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MICRO PHOTO DIVISION

BELL & HOWELL

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PATENT OFFICE NOTICES

Patent Numbers For Which No Patents Exist

Issue of October 3, 1972

3,694,822	3,695,272	3,695,682	3,696,119
3,694,824	3,695,282	3,695,683	3,696,124
3,694,827	3,695,285	3,695,686	3,696,139
3,694,833	3,695,292	3,695,704	3,696,140
3,694,841	3,695,294	3,695,705	3,696,148
3,694,842	3,695,305	3,695,712	3,696,149
3,694,849	3,695,312	3,695,738	3,696,151
3,694,850	3,695,313	3,695,740	3,696,159
3,694,854	3,695,328	3,695,748	3,696,174
3,694,874	3,695,343	3,695,759	3,696,175
3,694,877	3,695,348	3,695,773	3,696,178
3,694,878	3,695,353	3,695,782	3,696,190
3,694,886	3,695,357	3,695,793	3,696,196
3,694,900	3,695,359	3,695,794	3,696,205
3,694,901	3,695,372	3,695,798	3,696,208
3,694,904	3,695,380	3,695,803	3,696,209
3,694,910	3,695,393	3,695,843	3,696,211
3,694,917	3,695,400	3,695,846	3,696,212
3,694,920	3,695,413	3,695,852	3,696,213
3,694,922	3,695,420	3,695,857	3,696,214
3,694,929	3,695,425	3,695,862	3,696,215
3,694,938	3,695,428	3,695,872	3,696,221
3,694,941	3,695,429	3,695,873	3,696,231
3,694,946	3,695,431	3,695,913	3,696,256
3,694,948	3,695,435	3,695,914	3,696,267
3,694,956	3,695,436	3,695,930	3,696,275
3,694,980	3,695,442	3,695,940	3,696,280
3,695,000	3,695,454	3,695,943	3,696,284
3,695,016	3,695,465	3,695,957	3,696,289
3,695,028	3,695,470	3,695,958	3,696,300
3,695,030	3,695,511	3,695,963	3,696,327
3,695,039	3,695,530	3,695,973	3,696,330
3,695,061	3,695,536	3,695,978	3,696,336
3,695,069	3,695,537	3,695,979	3,696,337
3,695,077	3,695,547	3,695,986	3,696,339
3,695,085	3,695,560	3,695,991	3,696,342
3,695,118	3,695,580	3,695,997	3,696,355
3,695,169	3,695,581	3,695,998	3,696,361
3,695,184	3,695,584	3,696,001	3,696,370
3,695,191	3,695,588	3,696,016	3,696,375
3,695,202	3,695,596	3,696,018	3,696,376
3,695,206	3,695,613	3,696,045	3,696,405
3,695,214	3,695,653	3,696,055	3,696,406
3,695,227	3,695,668	3,696,070	3,696,413
3,695,236	3,695,675	3,696,073	3,696,420
3,695,251	3,695,677	3,696,105	3,696,423

Disclaimers

3,632,976.—*Masao Ando*, Yokohamashi, Japan. DIFFERENTIAL AND/OR DISCONTINUOUS HEATING ALONG PIPELINES BY HEAT-GENERATING PIPES UTILIZING SKIN-EFFECT CURRENT. Patent dated Jan. 4, 1972.. Disclaimer filed Aug. 10, 1972, by the assignee, *Chisso Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Dec. 20, 1983.

3,637,491.—*Ross M. Hedrick*, St. Louis, Mo. and *David T. Mowry*, Yokohama, Japan. CLARIFICATION OF WATER. Patent dated Jan. 25, 1972. Disclaimer filed Sept. 20, 1971, by the assignee, *Monsanto Company*.

Hereby disclaims the portion of the term of the patent subsequent to June 22, 1987.

3,666,258.—*Paul Emile Gaudry*, Laval des Rapides, Quebec, Canada. ELECTRIC MOTOR BRUSH SPRING. Patent dated May 30, 1972. Disclaimer filed Sept. 5, 1972, by the assignee, *Consolidated Foods Corporation*.

Hereby disclaims the entire term of said patent.

3,670,073.—*Thomas H. Shepherd*, Hopewell, and *Francis E. Gould*, Princeton, N.J. HYDROPHILIC POLYMER CONTAINING AEROSOL. Patent dated June 13, 1972. Disclaimer filed Sept. 1, 1972, by the assignee, *National Patent Development Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 13, 1988 .

3,674,784.—*J. Alan Webber*, Indianapolis, Ind. 3-FORMYL CEPHALOSPORIN SULFOXIDES. Patent dated July 4, 1972. Disclaimer filed Mar. 13, 1972, by the inventor, the assignee, *Eli Lilly and Company*, assenting.

Hereby disclaims the portion of the term of the patent subsequent to Aug. 3, 1988.

Certificates of Correction for the Week of Oct. 3, 1972

Re. 27,307	3,626,432	3,644,293	3,656,855
Re. 27,340	3,627,792	3,644,298	3,656,870
3,191,790	3,630,833	3,644,378	3,656,957
3,448,973	3,631,062	3,644,411	3,657,083
3,533,480	3,631,258	3,644,429	3,657,142
3,552,335	3,631,954	3,644,613	3,657,237
3,558,738	3,632,552	3,645,776	3,657,267
3,567,458	3,633,652	3,645,988	3,657,772
3,572,730	3,634,572	3,646,072	3,658,461
3,578,213	3,635,848	3,646,352	3,658,562
3,581,898	3,636,272	3,646,953	3,658,690
3,582,674	3,636,285	3,647,525	3,658,970
3,582,961	3,636,565	3,648,244	3,659,388
3,590,034	3,636,567	3,649,257	3,659,675
3,590,209	3,636,842	3,649,889	3,659,744
3,593,091	3,636,981	3,650,004	3,659,904
3,593,264	3,637,015	3,650,276	3,661,429
3,593,533	3,637,153	3,650,644	3,661,680
3,595,334	3,637,207	3,650,650	3,661,860
3,601,891	3,637,309	3,650,694	3,662,178
3,601,906	3,637,330	3,650,799	3,662,860
3,603,026	3,637,335	3,650,802	3,662,937
3,604,070	3,637,370	3,650,898	3,663,525
3,606,131	3,637,389	3,650,945	3,663,680
3,607,522	3,637,444	3,651,343	3,663,845
3,607,864	3,637,452	3,651,611	3,664,114
3,609,773	3,637,487	3,651,798	3,664,613
3,610,472	3,637,520	3,652,083	3,665,081
3,612,686	3,637,714	3,652,258	3,665,650
3,612,843	3,637,956	3,652,621	3,665,891
3,613,556	3,637,963	3,653,241	3,665,940
3,616,680	3,638,225	3,653,288	3,666,063
3,617,633	3,638,488	3,653,542	3,666,701
3,618,275	3,640,457	3,653,634	3,667,572
3,621,217	3,640,722	3,653,797	3,667,939
3,621,221	3,640,870	3,654,751	3,668,307
3,622,559	3,641,258	3,655,275	3,668,449
3,622,690	3,641,601	3,655,599	3,668,635
3,623,151	3,642,502	3,655,602	3,669,826
3,623,377	3,642,931	3,655,646	3,670,503
3,624,044	3,643,216	3,655,809	3,670,721
3,624,158	3,643,565	3,656,335	3,670,899
3,624,176	3,643,598	3,656,357	3,671,149
3,624,236	3,644,051	3,656,449	3,671,684
3,624,978	3,644,120	3,656,529	
3,625,631	3,644,246	3,656,764	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 19, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-15-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-26-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries, Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-11-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-24-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-18-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-30-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-29-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 3, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T903,001

TERPOLYMER COMPOSITIONS

Oliver deS. Deex, Clayton, and William R. Fallwell, Jr., St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Original application May 29, 1968, Ser. No. 732,887, now Patent No. 3,637,566, dated Jan. 25, 1972. Divided and this application June 19, 1970, Ser. No. 59,803

Int. Cl. D21h *1/28*
U.S. Cl. 117—155 UA

No Drawing. 14 Pages Specification

This invention relates to terpolymers containing (a) 2 to 60 weight percent of an olefinic unsaturated hydrocarbon compound, (b) 40 to 98 weight percent of a vinyl type compound having the formula

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-R_2$$

wherein R_1 is hydrogen, methyl or halogen and R_2 is hydrogen or a carbonyl type residue such as $-COOR_3$ or $-OCOR_4$ where R_3 is an alkyl radical having 1 to 12 carbon atoms, and R_4 is an alkyl radical having 1 to 4 carbon atoms, —CN, phenyl —Cl and —Br, and (c) 0.1 to 40 weight percent of a partial ester of (1) an α-β-olefinic unsaturated polycarboxylic acid or anhydride thereof having from 4 to 10 carbon atoms and (2) a hydroxyl nonionic dispersing agent having the formula

$$H-\left(OCH_2CH_2\right)_n-OR_9$$

wherein R_9 is any hydrophobic group having 6 to 30 carbon atoms or more in the hydrophobic group and n is an average number of from about 0 to about 60. These compositions are useful as adhesives, extrusion coatings or gasketing material. In latex form, they are especially useful as adhesive binders in mineral pigment coating compositions for paper, paperboard and paper products. A specific example is a terpolymer of (a) ethylene, (b) vinyl chloride, and (c) ethoxylated tridecyl maleate half ester containing 9 to 10 ethoxy groups in the ester. They may also be applied as the only paper treating agent to improve the barrier properties and grease resistance of the paper or paperboard.

T903,002

RECOVERING VALUES FROM MONOVINYL-ACETYLENE CATALYST TARS

Alfred P. Kottenhahn, Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1971, Ser. No. 104,748

Int. Cl. B01d *11/04*; C01g *3/04*
U.S. Cl. 23—312

No Drawing. 14 Pages Specification

Cuprous chloride is recovered from tarred catalyst formed in the presence of a reaction control diluent during the catalytic dimerization of acetylene to monovinylacetylene. Water, preferably having an aliphatic nitrile compound such as acetonitrile dissolved therein, is mixed with the tarred catalyst to form a tar concentrate containing the values to be recovered. The tar concentrate is mixed with a concentrated aqueous solution of monomethylamine hydrochloride (preferably 20–70%) to form a two-phase system. One phase is aqueous and contains the monomethylamine hydrochloride and a substantial portion of the cuprous chloride which was in the tar, and the other is a tar phase and contains reaction control diluent, tar formed during the dimerization reaction, and any remaining cuprous chloride. The phases are separated and normally 50–60% of the cuprous chloride is recovered from the aqueous phase. In a preferred aspect, reaction control diluent, e.g. diphenylether, also is recovered, from the tar phase, by extracting that phase with a hydrocarbon solvent, followed by separating the solvent, containing any dissolved control diluent, from the tar phase, and recovering the diluent.

T903,003

CONTINUOUS HYDROGENATION PROCESS

Barry M. Mitchell, Rte. 12, Westbrook Drive, Kingsport, Tenn. 37663

Filed Feb. 11, 1971, Ser. No. 114,730

Int. Cl. C07c *85/12*
U.S. Cl. 260—583 K

No Drawing. 8 Pages Specification

Both an improved process for the production of primary amines and a method of separating the hydrogenation catalyst from the reaction products are disclosed. By the process, an unsaturated nitrile and liquid ammonia are reacted in the presence of an excess of a polar solvent such as isopropanol to give a cyanoethylated product. The cyanoethylated product is then fed to a continuous hydrogenation process which utilizes a stirred reactor for the hydrogenation of the dinitriles. The hydrogenation catalyst employed in the process is formed from a material that is magnetically attracted by a magnet field and is separated from the hydrogenation reaction mixture by magnetic means.

T903,004

FLASH COOLING PROCESS

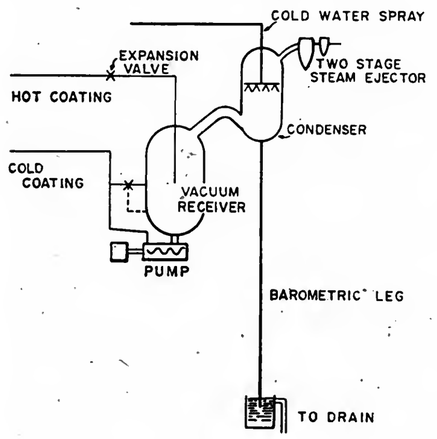
Robert C. Rose, 13 Ervilla Drive, Larchmont, N.Y. 10538

Filed May 14, 1971, Ser. No. 143,465

Int. Cl. F25b *19/00*
U.S. Cl. 62—100

1 Sheet Drawing. 9 Pages Specification

Method and apparatus for cooling coating and coating components by flash evaporation. Cooling coating components results in improved control over coating viscosity, water retention and adhesive retention, factors which effect coating weight and quality.



T903,005

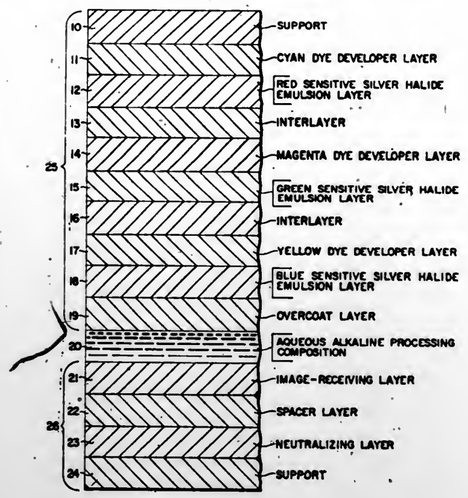
TEXTURING THE SURFACE OF A PHOTOGRAPHIC DIFFUSION TRANSFER PRINT

Paul A. Camello, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 2, 1971, Ser. No. 159,253

Int. Cl. B44c *1/16*
U.S. Cl. 96—27

1 Sheet Drawing. 14 Pages Specification



Distinctive photographic products are obtained by separating the support member from a diffusion transfer image bearing element. The residual portion of the diffusion transfer element, e.g., that portion bearing the image pattern can then be applied to a substrate having a surface which can provide a predesired antique or textural effect for the image pattern carrying member. Photographic products produced in accordance with the present invention closely resemble painted miniature portraits or similar specialized photographic products of this type.

T903,006

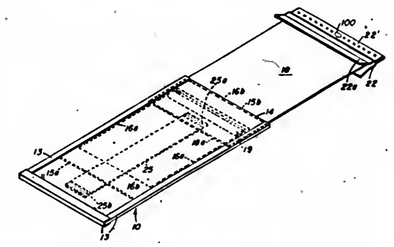
PHOTOGRAPHIC FILM UNIT

David A. Frost, 1669 Lake Ave., Rochester, N.Y. 14650

Filed July 6, 1971, Ser. No. 159,963

Int. Cl. G03b *17/50*
U.S. Cl. 95—13

2 Sheets Drawing. 18 Pages Specification



In a photographic film unit of the in-camera processing type comprising a sheet of photosensitive film and a sheet of image-receiving material adapted to be processed by spreading a processing solution between the two contained within an opaque envelope open at one end to allow the envelope and said sheet of image-receiving material to be slid off the film for exposure of the film and returned to covering relation with the film for processing, the improvement which comprises incorporating within the film unit itself a flexible limit strap for positively limiting the amount the envelope can be withdrawn from the film for exposure of the film. This limit strap has one of its ends attached to the back side of the film and its other end attached to the inside of one wall of the envelope. As the envelope is slid off the film this limit strap is unfolded and stops withdrawal of the envelope from the film when it becomes fully extended.

T903,007

PREPARATION OF SUBSTITUTED CYCLOHEXADIENONES

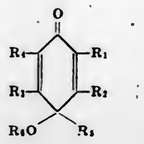
Hans K. Dietl and Howard S. Young, both of P.O. Box 511, Kingsport, Tenn. 37901

Filed July 9, 1971, Ser. No. 161,355

Int. Cl. C07c *49/64*
U.S. Cl. 260—396 N

No Drawing. 9 Pages Specification

Substituted cyclohexadienones having the structural formula



wherein R_1, R_2, R_3 and R_4 are the same or different and each of R_1, R_2, R_3 and R_4 may be hydrogen, alkyl, aryl,

halogen, or alkoxy; R_5 is alkyl, aryl, or halogen, and R_6 is alkyl, are prepared by reacting a para-substituted phenol having at least one substitution in the ortho position, with manganese dioxide in an aqueous sulfuric acid-straight or branched chain alcohol solution or reaction medium. The substituent occupying the para-position on the para-substituted phenol starting material must not be hydrogen. Among typical suitable, readily available and relatively inexpensive alcohols which may be employed as the alcohol component of the acid-alcohol reaction medium may be mentioned straight or branched chain alcohols such as methanol, ethanol, n-propanol, isopropanol, n-butanol, tertiary-butanol, pentanols, and the like. The cyclohexadienones prepared in accordance with the invention may be readily converted by known reactions into a number of valuable food antioxidants and related products.

T903,008
COATING COMPOSITIONS
John M. McCabe, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650
Filed July 16, 1971, Ser. No. 163,444
Int. Cl. B44d *1/09*
U.S. Cl. 117—161 KP
No Drawing. 12 Pages Specification

Radiographic screens are provided with protective overcoats coated from aqueous coating compositions containing a thermoplastic polyurethane elastomer. Such compositions provide low gloss matte overcoats which are easily cleaned and which possess a high degree of flexibility, durability, abrasion resistance, and resistance to radiation degradation. Particularly good properties are provided by admixing polymethyl methacrylate resin and a polymer of ethyl acrylate, acrylic acid and acrylonitrile with the polyurethane elastomer. In such compositions, the polyurethane elastomer is preferably employed in an amount of about 5 to 10 percent by weight, based on the total weight of resins in the composition. The protective overcoats are particularly useful in screens comprising heavy metal host matrix phosphors such as barium lead sulfate or europium-activated barium strontium sulfate.

T903,009
PHOSPHORUS-FREE CLEANING FORMULATIONS
Richard D. Katstra, Englewood Cliffs, N.J., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 22, 1971, Ser. No. 182,863
Int. Cl. C11d *1/12*
U.S. Cl. 252—559
No Drawing. 17 Pages Specification

Phosphorus-free cleaning formulations containing only surface active materials. The surface active materials used include a major proportion of a nonionic surfactant and a lesser amount of an alkyl aryl sulfonate salt.

T903,010
PHOSPHORUS-FREE CLEANING FORMULATIONS
Richard D. Katstra, Englewood Cliffs, N.J., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 22, 1971, Ser. No. 182,883
Int. Cl. C11d *1/18*
U.S. Cl. 252—546
No Drawing. 19 Pages Specification

A liquid, phosphorus-free cleaning formulation comprising a nonionic surface active agent in combination with an alkali cleaning compound or in combination with an amino polycarboxylic acid salt as a sequestering agent. Alternatively, a high level (from about 40 weight percent to about 70 weight percent) of the nonionic surfactant in an aqueous alcohol diluent may be employed without the inclusion of detergency builder compounds, sequestering agents or hydrotropes.

T903,011
LAMINAR ELASTOMERIC FILM STRUCTURES
Max Goldman, Wililamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 743,641, July 10, 1968. This application Sept. 30, 1971, Ser. No. 185,353
Int. Cl. B32b *27/08, 27/28*
U.S. Cl. 161—253
No Drawing. 9 Pages Specification

A laminar film structure consisting essentially of an inner layer of film prepared from an elastomeric polymer and a plurality of outer layers of film prepared from polymeric resin wherein the outer layers have an extensibility equal to at least 50% of the extensibility of the inner layers with at least one of the outer layers having a film-to-metal coefficient of friction of less than about 0.50.

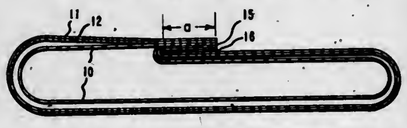
The elastomeric polymer chosen for the inner layer preferably has an extensibility of at least 400% and can include materials such as natural or synthetic rubbers, Synthetic rubbers include materials such as styrene-butadiene polymers, ethylene-propylene copolymers, polychloroprene, polybutadiene, and copolymers of propylene and ethylene with other unsaturated compounds such as hexene and hexadiene.

Polymeric resins which can be used as the outer layer preferably have an extensibility that is at least 200%. Useful polymeric resins include ethylene-vinyl acetate copolymers, ethylene copolymerized with alkyl acrylic esters having 1–5 carbon atoms in the alkyl group, and ethylene and propylene copolymers. Especially preferred are ethylene copolymers wherein the comonomer comprises from about 25 to 35% of the polymeric composition.

One combination of elastomeric polymer and polymeric resin which has been found to be particularly satisfactory comprises an inner layer of styrene-butadiene elastomer laminated on two sides with an outer layer of ethylene-vinyl acetate copolymer.

The laminar film structures of the present invention can be prepared by conventional means such as coextrusion, adhesive lamination, or melt coating. These laminated structures have a reduced tendency to delaminate upon stretching making them particularly suitable for packaging foodstuffs such as bread and meat.

T903,012
LAMINAR STRUCTURES AND PACKAGES THEREOF AND METHOD OF MANUFACTURE
James Maurice Quinn, Tonawanda, N.Y., and Edgar Davis Swain, Westport, Conn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 61,481, Aug. 5, 1970, which is a continuation of application Ser. No. 655,076, July 21, 1967. This application Oct. 4, 1971, Ser. No. 186,405
Int. Cl. B32b *27/08*
U.S. Cl. 161—227
1 Sheet Drawing. 15 Pages Specification



In a double-wall laminar packaging structure formed of an outer wall of film coated on its inner side with a vinylidene chloride copolymer, and an inner wall of film bonded to the inner side of said outer wall only along edge areas; the improvement wherein said film of said outer wall is an organo thermoplastic polymer film, such as polyethylene terphthalate, polypropylene or nylon, and the film of said inner wall is a polyolefin film, such as polyethylene or an ionic hydrocarbon copolymer, and wherein said edge areas comprise polyolefin film directly bonded to vinylidene chloride copolymer-coated surfaces of said outer wall of film.

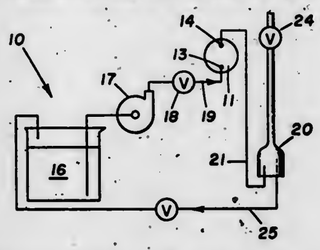
T903,013
POLYESTER COMPOSITIONS HAVING HIGH DIELECTRIC CONSTANTS, FILMS THEREOF AND SHAPED ARTICLES
John O. Sharp and Richard G. Devaney, both of P.O. Box 511; Kingsport, Tenn. 37901
Continuation of application Ser. No. 81,126, Oct. 15, 1970. This application Oct. 5, 1971, Ser. No. 186,817
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R
No Drawing. 9 Pages Specification

Compositions comprising a linear polyester derived from terephthalic acid, isophthalic acid, hexahydroisophthalic acid and 1,4-butanediol, said composition containing from 70 to 90 weight percent, based on the weight of the composition, of rutile titanium dioxide, said compositions having a dielectric constant of at least 50. These compositions advantageously form films and coatings which find utility in areas such as electrical components and molded articles.

T903,014
LASER PROCESS OF PRINTING TABLETS AND CAPSULES
Robert E. Dempski, 1629 Arran Way, Dresher, Pa. 19025
Filed Oct. 7, 1971, Ser. No. 187,576
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LM
No Drawing. 3 Pages Specification

A laser is used for printing indicia on solid pharmaceutical dosage forms. The process involves scanning a laser beam, which is focussed and modulated to produce a desired image, over tablets or capsules in order to write or print a coding word or symbol. The laser energy acting on the surface of the tablet or capsule forms the desired image.

T903,015
IMBIBITION WATERFLOODING PROCESS
James M. McMillen, Arlington, Tex., assignor to Mobil Oil Corporation
Filed Oct. 18, 1971, Ser. No. 190,011
Int. Cl. E21b *43/22*
U.S. Cl. 166—252
1 Sheet Drawing. 12 Pages Specification



An imbitition waterflooding process for recovering petroleum from a reservoir wherein the pH of the imbibing fluid, e.g., water, is adjusted to a desired value that will enhance production. By means of controlled experiments, a pH value of water is determined that will best displace a particular oil from a particular reservoir. Waters which are available for waterflooding said reservoir are tested and the pH value of the most suitable is adjusted and buffered to the desired pH value. This water is then injected into the reservoir.

T903,016
PROCESS FOR PREPARING HIGHER TRIORGANO PHOSPHATE ESTERS
James Perry Cleveland, Rte. 8, Cochise Trail, Kingsport, Tenn. 37664
Filed Oct. 29, 1971, Ser. No. 193,999
Int. Cl. C07f *9/08*
U.S. Cl. 260—982
No Drawing. 8 Pages Specification

The present invention concerns a process for substituting at least one higher organo group such as butyl, for a lower alkyl group of a trialkyl phosphate such as triethyl phosphate, wherein each original alkyl group of the phosphate contains from 1 to 10 carbons, comprising reacting the trialkyl phosphate with an alcohol or substituted alcohol in the presence of from about 2 to about 40 mole percent based on moles of phosphate triester of the alkoxide of the alcohol which is higher in carbons than at least one alkyl group of the phosphate, the reaction being carried out at a temperature of from about 25° C. to about 115° C., and under conditions such that the liberated alcohol is rapidly removed.

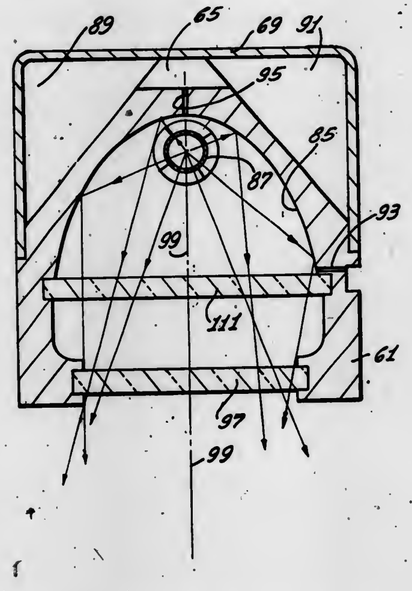
T903,017
PHOTOSENSITIVE COMPOSITION AND ELEMENT EMPLOYING COMPLEXES OF CYANIDES AND ORGANOAZIDES AND METHOD OF USE
James A. Van Allan, 314 Rye Road, Rochester, N.Y. 14615, and Shirley C. Chang, 64 Elaine Drive, Henrietta, N.Y. 14467
Filed Nov. 1, 1971, Ser. No. 194,551
Int. Cl. G03c *1/52, 1/92;* **G03f** *7/08*
U.S. Cl. 96—33
No Drawing. 22 Pages Specification

Photographic compositions including a radiation-sensitive complex of a cyanide of an alkali metal or a triorganophosphonium group with an organoazide such as an arylazide are radiation-sensitive and can be imagewise exposed to activating rays to yield a species that can react with a dye-forming coupler to form an image dye, e.g. an azo dye. Optionally, such compositions can include a polyhalogen sensitizer, a water-permeable polymeric binder and/or a dye-forming coupler. When these compositions are present on a support, photographic elements are formed. Imagewise exposure of the compositions or element to activating rays for the complex in the presence of a dye-forming coupler produces a photographic image in exposed regions. Also, if an element or composition not exposed in the presence of a coupler is subsequently treated with a dye-forming coupler, a photographic image forms in exposed regions. After production of the image, it can be stabilized by a water wash. If desired, the photographic image can be intensified by heating. Lithographic printing surfaces can be prepared when an element including a lithographic plate support has thereon a composition of the present type that is ink receptive or can be made so by exposure to activating rays. The lithographic surface is formed after exposure and subsequent washing away of exposed or unexposed regions.

T903,018
OPTICAL SYSTEM FOR A PHOTOSENSITIVE MATERIAL PRINTER
John L. Dexter, Santa Barbara, Calif., assignor to Gyrex Corporation, Santa Barbara, Calif.
Continuation of abandoned application Ser. No. 877,160, Nov. 17, 1969. This application Dec. 8, 1971, Ser. No. 206,212
Int. Cl. G03b *27/10, 27/16*
U.S. Cl. 355—84
4 Sheets Drawing. 21 Pages Specification

An optical system for exposure of either or both sides of a workpiece which is sensitive to light rays. The described embodiment comprises a pair of collimated mercury vapor tubular lamps positioned close to the work-

piece and mounted in opposed semi-elliptical reflectors. An infrared ray filter (111) is mounted adjacent the mouth of each reflector, intermediate the lamp and a fiber optic plate (97). The fiber optic plates segregate the light rays emanating from the lamps so that only those rays which are within a predetermined range of angles relative to a perpendicular plane reach the workpiece. The filters absorb nearly all of the infrared rays emitted toward the optic plates, thereby protecting the plates and the workpiece from heat generated by the lamps. Each lamp is fixed within its reflector by means of insulators



mounted within housing end caps which are formed with airflow passages for cooling the lamp, the infrared ray filter, and the reflector. An insulator for holding the ends of the tubular lamp comprises a body having flexible mmebers on one end thereof which fit into a bore and form a seat for the end of a lamp. An axial passage through the body provides a passage for the electrical wire leading to the end of the lamp and a pair of shoulders are formed on the body for axially positioning the insulator in the bore and for manually gripping the insulator during installation and removal.

T903,019
FIRE-RETARDANT POLYESTER COMPOSITIONS

Samuel M. Draganov, Tustin, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation of application Ser. No. 60,763, Aug. 3, 1970. This application Jan. 3, 1972, Ser. No. 215,228

Int. Cl. C08g *51/04*; C09d *5/18*
U.S. Cl. 260—40 R

No Drawing. 11 Pages Specification

Fire-retardant halogenated polyester compositions containing a synergistic mixture of zinc borate and hydrated alumina. Brominated polyesters containing about 5 to 30% by weight of the synergistic additive combination are preferred.

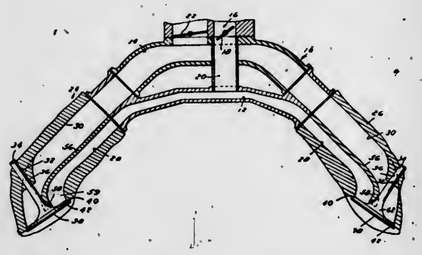
T903,020
INTERNAL COMBUSTION ENGINE DUAL INDUCTION SYSTEM

Robert R. Cook, Dearborn, and Richard P. Krygowski, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of abandoned application Ser. No. 50,645, June 29, 1970. This application Jan. 7, 1972, Ser. No. 216,231

Int. Cl. F01l *3/00*; F02n *13/04*
U.S. Cl. 128—188 M

2 Sheets Drawing. 15 Pages Specification



An internal combustion engine having a cylinder head positioned over the end of a combustion chamber with the cylinder head having primary and secondary induction passages positioned therein. An induction valve including a valve stem and a valve head is reciprocably mounted within the cylinder head, and a common wall of the primary and secondary induction passages terminates at the head of said valve in a web extending across the head. When the induction valve is in the closed position, the edge of this web is spaced from the valve head at a distance sufficiently small that the deposits on the valve head form a positive seal between the valve head and the edge of the web after the internal combustion engine has been operated for a short period of time. This structure provides a seal between the primary and secondary induction passages when the induction valve is closed.

T903,021
PYRAZOLONE DERIVATIVES

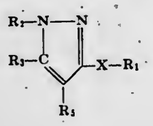
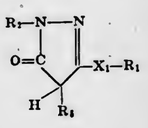
William F. Coffey, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650

Filed Jan. 17, 1972, Ser. No. 218,555

Int. Cl. G03c *1/40*
U.S. Cl. 96—100

No Drawing. 13 Pages Specification

Azomethine magenta dye-forming color photographic couplers of the formulae

(I)  or (II) 

wherein

X is —S—, —Se—,



or —SO_2—;

X_1 is —Se—,



or —SO_2—;

R_1 and R_2 are branched or unbranched alkyl groups having 1–20 carbon atoms, or an aryl group such as a phenyl or a naphthyl radical or a heterocyclic radical;

R_3 is defined as an acyloxy radical such as R_4—CO—O in which R_4 is an alkyl group of 1–20 carbon atoms or an aryl group; and

R_5 is defined as a hydrogen atom, or a coupling off group such as a halo, an aryloxy, an arylthio, an alkylthio, an alkoxy, an acyloxy, a thiocyano, or a heterocyclic radical attached to the pyrazolone ring by an —O— or —S— group;

also included within the invention is an alkaline color developing solution containing a diffusible coupler compound of the above-defined class; a color photographic silver halide emulsion containing nondiffusible coupler compounds as above-defined; color photographic elements including diffusion transfer-type elements and having one or more of the defined couplers contained therein; and a process for forming azomethine dyes by reacting couplers of the above class with oxidized color developing agent.

T903,022
PHOTOSENSITIVE DIAZONIUM SALTS OF XANTHENE DYES

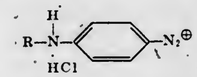
Douglas G. Borden, % Kodak Park Research Laboratories, Rochester, N.Y. 14650

Filed Feb. 1, 1972, Ser. No. 222,649

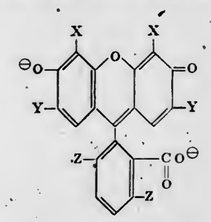
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 R

No Drawing. 9 Pages Specification

Diazonium salts are spectrally sensitized by forming a diazonium xanthene dye complex by reacting an aqueous solution of a diazonium cation, which contains an imino group para to the diazonium group, with an aqueous solution of a xanthene dye anion and collecting the precipitate. Suitable diazonium cations include those which have the structure



where R is alkyl, aralkyl, or aryl. Typical diazonium salts are 4-ethylaminobenzenediazonium chlorozincate and 4-phenylaminobenzenediazonium sulfate. Suitable xanthene dye anions include those which have the structure



where X, Y and Z are each independently hydrogen or halogen. Typical xanthene dyes are fluorescein, eosin, rose bengal and erythrosin. The photodecomposition products of the complexes are ink accepting and can be used as is, or optionally with a binder, in the preparation of planographic printing plates.

T903,023
PRINTING INK CONTAINING A LACTONE SOLVENT

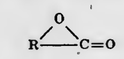
Clarence S. Hunter, 1669 Lake Ave., Rochester, N.Y. 14615

Continuation of abandoned application Ser. No. 861,170, Sept. 25, 1969. This application Feb. 17, 1972, Ser. No. 227,255

Int. Cl. C09d *11/08*, *11/10*
U.S. Cl. 106—22

No Drawing. 8 Pages Specification

A printing ink characterized by its rapid absorption by polymeric materials, and especially suited for printing on photographic film such as cellulose ester base film and on photographic paper having a polyolefin coating thereon. This printing ink comprises: (1) a colorant such as a dye and/or a pigment in an amount between 1 and 50% by weight; (2) a film-forming resinous binder such as a vinyl resin (e.g. polyvinyl acetate), a polycarbonate resin, a polyolefin resin or a cellulose ester (e.g. cellulose acetate, propionate, butyrate, nitrate, or acetate butyrate) in an amount between 1 and 20% by weight sufficient to dissolve said binder and render the ink spreadable; and (3) a solvent comprising 5–100% of a lactone of the formula:



wherein R is an alkylene radical of 2–6 carbon atoms. Examples of suitable lactones are beta-propiolactone, 4-butyrolactone, 4-valerolactone, 6-hexanolactone and the like. The lactone may be employed as the sole solvent or it can be mixed in an amount of 5% or more with one or more conventional solvents such as methanol, ethanol, isopropanol, butanol, or pentanol; esters, such as ethyl acetate, butyl acetate, ethyl propionate; ethers, such as ethyl ether, propyl ether, butyl ether; and ketones such as acetone, methyl ethy ketone, 4-methyl-2-pentanone. The ink is exceptionally suitable for flexographic or rotatogravure pirnting, but it also can be used in ink stamp pads or in felt-tipped marking pens.

T903,024
LIGHT-SENSITIVE POLYMERS CONTAINING THALLATED ARYL GROUPS

George A. Reynolds and Douglas G. Borden, both % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650

Filed Feb. 18, 1972, Ser. No. 227,643

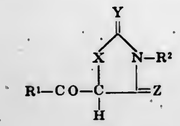
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R

No Drawing. 9 Pages Specification

Light-sensitive polymers containing thallated aryl groups are prepared by reacting a preformed polymer containing aryl groups with a thallating agent. Suitable preformed polymers can have the aryl groups pendant from or as an integral part of the polymer backbone and include nonlight-sensitive polymers such as polystyrenes and polyphenyl ether and light-sensitive polymers such as poly(vinyl cinnamate) and poly(vinylnaphthophenone). Suitable thallating agents include thallium trifluoroacetate. Polymers of this invention are positive-working, i.e. on exposure to actinic radiation they become more soluble in typical developer solvents, and can be used in compositions and elements to prepare photomechanical images such as photoresists and planographic printing plates.

T903,025
NOVEL PHOTOGRAPHIC COUPLERS
Delwyn E. Machiele, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650
Filed Feb. 18, 1972, Ser. No. 227,668
Int. Cl. G03c *1/40, 5/54, 7/32*
U.S. Cl. 96—100
No Drawing. 28 Pages Specification

A class of 5-acyl-2,4-oxazolidinediones of the general formula



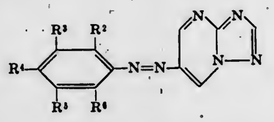
in which

X, Y and Z are each defined as oxygen or sulfur;
R^1 represents an aryl, an alkyl, a heterocyclic group, —NHR and —OR group in which R is defined as hydrogen, an aryl, an alkyl, or a heterocyclic radical;
R^2 is a hydrogen, an aryl group, an alkyl group, or a heterocyclic group;

said class of compounds having the ability to react with oxidized color developer to obtain photographically useful yellow dyes; the non-diffusible compounds of this invention being preferably utilized in a color photographic element as part of one or more light-sensitive silver halide emulsion layers and the diffusible compounds utilized by incorporation into a developer composition; also included is a process for producing the indicated compounds by reacting a 2,4 oxazolidinedione or thio analog thereof with magnesium methyl carbonate, and, thereafter, reacting the resulting chelate salt with an acylating agent or subjecting it to alcoholysis.

T903,026
DIRECT-POSITIVE SILVER HALIDE EMULSIONS CONTAINING SUBSTITUTED PHENYLAZO-1,2,3-ALPHA, 7-TETRAZAINDENE COMPOUNDS
Cynthia Geer Ulbing, Fairport, and Dorothy Johnson Beavers, Rochester, N.Y. (both % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650)
Filed Mar. 10, 1972, Ser. No. 233,758
Int. Cl. G03c *1/28*
U.S. Cl. 96—107
No Drawing. 12 Pages Specification

Direct-positive silver halide emulsions and photographic elements containing said emulsions are disclosed wherein the emulsion contains a substituted phenylazotetrazaindene compound. In one aspect, the tetrazaindene compounds which are used in direct-positive emulsions have the formula:



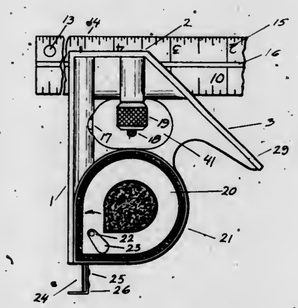
wherein R^2, R^3, R^4, R^5 and R^6 can each be hydrogen atoms, alkyl groups, nitro groups, halogen atoms, alkyloxy groups or alkylthio groups. The phenylazotetrazaindene compounds can be incorporated in fogged, silver halide emulsions such as, for example, emulsions disclosed in U.S. Pats. 3,367,778 by Berriman, 3,501,307 by Illingsworth, and the like. In one aspect, good image properties are obtained upon exposure and development of direct-positive emulsions containing the phenylazotetrazaindene compounds at concentrations of from 10 mg. to 2 g. per mole of silver.

REISSUES

OCTOBER 3, 1972

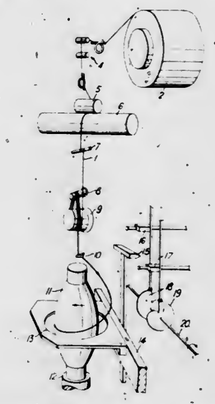
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,496
DUAL SQUARE
Peter Andrews, 190 Gebhardt Road, Penfield, N.Y. 14526
Original No. 3,364,581, dated Jan. 23, 1968, Ser. No. 167,609, Jan. 24, 1962, which is a continuation-in-part of Ser. No. 786,069, Jan. 12, 1959, which is a continuation-in-part of Ser. No. 611,926, Sept. 25, 1956. Application for reissue Jan. 19, 1970, Ser. No. 8,131
Int. Cl. G01b *3/10*
U.S. Cl. 33—189 15 Claims



A combination square having, in one embodiment, a graduated grooved rule member releasably secured to the head of the square by a clamping stud member while having a resilient graduated tape measure of the concavo-convex, in cross section when free, type housed in a lower portion of the square head. The square head having a side edge which extends perpendicular to a longitudinal edge portion of the rule member. When the tape measure is extended, for example, 2 or 3 feet from the head, it inherently forms a rod-like state so that an extension of the side edge is thereby made and a generally semi-rigid gauge is formed so that measuring, squaring and scribing operations along a longitudinal edge portion of the rule member are executed, for example, on the surface of a board, and in one operation. In another embodiment the rule member is removed from the head so that another semi-rigid gauge effect is produced, by use of the tape measure in an extended rod-like state, for readily making surface gauge measurements at an oblique angle, by use of an oblique angle side edge of the head, accordingly. In still another embodiment, the rule member either is or is not used in the head so that semi-rigid gauge, for example, inside measurements may be repeatedly made so that transfer of the measurement may be made to the surface of a board, for example. The tape measure may also be used as an extension of the rule member for making measurements over a large corner obstruction. And in still other embodiments a level vial is housed substantially in the head of the square that may also have a tape measure cam lock for locking the tape measure in an extended position and even while the level vial is being used, accordingly.

27,497
METHOD AND APPARATUS FOR WINDING YARN
Bryan Kingsley Johnson, Abergavenny, and Frederick Arthur Smith, Newport, England, assignors to British Nylon Spinners Limited, Pontypool, Monmouthshire, England
Original No. 3,488,938, dated Jan. 13, 1970, Ser. No. 442,858, Apr. 5, 1965. Application for reissue Apr. 22, 1970, Ser. No. 30,727
Int. Cl. D01h *13/00;* D02g *3/02*
U.S. Cl. 57—98 19 Claims



An apparatus and process for the preparation of cylindrically-wound yarn packages characterized by a relatively high helix angle and reduced ridging, the process including programming means arranged to control the winding conditions by varying winding speeds in a manner such as to reduced ridging.

27,498
SINGLE FLIGHT AUGERS
John V. Watson, Fort Worth, Tex., assignor to Watson Manufacturing Company, Fort Worth, Tex.
Original No. 3,387,674, dated June 11, 1968, Ser. No. 591,608, Nov. 2, 1966. Application for reissue May 21, 1970, Ser. No. 39,486
Int. Cl. E21c *13/04*
U.S. Cl. 175—394 10 Claims



1. An auger type cutting apparatus comprising: a central shaft; a single edge cutter extending substantially

radially from an inner region of the normally lower end of said shaft; a single flight spiral conveyor secured to said shaft to extend from said cutter toward the normally upper end of said shaft; a skirt having the form of a truncated cylinder segment depending from said single flight spiral conveyor along its outermost edge and terminating in a lower edge having a substantially horizontal region spaced a selected distance above said cutter to define the maximum advance angle of the apparatus and an oblique region which extends upward along the periphery of said spiral conveyor; and a substantially vertical ear extending upward from the outermost edge of said cutter to clean the wall of the bore hole as formed.

27,499

SPINNING APPARATUS UTILIZING AIRSTREAM

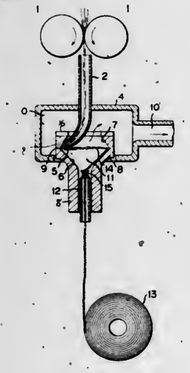
Kiyosige Isomura, Kariya, Japan, assignor to Toyoda Automatic Loom Works, Ltd., Kariya, Aichi Prefecture, Japan

Original No. 3,411,283, dated Nov. 19, 1968, Ser. No. 626,224, Mar. 27, 1967. Application for reissue Nov. 19, 1970, Ser. No. 91,168

Claims priority, application Japan, Mar. 31, 1966, 41/20,325, 41/20,326

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **8 Claims**



Apparatus for continuous spinning utilizing an airstream issuing into a spinning chamber. Said spinning chamber having oppositely formed inclined walls which form a V and said apparatus having a guide tube for depositing opened sliver-like fiber in said V-shaped area. The spinning chamber having vanes at the top thereof to facilitate discharge of air toward a suction box connected to a source of negative pressure.

27,500

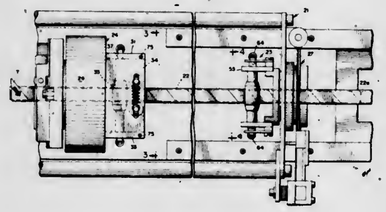
STRIPPER FOR INTERMITTENT SPIRAL TUBE WINDER

Anthony V. Thomas, Prospect Heights, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.

Original No. 3,482,490, dated Dec. 9, 1969, Ser. No. 712,291, Mar. 11, 1968. Application for reissue Oct. 9, 1970, Ser. No. 79,715

Int. Cl. B31c *3/00*

U.S. Cl. 93—80 **5 Claims**



An improved stripper for an intermittent spiral tube winder wherein an arbor advances while rotating to perform a winding operation and thereafter retracts from the already wound tube so as to present an overlapping portion suitable for severing—the severed tube being useful as a coil form. The improved stripper or gripper includes one-way roller clutches arranged to bear against the sides of a rectangular tube to restrict the same from returning with the arbor.

PATENTS

GRANTED OCTOBER 3, 1972

GENERAL AND MECHANICAL

3,694,814

DIVER'S MASK

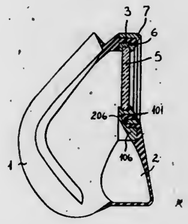
Ettore De Barbieri, Via Solimano, S. Margherita Ligure, and Umberto Boggian, Crosa Osten 5/B, 16030 Sori, both of Italy

Filed March 23, 1970, Ser. No. 21,847

Claims priority, application Italy, March 26, 1969, 6905 A/69; Sept. 12, 1969, 7312 A/69

Int. Cl. A64f *9/02*

U.S. Cl. 2—14 D **10 Claims**



A diver's mask comprising a rubber face piece having a nose piece and a rimmed front opening to accomodate a single-piece glass pane, a rigid frame member encircling said front opening and provided with means extending into a deep groove formed in the face piece above the nose root zone of the mask, so as to sustain the mask nose piece and to press the rim of the face piece against the edge of the glass pane, thus providing for a waterproof tight seal between said parts.

3,694,815

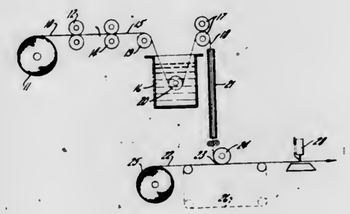
METHOD FOR APPLYING ELASTIC RIBBON TO FABRICS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 25, 1970, Ser. No. 75,495

Int. Cl. A41b *9/04*; A41d *1/00*

U.S. Cl. 2—224 A **2 Claims**



A method for attaching a garment gathering elastic ribbon comprising the steps of stretching the elastic ribbon, internally immobilizing the elastic ribbon in a stretched state, attaching the stretched elastic ribbon to the garment and causing the attached elastic ribbon to return to its original contracted state.

3,694,816

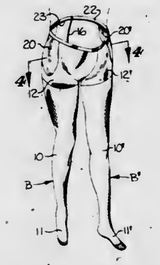
MATERNITY PANTY HOSE GARMENT AND METHOD

John R. Smith, Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.

Filed Nov. 12, 1970, Ser. No. 88,655

Int. Cl. A41b *9/00, 11/00*

U.S. Cl. 2—224 R **6 Claims**



This garment is formed of a pair of elongate stocking blanks which are each slit in a walewise direction and downwardly from the upper ends and along the inner and outer side portions. The edges of the inner slits are connected together to form the crotch area. Substantially U-shaped elastic gusset panels are connected in the outer slits at opposite sides of the garment to provide substantial expansion and support in the panty area without unduly constricting the abdomen of the wearer as it increases in size during pregnancy.

3,694,817

METHODS OF MANUFACTURING GARMENTS

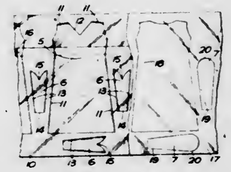
Philip Brown, Wembley, England, assignor to Mintray Limited, London, England

Filed Jan. 8, 1971, Ser. No. 104,950

Claims priority, application Great Britain, Jan. 3, 1970, 1,641/70

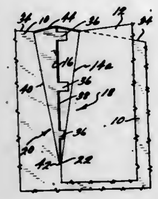
Int. Cl. A41d *27/00*

U.S. Cl. 2—243 R **7 Claims**



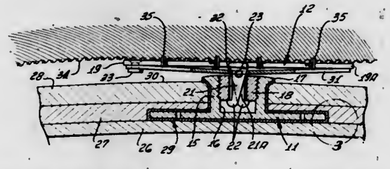
The invention provides a method of manufacturing garments or garment parts from a continuous web comprising feeding the web to an apparatus in which a tuck is formed in the web within the area from which the garment or garment part is to be formed, the tuck is secured at at least one location within the area to hold the tuck in place, the web is severed around the outline of the required garment part and the tuck is opened away from the location where it is secured thereby forming a dart or pleat in the garment part.

3,694,818
METHOD AND APPARATUS FOR SEWING DARTS
Ruth N. Nielson, 665 Meadowbrook Dr., Boulder, Colo.
Filed June 11, 1971, Ser. No. 152,087
Int. Cl. A41d
U.S. Cl. 2—243 R 10 Claims



This invention relates to a template to be temporarily fastened to a piece of yard goods and used as a guide while sewing a dart in accordance with a dress pattern or the like. The invention also contemplates the method of sewing the dart which includes the steps of folding the pattern back along the bisector of the dart imprinted thereon, laying the template atop the goods thus exposed along the fold line of the pattern to form the missing half of the dart, removing the pattern, folding the goods back under the template so that the fold line coincides with the bisector of the dart, and stitching the double thickness of material together using the margin of the template remote from the fold line as a guide.

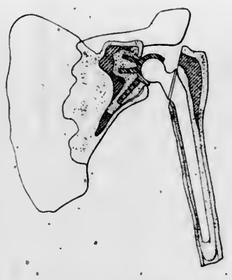
3,694,819
HAIR PIECE SECURING DEVICE
Gene P. Meyer, 16642 Wanderer Lane, Huntington Beach, Calif.
Filed Dec. 2, 1970, Ser. No. 94,275
Int. Cl. A61f 1/00; A41g 5/00
U.S. Cl. 3—1 11 Claims



The hair piece attachment device of the present invention is comprised of an anchor piece which is surgically imbedded in the scalp and an attachment piece which is removably attached to the anchor piece by latching means. The hair piece is connected to the attachment piece. A plurality of the anchor pieces are surgically imbedded in the scalp and a plurality of attachment pieces are attached to the hair piece such that when the attachment pieces are removably attached to the anchor pieces the hair piece will be secured and cosmetically aligned on the individual's head.

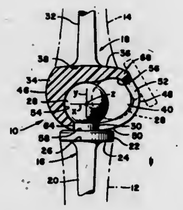
3,694,820
PROSTHETIC SHOULDER JOINT
John Tracey Scales, Stanmore, and David Goddard, Kings Langley, both of England, assignors to National Research Development Corporation, London, England
Filed July 29, 1970, Ser. No. 59,083
Claims priority, application Great Britain, Aug. 25, 1969, 42,197/69
Int. Cl. A61f 1/24
U.S. Cl. 3—1 7 Claims

A prosthetic scapular device is provided having a generally cup-shaped member, normally of a hemispherical form at least internally, and intracancellous fixation means extending from approximately one half only of the outer surface of the cup. The fixation means, normally in the form of mutually divergent spikes, include long members extending from points ad-



jacent the central radial plane of the relevant cup half and diverge in the same sense from such plane, together with short members on opposite sides of such plane. Preferably, the long members increase in length and divergence from said plane as they approach the cup rim.

3,694,821
ARTIFICIAL SKELETAL JOINT
Walter D. Moritz, 5253 Brummel, Skokie, Ill.
Filed Nov. 2, 1970, Ser. No. 85,971
Int. Cl. A61f 1/24
U.S. Cl. 3—1 17 Claims



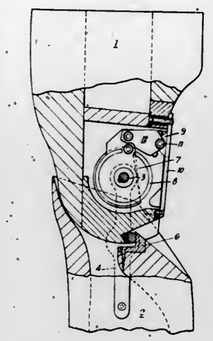
A pair of skeletal members, such as a tibia and a femur, are connected together by a ball and socket type assembly comprising said artificial joint. The ball of the assembly is secured to one of said skeletal members which shifts relative the other skeletal member in an anterior-posterior direction as the ball rotates. A follower supported from the ball against the exterior of the socket cams the ball from a first chamber to a connected second chamber in the socket, the follower being secured to the other skeletal member to produce the relative shifting of said members.

3,694,822
Patent Not Issued For This Number

3,694,823
KNEE JOINTS FOR ARTIFICIAL LEGS
Denis Ronald William May, London, England, assignor to J. E. Hanger and Company Limited, London, England
Filed June 25, 1970, Ser. No. 49,858
Int. Cl. A61f 1/104
U.S. Cl. 3—27 1 Claim

The invention provides a prosthetic knee joint of the kind applying a lock against flexure when it is bearing a patient's

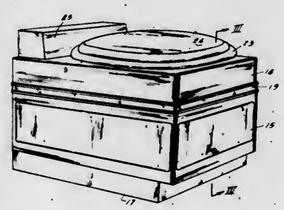
weight, in which a brake band is applied to a drum on the knee

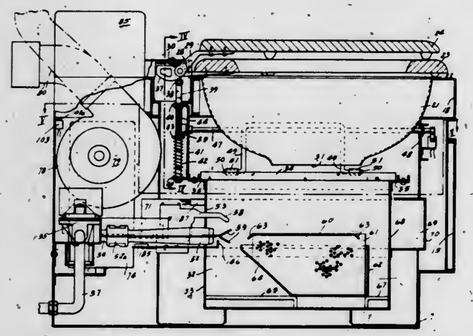


joint spindle by an accurately adjustable lever carried by the thigh portion of the joint.

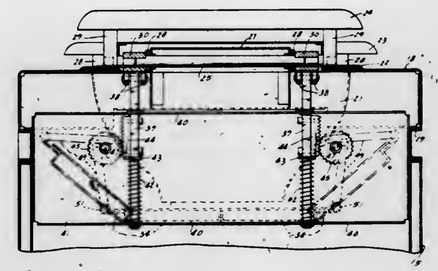
3,694,824
Patent Not Issued For This Number

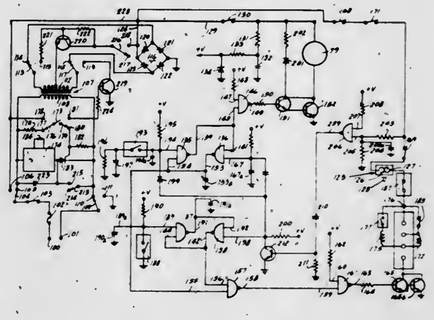
3,694,825
DISPOSAL OF HUMAN WASTE BY INCINERATION
Frederick W. Kufrin, Janesville; Paul R. Virnoche, Newton; Donald J. Allen, Fort Atkinson; Phillip E. Gokey, Whitewater, and Frederick A. Rose, Fort Atkinson, all of Wis., assignors to Polar Ware Company, Sheboygan, Wis.
Filed March 17, 1970, Ser. No. 20,319
Int. Cl. A47k 11/02
U.S. Cl. 4—131 42 Claims





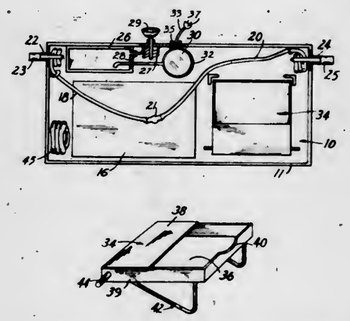
Human waste is disposed of by incineration including burning solids, vaporizing liquids and converting any residual gases into elemental substantially odorless form. Discharge temperature of the treated gases is reduced to an acceptable level. Practice of the method is exemplified in an incineration toilet utilizing a "soft" gas flame providing not only incinerating and vaporizing heat within a firebox but also gas consuming heat in





a combustion passage leading from the firebox. Circulation of the products of combustion is promoted by an exhaust fan which draws them across a cooling air gap into a settling chamber before discharge from the apparatus. Various operating and safety structures and controls are provided.

3,694,826
PORTABLE SHAMPOOING UNIT
Mary A. Pugh, Rt. 2, Box 273, Muskogee, Okla.
Filed Oct. 30, 1970, Ser. No. 85,604
Int. Cl. A47k 3/12; A61h 35/00
U.S. Cl. 4—159 5 Claims



A portable shampooing unit for washing the hair of bedridden patients wherein the shampooing unit is a substantially

self-contained unit requiring only the provision of common electrical house power while in use. The unit comprises a portable cart having a shampoo bowl in communication with a water source and a waste water container and a water heating unit for the water source. The entire unit is particularly designed and constructed to be rolled to the bedside and used for washing the patient's hair while the patient is in bed.

3,694,827

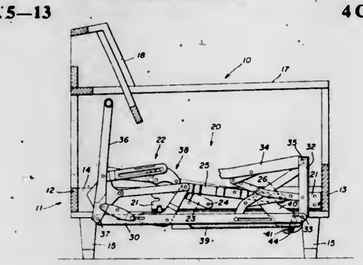
Patent Not Issued For This Number

3,694,828

SOFA SLEEPER WITH SEAT HEIGHT ADJUSTMENT

Aloysius J. Mikos, Skokie, and Theodore Dlugostinski, Elmhurst, both of Ill., assignors to The Seng Company

Filed Oct. 1, 1971, Ser. No. 185,524
Int. Cl. A47c 17/14
U.S. Cl. 5—13 **4 Claims**



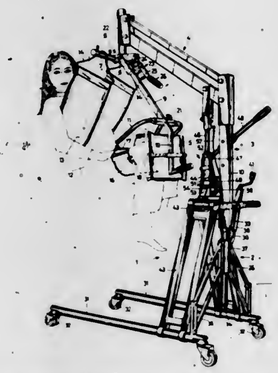
A sofa sleeper of the type in which three pivotally interconnected bed sections are mounted on linkage means including front support arms at the ends of a rectangular sofa frame on which the bed sections swing between a sofa position within the frame and an intermediate position above and extending forwardly of the frame with one of the bed sections providing a seat deck in sofa position, a stabilizing cross bar on the front support arms which supports the forward end of the bed sections in sofa position, said cross bar being movable to adjust the pitch of the seat deck.

3,694,829

PATIENT LIFTING APPARATUS

Johannes Petrus Bakker, Van Galenlaan 28, Doorn, Netherlands

Filed March 18, 1970, Ser. No. 20,742
Int. Cl. A61g 7/08
U.S. Cl. 5—81 **15 Claims**



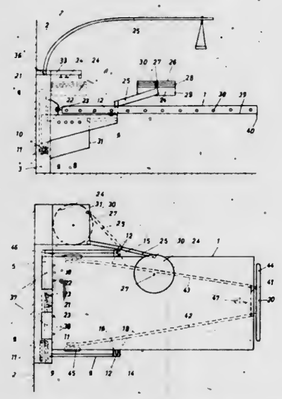
A patient lifting apparatus comprising a mobile undercarriage whose track is adjustable, which undercarriage carries a vertical column to which a lifting apparatus comprising a system of parallel rods is attached, on the free end of which system of parallel rods suspension means for supporting the patient are provided.

3,694,830

HOSPITAL BED

Johann Koller, Munich, Germany, assignor to M M M Muncher Medizin Mechanik GmbH, Munich, Germany

Filed June 17, 1970, Ser. No. 47,104
Claims priority, application Germany, June 18, 1969, P 19 30 789.2
Int. Cl. A61g 7/00, 7/10
U.S. Cl. 5—63 **10 Claims**



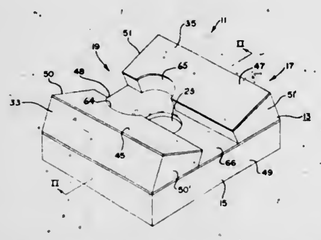
Hospital bed arranged for independent vertical or tilting adjustment. The bed frame is supported for tilting adjustment on a subframe which latter is movable for vertical adjustment bodily on a base frame. The base frame may be supported on a wall, on the floor or otherwise. A variety of auxiliary devices are supported on the subframe or on the base frame.

3,694,831

MEDICAL HEAD SUPPORT

Harry T. Treace, Germantown, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

Filed April 9, 1970, Ser. No. 27,069
Int. Cl. A47g 9/00
U.S. Cl. 5—338 **11 Claims**



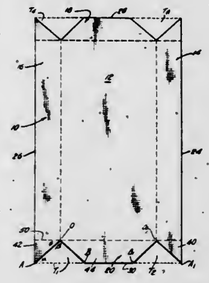
A medical head support having a variety of uses in hospitals and the like. The head support is formed from a flexible open cell foam material, and includes a base portion for resting on a supporting surface and a pair of pads fixedly mounted on the base portion. An upper minor portion of the pads and the base are provided with an open cell foam material which is soft and finer, i.e., has a greater number of cells per square inch, than the remainder of the material of the pads and base.

3,694,832

FITTED BED SHEET

Samuel J. Jamison, West Springfield, Mass., assignor to Johnson & Johnson

Continuation-in-part of Ser. No. 851,264, Aug., 1969, abandoned. This application Sept. 29, 1970, Ser. No. 76,879
Int. Cl. A47g 9/00
U.S. Cl. 5—334 **9 Claims**



A fitted bed sheet prepared from a simple, substantially rectangular blank of textile material by inexpensive manufacturing techniques which provide fitted or mitered corners whereby the sheet clings to the mattress or pad upon which it is placed and resists movements to shift or dislodge it therefrom, and wherein there is substantially no excess textile material to form undesirable pockets, recesses, or folds.

3,694,833

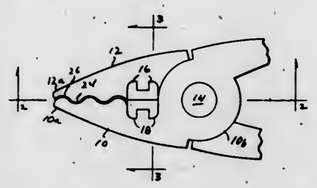
Patent Not Issued For This Number

3,694,834

PLIER JAWS

Charles M. Daniels, Jr., Chagrin Falls, Ohio, assignor to Miller Corporation, Chagrin Falls, Ohio

Filed April 9, 1970, Ser. No. 27,036
Int. Cl. B21f 7/00; B25b 7/22
U.S. Cl. 7—5.5 **8 Claims**



A pair of pliers having wire gripping jaws wherein the opposing wire engaging surfaces are formed as undulating surfaces without sharp bends to increase the linear contact with the wire to be engaged without nicking or scraping the wire.

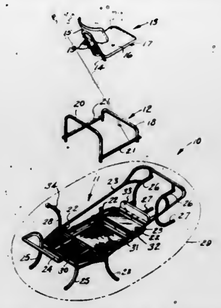
3,694,835

SPORTSMAN'S BOAT

Tommie Casey, 7907 N. Jefferson, Kansas City, Mo.; Ed Farrar, 5010 N. Garfield, Kansas City, Mo., and Grover Cockrum, 6500 N. Bell, Kansas City, Mo.

Filed March 31, 1970, Ser. No. 24,223.
Int. Cl. B63b 7/08
U.S. Cl. 9—2 A **7 Claims**

A boat which includes a tubular main frame with a transom board for mounting a motor in order to drive the boat. The main frame includes arcuate arm members which engage an inflatable O-shaped tube which imparts buoyancy to



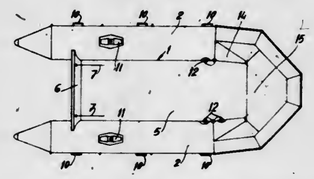
the device. The main frame includes a removable smaller frame which supports a folding chair.

3,694,836

COLLAPSIBLE INFLATABLE BOAT

Juan Duarry Serra, Calle Rosellon, 1, Barcelona, Spain

Filed Dec. 1, 1970, Ser. No. 94,055
Claims priority, application Spain, May 22, 1970, 380,672
Int. Cl. B63b 7/08
U.S. Cl. 9—2 A **12 Claims**



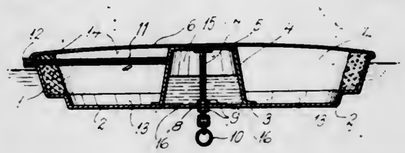
A collapsible inflatable boat has a substantially rigid buoyant bottom with inflatable float means fixedly attached thereto and can be collapsed to occupy substantially no more space than is occupied by the bottom alone while still retaining sufficient buoyancy to float in its collapsed condition. When inflated, the boat can be propelled by motor, sail or oars.

3,694,837

FLOATING BODY

Enar Sixten Von Norring, 770 20 Soderbarke, Sweden

Filed Aug. 25, 1970, Ser. No. 66,751
Claims priority, application Sweden, Aug. 25, 1969, 11727/69
Int. Cl. B63c 9/04
U.S. Cl. 9—311 **5 Claims**



A floating body upon which swimmers may rest has an inner central chamber open at its bottom to let in surrounding water, a valved conduit leading from the upper end of said chamber to the outside for letting a swimmer control the amount of water and air in said chamber and thus the amount of submergence of the body and a bolt extending through the center of the bottom of the body to allow an anchor to be at-

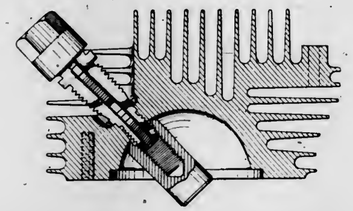
tached thereto to allow the rotation of the body in the water, while the remainder of said body is enclosed providing a floatation chamber.

3,694,838

APPARATUS FOR RENEWING DAMAGED SPARK PLUG PORTS

Leslie A. Runton, Canton, Mass., assignor to Phillips Screw Company, Natick, Mass.

Filed Sept. 2, 1970, Ser. No. 68,975
Int. Cl. B23g 1/26, 5/06, 5/20
U.S. Cl. 10—140 5 Claims



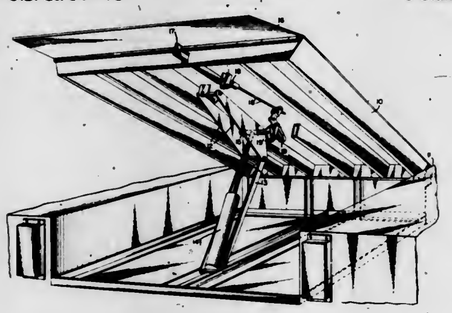
A tool for reworking spark plug ports in soft metal cylinder heads and comprising successive sections starting with a reduced extremity tapped to fit the original thread of the spark plug port, followed by two successive reamer sections of smaller and larger diameters, respectively, a tapered lead-in section, a tapping section and a third reamer section having a diameter larger than that of the tapping section to produce a countersink at the mouth of the spark plug port. Beyond the third reamer section the tool is provided with a hexagonal or other polygonal section for engagement by a wrench or the like. A separate handle portion having an internally threaded axial bore is provided for engaging the entering end of the reaming and tapping tool after the latter has penetrated through the cylinder head, which handle portion is provided with serrations surrounding the mouth of its axial bore and is counter-bored at the mouth to receive at least a part of the reamer section of the reaming and tapping tool.

3,694,839

HYDRAULIC ARRANGEMENT FOR DOCKBOARDS

Dermont F. Loblick, Gibbons, Alberta, Canada

Filed June 26, 1970, Ser. No. 50,256
Claims priority, application Great Britain, July 4, 1969, 33,904/69
Int. Cl. B65g 1/12; F15b 15/18
U.S. Cl. 14—71 5 Claims



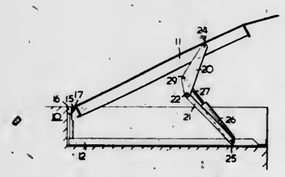
A hydraulic arrangement for use in dockboard installations which include a hydraulic cylinder for raising the dockboard. The arrangement allows the dockboard to be raised to a position above the vehicle platform, and then to be lowered onto the vehicle platform, all by a single operation of a switch which energizes the hydraulic pump motor. The hydraulic arrangement includes a special control valve situated between the pump and hydraulic cylinder, the valve being also connected to a reservoir, and arranged so that when the pump is operating at normal pressure the control valve allows fluid to flow to the cylinder so raising the dockboard, and when the pump motor is stopped the control valve allows fluid to flow from the cylinder to the reservoir allowing lowering of the dockboard. The circuit includes further valve means to assist reduction of pressure at the pump outlet when the pump motor is stopped, to speed operation of the valve.

3,694,840

DOCKBOARD RAISING MECHANISM

Dermont F. Loblick, Gibbons, Alberta, Canada

Filed June 26, 1970, Ser. No. 50,255
Claims priority, application Great Britain, July 4, 1969, 33,904/69
Int. Cl. B65g 1/00
U.S. Cl. 14—71 10 Claims



A dockboard raising mechanism for a dockboard installation in which the dockboard is hingedly attached at its rear end to the base part, the mechanism including a lever and a link pivotally connected together at their inner ends, and having their outer ends attached to pivots respectively on the dockboard and base parts, the mechanism being powered by a hydraulic cylinder acting between a pivot on the base part and an intermediate pivot point on the lever. This mechanism is compact both vertically and longitudinally, maintains a fairly constant direction of force on the dockboard, and can be arranged to maintain a rearwards force on the dockboard to prevent dislocation of a floating hinge.

3,694,841

Patent Not Issued For This Number

3,694,842

Patent Not Issued For This Number

3,694,843

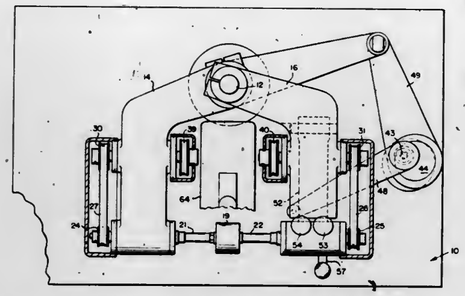
WIRE STRIPPING MACHINE

Erich R. Seifert, Syracuse, N.Y., assignor to E. R. Seifert, Inc., Syracuse, N.Y.

Filed July 28, 1971, Ser. No. 166,740
Int. Cl. A46b 13/02
U.S. Cl. 15—88 3 Claims

A pair of cylindrical wire brushes are mounted one above the other and arranged for simultaneous rotation and axial reciprocation in opposition to each other. The brushes are

carried by respective, generally L-shaped arms which are supported on a common vertical pivot. The generally axial



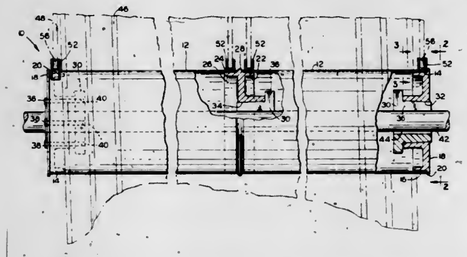
reciprocation is achieved by rotational oscillation of the supporting arms.

3,694,844

BRUSH CONSTRUCTION

Jeff R. Welter, Vancouver, Wash., assignor to Daniel C. Hanna

Filed Nov. 27, 1970, Ser. No. 93,083
Int. Cl. A46b 3/16
U.S. Cl. 15—182 7 Claims



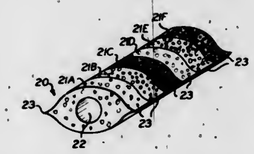
A pair of tubes having filament strip securing clips secured thereto by rivets are mounted on hubs secured to a driving shaft. The hubs have keying slots receiving the heads of the rivets to key the tubes to the hubs.

3,694,845

CLEANSING DEVICE FOR SURGICAL SCRUBS

Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries Ltd., Bronx, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,530
Int. Cl. A47k 7/02
U.S. Cl. 15—244 C 2 Claims



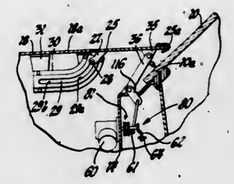
A cleansing device for performing surgical scrubs and having a plurality of apertured foamed polyurethane members stacked and bonded together to form a resilient, composite tubular structure into which is inserted a body member to be cleansed.

3,694,846

MECHANISM FOR OPENING AND CLOSING A COVER FOR A CONCEALED WINDSHIELD WIPER SYSTEM

Eric George Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,652
Int. Cl. B60s 1/08
U.S. Cl. 15—250.16 3 Claims



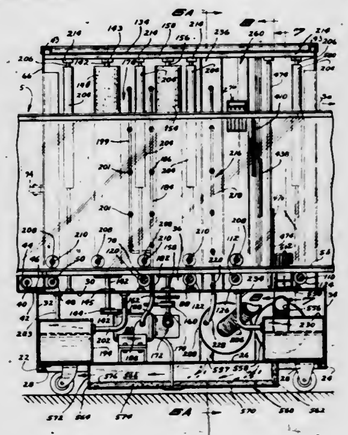
In a preferred form, this disclosure relates to a cover concealed windshield wiper apparatus for an automotive vehicle having a windshield which extends within a well extending transversely of the vehicle and a cover means movable between a closed position in which it covers the well and an open position in which it uncovers the well. The windshield cleaning apparatus includes a pair of spaced oscillatable windshield cleaner assemblies, a drive means including a motor having a rotary output shaft for oscillating the windshield cleaners across the windshield between an outboard position and an inboard position in which the windshield cleaner assembly is disposed within the well, and a cover operating mechanism for moving the cover from its closed position towards its open position, and vice versa, in response to initial and final rotative movement of the output shaft of the wiper motor when wiper operation is initiated and being terminated, respectively.

3,694,847

DEVICE FOR AUTOMATICALLY CLEANING A WINDOW SASH

Frank W. Hetman, and Donald I. Johnson, both of Minneapolis, Minn., assignors to DeVac, Inc., Minneapolis, Minn.

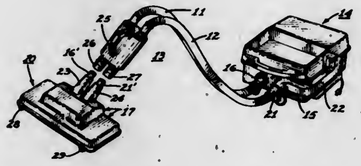
Filed March 25, 1970, Ser. No. 22,527
Int. Cl. A47l 1/02
U.S. Cl. 15—302 14 Claims



A device for automatically cleaning a window sash or the like which includes a support having a housing mounted thereon, operable mechanism mounted on the support for

transporting a window sash upon the support and through the housing, together with means for guiding the sash through the housing, operable mechanism carried by the support for cleaning the sash by means of a liquid as it is transported upon the support and through the housing and means for collecting the liquid used for cleaning.

3,694,848
VACUUM AND PRESSURE PICKUP DEVICE FOR HOME AND COMMERCIAL VACUUM CLEANERS
Frank Alcala, 6950 E. Dixileta Dr., Carefree, Ariz.
Filed Oct. 28, 1970, Ser. No. 84,649
Int. Cl. A47l *5/14*
U.S. Cl. 15—346 **3 Claims**

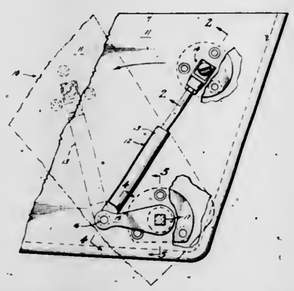


An improved home and commercial vacuum cleaner employing pressure and vacuum functions for picking up dirt and lightweight articles from a rug surface.

3,694,849
Patent Not Issued For This Number

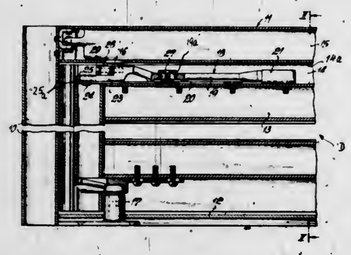
3,694,850
Patent Not Issued For This Number

3,694,851
QUICKLY REMOVABLE, RETRACTABLE SNUBBED PIVOT PIN MECHANISM
James E. Matuska, 13515 25th N.E., Seattle, Wash.
Division of Ser. No. 744,933, July 15, 1968, abandoned. This application Oct. 6, 1970, Ser. No. 78,584
Int. Cl. E05f *3/00*
U.S. Cl. 16—49 **5 Claims**



A quickly retractable and snubbing pivot pin mechanism comprising an extendible means, snubbing means, and link nonrotatably and slideably connected to the extendible pin means and pivotally connected to the snubbing means. This pin mechanism may be combined with other pivotal structure as a storage bin, such as for aircraft passenger carry-on luggage having the axially retractable pivotal pins extendible from the bin into recesses in support structure, as in an aircraft passenger transport, in a nonrotatable fitting and the snubber pivotally connected between the bin and the pin for snubbing relative movement between the bin and its pivot pin and accordingly between the bin and the support structure.

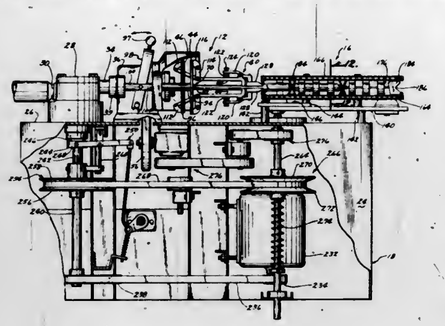
3,694,852
MOUNTING FOR BUILT-IN DOOR-CLOSING ARRANGEMENT
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel, KG, Ennepetal-Voerde, Germany
Filed Oct. 8, 1970, Ser. No. 79,149
Claims priority, application Germany, Oct. 17, 1969, P 19 52 412.0
Int. Cl. E05d *7/04*
U.S. Cl. 16—129 **8 Claims**



A frame of a door has a transversely extending upper frame member and a door is swingably mounted in the frame having an upper portion which is adjacent the frame member. A door-closing unit is accommodated in the frame member and has a shaft which projects downwardly towards the upper portion of the door and which is permanently biased for turning movement towards a rest position. Coupling means couples the shaft with the door so that the shaft is turned from its rest position in response to swinging of the door. The coupling means comprises a coupling member which extends along the upper portion of the door across the width of the latter, having one portion of greater height at one axial side of the shaft and an other portion of lesser height at the opposite axial side of the shaft. Connecting means connects the coupling member to the door so that it has limited freedom of displacement along the upper portion thereof, and displacing means is provided for effecting such displacement. A cross-head at least in part overlies the upper portion of the coupling member and has a height substantially corresponding to the difference between the greater and the lesser heights, and securing means secures the cross-head to the one portion of the door so that between this one portion and the cross-head the shaft is clamped against rotation relative to the door.

3,694,853
APPARATUS FOR ENCASING A PRODUCT
Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Nov. 9, 1970, Ser. No. 87,818
Int. Cl. A22c *11/10*
U.S. Cl. 17—33 **18 Claims**

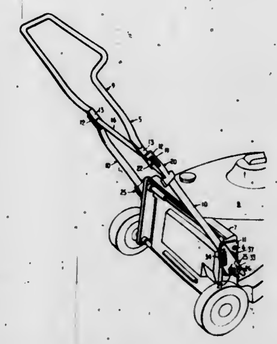
An apparatus for encasing a product includes a product encasing machine, a linking apparatus, and a looping apparatus. The product encasing machine includes a rotatable stuffing tube which carries a chuck and a pair of lands adjacent its discharge end. The chuck and lands are mounted so as to rotate in unison with the stuffing tube. The chuck and lands are separable and are adapted to be moved selectively away from the longitudinal axis of the stuffing tube. The linking apparatus includes a pair of loop members carrying pinching members thereon. The pinching members include pinching surfaces adapted to engage and collapse the rotating casing issuing from the encasing machine. The pinching surfaces each include at least one portion in vertical alignment below the longitudinal centerline of the loop on which it is carried so that it will travel at a uniform velocity as it is carried by the



loop members. The looping apparatus includes a guide through which the linked casings are fed. The guide is adapted to swing the links in a loop. The looping apparatus also includes a plurality of hooks adapted to catch and carry away the linked casing as it is swung by the guide.

3,694,854
Patent Not Issued For This Number

3,694,855
ADJUSTABLE HANDLE FOR LAWNMOWERS
Dolph Allan Meyer; Ross Leslie Phelps; Edward Henry Sykes; Ian Sweet Clipsham; David Paul Seidel; Donald Gray, and Theodore Demetrius Ractivand; all of Milperra, New South Wales, Australia, assignors to Victa Limited, Australia
Filed Sept. 16, 1970, Ser. No. 72,757
Claims priority, application Australia, Apr. 8, 1970, PA 0845/70
Int. Cl. B62b *5/06*
U.S. Cl. 16—111 A **6 Claims**



For a lawnmower a controlling handle articulated for collapsing over the mower, and in which its bottom end is detachably locked to the mower by a pivoted latch plate spring biased to its latching position, a bush over the latch plate pivot pin providing a stop for rotation of the handle in its erected condition, and a spring catch operative between the latch plate and the handle for holding the latch plate open until the handle is at least partly collapsed.

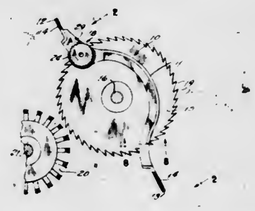
ERRATUM

For Class 17—47 see:
Patent No. 3,694,853

3,694,856
METHOD OF DEFEATHERING POULTRY
Vern F. Kaufman, Lafayette; Alvin A. Klose, Albany, and Morris F. Pool, El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Oct. 30, 1970, Ser. No. 85,786
Int. Cl. A22c *21/04*
U.S. Cl. 17—47 **5 Claims**

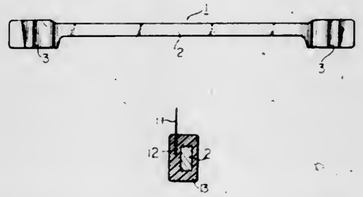
Procedure for defeathering poultry wherein the feathers are first loosened by an essentially dry treatment, namely, by contacting the poultry carcasses with steam under subatmospheric pressure. The loosened feathers are then removed by subjecting the carcasses to the action of rotating drums provided with rubber fingers.

3,694,857
COTTON GIN RIB
James E. Nayfa, 1209 Levee St., Dallas, Tex.
Filed July 23, 1970, Ser. No. 57,488
Int. Cl. D01b *1/08*
U.S. Cl. 19—62 **7 Claims**



A cotton gin rib having embodied therein a roller assembly comprising a pair of disks rotatably arranged in the upper portion of the rib, at the ginning point, or the point at which the lint is detached from the seed, the disks being operative on opposing sides of the rib and having a series of relatively shallow tangential channels on their inner faces diverging outwardly in width and terminating in a peripheral series of serrations having their peaks directed counter to the direction of rotation of the disks as they are impelled by the movement of cotton fibers thereagainst as the saw is rotated.

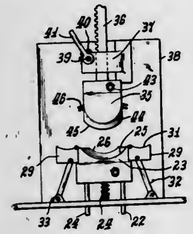
3,694,858
GILL FALLER
Ichizo Isumi, Osaka, Japan, assignor to Hakushin Seisakusho Co., Ltd., Osaka, Japan
Filed Jan. 20, 1970, Ser. No. 4,218
Claims priority, application Japan, Jan. 27, 1969, 44/7345
Int. Cl. D01g *5/14*
U.S. Cl. 19—129 R **8 Claims**



A lightweight and load-resistant gill faller having a gill faller body of a substantially uniform thickness over an entire length

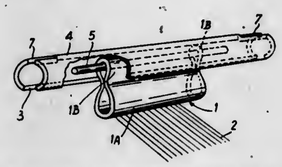
thereof and combing pins advantageously fixedly disposed relative to the body by a plastic layer. Manufacturing method is disclosed as to forming the end portions by pressing with elimination of conventional cut shaping.

3,694,859
APPARATUS FOR FORMING CATAMENIAL NAPKINS
Jacob A. Glasman, 1680 Meridan Ave., Miami Beach, Fla.
Filed Nov. 23, 1970, Ser. No. 92,109
Int. Cl. A611 *15/00*
U.S. Cl. 19—144 S **17 Claims**



Apparatus for forming permanently curved catamenial napkins having compressed troughts or channels on its effective top surface defining a compacted tampon-like ridge between the channels, and a longitudinal channel on its convex bottom surface. The apparatus also functions to generate lateral creases adjacent to the napkin ends to facilitate folding inwardly of the end portions when packaging.

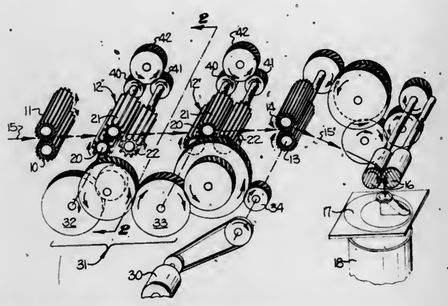
3,694,860
DEVICE WITH FLEXIBLE ELEMENTS FOR PROCESSING TEXTILE FIBERS
Jean-Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, Haut-Rhin, France
Filed July 2, 1970, Ser. No. 51,912
Claims priority, application France, July 11, 1969, 6923752
Int. Cl. D01h *5/70*
U.S. Cl. 19—236 **13 Claims**



The flexible element for processing fibers is constituted by a tubular flexible member which is flattened in such a manner that its cross-section has a shape which is close to that of a figure eight and consequently determines two hollow lobes, one of which is the fiber-processing lobe while the other is a fastening lobe which is inserted through a longitudinal mounting slot in a supporting tube and maintained applied against the internal wall of the said tube by a locking rod placed in the bottom of the said fastening lobe, the width of the longitudinal slot of the supporting tube being smaller than the external diameter of the fastening lobe fitted with its locking rod.

3,694,861
FLUTED ROLL SLIP DRAFTING SYSTEM
Joe R. Whitehurst, Bessemer City, N.C., assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Jan. 22, 1970, Ser. No. 4,868
Int. Cl. D01h *5/78*
U.S. Cl. 19—259 **7 Claims**

Apparatus for drafting fibrous textile material in which a drafting system includes at least one three-roll control unit having first and second intermeshing fluted feed rolls and a fluted slip roll adjacent on of the feed rolls and spaced forwardly of the nip of the feed rolls. A first one of the feed rolls is driven positively from a power source to, in turn, rotate the other feed roll solely by the intermeshing relationship of the feed rolls and the textile material passing therebetween whereby the textile material is gripped between and fed by the feed rolls. The slip roll is driven in fixed angular relation to



one of the feed rolls, but not to the other, to cause the teeth of the slip roll to register with the grooves between the teeth of said first one of the feed rolls, without gripping the textile material passing therebetween, and thereby to cause the material therebetween to move in an undulating path while a fiber-distributing slip draft thus is applied to the material as it is being pulled therebetween and drafted in its forward course from the nip of the feed rolls.

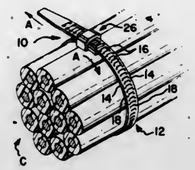
3,694,862
METHOD FOR OPENING RIGID FIBERS
Kensuke Okuda, Tokyo; Tadaaki Yoshida, Tokyo, and Katsuyuki Sugawara, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1970, Ser. No. 3,413
Claims priority, application Japan, Jan. 17, 1969, 44/2933
Int. Cl. D01g *1/04*
U.S. Cl. 19—.58 **2 Claims**



A method of opening a tow of staple fibers wherein the fibers are first cut to a length of less than 254 mm. and which are then introduced into a gas stream emanating from a nozzle located in a tubular member having a fiber opening section. The gas stream having a velocity at the nozzle greater than 30 meters per second.

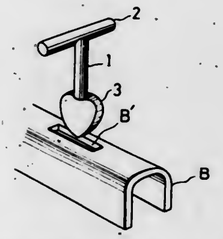
3,694,863
BUNDLE TIE DEVICE
Henry George Wasserlein, Jr., Largo, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 14, 1970, Ser. No. 80,548
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **12 Claims**

A bundle tie device. The central portion of a strap, preferably a form of plastic, has vanes which are turned at an angle to the strap surfaces. Each vane is defined by two transverse slits each ending in holes, the area between adjacent holes comprising a web. Strap ends are overlapped and the



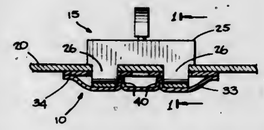
vanes allowed to interleave causing forward hole edges of one vane to engage trailing hole edges of an overlapped vane, the hole edges lock up absorbing the maximum tensile load placed on the strap.

3,694,864
FASTENERS FOR ATTACHING UMBRELLA CLOTHES TO RIBS
Takuo Kawano, 11, Shimogamo Minamishiba-cho, Sakyo-ku, Kyoto, Japan
Filed Sept. 28, 1970, Ser. No. 75,937
Claims priority, application Japan, Dec. 27, 1969, 44/572
Int. Cl. A44b *21/00*; **A45b** *15/00*
U.S. Cl. 24—73 PF **1 Claim**



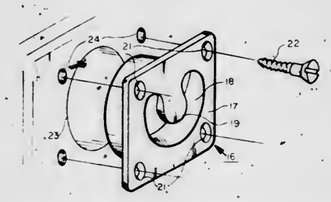
A fastener for attaching an umbrella cloth to a rib is comprised of a longitudinal rod, a transverse member connected to one end of the longitudinal rod and adapted to pierce through the cloth and an anchor provided on the other end of the longitudinal rod and adapted to be secured to the rib. These component parts are made of relatively soft deformable material as an integral unit.

3,694,865
COVERED BACKWASHERS
Randolph J. Mershon, 2100 Linwood Ave., Fort Lee, N.J.
Filed Nov. 17, 1971, Ser. No. 199,671
Int. Cl. A44b *1/42, 17/00*
U.S. Cl. 24—95 **4 Claims**



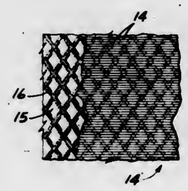
An improved covered backwasher for attaching an engaging member having at least one set of band-shaped prongs to a piece of material. The improved backwasher includes a frontplate having at least one pair of spaced-apart openings therein and a backplate having a recess therein opposite each opening in the frontplate for curling the prongs of the engaging member as they are inserted into the backwasher. The improvement resides in providing at least one rib member on the backplate adjacent the recesses for abutting portions of the edges of the prongs, thus effectively preventing turning of the engaging member relative to the backwasher.

3,694,866
VEHICLE HOOK
Roy R. Maier, 3428 Tennyson St., San Diego, Calif.
Filed Oct. 23, 1970, Ser. No. 83,286
Int. Cl. F16g *11/00, 11/14*
U.S. Cl. 24—115 J **1 Claim**



A vehicle hook dimensioned for a substantially flush mounting in a cutout recess in the side of a pickup truck, for example, in which the hook portion is stamped from one flat piece of metal and a circular protrusion is dimensioned for being received by the cutout recess in the side of a vehicle's side panel such as a pickup truck, for example; the hook portion comprising a flat piece of metal with a cutout defining a tongue hook therein.

3,694,867
SEPARABLE CLASP CONTAINING HIGH-LOFT, NON WOVEN FABRIC
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Aug. 5, 1970, Ser. No. 61,352
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **10 Claims**

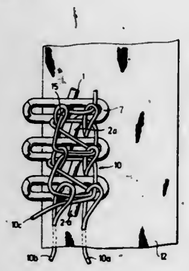


A separable clasp comprising a male fastening member and a female fastening member wherein the female member contains a plurality of upstanding loops and the male member contains a plurality of upstanding functional elements such as hooks or beaded stems which can engage with the loops of the female member. The female member is comprised of a high-loft, nonwoven fabric comprising a substantially continuous backing layer of consolidated flexible adhesive, and a multiplicity of staple length fibers looped outwardly from said backing layer with the ends of such loop imbedded in said backing layer, and said loops being twisted to be in planes extending in the cross direction of the fabric.

3,694,868
SLIDE FASTENER STRINGER

Siegfried W. Spindler, Munich, Germany, assignor to Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

Filed Jan. 21, 1970, Ser. No. 4,708
Claims priority, application Germany, Jan. 23, 1969, P 19 03 339.7
Int. Cl. A44b *19/10, 19/34*
U.S. Cl. 24—205.1 C 7 Claims

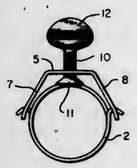


The interlocking elements of a slide fastener stringer consisting of consecutive sections of a plastic wire have elongated leg portions parallel to each other, transverse to the sequence of elements, and linked by connecting portions common to two adjacent elements. The fastener elements are secured to a carrier tape by two rows of thread loops offset from the connecting portions in opposite directions longitudinally of the leg portions.

3,694,869
TUBE FASTENER

Norio Matsuura, 31 Owada-naka 1-chome, Nishiyodagawa-ku, Osaka, Japan

Filed Jan. 7, 1971, Ser. No. 104,633
Claims priority, application Japan, May 22. 1970, 45/48486
Int. Cl. B65d *63/06*
U.S. Cl. 24—278 11 Claims



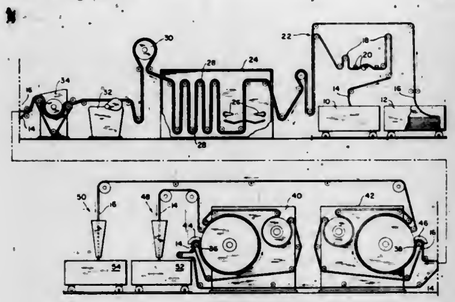
A fastener is provided with one or more flexible coiled bands, capable of surrounding a tube or pipe, whereby two or more pieces may be joined together. The band is associated with a body by fixing both ends of the band on opposite portions of the body, and a screw-tightener is provided to exert a downward force on, and to tighten the coiled band.

When the tube fastener is placed at the joining point of two pieces of flexible pipe or tubing, and when the tightener is manually operated, the coiled band is forced away from the supporting body and the diameter of the coil is reduced, so that the coiled band exerts a high pressure on the entire contacted portion of the tube along the whole circumference of the coil, thereby joining the two pieces of pipe securely so as to prevent leakage.

3,694,870
APPARATUS FOR THE COMPRESSIVE PRESHRINKAGE OF FABRICS

George Fischer, Troy, N.Y., assignor to Cluett, Peabody & Co., Ltd., Troy, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,453
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 1 Claim

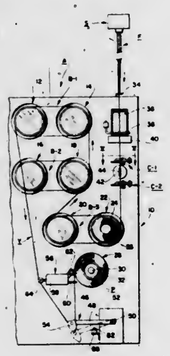


This disclosure teaches a method and apparatus for compressively preshrinking two layers of high-shrinkage fabric simultaneously and for limiting post-processing loss of preshrinkage in either layer to a minimum. Two layers of fabric are drawn through preliminary finishing apparatus, such as a cloth spreader, then both layers are advanced together through a conditioning chamber and around a heated drum, preferably through a clip expander, and then together they are run through a rubber-belt compressive-preshrinkage unit. Thereafter the layers are separated and each is delivered to a separate woolen felt-belt dryer. Each of the layers, as it enters its respective felt-belt dryer, is passed around an input roller against which it is pressed by a heated shoe which performs a final compressive preshrinking function and the layers are dried completely so that preshrinkage effected theretofore in the layers is not altered due to stretching in a wet condition in subsequent handling.

3,694,871
APPARATUS FOR PROCESSING STRAND MATERIAL

John W. Ditzler, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 8, 1970, Ser. No. 70,334
Int. Cl. D02j *1/22*
U.S. Cl. 28—71.4 8 Claims

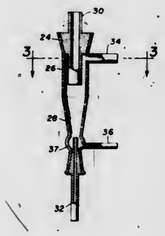


An apparatus for forming, drawing and winding synthetic yarn materials wherein tension on the yarn during passage from the drawing to the winding means is controlled by a compensator device additionally effective to actuate aspirator means and yarn severing means should a yarn break occur, thereby eliminating an excessive build-up of yarn on the drawing means and resultant yarn waste, the apparatus desirably further embodying a plurality of drawing means particularly positioned with respect to one another and providing a generally upwardly directed path for the yarn through specific stages of the drawing cycle.

3,694,872
APPARATUS FOR DRAWING THERMO-PLASTIC FILAMENTS IN A HIGH TEMPERATURE GAS VORTEX

Edward H. Sundbeck, Chapel Hill, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 455,394, May 13, 1965, Pat. No. 3,551,549. This application April 20, 1970, Ser. No. 43,249
Int. Cl. D01d *5/00*
U.S. Cl. 28—71.3 3 Claims



A continuous strand conditioning tube having fluid delivery and discharge ports arranged and internal wall surfaces shaped to provide a vortical flow of fluid around a strand normally passing therethrough.

3,694,873
METHOD OF PREPARING A TUFTED RUG WITH CELLULAR FIBERS

Richard P. Crowley, 125 High St., Wellesley Hills, Mass.

Continuation-in-part of Ser. No. 872,498, Oct. 30, 1969. This application April 2, 1970, Ser. No. 25,275
Int. Cl. D05c *15/00*; D06c *7/00*
U.S. Cl. 28—72 P 13 Claims

A sheet material, such as a needle-punched or tufted fabric, is prepared employing gas-expandable polymeric fibers, such as a polypropylene resin containing an undecomposed blowing agent, and, thereafter, expanding the diameter of the polymeric fibers by heating the fibers to form cellular polymeric fibers, the expansion locking such cellular fibers into the sheet material. The gas-expandable polymeric fibers may be employed either in the backing sheet or as the face fabric.

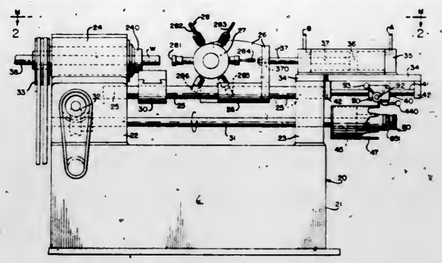
3,694,874
Patent Not Issued For This Number

3,694,875
AUTOMATIC TURRET LATHES

Lukas Zimmermann, 5755 Bloomfield Glens Rd., Birmingham, Mich.

Continuation-in-part of Ser. No. 730,104, May 17, 1968, abandoned. This application July 10, 1970, Ser. No. 53,863
Int. Cl. B23b *7/02*
U.S. Cl. 29—42 15 Claims

A hydraulically powered, cam controlled means for actuating the turret slide of an automatic turret lathe including a valve actuator, which translates any input motion received from the cam into endwise motion of the control valve spool regardless of the direction from which this motion is received,

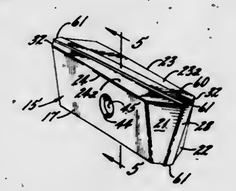


thereby making unlimited cam steepness possible, so that it becomes now possible to obtain any desired speed for the rapid advance, rapid return as well as for the feed motion of the turret slide, all positively controlled by the cam.

3,694,876
INDEXABLE CUTTING INSERT AND HOLDER THEREFOR

Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Aug. 28, 1970, Ser. No. 67,949
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—95 13 Claims



Rectangular blocks or inserts of cutting material having a center hole are secured by conically headed screws in peripheral pockets in the rotary body of a face milling cutter and adapted for selective indexing about the screw axis into a plurality of cutting positions in each of which a side and end cutting edge is adapted to produce the high rate of metal removal achieved with the face milling cutter disclosed in U.S. Pat. No. 2,186,417. One of the abutments defining each indexed position of the insert in its holder is itself mounted for indexing about its central axis.

3,694,877
Patent Not Issued For This Number

3,694,878
Patent Not Issued For This Number

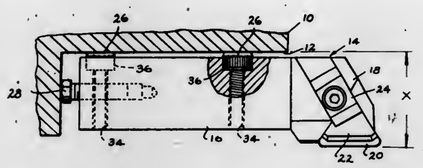
3,694,879
TOOL HOLDER AND METHOD OF USING

Wilbur L. Kennicott, Ligonier, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sept. 28, 1970, Ser. No. 75,873
Int. Cl. B26d *1/00*; B23b *29/00*
U.S. Cl. 29—96 6 Claims

The specification discloses a tool holder, especially for receiving throw away inserts in which the tool holder is a bar-

like member adapted for being clamped in a tool support member. The bar-like member has abutment elements thereon to abut the support member to locate the tool holder in a predetermined position. The regions for receiving the abutments are threaded for receiving threaded abutment



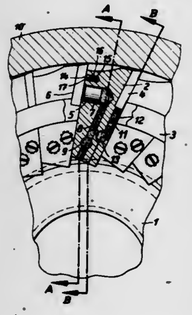
screws and are adapted at their outer ends to receive pressed in abutment elements which can be ground to a precise dimension whereby the mounting of the tool holder in the support member will provide for precise fixed positioning of an insert mounted on the holder.

3,694,880

MILLING TOOL WITH INDIVIDUALLY ADJUSTED CUTTERS

Adolf Wolf, Jes-Juhl Weg 9, Hamburg 52, Germany

Filed Nov. 18, 1970, Ser. No. 90,852
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **4 Claims**



This invention relates to a milling tool of composite construction having a base member, a plurality of segmental pieces contained on the base member by a surrounding ring member wherein the segmental members provided cutter recesses and contain separate cutter adjusting and clamping means. The said clamping and adjusting means being hydraulically operable from separate sources.

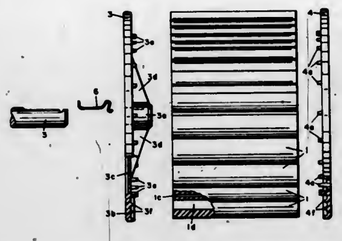
3,694,881

METHOD FOR MANUFACTURING SQUIRREL-CAGE ROTORS FOR FLUID MOVING DEVICES

Dov Z. Glucksman, 26 Chase Ave., West Newton, Mass.

Division of Ser. No. 729,031, May 14, 1968, Pat. No. 3,536,416. This application June 10, 1970, Ser. No. 44,990
Int. Cl. B21k *3/04*; B23p *15/02*, *15/04*
U.S. Cl. 29—156.8 R **5 Claims**

A method for manufacturing squirrel-cage rotors for fluid moving devices by assembling blade-shaped tubular bars of a thermoplastic material to form spatially a cylindrical pattern, and mounting end members of a thermoplastic material on said bars by insertion of pin means integral with said end members into the open ends of said tubular bars, and finally bonding the bars and the end members by ultrasonic welding into a unitary structure.

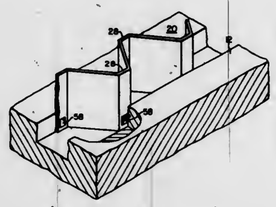


3,694,882

METHOD FOR PROVIDING A CORRUGATED SEAL IN AN ELASTIC FLUID MACHINE

John William Desmond, Media, Pa., assignor to Westinghouse Electric Corporation and Pittsburgh Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,194
Int. Cl. B21k *3/04*
U.S. Cl. 29—156.8 R **6 Claims**



A turbine rotor blade path seal consists of a corrugated strip of sheet metal secured edgewise in an annular groove in the turbine cylinder or casing. The corrugated seal strip requires no edge rolling for the various diameters of the different stages of a multi-stage turbine. Thus, one pattern of a seal strip which is easily customized and assembled can be utilized for all stages of a turbine. The seal strip is caulked or interlocked in the groove at assembly by means of a special tool.

3,694,883

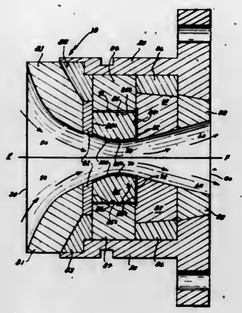
METHOD OF MOUNTING A NOZZLE INSERT

Eugene L. Olcott, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed May 20, 1970, Ser. No. 50,001
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 C **1 Claim**

A method of mounting in a composite-type rocket nozzle, a nozzle insert which is substantially annular in configuration and which has four surfaces, three of which are external and uncoated, and the fourth of which is internal and is coated with pyrolytic graphite. The method includes the steps of coating the insert on the three uncoated external surfaces with a thin layer of silicone grease, coating two of the external surfaces with a layer of a filled epoxy cement on the thin layer of silicone grease, coating the third external surface with a layer of silicone rubber on the thin layer of silicone grease, and

placing the insert in its proper position in the composite-type rocket nozzle. This method of mounting promotes the service



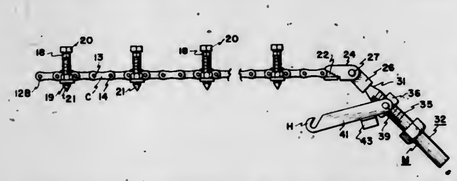
life of the insert by eliminating the application of tensile stresses to the insert.

3,694,884

METHOD FOR MANUFACTURING A PISTON VALVE FOR VALVED WIND MUSICAL INSTRUMENTS

Masaru Kondo, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 17, 1970, Ser. No. 47,013
Claims priority, application Japan, June 20, 1969, 44/48548
Int. Cl. B21k *29/00*
U.S. Cl. 29—157.1 R **4 Claims**



A method for manufacturing a piston valve comprising boring a plurality of pairs of holes in the predetermined portions of the peripheral surface of the hollow sliding member of the piston valve, said member being made of wear resistant material such as monel metal, inserting a flexible rod or tube through each pair of the holes, filling the hollow sliding member with moldable material with the rod kept in a predetermined curved state to permit the material to be cured, and thereafter withdrawing the rod from the member.

3,694,885

METHOD OF MANUFACTURING AN ESCAPEMENT LEVER FOR A TIMEPIECE

Andre Simon-Vermot, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Neuchatel, Switzerland

Filed July 2, 1970, Ser. No. 52,093
Claims priority, application Switzerland, July 11, 1969, 10607/69
Int. Cl. B23p *13/00*
U.S. Cl. 29—177 **4 Claims**

A method of manufacturing an escapement lever for a timepiece, characterized by blanking out the lever of a metal sheet, the pallets being made integral with the body of the lever, depositing electroless nickel on to the whole piece and subjecting the lever to a finishing operation carried out so as to obtain cold rolled properties in the layer of chemical nickel, this finishing operation determining the final dimensions of the lever, to which the pallet arbor and the safety-pin are then secured.

3,694,886

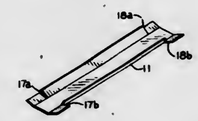
Patent Not Issued For This Number

3,694,887

WEDGEMAKER

Robert G. Walker, Brighton, Mich., and Donald E. Hill, Ft. Wayne, Ind., assignors to Industra Products Inc., Fort Wayne, Ind.

Filed Oct. 30, 1970, Ser. No. 85,355
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 E **9 Claims**



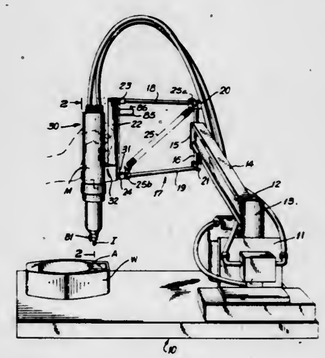
An improved method and apparatus for making insulating wedges for use in an automatic coil placing machine which first severs the wedge material and then contemporaneously forms and slits the wedge is disclosed. The machine is adapted to provide wedges of at least two different lengths and to slit only the longer wedges. The improvement comprises a power operated punch, a forming die, and a plurality of cutting surfaces some of which are retractable wherein the punch forces the wedge blanks through the forming die and past the cutting surfaces in a single stroke.

3,694,888

INSERT DRIVER DEVICE

Robert W. Bosse, Englewood Cliffs, N.J., assignor to Groov-Pin Corporation, Ridgefield, N.J.

Filed Oct. 22, 1970, Ser. No. 82,999
Int. Cl. B23p *19/06*
U.S. Cl. 29—240 **10 Claims**

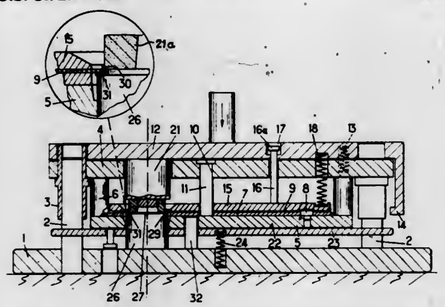


A device for automatically applying inserts into wood, plastic, aluminum or other relatively soft material, comprising a motor driving a rod threaded at its outer end to receive an insert, the rod extending through a hollow member against the end of which an end of the insert is adapted to abut, frictionally to lock the rod and the hollow member together, means being provided to permit simultaneous rotation of the rod and the hollow member when the insert is being applied, and to restrain rotation of the hollow member when the rod is reversed for removal from the insert.

3,694,889
METHOD OF SETTING FIRE RINGS IN CYLINDER HEAD GASKETS

Pierre Pommier, Saint-Priest, France, assignor to Societe Anonyme dite: CEFILAC, Paris, France

Filed Oct. 5, 1970, Ser. No. 77,841
Claims priority, application France, Oct. 10, 1969, 6934752
Int. Cl. B23p 17/00
U.S. Cl. 29—412 2 Claims

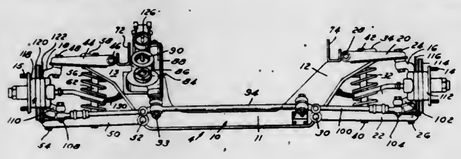


Method of setting fire rings in gaskets according to which a metallic sheet is provided with holes having upstanding cylindrical rings dimensioned and positioned to register with holes in the gasket. Rings encircling these rims are then cut from the metallic sheet while retaining them in their relative position, the gasket is placed on the rings so that the rims project through the gasket holes, and the rims are pressed down against the gasket. The invention includes a machine which carries out all but the first of these steps successively and automatically.

3,694,890
METHOD OF MANUFACTURING A MOTOR VEHICLE

Klaus H. Arning, Birmingham, and Robert J. Rumpf, Grosse Pointe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 6, 1970, Ser. No. 52,236
Int. Cl. B23p 19/00
U.S. Cl. 29—428 10 Claims



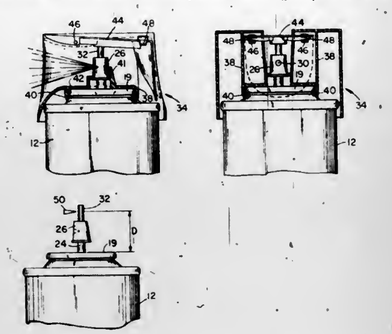
A method of manufacturing a motor vehicle including manufacturing a subassembly comprising a frame cross member, a front suspension system, a steering linkage system, power steering gear system, front brake system and power brake booster system integrated into a single unit. The method includes the adjustment of the suspension and steering linkage components for obtaining proper wheel alignment and the charging of the hydraulic systems of the power brake booster and power steering booster with hydraulic fluid prior to the installation of the subassembly into the vehicle body.

3,694,891
PROCESS OF ASSEMBLING PRESSURE CONTAINER AND OVERCAP

Edward J. Adams, St. Paul, Minn., assignor to The Gillette Company, Boston, Mass.

Filed Sept. 29, 1970, Ser. No. 76,535
Int. Cl. B23p 17/04; B23q 3/18; B26d 7/16
U.S. Cl. 29—428 3 Claims

Assembly of a valved pressurized container with an overcap arranged to actuate the valve is facilitated by mounting an oversize actuating member on the valve, then cutting it to size

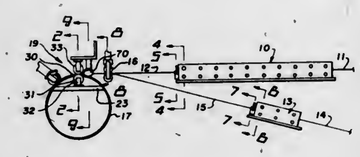


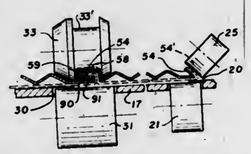
using as a reference the same portion of the container as is in contact with the overcap.

3,694,892
APPARATUS FOR AND THE METHOD OF MAKING SPIRAL SEAMED LAMINATED SHEET METAL PIPE

Reginald D. Hale, Vancouver, British Columbia, Canada, assignor to Spir-L-OK Industries Limited, Vancouver, British Columbia, Canada

Filed Oct. 26, 1970, Ser. No. 83,904
Int. Cl. B23p 19/00
U.S. Cl. 29—429 8 Claims





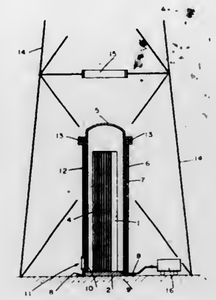
Method of and apparatus for making spiral seamed laminated sheet-metal pipe having a corrugated outer surface and a smooth inner surface. There is described a method which consists in denting the pipe in the region where seaming takes place and subsequently bringing the pipe to size and seaming between seaming rolls on a fixed mandrel, in this way to avoid large gaps at the inside of the seam and to maintain the pipe of substantially constant diameter.

3,694,893
METHOD FOR CONSTRUCTING CYLINDRICAL STRUCTURES SUCH AS STEEL CHIMNEYS

Hiroshi Ashida, Nishinomiya, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd.

Filed April 9, 1970, Ser. No. 26,835
Claims priority, application Japan, June 11, 1969, 44/46397
Int. Cl. B23p 19/00, 17/00
U.S. Cl. 29—431 8 Claims

Constructing cylindrical structures such as tall steel chimneys, advertisement towers and antenna supports by separately preparing a cylinder with a closed upper end, which will become the top end section of the intended cylindrical structure, and a plurality of extension cylinders to be successively connected thereto, fitting said closed-end cylinder to a fixed guide in telescopic relation, supplying compressed gas into an

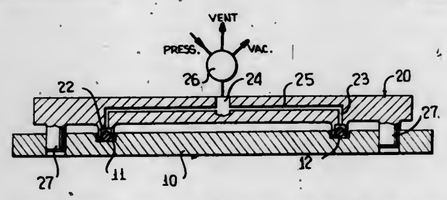


inside air-tight space surrounded by said cylinder and guide to lift the closed-end cylinder, connecting one of the extension cylinders to the lower end of the lifted cylinder and lifting the extended cylindrical structure by again utilizing compressed gas. These procedures are repeated whereby a cylindrical structure of desired height can be safely constructed.

3,694,894
METHOD OF INSERTING A SEAL IN A FACE-CUT GROOVE

Jerry G. Jelinek, Whittier, and Edward Reinsch, Palos Verdes, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 14, 1970, Ser. No. 2,775
Int. Cl. B23p 11/02
U.S. Cl. 29—451 7 Claims



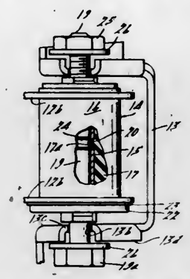
This invention relates to a method of and a device for enabling the insertion of a sealing element into a face-cut groove with a minimum of time and effort, together with the accuracy and quality required. This particularly has to do with practical field maintenance of seals while eliminating all problems usually encountered during installation of prior insertable seals. This is accomplished by means of a fixture which holes the seal element by means of an applied vacuum, and the utilization of the fixture to insert the seal element into a groove quickly and accurately.

3,694,895
METHOD OF MOUNTING AN AUTOMOBILE ENGINE

Lawrence E. Werner, Grosse Pointe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 884,857, Dec. 15, 1969. This application June 9, 1971, Ser. No. 151,325
Int. Cl. B23p 21/00
U.S. Cl. 29—469 2 Claims

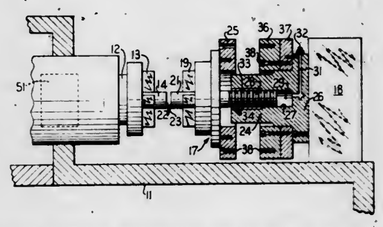
An automobile engine is assembled with the body by providing an engine mount comprising a tubular member enclosed within an elastic bushing under sufficient pressure to extrude a portion thereof through a radial opening in the tubular member. A bolt having an annular detent receiving groove is adjustably inserted into the tubular member until its groove receives the bushing extruded portion at a detent position with the bolt ends extending beyond the assembly of the bushing and tubular member. The engine with said assembly secured thereto is lowered toward the body in predetermined relationship by confining the extending bolt ends within a pair of upwardly opening guide slots in a corresponding pair of brackets secured to the body and guiding said bolt ends downwardly along said slots to predetermined seated locations at the bases of said slots, whereupon the bolt is withdrawn from its detent position and clamped securely to said brackets in final position by tightening a nut at one end of the bolt.



3,694,896
METHOD OF FRICTION WELDING

Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 704,873, Oct. 26, 1970, Pat. No. 3,563,444. This application Oct. 26, 1970, Ser. No. 84,140
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 3 Claims



An inertia welding machine having its nondriven tailstock mounted to permit rotation during welding contact between two weld parts and providing a plurality of flywheels for selective rotational association with the tailstock during welding. To provide optimum surface velocity between parts having a small weld interface which would normally result in excessive rotational energy in relation to weld requirements, the nondriven tailstock is permitted to rotate with an associated inertia mass to absorb a portion of the energy.

3,694,897
PROCESS FOR SOLDERING AN INORGANIC SOLID OXIDE PRODUCT

Kazuyuki Akeyoshi, Yamato, and Naonori Hayashi, Tokyo, both of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 769,044, Oct. 21, 1968, Pat. No. 3,623,906. This application Sept. 23, 1970, Ser. No. 74,901
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 4 Claims

A soldering alloy which contains 40–98% by wt. of Pb; 1.8–50% by wt. of Sn; 0.05–10% by wt. of Zn; and 0.05–10%

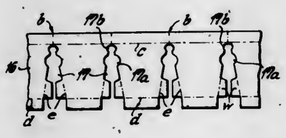
by wt. of Sb. A process for adhering said solder to a solid inorganic oxide product, such as glass or ceramic whereby ultrasonic vibration is applied.

3,694,898

METHOD OF FORMING CARRIER MEANS FOR CARRYING AND COOLING SEMI-CONDUCTOR RECTIFIER ELEMENTS FOR AN ALTERNATING CURRENT LIGHTING GENERATOR FOR MOTOR VEHICLES

Suguru Sato, Motogariya Shataku, Japan, assignor to Nippon Denso Kabushiki Kaisha, Bachi, Japan

Division of Ser. No. 811,323, March 28, 1969, Pat. No. 3,553,505. This application Sept. 24, 1970, Ser. No. 74,999
Int. Cl. B23k *31/02*
U.S. Cl. 29—477 **4 Claims**



A method of forming carrier means for carrying and cooling semi-conductor rectifier elements for an alternating current lighting generator for motor vehicles in which a narrow straight strip of sheet metal is first formed with a plurality of cutouts which extend uniformly spaced from each other and transverse to the longitudinal direction of the strip from one toward but short of the other edge of the strip, to thus provide a plurality of strip sections connected to each other at the other edge. Opposite edge portions of the strip are then bent to one side and substantially normal to the plane of the remainder of the strip and the strip sections are then bent in the aforementioned plane about an axis normal thereto to a polygonal configuration.

3,694,899

PROCESS FOR BRAZING PARTS OF ALUMINIUM AND ALUMINIUM ALLOYS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Oct. 7, 1970, Ser. No. 78,971
Claims priority, application France, Oct. 22, 1969, 6936199
Int. Cl. B23k *31/02*; B23l *35/36*
U.S. Cl. 29—495 **7 Claims**

Process in which the parts to be brazed are dipped in an acidic or alkaline aqueous bath containing further a metallic salt or oxide thereof until the aluminum oxide is replaced by a metallic coating. The parts are then removed from the bath, then rinsed and dried to be assembled by brazing.

3,694,900

Patent Not Issued For This Number

3,694,901

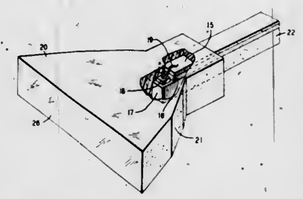
Patent Not Issued For This Number

3,694,902

ELECTROLUMINESCENT DISPLAY APPARATUS

Waldo Ditmar Apgar, Fleetwood, Pa.; Lucian Arthur D'Asaro, Madison; Richard Wayne Dixon, Morristown, both of N.J.; William Henry Dufft, Shillington, Pa.; Harry Eugene Elder, Wyomissing, Pa., and Phillip Edward Fraley, Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 31, 1970, Ser. No. 68,426
Int. Cl. B01j *17/00*
U.S. Cl. 29—588 **3 Claims**



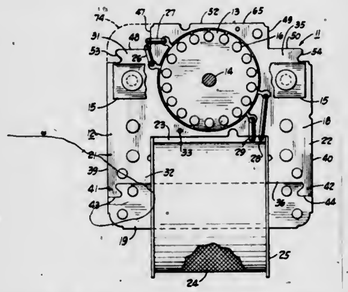
A method of fabricating electroluminescent display apparatus by forming a lead-frame from a laminate comprising two metal layers and an intervening insulating layer, is disclosed. The lead-frame comprises an array of laminate strip members, the tip of each of which may be cut back to expose the inside face of one metal layer. A light emitting semiconductor device then is mounted and electrically connected either to the inner or end face of the projecting metal layer. The other contact of the device is connected, typically by a wire lead or a metal beam lead, to the other metal layer of the laminate strip. Each semiconductor device and adjoining portion of the conductive mounting is encapsulated in a molded transparent plastic member, and supporting portions of the lead-frame then are severed to make each encapsulated diode available for individual assembly. Portions of the outer surface of the molded transparent member may be faceted and metal coated for improved light reflection and visual impact.

3,694,903

METHOD OF MAKING A STATOR

Andrew F. Deming, Alliance, Ohio, assignor to Alliance Manufacturing Company, Inc.

Filed June 3, 1970, Ser. No. 43,039
Int. Cl. H02k *15/00*, *15/14*, *15/16*
U.S. Cl. 29—596 **24 Claims**



A two-pole off-set construction of an electric motor has winding portion laminations and rotor portion laminations which are separate so that the winding may be formed or placed on the winding portion and then the two portions of the stator interconnected to complete the flux path for the rotor circumscribed by a rotor aperture in the rotor portion. There must be a window space between these two portions to accommodate the winding on the winding portion and formerly the

metal removed from this window space was scrap metal, necessitating an excessive amount of steel lamination material. In this invention, the layer of lamination is made in two complementary pieces and this layer has a rotor portion and a winding portion. The two separate lamination pieces for a layer of complete lamination are to permit the winding to be placed on this complete stator. The material removed from the window space instead of being scrap is utilized as an active flux carrying member by being unitary with one of these first and second lamination pieces. In a first embodiment of the invention the legs joining the end areas of the winding and rotor portions are off-set in the direction toward the winding portion by approximately one-eighth of their length resulting in the bight of the rotor portion, which contains the rotor aperture, being displaced in a direction opposite to the leg extensions. Accordingly, laminations for only the rotor portion are successively formed from a strip of lamination material with the bight of the rotor portion extending into the space between the two legs of the next adjacent rotor portion lamination in the strip of lamination material. In a second embodiment of the invention the rotor and winding portions are unitary on a first piece of the lamination and complementary with a small second piece of lamination. The first pieces of the lamination are nested or interlocked together as they are formed from the lamination steel, utilizing the window space of one piece as the winding portion of the adjacent first lamination piece. This utilizes lamination material from the window space which would otherwise be scrap and saves approximately one-eighth of the steel used in making the motor. The winding portion or second piece laminations are separately made adjacent to each other in a strip of lamination material. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,694,904

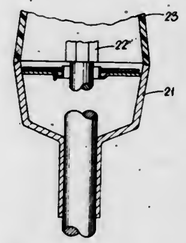
Patent Not Issued For This Number

3,694,905

IGNITION DISTRIBUTORS

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 12, 1970, Ser. No. 63,246
Claims priority, application Great Britain, Dec. 24, 1969, 62,777/69
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **4 Claims**



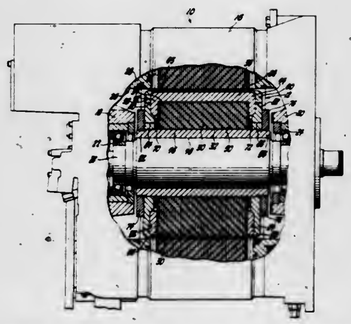
A method of assembling an ignition distributor including the steps of engaging an annular timing plate with an annular base plate so that the timing plate is capable of angular movement with respect to the base plate. Three ears formed on the base plate overlie the timing plate, and the timing plate is rotated relative to the base plate, so that three ramps provided on the timing plate engage the ears respectively. As the timing plate is rotated the ramps bend the ears away from the timing plate, so that a clearance exists between the ears and the timing plate which is substantially equal to the heights of the highest part of the ramps above the surface of the timing plate. Thus the timing plate will be capable of a predetermined degree of axial movement relative to the base plate.

3,694,906

METHOD FOR MANUFACTURING A HIGH SPEED SQUIRREL CAGE ROTOR

William E. Rank, Dayton, and Gene L. Dafler, New Lebanon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 52,558, July 6, 1970, Pat. No. 3,662,200. This application Oct. 14, 1971, Ser. No. 189,455
Int. Cl. H02k *15/02*, *15/10*
U.S. Cl. 29—598 **3 Claims**



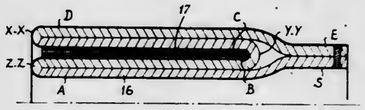
In a preferred embodiment, a rotor for a dynamoelectric machine and method for manufacture includes a laminated rotor core mounted on a shaft sleeve which is mechanically expanded by an interference fit with the motor shaft. A pair of rotor end supports are mounted on the shaft sleeve in an axially supporting relationship with the ends of the rotor core and in a circumferentially supporting relationship with the ends of a winding carried by the rotor core.

3,694,907

METHOD OF MAKING LOW INERTIA ROTOR FOR DYNAMO ELECTRIC MACHINES

Pierre Margrain, and Gerard Lacroux, both of Malakoff, France, assignors to Etablissements E. Ragonot

Filed July 6, 1970, Ser. No. 52,595
Claims priority, application France, July 10, 1969, 6923496
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **9 Claims**

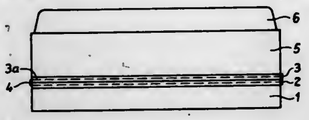


The complete winding outline of a rotor, including the forward as well as the return conductor of the winding loops are applied, in flat form, to a flexible sheet, as a printed or laminated conductor. The flexible sheet has a fold line, across which the conductor portions forming the coil ends extend. The sheet is then folded along the fold line upon itself and rolled into a hollow cylinder, to form a self-supporting rotor. If desired, an internal support of a plastic, metal tube, or the like can be applied Multiple-layer windings can be formed by first applying the winding outline to the sheet, and then folding the sheet-zig-zag upon itself with additional insulating layers where conductors would contact each other, and then rolling the folded sheet with the conductors thereon into a cylinder.

3,694,908
METHOD OF PRODUCING A SELENIUM RECTIFIER

Heinz Eggert, Berlin 33, Germany, and Ekkehard Schillmann, Tongi-Dacca, Pakistan, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed April 15, 1970, Ser. No. 31,126
Claims priority, application Germany, April 25, 1969, P 19 22 140.0
Int. Cl. B01j *17/00*; H01l *7/24*
U.S. Cl. 29—590 6 Claims

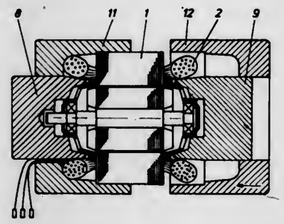


In a method for producing a selenium rectifier, a thin base selenium layer is first placed upon a metallic carrier electrode. This base selenium layer is converted into a metal selenide layer by means of a heat treatment, at a temperature above 250° C., through reaction with the metal of the carrier electrode, to from a barrier-free junction. Thereafter, the unconverted remaining selenium layer is coated with the main layer of the selenium semiconductor body and the entire semiconductor body is thermally converted or formed into the best conducting modification. The selenium, used for the selenium layer, is so doped with a halogen and another particularly metallic element, that the conductivity of the remaining selenium layer, following the thermal forming of the entire semiconductor body, is from 5 to 50 times the conductivity of the main selenium layer.

3,694,909
METHOD FOR MANUFACTURING ELECTRIC ROTARY MACHINES

Stig Lennart Hallerback, 12 Blodboksgatan, Vastra Frolunda, Sweden

Filed Nov. 18, 1970, Ser. No. 90,714
Claims priority, application Netherlands, Nov. 19, 1969, 6917401
Int. Cl. H02k *15/00*, *15/14*, *15/16*
U.S. Cl. 29—596 7 Claims
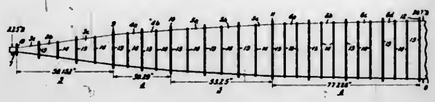


The present disclosure relates to a manufacturing method for electric rotary machines. By employing this method the machines, e.g. electric motors, can be submitted to a running test before the rotor assembly is permanently mounted by bonding its cup-shaped bearing supports to the ends of the stator core inside the stator winding heads. Machines which fail to meet the requirements need not be scrapped, but can be readily disassembled for recovering their good components.

3,694,910
Patent Not Issued For This Number

3,694,911
WAVEGUIDE PROCESS

Kiyo Tomiyasu, Scotia, N.Y., assignor to General Electric Company

Division of Ser. No. 754,700, Aug. 22, 1968, Pat. No. 3,569,871.
This application June 24, 1970, Ser. No. 59,841
Int. Cl. H01p *11/00*
U.S. Cl. 29—600 3 Claims

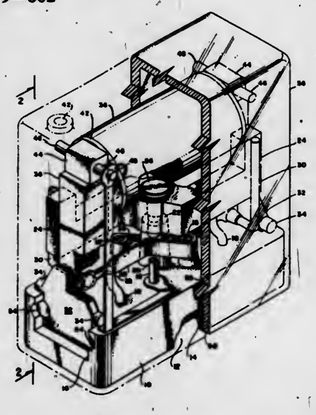


A low-cost waveguide taper for interconnecting two circular waveguides which differ substantially in size is constructed from a plurality of reinforced, thin-walled conical sections having predetermined taper angles and axial lengths to minimize the effects of spurious modes generated at the junctions of the conical sections. For the particular example of a waveguide taper interconnecting a circular waveguide of 2.25 inch diameter to an oversize circular waveguide of 29.7 inch diameter and suitable for the propagation of the TE°_{01} mode at X-band frequency, the taper comprises 12 conical sections having four different taper angles. The three cone-cone junctions and the cone oversize waveguide junction form two pairs of mode converting junctions which are interlaced such that the first and third and also the second and fourth junction effects each cancel as a pair and this interlaced concept permits fabrication of the particular waveguide taper having a minimum length of 17.5 feet. The larger diameter conical sections of the taper are fabricated by forming longitudinal welds along the seams formed by rolling thin aluminum sheet metal into the desired conical shapes. The sections are then precisely aligned and connected together by means of flanges epoxied on the sections.

3,694,912
METHOD OF MANUFACTURING AN ELECTRICAL RELAY

Anthony E. Sprando, Portland, and Richard L. Sollars, Hillsboro, both of Oreg., assignors to Textronix, Inc., Beaverton, Oreg.

Division of Ser. No. 611,540, Jan. 23, 1967, Pat. No. 3,519,966. This application March 23, 1970, Ser. No. 30,369
Int. Cl. H01f *7/06*
U.S. Cl. 29—602 5 Claims

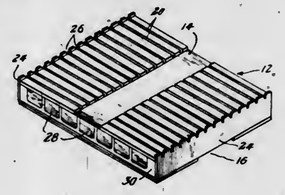


An electrical relay including a plastic header or base and a plastic shell hermetically sealed to the header. Electrical terminals are sealed into said header and extend into a recessed under portion, the periphery or skirt of which is sealed to the plastic shell. The header is also formed with an integral boss providing bearing means for a balanced armature. Accurately positioned plastic core supporting members are cast in fastening relation to the relay's core, and a plastic coil bobbin is similarly cast around the core.

3,694,913
METHOD FOR WIRING CORE MEMORY CORES

Walter J. Draving, Willow Grove, and Robert C. Draving, Fort Washington, both of Pa., assignors to Micro-Miniature Parts Corporation, Willow Grove, Pa.

Filed Jan. 12, 1970, Ser. No. 2,165
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 14 Claims

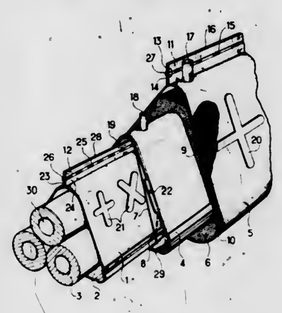


A method and apparatus for wiring the apertured cores of a core memory which includes placing the cores in a magnetic field and translating the wires through the apertures by means of magnetic needles.

3,694,914
CRYOGENIC CONNECTION FOR THE TRANSMISSION OF HIGH ELECTRIC POWER AND METHOD OF MANUFACTURE THEREOF

Marcel Aupoix, Paris, and Andre Culand, Gif-sur-Yvette, both of France, assignors to Compagnie Generale D'Electricite and L'Air Liquide Societe Anonyme Pour L'Etude et L'Exploitation Des, Paris, France

Filed Sept. 8, 1971, Ser. No. 178,614
Claims priority, application France, Sept. 8, 1970, 7032584
Int. Cl. H01b *13/00*
U.S. Cl. 29—624 4 Claims

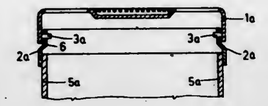


A cryogenic connection which can be formed directly on the ground on which it is to be laid includes a fluid-tight internal enclosure adapted to carry a cryogenic fluid, a metallic thermal screen surrounding the internal enclosure, a metallic external enclosure surrounding the thermal screen and suspension means for suspending the internal enclosure in the thermal screen and the thermal screen in the external enclosure.

3,694,915
TILTABLE SHEAR PLATE

Bernard Joseph Beusink, Clementinalaan 10, Oerle, Netherlands

Filed June 24, 1970, Ser. No. 49,130
Claims priority, application Netherlands, June 26, 1969, 6909789
Int. Cl. B26b *19/14*
U.S. Cl. 30—32 10 Claims

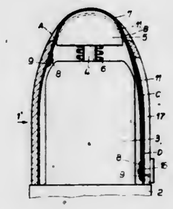


A shear plate assembly for attachment to a dry-shaver casing wherein the shear plate co-operates with a rotating cutter member which is resiliently maintained in engagement with the shear plate, and the shear plate is suspended so as to be tiltable with respect to the casing.

3,694,916
DRY SHAVER

Luhr Harms, Oberursel/Taunus, and Gunter Voigt, Schoenberg/Taunus, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt (Main), Germany

Filed July 10, 1970, Ser. No. 53,859
Claims priority, application Luxembourg, July 18, 1969, 59.126
Int. Cl. B26b *19/04*, *19/20*
U.S. Cl. 30—43.1 5 Claims



A dry shaver has a reciprocating cutter and a shearing blade having at least two different fields of perforations. The shearing blade is bent to a position over the reciprocating blade, and the selected perforated field can be brought against the reciprocating blade by adjusting the mutual position of the end rims of the foil blade. A frame that is removable relative to the shaver housing insures an accurate displacement of these end rims.

3,694,917
Patent Not Issued For This Number

3,694,918
METAL-CUTTING APPARATUS

Darrel E. Bailey, 5301 Kaster Dr., and Earl M. King, 1745 Lafayette, both of Bremerton, Wash.

Filed Oct. 20, 1971, Ser. No. 190,766
Int. Cl. B26b *27/00*; B25d *17/02*
U.S. Cl. 30—277 7 Claims

An apparatus for cutting sheet metal or the like under emergency conditions includes a bar having a pry surface and a cutting blade at one end thereof, and a cylinder reciprocably slidable thereon. In operation, the point of the cutting blade and the pry surface are rested on the sheet metal. The cylinder

is extended, then slid in the direction of the point so as to drive the point through the sheet metal when the cylinder engages a



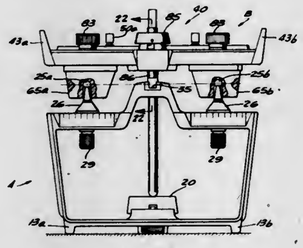
corresponding stop on the bar. Cutting is then accomplished by rocking the bar, using the pry surface as a fulcrum.

3,694,919

DENTAL ARTICULATOR

Robert L. Lee, Colton; Jacob L. Schwartz, Whittier, and Peter P. Klepa, Los Angeles, all of Calif., assignors to Dentonamics Corporation, Inglewood, Calif.

Filed Dec. 2, 1970, Ser. No. 94,443
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **14 Claims**



A dental articulator including a lower frame, an upper frame, a pair of spherical styluses mounted on the lower frame for providing the condyle parts of simulated temporomandibutlar joints, a pair of analog blocks removably attached to the upper frame for providing the socket parts of the simulated joints, an incisal rest pin on the front end of the upper frame for supporting the upper frame in a selected position of vertical adjustment, and separate means on the two frames for securing their respective dental casts.

For transferring casts into the articulator, there are dimples provided on the laterally outward ends of the analog blocks to indicate the hinge axis, and an alignment device on the upper articulator frame to indicate the plane of the orbital nose point.

For convenient operation of the articulator a centric alignment device is provided having cooperating parts on the upper and lower frames, and also including a releasable lock for the alignment device.

3,694,920

Patent Not Issued For This Number

3,694,921

FLAT DRESS FORM

Ruth Oblander, La Grange Park, Ill., assignor to Sew Fit Co., La Grange Park, Ill.

Filed Aug. 24, 1970, Ser. No. 66,220
Int. Cl. A41h *3/04*
U.S. Cl. 33—17 R **2 Claims**



A method of forming a female flat garment form using a pair of paper sheets, a tape with adhesive on one side and means for securing the paper to the tape on the opposite side, and a plurality of markers formed generally in the same manner as the tape. The markers are first placed on the predominant bulges of the female after which the tapes are secured along the sides and shoulders. The paper sheets, one for the front and one for the back, are attached to the markers on the front and back of the female. The sheets are then fitted to the female by darts, as necessary, after which they are attached to the shoulder and side tapes. Subsequently the paper sheets are trimmed along the lines of attachment to the shoulder and side tapes, either after removal of the sheets, or prior to removal.

3,694,922

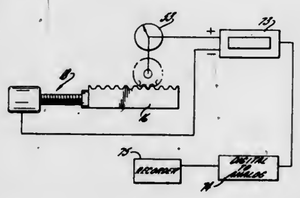
Patent Not Issued For This Number

3,694,923

RACK INSPECTION APPARATUS

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation

Filed Feb. 27, 1970, Ser. No. 15,163
Int. Cl. G01b *7/28, 7/30, 19/28*
U.S. Cl. 33—179.5 B **5 Claims**



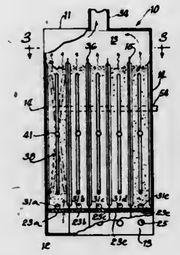
For quality control inspection of a rack-type gear to check for deviations of the rack from specified pitch and gauge, the rack is advanced a measured distance in meshing engagement with a pivotally mounted ultra precision pinion gear cut to the specified pitch. The resultant rotation of the pinion is converted by an encoder to a digital count which, in turn, is compared against the measured distance through which the rack was moved to determine the accuracy or lack of accuracy of the pitch of the rack. A detector senses any pivotal movement of the pinion as the rack is advanced to sense differences in the gauge of the rack along its length.

3,694,924

APPARATUS FOR DRYING PARTICULATE SOLIDS

Herbert Kenneth Staffin, and Robert Staffin, both of Colonia, N.J., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 7, 1970, Ser. No. 61,990
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **7 Claims**



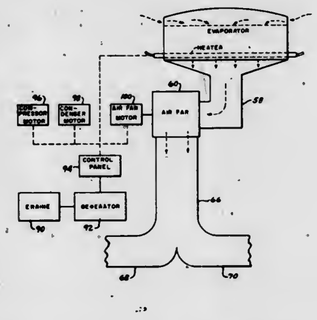
Apparatus for drying particulate solid materials employing a fluidized bed of the material to accomplish drying. Drying is carried out in a chamber having walls defining a confined mass of the particles which is of slab-like configuration to preclude channeling of the fluidizing gas and consequent poor efficiency. Heated agitator means are provided to assist in maintaining the fluidity of the bed notwithstanding the tendency thereof to pack in the presence of moisture.

3,694,925

HUMIDITY CONTROL IN A TEMPERATURE CONTROLLED RAILWAY CAR

Edward L. Coyle; Edgar F. Josephson, and Dennis J. Schipper, all of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,852
Int. Cl. F26b *21/08*
U.S. Cl. 34—46 **2 Claims**



Thermostatically controlled apparatus for heating or cooling air circulated through a closed railway car is modified so that in a temperature zone near the thermostat setting, where in prior systems the heating or cooling would be stopped, the circulated air is cooled and heated simultaneously to reduce humidity or remove moisture from the air.

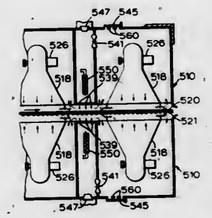
The railway car normally transports fresh fruit or vegetables and the moisture content of the fresh produce may be maintained within a specific range as the air being reintroduced within the car has a moisture content.

3,694,926

SONIC DRYING OF WEBS

Stephen Anthony Rodwin, Montreal, Quebec, and Eustace Cosmo Shuffler, Lachine, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed June 17, 1970, Ser. No. 46,979
Claims priority, application Canada, July 7, 1969, 56,305
Int. Cl. F26b *19/00*
U.S. Cl. 34—69 **4 Claims**



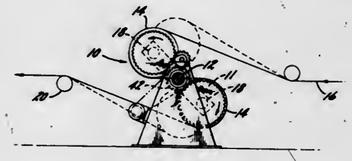
A paper dryer is provided with a sonic drying section through which the web is passed and subjected to high intensity noise from grouped noise generators, usually air operated, to dislocate moisture from the web for enhanced drying rates.

3,694,927

ADHESIVE CURING DEVICE

Wayne P. Sorenson, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 30, 1970, Ser. No. 76,798
Int. Cl. F26b *13/18*
U.S. Cl. 34—121 **1 Claim**



A device for controlling the heating and thus the degree of cure of an adhesive on the surface of a web by utilizing two heated, rotatable drums movably mounted on a turret. By rotating the turret, the contact time between the web and the surface of the heated drums is varied thereby altering the heat transferred to, and therefore the cure state of, the adhesive.

3,694,928

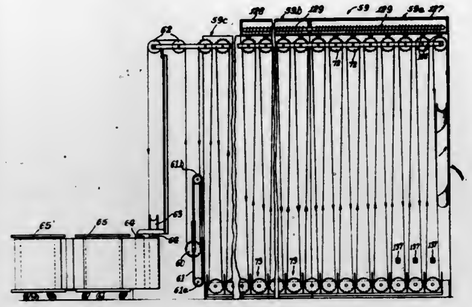
WEB PROCESSING APPARATUS

Franz Barta, Vienna, Austria, and Alfred F. Grupp, Glen Ellyn, Ill., assignors to The Mayercord Co., Carol Stream (Wheaton), Ill.

Filed Aug. 28, 1970, Ser. No. 67,890
Int. Cl. F26b *13/00*
U.S. Cl. 34—159 **7 Claims**

A web processing apparatus is provided, particularly for drying the printed surface of a continuous web. The web is disposed in festooned relation between upper driving rolls and lower restraining rolls or guides disposed in the depending loops of the festooned web. The restraining rolls or guides have end rim portions which engage and support the web at its marginal edge portions. A plurality of web correction elements, such as toothed annular elements, are provided between the rim portions, and the web is normally held in spaced relation from the web correction elements but is engageable therewith for straightening out collapsed areas or in-

wardly deflected portions of the web as it passes around the restraining rolls or guides. Preferably, a gaseous medium is



passed through an enclosure for the festooned web, and the arrangement permits relatively high flow rates and velocities without disturbing the web.

3,694,929

Patent Not Issued For This Number

3,694,930

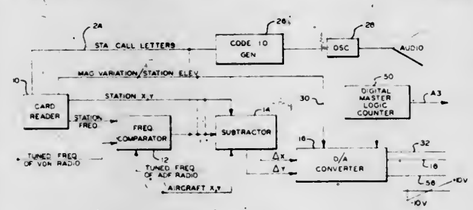
INSTRUMENT DRIVE SIGNALS

Robert W. Howland, Windsor; George E. Minnich, Vestal, and Richard L. Van Fleet, Binghamton, all of N.Y., assignors to The Singer Company, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,378

Int. Cl. G09b *9/08*; B64g *7/00*

U.S. Cl. 35—12 F **4 Claims**



A system providing electrical signals for controlling simulated instruments in fixed-base aircraft trainers. The signals are derived by digital integration of inputs from the flight computer representing variable flight conditions. These are compared with signals from a master logic section and a sample pulse is generated when the signals match. A pair of sample/hold circuits, in response to the sample pulse, respectively sample the instantaneous phase of sine and cosine waves which are represented as DC signals supplied to the two coils of a DC synchro repeater which positions the needle of the simulated instrument.

3,694,931

TRAINING DEVICE FOR TEACHING DIGITAL LOGIC OPERATIONS

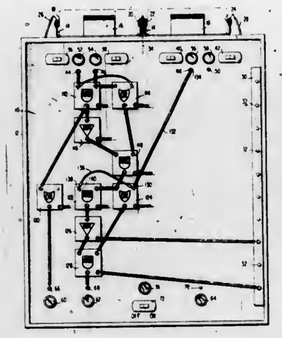
Joseph J. Bialek, 1 Hillside Dr., New York Mills, N.Y.

Filed Jan. 6, 1970, Ser. No. 994

Int. Cl. G09b *23/18*

U.S. Cl. 35—19 A **1 Claim**

A training device for instructing students in digital logic, which includes a desk size panel upon which digital logic operations may be fabricated and visually displayed, a plurality of digital logic circuit devices having means for both mechanical and electrical attachment to the panel, circuit connection means for connecting the digital logic circuit devices to a source of bias voltage supply for energizing the digital logic devices, circuit connection means for providing selected interconnections between the digital logic devices



displayed on the panel, and means for providing input digital values to the interconnected digital logic devices. Both magnetic and plug-type embodiments are disclosed as means for mechanically and electrically attaching the digital logic devices to the panel.

3,694,932

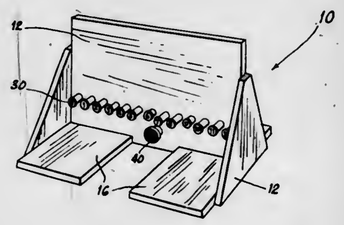
MATHEMATICS TEACHING MACHINE FOR PRIMARY GRADES

Mildred G. McGrath, Chicago, Ill., assignor to McGrath-Hoffman and Associates

Filed June 1, 1971, Ser. No. 148,720

Int. Cl. G09b *19/02*

U.S. Cl. 35—31 B **7 Claims**



A teaching device for teaching mathematics in the primary grades including a board having a plurality of openings extending between opposite sides with a movable plug in each of the openings. Each plug has a cardinal number on opposite ends thereof and is axially movable between first and second positions, the same number being on both ends of a given plug. In a device for teaching addition and subtraction, the numbers on the plugs are preferably arranged to form a number line that extends consecutively from one side of the device to the other. A chart for each of the plugs is provided on one surface of the board, with the chart having a plurality of groups of numerical values each having a mathematical solution equal to the cardinal number of the associated plug, so that a person facing one surface of the board may perform a problem solving function and a person facing the other surface of the board can perform an answer checking function.

3,694,933

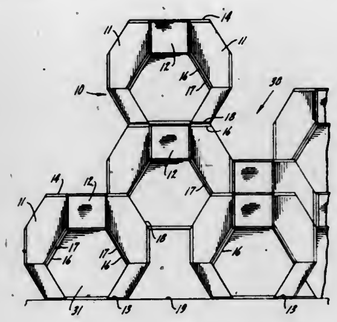
STUDENT LEARNING SPACES

William Larry Busch, Carbondale, Ill., assignor to Avery Coonley School, Inc., Downers Grove, Ill.

Filed May 20, 1970, Ser. No. 39,080

Int. Cl. A47b *41/00*

U.S. Cl. 35—60 **9 Claims**



This invention is directed to a system for dividing an otherwise open area into a plurality of individual activity zones by means of a plurality of partially enclosed polyhedron units which are capable of vertical arrangement and, at the same time, are adapted to provide a number of individual activity zones. The partially enclosed polyhedron units can be arranged into a wide variety of self-supporting areas suitable for use by students in undertaking individual learning activities.

3,694,934

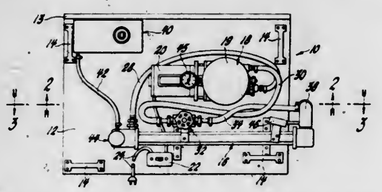
DEMONSTRATOR SYSTEM FOR VEHICLE COOLING SYSTEM

Frederic D. Barton, 47736 Ahumanu Loop, Kaneohe, Hawaii

Filed June 9, 1971, Ser. No. 151,313

Int. Cl. G09b *25/02*

U.S. Cl. 35—13 **18 Claims**



A cooling system demonstrator means for demonstrating the action of a vehicle cooling system are disclosed comprising means for forcing liquid without heating the same under pressure into a vehicle radiator to simulate the heating and expansion of said cooling system from engine heat and means for withdrawing liquid without heating the same under suction from said radiator to simulate the cooling of said cooling system to ambient temperature.

3,694,935

RESPONSE SYSTEM WITH COMMON CIRCUITRY FOR MULTIPLE FUNCTIONS

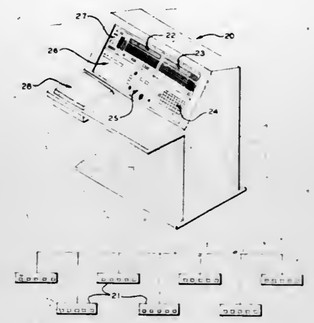
David Friedman, Framingham, Mass., and Bernard Mortimer Segal, Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,280

Int. Cl. G09b

U.S. Cl. 35—48 R **15 Claims**

An improved response and scoring system for use in teaching and testing apparatus which permits reducing the number of wires between a student's responder station and an instructor's console, provides simultaneous correct answer reinforcement on an individual or class basis, allows selective



transfer of student response data to the common computational circuitry in a simple manner, and allows selected groups of student responses to be displayed on the instructor's console.

3,694,936

APPARATUS FOR DETERMINING VISIBILITY INCLUDING A PULSED LIGHT SOURCE, A PLURALITY OF SPACED REFLECTORS, AND A DETECTOR

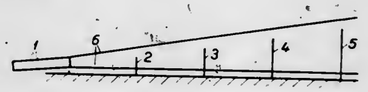
Bernt Ling; Anders Persson, and Olof Svensson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Atiebolaget, Vasteras, Sweden

Filed Oct. 21, 1971, Ser. No. 191,328

Claims priority, application Sweden, Nov. 16, 1970, 15470/70

Int. Cl. G01n *21/22*

U.S. Cl. 356—208 **7 Claims**



To determine visibility in varying weather conditions, a light-emitting source is arranged to emit light pulses in the direction of reflectors arranged at known constant distances or with consecutively increasing or decreasing distances between them, the size and reflexibility being unique for each one of them, and a receiving unit of which the amplification can be variable according to the time, is arranged to receive echoes from the reflectors, the number of echoes the amplitude of which exceeds a certain value are registered and counted and the number of echoes actually accepted by the receiver unit constitutes a measurement of visibility.

3,694,937

SKI BOOT

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Francois Salomon et Fils, Chemin de la Prairie Prolonge Annecy, Haute-Savoie, France

Filed June 14, 1971, Ser. No. 152,689

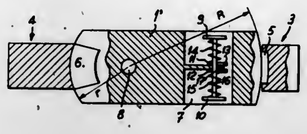
Claims priority, application Germany, June 23, 1970, P 20 30 929.2

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 AL **10 Claims**

The sole of a ski boot comprises a part movably mounted in relation to the rest of the sole and upper of the boot, and elastic means tending to maintain the movable part in a rest

position. The movable part protudes from the upper and forms means for cooperation with a binding device, so that the



remainder of the boot can elastically move to absorb shocks prior to release of the binding.

3,694,938

Patent Not Issued For This Number

3,694,939

METHOD OF COVERING SHOES

Allen Chen, Belleville, Mich., assignor to Lorton Laboratories, Ltd., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,328

Int. Cl. A43b *1/10*; A43d *9/00*

U.S. Cl. 36—7.3 **30 Claims**



A method for covering shoes on the feet of a wearer with a protective sanitary shoe wrapper formed of heat-shrinkable material is disclosed, wherein individual shoe wrappers are positioned at a heat-shrink station in an open configuration to receive and enclose a shoe on the foot of a wearer; after the insertion of the shoe, heat is applied to the wrapper to heat-shrink it and conform it to the show.

3,694,940

INNER SHOE FOR FOOTWEAR

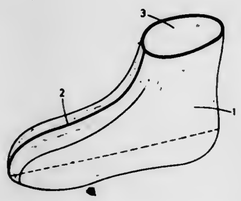
Rudolf Stöhr, Tuttlingen/Wurttemberg, Germany, assignor to Dr. Justus Rieker & Co., Tuttlingen/Wurttemberg, Germany

Filed Oct. 20, 1970, Ser. No. 82,306

Claims priority, application Germany, Nov. 15, 1969, G 69 44 404.8

Int. Cl. A43b *3/10*

U.S. Cl. 36—10 **9 Claims**



An inner shoe comprising a non-woven structure based on paper for fitting within footwear such as a ski boot to absorb perspiration. The inner shoe can be formed of one piece only by folding and joining the edges of the folded portions, or from two molded half-shells.

3,694,941

Patent Not Issued For This Number

3,694,942

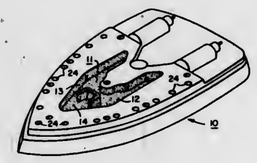
STEAM CHAMBER COATINGS

Charles H. Vondracek, and Anne B. Dunlap, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 677,643, Oct. 24, 1967, Pat. No. 3,551,183. This application May 26, 1970, Ser. No. 40,493

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **7 Claims**



A coating composition containing sodium silicate and hydrated alumina is deposited on a surface of the flash evaporation chamber in a steam ironing device. The coating is heated, most conveniently by application to an already heated surface and preferably heated to at least about 375° F, to convert it to a more insoluble form.

3,694,943

PLURIMILLENARY AUTOMATIC UNIVERSAL CALENDAR HAVING TIME DIVISION REPRODUCING SCALES OF A SLIDABLE TYPE

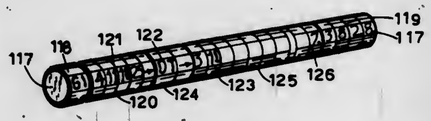
Domenico De Filippo, Via San Valentino 26, Sarno, Salerno, Italy

Filed Jan. 9, 1970, Ser. No. 1,832

Claims priority, application Italy, Jan. 13, 1969, 49101 A/69; Oct. 25, 1969, 49124 A/69

Int. Cl. G09d *3/10*

U.S. Cl. 40—113 **5 Claims**



A plurimillenary universal calendar comprising a support carrying one or more symbol scales for time periods, as well as a plurality of members slidable relative to the support, on each of which are placed one or more scales of other symbols of time periods, wherein each scale comprises subdivisions which are geometrically equal to one another and to those on the other scales, and being the calendar structurally set on the basis of an ideal year beginning on March 1st and ending on February 28th or 29th, on its scale each symbol is spaced apart from the chronologically preceding symbol by as many subdivisions as the week days passing between the beginnings of the two time periods to which said symbols are related.

3,694,944

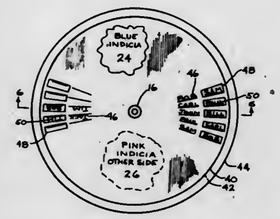
WORD SELECTING DEVICE

Norvell E. Von Behren, 1651 Ardmore Ave., Glendale Heights, Ill.

Continuation-in-part of Ser. No. 718,882, April 14, 1968, Pat. No. 3,553,867. This application Sept. 14, 1970, Ser. No. 71,785

Int. Cl. G09f *11/04*

U.S. Cl. 40—70 R **4 Claims**



A baby naming device is disclosed which comprises a plurality of moveable plates mounted together, with the moveable plates having a plurality of indicia designating male names on one side and indicia designating female names on the other side. The frame may contain viewing windows through which the name indicia may be viewed in combination.

3,694,945

OPTICAL ELEMENT FOR ILLUMINATION

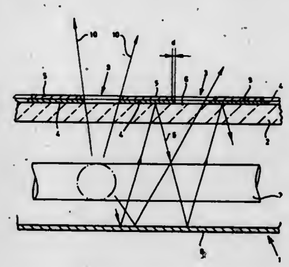
Jakob Detiker, Nuglar, Switzerland

Filed Nov. 5, 1970, Ser. No. 87,282

Claims priority, application Switzerland, Nov. 11, 1969, 16631/69

Int. Cl. G09f *9/38*; B44f *1/00*; F21p *5/00*

U.S. Cl. 40—133 R **15 Claims**



The invention provides an optical structural unit for use in lighting, decorating, signalling, advertising and similar purposes which in use incorporates a light source and which can provide differing light effects in the dark when illuminated and in daylight when the light source is not in use. The element consists of a plane or curved plate of a partly transparent material e.g. a plastics material rendered turbid to reduce its transparency. This plate has either on its surface or in its interior a grating or grid of opaque material. At least the surface of the grid which faces the light source is rendered reflecting and the interstices of the grating or grid are such that part of the surface of the plate is exposed to permit light to pass through from the light source, there being at least 10 exposed areas per cm^2 of the plate. The grating or grid may be made of at least two superimposed layers, a lower one which is opaque and an upper one of any desired color. Preferably the lower layer of the grating extends on all sides beyond the colored layer above it.

3,694,946

Patent Not Issued For This Number

3,694,947

PICTURE FRAME

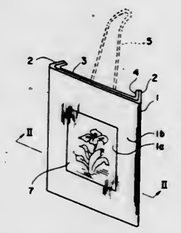
Kazue Mukai, 5-5-11 Ginza, Chuo-ku, Tokyo, and Hisao Odahara, 4-601 Kashiwagi, Shinjuku-ku, Tokyo, both of Japan, assignor to said Mukai, by said Odahara

Filed June 4, 1970, Ser. No. 43,404

Claims priority, application Japan, July 23, 1969, 44/69364

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **3 Claims**



This invention relates to a picture frame having an at least partially transparent face plate, with bent edges which resiliently engage a back plate so that a picture to be enjoyed may be held between said face plate and said back plate.

3,694,948

Patent Not Issued For This Number

3,694,949

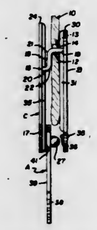
ANIMAL IDENTIFICATION TAG AND INSTALLATION TOOL THEREFORE

Clarence H. Howe, 1925 Newton Ave., Cody, Wyo.

Filed Jan. 29, 1970, Ser. No. 6,705

Int. Cl. A01k *11/00*

U.S. Cl. 40—301 **11 Claims**



A tag and a tool for installing the same, the tag having a generally flat, elongated blade member with a hole near the lower end which fits onto a forwardly slanted pin upstanding from the cutting end of the tool, which makes a curved slit, with the curve facing upwardly, in an ear or the brisket or flank of the animal. The tool is thrust quickly through the ear, to pull the blade member with it through the slit, then the tool is quickly withdrawn from the same side of the ear. The blade member of the tag and a body member are connected by a flat, S-shaped yoke, with the upper end of both the blade member and the body member spaced above the yoke. The tool has a clamping section beneath which the body member of the tag is placed, to hold the blade member extending rearwardly along

the tool. As the blade member passes through the slit, its upper end will engage the far side of the ear. The tag yoke has an elongated central section and bars connecting with the blade and body members with rounded corners between and the upper bar remaining in the slit. The flat yoke permits quick healing of the slit, while the central section of the yoke and also the upper rounded corner, permit considerable movement of the tag body, without disturbing the yoke bar within the ear. The body of the tag also has, adjacent the lower end, a T-shaped connector for a larger auxiliary tag, which may be marked on both sides, and extends below the ear. The tool has an upstanding post having a slot in which a side of the T-connector may be held, for forcing a hole in the auxiliary tag onto the T-connector.

3,694,950

SLIDING COVER APPARATUS FOR ICE FISHING HOLE

Charles W. Maier, 107 Oscar Ave. N., Canby, Minn.

Filed June 9, 1971, Ser. No. 151,173
Int. Cl. A01k *97/00*
U.S. Cl. 43—4 **6 Claims**



An ice fishing accessory and safety appliance for an ice fishing hole, the apparatus having a stationary frame surrounding the hole and supported in a substantially horizontal plane relative to the ice. A movable cover mounted for sliding movement along a pair of substantially parallel guideways of the frame moves between an open position permitting access to the hole and a closed position obstructing the hole so a captured fish withdrawn from the ice hole cannot re-enter the hole and a fisherman will not accidentally slip through the hole. A pair of tensioned springs connected between movable cover and stationary frame move the cover from an open position to a closed position when a foot pedal actuated latch on the frame is released by the fisherman.

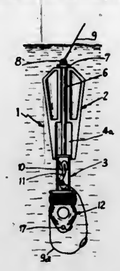
3,694,951

FISHING FLOAT

Robert L. Modeme, Paris, France, assignor to M.E.P.P.S., Manufacture d'Engins de Precision pour Peches Sportives, Paris, France

Filed July 16, 1970, Ser. No. 55,397
Claims priority, application France, Aug. 11, 1969, 6926452; Nov. 13, 1969, 6939409
Int. Cl. A01k *93/00*, *97/04*
U.S. Cl. 43—41.2 **15 Claims**

The device of float type comprises a first element having in its upper part means for the attachment of the line, and in its lower part an external neck for winding thereon part of the line to be immersed extending beyond the point of attachment, a second element of a density adapted to ensure the buoyancy of the whole and movable relative to the first element between a bottom position in which the two elements confine a closed housing for the reception of the hook, the bait being attached to the hook and eventually separate fish food particles, and a top position in which the said housing is open to the exterior, the whole being such that on contact with the water, the second element is displaced relative to the first



for opening the housing, releasing the hook bait and eventual particles and subsequent unwinding of the line from the neck.

3,694,952

FISH GRAPPLING DEVICE

Edward E. Matthews, P.O. Box 1394, Galveston, Tex.

Filed July 22, 1970, Ser. No. 57,183
Int. Cl. A01k *97/14*
U.S. Cl. 43—5 **10 Claims**



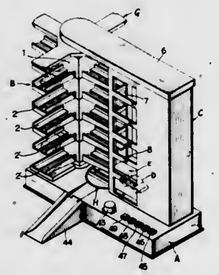
An elongated metal rod member is formed into an eyelet at one end and is provided with a gaff hook at its other end. An intermediate portion of the member is formed into spaced helical coils to slidably receive a fishing line.

3,694,953

TOY PARKING GARAGE

Eijiro Tomiyama, c/o Tomy Kogyo Co., Ltd., No. 10,9,7-chome, Tatuski, Katsushika-ku, Japan

Filed Sept. 3, 1971, Ser. No. 177,687
Int. Cl. A63h *33/00*
U.S. Cl. 46—12 **9 Claims**



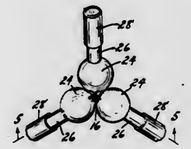
An electrically operated toy parking garage which comprises a rotatable parking tower of a multi-stage structure and an elevator system supported within a housing and including a vertically movable elevator cab, wherein transfer of a toy car to and from the various levels is effected by rotation of the parking tower and by vertical travel of the elevator cab.

3,694,954

CONSTRUCTION ELEMENT FOR THE ASSEMBLY OF MODELS AND THE LIKE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J.

Continuation-in-part of Ser. No. 836,698, June 26, 1969, Pat. No. 3,554,584. This application Jan. 11, 1971, Ser. No. 105,530
Int. Cl. A63h *33/10*
U.S. Cl. 46—29 **10 Claims**



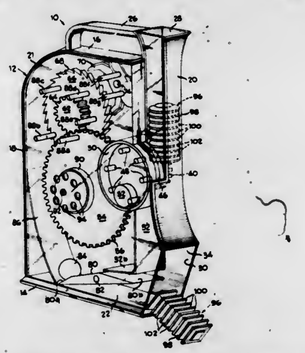
A construction element comprises a pair of matable segments interconnected by a flexible strap. The segments join to form the element which has an elongated end adapted to receive and mount a tube and a bulbous end. The strap can be positioned to surround a structural member to retain the element in a selected locus with respect to the structural member.

3,694,955

AMUSEMENT DEVICE

Martin I. Glass, Chicago, and Howard J. Morrison, Highland Park, both of Ill., assignors to Marvin Glass & Associates

Filed Aug. 11, 1970, Ser. No. 62,888
Int. Cl. A63h *33/30*
U.S. Cl. 46—39 **10 Claims**



An amusement device having a preferably transparent housing including an upright chute, and a gear train in the housing including a gear which partially extends into the chute. Plural playing pieces are associated with the device and are of a size and shape to loosely fit within, and slide down, the chute. The playing pieces have a preferably serrated periphery forming a rack for engagement with the toothed periphery of the gear which extends into the chute to initiate movement of the gear train as the playing pieces move through the chute. The bottom of the housing includes a pivoted member which extends partially into the chute for engagement by a descending playing piece and a missile element is associated therewith to the interior of the housing, remote from the chute, so as to be flipped upwardly by a descending playing piece which strikes the pivot element.

3,694,956

Patent Not Issued For This Number

3,694,957

GROWING HAIR DOLL

Lionel Houghton, Kowloon, Hong Kong, assignor to Mego International, Inc., New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,344
Int. Cl. A63h *3/44*
U.S. Cl. 46—135 **7 Claims**



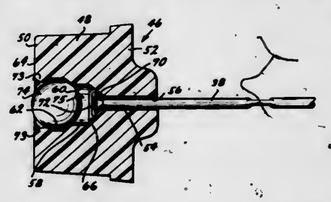
In a doll or the like, improved structure is provided for simulating growth of the normal complement of the doll's hair. An extra bundle of hair is passed through a hole in the top of the doll's head and the inner end of the bundle is secured, by means of a resilient anchor, internally of the doll. Pushbutton means are provided for normally preventing the bundle of hair from being pulled outwardly. Thus, only when the pushbutton is depressed can the hair be withdrawn. The pushbutton means, when released, will stop both the inward and outward movement of the bundle of hair and will retain the bundle of hair in the selected position in order to simulate various different stages of "growth" of the remainder of the hair. The resilient anchor for the bundle of hair may be encased in a flexible plastic due on which the pushbutton means acts directly or, alternatively, the pushbutton may act on the bundle of hair itself.

3,694,958

WHEEL AND AXLE ASSEMBLY HAVING AN ENTRAPPED THRUST BEARING

John C. Parker, Los Angeles, and Keith M. Johnson, South Laguna, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 27, 1970, Ser. No. 93,348
Int. Cl. A63h *17/26*
U.S. Cl. 46—201 **9 Claims**

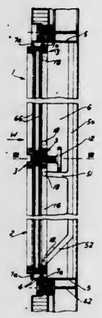


An improved low-friction carriage for a toy vehicle where the wheels are each of one-piece construction including an axle bearing surface and a precisely concentric outer running surface. The wheel is retained by blunting the end portion of the corresponding axle and press fitting a steel ball in another opening of the wheel to act as a thrust bearing. Not only is friction reduced, but the axle, the wheel and the steel ball are economical elements which are easily and inexpensively assembled.

3,694,959
METAL SLIDING WINDOW

Karl Gartner, Gundelfingen/Danube, Germany, assignor to Joseph Gartner & Co., Gundelfingen/Danube, Germany

Filed July 23, 1970, Ser. No. 57,632
Claims priority, application Germany, July 26, 1969, P 19 38 021.3
Int. Cl. E05d 15/20
U.S. Cl. 49—128 12 Claims

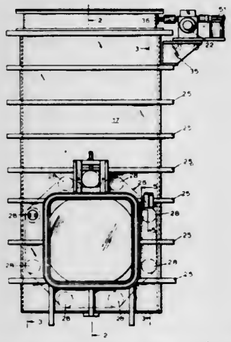


A metal sliding window having a plurality of relatively movable sash means positioned in a common plane when in a closed position and in parallel planes when in an opened position. The sash means each include a frame composed of identical integrally formed profiled frame parts U-shaped in cross section and adapted to receive window panel means between the parallel flanges of the frame parts. Each of the frame parts also has at least one rib extending outwardly from the base part thereof and cooperates with the stop flanges on the guide profiles and the centering flanges on the centering profiles. Grooves are provided in the guide profiles and receive rollers secured to the sash means to permit said relative movement between the sash means.

3,694,960
DOOR ASSEMBLY AND CHAMBER COMBINATION

Peter Thomas Miraldi, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Aug. 18, 1970, Ser. No. 64,776
Int. Cl. E05d 15/10
U.S. Cl. 49—209 7 Claims

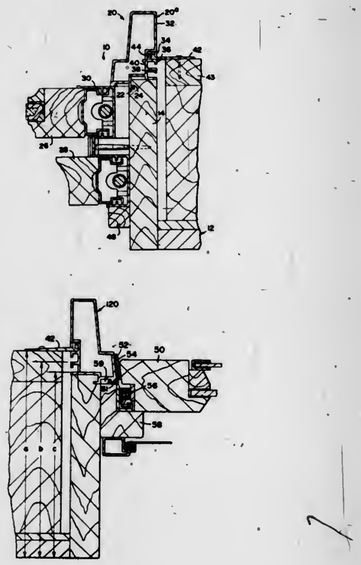


The specification discloses a door assembly and chamber combination. The door is disposed in a door chamber at the front of the sterilizing chamber and a lifting mechanism is provided for the door. A clamping mechanism is provided for clamping the door to a seal around an opening to the chamber. The door chamber is made up of a front plate and a rear plate, each of which have an opening aligned with the other and the door slides between these openings and is forced into engagement with a rearwardly facing seal attached to the front plate. A clamping arrangement made of plungers spaced around the opening and fixed to the back plate provided with chains and sprockets driven by an electric motor which forces the plungers into engagement with the door and causes it to seal against the seal. The door is counterweighted and a lifting motor is provided to lift the door out of the space between the two openings.

3,694,961
MODULAR WINDOW UNIT

Waldo O. Johnson, 1419 Beall Ave., Wooster, Ohio, assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed April 7, 1970, Ser. No. 26,240
Int. Cl. E06b 1/20
U.S. Cl. 49—414 9 Claims



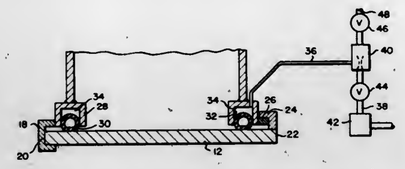
A modular window or window frame unit is provided from a wooden frame including a pair of jambs, a sill and a header, a window is operatively positioned in the frame, and a plurality of metal frame extenders operatively engage each section of the wood frame on the outer surface thereof, are of the same sectional shape, and are in interlocking engagement with one of the frame members.

3,694,962
SLIDING DOOR STERILIZER WITH POWER ACTUATED SEAL

Robert L. McDonald, Rochester, and Edgar L. Anderson, Penfield, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed April 27, 1970, Ser. No. 32,284
Int. Cl. E06b 7/16
U.S. Cl. 49—477 2 Claims

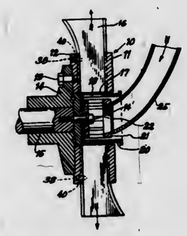
Disclosed is a sliding door sterilizer having a power operated seal means for sealing between the door closure and the sterilizer opening. The seat for the seal means is pressurized to move the seal against the door and the seat is evacuated to create a partial vacuum for drawing the seal away from the door closure.



3,694,963
CENTRIFUGAL BLASTING WHEEL

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.

Filed March 25, 1970, Ser. No. 24,047
Int. Cl. B24c 3/00
U.S. Cl. 51—9 14 Claims

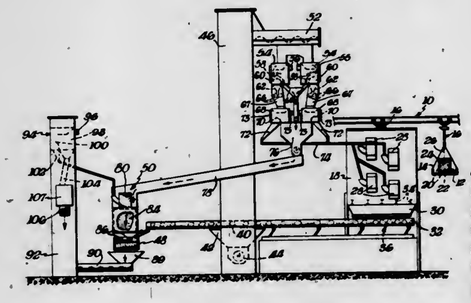


A centrifugal blasting wheel provided with throwing blades whose throwing surfaces are flat and parallel to the axis of rotation of the wheel at their inner ends and slope gradually so that their outer ends lie in a plane at an angle to the axis of rotation.

3,694,964
ABRASIVE BLAST CLEANING SYSTEM

Joseph E. Bowling, Jr., Waynesboro, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,181
Int. Cl. B24c 3/08
U.S. Cl. 51—9 7 Claims

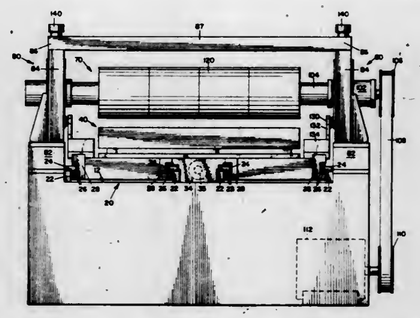


An abrasive blast cleaning system includes a pair of separators for separating sand from abrasive particles in conjunction with a no-bake molding procedure with crushing rollers being provided between the separators to crush small lumps of pea size sand.

3,694,965
GRINDING OR POLISHING OR GLAZING MACHINE

John P. McLeod, 21 School St., Hatfield, Mass.

Filed March 18, 1970, Ser. No. 20,566
Int. Cl. B24b 3/00, 5/00
U.S. Cl. 51—93 4 Claims

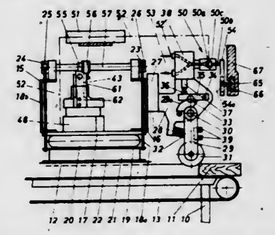


Apparatus for grinding or polishing or glazing or otherwise finishing flat or contoured-in-one dimension surfaces of a work as the work is held on a work table reciprocated rectilinearly along a horizontal plane in front-rear and end-end directions with reference to a tool mechanism in the form of a driven rotatable grinding or polishing or glazing wheel having a peripheral face providing the grinding or polishing or glazing action, with cooperant means for reciprocating the work table in the forward and rearward directions and simultaneously therewith in the end to end directions, and other means for simultaneously driving the tool mechanism vertically to bring the tool into and remove the tool out of working position with respect to work.

3,694,966
BELT GRINDING MACHINE

Karl Heesemann, 54, Friedenstrasse, Rehme via Bad Oeynhausen, Germany

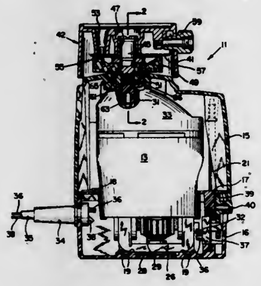
Continuation of Ser. No. 684,867, Nov. 21, 1967, abandoned.
This application Nov. 6, 1970, Ser. No. 87,655
Int. Cl. B24b 21/08
U.S. Cl. 51—138 13 Claims



A belt grinding machine which is equipped with an elastically flexible load beam extending over the entire operative length of an endless grinding belt for applying the necessary grinding pressure to the belt. The effective pressure-applying surface of said beam is suspended for elevational control from support elements distributed at intervals along the length of the beam and attached to an elevationally movable carrier preferably in the form of transverse beams mounted on push rods operable by a pressure medium. The push rods are associated with constant delay mechanism adjustable to the difference in time between the instant of response of a sensing element to the passage of the leading end of a workpiece and the instant the grinding action begins, on the one hand, and between the instant of response of a sensing element to the

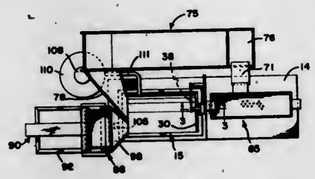
passage of the trailing end of the workpiece and the instant the grinding action terminates, on the other hand.

3,694,967
DOUBLE INSULATED DRILL BIT SHARPENER
Henry J. Stielper, Baltimore, Md., assignor to The Black and Decker Manufacturing Co., Towson, Md.
Filed Sept. 30, 1970, Ser. No. 76,693
Int. Cl. B24b 3/26
U.S. Cl. 51—73 R 10 Claims



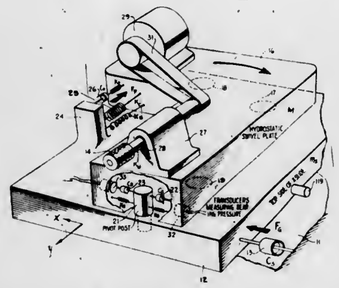
A double insulated drill bit sharpener including an electric motor supported within a casing and including an output rotary shaft. A sharpening head is fixed to the casing and includes a sharpening wheel fixed to a rotatable spindle coupled to the motor driven shaft.

3,694,968
VIBRATORY APPARATUS
Max Isaacson, and Benjamin Smilg, both of Dayton, Ohio, assignors to Vibrodyne, Inc., Dayton, Ohio
Filed Jan. 2, 1970, Ser. No. 53
Int. Cl. B24b 31/06
U.S. Cl. 51—163 10 Claims



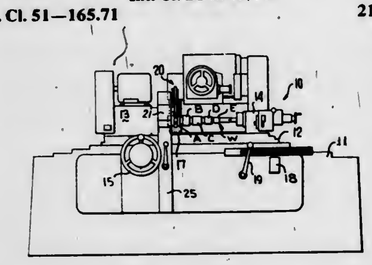
Successive batches of parts are automatically treated for a predetermined time within a vibratory container supporting a load of treating media and having an outlet that is opened and closed by a movable gate member or a pivotal door. When the gate member and door are moved to open positions in response to actuation by an automatic control system, the parts and media flow by vibration of the container onto a vibratory screen where the parts and media are separated. The media is immediately recirculated to the container by an endless conveyor to aid in discharging the treated batch of parts and media from the container. The gate member is moved into the recirculating media within the container to block the outlet, and after the outlet is clear of media, the door closes. The amplitude of vibration of the container is regulated by a sensing device connected to the container, and controls are provided for presetting the amplitude for different conditions of operation during cycling of the system. Batches of parts are successively supplied to the container from a weighing device including a parts hopper having a door actuated by the control system.

3,694,969
AUTOMATIC GRINDING MACHINE
Robert S. Hahn, Northboro, and Richard P. Lindsay, Marlboro, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed May 22, 1970, Ser. No. 39,619
Int. Cl. B24b 49/16
U.S. Cl. 51—165.91 3 Claims



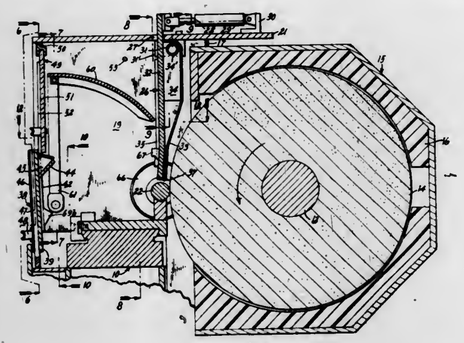
This invention relates to an automatic grinding machine and, more particularly, to apparatus for generating surfaces of revolution by use of the abrasive process, wherein the operation of the machine is under closed loop force control.

3,694,970
OFFSET SIZE ADJUSTMENT CIRCUIT FOR GRINDING MACHINES
Stanley C. Schoonover, Waynesboro, and Lester R. Luckenbach, Mont Alto, both of Pa., assignors to Litton Industries, Inc., Beverly Hills, Calif.
Filed Sept. 18, 1970, Ser. No. 73,331
Int. Cl. B24b 49/06
U.S. Cl. 51—165.71 21 Claims



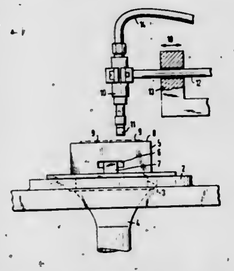
An automatic machine, which includes a gage mechanism, for grinding workpieces having axially spaced portions of different diameters is disclosed. The gage mechanism, which is used to determine the diameter of each workpiece portion to assure that the workpiece is within certain tolerances, includes a workpiece engaging element or caliper of the chordal type which supplies a signal, indicative of the sensed diameter of a workpiece portion, to a summing network. The summing network also receives a signal from a digital to analog converter arranged to convert a digital signal from a card reader into an analog signal indicative of a desired diameter of a workpiece portion. An analog size offset circuit is arranged to supply an offset signal to the digital to analog converter. The offset circuit provides, in addition to a settable common offset signal, an additional programmed offset signal which is derived from a second analog to digital converter supplied with digital signals from thumbwheel switches which receive enabling signals from a program sequence controller. The controller also supplies enabling signals to the card reader associated with the first-mentioned digital to analog converter.

3,694,971
GUARD SYSTEM FOR HIGH SPEED GRINDER
Howard W. Renner, and John A. Moores, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 31, 1970, Ser. No. 68,114
Int. Cl. B24b 55/02, 55/04
U.S. Cl. 51—267 16 Claims



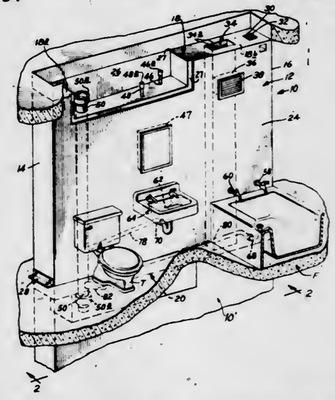
A first shield is disposed above a workpiece and adjacent thereto to protect the operator of a grinding machine during a grinding operation from any fragments of an exploding grinding wheel. During loading and unloading of the workpieces, the first shield is pivoted away from the grinding position of the workpiece, and a second shield is disposed between the workpiece and the grinding wheel to protect the operator during loading and unloading operations. The first shield has a coolant supplied thereto for cooling the grinding wheel; this coolant serves as an energy absorber if any fragment of an exploding grinding wheel strikes the first shield.

3,694,972
METHOD AND APPARATUS FOR SUBDIVIDING A CRYSTAL WAFER
Reimer Emeis, Ebermannstadt, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 26, 1970, Ser. No. 50,181
Int. Cl. B24b 1/00; B24c 1/00
U.S. Cl. 51—319 2 Claims



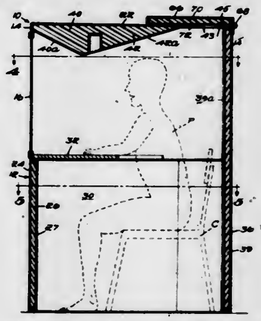
A body, such as a crystalline semiconductor body for the production of diodes, transistors, thyristors or other electronic components, is severed from a crystal wafer by placing the wafer face-to-face onto the surface of a griddle which has a slit along each cutting line. A sandblast is directed from a jet nozzle upon the top face of the wafer above the slit, and relative movement is imparted between griddle and jet nozzle in a direction lengthwise of the slit, simultaneously exhausting the sand out of the slit. In this manner, the crystal body is separated from the rest of the wafer along the slit. Preferably, the device for performing the method is provided with a griddle whose top surface has a group of parallel slits extending crosswise to another group of parallel slits, a comb structure, also with intersecting slits, being mounted above the griddle surface proper. Such apparatus is capable of simultaneously severing a multiplicity of individual bodies from a crystal wafer.

3,694,973
UTILITY MODULE FOR APARTMENT-TYPE DWELLINGS
David Unger, Highland Park, Ill., assignor to Midweco-Enterprise, Inc.
Filed Aug. 14, 1970, Ser. No. 63,680
Int. Cl. E04b 5/48; E04c 1/39; E04f 17/08
U.S. Cl. 52—34 7 Claims



A utilities-containing structural module for high-rise apartments is provided in which a precast concrete block is used to provide an insulated structural wall between the bathroom and kitchen of the apartment. Spaced risers are embedded in the concrete block for effecting continuous utilities communication between vertically arranged blocks, and the upper edge of each block defines a recess which is used as an access where connection may be made between the risers of vertically aligned modules. Laterally and transversely extending conduits are also embedded in the concrete block for operative connection to various room fixtures.

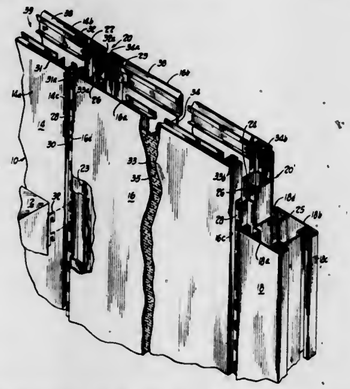
3,694,974
AUDIOMETRIC SURVEY BOOTH
Alan Eckel, 10 Hildreth St., Westford, Mass.
Filed March 10, 1970, Ser. No. 18,172
Int. Cl. E04b 1/82
U.S. Cl. 52—36 7 Claims



An audiometric survey booth to conduct basic hearing tests is padded interiorly with sound absorbing material at the top

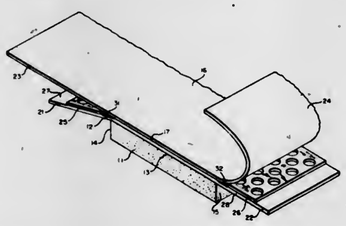
and sides to shut out exterior noises. At the top, portions of said material extend diagonally downward and thence diagonally upward while the material at opposite sides is non-parallel, flaring inwardly from the top in a downward direction, being so arranged that the ears of a person within my booth are particularly well shielded from outside noises.

3,694,975
PARTITION STRUCTURE
Gordon J. Pollock, Parma Heights, Ohio, assignor to The Mills Company, Cleveland, Ohio
Filed July 27, 1970, Ser. No. 58,601
Int. Cl. A47b *5/00*
U.S. Cl. 52—36 **7 Claims**



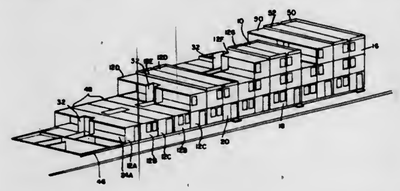
Partition structure including two upright members secured together along adjacent vertical edges. A narrow member forms a part of a juncture between said upright members and extends between the vertical edges thereof, recessed from opposite faces that form major surfaces of the partition structure. The narrow member includes two inwardly facing channel portions, each having a flat vertical wall portion parallel with the major surfaces of the partition structure and extending between vertical edges of the upright members. A plurality of vertically aligned apertures extend through one or both of said vertical wall portions of the narrow member to receive support brackets, mounting clips, or the like for securing shelving, cabinets, panels, or the like, to the partition structure.

3,694,976
EXPANSION JOINT COVERING
Stanley W. Warshaw, c/o Technical Coatings, Inc., 295 Reservoir St., Needham Heights, Mass.
Filed Nov. 13, 1970, Ser. No. 89,251
Int. Cl. E04b *1/68*; **E04d** *3/38*
U.S. Cl. 52—58 **10 Claims**



An expansion joint cover includes an insulating cushion to be laid over a gap in a structure to be sealed. An intermediate flexible strip is sandwiched between the cushion and an outer flexible strip, both strips extending beyond the cushion. First and second rigid strips are attached to that side of the intermediate strip facing the outer strip adjacent to the edge of the cushion. Preferably, these rigid strips are perforated to help relieve shear strain when structure on opposite sides of the joint tends to shift along the length of the joint, and thermal stresses from ambient temperature changes.

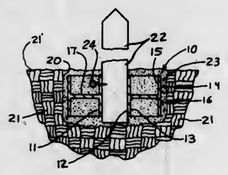
3,694,977
MODULAR ROW HOUSING
Marvin Verman, 2137 Naudain St., Philadelphia, Pa.
Filed Sept. 1, 1970, Ser. No. 68,667
Int. Cl. E04b *1/04*
U.S. Cl. 52—79 **4 Claims**



Modular row housing used to construct row housing units of one story or more comprising a plurality of modular units, each having a height of one story and a width corresponding to one-half of the finished width of the row housing unit, each modular unit comprising a party wall along its length, front and rear walls, a floor and a ceiling with the front and rear walls having a width corresponding to one-half of the finished width, each modular unit having an opening at the face opposite to the party wall, said opening being defined by free edges, two of said modular units being assembled together to form a single story with the free edges of each modular unit being held together in abuttment by a sealing material to close off the opening of each modular unit, thereby to provide the first story or a subsequent story of the row housing unit.

In the preferred embodiment there is at least a second story that is comprised of two modular units similar to those comprising the first story, with the second story modular units being positioned on the corresponding first story modular units and a compressible sealing material is interposed between the second story modular units and the first story modular units in order uniformly to distribute the weight to the second story modular units on the first story modular units without the necessity of a common support structure for the second story modular units.

3,694,978
POST ANCHOR
Maxie R. Mintz, 543 Dale Drive, Fayetteville, N.C.
Filed June 11, 1970, Ser. No. 45,342
Int. Cl. E02d *5/74*
U.S. Cl. 52—166 **2 Claims**



In abstract, a preferred embodiment of this invention is a post anchor in the form of spaced, concentrically disposed, interconnected cylindrical bearing surfaces forming a sturdy reinforcing anchor for elongated post-like members.

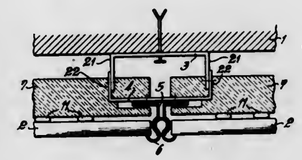
3,694,979
SKIRTING FOR MOBILE HOMES
Marlynn D. Vadnie, Rte. 1, Paynesville, Minn.
Filed Nov. 12, 1970, Ser. No. 88,584
Int. Cl. E06b *9/00*; **E02d** *27/00*
U.S. Cl. 52—169 **4 Claims**



Skirting for enclosing the space under mobile homes and similar elevated structures for aesthetic and insulating purposes. The skirting comprises a plurality of segments arrayed end-to-end and suspended from a track mounted on the underside of the edge of the structure. Each skirting segment includes an upper flat panel and a vertically adjustable lower panel telescopically mounted in a pair of vertical channels at the ends of the upper panel. Adjacent segments are joined by engagement in back-to-back channels in a vertical connecting strip. Corners are finished off by segments of appropriate contour constructed in the same general manner as the flat panels.

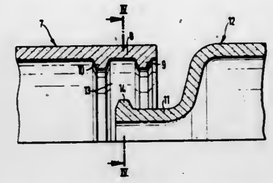
3,694,980
Patent Not Issued For This Number

3,694,981
MEANS FOR ATTACHING SLABS AND TILES ON BUILDING STRUCTURES
Gottfried Cremer, Junkersdorf, and Joachim Kraus, Amberg, both of Germany, assignors to Fetok GmbH, Chur, Switzerland
Filed May 27, 1970, Ser. No. 40,928
Claims priority, application Germany, May 28, 1969, P 19 27 195.5
Int. Cl. E04f *13/08*
U.S. Cl. 52—235 **2 Claims**



A method for attaching slabs or tiles of ceramic material on a building structure in which on lines on the building structure which are to be overlain by adjacent edges of tiles or slabs anchoring strips are attached which are of T-section. These anchoring strips have jaws or cheek pieces adapted to receive holding strips, also of T-section, which when fitted in the anchoring strips overlap adjacent edges of the tiles or slabs and hold them in place.

3,694,982
RIDGE TILE
Max Gerhaher, Stadtgraben 21, 844 Straubing, Germany
Filed Sept. 22, 1970, Ser. No. 74,294
Claims priority, application Germany, Sept. 30, 1969, P 19 49 35.1; Nov. 6, 1969, P 19 55 924.1
Int. Cl. E04d *1/30*
U.S. Cl. 52—302 **12 Claims**



At its small end, which is to be covered by the adjacent ridge tile, only parts of the peripheral surface of the ridge tile are dimensioned to match the engaging inside surface of its other end whereas other parts of the outside peripheral surface of the small end are recessed from the inside surface of the other end.

3,694,983
PILE OR PLASTIC TILES FOR FLOORING AND LIKE APPLICATIONS
Pierre Jean Couquet, 09-Levelanet, France
Filed May 19, 1970, Ser. No. 38,774
Int. Cl. E04f *15/10*
U.S. Cl. 52—384 **1 Claim**

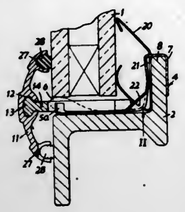


Tiles adapted to constitute by juxtaposition a continuous, plain or diversified carpet or revetment of textile, plastic or other material, characterized in that each tile is secured to a backing of same dimensions but projecting along two adjacent edges of the tile to form an embedded strip provided with means permitting the mutual engagement of fastening means provided in embedded condition under the edges of two sides of the adjacent tile, said fastening means having a thickness inferior to that of said backing so that in the assembled condition no extra thickness is produced in relation to the normal backing thickness.

3,694,984
MOUNTING OF SEALED DOUBLE GLAZING UNITS
Bernard Paul Manfred Schwartz, 84 King Charles Road, Surbiton, England
Filed May 24, 1971, Ser. No. 146,289
Claims priority, application Great Britain, May 27, 1970, 25,579/70
Int. Cl. E06b *3/62*
U.S. Cl. 52—398 **10 Claims**

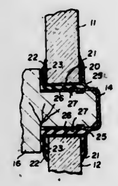
The invention is directed to a frame and panel assembly. There are spaces between the panel sides and the frame and these spaces are bridged by retaining means which engages the panel and frame on opposite sides of the spaces and holds the panel to the frame. The retaining means is held against the panel and frame by two sets of mutually co-operable catch members. One set of catch members is mounted on the frame and the other set is mounted on the retaining means, and the respective catch members of the two sets co-operate together in the spaces between the panel and frame. When brought into

mutual co-operation, the respective catch members of the two sets are held together by virtue of the catch members of one set having a pair of projections which are located on opposite sides of a guide portion and which will be urged to enter a pair



of apertures of the catch members of the other set. The apertures are located on opposite sides of a slot for receiving the respectice guide portion so that the projections and apertures will be guided towards each other when the two sets of catch members are brought into mutual co-operation.

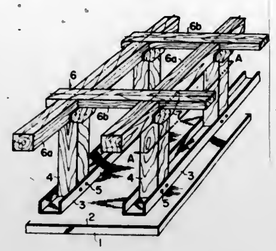
3,694,985
WINDOW GLASS GLAZING SYSTEM
Albert E. Spaiches, Webster, N.Y., assignor to Schlegel Manufacturing Company, Rochester, N.Y.
Filed Oct. 23, 1970, Ser. No. 82,934
Int. Cl. E04b *1/62*
U.S. Cl. 52—400 **8 Claims**



A channel-shaped retainer strip is secured to the edge of a window glass to retain the glass in a plastic frame and form a seal between the glass and the frame. The bodies of the frame and the retainer strip are formed of relatively strong and hard plastic, and the retainer strip has relatively soft plastic seal fins engaging the outside of the glass and the frame to seal the glass in the frame. Confronting surfaces between the frame and the retainer strip are formed with interlocking projections of soft plastic material that allow the glass to be pressed into the frame and resist movement of the glass back out of the frame to retain the glass in place.

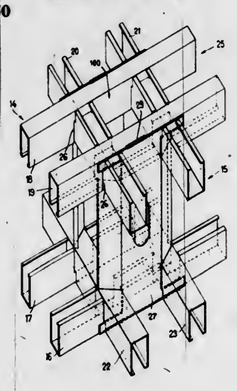
3,694,986
HEAT INSULATING WALL CONSTRUCTION FOR A LOW TEMPERATURE LIQUEFIED GAS TANK OF THE MEMBRANE TYPE
Katsuro Yamamoto, Tokyo; Kuniyoshi Obata, Kawasaki, and Toru Sata, Kamakura, all of Japan, assignors to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan
Filed Aug. 18, 1970, Ser. No. 64,671
Claims priority, application Japan, Sept. 9, 1969, 44/71150
Int. Cl. E04b *1/76*
U.S. Cl. 52—404 **2 Claims**

A heat insulating wall construction for a membrane type low temperature liquefied gas tank includes a plurality of support members extending in parallel with each other between the inner membranous vessel and the outer rigid vessel. A laminated wood plate is fixed on the inner ends of the support members. Heat insulating material is charged in the space formed among the support members between the laminated wood plate and the outer rigid vessel. The laminated wood plate is composed of inner and outer layers with the joints of



the respective layers positioned out of alignment with each other. All the components in the wall construction are bound together by means of adhesives and nails.

3,694,987
SURFACE SUPPORTING ASSEMBLY WITH A SUPPORTING NETWORK
Aldo Henggeler, Matthofring 17,, Luzern; Oskar Furter, Villa Landenberg, Sarnen; Roland Crottaz, Hergiswil am See, and Hans Seghizzi, Meggen, all of Switzerland, assignors to said Henggeler and Furter, by said Crottaz and Seghizzi
Filed March 17, 1970, Ser. No. 20,197
Claims priority, application Switzerland, March 20, 1969, 4213/69
Int. Cl. E04b *5/14*
U.S. Cl. 52—650 **7 Claims**

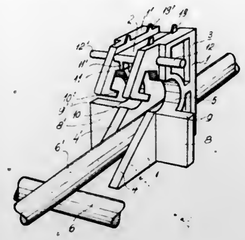


The invention is concerned with means for supporting surfaces used in building construction, for example for supporting ceilings, which means includes a supporting assembly in the form of a composite network of supporting elements. These supporting elements each include at least two parallel, spaced profiled bars which intersect one another and which have recesses, at their mutual points of intersection, by which they can engage and be anchored in one another so as to form a rigid assembly.

3,694,988
SPACER CLIP FOR JOINING AND SUPPORTING CROSSWISELY EXTENDING REINFORCEMENT BARS
Mats Folke Skold, Backvagen 78, Hagersten, Sweden
Filed Jan. 19, 1970, Ser. No. 3,765
Int. Cl. E04c *5/20*
U.S. Cl. 52—678 **4 Claims**

Spacer clip for joining crosswisely extending reinforcement bars at their intersections in preparation for casting concrete

slabs and the like and supporting them in an elevated position spaced from the casting mold and which has a generally U-



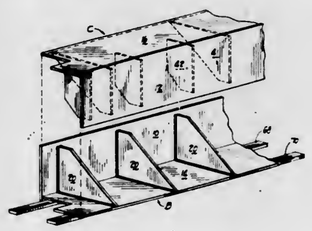
shaped body comprising arcuate recesses for receiving and resiliently retaining reinforcement bars of various sizes.

3,694,989
SUPPORT SPACERS FOR CONCRETE REINFORCEMENT RODS
Keith W. Oliver, Hadfield, and Donald Taylor, Stalybridge, both of England, assignors to Celmac Plasclip Limited, Godley, Hyde, England
Filed Jan. 5, 1970, Ser. No. 555
Claims priority, application Great Britain, Jan. 16, 1969, 2,611/69
Int. Cl. E04c *5/20*
U.S. Cl. 52—678 **6 Claims**



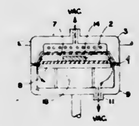
A spacer for concrete reinforcement rods of a plastics material comprising a U shaped support member having teeth on the legs of the member for engagement by teeth on a locking member to secure the reinforcement rod in position between the legs.

3,694,990
WELDED BOX-TYPE STRUCTURAL MEMBER
Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed June 9, 1970, Ser. No. 44,773
Int. Cl. E04c *3/30*
U.S. Cl. 52—731 **7 Claims**



A welded box article, such as, a girder, column, beam, etc., comprising top, bottom, web and diaphragm or reinforcing plates connected by "flat" welds, that is, by welds formed on the top side of a flat or horizontally positioned member and a method of constructing such an article by welding diaphragm plates to top and bottom plates with the top plate inverted and both plates flat; subsequently positioning the subassemblies thus formed on separate flat web plates with one edge of the diaphragm plates resting on the web plates and welding the diaphragm plates to the web plates to form girder sections; thereafter assembling the two sections with two of the plates extending vertically and welding the adjoining flat edges; rotating the assembly thus formed 180° about its longitudinal axis, and welding the adjoining flat edges. In an alternative method a different web plate is first welded to each of the flat top and bottom plates.

3,694,991
VACUUM SKIN PACKAGE, AND PROCESS AND APPARATUS FOR MAKING SAME
Richard R. Perdue, Greer; Le Roy F. Hoagland, and Richard O. Kuehne, both of Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed Oct. 23, 1970, Ser. No. 83,398
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **8 Claims**

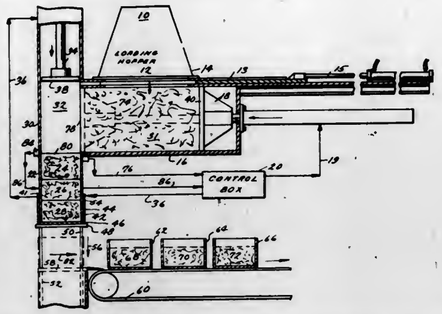


In the prior art, vacuum skin packaging processes are performed by placing the product to be packaged on an impervious backing board; placing the product and board in a vacuum chamber; positioning a sheet of thermoplastic film above the product and backing board in the chamber; evacuating the chamber; then, either pulling the film down over the product or pushing the product up into the film; and, thereafter sealing the film to the board. In the present invention, a portion of the film is drawn by differential air pressure against the concave interior surface of the upper portion of a vacuum chamber; the film is then heated by surface contact; and then, after evacuation of the chamber, air pressure is used to blow the film down over the product and against the backing board. Thus, in the present invention, the film is shaped in a concave fashion surrounding the upper portion of the product and it is not necessary for the product to move. The height of the chamber may be adjusted for different products so that excess film is not used and wrinkling is prevented.

3,694,992
PACKAGING COMPRESSIBLE MATERIAL
Johnnie B. Hunt, Stuttgart, Ark., assignor to J. B. Hunt Company, Stuttgart, Ark.
Continuation of Ser. No. 24,052, March 24, 1970, abandoned, which is a division of Ser. No. 592,403, Nov. 7, 1966, Pat. No. 3,501,890. This application July 28, 1971, Ser. No. 167,051
Int. Cl. B65b *1/24, 63/02*
U.S. Cl. 53—24 **11 Claims**

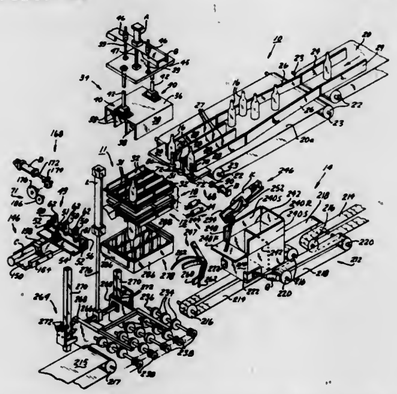
Apparatus and method are disclosed by which a compressible and expandable material such as rice hulls may be packaged. The apparatus includes hydraulic press means for

successively compressing and packing increments of compressed rice hulls into a container or bag without releasing ex-



panding pressure therein which would otherwise rupture the bag or container in the packing operation.

3,694,993
AUTOMATIC BOTTLE PACKING METHOD AND APPARATUS
Jerry L. East, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.
Filed May 20, 1970, Ser. No. 38,974
Int. Cl. B65b *21/06*
U.S. Cl. 53—26 **29 Claims**



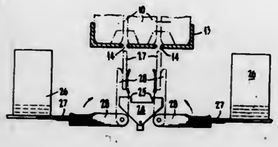
Apparatus and method for automatically packing bottles into a series of cases in a necks-down position. Means are provided for receiving the bottles in an upright position on a rotatable support, rotating the support to a position in which the bottles are held necks-down and releasing said bottles in such necks-down position into an elevated case. Guides and hold-back means are provided both for the cases and the bottles to insure properly timed automatic operation.

3,694,994
METHOD AND APPARATUS FOR PACKAGING JARS AND LIKE ARTICLES IN CARTONS
Henry Morgan Corderoy, Gladesville, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia
Filed Dec. 1, 1970, Ser. No. 94,076
Claims priority, application Australia, Dec. 2, 1969, 64585/69
Int. Cl. B65b *24/06*
U.S. Cl. 53—26 **9 Claims**

Jars or the like are arranged in columns and rows on a conveyor plate which is provided with longitudinal and transverse slots to permit partition strips to be passed upwardly therethrough for placement between said columns and rows of jars or the like.

Partition strip inserting means arranged beneath the conveyor plate, collect partition strips from magazines and insert them upwardly through said slots.

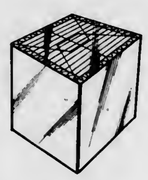
Partition strips at one partition strip inserting station are in-



serted at right angles to those inserted at the next immediate station, the last-mentioned strips serving to force the first-mentioned strips upwardly between said columns or rows of jars or the like.

The jars or the like with partition strips inserted are then packed into cartons or bound together by suitable binding material.

3,694,995
CORRUGATE-FILM LAMINATE PACKAGE MATERIAL AND PACKAGE
James C. McKinney, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Sept. 10, 1970, Ser. No. 71,063
Int. Cl. B65b *53/02*
U.S. Cl. 53—30 **4 Claims**

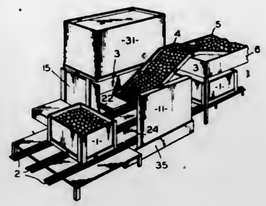


This invention comprises a corrugated package material wherein the corrugated fluting is attached to one or more sheets of heat shrinkable polymeric film. The heat shrinkable film is preferably on only one side of the corrugated fluting, but may be on both sides of the corrugated fluting. This packaging material is then formed into a carton and this carton filled; or is used to bundle a series of containers, and the final assembly, whether a carton or bundle, heat shrunk, whereby the strength of the corrugate is increased.

3,694,996
INSTALLATION FOR THE FILLING OF PALLETS WITH FRUIT OR OTHER EASILY DAMAGED PRODUCTS
Earl W. Carlsen, Yakima, Wash., assignor to Food Industries Research & Engineering, Inc., Yakima, Wash.
Filed Nov. 20, 1970, Ser. No. 91,287
Int. Cl. B65b *5/06, 57/14*
U.S. Cl. 53—35 **8 Claims**

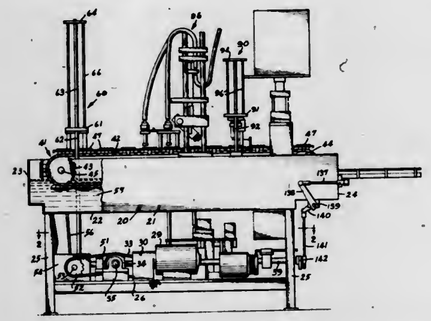
The installation comprises a roller bed 2 for pallets 1 passing beneath a fruit feed unit 4 to a position called the filling point 3; a tank-forming arrangement of liquid-tight partitions positioned around the filling point, some of which at least, are movable and may selectively occupy either an operative position in which they laterally close the filling point, or a non-operative position in which, on the other hand, they permit passage of the pallets; means for placing a predetermined quantity of liquid in the tank; means for rapidly, continuously flowing fruit into the tank to overflow the tank; means for

placing a predetermined fraction of the overflowed liquid into a metering column; means responsive to height of liquid in the



column to stop the flowing of fruit into the tank; and means for rapidly emptying the tank of said liquid.

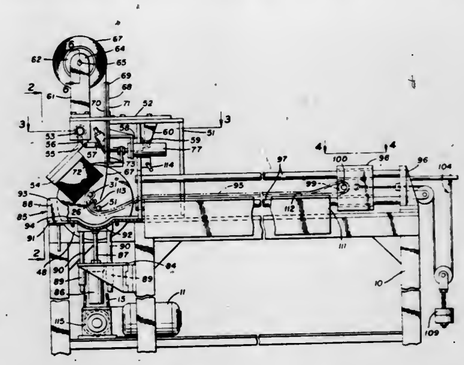
3,694,997
FOOD PACKAGING MACHINE WITH SYNCHRONIZED DRIVE MECHANISM
William C. Christine, Catasauqua, and Joseph E. Pierce, Allentown, both of Pa., assignors to A. E. J. Corporation, Bethlehem, Pa.
Filed July 10, 1970, Ser. No. 53,947
Int. Cl. B65b *3/00, 31/02*
U.S. Cl. 53—112 R **7 Claims**



Apparatus for packaging food products and including mechanism for dispensing containers onto an endless conveyor, filling the containers with flowable material, placing a cover on the filled containers, sealing the cover to the container, and discharging the sealed containers from the machine. All of the individual mechanisms are driven from a single source of power so that all of such mechanisms will be synchronized and will remain in time relationship with each other at all times. Also, novel means are provided for discharging filled and capped containers from the endless conveyor. The discharge means include a container raising cam, a notched receiver plate, a pair of fixed support rods and means for reciprocating the receiver plate to discharge containers from the conveyor onto the support rods.

3,694,998
APPARATUS FOR WRAPPING A FLEXIBLE ENDLESS BAND INTO A COIL
Max D. Brinkley, North Canton, Ohio, and Glenn D. Kerr, Akron, Ohio, assignors to Goodyear Tire and Rubber Company, Akron, Ohio
Filed June 25, 1970, Ser. No. 49,684
Int. Cl. B65b *13/04, 63/04*
U.S. Cl. 53—116 **12 Claims**

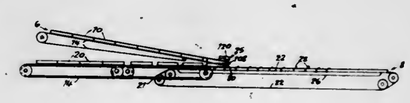
An apparatus for wrapping a flexible endless band into a coil comprising; a pair of pins mounted for rotation about a common axis parallel to the pins for wrapping the band, a carriage movable toward and away from the pins and having a peg thereon over which the band is placed, means to retard the motion of the carriage to apply tension to the band while it is being wrapped about the pins, means for withdrawing the peg and means for ejecting the coiled band from the pins. Means are also provided to feed tape to the band as it is being



wrapped so that the tape is wrapped up with the band and holds the band in a coiled configuration.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

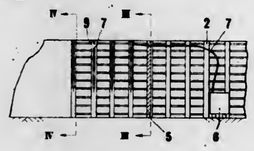
3,694,999
BOX LIDDING MACHINE
Vincent S. Switliski, Glen Olden, Pa., and Arthur R. Harmon, Port Republic, N.J., assignors to Charles Beck Machine Corporation, King of Prussia, Pa.
Filed July 15, 1970, Ser. No. 55,058
Int. Cl. B65b *7/28*
U.S. Cl. 53—313 **3 Claims**



A box lidding machine has a box support along which the bases of the boxes are moved at a predetermined speed by a conveyor having pivoted fingers presenting upper ends projecting above the conveyor to engage the base of a box while the lower ends of the fingers are engagable with a vertically adjustable member movable to vary the distance to which the fingers will project above the box support. Lids are moved at a slower speed than the bases along a converging path and into a position wherein the foremost lid is held in place by yieldable detents. When thus positioned the foremost lid is engaged by the base of a box moving along the box support, and is then pressed down into a closing position on the base of the box.

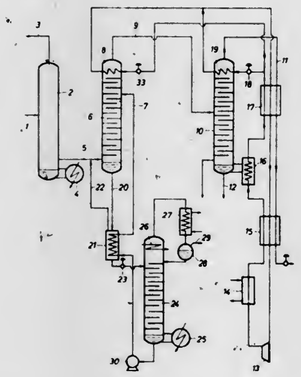
3,695,000
Patent Not Issued For This Number

3,695,001
METHOD AND SYSTEM FOR REMOVING PARTICLES OF FLOATING DUSTS PRODUCED UPON AN EXCAVATION OF A TUNNEL
Tamotsu Watanabe, Tokyo, Japan, assignor to Nippon Kogei Kogyo Company, Ltd., Tokyo, Japan
Filed March 24, 1970, Ser. No. 22,336
Claims priority, application Japan, Dec. 29, 1969, 45/1271
Int. Cl. B03c 3/43
U.S. Cl. 55—2 7 Claims



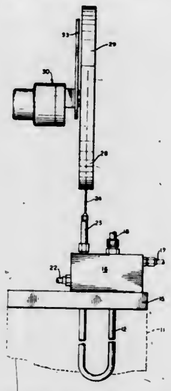
A method of removing particles of floating dust produced upon excavation of a tunnel including the step of charging the particles by the formation of an electric field between the inner wall of the tunnel and a plurality of electrodes equidistantly positioned within the tunnel and which have a high potential applied thereto. The apparatus for accomplishing this method consists of a system for removing the particles of floating dust produced upon excavation of the tunnel and including a plurality of electrodes equidistantly positioned with respect to the tunnel wall for forming an electric field between the inner wall of the tunnel and the electrodes so as to charge the particles, a plurality of posts provided in the tunnel for supporting the electrodes, and a high voltage supply for applying a high potential to the electrodes whereby the particles are electrically deposited on the inner wall of the tunnel.

3,695,002
PROCESS FOR PRODUCTION OF PURE ETHYLENE
Friedrich Rottmayr, and Hans Reimann, both of 8023 Pullach, Germany, assignors to Linde Aktiengesellschaft Zentrale Patentabteilung, Munich, Germany
Filed Sept. 1, 1970, Ser. No. 68,672
Claims priority, application Germany, Sept. 2, 1971, P 19 44 505.7
Int. Cl. B01d 19/00
U.S. Cl. 55—64 16 Claims



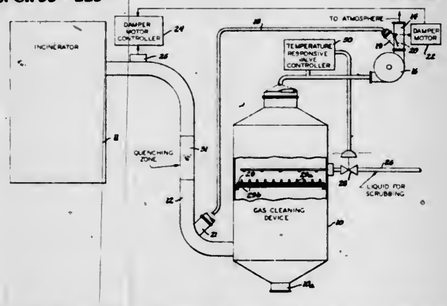
A process for the production of acetylene-free ethylene from a mixture of C_2-hydrocarbons by selective absorption of the acetylene and separation of the ethane by rectification in which the acetylene is selectively absorbed at a pressure of more than 5 atmospheres absolute, preferably within a pressure range of 8–40 atmospheres absolute with a polar aprotic solvent boiling higher than 120° C.

3,695,003
GAS CHROMATOGRAPHY METHOD AND APPARATUS
Valery N. Bednarski, c/o Texaco Inc., P.O. Box 425, Bellaire, Tex.
Filed Sept. 10, 1970, Ser. No. 71,165
Int. Cl. B01d 53/04, 15/08
U.S. Cl. 55—67 3 Claims



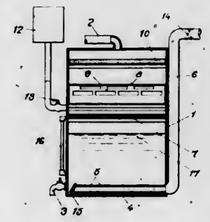
A gas chromatograph which divides the effluent stream from its column into two portions. One portion is for obtaining a conventional record with peaks which indicate the various compounds in the effluent of the column. The other portion of the divided effluent is directed through a nozzle and against a strip, that may be coated, for retaining the effluent while the strip is moved in synchronism with the conventional record. The strip may be matched against the record afterward so that individual peaks may be identified by direct analysis of the trapped effluent on the strip.

3,695,004
GAS CLEANING SYSTEM
Michael P. DeLisio, Birmingham, and Robert L. Clement, Farmington, both of Mich., assignors to Arco Industries Corporation, Detroit, Mich.
Filed Oct. 27, 1970, Ser. No. 84,403
Int. Cl. B01d 47/06
U.S. Cl. 55—225 17 Claims



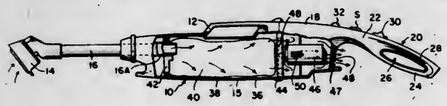
A gas cleaning system for cleaning gases from an incinerator or the like wherein the gas is discharged at a variable rate including a gas cleaning device such as a wet scrubber that requires gas to be fed into the scrubber at a minimum velocity for efficient operation. A delivery duct feeds the gases from the incinerator to the cleaning device and a discharge duct conducts the gas from the cleaning device. A blower forces or induces the gas through the discharge duct. In order to maintain an efficient rate of flow of gas into the cleaning device, a recirculating duct has one end connected with the discharge duct on the downstream side of the blower and its other end connected with the delivery duct, and flow is proportioned between the recirculating duct and the delivery duct in accordance with variations in the velocity of the gas in the delivery duct so that the gas entering the cleaning device is maintained at an efficient rate of flow. The system further includes a temperature responsive modulating valve for controlling the flow of scrubbing liquid into the cleaning device in accordance with variations in the temperature of the gas exiting from the cleaning device so that the supply of water to the cleaning device can be reduced when the temperature drops and can be increased as necessary when the temperature of the gas increases, and thereby maintain constant temperature and gas weight to the blower to prevent overload of the driving device.

3,695,005
PURIFICATION DEVICE FOR EXHAUST GAS
Masaharu Yuzawa, 10-23, 2-chome, Kamiikedai, Ota-ku, Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,890
Int. Cl. B01d 50/00
U.S. Cl. 55—255 1 Claim



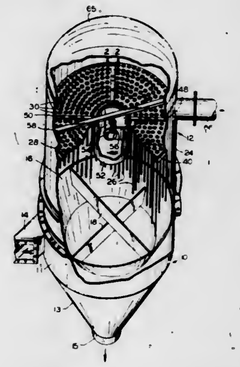
The purification device for use of exhaust gas to be embodied by the present invention consists of a vertically longer purification tank, and at bottom of the tank there is arranged and equipped with nozzle to which many fine pores are perforated; and an exhaust gas introducing pipe come from exhausting part of engine is connected to said nozzle, and a filter plate is installed at center position of said purification tank, and an entrainment prevention baffle plate is installed at upper position of said filter plate, and an adsorption zone which is filled up with particles of activated carbon is installed at upper position of said entrainment prevention plate. At uppermost position of said purification tank, there is attached the outlet for discharge of exhaust gas, and at bottom position of the tank there is attached a discharge outlet for draining the solution. The purification solution is filled up to an appropriate level which level is lower for the position than the filter plate in said purification tank. A pouring inlet for supply of purification solution is equipped to said purification tank.

3,695,006
VACUUM CLEANER
Bruno M. Valbona, Avon; William J. Conlon, New Britain, and Harry M. Voglesonger, Riverton, all of Conn., assignors to Dynamics Corporation of America, New York, N.Y.
Filed Oct. 23, 1970, Ser. No. 83,504
Int. Cl. B01d 46/02
U.S. Cl. 55—274 19 Claims



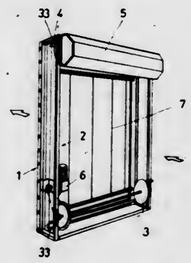
A multi-speed electrically driven, lightweight vacuum cleaner with a switch manually held closed for momentary extra high speed and air volume surge. A warning light responsive to rising temperature of motor cooled by filtered exhaust air passing through the motor indicates when a filter bag should be emptied.

3,695,007
APPARATUS FOR REMOVING PARTICULATE MATERIAL FROM GASES
Wilfred Farnworth, North Vancouver, British Columbia, Canada, assignor to Rader Pneumatics Incorporated, Portland, Oreg.
Filed Aug. 14, 1970, Ser. No. 63,772
Int. Cl. B01d 46/04
U.S. Cl. 55—294 3 Claims



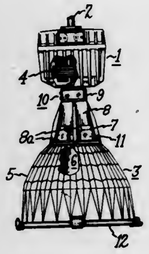
Apparatus for removing particulates from gases comprises cyclone separator and tube filter mounted thereover. Baffles are provided to direct air flow from separator to tube filter. Tube filter comprises long porous tubes suspended from plate, latter being divided into sections to facilitate removal for repair of tubes. Backwash device for tubes comprises hollow arm to create air pulses in tubes driven by motor mounted in well of plate.

3,695,008
ROLLER STRIP FILTER FOR PURIFYING AIR OR GASES
Gerhard Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, Berlin, Germany
Filed Jan. 15, 1970, Ser. No. 2,995
Claims priority, application Germany, Jan. 21, 1969, G 69 02 635; Jan. 21, 1969, G 69 02 636; Jan. 21, 1969, G 69 02 637
Int. Cl. B01d 25/24
U.S. Cl. 55—354 23 Claims



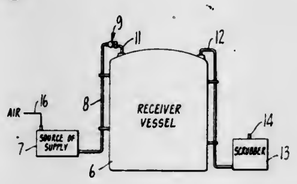
A roller-strip filter for air or gas purification, which can be easily disassembled, consists of two units separable from each other. The first unit comprises a mounting framework, seals for the filter strip and support grids for backing the filter strip, guide rollers for the filter strip; the second unit comprises feed and wind-up rollers for moving the filter strip and a drive unit for rotating the wind-up roller, whereby the more delicate components can be mounted in the filter framework after fitting the framework to a wall portion or the like.

3,695,009
AIR FILTER DEVICE
Mitchell M. Osteen, Rte. 1, Zirconia, N.C.
Filed March 30, 1970, Ser. No. 23,912
Int. Cl. B01d 50/00
U.S. Cl. 55—385 3 Claims



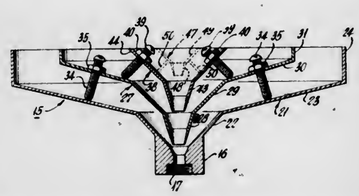
An air-purifying filter device for a sealed optical enclosure of a luminaire comprises a coherent mass of activated charcoal particles contained in a rigid holder and having a plurality of recesses in its surface to increase the filter surface area, lower its air flow resistance, and reduce the amount of contaminant deposit thereon. The filter device is arranged in an enclosure formed by separable connecting parts of the luminaire in communication with the sealed optical enclosure.

3,695,010
TANK VENTING SYSTEM
James R. Barrett, Novato, Calif., assignor to Fiberglass Structures
Filed Aug. 28, 1970, Ser. No. 67,797
Int. Cl. B01d 19/00
U.S. Cl. 55—385 2 Claims



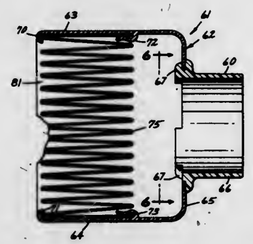
The present invention relates to a system for transferring a noxious liquid such as any of the mineral acids from a source of supply under air pressure to a tank and for removing the noxious gas from the tank as the tank is filled. The gas is scrubbed to permit release of the air displaced from the tank to the atmosphere free of any noxious components. The inlet line to the tank includes valve means permitting the free flow of liquid to the tank only as long as the liquid being reduced so that air is present, a valve in the valve means seats on the outlet from the valve means to permit only a small quantity of air to pass into the tank until the air pressure on the source of supply has been relieved, the released air being passed through the scrubber.

3,695,011
GAS FLOW DIFFUSER
Okie R. Leech, and Ernest A. Dewey, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.
Filed May 26, 1971, Ser. No. 147,053
Int. Cl. B01d 53/04
U.S. Cl. 55—386 8 Claims



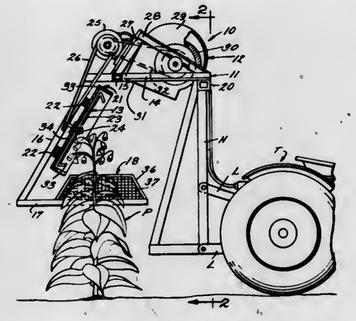
For large-scale gas chromatography separation apparatus, a diffusing structure in between the inlet line and the packed column. There are a plurality of funnel-shaped coaxial baffles for spreading the gas flow into the column to reduce channeling in the column.

3,695,012
FILTER ASSEMBLY WITH PLEATED FILTER ELEMENT
William C. Rolland, Saint Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Division of Ser. No. 711,114, March 6, 1968. This application April 23, 1970, Ser. No. 43,304
Int. Cl. B01d 27/06
U.S. Cl. 55—499 2 Claims



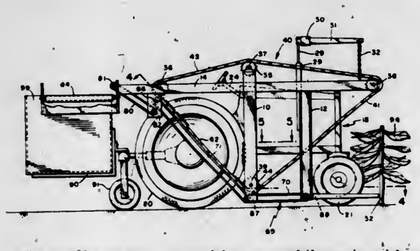
In dry copying machines utilizing particulate toner a particle conveying system including a plurality of pneumatic ducts and a blower with a vacuum-type pickup device attached to an inlet of the blower and positioned to remove loose particles from the copies as they egress from the copying machine, a centrifugal separator positioned in the pneumatic system to receive the air and particles from the vacuum pickup device and separate the particles from the bulk of the air, a particle settling chamber having baffles therein attached to the copying machine and receiving separated particles from the separator so as to return them to active use in the copying machine and further having an outlet duct attached to the blower to reduce the pressure therein slightly below atmospheric, and a filter assembly attached to the air outlet of the separator so that air leaving the separator is filtered prior to being returned to the atmosphere. The filter assembly is constructed from an extruded plastic housing having two side walls and a joining wall connected to provide a U-shaped cross section and a pleated filter element connected to the sidewalls opposite the joining wall and end walls formed of plastic while in its formable state and subsequently hardened to provide sealing engagement with the ends of said housing and pleated filter.

3,695,013
APPARATUS FOR TOPPING STALK-TYPE PLANTS
Walter Cecil Hammond, Tifton, Ga., assignor to Powell Manufacturing Company, Inc., Bennettsville, S.C.
Continuation-in-part of Ser. No. 114,488, Feb. 10, 1971, abandoned. This application June 15, 1971, Ser. No. 153,382
Int. Cl. A01d 45/02
U.S. Cl. 56—63 17 Claims



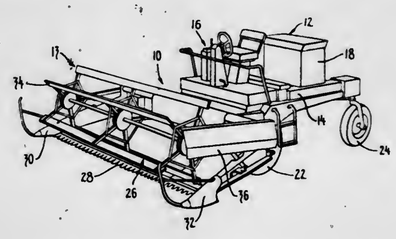
Apparatus for topping stalk-type plants such as tobacco, corn and the like including a frame structure adapted to be moved along a row of stalk-type plants in a position of general clearance with respect to the topped plants, a power operated blower assembly carried by the frame structure operable in response to the movement of the frame structure along the row to establish a continuous flow of air in a direction generally downwardly on the top portion of successive plants in the row with a velocity sufficient to deflect the top leaves of the plants downwardly and a power operated cutting assembly carried by the frame structure operable in response to the movement of the frame structure along the row to cut and remove the top portion of successive plants in the row at a predetermined stalk height without cutting leaves attached to the stalk below the predetermined height by virtue of the leaves having been deflected downwardly by the flow of air, the power operated cutting assembly preferably embodies a high speed rotary cutting blade particularly suited for topping tobacco plants operable to cut the top portion of the tobacco plants into small particles and impart a movement thereto, the rotary cutting blade being disposed in cooperating relation with a shroud assembly for confining the movement of the small particles to a predetermined path substantially out of contact with the tobacco plants of the row and adjacent rows.

3,695,014
TOBACCO HARVESTERS
John G. Alphin, and John B. Pitner, both of Florence, S.C., assignors to Clemson University, Clemson, S.C.
Filed Feb. 17, 1970, Ser. No. 12,024
Int. Cl. A01d 45/16
U.S. Cl. 56—27.5 18 Claims



A tobacco harvester comprising a mobile unit with an endless defoliator belt mounted on roller assemblies. There are front and rear upper assemblies and a lower intermediate assembly to provide a lower V-shaped path including a front stripping course, a rear conveyor course and a generally horizontal return course. The belt is provided with openings spaced apart a sufficient distance so that as the belt is travelling diagonally downwardly over its front stripping course each of the stalks will enter one of the openings and the sides of each opening will push the leaves of the stalk downwardly and remove them.

3,695,015
DEFLECTOR ARRANGEMENT FOR SINGLE OR DOUBLE WINDOW LAYING, CONVERTIBLE TABLE FOR SWATHERS
William H. Twidale, Islington, Ontario, and Mark K. Byrnes, Mississauga, Ontario, both of Canada, assignors to Massey-Fergusen Industries Limited, Toronto, Ontario, Canada
Filed Sept. 7, 1971, Ser. No. 178,226
Int. Cl. A01d 43/00
U.S. Cl. 56—181 6 Claims



A deflector arrangement for a transversely shiftable swath table assembly for windrower type harvester is comprised of two individually hinged overlying deflector blades at one outer end of the table assembly. The one deflector blade adjacent said end is used only for laying a single windrow and is inactive when laying a double windrow. The other deflector blade is normally spring biased away from said end of the table assembly in one position and the table assembly is provided with an actuating member adapted to move the other deflector blade against the end of the table assembly when the table assembly is shifted to the other position.

3,695,016
Patent Not Issued For This Number

3,695,017
AUTOMATIC YARN PIECING APPARATUS FOR SPINDLELESS SPINNING MACHINE
Kiyokazu Hori; Tatsuo Kose, and Kazuo Ochi, all of Wakayama, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka, Japan
Filed March 11, 1970, Ser. No. 18,596
Claims priority, application Japan, Mar. 15, 1969, 44/19943; Dec. 16, 1969, 44/101514; Dec. 19, 1969, 44/102821
Int. Cl. D01h 15/00
U.S. Cl. 57—34 R 4 Claims

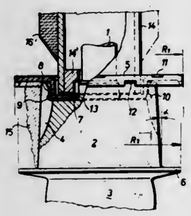
An automatic yarn piecing apparatus for use with an spindleless spinning machine of the type having a plurality of spinning units each of which spins fiber materials into a yarn and deliver the thus-formed yarn to be taken up on a bobbin. The apparatus travels along the front face of the spinning machine and stops at the position of a particular spinning unit wherein yarn breakage has occurred, to automatically piece the broken yarn by the cooperation of various means in such a manner that the broken yarn is withdrawn from the yarn package on the bobbin, gripped and cut to form a new cut end

of the yarn while simultaneously removing the snarl from the yarn end, and then the cut end of the yarn is introduced into



the rotary chamber of the spinning unit through the delivery outlet thereof to effect piecing of the yarn.

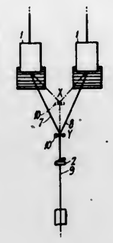
3,695,018
WASTE CONE FOR A SPINDLE
Kurt Angst, Wiesengrundstrasse 547, 9545 Wangi, and Marco Tunzini, Reutgasse 2, 8406 Winterthur, both of Switzerland
Filed Aug. 4, 1970, Ser. No. 60,836
Claims priority, application Switzerland, Aug. 6, 1969, 11974/69
Int. Cl. D01h *1/38*
U.S. Cl. 57—34 PW **20 Claims**



The waste cone is provided with a removable flange or pivotally mounted fingers which have outwardly directed extensions. The flange and extensions each serve to increase the radial extent of the upper end of the waste cone so as to trap larger quantities of waste material while preventing upward sliding of the accumulated waste.

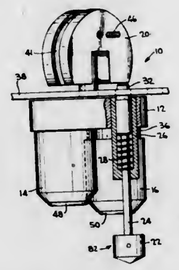
3,695,019
METHOD AND APPARATUS FOR FORMING YARN
James Lappage, 4 Shackleton St., Belmont, Victoria, Australia
Filed June 16, 1970, Ser. No. 46,666
Claims priority, application Australia, June 17, 1969, 56569/69
Int. Cl. D01h *7/00*; **D02g** *3/26, 3/28*
U.S. Cl. 57—38.3 **9 Claims**

In a spinning operation in which two strands are fed from separate nip positions and are twisted together into a single ply at a convergence point, twist is incorporated into the single strands by cyclically varying the path lengths of the strands between the nip positions and the convergence point. Preferential spiralling of one strand about the other is



prevented by ensuring that the ratio of feed of the strands to the convergence point are substantially equal.

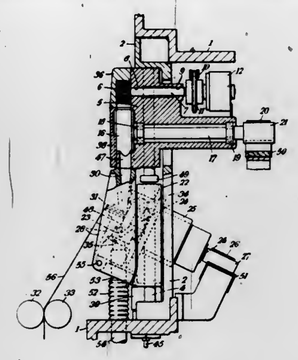
3,695,020
TWISTER AND METHOD OF TWISTING
Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed May 6, 1970, Ser. No. 25,559
Int. Cl. D02g *1/04*
U.S. Cl. 57—77.4 **18 Claims**



A method is disclosed for imparting twist to textile filaments and a friction twister therefor wherein a plurality of turns of twist are imparted to the filament for each revolution of the friction twister. The disclosed friction twister comprises two hollow spindles containing frictional engagement means therein. The two spindles are driven by pivoting the twister about a pivot point so that the hollow spindles come into engagement with a drive belt that passes between the spindles. Reversing guide means is provided to allow a filament to enter the front portion of one spindle and exit from the front portion of the other spindle. Another embodiment of the reversing guide means has a capacity to handle two filaments simultaneously.

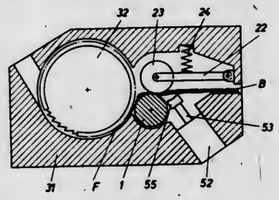
3,695,021
TEXTILE SPINNING MACHINES
Reginald Ormerod, Clayton-Le-Moors, and Richard Motler, Accrington, both of England, assignors to T. M. M. (Research) Limited, Oldham, England
Filed Oct. 12, 1970, Ser. No. 79,720
Claims priority, application Great Britain, Oct. 13, 1969, 50,263/69
Int. Cl. D01h *1/12, 7/00, 13/26*
U.S. Cl. 57—58.91 **18 Claims**

In an open-end spinning unit for spinning textile yarns, there is provided a first housing containing opening means to open a sliver or roving fed thereto, a second housing containing spinning fibers delivered by said opening means, and a closure member for the spinning means mounted on the second housing, the first and second housings being movable between a first disposition in which the closure member is held thereby in a closed position and which they occupy during normal work-



ing of the machine, and a second disposition in which the closure member is not so held and moves or is movable to gain access to the spinning means.

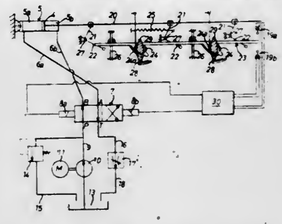
3,695,022
METHOD AND APPARATUS FOR THE INTERRUPTION OF SILVER SUPPLY IN OPEN END SPINNING MACHINES
Hans Landwehrkamp, Gerolfing, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Filed Oct. 19, 1970, Ser. No. 81,731
Claims priority, application Germany, Nov. 13, 1969, P 19 57 014.0
Int. Cl. D01h *1/22, 1/12*
U.S. Cl. 57—81 **7 Claims**



Sliver supplied to a combing machine and/or to an open end spinning machine is clamped closely adjacent to the line of contact between a driven supply roll and a resiliently engaged cooperating loading device, the distance between the contact line and the clamping location preferably being less than the average staple fiber length in the sliver. Such sliver clamp, when actuated, simultaneously separates the loading device from the driven supply roll, and when such clamp is released the supply of sliver to the separator is resumed automatically.

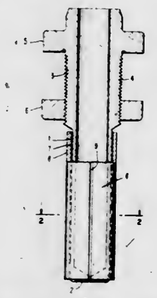
3,695,023
CONTROL APPARATUS FOR FLUID ACTUATOR
Yasutaka Hayashi, and Hideo Arakawa, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyoda Jido Shokki Seisakusho, Kariya-shi and Kabushiki Kaisha Toyota Chuo Kenkyu-sho, Nagoya-shi, Japan
Filed Oct. 30, 1970, Ser. No. 85,403
Claims priority, application Japan, Nov. 7, 1969, 44/89200
Int. Cl. D01h *13/06*; **B65h** *54/28*
U.S. Cl. 57—99 **10 Claims**

A control method and apparatus for a fluid actuator to control the movement of objects, which includes an electro-hydraulic or pneumatic selector valve to regulate the actuator, a pressure fluid reservoir, conduits to connect the actuator to the reservoir through the selector valve, a fluid pump disposed within one of the conduits for supplying pressure fluid from the reservoir to the actuator through the selector valve, limit switches operated by the movement of the objects to energize an electrical control or timing circuit to control operation of



the selector valve. Operation of the selector valve functions to switch over the situation of the pressure fluid within the actuator to and from the switched-over-situation and/or the unswitched-over-situation and to hold the two situations respectively for predetermined periods of time, thereby undesired vibrations of industrial devices and machines are eliminated to permit high speed, high pressure and accurate operation of the devices and machines.

3,695,024
VIBRATION-DAMPED TUBULAR CASING
Kenneth Tsunoda, 625 D Closter Dock Road, Closter, N.J.
Filed May 25, 1971, Ser. No. 146,697
Int. Cl. D01h *7/12*
U.S. Cl. 57—130 **10 Claims**

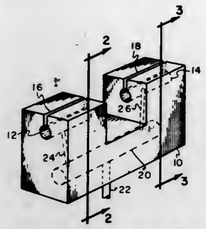


The noise generated in a tubular casing such as the bolster casing of a textile spindle assembly is appreciably diminished by coating the outer surface of the casing with a viscoelastic material and adhering a rigid sheet to the viscoelastic material. The rigid sheet forms a discontinuous cylinder with at least one gap extending over the full length thereof.

3,695,025
FIBRILLATED FILM YARN
John D. Gibbon, Charlotte, N.C., assignor to Fiber Industries, Inc.
Filed July 30, 1970, Ser. No. 59,383
Int. Cl. D02g *3/06, 3/22, 1/16*
U.S. Cl. 57—140 R **5 Claims**

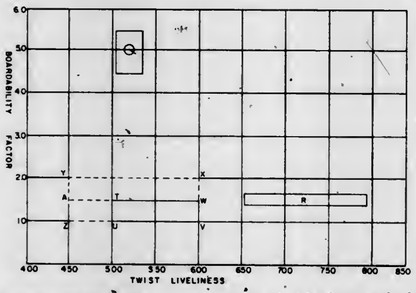
There is provided a fibrillated continuous filament yarn comprised of random-length fibrils of a synthetic organic high polymer wherein: the average width/thickness ratio of cross sections of the fibrils (the "aspect ratio") is from about 2/1 to about 12/1, and the aspect ratios of the cross sections of the fibrils range from about 0.5/1 to about 20/1; the fibrils in the yarn exceeding 40 centimeters in length comprise at least 70 percent (by weight) of the yarn; the tenacity of the yarn is

from about 0.1 to about 10 grams per denier; the total denier of the yarn is from 30 to about 10,000, and the average denier per fibril of the fibrils comprising the yarn is from about 0.5 to



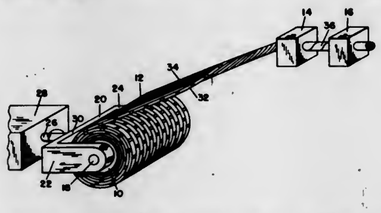
about 60; the elongation of the yarn is from about 0.5 to about 75 percent; and the initial modulus of the yarn is from about 2 to about 300. The yarn of this invention has high tenacity, a soft hand, and good cover.

3,695,026
FLANGE FALSE TWIST TEXTURED NYLON
Michael P. Taylor, Charlotte, N.C., assignor to Fiber Industries, Inc.
Filed Aug. 6, 1970, Ser. No. 61,526
Int. Cl. D02g *3/24*
U.S. Cl. 57—140 R **13 Claims**



A novel monofilament nylon yarn suitable for use in knit constructions, particularly women's hosiery, characterized by its boardability and twist-liveliness values is disclosed. A false twist process, which may be a simultaneous or sequential drawing, false twisting operation utilizing a twist insertion flange, is disclosed as exemplary of methods to produce the yarn.

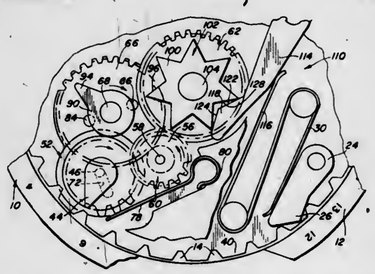
3,695,027
METHOD FOR MAKING TWISTED CABLE
Albert R. Copp, 42 Lincoln St., Hudson, Mass.
Division of Ser. No. 50,029, June 26, 1970, Pat. No. 3,609,256.
This application June 7, 1971, Ser. No. 150,521
Int. Cl. D07b *5/10*; H01b *13/00*
U.S. Cl. 57—162 **5 Claims**



A method for making twisted cable. As flat cable is processed, it is twisted. A retaining jacket is applied to the twisted cable.

3,695,028
Patent Not Issued For This Number

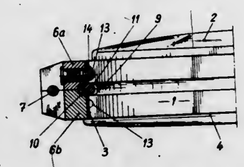
3,695,029
CALENDAR DAY AND DATE WATCH
Jean Tripet, Bienne, Switzerland, assignor to Gruen Industries, Inc.
Filed June 1, 1970, Ser. No. 41,821
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **5 Claims**



In a calendar watch, a day and date drive and dial indicator stepping mechanism including a pair of rotatably driven cams, the cams being geared to revolve at relatively different rates, one of the cams rotating at the rate of one revolution per day and operable to advance a day-indicator dial one step each day, and the second of the cams rotating at a rate of *n* revolutions per day, *n* being an integer greater than one, the second cam being rotatable about a shaft slidably engaged in a guide groove, means being provided to shift the second cam for periodic engagement with and to advance a date-indicating calendar ring one step for each *n* revolutions of the cam, whereby very rapid date and day setting and correction are rendered feasible.

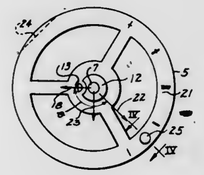
3,695,030
Patent Not Issued For This Number

3,695,031
WRIST WATCH WITH CHANGEABLE CASE
Bruno Loeb, 37, Chemin des Plantes, 2520 La Neuveville, Switzerland
Filed Dec. 6, 1971, Ser. No. 204,836
Claims priority, application Switzerland, Dec. 8, 1970, 18168/70
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 R **10 Claims**



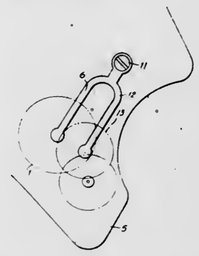
A wrist watch which has an encased movement provided with a crystal, a sidewall, a bottom and a winding crown, and which includes a reversible housing center part as retaining member equipped with stems for fastening to a watchband, and presenting in its bore a spring wire, seated in a circular groove, as fastening means for the movement, which spring wire pushes into a circular groove in the movement.

3,695,032
ISOCHRONAL CORRECTION SYSTEM
Robert R. Lawson, Somerset, and Leonard L. Metzinger, Delavan, both of Wis., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed June 7, 1971, Ser. No. 150,586
Int. Cl. G04b *17/00*
U.S. Cl. 58—107 **11 Claims**



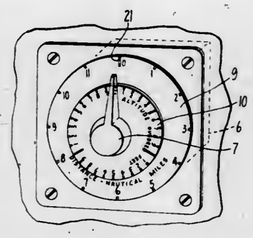
An isochronal correction system for mechanical clock movements, such as automobile clocks, enabling clockworks which have been isochronally balanced within acceptable limits to perform satisfactorily in a predetermined gravitational position, such as vertically to meet the most general or usual service mounting of the clock, nevertheless providing for utilization where for some reason, such as variation of position or accessibility of the usual clock-setting stem, the clockworks must be mounted in a different position in which it has been rotated beyond the plus or minus degrees of variation permitted by the standard, i.e., vertical, orientation accommodating the original isochronal correction. To this end, means in the form of a weight relationship on the balance wheel are provided to compensate for the deviation from the standard balancing relationship. Thereby performance characteristics substantially equivalent to the standardized isochronal correction are maintained without requiring special construction, rebalancing, or adjustment of the various parts of the clockwork assembly.

3,695,033
CONTROLLING DEVICE FOR AN ESCAPE WHEEL
Motoyuji Fujimori, Suwa-shi, Japan, assignor to Kabishiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed June 3, 1971, Ser. No. 149,599
Claims priority, application Japan, June 9, 1970, 45/56291
Int. Cl. G04b *15/00*
U.S. Cl. 58—116 R **3 Claims**



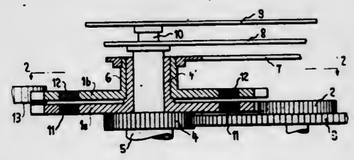
A controlling device for an escape wheel supported between a bridge and a plate, the controlling device including a resilient member provided on the bridge or plate and positioned to apply force axially to the escape wheel. The resilient member may be U-Shaped and positioned to apply force axially to the escape wheel and a second wheel.

3,695,034
APPROACH COMPUTER FOR AIRCRAFT
Ivan W. Nealon, 364 Darrell Road, Hillsborough, Calif.
Filed Nov. 19, 1970, Ser. No. 91,063
Int. Cl. G04b *47/06*
U.S. Cl. 58—152 R **7 Claims**



An approach computer device is provided for an aircraft approaching a landing field to enable the pilot to have before him during the approach a device which shows the distance to the landing field and, correlated with that distance, the altitude at which the plane should be flying at such distance. The distance to be flown is set as the plane passes over the final approach fix from which the plane is to approach the field at a constant rate of speed. The device is calibrated to provide a constant rate of descent, such as 500 feet per minute.

3,695,035
TIMEPIECE MOVEMENT
Willy Cleusix, Biel, Switzerland, assignor to Omega Louis Brandt & Frere S.A. Biel, Canton of Bern, Switzerland
Filed Sept. 22, 1970, Ser. No. 74,278
Claims priority, application Switzerland, Oct. 27, 1969, 15965/69
Int. Cl. G04b *19/22, 27/00*
U.S. Cl. 58—42.5 **14 Claims**

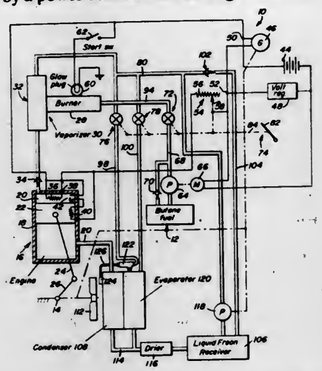


A timepiece movement for driving a plurality of hands, one of which is an hour hand, includes a power train and a pair of identical, coaxially mounted independently rotatable gears operatively connected with the hour hand, one of said gears being driven by said power train and the other of said gears being selectively operated manually, and magnetic means normally coupling said gears for simultaneous rotation but permitting adjustment of said one gear relative to the other to change the indication of said hour hand without affecting any other hand, whereupon following such adjustment said magnetic means effects coincidence of said gears to accurately position the hour hand.

3,695,036
INTERNAL EXPANSION VAPOR ENGINE
James Earl Martin, Sr., 506 Wanda St., San Angelo, Tex.
Filed Jan. 23, 1970, Ser. No. 5,253
Int. Cl. F01k *25/10*
U.S. Cl. 60—27 **19 Claims**

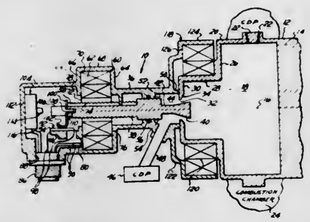
The expansion of a low boiling point refrigerant is converted into useful work by supply of heat energy to the refrigerant internally of an expansible chamber type of prime

mover. The heat energy is derived from an electrical source regulated by a power control which also governs circulation of



the refrigerant through a refrigeration cycle and generation of heat to pressurize the refrigerant for injection into the working chamber of the prime mover.

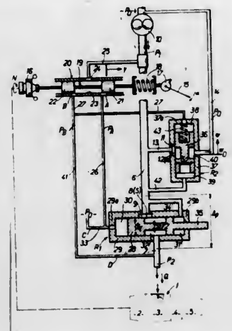
3,695,037
SHAFT MOUNTED FUEL CONTROL
Julius Alverani, Dearborn, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Sept. 8, 1970, Ser. No. 70,378
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 **12 Claims**



A fuel control system with a gas turbine engine that has a slinger-type burner nozzle. The fuel control system is attached to, but does not rotate with, the engine shaft and includes an electronically controlled valve member operated by a reversible motor upstream of the slinger nozzles for controlling the supply of fuel thereto. Fuel is delivered to the valve member from the fuel tank which is pressurized to compressor discharge pressure.

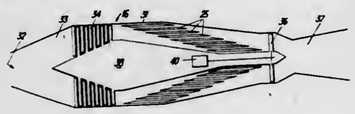
3,695,038
INSTALLATION OR PLANT CONTROL DEVICE, IN PARTICULAR FOR GAS-TURBINE POWER PLANTS
Gerard Greiner, Vincennes, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France
Filed Nov. 13, 1970, Ser. No. 89,408
Claims priority, application France, Nov. 14, 1969, 6939274
Int. Cl. F02c 9/04
U.S. Cl. 60—39.28 **10 Claims**

In and for an installation supplied with liquid through a piping system, such as a gas-turbine plant supplied with fuel, a device for controlling the liquid supply as a function of an installation operating condition, such as turbine rotor speed, said device being of the kind in which fuel flow through a metering passage is regulated by a controller responsive to change in said condition, wherein in accordance with the invention separate adjusting means are provided for varying the cross-sectional area of the metering passage and for varying the liquid pressure drop therethrough, and separate controllers, one of the integrating action type and one of the proportional action type, are provided for the respective varying means.



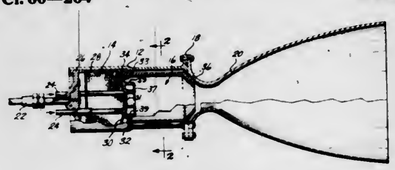
3,695,039
Patent Not Issued For This Number

3,695,040
AIRCRAFT POWER PLANT
Michael D. L. Mason, 5 Partridge Ave., Baguley Hall, Manchester 23, England
Filed March 17, 1970, Ser. No. 20,328
Int. Cl. G21d 5/00; H05b 7/00, 7/16, 7/18
U.S. Cl. 60—203 **8 Claims**



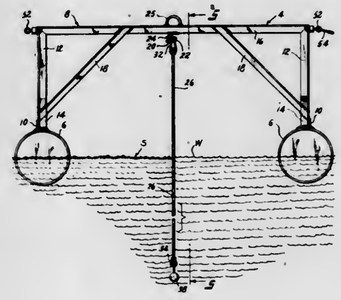
An aircraft power plant includes a nuclear reactor, a device for converting reactor heat to electricity which is used to create a silent discharge, an air-breathing engine, the ingested air being heated by being passed through said discharge, and a jet nozzle for expelling the heated air to obtain thrust.

3,695,041
TWO-STAGE HYDRAZINE ROCKET MOTOR
Robert F. Eggers, Snohomish, and Donald L. Emmons, Issaquah, both of Wash., assignors to Rocket Research Corporation, Richmond, Wash.
Filed May 8, 1970, Ser. No. 35,858
Int. Cl. F02k 3/04
U.S. Cl. 60—264 **8 Claims**



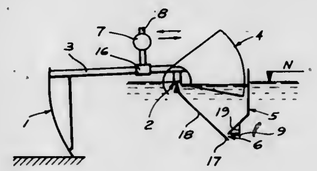
Hydrazine is catalytically decomposed in a primary reaction chamber. During low thrust operation all of the decomposition products flow directly to the nozzle. During high thrust operation an oxidizer is reacted with a major portion of the decomposed hydrazine in the central portion of the secondary reaction chamber downstream of the primary reaction chamber. The remaining decomposed hydrazine is directed as a buffer layer along the inner surface of the secondary reaction chamber's outer wall, to serve as a coolant.

3,695,042
SURFACE OIL CONTAINMENT DEVICE
Cleo S. Denison, P.O. Box 5, Lynn, Ark.
Filed July 7, 1970, Ser. No. 52,899
Int. Cl. E02b 3/00, 15/04
U.S. Cl. 61—1 F **3 Claims**



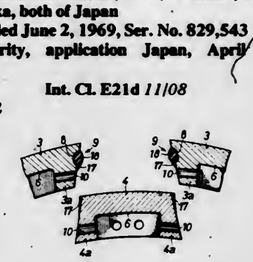
A device for containing oil spills in the open sea, comprising a plurality of hanger float structures having a continuous flexible wall or barrier suspended therefrom that encircles and contains an oil spill, the bottom edge of the wall being weighted and submerged, and the hanger float structures being connected with and held in place by spaced anchor float structures to which anchors are attached.

3,695,043
FLOAT CONTAINER FOR AN AUTOMATIC CONSTANT DOWNSTREAM LEVEL GATE
Guy Vallet, Eybens, France, assignor to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Grenoble, France
Filed Jan. 7, 1971, Ser. No. 104,605
Claims priority, application France, Jan. 13, 1970, 7001125
Int. Cl. E02b 7/52, 7/42
U.S. Cl. 61—22 **6 Claims**



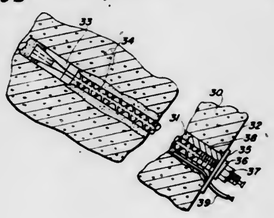
The gate float container which is in communication with the tailrace through an opening in the bottom of such container, is provided with a slidable plate formed to enable the size of the opening to be varied to control the operation of the gate, and to enable the gate to be balanced without immersing the container in the tailrace.

3,695,044
SEALING METHOD OF SEALED SEGMENTS OF A TUNNEL
Masahiro Hoshino, 19, 2-chome, Misakicho, Sumiyoshi-ku, Osaka, and Kenkichi Sasaki, 3-58, 4-chome, Kamihozumi, Ibaragi, Osaka, both of Japan
Filed June 2, 1969, Ser. No. 829,543
Claims priority, application Japan, April 12, 1969, 44/33315
Int. Cl. E21d 11/08
U.S. Cl. 61—42 **6 Claims**



The present invention relates to a method of sealing segments of a tunnel, wherein a groove is formed in the direction of breadth of at least one of opposite sides to be united, which are adjacent, between respective segments, which constitute an annular body as well as between respective annlar bodies in the direction of length of a tunnel, and in said groove are projectively fixed a hard elastic core materials and a soft elastic coating materials which cover the exposed side of said core materials., and said sealing materials are held between said adjacent materials, so that, by interposing and stitching sealing materials, said adjacent segments are united.

3,695,045
ROCK BOLTS
Chester I. Williams, 347 Greenbriar, S.E., Grand Rapids, Mich.
Filed Feb. 3, 1970, Ser. No. 8,345
Int. Cl. E21d 20/02
U.S. Cl. 61—45 B **4 Claims**

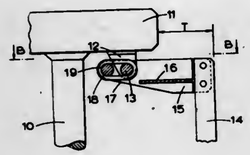


A method of reinforcing a rock formation with rock bolts establishing a lock-in pre-stress condition inhibiting the initiation of movement of the formation, and structural features of a rock bolt assembly capable of use in the practice of the method.

3,695,046
FENDERS
Ralph P. Torr, New Malden, and Juncker Zelo Nicolaisen, Crawley, both of England, assignors to Andre Rubber Company Limited, Kingston-By-Pass Surbiton, Surrey, England
Filed Jan. 23, 1970, Ser. No. 5,430
Claims priority, application Great Britain, Jan. 23, 1969, 3,862/69
Int. Cl. E02b 3/22
U.S. Cl. 61—46 **8 Claims**

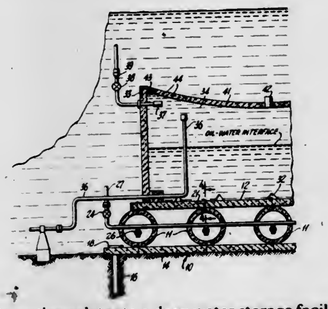
A fender arrangement for a jetty, dockside, dolphin or the like comprising a fender mounted for load-absorbing movement towards the edge of the jetty against the action of nor-

mally unstrained elastomeric tension springs in the form of endless bands looped between mounting pedestals carried by the jetty and the fender. The fender may be slender driven pil-



ing or bodily carried and guided by the jetty. Tension springs of elastomeric material show specified advantages over compression and shear springs in jetty fenders.

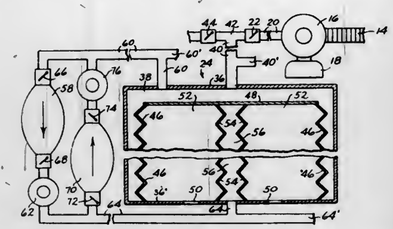
3,695,047
UNDERWATER LIQUID STORAGE FACILITY
Ivo C. Pogonowski, and Paul D. Carmichael, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed July 2, 1970, Ser. No. 51,792
Int. Cl. E02b *17/00*; B65d *89/10*
U.S. Cl. 61—46.5 **6 Claims**



The invention relates to a deep water storage facility formed primarily of concrete, for holding a liquid such as crude oil having a lesser density than that of the surrounding water. The facility includes a floatable base which is supportably fastened to a storage tank. The latter includes a support foundation having an upstanding continuous side wall defining an enclosure. A canopy fastened to the upper rim of said foundation wall thereby defines a substantially closed storage compartment. Said canopy is formed of reinforced concrete and assumes an inwardly contoured or concave shape whereby to withstand compressive stresses induced by the buoying action of stored crude oil.

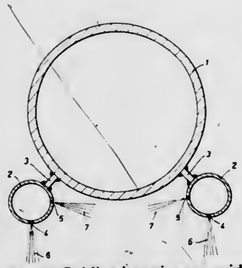
3,695,048
BUOYANCE REGULATING APPARATUS FOR UNDERWATER SWIMMING
Royal H. Dimick, Rte. # 4, Box 391, Albany, Oreg.
Continuation-in-part of Ser. No. 755,211, Aug. 26, 1968, abandoned. This application Feb. 6, 1970, Ser. No. 9,281
Int. Cl. B63c *11/22*; B63g *8/24*; G05d *9/00*
U.S. Cl. 61—69 **26 Claims**

A piston, defining a part of or otherwise operatively associated with an elongated, hollow air chamber, is movable relative thereto for varying the volume of the latter, and is urged resiliently in the direction to reduce the volume of the air pressure chamber. The side of the piston opposite the air chamber is exposed to water in which a swimmer is to submerge, and a passageway communicates the interior of the air



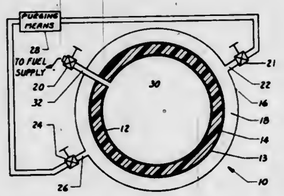
pressure chamber with a source of air under pressure, preferably the exhaust breath of the swimmer.

3,695,049
METHOD AND APPARATUS FOR BURYING A PIPELINE HAVING FIXED FLUIDIZATION MEANS
Johannes Van Steveninck, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 11, 1971, Ser. No. 105,201
Claims priority, application Great Britain, Feb. 11, 1970, 6,559/70
Int. Cl. F16l *1/00*; E02f *5/02*
U.S. Cl. 61—72.4 **10 Claims**



A pipeline having fluidization pipes provided with fluidization nozzels running along the pipeline and secured thereto. To bury the pipeline in the unconsolidated bottom of a body of water such as the seabed, the pipeline is laid on the seabed and water is pumped into the fluidization pipes; the water leaves the fluidization nozzels and fluidizes the seabed along the pipeline causing the pipeline together with the fluidization pipes to sink into the fluidized seabed.

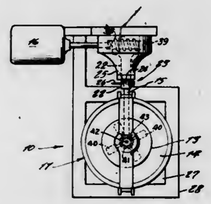
3,695,050
LIQUID PROPELLANT STORAGE TANK
George H. Bancroft, Davenport, Iowa, assignor to The Bendix Corporation
Filed May 14, 1970, Ser. No. 37,072
Int. Cl. F17c *13/00*
U.S. Cl. 62—45 **8 Claims**



A multi-layer insulated tank for storing a liquid propellant. A tank is coated with a low thermal conductive gas expanded

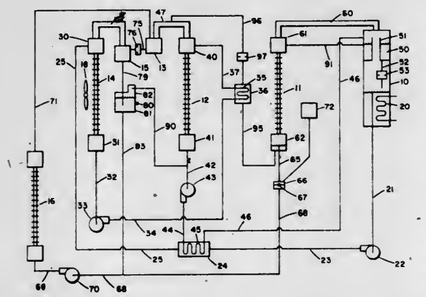
foam. The foam coated tank is encased in a plastic bag and is maintained under a low thermal conductive gas until just before the tank is charged with the liquid propellant. Just prior to charging the tank with cryogen, the low thermal conductive gas is replaced by helium or nitrogen depending upon the cryogen to prevent condensation of water vapor and/or purge gas on the outer surface of the tank.

3,695,051
AUTOMATIC ICE CREAM FREEZER
William B. Hunt, Rte. # 2, Wickliffe, Ky.
Filed June 10, 1970, Ser. No. 44,989
Int. Cl. F25c *7/10*
U.S. Cl. 62—136 **1 Claim**



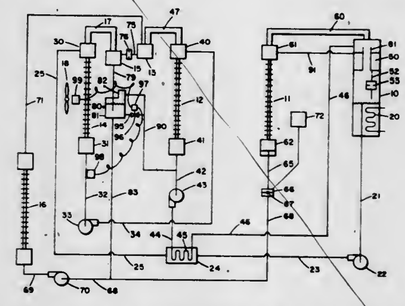
A mechanism for freezing ice cream, the mechanism including a conventional, manually operated ice cream freezer to which an electro magnetical drive is connected for powering the freezer, the device including a motor, a gear reduction and a nail clutch for separating the drive from the ice cream freezer after the ice cream has become sufficiently solidified.

3,695,052
CONCENTRATION CONTROL FOR MULTIPLE STAGE ABSORPTION REFRIGERATION SYSTEMS
Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed July 28, 1971, Ser. No. 166,914
Int. Cl. F25b *15/06*
U.S. Cl. 62—101 **5 Claims**



A two-stage air cooled lithium bromide absorption refrigeration system having a generator, a refrigerant condenser, a high pressure absorber coupled with a high temperature evaporator, a low pressure absorber coupled with a low temperature evaporator and an air conditioning fan coil unit for passing cooled refrigerant in heat exchange with ambient air is provided with a concentration control system for automatically diluting the absorbent solution under conditions of either low ambient temperatures or an inadequately purged low pressure absorber. The concentration control includes a refrigerant storage tank connected directly to the refrigerant condenser. Intermediate strength absrobent solution discharged from the low pressure absorber is passed through a heat exchanger in the refrigerant storage tank, in heat exchange relation with refrigerant therein, to the high pressure absorber. A refrigerant overflow passage is provided from a refrigerant sump to a location containing absorbent solution. Ambient air passes serially over the low pressure absorber and then over the refrigerant condenser so that when the low pressure absorber is poorly purged or the ambient air temperature is relatively low, these events will be reflected by a drop in the intermediate solution temperature passing through the refrigerant storage tank and a simultaneous drop in the condensing temperature. Consequently, the difference in pressure between the refirgerant storage tank and the condenser will drop and refrigerant will pass into the system from the storage tank and will cause the refrigerant level in the sump to overflow into absorbent soulution through the refrigerant overflow passage to prevent solidification.

3,695,053
DILUTION SYSTEM FOR ABSORPTION REFRIGERATION SYSTEMS
Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed July 28, 1971, Ser. No. 16,689
Int. Cl. F25b *15/06*
U.S. Cl. 62—103 **4 Claims**

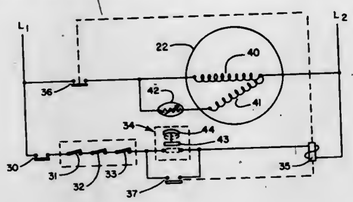


A two-stage air cooled lithium bromide absorption refrigeration system having a generator a refrigerant condenser, a high pressure absorber coupled with a high temperature evaporator, a low pressure absorber coupled with a low temperature evaporator and an air conditioning fan coil unit for passing cooled refrigerant in heat exchange with air to be cooled is provided with a dilution system for automatically diluting the absorbent solution under conditions of either low ambient temperatures or an inadequately purged low pressure absrober. The dilution system includes a refrigerant sump connected by a dilution passage to a location containing absorbent solution. When the low pressure absorber is poorly purged, the difference in temperature between the intermediate solution and the abmibent air will be reduced. When this difference in temperature is less than a predetermined difference, a value in the dilution passage is opened to pass refrigernat from the sump to the location containing absorbent solution to dilute the solution.

3,695,054
CONTROL CIRCUIT FOR AN AIR CONDITIONING SYSTEM
Vincent T. Barry, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 25, 1971, Ser. No. 146,719
Int. Cl. F25b *1/00*; G05b *5/00*
U.S. Cl. 62—115 **10 Claims**

An air conditioning system is provided to supply treated air to an area. The system includes a refrigeration unit comprising a motor-driven compressor, a condenser, an evaporator, and

expansion means. The motor includes a run winding and a start winding connected in parallel. The start winding has a positive temperature coefficient thermistor connected in series therewith to interrupt operation of the start winding after the motor has reached its operating speed. A bimetallic switch responsive to the temperature of the thermistor is actuated



thereby. During normal operation, a bypass circuit about the bimetallic switch prevents the switch from having any effect on the operation of the compressor motor. When the compressor motor is deenergized, the bypass becomes ineffective. The switch, which has been opened by the temperature of the thermistor, prevents reenergization of the compressor motor until a predetermined period of time has elapsed.

3,695,055

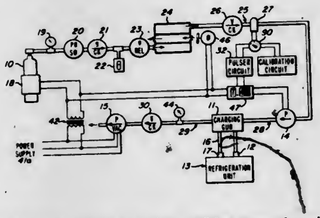
TEMPERATURE COMPENSATING REFRIGERANT CHARGING DEVICE

Ralph E. Bruce, 6342 Seton Hill, Dayton, Ohio

Filed July 15, 1970, Ser. No. 55,059

Int. Cl. G05d *23/32*

U.S. Cl. 62—157 **7 Claims**



A temperature compensating refrigerant charging device and refrigeration servicing unit comprising a volumetric refrigerant flow establishing unit such as a volumetric charging pump controlled by a temperature-responsive timer assembly comprising a thermistor-controlled, pulser-actuated counter which may be pre-set for the desired weight of the refrigerant to be placed in a refrigeration unit. When the temperature of the refrigerant entering the pump is relatively low and its density correspondingly high, the thermistor resistance changes to increase the pulsing rate of the pulser and cause the counter to reach shutoff position in less time. When the temperature of the refrigerant is relatively high, the thermistor resistance change causes the pulser to discharge at a slower rate thereby increasing the time it takes the counter to reach shutoff position and allowing the pump to complete more cycles and to introduce a larger volume of the less dense refrigerant into the system.

3,695,056

CARBON DIOXIDE REFRIGERATION SYSTEMS

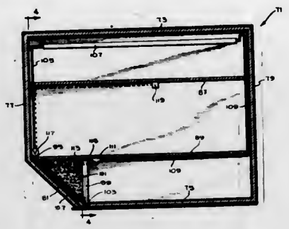
Emmett P. Glynn, Lemont, and Howard L. Hsu, China, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 66,961

Int. Cl. F25d *3/12*

U.S. Cl. 62—168 **7 Claims**

Refrigeration apparatus utilizing solid carbon dioxide as a refrigerant comprising a pair of refrigeration compartments, a solid carbon dioxide hopper defined by a pair of hollow condensers arranged in the shape of a V for a circulating heat-exchange fluid. A pair of evaporators vertically below the hopper and defining a chimney between the compartments for



the circulation of air being cooled. An air cargo container having a lower hopper and an upper evaporator. In the conduit connecting the condenser at the hopper to the evaporator there is means for providing bubbles to lift the heat exchanger liquid to the evaporator.

3,695,057

CRYOSTAT CURRENT SUPPLY

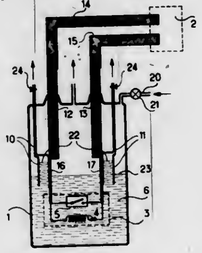
Francois Moisson-Franckhauser, Bretigny-sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Sept. 30, 1970, Ser. No. 76,926

Claims priority, application France, Sept. 30, 1969, 6933345

Int. Cl. F25b *19/00*

U.S. Cl. 62—514 **4 Claims**



A transition conductor comprising a tubular envelope has one end dipped in a cryogenic fluid and the upper section connected to an external current source with cryogenic fluid raised in the tubular envelope during current application to the load emersed within the cryogenic fluid.

3,695,058

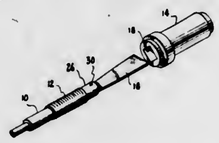
FLEXIBLE LINK ROTATABLE DRIVE COUPLING

Marvin W. Keith, Jr., 1623 South Blvd., Evanston, Ill.

Filed May 26, 1971, Ser. No. 147,104

Int. Cl. F16d *1/10*

U.S. Cl. 64—23 **5 Claims**



A flexible link coupling for transmitting rotational movement includes a flexible flat link of trapezoidal configuration

having its narrow end pivotally connected to a driven member by a transverse pin and its wide end slidably received diagonally within an elongate square hole in a driving member. This coupling accommodates both angular misalignment and relative axial movement while transmitting rotational movement from the driving member to the driven member.

3,695,059

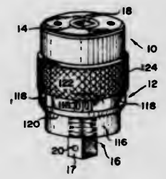
ADJUSTABLE TORQUE LIMITING COUPLING

Wilburn B. Laubach, 5718 Wellington Drive, Austin, Tex.

Filed Jan. 14, 1971, Ser. No. 106,348

Int. Cl. F16d *7/06*

U.S. Cl. 64—29 **15 Claims**



An adjustable torque limiting coupling including a driving member, a driven member, an intermediate member and a housing for the driving, driven and intermediate members. The intermediate member is coupled with the driven member so as to accommodate relative axial motion and prevent relative rotation between the driven member and the intermediate member. The intermediate member includes a disc like portion having a plurality of pairs of radially disposed, diametrically opposed recesses in the face of the disc like portion for engaging in yieldable driving relationship a member projecting from the driving member. Adjustable spring means is provided for urging the recesses and projecting member into yieldable driving relationship, and means for adjusting the spring means and locking the adjustment of the spring means is provided.

3,695,060

APPARATUS FOR CONTROLLING THE JACKS OF KNITTING MACHINES

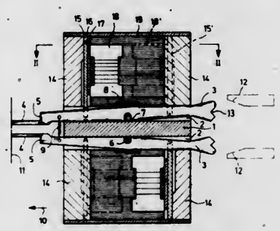
Karl Flad, Hauptstrasse 29, 7411 Undingen, Germany

Continuation-in-part of Ser. No. 682,856, Nov. 14, 1967, Pat. No. 3,509,738. This application June 30, 1969, Ser. No. 837,741

Claims priority, application Germany, Oct. 2, 1968, P 18 00 568.0; June 29, 1968, P 17 60 768.0. The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.

Int. Cl. D04b *7/28, 15/70, 15/78*

U.S. Cl. 66—75 **19 Claims**



In a knitting machine, such as a Jacquard controlled knitting machine, in which the needles are selected by means of pivotal plates which are mounted on a reciprocatory plate bed and which are actuated by electromagnetic means energized in accordance with information stored in an information carrier, at least some of the parts cooperating with the electromagnetic means to effect selection of the needles are arranged to be temporarily demagnetized before the plates are released for return to their rest position.

3,695,061

Patent Not Issued For This Number

3,695,062

MAGNET DRIVE FOR TAKE UP SPOOL SPINDLE IN CIRCULAR KNITTING MACHINES

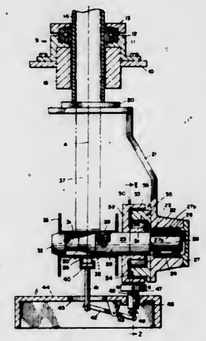
Kurt Schaack, Lenneper Str. 40, Wuppertal, Germany

Filed June 22, 1970, Ser. No. 48,380

Claims priority, application Germany, June 28, 1969, P 19 32 944.3

Int. Cl. D04b *15/88*

U.S. Cl. 66—151 **10 Claims**



Magnetic drives for turning the spindle of a take-up spool in circular knitting machines; the wheel on the spindle orbits past the magnet(s) or the magnet(s) orbit past wheel; and means for adjusting the distance between the wheel and magnet(s) in response to increasing diameter of the knitted fabric wound on the spool or in response to program control.

3,695,063

KNITTING METHOD AND KNITTED GARMENT

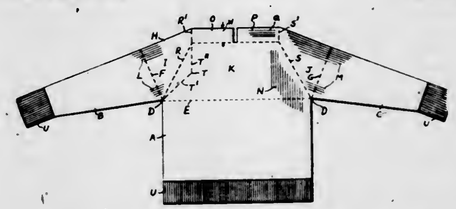
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Oct. 9, 1970, Ser. No. 79,545

Claims priority, application Great Britain, Oct. 13, 1969, 53470/69

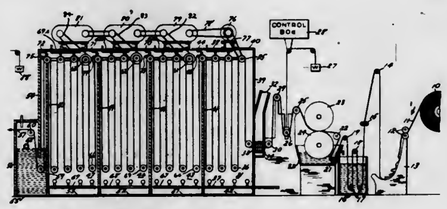
Int. Cl. D04b *7/10*

U.S. Cl. 66—176 **7 Claims**



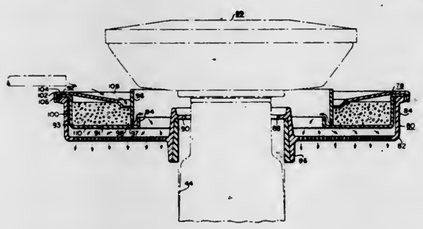
A method of machine knitting a garment blank includes knitting a tube having portions constituting portions of sleeves and body of the garment located between the underarm region and neck of the garment and knitting an extension for each sleeve integral therewith, each extension constituting a shoulder portion of the garment and having edges arranged to be joined to the upper edges of the said single knitted tube.

3,695,064
IMPARTING STRETCH CHARACTERISTICS TO WOVEN FABRICS
Leslie A. Runton, Middle Haddam, Conn., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Division of Ser. No. 387,101, Aug. 3, 1964, Pat. No. 3,528,763.
This application May 25, 1970, Ser. No. 48,673
Int. Cl. D06c *1/00, 3/00*
U.S. Cl. 68—5 E **2 Claims**



The present invention relates to an apparatus wherein a fabric is treated with a shrinking agent and then led through a series of zones under successively increasing warp tension to thereby produce stretch characteristics in the fill direction of the fabric.

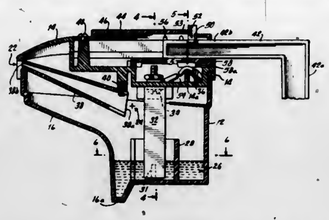
3,695,065
LAUNDRY AGENT DISPENSER FOR AGITATOR WASHERS
William A. Wasemann, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 8, 1970, Ser. No. 79,181
Int. Cl. D06f *39/02, 39/10*
U.S. Cl. 68—17 A **8 Claims**



A dispenser mounted on the center post of an automatic washing machine for dispensing a granulated or powdered laundering agent automatically during a wash cycle subsequent to an initial pre-soak cycle of any duration. The dispenser utilizes the flow of the recirculating water to expel the detergent stored therein and can be used in conjunction with or as part of a pan filter.

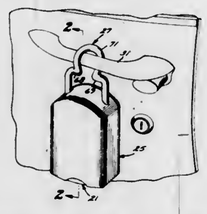
3,695,066
PORTABLE HAND-HELD STEAMER
John S. Doyel, 404 N. 20th St., New York, N.Y.
Filed March 16, 1970, Ser. No. 19,812
Int. Cl. D06c *1/00*; **D06f** *75/00*
U.S. Cl. 68—222 **6 Claims**

A portable hand-held steam generating apparatus includes a permanently sealed housing in which a quantity of water is disposed, the housing being shaped such that it contains the quantity of water in any portion taken about and through the center of the housing. Steam is produced by heating water in the lower portion of the housing using a pair of spaced, heat-conducting electrodes that are water-activated. From the center of the housing, a nozzle, having greater cross-sectional area at its intake end than at its discharge end in order to increase steam pressure, directs steam toward a surface to be treated. A handle for the apparatus is slidable from a position



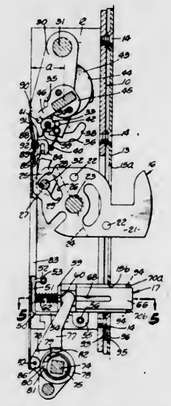
within the housing to an extended position where it may be used to control the direction of the issuing steam.

3,695,067
CAR THEFT PREVENTION DEVICE
Robert D. Bays, 3518 Stevely Ave., Long Beach, Calif.
Filed June 29, 1970, Ser. No. 50,541
Int. Cl. F05b *65/52, 73/00*; **B65d** *55/14*
U.S. Cl. 70—63 **5 Claims**



A car theft prevention device for locking a car key to the exterior door handle of a car so a number of authorized persons may have access thereto. The device includes a housing formed with an open chamber for receiving the key and including shackle-receiving means. A cover is provided for securement to the housing to close the chamber.

3,695,068
NARROW STILE LATCH-LOCK STRUCTURE
Charles L. Eads, Palm Springs, Calif., and Harry D. Brotman, Hollywood, Calif., assignors to Adams Rite Manufacturing Company, Glendale, Calif.
Filed July 13, 1970, Ser. No. 54,487
Int. Cl. E05b *59/00*
U.S. Cl. 70—107 **13 Claims**

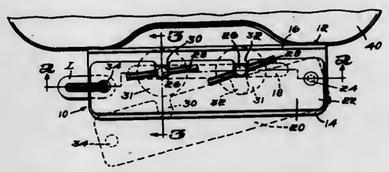


An improved combination locking and latching assembly for mounting between the side faces of a narrow tubular stile

frame member of a door to provide both locking and latching operations, respectively, by means of a locking bolt and a latch member, and wherein the latch member is spring urged to a latched position and is independently operable by a latch handle to an unlatched position, while the locking bolt is arranged to be actuated in a normal manner being further operable, in an unlocked position of the locking bolt, to move the latch member to a retracted or unlatched position.

3,695,069
Patent Not Issued For This Number

3,695,070
LOCKING CLAMP
Philip J. Desroches, West Yarmouth, Mass., assignor to Universal Saddle Hanger, Inc., West Harwick, Mass.
Filed Oct. 15, 1970, Ser. No. 80,996
Int. Cl. B65d *55/14*
U.S. Cl. 70—164 **6 Claims**

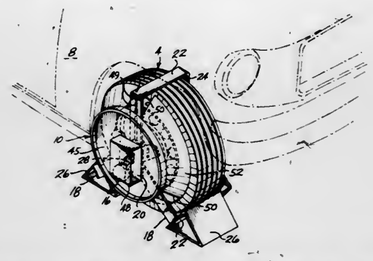


The present invention relates to a novel and improved locking device and preferably a detachable or removable locking device for locking the fuel or lubricating systems of heavy duty construction equipment. The present device comprises an L-shaped body member having a base portion and an integral upstanding leg portion. An elongated slot is provided in the base portion thereof arranged to receive the stems and handles of the oil fill and dip stick of a bulldozer. A separate locking bar having cutout portions coinciding with the stems is pivotally mounted at one end of the member and is arranged to slide into and out of engagement with the bar to position the cutout portions in locking position relative to the oil fill and dip stick stems. Means is provided for securing the base member and locking bar in position whereby the caps for the oil fill and dip stick cannot be removed.

In a modified form of the invention, a locking device for the fuel fill caps of heavy duty construction equipment is provided and comprises a hollow, cylindrical body member arranged to fit over and surround the cap and filling spout and be welded to the tank. A locking bar pivotally mounted on one side of the cylinder wall is arranged to extend across a cutout in the open end of the cylinder and to be locked in place by means of a padlock, or the like, to the opposed cylinder wall, thus making removal of the cap impossible.

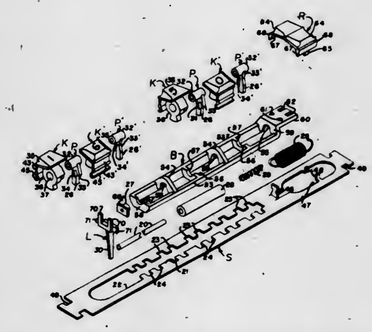
3,695,071
VEHICLE WHEEL IMMOBILIZING APPARATUS
Jon R. West, 6835 S. 262nd., Kent, Wash.
Filed Oct. 14, 1971, Ser. No. 189,087
Int. Cl. B60r *25/00*; **B60t** *3/00*
U.S. Cl. 70—225 **20 Claims**

The apparatus comprises a wheel stop device which in turn has a plurality of arms that are adapted to be transversely arranged about a common center line, in angularly spaced relationship to one another, and which are equipped with gripper elements on the relatively outlying end portions thereof, for engagement about the periphery of the wheel, on each side thereof, when the device is applied to the wheel, on one side thereof, such that the center line of the arms extends adjacent the axis of the wheel on a parallel thereto. The arms are interconnected and fixed against relative rotation about the line, by means which enable at least one of the arms to be reciprocated in the transverse plane thereof, for purposes of engaging and disengaging the gripper elements with respect to the wheel. There are, however, retainer means on the device for securing the one arm against reciprocation, in the engaged



position of the elements; and the apparatus further comprises a shield which is adapted to be superposed on the device to present across to the retainer means when the arms are disposed in the engaged position of the elements. The shield in turn is normally releasably interlocked to the device, in the relatively superposed position thereof.

3,695,072
PUSHBUTTON COMBINATION LOCKS
Kenneth A. Milette, Pasadena, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed May 15, 1970, Ser. No. 37,525
Int. Cl. E05b *37/02, 65/52*
U.S. Cl. 70—312 **13 Claims**



A series of keys partially encircle corresponding pawls having legs extending into a center slot of a slide bar, with a side slot at each side of the center slot, in which a pawl leg is placed, when the corresponding key is a part of the combination. When a key which is part of the combination is pushed, the corresponding pawl is turned, and its leg is moved from the side slot into the center slot of the slide bar. If a key not a part of the combination is pushed, the leg of the corresponding pawl will be moved into the opposite side slot. When the proper key combination is pushed, all of the pawl legs will then be in the center slot of the side bar, movement of which is then permitted, such as to unlock a catch, as of a luggage case. The keys are placed in pairs along a rocking bar, which is rocked by a restore key mounted thereon in alignment with the pawl keys, so as to move the down keys to an up position, or to move the keys of the combination to an up position, when pushed downwardly for setting the combination. For the latter purpose, the pawls are movable simultaneously by a lever, such as accessible on the inside of the luggage case, to move projections on the pawls away from dual sets of slots in

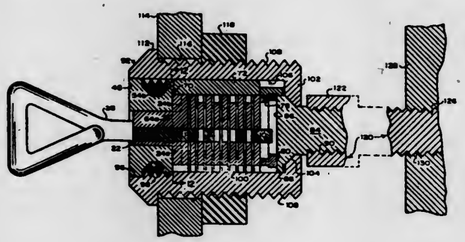
the corresponding keys and permit the pawls to be returned, after the keys forming the combination are pushed down. The lock is particularly adapted to be installed between the pivoted ends of the handle of a luggage case.

3,695,073

DISC AND SIDEBAR CYLINDER LOCK

Burnerd Clark Prescott, 440 Moffett Blvd., Mountain View, Calif.

Filed March 30, 1970, Ser. No. 23,554
Int. Cl. E05b *29/00*
U.S. Cl. 70—366 **20 Claims**



Tumbler discs are supported within a cylinder for rotation therein between locked and unlocked positions. The cylinder itself is rotatably supported within an outer casing into which it may be loaded from the front and held in place by a hidden externally-threaded collar. When the tumbler discs are in the locked position, they support a locking bar in engagement with a slot in the cylinder and an aligned groove in the outer casing to prevent the cylinder from being rotated relative to the outer casing. The first tumbler disc may include a concentric portion of reduced diameter and increased thickness communicating with the front of the outer casing and serving as a freely rotatable spinner until a key is engaged with the tumbler discs. Driving portions of the key are angularly coded for rotating the tumbler discs to the unlocked position as the key is turned in one direction. When the tumbler discs are in the unlocked position, peripheral lugs on some of the tumbler discs are positioned in abutment upon a stop portion of the cylinder, and notches in all of the tumbler discs are aligned with the slot in the cylinder to form a groove for receiving the locking bar so that the cylinder and the tumbler discs may be freely rotated together relative to the outer casing as the key is turned further in the same direction. In the unlocked position one of the tumbler discs may be releasably engaged with the cylinder so that the cylinder and tumbler discs may also be freely rotated together relative to the outer casing as the key is turned in the opposite direction. This same tumbler disc may be disengaged from the cylinder under control of the key. A locking member protruding through an opening in the rear of the outer casing is rotatably driven by the cylinder to lock and unlock a structure in which the outer casing is embedded.

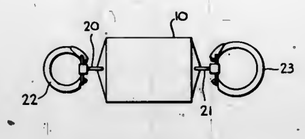
3,695,074

KEY CONNECTOR

James A. Smyth, Wilcox, and William T. Whitaker, Bradford, both of Pa., assignors to Zippo Manufacturing Company, Bradford, Pa.

Filed June 1, 1971, Ser. No. 148,688
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **7 Claims**

A detachable key connector has a socket element and a detachably connectible part which slides into the socket member. The socket member consists of a relatively flat tube having a plate fixed in one end thereof, with the inner edge of the plate formed to provide an undercut recess. A U-shaped spring has its base portion disposed in the undercut recess and includes converging leg portions. The detachably connectible



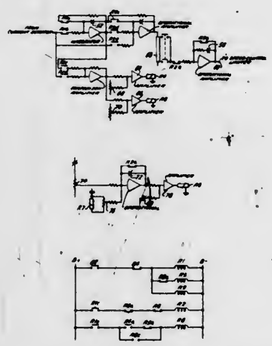
part comprises a flat plate having a bulbous nose portion which snaps releasably between the convergent leg portions of the spring member.

3,695,075

CORRECTION SYSTEM FOR CONTINUOUS ROLLING MILL

Nobuo Kubota, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 9, 1971, Ser. No. 151,442
Claims priority, application Japan, June 11, 1970, 45/50439
Int. Cl. B21b *37/00*
U.S. Cl. 72—19 **2 Claims**



In a tandem mill a roll current for a first mill stand is measured after a workpiece has entered only the first stand and after it has also entered a second stand. A difference between the measured currents predicts a speed correction factor for the second stand by which the speed of the second stand is modified. Then the roll current for the first stand is again measured and the speed of the second stand is adjusted so as to put a difference between the first and third measured current within predetermined limits. Otherwise, the above process is repeated until a difference between the first and last measured currents is put in the limits. The last speed correction factor determined is stored in a computer.

3,695,076

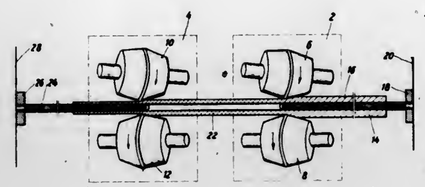
METHOD FOR MANUFACTURE OF SEAMLESS TUBE

Friedrich Kocks, Freiglgrathstrasse 1, 4 Dusseldorf, Germany

Filed Nov. 27, 1970, Ser. No. 93,014
Claims priority, application Germany, Dec. 2, 1969, P 19 60 328.2
Int. Cl. B21b *17/08*
U.S. Cl. 72—97 **10 Claims**

A method of manufacturing seamless tubing from a tubular bloom is provided in which the bloom is reduced on a mandrel

or like rod in a first skew rolling mill inserted into the bloom, and the tube issuing from the first skew mill is immediately



rolled in a continuous manner on a mandrel or like rod in a second skew mill directly contiguous to the first skew mill.

3,695,077

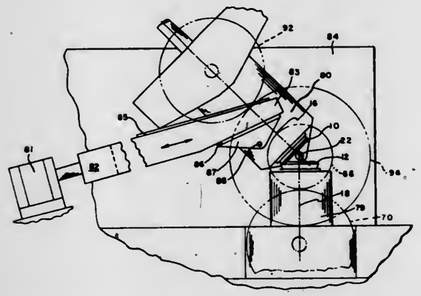
Patent Not Issued For This Number

3,695,078

METHOD AND APPARATUS FOR ROLL-FORMING OR ROLL-FINISHING GEAR PIECES

Norman G. Bruinsma, Webster, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,916
Int. Cl. B21h *5/04*
U.S. Cl. 72—101 **19 Claims**



A method for forming or finishing gear tooth configurations on a workpiece provides for a rolling together of a die member and a workpiece with a feed motion which essentially pivots about and axis substantially coincident with a common normal to the center axes of rotation of both the die member and the workpiece. The pivotal feed motion is continued so as to progressively engage the die member and the workpiece with each other to a desired limit depth which forms gear tooth configurations on the workpiece.

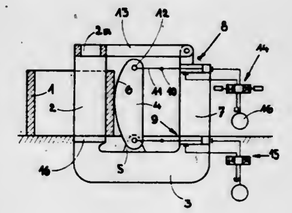
A machine for rolling together a die member and a workpiece to form a gear tooth configurations on the workpiece, including means for mounting and rotating the die member relative to the workpiece so that there is provided a pivotal feed motion about an axis substantially coincident with a common normal to the center axes of both the die member and the workpiece.

3,695,079

MEANS FOR FORGING LARGE SHELL RINGS E. G. FOR BOILER SHELLS

Willy Muller, Dusseldorf-Gerresheim, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Steinstrasse, Germany

Filed May 28, 1971, Ser. No. 148,079
Claims priority, application Germany, May 30, 1970, P 20 26 637.9
Int. Cl. B21b *17/06*
U.S. Cl. 72—208 **6 Claims**



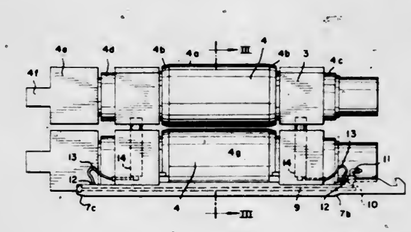
The forging of large shell rings, particularly for boilers, gives difficulty, but it is desirable to forge the rings in one piece. My invention provides apparatus suitable for forging such large rings, having a vertical mandrel which projects up the inside of the ring and a forging tool which works on the outside of the ring, against the counter-pressure of the mandrel. The forging tool has a generally vertical, arcuate forging surface and the forging tool executes a rocking movement during forging. The tool is driven by at least two hydraulic rams arranged one above the other, there being at least one pivotal connection between each ram and the forging tool.

3,695,080

SYSTEM FOR THE REPLACEMENT OF ROLLING-MILL ROLLS

Theodor Sevenich, Dortmund; Friedrich Zahn, Dortmund-Kleinholthausen, and Peter Zens, Dortmund-Kirchderne, all of Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Germany

Filed Oct. 14, 1970, Ser. No. 80,666
Claims priority, application Germany, Oct. 18, 1969, P 19 52 646.6
Int. Cl. B21b *31/08, 31/10, 31/32*
U.S. Cl. 72—239 **6 Claims**

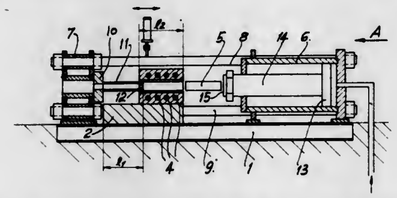


A pair of rolling-mill rolls, to be replaceably inserted in a rolling-mill stand, is mounted upon a skid carried parallel to the rolling direction and shiftable bodily in the horizontal transverse direction to carry the rolls into the stand. The members of the skid are provided with hydraulic ducts connected to positioning cylinders on the lower roll for spacing the rolls apart.

3,695,081
EXTRUSION PRESS FOR THE MANUFACTURE OF LIGHT METAL PROFILES

Karl Gartner, Gartnerstrasse 8, Gundelfingen, Danube, Germany

Filed July 20, 1970, Ser. No. 56,384
Claims priority, application Germany, July 26, 1969, P 19 38 024.6
Int. Cl. B21c 23/00, 27/00
U.S. Cl. 72—254 5 Claims

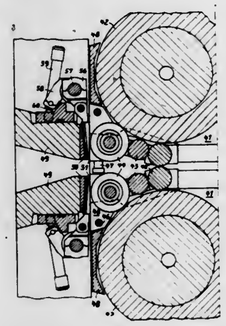


An extrusion press primarily adapted for the handling of light metal. The press comprises a heated receptacle for blanks, same being mounted for movement in a direction parallel to the direction of extrusion, together with a hollow shaft onto which the receptacle moves during extrusion operation. The extrusion die is placed at the end of the shaft toward the receptacle so that the movement above mentioned drives the extrudable material within the receptacle through the die and exits same through the hollow shaft. A double acting pressure cylinder and piston actuates a piston rod which bears against the receptacle for effecting said movement thereof. A quick acting connector is provided for connecting the piston rod to the receptacle for retracting same to the initial position after the completion of an extrusion operation. Further retraction of only the piston rod then provides sufficient space between the end of said piston rod and the end of said receptacle to guide a cut off knife therebetween for shearing residue from the die.

3,695,082
MULTI-ROLL STANDS

Klaus Leifeld, Kaarst; Josef Wochnik, Osterath, and Erich Stoy, Dusseldorf, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Division of Ser. No. 647,451, June 20, 1967, Pat. No. 3,546,914. This application May 14, 1970, Ser. No. 37,105
Int. Cl. B21b 31/16
U.S. Cl. 72—243 4 Claims

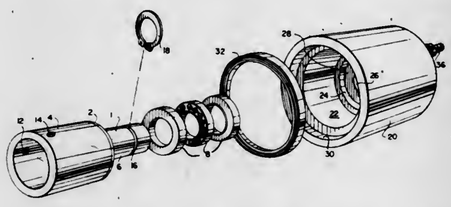


A multi-roll stand provided with two positively driven backing rolls and two working rolls frictionally driven by the backing rolls, in which the working rolls are displaced, for their horizontal support, with their axes out of the vertical plane containing the axes of the backing rolls, and intermediate rolls and supporting rollers journalled in supporting bridges provide further horizontal support for the working rolls. Means are provided for adjusting the lateral distance of the individual supporting rollers from the plane containing the axes of the backing rolls.

3,695,083
AXIAL THRUST SPINNING HEAD FOR ROTATING DIES

James L. Garfield, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Filed April 21, 1970, Ser. No. 30,391
Int. Cl. B21c 3/12
U.S. Cl. 72—285 3 Claims

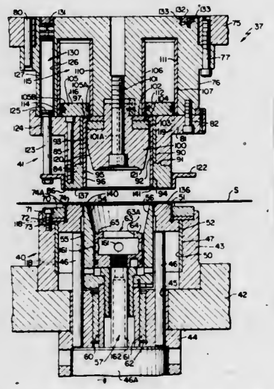


A spinning head for wire drawing die is disclosed. The die head or die holder comprises of a spinner housing having on its inner surface a bearing surface and a spinner head adapted to fit into the spinner housing. The head has on its outer surface a bearing surface and is adapted to retain a die. An axial thrust bearing is positioned between the housing and the head on the two bearing surfaces and the axial thrust bearing enables the head to spin relative to the housing. The spinning head is provided with means for retaining the spinner head within the spinner housing and means to permit the feeding of lubricant to the axial bearing.

3,695,084
NESTABLE CONTAINER AND APPARATUS FOR AND METHOD OF MAKING SAME

Frederik A. Siemonsen, Richmond, and Robert F. Bublitz, Chester, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 86,866, Nov. 4, 1970. This application Nov. 24, 1970, Ser. No. 92,446
Int. Cl. B21d 22/24
U.S. Cl. 72—348 17 Claims



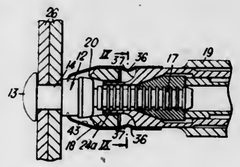
A nestable container and an improved apparatus for and method of making same are provided wherein a blank is drawn to define a drawn container which is reverse redrawn to form the nestable container which has a side wall and an annular planar flange extending therefrom with a toroidal bead extending from the flange and having at least a portion thereof arranged within and beneath the peripheral edge of the flange. The container is adapted to be nested in a substantially identical container so that the toroidal bead separates the flange from the flange of a substantially identical container when the container is nested in the substantially identical container.

3,695,085
Patent Not Issued For This Number

3,695,086
LOCKBOLT SWAGING APPARATUS

Donald Stanley Savage, St. Albans, England, assignor to Aerpat A.G., Zug, Switzerland

Filed Sept. 22, 1970, Ser. No. 74,254
Claims priority, application Great Britain, Sept. 26, 1969, 47,526/69
Int. Cl. B21d 9/05
U.S. Cl. 72—391 12 Claims

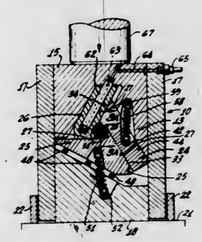


A device to facilitate the placing of lockbolt type fasteners by means of apparatus which swages a lockbolt collar onto the grooved stem of a lockbolt pin has a resilient body portion which frictionally grips the swaging apparatus so as to mount the device on the apparatus, and resilient arms which frictionally grip the collar to be swaged and hold it in appropriate relationship to the swaging apparatus to permit insertion of the stem through the collar and the swaging anvil of the swaging apparatus. The device may co-operate with a movable part of the swaging apparatus to produce movement of the arms to release the collar and to avoid interference of the device between the swaging apparatus and the work.

3,695,087
METHOD AND APPARATUS FOR POINTING TUBES

Arthur H. Tuberman, 4527 W. 170th St., Lawndale, Calif.

Filed Aug. 26, 1970, Ser. No. 67,007
Int. Cl. B21d 41/04
U.S. Cl. 72—402 16 Claims

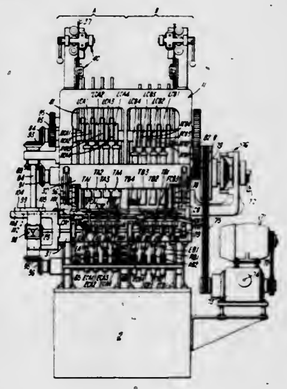


Method and apparatus for forming a generally cylindrical point on a tube by first flattening the tube from at least three sides to a polygonal cross section while forming curved sections between the flat sides, and then progressively contracting the tube to bring the curved sections together while buckling the flat sides inwardly into loops that are flattened inside the point. At least three die shoes arranged around a die recess in alternately overlapping relation have flat inner faces with an elongated lip along one side for shaping the curved sections, and also have flat, inclined bevels for shaping the transition zone of the tube during pointing, each bevel having a part-conical lip on one side for the final shaping of the transition zone to a conical shape. One actuating arrangement utilizes a mutual camming action to move all die shoes simultaneously at the same rate to maintain the point on a preselected axis, while a simpler form displaces the axis during pointing.

3,695,088
MULTI-STAGE FORMING MACHINE

Zia R. Alvi, Hatfield; Victor L. Heslop, Welwyn Garden City, and Frederick A. Summerlin, Harpenden, all of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Aug. 5, 1970, Ser. No. 61,070
Claims priority, application Great Britain, Aug. 15, 1969, 40,844/69
Int. Cl. B21j 9/18
U.S. Cl. 72—405 1 Claim



A machine for cold forming workpieces in which workpieces are subjected to a sequence of work operations performed by a bank of co-operating tools and dies, therebeing transfer means for transferring each workpiece through successive work stations in the bank so as to be subjected sequentially to the action of successive co-operating tools and dies. The machine has two such banks operating 180° out of phase and the transfer means of both banks are carried by a common reciprocable slide, the arrangement being such that, in one direction of its reciprocating movement, the common slide moves the transfer means of one bank in a direction which advances the workpieces in that bank to successive work stations while the transfer means of the other bank are returning, and, in the other direction of reciprocating movement of the slide, the transfer means of the other bank advance the workpieces in the other bank while those of the one bank return.

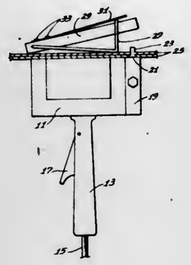
3,695,089
ELECTROMAGNETIC RIVETING MACHINE

William C. Seekins, Los Angeles, Calif., assignor to Hughes Tool Co., Aircraft Division, Culver City, Calif.

Filed April 8, 1970, Ser. No. 26,582
Int. Cl. B21j 15/24
U.S. Cl. 72—430 5 Claims

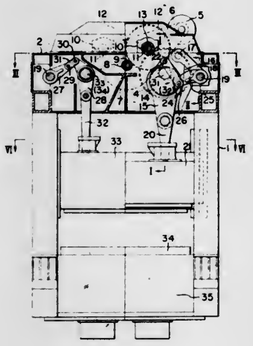
An electromagnetic riveting machine comprising a hand-held selectively actuatable electromagnet having means to support a rivet relative to a striker bar positionable on the opposite side of the workpiece from the electromagnet. The

striker bar comprises a metal bar pivotally held within a metal frame and biased away from the work surface by a flat spring



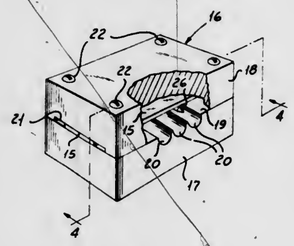
member acting against the frame. If desired, a permanent magnet may be attached to each of the portions of the tool so as to ensure proper placement thereof relative to one another.

3,695,090
MECHANICAL DOUBLE-ACTION PRESS OF LINK MECHANISM TYPE
Masaaki Kita, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan
Filed Aug. 14, 1970, Ser. No. 63,735
Int. Cl. B21J 9/18
U.S. Cl. 72—450 **2 Claims**



Mechanical double-action press of link mechanism type, in which metal sheet blanks are produced to formed articles by a drawing work, and in particular, within the pressing region, the speed of an inner slide is remarkably slow thereby to produce no cracking or cutting, and at the ascending and returning period of the inner slide, said inner slide is accelerated and rapidly ascends, whereby it is intended to increase the production efficiency of the press-formed articles having no cracks or cuts.

3,695,091
METHOD OF AND APPARATUS FOR MEASURING INTENSITY OF PEENING IN SMALL DIAMETER HOLES
Glenn D. Smith, Enfield, Conn., assignor to Metal Improvement Company, Inc.
Filed Sept. 28, 1970, Ser. No. 76,063
Int. Cl. G01n 3/34
U.S. Cl. 73—11 **14 Claims**



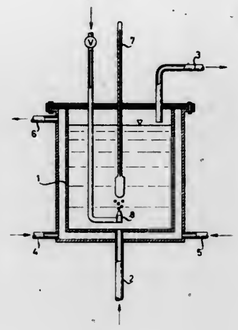
The method of measuring intensity of peening in the Almen scale of small diameter holes, such as 0.5 inch or less, consists of a first step of plotting an intensity curve on a reference graph, which intensity curve is proportional to but a fraction of the Almen scale. The intensity curve is plotted by peening, under a predetermined intensity, a number of Almen strips which have been masked to expose only portions of each of the strips so that each strip has an exposed portion differing in width from the others in equal increments of linear measurement and, then, measuring the curvature of each peened strip. Thereafter, peening a portion of an Almen strip which overlies at least one arcuate groove which has chordal dimension equal to the smallest unit width employed to produce the reference graph. After peening the Almen strip in which the same peening apparatus and technique used to peen the holes of the production pieces is utilized, the curvature of the strip is measured. The measurement is plotted on the reference graph to obtain an Almen scale measurement of the peening intensity. If the measurement is for a hole size outside of the intensity curve, the measurement is then extrapolated by using the reference graph to achieve an Almen scale measurement. This Almen value then can be compared with the Almen scale peening intensity called for to insure that the peening meets that requirement and continues to meet the Almen intensity during production peening.

3,695,092
Patent Not Issued For This Number

3,695,093
DEVICE FOR MEASURING THE SOLIDIFICATION TEMPERATURE OF LIQUIDS
Heinz Hummel, and Herbert Gortz, both of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning, Frankfurt/Main, Germany
Filed Nov. 20, 1970, Ser. No. 91,451
Claims priority, application Germany, Nov. 21, 1969, P 19 58 476.0
Int. Cl. G01n 25/04
U.S. Cl. 73—17 R **6 Claims**

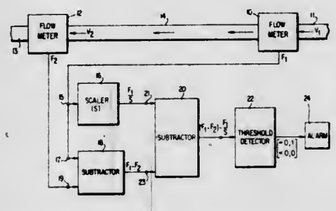
To measure the solidification temperature of liquids a

device is used comprising a heatable and coolable receptacle for a sample of the liquid, a temperature sensitive element and



in the receptacle in the vicinity of the temperature sensitive element means to produce a local supercooling.

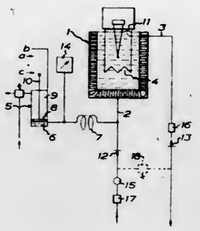
3,695,094
LEAK DETECTION METHOD AND SYSTEM
Jack R. Hulme, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed July 16, 1970, Ser. No. 55,480
Int. Cl. G01m 3/28
U.S. Cl. 73—40.5 **13 Claims**



Method and apparatus for determining when the volume of fluid leakage in a conduit exceeds a predetermined percentage of the volume of total fluid flow by measuring the volume of fluid leakage from the conduit, comparing the volume of fluid leakage with a predetermined percentage of the volume of total fluid flow and generating a distinctive signal based on the comparison.

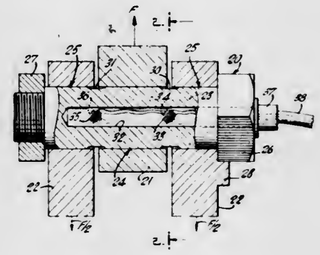
3,695,095
APPARATUS FOR MEASUING WATER IMPURITIES IN OIL
Birger David Lineberg, Ekorrvaegen 7, Koping, Sweden
Filed April 14, 1970, Ser. No. 28,350
Int. Cl. G01n 11/00, 33/28
U.S. Cl. 73—61.1 R **4 Claims**

An apparatus for measuring water impurities in oil comprises a confined space in which the oil is heated to a temperature higher than the evaporation temperature of water. In accordance with the invention, the confined space is a chamber arranged between an inlet and an outlet and having heating means and temperature control means, said chamber being adapted, by way of valves provided in the inlet and the outlet,



to form a closed system. The chamber has an expansion vessel connected thereto, which is of variable volume and has means for emptying it. Further, the closed system is provided with means for measuring and/or controlling the change of state produced by the heating of the oil.

3,695,096
STRAIN DETECTING LOAD CELL
Ali Umit Kutsay, 3520 Lewis Road, Newton Square, Pa.
Filed April 20, 1970, Ser. No. 30,190
Int. Cl. G01l 1/18
U.S. Cl. 73—88.5 R **9 Claims**

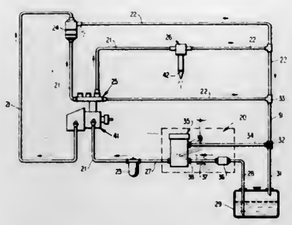


A strain detecting load cell which is adapted to replace or be readily interchangeable with coupling member such as a pin or bolt. The working dimensions of the cell and the part replaced are the same, except that the cell has short zones of slightly decreased diameter so that the shear strains are concentrated in these zones. An axial bore in the cell contains electrical strain gages attached to its circumferential wall within the concentrating zones and having leads for connection to exterior measuring instrumentation such as Wheatstone bridge equipment. The arrangement and orientation of the gages in the concentrating zones permit evaluation of the applied load both as to magnitude and direction.

3,695,097
DEDUCTOR FOR FLOW METERING SYSTEM AND APPARATUS
Joseph C. Michalowicz, 7904 Wyndale Road, Chevy Chase, Md.
Filed March 2, 1970, Ser. No. 15,578
Int. Cl. G01l 3/26
U.S. Cl. 73—113 **4 Claims**

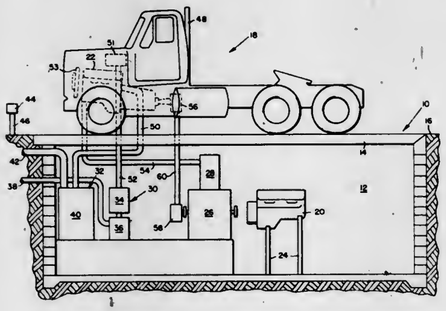
A flow consumption metering system and apparatus employing a flow meter and a mechanism (hereinafter called a

deductor) in the flow supply line from a source to a point of use and a return line for recirculating any unused portion of



the flow for reuse to the deductor so as to avoid a further metering of the unused portion of the flow.

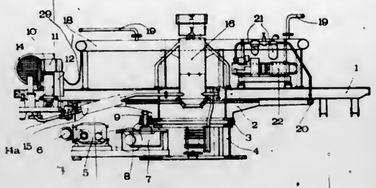
3,695,098
METHOD AND APPARATUS FOR ISOLATING AND MEASURING VEHICLE NOISE
Kenneth C. Kirkland, Jr., Longview, Tex., assignor to Garlock, Inc., Palmyra, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,426
Int. Cl. G01m *17/00*
U.S. Cl. 73—117.1 **16 Claims**



Method and apparatus for individually isolating and measuring major vehicle noise sources such as the exhaust system, the air intake system and the engine. The noise sources are individually isolated, one at a time, while installed in their normal condition on the vehicle. Noise measurements are then taken on and around the vehicle while the vehicle is located on the ground similar to its operating position on a highway, with no building or reflecting surfaces near the test site which would affect the test results. The noises are individually isolated by parking the vehicle on top of a subterranean building having a soundproof room therein and by locating all but the one noise source being measured in the soundproof room. Standard measurement and analysis equipment are used.

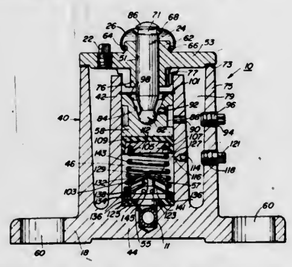
3,695,099
ROTARY DISK ENGINE TESTING ASSEMBLY
Luigi Viano, via Corrado Corradini 20, Moncalieri, Italy
Filed Nov. 3, 1971, Ser. No. 195,312
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **6 Claims**

A rotary disk engine testing assembly comprising a rotatable platform adapted to receive a plurality of internal-combustion engines to be tested or run in, the rotatable platform being rotatably supported on a base support and driven in rotation by drive means. Each engine testing unit on the rotatable platform is provided with a friction brake for applying a load to the engine to be tested, means for clamping the engine, a starter motor and carburetor for such engine, means for con-



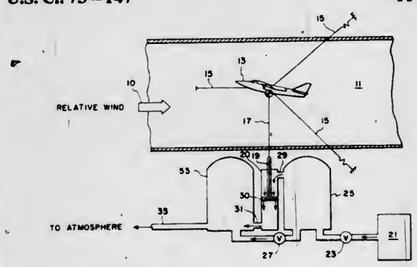
nection of the carburetor to a fuel supply line on the rotatable platform, and exhaust gas discharge means.

3,695,100
FORCE MEASURING AND INDICATING APPARATUS
Wallace F. Mitchell, 916 West Campbell St., Arlington Heights, Ill.
Filed Oct. 5, 1970, Ser. No. 77,966
Int. Cl. G01l *1/02*
U.S. Cl. 73—141 R **4 Claims**



Force measuring and indicating apparatus includes a pressure indicating gauge, such as a Bourdon gauge, and a force responsive sending unit having a liquid containing piston chamber and a piston movable therein in proportion to the force of being measured. A fluid outlet is connected to the gauge, and a pair of check valves are connected in opposing directions between the outlet and the piston chamber to maintain a predetermined pressure to the gauge and to provide a substantially greater flow rate from the gauge to the piston chamber than in the opposite direction.

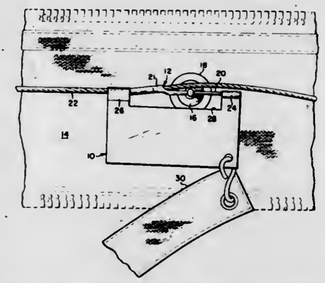
3,695,101
LIFT-BALANCING DEVICE
Perry W. Hanson, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 8, 1970, Ser. No. 70,032
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **11 Claims**



A static force balancing system attached to a lifting body flying on a free-flight suspension system in a wind tunnel

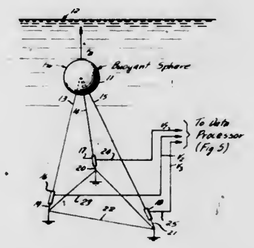
which balances the static lift forces generated in excess of lifting body weight while permitting freedom of movement of the lifting body in response to dynamic forces. The static lift forces are balanced by the flow of pressurized air against a piston sliding loosely in a casing. Friction between piston and casing is essentially eliminated by a portion of the pressurized air leaking past the piston. Force variation with piston position is essentially eliminated by providing a pressure reservoir connected to the casing which acts as an accumulator.

3,695,102
SLIDABLE PIN-LOCKING TOOL
Elbert E. French, 3400 S. 4th Ave., Space 38, Yuma, Ariz., and Robert W. Parker, 480 W. B. St., Brawley, Calif.
Filed Nov. 30, 1970, Ser. No. 93,760
Int. Cl. G01l *1/26*
U.S. Cl. 73—141 R **3 Claims**



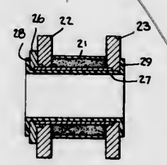
A tool particularly suitable for testing the maximum pull force on a parachute rip cord pin connector, the tool being capable of detachably fitting on the connection to enable only partial withdrawal of the pin without complete separation of the connection that would deploy the parachute.

3,695,103
CURRENT AND TURBULENCE METER
Franklyn C. W. Olson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 23, 1970, Ser. No. 74,782
Int. Cl. G01p *13/00*; **G01w** *1/00*
U.S. Cl. 73—170 A **9 Claims**



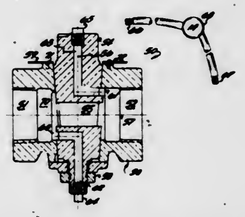
The invention disclosed is an instrument for sensing, measuring, and indicating the velocity components in the resultant velocity and direction of flow of, and turbulence occurring within a moving fluid medium. It incorporates a fluid movement responsive spherical sensor tethered by a trio of taught wires containing strain gages, one or more computers (depending on the parameters being calculated), and a readout calibrated in terms of the information desired during given operational circumstances.

3,695,104
ELECTROMAGNETIC FLOWMETER HAVING REMOVABLE LINER
Elmer D. Mannherz, Southampton, and Henry M. Hermanns, Huntingdon Valley, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.
Filed May 28, 1971, Ser. No. 147,827
Int. Cl. G01f *1/00*; **G01p** *5/08*
U.S. Cl. 73—194 EM **9 Claims**



An electromagnetic flowmeter having a meter pipe of magnetic material terminating at either end in a coupling flange. Coils are disposed within the pipe to establish an electromagnetic field which is mutually perpendicular to the longitudinal axis of the pipe and to a diametrical axis extending between a pair of electrodes mounted on the pipe. Telescopically insertable within the pipe is a replaceable liner assembly including a relatively rigid sleeve of non-magnetic material having a flange at only one end thereof which, when the sleeve is inserted, abuts the face of the corresponding flange in the meter pipe. Concentrically disposed within the sleeve is a tubular liner of resilient insulating material. The liner is provided at one end with a first flange abutting the face of the sleeve flange, and a second flange at the other end thereof, which when the assembly is in place, is adapted to abut the face of the corresponding pipe flange. The liner is bonded to the inner wall of said sleeve except at the end portion thereof which includes said second flange, whereby by temporarily collapsing the unbonded portion of the liner, the assembly may be readily telescoped within the pipe.

3,695,105
HYDRAULIC VALVE WITH FLUID METER CONNECTIONS
Gilbert Fritz Carlson, Skokie, Ill., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Division of Ser. No. 718,295, Mar. 14, 1968, Pat. No. 3,590,473
Filed March 25, 1970, Ser. No. 25,619
Int. Cl. G01f *1/00*
U.S. Cl. 73—211 **6 Claims**

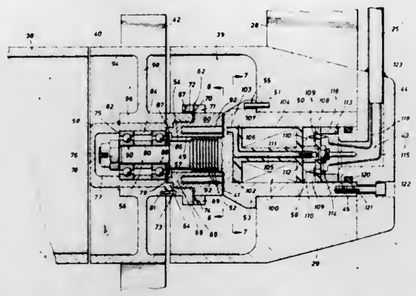


The rotor in a square cock head valve has the usual main fluid passage. In addition, it also has upstream and downstream orifices communicating connectably to a meter attachment point on the valve rotor. This way, a meter may be attached or removed by merely closing the main valve. There is no need to provide pressure tapping valves for controlling the flow of fluids when the meter is attached to or removed from its connections with the housing. When the meter is not attached, non-leaking plugs seal off the valve.

3,695,106
GAS TURBINE METER

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed July 2, 1970, Ser. No. 51,834
Int. Cl. G01f 1/06
U.S. Cl. 73—231 R 9 Claims

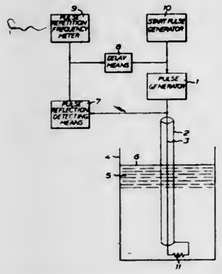


In one exemplar embodiment, a gas turbine flow meter is provided having a magnetic induction signal producing means disposed within the gas flow path of the meter and having unique weir type seals for protecting the rotor bearings from contamination, thus substantially prolonging the life of the rotor bearings. The magnetic induction coil and magnets utilized in the signal producing means are radially spaced significantly closer to the rotor axis of rotation than the rotor blades for substantially increasing the mechanical advantage of the meter and improving its low pressure, low flow-rate signal producing capability.

3,695,107
METHOD OF MEASURING THE LEVEL OF A MATERIAL IN A TANK, AND AN APPARATUS FOR PRACTICING THIS METHOD

Carl Hellmuth Hertz, Skolbankovagen 8, and Kjell O. T. Lindstrom, St. Hans Grand 25 A, both of Lund, Sweden

Filed June 1, 1970, Ser. No. 42,070
Int. Cl. G01f 23/28
U.S. Cl. 73—290 R 7 Claims

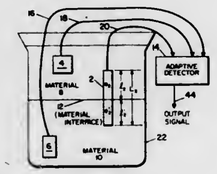


A method of measuring the level of a material filled into a tank by using a substantially vertical electromagnetic delay line partly submerged in the material so that the submerged part of the line has another characteristic impedance than the line part above the level of the material, sending an electric pulse down the delay line and measuring the time it takes the pulse to reach the level of the material and the time it takes the pulse reflection generated at the level of the material to return to the input end of the line as a measure of the level of the material in the tank. An apparatus for this method has an electronic oscillating system connected to the input end of the delay line and comprising a triggered pulse generator and a pulse reflection detecting means for triggering the pulse generator each time a pulse reflection appears at the input end of the delay line, and a pulse repetition frequency meter connected to the electronic oscillating system for indicating the oscillating frequency thereof as a measure of the level of the material in the tank.

3,695,108
ADAPTIVE PROPORTIONAL CONTROL FOR DETERMINING INTERFACES OF DISTINCT MATERIALS

Noel D. Wygant, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed July 23, 1970, Ser. No. 57,634
Int. Cl. G01f 23/22, 23/26
U.S. Cl. 73—290 R 17 Claims

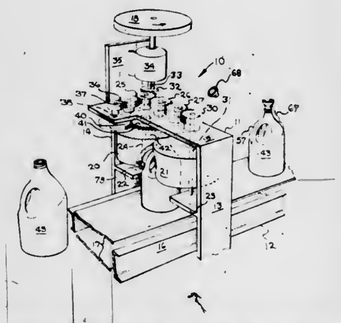


A process and apparatus for detecting changes in interface level between distinct materials within a container independent of any chemical or physical changes taking place within either or both of the distinct materials. Sensors are introduced into each of the materials and an additional sensor is placed across the interface, the output from each of the three sensors is transmitted to an adaptive detector device which combines these outputs by means of a control equation to give an emanating signal proportional solely to the position of the interface within the container.

3,695,109
METHOD AND APPARATUS FOR DEFLASHING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed June 26, 1970, Ser. No. 50,194
Int. Cl. B26d 11/00
U.S. Cl. 83—37 10 Claims

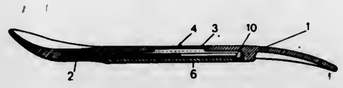


This invention relates to the removal of unwanted flash material from the seam areas of plastic articles such as handle containing bottles. A rolling cutter is employed and is synchronized with the movement of the containers so that the cutting knives enter the handle portion of the bottle and remove the flash material therefrom.

3,695,110
BABY THERMOMETER SPOON

Alexander Biolik, Marsstrasse 14, 8 Munich, Germany

Filed April 2, 1970, Ser. No. 25,199
Claims priority, application South Africa, Sept. 29, 1969, 69/6804
Int. Cl. G01k 13/12, 13/00
U.S. Cl. 73—343 R 9 Claims

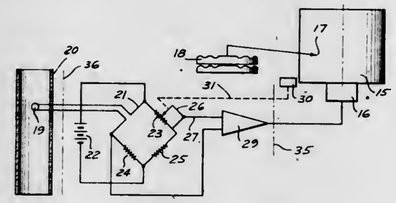


A temperature measuring device in the shape of a spoon or in another shape suited for feeding purposes comprising a feeding instrument having a handle and a food holding portion adapted for holding food to be eaten, the handle having a recess therein and a temperature measuring means disposed in the recess and adapted to be read to provide an indication of the temperature of the food held in the food holding portion.

3,695,111
APPARATUS FOR AND METHOD OF CONTINUOUSLY MEASURING A TEMPERATURE GRADIENT IN RELATION TO ALTITUDE

Pierre Belle, 5 rue Lecardonnel, Grenoble, Isere, France

Filed July 6, 1970, Ser. No. 52,561
Int. Cl. G01k 13/00; G01w 1/04
U.S. Cl. 73—345 2 Claims



The continuous measurement of a temperature gradient in relation to altitude is made directly by providing in the apparatus units sensitive to temperature and altitude and arranged to control a registering scribe and a recording drum as the apparatus is moved through an extended altitude (height or depth) at a given speed.

3,695,112
ELECTRICALLY OPERATED TEMPERATURE SENSING ASSEMBLY

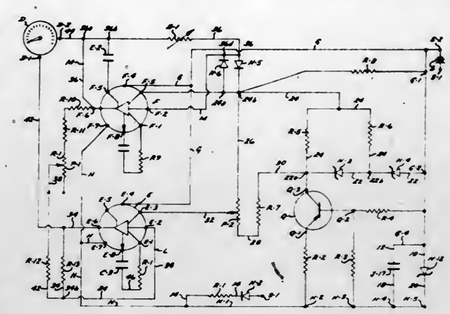
Clarence R. Possell, 4842 Viane Way, San Diego, Calif.

Filed Oct. 14, 1970, Ser. No. 80,537
Int. Cl. G01k 7/20; H01l 3/00
U.S. Cl. 73—362 AR 5 Claims

A temperature sensing assembly that indicates the temperature of an electrical resistance element containing sensor by comparing the differential in voltages between that in a first feedback loop and the voltage in a second feedback loop of which said sensor forms a part.

The operating components of the assembly are: the temperature sensor; an electric power supply; a voltmeter; and an electric circuit that includes first and second operational amplifiers that have said first and second loops associated therewith and means in said circuit for supplying a constant current input to said amplifiers.

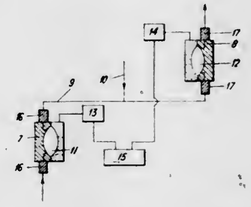
The sensor may be any resistance element that has a variable linear resistance value over a substantial temperature range. However, the assembly is considered to operate with optimum results, when the sensor described in the specification is used therewith.



3,695,113
SAMPLING METHOD AND APPARATUS

Graham Broadbent, and John Rickard Mansfield, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed March 30, 1970, Ser. No. 23,725
Claims priority, application Great Britain, March 28, 1969, 16,455/69
Int. Cl. G01n 1/14
U.S. Cl. 73—421 11 Claims



A method of sampling comprises regulating the flow of a carrier liquid at two points between which is located the sample source, the rate of flow upstream of the source being arranged to be less than that downstream of the source, the difference in rate being made up by withdrawal of a sample into the carrier liquid.

3,695,114
UNIVERSALLY TILTABLE STATIC BALANCE TESTING APPARATUS WITH ADJUSTABLE WORK GRIPPING MECHANISM

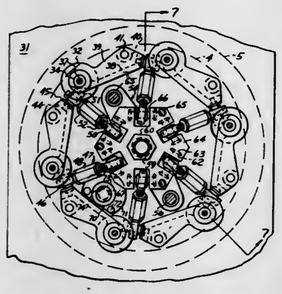
Thomas C. Smith, Centerline, Mich., assignor to Micro-poise Engineering & Sales Company, Wixom, Mich.

Filed March 6, 1970, Ser. No. 17,204
Int. Cl. G01m 1/04
U.S. Cl. 73—485 14 Claims

A workpiece carrier is supported for tilting travel about a substantially vertical axis upon an arcuately spherical universal pivot, which pivot rests upon a seat having a corresponding sphericity. The seat surmounts an annular pedestal situated upon the top surface of a housing. An annular clamp concentrically encircles the pedestal, and has limited, reciprocable, vertical travel thereon. Drive means is provided to urge the clamp in downward travel to a carrier restraint position. A portion of said annular clamp is adapted to engage the carrier in the restraint position to resist tilting travel of the pivot.

Drive means is provided, also, to drive the annular clamp in upward travel to a carrier release position. The release position leaves the pivot free for tilting travel in any direction. A plurality of equally spaced jaws, comprising a chuck, is individually, pivotally mounted upon the carrier to be swung inwardly toward said vertical axis (contracted) to a workpiece load and unload position. Alternatively, the jaws may be swung outwardly from said axis (expanded) to a workpiece gripping position.

Connecting links join said jaws with a spider, which has vertical, reciprocable travel, so that downward travel of the spider expands said chuck jaws, and upward travel contracts



said chuck jaws. A spring tends to drive the spider in downward travel (expansion) and a fluid motor opposes said spring to drive the spider in upward travel (contraction). A typical workpiece is a pneumatic tire, with the chuck jaws engaging upon the beads of the tire when the chuck expands. The actual gripping position of the jaws is determined by the bead diameter, and hence the chuck can accept a plurality of such diameters, in random sequence, within the limits of its minimum contraction and maximum expansion. Each connecting link includes at least one universally movable, spherical joint, to afford non-radial movement of the linkage relative to said vertical axis.

3,695,115

MONITORING DEVICE FOR VEHICLE BEHAVIOUR

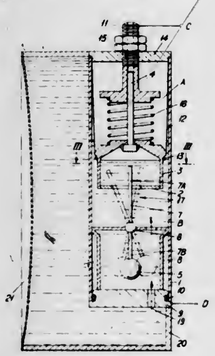
Anthony John Eccles, 16 Lefton Park Rd., Liverpool 8; Alistair Donald Mant, 35 Trinity Court Grays Inn Road, London, and Barry Owen Shorthouse, Liverpool, all of England, assignors to said Eccles and Mant, by said Shorthouse

Filed Nov. 12, 1971, Ser. No. 98,389

Claims priority, application Great Britain, Nov. 16, 1970, 54,463/70

Int. Cl. G01p *15/02*

U.S. Cl. 73—510 **20 Claims**



The invention comprises apparatus for mounting in a vehicle, which monitors the horizontal acceleration of the vehicle, and which signals when a level of acceleration is exceeded, the level at which a signal is made being determined by and varied with the speed of the vehicle.

3,695,116

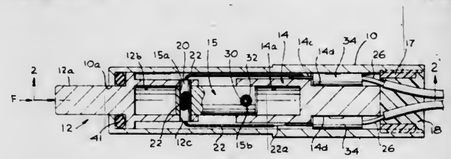
NON-EXPLOSIVE ELECTRICALLY INITIATED HEAT-IGNITABLE ACTUATOR

Robert Baur, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Sept. 30, 1970, Ser. No. 76,952

Int. Cl. G05g *17/00*

U.S. Cl. 74—2 **24 Claims**



A non-explosive, electrically initiated, heat-ignitable actuator constructed and arranged in the form of a biased, collapsible dual piston assembly. When the actuator is in the unactuated condition, the dual piston assembly is prevented from collapsing by an electrically triggerable dual shear pin and associated heat-ignitable wire arrangement. The shear pins and their associated wires are composed of a primarily alluminum and palladium bimetallic composition which when ignited produces a violent but non-explosive reaction which rapidly propagates to all portions of the material. The construction of the dual piston assembly is such that ignition of either or both of the shear pins causes the piston assembly to collapse and thereby bring about actuation of the actuator.

3,695,117

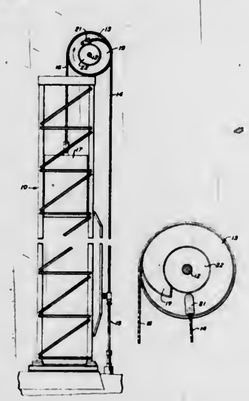
LONG STROKE PUMPING UNIT

Roy D. Ewing, Richardson, and Michael L. Rizzone, Dallas, both of Tex., assignors to United States Steel Corporation

Filed June 17, 1970, Ser. No. 47,074

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.22 **4 Claims**



An improvement in a long-stroke pumping unit of the type shown in an earlier patent (Kuhns et al. U.S. Pat. No. 3,285,081). The patented unit includes a tower, drums mounted at the top of the tower, and a reversible drive for the drums. Flexible cables suspend a rod string and a counterbalance from the drums to move in opposite directions. Improvement is in attaching the cables to the drums with pivoted levers to prevent detachment caused by overrun at the ends of

a stroke and to shorten the moment arms more effectively at the ends of each stroke.

3,695,118

Patent Not Issued For This Number

3,695,119

WORM DRIVE WITH CYLINDRICAL WORM

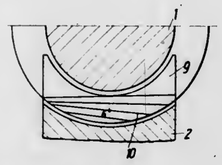
Gerhard Stade, Berlin, Germany, assignor to Firma Herbert Lidner GmbH, Berlin, Germany

Filed Sept. 28, 1970, Ser. No. 75,819

Claims priority, application Germany, Nov. 27, 1969, P 19 60 464.9

Int. Cl. F16h *1/08, 57/04*

U.S. Cl. 74—427 **3 Claims**



A worm drive is formed of a cylindrical worm which meshes with a worm wheel, and the cylindrical worm has cycloidally shaped flanks. The combined configurations of the worm and worm wheel provides two lines of contact between their corresponding flanks when they are in meshed engagement.

3,695,120

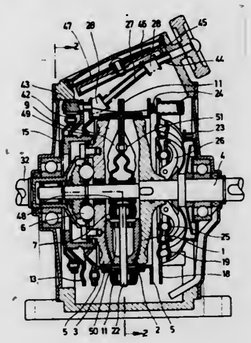
INFINITELY VARIABLE FRICTION MECHANISM

Georg Titt, Obere Vorstadt 9, D-8358, Vilshofen, Germany

Filed Jan. 14, 1971, Ser. No. 106,373

Int. Cl. F16h *37/06*

U.S. Cl. 74—690 **25 Claims**



Infinitely variable friction mechanism having axially aligned driving and driven shafts with attached friction disks that are rotated in opposite directions by barrel-shaped rollers that are articulated in a basket and in a first ring that is longitudinally shiftable relative to the basket. A second ring that is also independently longitudinally shiftable cooperates with the first ring in conjunction with the torque prevailing on the basket for providing counter pressure regulation of the frictional matings. Coupled to the output of the friction mechanism is a planetary gearing arrangement having an inside sun wheel driven by the driving shaft and an outside wheel connected to the driven friction disk but supported by a wheel which may be allowed to turn freely or to be braked in one or both rotational directions.

3,695,121

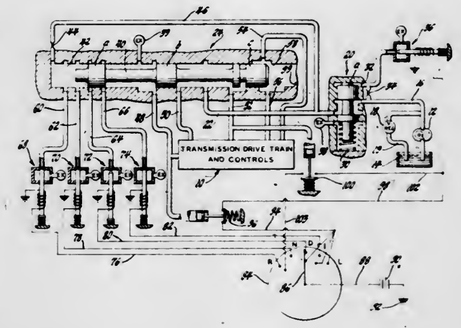
DRIVE MODE SELECTION SYSTEM FOR TRANSMISSIONS

Gordon D. Corrigan, Livonia; Donald H. Lee, Ann Arbor; Howard E. Olsen, Plymouth, and Robert J. Petry, Berkley, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 78,077

Int. Cl. F16h *3/44*

U.S. Cl. 74—753 **8 Claims**



Transmission operation selector system in which a selector valve is moved to predetermined control positions by the force of line pressure acting on a differential area of the selector valve and the opposing force of a signal pressure in a control chamber at one end of the valve. Signal pressure is controlled by solenoid operated valves operatively connected to a selector switch controlled by the vehicle operator. A line feed valve which controls the supply of operating fluid to the selector valve is controlled by a solenoid operated valve and cooperating pressure switches to cut off the feed of the fluid to the selector valve to prevent vehicle motion other than that selected when any one solenoid has failed.

3,695,122

CONTROL SYSTEM FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION

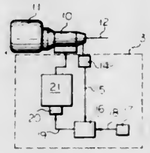
Namio Irie, Yokohama, and Ichimura Hirohisa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 13, 1970, Ser. No. 80,310

Claims priority, application Japan, Oct. 13, 1969, 44/81384

Int. Cl. B60k *21/00*

U.S. Cl. 74—864 **6 Claims**

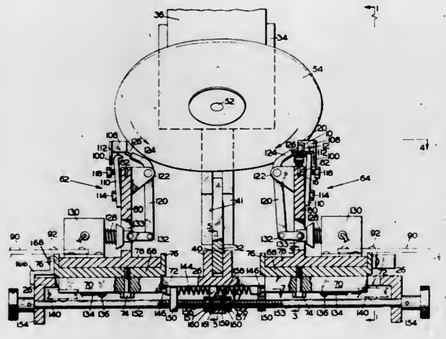


A control system for controlling the line pressure in a hydraulic control system of an automotive automatic power transmission, in which a line pressure regulator valve is controlled by a variable back pressure produced by a fluid jet nozzle which is electrically controlled in response to a variation in the vehicle speed, whereby a cutback is rapidly effected in the line pressure to effect a smooth shifting between the gear ratios.

3,695,123
SAW CHAIN GRINDING MACHINE

Elmer R. Silvey, Route 1, Box 138, Eagle Point, Oreg.

Continuation of Ser. No. 41,783, June 5, 1971, abandoned, which is a continuation of Ser. No. 704,789, Feb. 12, 1968, abandoned. This application Oct. 7, 1971, Ser. No. 187,422
Int. Cl. B23b *63/16*
U.S. Cl. 76—43 16 Claims

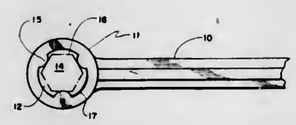


A grinding wheel is mounted on a machine base, and a pair of saw chain holders disposed on opposite sides of the grinding wheel are also mounted on the base. The holders are urged toward the grinding wheel by a spring and are moved away from the grinding wheel by pull cables operated by foot pedals. A turnscrew assembly is rotatably supported on the base and has right and left hand threads on opposite ends thereof on which are threadedly mounted stop fingers arranged such that by adjustment of one of the stop fingers for selectively locating its respective holder with relation to the grinding wheel, the other stop finger is simultaneously adjusted so that the other holder is positioned in precisely the same spaced position as the first mentioned holder but on the opposite side of the grinding wheel. A releasable solenoid operated hold-down lever for the saw chain is provided on each holder, and these levers are released when the foot pedals are depressed, such being accomplished by means of switches in the circuit to the solenoids and arranged for engagement by the foot pedals.

3,695,124
WRENCH HEAD

Herman A. Myers, R.D. # 1, Box 125, Lake Lynn, Pa.

Filed Nov. 27, 1970, Ser. No. 93,061
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R 2 Claims

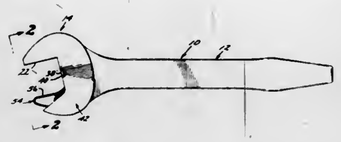


An annular wrench head in the form of a socket or a box end wrench which has a plurality of arcuately cross-sectioned ribs extending into the central opening of the head and spaced from one another so as to contact the midway point of certain of the faces of the fastener head. The spaces between the ribs are in alignment with the edges of the fastener head.

3,695,125
OPEN END RATCHET WRENCH

Robert I. Glass, Holyoke; William Phillips, and William R. House, both of Northampton, all of Mass., assignors to Cesco Mfg. Corp., Northampton, Mass.

Filed Oct. 6, 1970, Ser. No. 78,472
Int. Cl. B25b *13/12*
U.S. Cl. 81—179 9 Claims

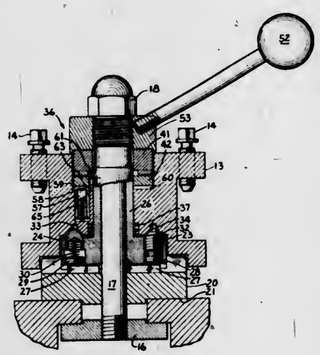


An open end ratchet wrench having a laminar head structure consisting of a central body portion with a pair of side caps permanently metal bonded on opposite sides thereof, the head structure defining therein between the caps an arcuate channel within which a spring biased ratchet pawl is slidable between an extended torquing position and a retracted ratcheting position. A pawl retention detent forming a permanent part of the head structure is movable between a temporary open position permitting insertion of the pawl and its biasing spring into the otherwise completely fabricated head structure, and a permanent closed position wherein the pawl is permanently retained in the head, the detent means defining the outer limit of sliding movement of the pawl in the head. With this construction a true open end ratchet wrench can be economically fabricated of any desired tool metal with a minimum number of parts and by simple production steps; the resulting wrench having high torquing capacity, minimal head thickness, and attractive appearance, approaching these respective characteristics in a solid open end wrench of comparable size.

3,695,126
INDEXABLE TURRET TOOL POST

Bruce M. Armstrong, Williams Bay, Wis., and Jack M. Butler, Mount Prospect, Ill., assignors to Armstrong Bros. Tool Co., Chicago, Ill.

Filed May 18, 1970, Ser. No. 38,180
Int. Cl. B23b *29/24*
U.S. Cl. 82—36 A 3 Claims

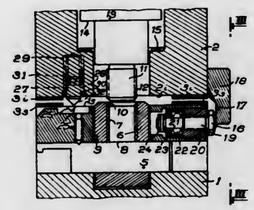


An indexable turret tool post is provided, in which a plurality of index pins situated around a central tool post bolt are provided. To rotate the tool block and to lock the tool block into position on the index pins, nestable cam means are included.

3,695,127
TOOL SUPPORT FOR A MACHINE TOOL

Martial Chabrier, Le Pecq, France, assignor to C.N.M.P. Berthiez, Paris, France

Filed June 1, 1970, Ser. No. 41,908
Claims priority, application France, June 6, 1969, 6918820
Int. Cl. B23b *29/08, 29/12*
U.S. Cl. 82—36 R 13 Claims

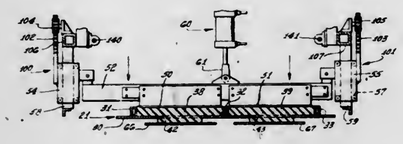


A tool support for a machine tool comprises support structure adapted to be attached to the machine tool and a tool holder adapted to receive a tool, the support structure and tool holder comprising a screw and nut to draw the support structure and tool holder towards each other into abutting relationship while permitting relative movement in another direction, corrugations on the support structure and the tool holder interengaging to constrain the last-mentioned relative movement to said another direction, an inclined surface being provided on the tool holder, the surface extending transversely of the said another direction and being engaged by spring-loaded plungers in the support structure whereby to effect relative movement of the support structure and tool holder in said another direction to predetermined relative positions.

3,695,128
MACHINE FOR FORMING CAVITIES IN FOAM PADS AND TRIMMING SAME

Carlos A. Gentile, Westminster, Calif., assignor to Califoam Corp. of America, Compton, Calif.

Filed Sept. 14, 1970, Ser. No. 71,758
Int. Cl. B26d *3/00, 7/14*
U.S. Cl. 83—1 12 Claims

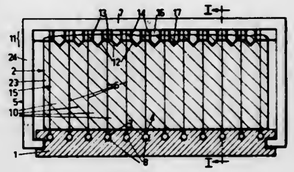


Machine for operating on foam pads or blanks used as fillers in automobile seat upholstering, which require one or more cavities in the back of the pad, the machine including a table die with an aperture defining the outline of the cavity, a primary pressure plate adapted to compress the pad and cause material of the pad to form a bulge through the aperture of the die, a secondary pressure plate below the die working upwardly against the bulge, a reciprocating knife travelling adjacent the bottom of the die to cut off the material of the bulge, in conjunction with descending knives, adjustable as to inclination, for cutting the ends to size.

3,695,129
APPARATUS FOR CUTTING A BLOCK OF PLASTIC MATERIAL

Berend Vrijma, Vuren, Netherlands, assignor to Calsilox S.A. Luxemburg Ville, Luxembourg

Filed June 22, 1970, Ser. No. 48,268
Claims priority, application Netherlands, June 26, 1969, 6909802
Int. Cl. B26d *3/06*
U.S. Cl. 83—5 2 Claims



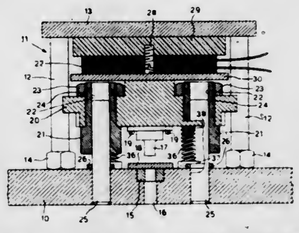
An apparatus for cutting a block of material in a plastic state, more particularly light weight concrete, grooved at the top, wherein a top crust cut loose from the block is removed by suction. If the crust is cut loose from the block by a horizontal cutting wire, and the grooves are cut away by means of blades, the material of the grooves remains behind on the top surface of the block, when the crust is removed by suction.

The material of the crust and the groove can be removed simultaneously by suction if the crust is cut loose along the profile of the grooves.

3,695,130
HIGH VELOCITY PRESS

Renzo Fedrigo, Banchette, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 869,059, Oct. 24, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,349
Int. Cl. B26d *5/08*; B26f *1/02*
U.S. Cl. 83—13 5 Claims



Presses for metal or other hard material in which the driving power for the punch is derived primarily from the kinetic energy of the punch element and the supporting structure moving at high speed. Capacitive discharge through a coil produces an electromagnetic interaction with a conductive plate adjacent to the coil and secured to the punch element to achieve the high velocity and therefore the desired kinetic energy, which energy is transformed to mechanical punching force.

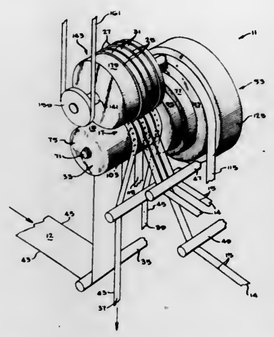
3,695,131
METHOD OF AND APPARATUS FOR SLITTING WEBS

Ernest F. Zimmermann, Buffalo Grove, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 9, 1970, Ser. No. 87,677
Int. Cl. B26d *4/04, 4/14*
U.S. Cl. 83—56 10 Claims

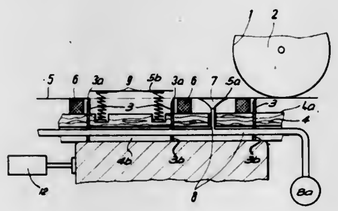
Thin elongated webs are slit by circular slitter blades having razor sharp cutting edges into strips having straight line edges

which are parallel to each other and which are held to a close tolerance width dimension. The web is carried across cutting edges of the slitter blades by a traveling support surface and is



held thereon against longitudinal or transverse shifting movement relative to the traveling support surface. The slitter blades are rotated to distribute wear uniformly about the circumferences thereof.

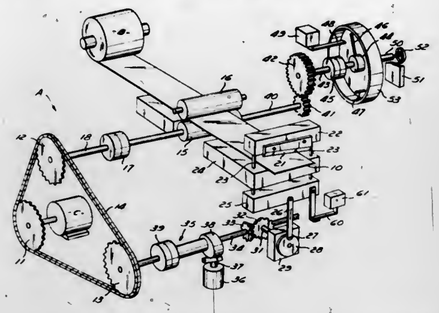
3,695,132
APPARATUS FOR CUTTING SHEET MATERIAL
Jean Pierre Cuir, and Gerard Cuir, both of 4, rue du Chateau, 59 Lille, France
Filed Nov. 12, 1970, Ser. No. 88,572
Claims priority, application France, Nov. 13, 1969, 6939101
Int. Cl. B26d *1/56, 7/18*
U.S. Cl. 83—98 **6 Claims**



An apparatus for cutting sheet material comprises a first member having a reaction surface and a second member carrying a cutting blade for cooperating with the reaction surface to cut sheet material into portions when passed between the first and second members. Elements are provided for maintaining one portion in the apparatus while other elements are provided for repelling another portion from the apparatus.

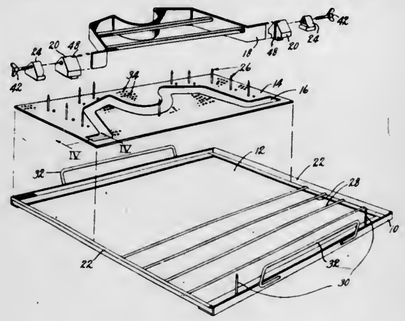
3,695,133
APPARATUS FOR CUTTING STRIP MATERIAL IN VARIABLE LENGTHS
Theodore R. Finke, Euclid, Ohio, assignor to The Euclid Products Co., Inc., Willoughby, Ohio
Filed July 16, 1970, Ser. No. 55,401
Int. Cl. B26d *5/24*
U.S. Cl. 83—204 **6 Claims**

Apparatus for cutting strand material, such as fabric strip material into finite segments of a preselected length. An end length of strip material is fed past a cutting mechanism until a desired length has been advanced. Then the feeding is stopped by an adjustable, length control mechanism operatively connected to the feeding mechanism and the cutting mechanism is actuated to cut the delivered segment from the strip. The



apparatus will either repeat this function automatically or in response to actuation by an operator.

3,695,134
DEVICES FOR CUTTING FABRIC
Albert R. Hardwick, Leicester, England, assignor to USM Corporation, Flemington, N.J.
Filed Nov. 3, 1970, Ser. No. 86,435
Claims priority, application Great Britain, Nov. 5, 1969, 54,158/69
Int. Cl. B26d *7/02*
U.S. Cl. 83—451 **4 Claims**

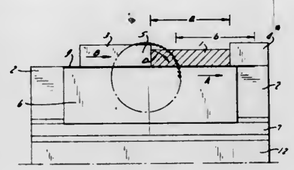


A device for cutting fabric has a pinning frame placed on a support of a press having a head relatively movable toward and away from the support. The frame has an aperture adjacent the support and receives a plate having an aperture in register with the frame aperture. A plurality of pins project from the plate near its aperture to hold fabric on the plate. A die is then forced through the fabric and both apertures by relative movement of the head toward the support to cut the material against the support of the press.

3,695,135
CIRCULAR SAW CONSTRUCTION
Leopold Jagers, Euskirchen Rhineland, Germany, assignor to Trennjager Maschinenfabrik, Euskirchen/Rhineland, Germany
Filed July 22, 1970, Ser. No. 57,158
Claims priority, application Germany, July 23, 1969, P 19 37 321.8
Int. Cl. B26d *7/02*
U.S. Cl. 83—455 **8 Claims**

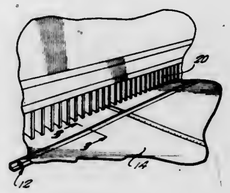
A housing of a circular saw is mounted for displacement in a predetermined direction and has an upper surface. A rotary saw blade is carried by the housing and projects at least in part

upwardly of the upper surface thereof. Its general plane is coincident with the predetermined direction. Mounting means is provided for mounting —upwardly proximal to the upper surface of the housing—workpieces which in the aforementioned predetermined direction have at most a predetermined maximum dimension. Supporting plate means is provided on



the upper surface of the housing movable with the same and in supporting engagement with a mounted workpiece. According to the invention the supporting plate means comprices a portion which projects beyond the saw blade in the predetermined direction by a distance which at least equals two thirds of the maximum dimension mentioned before to thereby offer additional support to the workpiece.

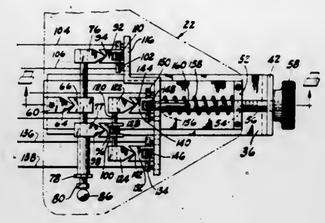
3,695,136
CUTTING STICK SPACER
Richard J. Horne, 13908 Barrydale St., La Puente, Calif.
Filed Oct. 16, 1970, Ser. No. 81,390
Int. Cl. B26d *7/20*
U.S. Cl. 83—658 **10 Claims**



Spacer means for the cutting stick of a paper cutting machine to permit periodic lateral adjustment of the stick relative to the plane of the cutting blade so as to locate different face portions of the stick in position for contact by the blade and thereby extend the useful life of the stick. The spacer means includes two or three spacer bars which are positionable between the cutting stick and the walls of the cutting stick channel in the bed of the cutting machine and are so dimensioned that reversing the position of the side spacer bar or bars shifts the stick laterally in the channel. The bottom spacer bar may be integrally joined to one side spacer bar to form a unitary L-shaped spacer member.

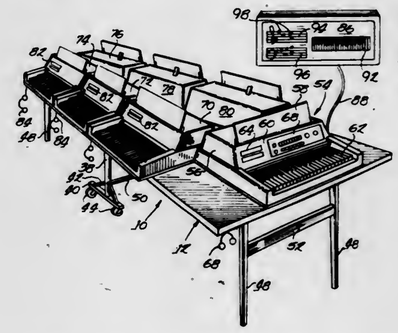
3,695,137
TENSION ADJUSTMENT FOR STRINGED MUSICAL INSTRUMENTS
Robert C. Eurich, 3109 Delaware, Fling, Mich.
Filed May 4, 1970, Ser. No. 34,205
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 **12 Claims**

A tuning mechanism for a stringed musical instrument comprisng a compound pivot assembly for anchoring the ends of the vibrating strings, said mechanism including pivoted members for balancing the tension in each string of separate pairs of strings, and other pivoted members for balancing the tension in one pair of strings with respect to tension in another pair of strings whereby a change in tension of one string will affect the tension in each of the other strings, and means for



effecting a common adjustment of each of the pivoted members during a tuning operation.

3,695,138
PORTABLE MUSIC LABORATORY
Clifford W. Andersen, DeKalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed Feb. 11, 1970, Ser. No. 10,363
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **7 Claims**

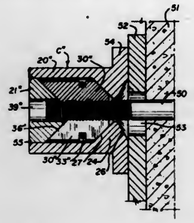


A plurality of electronic pianos is mounted on a folding table. One piano is a teacher's piano, and the remaining pianos are students' pianos. The pianos are positioned with the teacher's piano at one end of the table, and with the students' pianos converging therefrom along the sides of the table, being angled somewhat to allow a clear view of the teacher by each student without looking completely away from his piano. Each piano has its own generators and can reproduce locally at a loudspeaker or earphones, or at the teacher's piano. A table folds, rising up at its center-line, and dropping down at the outer ends in a counterbalancing arrangement, whereby all of the pianos lie on outer faces of the table for movement of the table on casters, the entire assembly when folded readily fitting through a standard 30 inch interior door to allow movement from one room to another. The teacher's piano is coupled to a display panel showing musical staffs and a keyboard, whereby the students may observe visually the notes played by the teacher.

3,695,139
QUICK CONNECT COUPLER
Wilson S. Howe, 1935 Spruce Avenue, Longmont, Colo.
Filed March 2, 1970, Ser. No. 15,613
Int. Cl. F16b *37/10*
U.S. Cl. 85—33 **11 Claims**

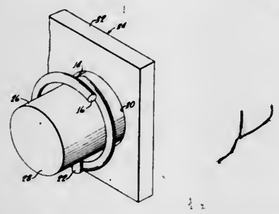
A quick connect coupler for a threaded bolt. The coupler includes a segmented core within its body having a threaded

passageway to receive the bolt. The segments of the core spread apart when the bolt is inserted into the coupler and into the passageway. Then the segments of the core come together



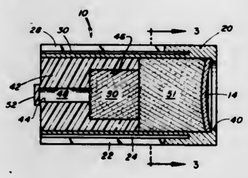
to grip the bolt and as the coupler is turned upon the bolt to tighten it, the core within the coupler body wedges against an inclined surface in the body to hold the segments together against a pull of the bolt.

3,695,140
COTTERING DEVICE
Robert L. Noble, Costa Mesa, Calif., assignor to Fowler Knobbe & Martens, Orange, Calif.
Filed March 23, 1970, Ser. No. 21,838
Int. Cl. F16b *21/14*
U.S. Cl. 85—8.3 **3 Claims**



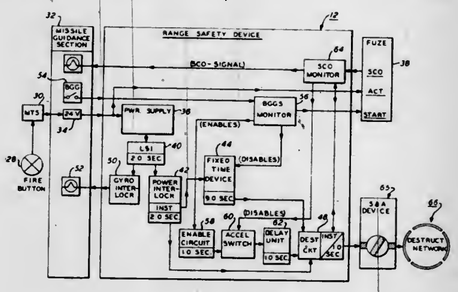
A cottering device for securing elements on a shaft made of a single length of resilient material formed to a circular shape with a diametrical straight portion extending from one extremity of the circular portion and intersecting the circular portion at a point on the periphery opposite the extremity essentially on the line of the diameter of the circle. Provision is made for rendering the device unsusceptible to being dislodged by vibration or pressure from the elements secured by the device, without the need for permanent bending of the device to lock it in place.

3,695,141
EXPLOSIVE ORDNANCE DEMOLITION WEAPON
Seymour Kronman, Aberdeen, Md.; Dana E. Spencer, Alexandria, Va., and Larry D. Henderson, Bryans Road, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Nov. 6, 1970, Ser. No. 87,522
Int. Cl. F41f *1/00*
U.S. Cl. 89—1 B **5 Claims**



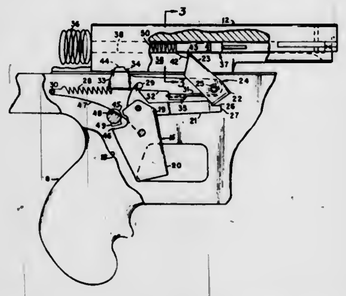
A weapon for firing a ballistic disc at an explosive ordnance device for disabling the target device. The ballistic disc, which is spherically curved and being of greater thickness at its central portion than at its peripheral portion, is positioned transversely within a cartridge casing with its concave side toward the target. A planar shock front is generated by an explosive train in the cartridge to propel the disc toward the target at very high velocities and, during initial flight, the concave disc configuration inverts to a convex streamlined tear-drop shape.

3,695,142
RANGE SAFETY DEVICE
Harvey R. Benson, Dover, and Milton V. Ashley, Jr., Iselin, both of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed June 8, 1971, Ser. No. 151,084
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.812 **11 Claims**



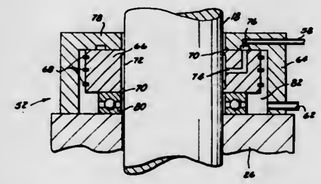
A range safety device for practice missiles is constructed to be mounted in the warhead of the missile to continuously monitor the entire flight of the missile. If the missile accelerates beyond prescribed limits of the guidance is wrong, the range safety device shuts off the rocket motor and destructs the warhead section, thus terminating the flight. The device independently monitors missile trajectory without the aid of ground based tracking equipment. The warhead section of the missile is only destroyed at a predetermined time after firing so as to avoid danger to the crew operating the missile.

3,695,143
FIRING MECHANISM FOR SEMIAUTOMATIC FIREARMS
Lee R. Frix, Knoxvile, Tenn., assignor to Volunteer Enterprises, Inc.
Filed May 5, 1970, Ser. No. 34,729
Int. Cl. F41c *5/02*
U.S. Cl. 89—145 **2 Claims**



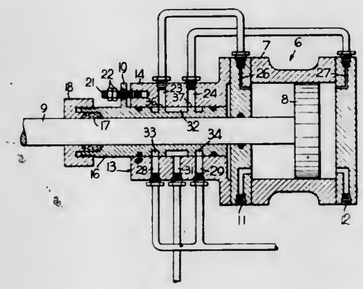
A firing mechanism for gas-operated semiautomatic firearms including positive disconnect means.

3,695,144
SERVO FEED SYSTEM FOR MACHINE TOOL PROVIDED WITH LOCKING MECHANISM
Thierry Goiffon, Ferney-Voltaire, France; Hans Rudolf Lehmann, Geneva, and Hubert Schaidl, Aire-Geneva, both of Switzerland, assignors to Ateliers des Charmilles S.A., Geneva, Switzerland
Filed Aug. 5, 1970, Ser. No. 61,219
Claims priority, application Switzerland, Aug. 7, 1969, 12073/69
Int. Cl. B23d *1/08*
U.S. Cl. 91—41 **6 Claims**



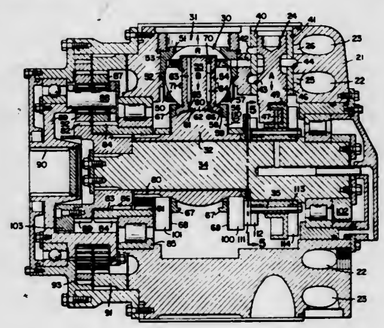
A locking mechanism for a hydraulically actuated movable rod member of a machine tool, such as the electrode tool holder of an electro-erosion machining apparatus, consisting of a locking member preferably in the form of an annular expansible member surrounding a linearly and/or angularly displaceable rod member and normally biased in engagement with the surface of the rod member. The annular member is supported by a stationary element of the machine and normally engages the rod member so as to immobilize it in a predetermined position as long as the machine servo mechanism is activated. When the machine servo mechanism is activated, pressurized fluid is introduced in a chamber dependent from the annular member, causing an expansion of the annular member releasing the rod member for normal actuation thereof by the servo mechanism.

3,695,145
PISTON POSITION MONITOR
John M. Horn, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 27, 1970, Ser. No. 84,298
Int. Cl. F15b *13/16*
U.S. Cl. 91—390 **2 Claims**



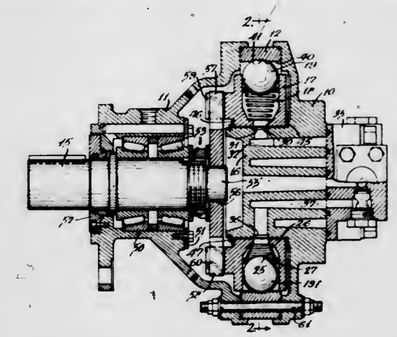
A device is disclosed which maintains the preset position of a reciprocating fluid servomotor. The device includes a spool valve with the spool connected to the servomotor piston rod. Any drifting of the servomotor piston causes the spool to open a port directing pressure fluid to the servomotor to return the piston to its preselected position.

3,695,146
HYDROSTATIC MOTOR OR PUMP AND HYDROSTATIC TRANSMISSIONS
Elias Orshansky, Jr., San Francisco, Calif., assignor to URS Corporation, San Mateo, Calif.
Continuation of Ser. No. 657,731, July 31, 1967, abandoned. This application April 22, 1970, Ser. No. 28,289
Int. Cl. F01b *3/10*
U.S. Cl. 91—478 **17 Claims**



This radial-piston, stationary-block, variable displacement motor or pump has special features that enable it to operate far beyond the operating pressure and speed ranges of current hydrostatic motors. Hydrostatic bearings or shoes with multiple recesses at the base of each piston bear on a variable eccentric attached to the output shaft of the motor. The bearing recesses are supplied through two sets of orifices, one set open at all times and the other set open a greater proportion of the time at high-speed, low-stroke operation than at low-speed, high-stroke operation. Valving is done by spool valves driven by a shaft-mounted eccentric of fixed eccentricity, adjustable as to phase. The cylinders have spherical bearing surfaces and are so mounted that the entire cylinder can undergo the oscillating motion required to maintain the piston's centerline alignment with the center of the eccentric.

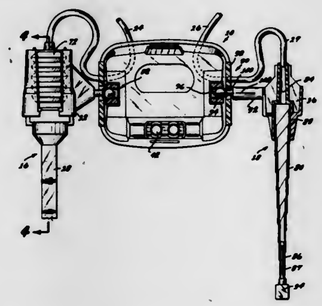
3,695,147
HYDRAULIC PUMP OR MOTOR
W. Wayne Siesennop, Milwaukee; Norman E. Gibbs, Hartland, and Edward S. Bartz, Milwaukee, all of Wis., assignors to Rex Chainbelt Inc.
Filed Jan. 20, 1970, Ser. No. 4,270
Int. Cl. F01b *13/06*
U.S. Cl. 91—498 **2 Claims**



An hydraulic pump or motor and, more particularly, a low-speed high-torque motor wherein radial forces are balanced

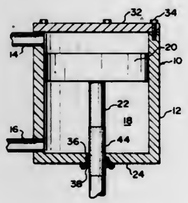
by symmetrically opposed ball piston elements and there is a constant mechanical torque output or input throughout every revolution of the pump or motor and further having a construction including first and second casing parts, one of which mounts the cylinder block carrying the ball pistons and the other of which mounts a power shaft and with a sliding coupling between said shaft and cylinder block whereby assembly is facilitated and the cylinder block is free to adjust on its mounting as required for the ball pistons to follow the annular race coacting with the ball pistons.

3,695,148
FLUID-PRESSURE OPERATED THRUSTING AND ROTATING DEVICE
Albert R. Baginski, Torrance, Calif.; David T. Okada, Piscataway, N.J., and Edwin O. Stastny, Hong Kong, United Kingdom, assignors to Mattel, Inc., Hawthorne, Calif.
Division of Ser. No. 780,154, Nov. 29, 1968, Pat. No. 3,599,363. This application June 9, 1971, Ser. No. 151,403
Int. Cl. F01b *19/00*
U.S. Cl. 92—92 **3 Claims**



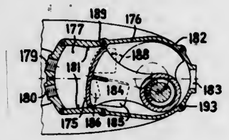
A thrust element mounted on the inner turn of a spirally-wound band, the spiral expanding lengthwise when pressured air is applied to it.

3,695,149
SEAL FOR RAM
Walter W. Eberhart, 645 Arbor Lane, Glenview, Ill.
Filed Oct. 23, 1970, Ser. No. 83,341
Int. Cl. F16j *1/02, 7/00, 11/04*
U.S. Cl. 92—168 **5 Claims**



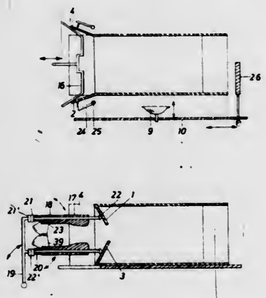
Bearings for the support of reciprocating members for operation under adverse conditions are disclosed having fluorocarbon-plastic interfaces that are capable of withstanding high fluid pressures and temperatures. The bearings are self-healing in the event of a scratch or scoring at the interface. In one embodiment sleeve bearings for hydraulic rams are disclosed wherein the moving part has a thin coat of a fluorocarbon of high tensile strength and abrasion resistance and the other part comprises a plastic body or seal formed of a different plastic such as Buna N, or polyurethane and the like or comprises a plastic body or seal such as fiber glass impregnated with a fluorocarbon, graphite on canvas, Nylon, Delrin and the like. The thin coating of fluorocarbon is applied by spraying at a temperature of about 600° F and must be without subsequent sintering.

3,695,150
CRANK ASSEMBLIES FOR MACHINES HAVING RECIPROCATING PISTONS
Willi Salzmann, Bielstrasse 111, Solothurn, Canton of Soleure, Switzerland
Filed July 13, 1970, Ser. No. 54,382
Claims priority, application Switzerland, July 18, 1969, 11159/69; June 10, 1970, 8764/70
Int. Cl. F01b *11/02;* **F16j** *1/00;* **Fo2f**
U.S. Cl. 92—169 **21 Claims**



A crank assembly for reciprocating piston machines, especially internal combustion engines, wherein the connecting rod is articulated to the cylinder piston by means of a ball socket. The invention also contemplates a crank assembly arrangement where the piston is rigidly connected with the connecting rod and is pivotably and sealingly guided on its spherical peripheral surface in a ring having a spherical inner surface slidable along the wall of the cylinder.

3,695,151
MACHINE FOR OPENING CARTONS
Jean Caron, Bethisy-Saint-Pierre, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Continuation of Ser. No. 807,522, March 17, 1969, abandoned. This application July 28, 1971, Ser. No. 166,923
Claims priority, application France, March 19, 1968, 68144306
Int. Cl. B31b *1/80, 5/26*
U.S. Cl. 93—53 BF **10 Claims**

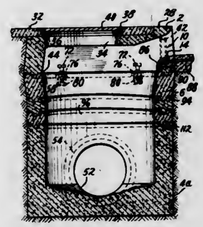


Machine for opening cartons comprising a magazine for flattened cartons, means for opening and converting cartons to a parallelepipedal shape, means for transferring cartons, means for displacing the flaps with respect to the faces of the carton whereby presenting said cartons with the flaps closed at one end thereof, means acting transversely to the longitudinal axis of the carton in cooperation with said opening means, means for separating two opposite flaps of said end and whereby causing said flaps to move apart towards the exterior of their respective initial planes and constitute two guide planes for the two other flaps of the said end and means for inwardly folding back said other flaps.

3,695,152
AQUEOUS SET INITIATORS FOR SLURRY SEALS
Peter E. Graf, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Aug. 5, 1970, Ser. No. 61,521
Int. Cl. C09j *3/30;* **C10b** *55/00;* **C10c** *3/00*
U.S. Cl. 94—23 **9 Claims**

Quick-set slurry seals are provided by contacting a mixture of aggregate and bitumen emulsion employing sulfonate or sulfate emulsifiers with a water soluble polyvalent metal set initiator in an aqueous medium at high pH.

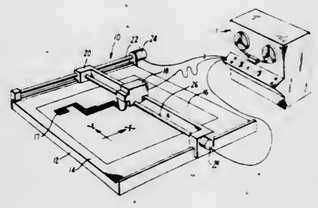
3,695,153
DRAINAGE CATCH BASINS
John P. Dorris, 1440 Bay Avenue, Newport Beach, Calif.
Filed Nov. 10, 1970, Ser. No. 88,423
Int. Cl. E01c *11/22*
U.S. Cl. 94—31.3 **8 Claims**



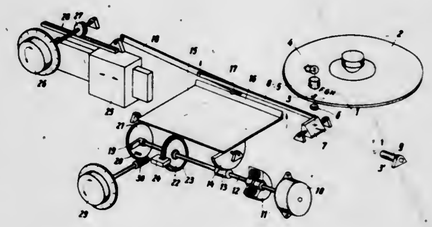
Drainage catch basin structures embodying dual level adjusting means, and comprising a rectangular top section containing a chamber with an elongated drainage water inlet communicating therewith and to be positioned in alignment with a street curb, said chamber having a rectangular outlet at its lower end; a base section having a generally circular interior and a water outlet; and an intermediate or transition section having a rectangular inlet conforming to the outlet of the top section and a circular outlet conforming with the upper end of the base section. The top section may have a non-skid surface cast therein and a man hole opening closed by a cover, and its marginal edges may be protected by angle iron to prevent chipping in use or in handling. The top section has four leveling bolts cast therein at its lower edge for effecting fine adjustment thereof side to side or front to rear, relative to an underlying section to conform its top surface to a desired side walk or street grade level. The transition section has sleeves cast therein to receive the lower ends of the leveling bolts. A pair of tapered adjusting rings, each of which is of greater height at one point than at a diametrically opposite point, can be interposed between the transition section and the base or other underlying section, and so positioned circumferentially relative to each other that the upper surface of the top section can be adjusted to conform to any major inclinations in road grade.

3,695,154
VARIABLE APERTURE PHOTOEXPOSURE DEVICE
Ronald B. Webster, Melrose, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Sept. 15, 1970, Ser. No. 72,359
Int. Cl. G03b *29/00*
U.S. Cl. 95—1 R **7 Claims**

In a photoexposure device for exposing lines on a photosensitive surface a rectangular aperture is used to form a rectangular spot of light projected onto the photosensitive surface and moved thereover to generate a line. During the exposure of a given line, the light spot is moved relative to the photosensitive surface in accordance with a velocity program which includes an acceleration stage at the beginning of the line, a deceleration stage at the end of the line, and possibly a constant velocity stage between the acceleration and deceleration stages. The width of the light spot, as measured in the direction of its travel, is varied in accordance with its velocity relative to the photosensitive surface to obtain distinct definition of the line at its ends and to obtain a substantially uniform exposure of the line along its length despite the changes in the velocity of the light spot. In one embodiment a pair of blades sliding in perpendicular directions form a variable aperture to determine the size and shape of the light spot. In another embodiment the source of light is a cathode ray tube, and the shape of the projected light spot is determined by the image on the face of the tube.



3,695,155
PHOTOSETTING METHOD AND MACHINE
Hans Guldenpfennig, Berlin, Germany, assignor to H. Berthold Messinglinienfabrik und Schriftiesserei AG., Berlin, Germany
Filed March 30, 1970, Ser. No. 23,788
Claims priority, application Germany, April 8, 1969, P 19 18 762.3
Int. Cl. B41b *17/42*
U.S. Cl. 95—4.5 **8 Claims**

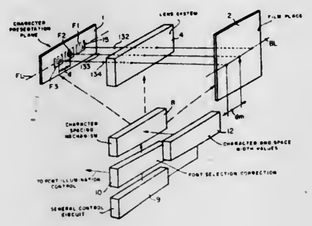


A photosetting machine uses a matrix carrying a spacing mark representing the proper spacing corresponding to the associated symbol. The selected symbol is photographically reproduced and simultaneously the spacing mark is sensed to determined the proper spacing of the symbol on the reproduction. The sensed spacing is stored and is then used, immediately after completion of the photographic reproduction step, to control the transport of the photographic material by an amount corresponding to the desired spacing. Selection of a further symbol is carried out during the spacing transport movement. Means are described for scanning the spacing mark, adjusting the spacing of the photographic reproduction automatically on adjustment of the size of the image of the symbol, and for adjusting the reproduced spacing by a constant amount.

3,695,156
PHOTOCOMPOSING MACHINE

Louis M. Moyroud, c/o Photn Inc., 355 Middlesex Ave., Wilmington, Mass.

Continuation-in-part of Ser. Nos. 827,128, May 21, 1969, Pat. No. 3,643,559, and Ser. No. 690,720, Dec. 13, 1967, Pat. No. 3,590,705, and Ser. No. 843,297, July 22, 1969, Pat. No. 3,620,140. This application Nov. 12, 1970, Ser. No. 88,920
Int. Cl. B41b 21/22
U.S. Cl. 95—4.5 7 Claims

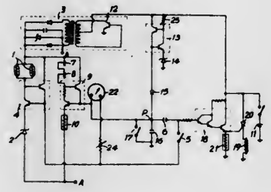


This invention relates to photographic type composing machines capable of automatically mixing a plurality of fonts, styles, or faces, and more particularly to machines presenting a selected character (from a given alphabet or font) at a common character presentation point from which its image is projected onto a light sensitive surface. The invention describes a method for rapidly changing from one character font to another solely by the utilization of either the character spacing mechanism of the machine, or the line spacing mechanism thereof.

3,695,157
CAMERA CONTROLS

Seinan Miyakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed April 14, 1970, Ser. No. 28,457
Claims priority, application Japan, April 17, 1969, 44/30093
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 9 Claims

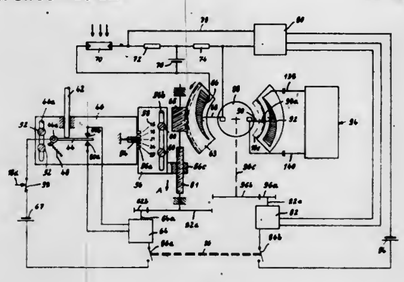


A camera capable of determining exposure time automatically in accordance with exposure-determining factors of film speed, aperture size, and object brightness. Upon opening of the shutter of the camera, to commence an exposure, a control capacitor starts its charging and discharging operations. This control capacitor is in series with a memory capacitor to which signals of the exposure-determining factors are transmitted. Both of these capacitors coact with a shutter-closing mechanism which is actuated in accordance with the signals transmitted to the memory capacitor for closing the shutter to terminate the exposure after an exposure time which is correct for the particular signals transmitted to the memory capacitor.

3,695,158
PHOTOGRAPHIC CAMERA

Paul Fahlenberg, Baierbrunn, Germany, assignor to Compur-Werk Gesellschaft mit beschraenkter Haftung and Co., Munich, Germany

Filed July 22, 1970, Ser. No. 57,038
Claims priority, application Germany, July 30, 1969, P 19 38 826.2
Int. Cl. G03b 7/10
U.S. Cl. 95—10 CE 11 Claims

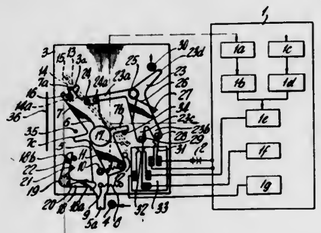


A photographic camera in which one of the two factors of diaphragm aperture and shutter speed is manually presettable, and the other of the two factors is automatically set by electrical mechanism dependent in part on the value of the preset factor and in part on the brightness of the subject to be photographed, which is measured by a photoresistance. A balancing bridge circuit is used, one branch of which contains the photoresistance, another branch of which contains a resistance element and a sliding wiper element, each of these elements being separately movable relative to the other element. A first motor, controlled in part by the value of the presettable factor, moves the resistance element relative to the wiper element. A second motor, controlled by the balancing bridge circuit, moves the wiper element relative to the resistance element until the bridge is in balance. The movement of this second motor also sets automatically the value of the other exposure factor.

3,695,159
REFLEX CAMERA WITH AUTOMATIC EXPOSURE CONTROL

Kunio Mita, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 9, 1969, Ser. No. 831,485
Claims priority, application Japan, June 20, 1968, 43/42214
Int. Cl. G03b 7/08, 9/58, 19/12
U.S. Cl. 95—10 C 8 Claims



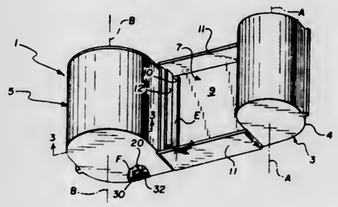
An automatic exposure timing system in a single lens reflex camera with a through the lens light measuring system includes a memory device and a shutter-timing network. A first switch alternatively connects the memory device to the light measuring or timing network and a second switch connects a battery to the light measuring system and timing network. A

mirror return release member sequentially closes the second switch, actuates the first switch to connect the memory device to the timing network, and releases the mirror. The mirror return sequentially releases the automatic diaphragm and the shutter, and blocks the light measuring photocell. Closing of the shutter returns the switches to their initial condition.

3,695,160
FILM CARTRIDGE FOR PREVENTING THE END OF A FILMSTRIP FROM ENTERING A CARTRIDGE CHAMBER

Willis L. Stockdale, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,879
Int. Cl. G03b 17/26
U.S. Cl. 95—31 CA 12 Claims

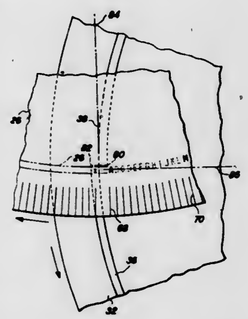


A tooth extends forwardly from a filmstrip engaging surface of a film cartridge for entering a perforation in the trailing end of a filmstrip loaded in the cartridge to preclude the entry of the trailing end into the cartridge take-up chamber, the trailing end being thereby rendered accessible to facilitate the withdrawal of the filmstrip from the cartridge.

3,695,161
ALPHANUMERIC PROJECTION DISC ASSEMBLY

Lawrence J. Mason, Webster, N.Y., and Louis F. Paradysz, East Randolph, Vt., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 791,049, Jan. 14, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,157
Int. Cl. G03b 15/00
U.S. Cl. 95—85 7 Claims

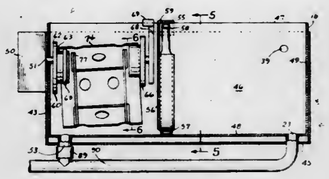


An alphanumeric recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed intercept the projected image and focus it onto a photoreceptive recording medium. The character disc rotates at a rate such that with the slits therein associated with respective characters inter-character spacing is assured. Dead time in the recording process is eliminated by the use of the collimated projected character image and plural interception of that image.

3,695,162
DEVELOPING MACHINE FOR PHOTOGRAPHIC FILM

Ray D. Wing, 4680 S.W. Upper Drive, Lake Oswego, Oreg.

Filed Aug. 17, 1970, Ser. No. 64,197
Int. Cl. G03d 3/00
U.S. Cl. 95—89 R 10 Claims

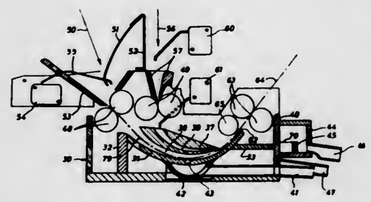


A developing machine for photographic film. The machine includes a covered tank having a developing trough secured therein. A perforated cylindrical sleeve surrounding a film reel is removably supported within the trough by circular hubs adapted to fit within the open ends of the cylinder. One hub is located at the end of the trough, eccentrically attached to the shaft of a motor mounted on the trough, for rotating and agitating the cylinder. The other hub is supported on a fence that can be adjustably positioned along the length of the trough to accommodate cylinders of different length. Fluid is admitted to an outer portion of the tank to control the temperature environment of the trough. A valve controlled fluid supply system is provided for sequentially furnishing developing, washing and setting solutions to the trough from remote containers. Inert gas such as nitrogen under pressure is used to propel these solutions from their containers. A programmable timer is provided to control the valves of the supply system and establish the time intervals and sequence of steps of a desired developing cycle.

3,695,163
PROCESSING APPARATUS FOR USE IN DIFFUSION TRANSFER COPYING

Emile Frans Stievenart, Hoboken, Belgium, assignor to Gevaert-AGFA N.V. Mortsel, Belgium

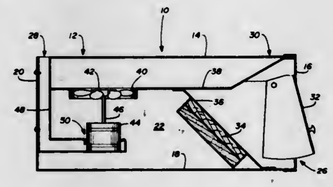
Filed July 6, 1970, Ser. No. 52,375
Claims priority, application Great Britain, July 7, 1969, 34,203/69
Int. Cl. G03d 3/00
U.S. Cl. 95—89 L 2 Claims



A processing apparatus for quickly obtaining, according to the silver complex diffusion transfer process, radiographic images of surgical interventions. The apparatus comprises separately driven pairs of inlet rollers for introducing an image-receiving sheet and a radiation-sensitive sheet in the processing liquid. The image-receiving sheet follows the upper path in the processing liquid and leads the radiation-sensitive sheet which follows the lower path. Edge guides which are curved in the longitudinal direction and which converge

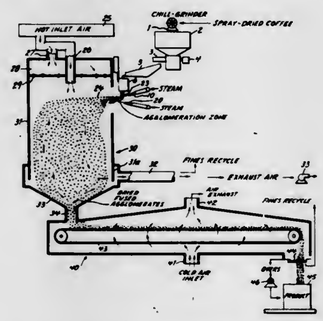
towards each other in the transport direction of the sheets support the sheets in the processing liquid. A longitudinally curved guide plate is provided under the lower sheet path and has a plurality of openings through which processing liquid is pumped so as to cushion the sheet which follows said lower path. The driving of the inlet roller pairs is accomplished through control apparatus which creates a relative delay in the advance thereby of the image-receiving sheet in order that the leading edge of the radiation sensitive sheet may trail the same by a short distance.

3,695,164
KITCHEN HOOD VENTILATOR
James E. Stalker, Richardson, Tex., assignor to Home Metal Products Company, Plano, Tex.
Filed Aug. 21, 1970, Ser. No. 65,867
Int. Cl. F23j 11/02
U.S. Cl. 98—115 K **1 Claim**



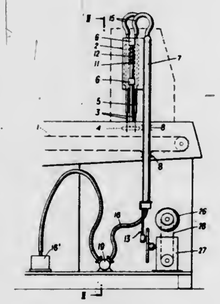
A kitchen hood ventilator comprising a casing including a warm air inlet, a cool air inlet, and an air outlet. A filter is mounted in the casing in the path of air flowing through the warm air inlet, and a cool air duct extends through the casing from the cool air inlet to a cool air outlet. The kitchen hood ventilator further includes a propeller fan for moving warm air through the filter and from moving cool air through the cool air duct. The propeller fan is driven by a fan motor mounted in the path of cool air flowing through the cool air duct. This permits the use of a relatively small motor that operates at substantially full power when rotating the propeller fan.

3,695,165
PROCESS AND APPARATUS FOR AGGLOMERATION
Boleslaw Sienkiewicz, Pearl River, and Ferdinand A. Bagley, Scotia, both of N.Y., assignors to General Foods Corporation, White Plaines, N.Y.
Division of Ser. No. 693,503, Dec. 26, 1967, Pat. No. 3,554,760. This application April 23, 1970, Ser. No. 43,310
Int. Cl. A23f 1/04
U.S. Cl. 99—236 C **7 Claims**



A process and apparatus for agglomeration of powders, especially soluble coffee, involving the use of upper and lower jets of steam which impinge against at least one falling curtain of powder at a substantial angle so as to disrupt said curtain into agglomerates which are then wetted and redirected into a drying zone. The purpose of the upper jets of steam is to form agglomerates of varying size, density, and moisture content whereas the purpose of the lower jets of steam is to further wet the agglomerates and render them more uniform in density, size and moisture content while insuring that all of said agglomerates are projected into the drying zone.

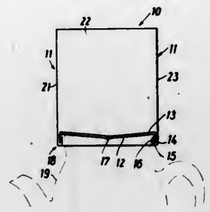
3,695,166
APPARATUS FOR INJECTING TREATMENT FLUIDS INTO MEATS AND THE LIKE
Louis Adolph Hoffmann, Gerasdorferstrasse 131, A-1210, Vienna, Austria
Continuation-in-part of Ser. No. 849,468, Aug. 12, 1969, Pat. No. 3,590,721. This application Aug. 21, 1970, Ser. No. 65,981
Claims priority, application Austria, Aug. 22, 1969, A 8100/69
Int. Cl. A23b 1/16
U.S. Cl. 99—257 **17 Claims**



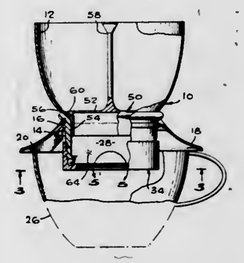
Meat to be pickled, carried on a conveyor, is penetrated by one or more injection needles on a reciprocating carrier which forms a manifold for liquid to be fed to the needle or needles through tubes with individual valves controlling the fluid supply therethrough. The valve associated with each needle, designed to cut off the liquid flow whenever that needle is not inserted into a piece of meat to be treated, may be actuated upon contact of the meat with the needle tip (or with the tip of ancillary needle juxtaposed therewith) by mechanical, fluid-operated or electric means.

3,695,167
FILTER FOR FILTERING COFFEE
Ernest G. F. H. Schmidt, Bremen; Bernhard Walkowsky, Maximilian; Wilfried Christoph Wilhelm Grote, Hannover, all of Germany, and Matthias Janssen, deceased, late of Hannover-Kleefeld, Germany (by Elizabeth Charlotte Janssen, executrix), assignors to Joh. Jacobs and Co., Bremen, Germany, by said Schmidt, said Walkowsky and said Grote
Filed Jan. 28, 1970, Ser. No. 6,492
Claims priority, application Germany, Jan. 28, 1969, P 19 03 949.7
Int. Cl. A47j 31/00
U.S. Cl. 99—306 **14 Claims**

A coffee filter having a square bottom sealed to four upright sides to form an open topped canister. The bottom and sides are scored by cooperating fold lines whereby the filter may be collapsed to a flat shape. The bottom has one or more perforations and is covered by a sheet of filter paper on the inside.



3,695,168
DRIP COFFEE MAKER
George H. Van Brunt, 1139 El Monte Drive, Thousand Oaks, Calif.
Filed June 2, 1970, Ser. No. 48,028
Int. Cl. A47j 31/10, 31/06
U.S. Cl. 99—306 **14 Claims**

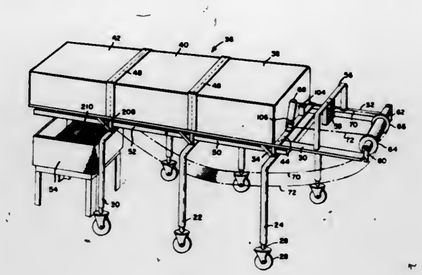


The drip coffee maker makes an aqueous coffee infusion by providing a brewing chamber which has a micro-pore (microscopic openings) filter at the bottom outlet, and water inlet control means which controls the entry of water into the brewing chamber from an upper hot water chamber. With a proper micro-pore outlet filter, fines are prevented from passing therethrough into the finished infusion and, with water inlet control, the grounds are properly wetted for extraction in the optimum time.

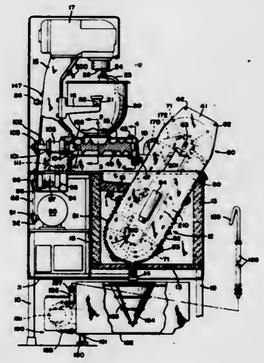
3,695,169
Patent Not Issued For This Number

3,695,170
APPARATUS FOR COOKING FOODS
Gustave Ehrenberg, c/o 133 Golf Hills Rd., Havertown, Pa.
Filed Jan. 12, 1970, Ser. No. 2,053
Int. Cl. A47j 37/04
U.S. Cl. 99—386 **16 Claims**

Food articles, for example steaks, are transported by a continuous, twistable conveyor chain through a path between a pair of electrical heating elements. The conveyor is guided so that the supporting surface provided by the conveyor is held in inclined relationship with respect to the vertical while passing between the heating elements. The heating elements are arranged to produce uniform heating of the food, but are disposed so that a space is provided between the heating elements, underneath the lowermost edge of the conveyor for drippage.

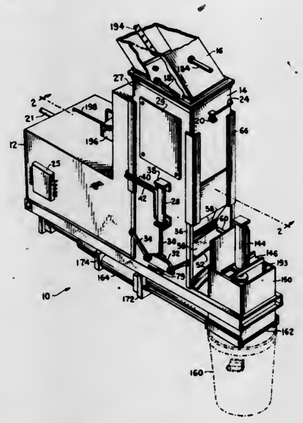


3,695,171
APPARATUS FOR MANUFACTURING A DEEP FRIED FOOD PRODUCT
Richard S. Hartley; George Churley, and F. Douglass Houser, all of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio
Filed Feb. 18, 1970, Ser. No. 12,335
Int. Cl. A47j 37/12
U.S. Cl. 99—404 **8 Claims**



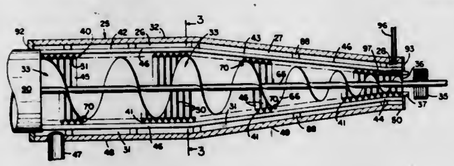
A machine for manufacturing deep fried food products, such as french fries, includes a mixing bowl for mixing the food product in dried form with a liquid to form an extrudable dough, and a barrel having a worm rotatably mounted therein connected to the bowl at one end and to an extrusion head at the other end. The extrusion head is mounted over a cooking well which has a conveyor slidably mounted therein to carry the extruded food product into and out of the well. At least one wall of the cooking well is inclined with respect to the vertical, which results in convection currents being set up in the well during cooking eliminating temperature stratification of the cooking medium and permitting lower cooking temperatures. The conveyor, extrusion die and worm drive are interconnected to provide automatic indexing of these three components with respect to each other and a drainage unit may be associated with the machine for periodically filtering the cooking medium and recirculating it to the cooking well.

3,695,172
AUTOMATIC REFUSE COMPACTION SYSTEM
John P. Cleary, Valley Cottage, and Abraham Schulkin, Mamaroneck, both of N.Y., assignors to International Pollution Controls Corporation, East Paterson, N.J.
Filed Oct. 16, 1970, Ser. No. 81,370
Int. Cl. B30b 15/30
U.S. Cl. 100—45 11 Claims



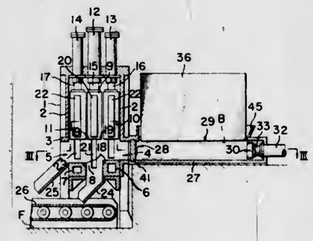
An automatic refuse compaction system includes a compactor unit having first and second stages of refuse compaction operating respectively vertically and horizontally in sequence. Refuse is compacted in a compaction chamber from which it is discharged automatically into a receptacle. The refuse compaction stages and discharge means are all pneumatically controlled. Automatic means for increasing compaction pressure in the second stage of compaction is provided. Pneumatically operated devices for discharging deodorant, insecticide and fire extinguishing fluid on the refuse are also provided. A plurality of compactor units can be connected in a pneumatic circuit with a single source of compressed air and programmed selector means for delivering air under pressure to each compactor unit in turn requiring compressed air.

3,695,173
SLUDGE DEWATERING
Clyde Harold Cox, 35-236 Juniper Lane, Glen Ellyn, Ill.
Continuation-in-part of Ser. No. 887,125, Dec. 22, 1969, abandoned. This application Jan. 28, 1972, Ser. No. 221,725
Int. Cl. B30b 9/06
U.S. Cl. 100—74 29 Claims



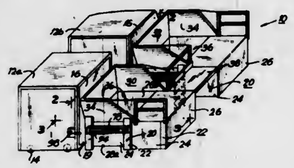
Sludge dewatering is achieved with the aid of a flow-impeding, continuous, self-cleaning, non-blinding or clogging and permanent filtering-dewatering device. The device is partly cylindrical and partly conical and comprises closely spaced rings or hoops held rigid by a frame. Inlet pressure created by a low-pressure sludge pump along with the movement of sludge through the filter-dewatering unit, where squeezing and pressing takes place, forces most of the liquid or water associated with the sludge through the filtering medium or slots formed by successive closely spaced filter rings, while the solids are trapped on the inside surface before they are conveyed along the length of the filter-dewatering unit and are discharged relatively dry from the solids-discharge end by a filter-cake discharger. To prevent clogging and interruption of continuous filtration or dewatering, cutter or slot-cleaning blades or brushes are secured to the outside edge of the filter-cake discharger, projecting out radially and spaced to extend into the slots or spaces between the closely spaced successive filter rings or hoops. The solids tending to clog or blind the slots or spaces pass through and out with the filtrate, or they may be forced back into the filter-dewatering unit by the cutting or cleaning action of the cutter-slot cleaning blades or brushes, when the leading edge of the filter cake discharger and conveyed sludge cuts and scrapes away the solids protruding within the filter-dewatering unit.

3,695,174
APPARATUS FOR FORMING SMALL LUMPS FROM SCRAP MATERIALS
Kunitoshi Tezuka, 14-3, 6-chome, Higashi-suna, Koto-ku, Tokyo, Japan
Filed March 30, 1970, Ser. No. 23,786
Int. Cl. B30b 9/32
U.S. Cl. 100—95 5 Claims



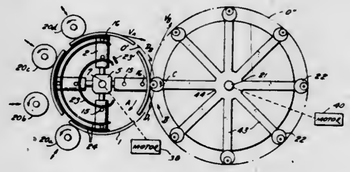
Apparatus for making small lumps from scrap materials, such as motor vehicles, used cars and the like, comprising means for compressing the scrap materials into a compact columnar block, and cutting means including at least two spaced and juxtaposed lower shearing dies, and at least one upper shearing die adapted to be reciprocable into the space between said lower shearing dies, whereby it is possible to form small lumps of high compactness from scrap materials, such as used cars.

3,695,175
DUAL COMPACTOR ASSEMBLY
Arthur E. Bausenbach, Rockville Centre, and Frank Palopoli, Massapequa Park, both of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.
Filed May 22, 1970, Ser. No. 39,897
Int. Cl. B30b 15/06
U.S. Cl. 100—193 6 Claims



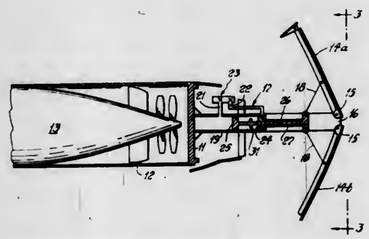
A compactor assembly for loading refuse into refuse containers. The refuse containers are the type having a dumping door in which there is a loading aperture. The assembly includes a pair of hoppers which are situated side-by-side in a frame. Each hopper has a refuse exit on one side and each hopper has a ram which is mounted for movement through its charging chamber so as to drive refuse placed into the hopper out the refuse exit. The assembly further includes hydraulic coupling means for drawing a container to and against each hopper, with the loading aperture of the refuse container being brought into alignment with the refuse exit of the hopper, so that as the ram is driven through the hopper, it forces refuse out the refuse exit of the hopper, through the loading aperture and into the refuse container. Controls are provided so that an operator can selectively actuate the hydraulic coupling means for drawing the containers to the hoppers, and for driving the rams within the hoppers.

3,695,176
MACHINE FOR PRINTING ON CUPS AND THE LIKE
Humphrey Alphons Victor Van Der Roer, 174 Olympiaplein, Amsterdam, Netherlands
Filed June 22, 1970, Ser. No. 48,116
Claims priority, application Switzerland, June 21, 1969, 9606/69
Int. Cl. B41f 17/28
U.S. Cl. 101—39 10 Claims



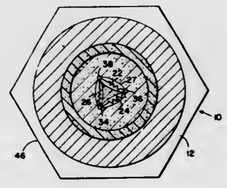
A printing cylinder, divided into several peripheral segments which are limitedly radially displaceable on a rotating first hub, coacts with an array of supporting arms radiating from a rotating second hub whose axis is generally parallel to that of the first hub, the orbits of the segments in an outwardly extended position intersecting with those of a set of revolving cups carried on individually rotatable mandrels on the supporting arms. The segments or the mandrels are additionally tiltable about pivotal axes lying in their plane of rotation in order to compensate not only for disparities in the wall thickness of different cups but also for nonuniform wall thickness of a single cup to be imprinted.

3,695,177
AIR BRAKE FOR AIRBORNE MISSILES
George Chakoian, Lincoln, and Russell T. Crowell, East Greenwich, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 17, 1964, Ser. No. 397,343
Int. Cl. F42b 25/02
U.S. Cl. 102—4 4 Claims



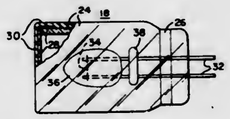
1. An apparatus for use in controlling the descent of airborne missiles comprising:

3,695,178
DELTA SQUIB CIRCUIT
Robert E. Betts, 8107 Hogan Dr. S.E., Huntsville, Ala.
Filed Nov. 9, 1970, Ser. No. 87,755
Int. Cl. F42c 19/12
U.S. Cl. 102—28 R 4 Claims



An electroexplosive device disposed for energization for creating a spark flame and/or gaseous discharge which is utilized to perform a work function such as igniting the propellant igniter in a rocket to initiate launch thereof.

3,695,179
ELECTRICALLY ACTUABLE IGNITOR FOR PASSENGER RESTRAINT SYSTEM EMPLOYING AN INFLATABLE CUSHION
Nicholas J. Rainone, Clifton, and Jacob F. Michael, Paramus, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 24, 1970, Ser. No. 92,474
Int. Cl. F42c 19/12; B60k 35/00
U.S. Cl. 102—70.2 R 9 Claims

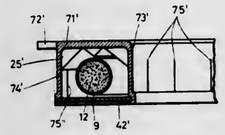


A reliable and inexpensive ignitor for rapidly "firing" the combustible gas-producing charge of an inflatable-cushion type safety apparatus for motor vehicles. The ignitor preferably comprises a modified AG ½ photoflash lamp assembly which has an open-ended glass tube instead of the sealed glass envelope normally employed and is devoid of shredded foil. The open end of the tube is sealed by a plastic diaphragm which ruptures when a predetermined amount of primer inside the tube is ignited by passing electric current through a wire filament that is embedded within the primer.

3,695,180
PYROTECHNIC RADIATOR CONSTRUCTION

Gunter Stetter, and Ullrich Reinemann, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Nov. 10, 1970, Ser. No. 88,441
Claims priority, application Germany, Nov. 15, 1969, P 19 57 524.7
Int. Cl. F42b *11/16, 13/34*
U.S. Cl. 102—87 10 Claims



A pyrotechnic radiator comprises a radiation-emitting body and an energy source heating it. The radiator is particularly adapted for use in locating moving bodies such as guided missiles using infrared equipment. The radiation-emitting body comprises a thin-walled tube which is formed by bending into the desired geometry for locating it in a receiver. The energy source comprises a pyrotechnic incandescent composition which gives off heat energy without an appreciable evolution of gas. The receiver for the radiation-emitting body is constructed so that oxygen necessary for the optimum radiation yield can be fed to the radiator in dosed amounts. For this purpose, the receiver includes a plurality of individual slots which are distributed around at least one surface of the exterior and which provides a communication from the exterior to the interior of the receiver.

3,695,181
SUB-CALIBER PROJECTILE

Gerald V. Bull, St. Bruno, Quebec, Canada, and Luis M. Palacio, Newport, Vt., assignors to Space Research Corporation, North Troy, Vt.

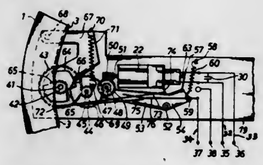
Filed March 12, 1970, Ser. No. 19,057
Int. Cl. F42b *31/00, 13/16*
U.S. Cl. 102—93 2 Claims

A projectile has a sabot including a plurality of separate angular segments secured in place around the projectile by an annular band surrounding the segments. The segments and the projectile, and the segments and the band, have intermeshing surfaces to enable thrust and spin to be imparted to the projectile by the sabot. The projectile may have a pair of such sabots, one sabot being mounted adjacent to the rear end of the projectile, and the other sabot being mounted in a forward position.

3,695,182
TURNTABLE FOR TOY AND MODEL RAILROADS

Max Ernst, Lohengrinstrasse 14, 85 Nurnberg, Germany

Filed Aug. 10, 1970, Ser. No. 62,458
Claims priority, application Germany, Aug. 8, 1969, P 19 40 333.9
Int. Cl. B60s *13/02*
U.S. Cl. 104—38 10 Claims

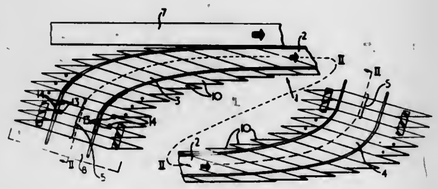


A turntable structure, especially for toy and model railroads, in which the turntable, with at least one set of tracks thereon, is rotatably supported by a frame and is adapted for being driven in rotation by an electric motor in the frame via a speed reducing transmission. An arresting device arrests the turntable in rotated positions wherein the set of tracks thereon align with stationary sets of tracks leading to the turntable. The arresting device operates a holding switch to keep the motor energized while the turntable moves from one position to the next. The transmission is normally disconnected from the motor and a flyweight arrangement driven by the motor connects the transmission thereto when the motor runs.

3,695,183
SLIDERS AND LOCKING ARRANGEMENTS FOR INTEGRATOR PLATFORMS

Paul Zuppiger, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Geneva, Switzerland and Dunlop Holdings Limited, London, England

Filed June 2, 1971, Ser. No. 149,175
Claims priority, application Great Britain, June 10, 1970, 28,110/70
Int. Cl. B65g *17/06*
U.S. Cl. 104—25 20 Claims



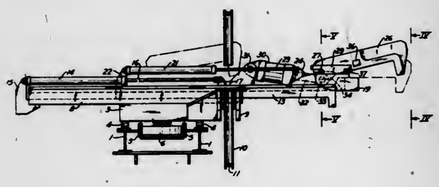
A platform conveyor having a constant speed high-speed section and variable-speed sections at either end, the platforms being adapted to slide relative to one another in the variable-speed sections and locking and sliding mechanism for connecting the platforms. The locking and sliding mechanisms allow platform movement and prevent platform movement as required.

3,695,184
Patent Not Issued For This Number

3,695,185
RAILROAD CAR POSITIONER

Bennie A. Rose, Mount Lebanon, Pa., assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.

Filed June 2, 1971, Ser. No. 149,150
Int. Cl. B61j *3/00*
U.S. Cl. 104—176 7 Claims

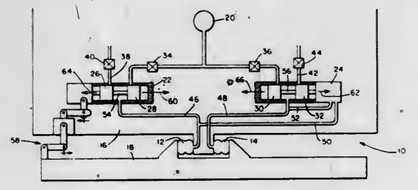


A carriage, movable back and forth parallel to a line of coupled cars on a track, supports a horizontally sliding jaw which can be moved horizontally away from one side of the carriage. The outer end of the jaw is shaped to substantially engage one side of the coupler between a pair of coupled cars, and means are provided for pivotally connecting the inner end of a jaw hook to the sliding jaw on a transverse axis with the hook normally inclined upwardly away from the outer end of the sliding jaw and having a downwardly projecting outer end. After the outer end of the hook has passed over the coupler, means are operative for swinging the hook down and for moving the pivotal means and hook inwardly along the sliding jaw to pull the outer end of the hook close to the coupler. Movement of the carriage, now connected with the coupler, will move the cars along the track to the desired position.

3,695,186
LATERAL CAR STABILIZING SYSTEM

James M. Herring, Jr., Merion Station, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,312
Int. Cl. B61f *5/10, 5/24, 5/38*
U.S. Cl. 105—171 9 Claims

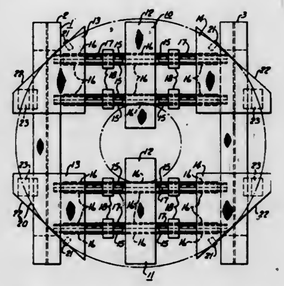


A lateral stabilizing suspension control system for counteracting lateral unbalancing forces against a railcar includes air springs responsive to such unbalancing forces. Pressurized fluid is applied to or released from the air springs to counteract the unbalancing forces. Means are also provided to assure that the total pressure in the air springs is relatively constant to provide a uniform spring rate during operation.

3,695,187
ADJUSTABLE PALLET

LeRoy Weiss, 1812 Tragone Dr., Pittsburgh, Pa.

Filed Oct. 9, 1970, Ser. No. 79,492
Int. Cl. B65d *19/18*
U.S. Cl. 108—54 8 Claims

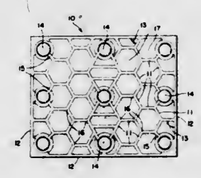


A dimensionally adjustable knockdown pallet for supporting during transport and storage loads of various sizes that may be strapped to the pallet. Two I-beam base members support at least two load bearing deck sections positioned transversely on the I-beam base members. Interlocking means is provided between each of the I-beam base members and the ends of the load bearing deck sections to detachably secure the ends of each of the deck sections at any selected position along the length of the I-beam base members, the position selected dependent upon the size of the load to be placed on the pallet.

3,695,188
PALLET OF MOLDABLE OR THERMO-FORMABLE MATERIAL

David Lloyd Granatstein, Toronto, Ontario, Canada, assignor to Steve Z. Dasovic

Filed May 28, 1971, Ser. No. 147,863
Claims priority, application Canada, March 19, 1971, 108178
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 7 Claims

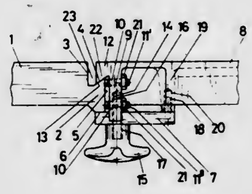


A pallet which may be fabricated from a mouldable or thermo-formable material, and which possesses rigidity over the entire load bearing surface, is light in weight and easy to manufacture. The pallet is preferably formed of a single sheet of mouldable or thermo-formable material incorporating a plurality of legs depending from its lower surface so as to space the same above the floor to permit entry of any suitable lifting mechanism thereunder, and is provided with a network of interconnecting ribs projecting downwardly from the lower surface of the pallet and forming a network of corresponding channels in the load supporting upper surface of the pallet, the ribs and channels being arranged in a particular pattern, characterized by an absence of channels crossing one another, and at least one of said channels meeting each leg.

3,695,189
REMOVABLE EXTENSION PLATE

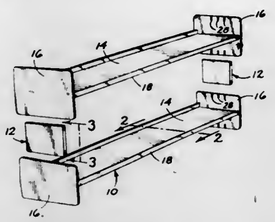
Johann Felder, Jr., Salzbergstrasse 26, 6060 Absam, Austria

Filed July 13, 1970, Ser. No. 54,340
Int. Cl. A47b *1/00*
U.S. Cl. 108—65 5 Claims



A removable extension plate for a work supporting table with projections on said plate and table having inclined faces engageable with one another. The plate is vertically adjustable at its inner end that is connected to the table and angularly adjustable at its free end to permit the surface of the plate to coincide with the surface of the table.

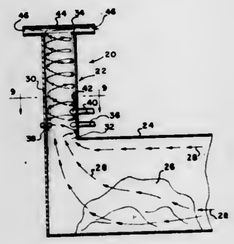
3,695,190
KNOCKDOWN SECTIONAL SHELVING
Allan A. Bucholz, Gig Harbor, Wash., assignor to Monitor Cabinets, a Division of Comerco, Inc., Tacoma, Wash.
Filed Aug. 5, 1970, Ser. No. 61,270
Int. Cl. A47b 45/00
U.S. Cl. 108—91 **2 Claims**



Knockdown sectional shelving comprises a plurality of shelf units arranged one above the other and demountably interconnected and spaced by a plurality of connectors. Each of the shelf units comprises a horizontal shelf having a pair of vertical end pieces mounted, one on each end of the shelf and projecting above and below the same. One of the connectors is interposed between and bears against the end pieces of each adjacent pair of shelf units. Tongue and groove means demountably interconnect the end pieces and connectors. Where the end pieces are planar, the projections thereof constitute the tongues which cooperate with grooves on the connectors in interconnecting the two elements of the assembly. The shelving thus may be demountably assembled in various multiples and configurations to meet the requirements of contemplated end uses.

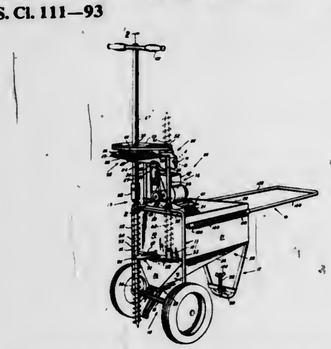
3,695,191
Patent Not Issued For This Number

3,695,192
COMBUSTION PRODUCT PROCESSING DEVICE AND METHOD
Joe W. Von Brimer, 3664 Vegas Plaza Dr. Apt. 2, Las Vegas, Nev.
Filed Oct. 12, 1970, Ser. No. 79,892
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A **18 Claims**



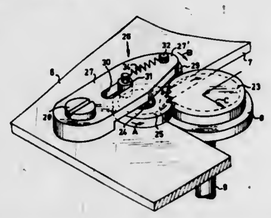
A combustion product processing device for use with a furnace or other burner which includes means for imparting a helical flow pattern to an influent gas stream entering a smokestack generally axially thereof wherein the stack has inlets for additional combustion air and means such as a gas jet or the like to promote ignition of at least those portions of the combustion products passing nearest the sidewalls. The tangentially injected, higher velocity gases impart a swirling action to the slower, axially flowing combustion products, causing an overall helical combustion product flow pattern, resulting in virtually complete combustion of the products. By reason of longer dwell or residence time within the tack, higher pressures caused by centrifugal force, and higher temperatures causing combustion rate increases, greatly decreased emissions result. In one embodiment the top or outlet end of the stack is fitted with a heavy particle separator adapted to collect particulate residues, or denser gases for subsequent treatment or collection, and in most other embodiments, means are filled at the outlet end of the stack to minimize axial flow and promote helical flow therefrom.

3,695,193
FERTILIZER APPLYING APPARATUS
Gary H. Maier, Des Moines, Iowa, assignor to Ferti-Feeder, Inc., Des Moines, Iowa
Filed March 30, 1970, Ser. No. 23,908
Int. Cl. A01c 5/02
U.S. Cl. 111—93 **5 Claims**



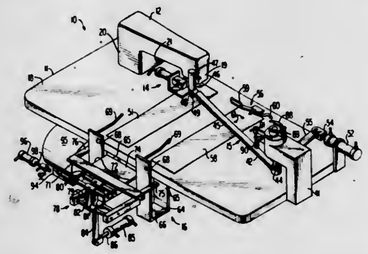
The apparatus is comprised of a portable fertilizer container formed with a forwardly and downwardly shaped bottom wall that has a discharge opening located adjacent the front end of the container. A frame structure on the container supports a motor and a motor driven hole-boring auger which is located forwardly of the container. A discharge chute directs material from the discharge opening into a bored hole on axial movement of the auger to an elevated position above the lower terminal end of the chute. Flow of material into the hole is controlled by a valve means that is operable to open and close the discharge opening.

3,695,194
TEMPLATE FOLLOWER MECHANISM
Alfred Heimann, Senne near Bielefeld, Germany, assignor to Kochs Adlernahmaschinenwerke AG, Bielefeld, Germany
Filed Oct. 9, 1970, Ser. No. 79,506
Claims priority, application Germany, Oct. 10, 1969, P 19 51 056.6
Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 **2 Claims**



A mechanism for use in automatic and template-controlled machine tools and especially in automatic sewing machines in which a magnetic roller rolls along the peripheral edge of the template, for causing an automatic and safe driving of the roller out of the internal corner. This mechanism includes a gear pinion coaxial with the magnetic roller, a gear wheel mounted adjacent to the internal corner, and having a crank pin, an one armed lever pivoted on the template and having an oblong hole in which the crank pin engages, and a roller pivoted on the lever and bearing against the gear pinion, for driving the magnetic roller out of the corner.

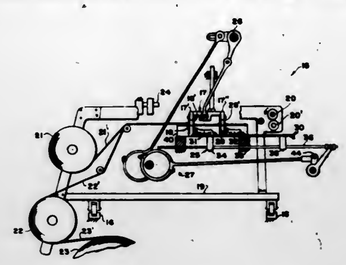
3,695,195
TOP STITCH COLLAR STACKER METHOD AND APPARATUS
Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed Sept. 21, 1970, Ser. No. 73,729
Int. Cl. D05b 33/00
U.S. Cl. 112—121.29 **9 Claims**



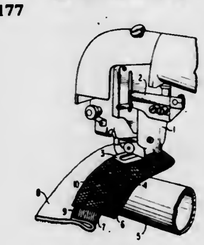
A collar stacker wherein shirt collars are automatically moved from a sewing machine where they received the top stitch about the edge of the collar structure to a stack of collars. A conveyor arm oscillates back and forth across the work table behind the sewing machine, and an engaging pin moves in a downward direction from the conveyor arm toward the work table and into engagement with the collar while the conveyor arm moves away from the sewing machine to the stacker mechanism to drag the collar to the stacker mechanism. The stacker mechanism includes a stationary basket having its upper opening at the edge of the work table, and a stacker tray is movable into the basket at a position approximately coextensive with the top surface of the work table to receive the collars, and then movable out of the basket to withdraw from the basket and allow the collar to drop in an orderly manner to the bottom of the basket. A cutter mechanism is arranged to automatically cut the threads extending between the sewing head and the collar as the collar is moved toward the basket.

3,695,196
MULTI-NEEDLE SEWING MACHINES, SIMULATING PIPED SEAMS
William V. Codos, Clifton, N.J., assignor to Pathe Equipment Company, Inc., East Paterson, N.J.
Filed July 6, 1970, Ser. No. 52,625
Int. Cl. D05b 1/08
U.S. Cl. 112—164 **8 Claims**

A vertically-reciprocatable bar horizontally positioned across the machine, has a series of needles mounted on its front face and depending therefrom. There is a companion needle for each of the front needles, depending from the back surface of said bar. Under this needle bar, is a work-supporting carriage mounted for movement in a direction along this bar. Pinch rollers on this carriage, feed web material off supply rolls, through the machine past the needles. Cam means control carriage movement and pinch roller operation. For each pair of needles there is one slide shuttle; all shuttles being on a second carriage. A main rotating shaft is associated with mechanism to reciprocate the needle bar and the shuttles' carriage. The work-supporting plate has one slot for each pair of needles to pass through to and from the shuttle zone. Shuttle movement is either in a direction through the machine or in an oblique direction. For ordinary seams, the rear needles are removed.

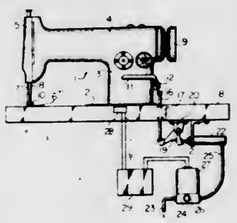


3,695,197
APPARATUS FOR FELLING LININGS ON FUR GARMENTS
Winfried Rau, Turkenfeld, Germany, assignor to J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik, Postfach, Germany
Filed Sept. 18, 1970, Ser. No. 73,531
Claims priority, application Germany, Nov. 14, 1969, P 19 57 251.1
Int. Cl. D05b 7/14
U.S. Cl. 112—177 **5 Claims**



A double lock-stitch blind-stitch sewing machine with a lower cloth feeder installed in such a manner that, upon feeding the cloth, it will move only parallel to the stitchplate and sufficiently downward in relation to the thickness of heavy material such as fur for felling linings on fur garments.

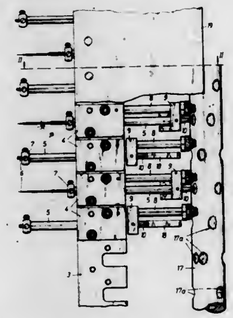
3,695,198
SEWING MACHINE FOR AUTOMATIC BACKTACKING
Hitoshi Sakashita, Toyota, and Tsutomu Mitsui, Chieyu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Perf., Japan
Filed July 9, 1970, Ser. No. 53,452
Int. Cl. D05b 27/00
U.S. Cl. 112—203 **9 Claims**



A sewing machine for automatically making a backtacking stitch against unstitching at a terminal of a stitch by alternately

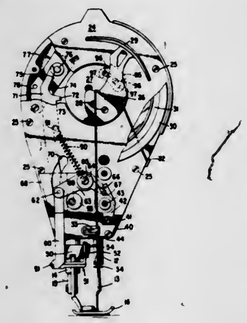
repeating short forward feed and backward feed. An electromagnetically operating means which controls the feeding mechanism applies a pulse wave potential to operate the feeding mechanism. A time period necessary to define the action of the electromagnetically operating means is determined by a multivibrater.

3,695,199
SHUTTLE EMBROIDERING MACHINE
Hans Rolauffs; Hubert Hoven; Hans Hippel, and Max Schafer, all of Krefeld, Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Germany
Filed Oct. 15, 1970, Ser. No. 81,022
Claims priority, application Germany, Oct. 17, 1969, P 19 52 307.0; June 5, 1970, P 20 27 630.6
Int. Cl. D05b *55/14*
U.S. Cl. 112—221 **11 Claims**



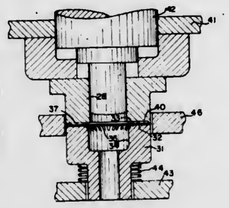
An embroidering machine having a plurality of reciprocable needle bars and a rail for actuating the needle bars. Each needle bar carries a pawl for coupling it to the rail and a control shaft engaging the pawls has depressions arranged thereon for controlling the pawls when the control shaft is turned. The turning of the control shaft may be programmed in any suitable manner and, furthermore, the control shaft can be exchanged for another having a different pattern of pawl controlling depressions.

3,695,200
THREAD PULL-OFF AND WIPING MECHANISM FOR SEWING MACHINES
Reinhold Papajewski, Buchig, and Johann O. Kleinschmidt, Blankenloch, Buchig, both of Germany, assignors to The Singer Company, New York, N.Y.
Filed June 4, 1971, Ser. No. 149,968
Int. Cl. D05b *49/00*
U.S. Cl. 112—243 **8 Claims**



A thread pull-off and wiping mechanism for sewing machines in which thread-engaging pull-off and thread wiping elements are reciprocated by a spring-returned linkage that may be detained in an inoperative position by a latch device, which, when released permits the linkage to assume an operative relation to a drive element operating in timed relation with the sewing machine thread take-up mechanism.

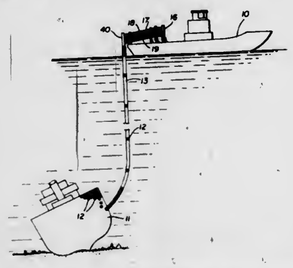
3,695,201
METHOD AND APPARATUS FOR MAKING CORRUGATED CROWN CAPS
Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 17, 1970, Ser. No. 72,947
Int. Cl. B21d *51/00, 22/00*
U.S. Cl. 113—121 A **4 Claims**



A corrugated crown cap shell is formed by drawing a disc blank into a die having grooves arranged according to a desired pattern of corrugation ridges in the shell skirt. The marginal portion of the blank is closely confined between the face of the die and the end face of a hollow punch surrounding the draw punch. The blank is most closely confined around the margin thereof at points along the edge on the lines of the grooves. For this purpose, the punch end face is provided with a series of radial ribs aligning with the die grooves along the die face. The differential restraint thus effected against the margin of the blank induces buckling thereof along and toward the lines of the die grooves to form corrugation ridges corresponding to the pattern defined by the draw die. Clearances and pressure relief are so established as to provide a substantially free draw, obviating ironing, cold-pressing or deep-drawing the material.

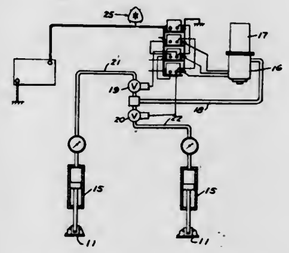
3,695,202
Patent Not Issued For This Number

3,695,203
SUBMERGED VESSEL RAISING APPARATUS
Jim D. Helbig, Brighton, Colo., assignor to Cyclo Manufacturing Company, Denver, Colo.
Filed Dec. 2, 1970, Ser. No. 94,461
Int. Cl. B63c *7/12*
U.S. Cl. 114—50 **8 Claims**



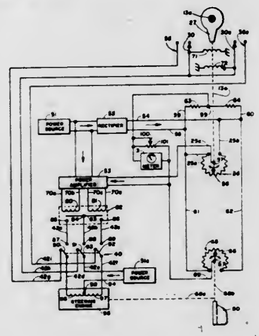
Submerged vessel raising apparatus which comprises one or more tubes into which buoyant elements are loaded by suction, pressurized in batches, and when pressurized travel in the tube by gravity to a delivery conduit leading into the vessel to be raised, including pressurizing means by which the air in the tube is overpressurized to at least 20 pounds in excess of the ambient water pressure at the point of delivery of the buoyant elements into the sunken vessel.

3,695,204
POWER BOAT WITH TRIM TABS
Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.
Filed Sept. 17, 1970, Ser. No. 73,166
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 P **9 Claims**



A boat with a pair of trim tabs adjustably mounted thereon and control means for changing the orientation of each trim tab with respect to the boat independently of the other. The control means includes a single actuator which is operable in one plane to simultaneously move both trim tabs, in another plane to move one trim tab and in a third plane to move the other trim tab. An indicia plate is associated with the control means to orient the control means with respect to the boat.

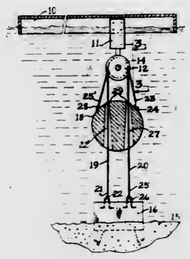
3,695,205
COMBINATION LEVER SHIP'S STEERING SYSTEM
William G. Thomas, Charlottesville, Va., assignor to Sperry Rand Corporation
Filed Nov. 5, 1970, Ser. No. 87,213
Int. Cl. B63h *25/14*
U.S. Cl. 114—144 R **7 Claims**



A compact combination lever ship's steering system is disclosed having unitary control features permitting ready selection of either of two preferred modes of operation. The ship's pilot may select lever operated proportional control of the ship's rudder steering engine with a direct display of rudder position for reference. The same combination lever control may be used for direct control of the ship's steering engine, rudder position again being displayed.

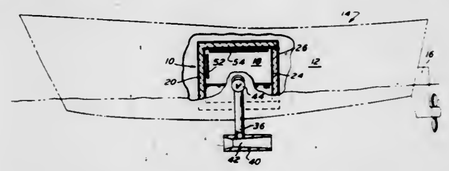
3,695,206
Patent Not Issued For This Number

3,695,207
ANCHORAGE FOR A BOAT DOCK, BUOY OR THE LIKE
Gerald D. Atlas, 2940 West Balmoral, Chicago, Ill.
Filed Aug. 17, 1970, Ser. No. 64,280
Int. Cl. B63g *21/24*
U.S. Cl. 114—206 R **2 Claims**



An anchorage for a boat dock, buoy, or the like, in which a suspended non-buoyant weight is cable-supported at a predetermined point between a fixed anchor on the floor of the harbor and the dock or buoy, for allowing the rise or fall of the dock, buoy or the like with the tide or to compensate for wave undulation, with the minimum degree of lateral movement and without disturbance to the imbedded anchor.

3,695,208
FOOD STORAGE APPARATUS FOR USE IN WATER-BORNE VESSELS
Jon Scott Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corp., Philadelphia, Pa.
Filed Nov. 16, 1970, Ser. No. 89,752
Int. Cl. B63j *2/12*
U.S. Cl. 114—211 **2 Claims**

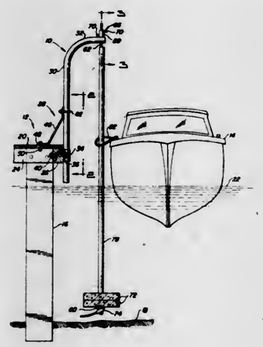


An enclosed, thermally insulated air-tight chamber within the vessel, and vacuum creating apparatus, responsive to motion of the vessel, in fluid communication with the chamber.

3,695,209
VESSEL MOORING DEVICES
Elroy J. Giese, Cleveland, Ohio, assignor to Tomlinson Industries, Inc.
Filed Aug. 21, 1970, Ser. No. 65,850
Int. Cl. B63b *21/04, 21/00*
U.S. Cl. 114—230 **10 Claims**

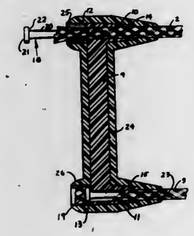
The specification and drawings disclose devices for mooring boats. The devices are arranged to permit vertical movement of the boats, such as caused by rise and fall of tides or rolling of the boats while maintaining the boats away from an associated dock, pier, seawall, float or the like and redistributing

or absorbing energy produced by the action of water, wind and other normally expected conditions. The devices disclosed all include a mounting assembly having a support arm adapted to extend outwardly above the normal maximum water levels. A mooring member extends vertically downward from the support arm to a predetermined position which, de-



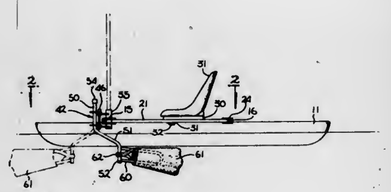
pending upon the application, may be either below or somewhat above the normal minimum water level. The member is supported only at its upper end and is not otherwise guided or constrained. Four specific embodiments are disclosed. Two comprise weighted cables and two other comprise resilient plastic pipes or tubes.

3,695,210
TOW HANDLE FOR WATER SKIING AND THE LIKE
William Harold Stein, 11136 Leadwell St., Sun Valley, Calif.
Filed June 9, 1970, Ser. No. 44,770
Int. Cl. B63b *21/56*
U.S. Cl. 115—6.1 **11 Claims**



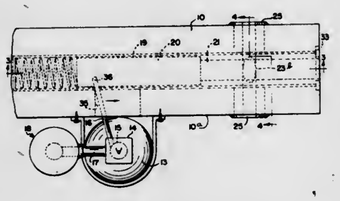
A shock-absorbing water ski tow handle that floats and has a hard springy thermoplastic spine with a hole near each end. These holes receive hollow braided tow ropes held to the spine by knots or tapered wedge pins fitting inside the hollow ropes. Formed around the hard springy spine is a soft thermoplastic casing presenting an outer surface of the tow handle that is tacky and slip resistant regardless of whether the tow handle is wet or dry. A skier can grasp the tow handle between the tow ropes, and the encased spine is capable of substantially flexing and unflexing in this area without collapsing on the skier's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to the skier.

3,695,211
SELF-PROPELLED BOAT
William J. Gross, 20550 DeForest St., Woodland Hills, Calif.
Filed May 7, 1970, Ser. No. 35,321
Int. Cl. B63h *1/36*
U.S. Cl. 115—26 **6 Claims**



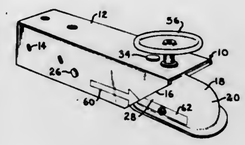
A self-propelled boat which utilizes a fin mounted on the lower end of an angularly moving, pivotally mounted shaft. The upper end of the shaft is connected with a cross piece which is engaged at its opposite ends by the feet of a boat occupant. The shaft is pivotally mounted at its upper end to flange plates attached to an upstanding post secured to the boat structure. The lower end of the shaft has a projection which can be inserted into a standard swim fin and the heel strap of the swim fin can wrap around the lower shaft end to retain the swim fin. The propelling mechanism can be applied to either a single-hull or twin-hull boat and can be positioned to propel the boat in either the fore or aft direction.

3,695,212
BURGLAR ALARM FIXED TO DOOR OR THE LIKE
Kenneth T. Gantt, 4224 E. 131st St., Cleveland, Ohio
Filed Oct. 22, 1970, Ser. No. 83,082
Int. Cl. E05b *45/00*
U.S. Cl. 116—8 **8 Claims**



A burglar alarm is provided for use in connection with a door or other closure member for a building opening. A casing embedded in the door intermediate its inside and outside faces opens at that edge of the door which is presented to the frame when the door is closed. A plunger is slidably mounted in the casing and provided with a lock or keeper which either holds the plunger locked in an inoperative position approximately flush with the edge of the door and which, in unlocked position, is pushed outwardly by a spring in an abutting position against the door frame. If the door is opened by an unauthorized person while the plunger is in its unlocked condition, then the plunger is pushed outwardly by the spring and is operatively connected with an actuator which sounds an alarm. The plunger lock is preferably a Yale-type lock having two identical plugs which are turnable by a bitted key to turn the keeper between locked and unlocked positions. By this arrangement, the same key may be utilized to manipulate the keeper either from inside or outside the door.

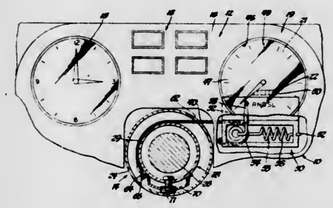
3,695,213
TRAILER LOADING TESTER AND HITCH
John C. Littlefield, 11505 E. Bannister Road, Kansas City, Mo.
Filed Sept. 30, 1970, Ser. No. 76,753
Int. Cl. B60q
U.S. Cl. 116—28 **10 Claims**



A connection for a tailer to indicate an improper load from the trailer tongue on the hitch of the towing vehicle comprising a pair of relatively movable members adapted for coupling with the trailer tongue and towing vehicle respectively. A spring is interposed between the members to resist relative movement therebetween resulting from the load. Indicia on the members visually indicate the relative positions of the members corresponding to the proper load. A manually operable clamp cooperates with an abutment on one member disposed to engaged by the other member for releasably securing the members together as a unit against the bias of the spring for normal towing operations.

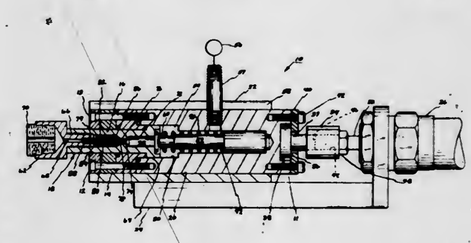
3,695,214
Patent Not Issued For This Number

3,695,215
TRANSMISSION GEARSHIFT INDICATOR
Theodore Lambiris, Walled Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 29, 1971, Ser. No. 193,804
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 R **4 Claims**



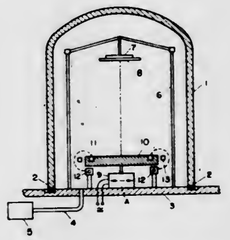
In a preferred form, this disclosure relates to an indicator mechanism for a transmission control system. The indicator mechanism comprises a housing means which has a dial associated therewith with spaced representations corresponding to different transmission settings, a pulley which is supported by the housing means for movement in opposite directions adjacent the dial, spring means which biases the pulley toward one end of the dial, a pointer which is adapted to move in opposite directions with the pulley to positions adjacent different ones of the representations to provide a visual indication of the transmission settings, and a cable which extends around the pulley and which acts in opposition to the spring means. The cable is adapted to be connected to a rotatable gearshifting member. The pulley rotates and moves in opposite directions adjacent the dial in response to movement of the gearshifting member to effect different transmission settings whereby the pointer is moved across the dial distances less than those traveled by the cable.

3,695,216
MARKING DEVICE
Paul S. Abrams, Huntington Woods, and Rudolph G. Peterson, Detroit, both of Mich., assignors to Carco Inc., Detroit, Mich.
Continuation-in-part of Ser. No. 817,371, April 18, 1969, Pat. No. 3,614,940. This application March 2, 1970, Ser. No. 15,731
Int. Cl. B05c *1/00*
U.S. Cl. 118—3 **6 Claims**



A marking device having a housing with a reservoir of a liquid marking agent therein and a reciprocally mounted feed tube having its inner end extending into the reservoir and its outer end terminating in a marking nib externally of the housing is adapted to engage an article to mark the same with the liquid marking agent. The feed tube is reciprocal between an extended position and a retracted position; the feed tube being reciprocated toward the retracted position to transfer the liquid marking agent from within the reservoir to the marking nib during movement of the housing toward the article subsequent to the initial engagement of the marking nib with the article.

3,695,217
VAPOR DEPOSITION APPARATUS
Jan Roland Jacobsson, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed June 11, 1970, Ser. No. 45,496
Claims priority, application Sweden, June 13, 1969, 8403/1969
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 **4 Claims**

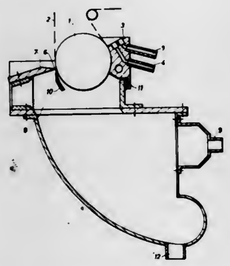


The vapor deposition apparatus includes a horizontally disposed, continuously rotating disc having a plurality of packets spaced about the periphery thereof, each containing a different evaporant source. Means directly heat only a portion of an annulus of said disc, including at least a portion of only one of said pockets. The disc has a thermal inertia such that sufficient heat is retained at all pockets, which have passed out of the immediate influence of said heat means, whereby to effect a simultaneous evaporation from all pockets.

3,695,218
APPARATUS FOR COATING TAPES, SHEETS AND THE LIKE WITH VISCOUS SOLUTIONS USING THE AIR-BRUSH PRINCIPLE

Peter Herzhoff, Leverkusen; Hans Gref, Cologne, and Stephan Platz, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1970, Ser. No. 43,857
Claims priority, application Germany, July 12, 1969, P 19 35 488.2
Int. Cl. B05c 11/06
U.S. Cl. 118—50 3 Claims

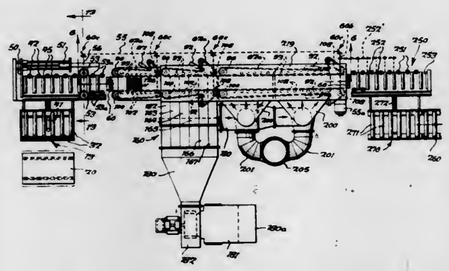


In a process for coating tapes or sheets with viscous solutions by the air-brush principle, a steam of air flows in the opposite direction to the movement of the web of material and acts substantially tangentially on the formation of the coating. This steam of air is produced by a vacuum between a bar which has an edge in the form of a ruler edge and the tape which is being coated, which moves past it at a close distance.

3,695,219
CORRUGATED BOARD IMPREGNATION APPARATUS

Charles Mourad Arian, Montreal, Quebec; Hans Hermann Mahler, Ville D'Anjou, Quebec, both of Canada; Claude Cecil Hayes, Jr., Suffield, Conn., and Hal W. Tanner, Jr., Georgetown, S.C., assignors to International Paper Company, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,201
Int. Cl. B05c 7/02, 11/06
U.S. Cl. 118—50 16 Claims



A bundle of corrugated boards, having the fluted channels of the boards in substantially unidirectional alignment throughout the bundle are continuously advanced through an apparatus which comprises means for supporting the bundle, means for applying a compressive force against the outer surfaces of the bundle to maintain surfaces of adjoining boards in the bundle in tight abutment as the bundle advances, with at least a portion of the compression means forming the walls of a trough in the zone of impregnation with the bottom of the trough being defined by the upper surface of the bundle; the trough walls tightly abut against at least the upper portions of the outer surfaces of the bundle. Means are provided for delivering a liquid impregnating composition into the trough as the bundle advances through the trough. The trough communicates with the aligned fluted channels of the bundle. Since the individual members of the bundle are tightly compressed together, the impregnating liquid flows downwardly through the fluted channels of the boards without contacting the outer surfaces of the individual members of the bundle. When impregnation is completed, sequential means are provided for: first, circulating a gas through the fluted channels of the board bundle as it continuously advances to flush out excess impregnant; second, means for circulating a hot gas through the fluted channels of the bundle to drive off volatiles contained in the impregnating composition; third, circulating a second stream of the hot gas through the fluted channels of the dried bundle as it continuously advances to effectuate curing of the impregnant contained in the boards; and fourthly, delivering water into the fluted channels of the bundle as it continuously advances in order to humidify the boards.

3,695,220
APPARATUS FOR FINISHING TEXTILE MATERIALS AND THE LIKE

Felice Garzotto, Valdagno, Italy, assignor to Rimar S.p.A., Trissino (Vicenza), Italy

Filed March 9, 1970, Ser. No. 17,699
Claims priority, application Italy, March 30, 1969, 14310 A/69
Int. Cl. B05c 11/16
U.S. Cl. 118—61 12 Claims

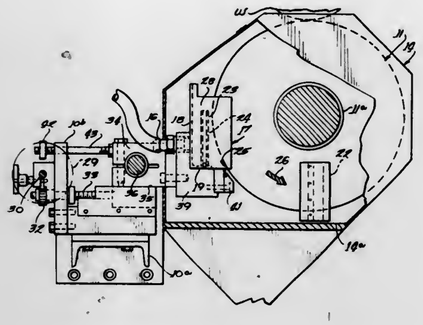
Apparatus for finishing textile materials and the like, in which the finishing compositions are applied onto the articles to be treated by the spraying method through one ore more rows of nozzles fed by a pump under a pressure of at least 3 kg/cm². The textile material is passed, driven by a plurality of rolls, firstly through the spraying chamber, then through a drying chamber with recycle of air, finally through a thermal treatment chamber with circulation of air.

3,695,221
COATING APPARATUS

Edwin K. Schaeuble, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.

Filed May 24, 1971, Ser. No. 146,191
Int. Cl. B05c 1/08
U.S. Cl. 118—203 4 Claims

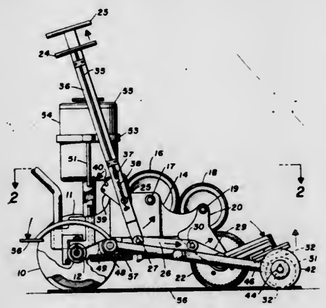
Coating apparatus for the application of fluid media to a traveling web wherein a unique fountain arrangement is provided for a reverse angle doctor blade to minimize foaming.



3,695,222
PAINT STRIPER

Kearney D. Arrant, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1970, Ser. No. 85,636
Int. Cl. B05c 1/00
U.S. Cl. 118—207 4 Claims



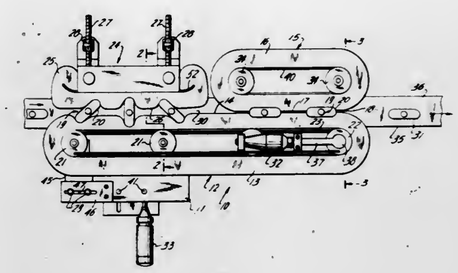
A paint striper is provided with an adjustable cable guide means which constrains movement of the striper along one or more cables laid adjacent to a predetermined path on a surface. The striper moving on the cables then applies a continuous straight stripe on the surface along the predetermined path.

3,695,223
ALL PURPOSE BELT COATER

Milo A. Dunham, Elmira, and Donald F. Hardy, Horseheads, both of N.Y., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed July 28, 1970, Ser. No. 62,218
Int. Cl. B05c 1/14
U.S. Cl. 118—217 12 Claims

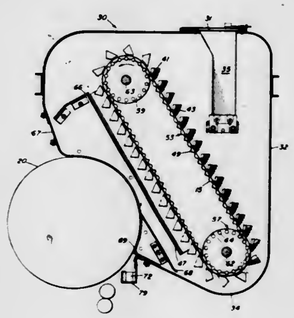
An apparatus for coating an article having a cross section of any shape. The apparatus includes two coating portions. In one of the portions, the article is rotated against a backplate by a coating belt and in the other portion, the article is coated by two belts having surfaces which conform to the shape of the article.



3,695,224
CASCADE DEVELOPMENT

Stephen F. Royka, 265 Howell Road, Fairport, N.Y.

Division of Ser. No. 866,320, Oct. 14, 1969, Pat. No. 3,663,291. This application Nov. 26, 1971, Ser. No. 202,181
Int. Cl. G03g 13/00
U.S. Cl. 118—637 3 Claims



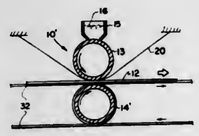
Processes are provided for improving the mixing efficiency of carrier and toner in electrostatographic apparatus by causing a partial reverse cascade of developer from the buckets of a bucket-type conveyor in the electrostatographic developing apparatus prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with toner newly deposited therein.

An improvement in electrostatographic development apparatus is obtained by providing the buckets of the bucket-type conveyor of the development apparatus with a plurality of apertures in the posterior wall of each bucket thereby obtaining buckets adapted to allow a partial egress of developer from said apertures prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with fresh toner released from the toner dispenser.

3,695,225
GLUE SPREADER

Wayne Pape, Gold Beach, and Doyle J. Hall, Eugene, both of Oreg., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,101
Int. Cl. B05c 1/00
U.S. Cl. 118—239 2 Claims

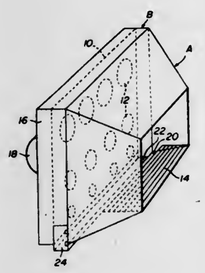


A roll glue spreader for applying an adhesive coating to one side of veneer strip or sheets wherein a set of transversely-spaced endless chain conveyors, extending fore and aft of a pair of spreader rolls and fitting inside mating grooves formed on the circumference of the bottom spreader roll, carry the veneer through the spreader while maintaining a positive drive on the veneer at all times and preventing any tendency of the veneer to wrap-up on the bottom spreader roll.

3,695,226
SPRAYING BOOTH

Maurice Paul Wanner, Geneva, Switzerland, and Neil Rudolph Wallis, Goring on Thames, England, assignors to Aerocoat S.A., Geneva, Switzerland

Filed May 26, 1970, Ser. No. 40,593
Claims priority, application Switzerland, June 25, 1969, 9701/69
Int. Cl. B05c 11/16
U.S. Cl. 118—326 6 Claims



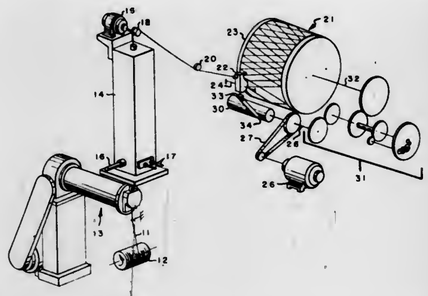
A spraying booth for facilitating the recovery of the surplus of pulverulent material used to coat an object with an electrostatic gun, which includes at the rear means for enabling the booth to communicate with an air extraction installation, which is open at the front to give access to the gun, and which has a vertical cross-section that increases from the front rearwards.

3,695,227
Patent Not Issued For This Number

3,695,228
VULCANIZING RUBBER COVERED WIRE

Herbert R. King, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 15, 1970, Ser. No. 46,416
Int. Cl. B05c 5/00
U.S. Cl. 118—620 2 Claims

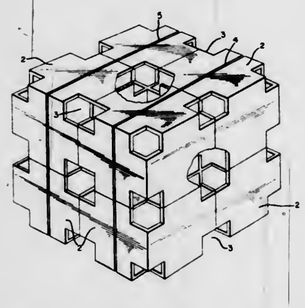


Apparatus including a supply source of metal wire cord, an extruder for applying a coating to the cord, a pressure chamber including a high frequency induction heating source, an adjustable seal assembly for the outlet of the chamber, means for withdrawing coated cord from the pressure chamber through the seal assembly, and means for collecting the coated cord in a desired configuration.

3,695,229
CELL ASSEMBLY

Charles E. Renn, Route 2, Hampstead, Md.

Filed June 17, 1970, Ser. No. 47,091
Int. Cl. A01k 61/00
U.S. Cl. 119—4 7 Claims

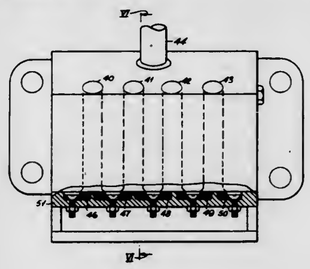


A unitary cell assembly comprises a plurality of regular, six sided, rectilinear and contiguous hollow cells, each cell having an opening at each vertex thereof, the openings of adjacent cells being adjacent thus providing intercommunication between adjacent cells for the passage of a fluid therebetween. In a preferred form, the cells are cubic. The cell walls are preferably disposed at an angle with respect to the horizontal and verticle for several uses. For example, for use as an oyster cultch, each cell wall is preferably disposed at an angle of about 45° with respect to the horizontal and vertical. Other uses for the cell assembly include gas-liquid contact, liquid-liquid contact, gas-solids contact, liquid-solids contact, removal of solids from liquids and gases, flocculation of suspended solids, water clarification, biological trickle filtration, energy absorbing such as sound absorbency.

3,695,230
APPARATUS FOR THE DETECTION OF MASTITIS IN MILK ANIMALS

Joshua Creer Quayle, 14 Raby Road, Stockton, Teesside, and Graham Roland Greatrix, 12 Gillpark Grove, Seaton Carew, both of England

Filed June 29, 1970, Ser. No. 50,711
Claims priority, application Great Britain, June 30, 1969, 33,032/69
Int. Cl. A01j 7/00
U.S. Cl. 119—14.14 8 Claims

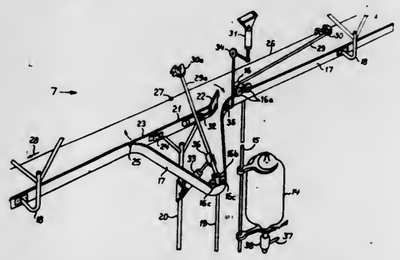


Apparatus for comparing the conductivities of liquid streams is described. Such apparatus has a particular application in detecting mastitis in milk animals where differences in the conductivities of milk streams from different teats of the same animal may indicate the presence of mastitis. The apparatus described is specially suited for use with milking machinery in that it is economical to manufacture and is easy to keep clean. In one form the apparatus has four U shaped channels one for each stream of milk from a cow. The channels include electrodes so connected that each milk stream can form one arm of a four arm resistance bridge. In other embodiments four coils or four groups of electrodes are provided, one for each of four conductivity measuring cells in a cylindrical chamber on the claw piece of milking apparatus. A switch for use with the apparatus is described to allow a resistor to be substituted in the bridge for the resistance of any milk stream.

3,695,231
MILKING SYSTEM

Sven Olof Erik Strom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed July 2, 1970, Ser. No. 51,830
Claims priority, application Sweden, July 7, 1969, 9609/69
Int. Cl. A01j 09/08
U.S. Cl. 119—14.11 2 Claims

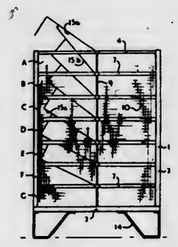


A conveying path for milk containers with their respective teat cup clusters extends in a closed circuit and along a row of cow stalls. Switches for the respective stalls are located in said path, each switch being operable in a first position to convey from the path to the corresponding stall a milk container with its cluster and to return the container and cluster to the path after completion of milking, each switch being operable in a second position to prevent a container and cluster from entering the corresponding stall when it is occupied by another container and cluster. The system also includes an emptying station located in said path for emptying the containers, and a treating station located in said path for washing and disinfecting the containers and their teat cup clusters.

3,695,232
POULTRY CRATES

William C. Frank, Hyde Park, Ontario, Canada, assignor to Hyde Park Farm Supply Limited, Hyde Park, Ontario, Canada

Filed March 13, 1970, Ser. No. 19,166
Int. Cl. A01k 31/06
U.S. Cl. 119—17 3 Claims

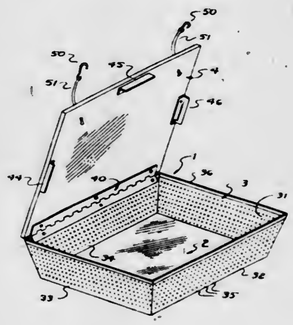


A unit consisting of one or more stacks of poultry cages for facilitating large volume in-and-out movements of poultry, suitable for loading on and unloading from a truck trailer by a power lift carried by the vehicle and for travel to and from the vehicle and along the aisles of a poultry house on a separable wheeled dolly, wherein access to each individual cage in a stack is afforded through the top at one end by way of an upwardly hinged lid, the cage interiors being accessible successively from bottom to top for filling and from top to bottom for emptying.

3,695,233
GAME BIRD TRANSPORTING DEVICE

Vincent J. Kovarik, Route 2, Imperial, Mo.

Filed May 4, 1970, Ser. No. 34,421
Int. Cl. A01k 1/02
U.S. Cl. 119—19 6 Claims



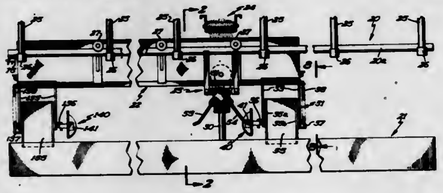
Game birds, especially pheasants, are transported in stacked containers, each with a substantially imperforate bottom, a rigid, load-supporting perforate side wall convergently

slanted toward the bottom and connected to it, and a load-supporting opaque top, hingedly connected to the side wall.

3,695,234
MATERIAL HANDLING APPARATUS WITH DIVERTER MEANS

Floyd E. Buschbom, Long Lake, and Roger L. Johnson, Wayzata, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Filed Oct. 2, 1970, Ser. No. 77,668
Int. Cl. A01k 05/00
U.S. Cl. 119—52 B 17 Claims

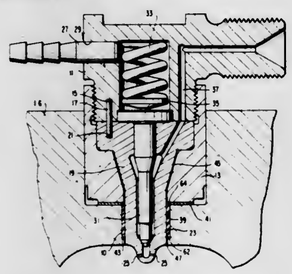


A material handling apparatus especially for handling livestock feed or the like and including a carriage movable along a fixed track and having a movable conveyor on the carriage so that it receives material and distributes it along the length of a bunk or the like as the carriage moves back and forth along the track. A diverter is disposed so that material handled by the carriage and the conveyor thereon is deposited first onto the diverter and is guided thereby either to one or the other of two longitudinal sections in the feed bunk or the like, depending upon the angle or position of the diverter. In an example disclosed, material is deposited from either one end or the other of the carriage and a diverter is located at each end thereof. A remotely controlled apparatus is provided for switching the diverter from one position to the other so that the feed or other material may be deposited selectively in one or the other of the longitudinal sections of the bunk. The switching apparatus includes cam means including a stationary means and a means movable with each of the diverters. The stationary means includes a means movable between first and second operating positions cooperable with the means movable with the diverters to move the diverters to one or the other of their positions and to maintain them in such position until the means associated with the stationary means is moved to its other operating position.

3,695,235
HEAT SEAL FOR FUEL INJECTION NOZZLES

Harold E. Anderson, Redondo Beach, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Aug. 26, 1970, Ser. No. 67,081
Int. Cl. F02m 61/14
U.S. Cl. 123—32 R 7 Claims



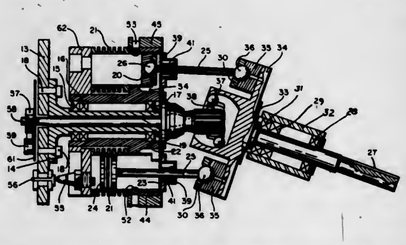
An elongated bushing consisting of a polymer such as tetrafluoroethylene may be formed in the configuration of a sleeve. The bushing may be fit over an injection nozzle mounted within a bore formed within the cylinder head of an internal combustion engine. The bushing may be axially compressed between an internal shoulder formed within the bore of the cylinder head and a built-up portion on the nozzle assembly. The axial compression acting on the bushing causes the bushing to have radial expansion so as to completely fill the annular space formed between the nozzle and the internal wall of the bore defining a cavity within the cylinder head. An annular disk-like monel member may be fit over the nozzle and supported adjacent the hot axial end of the bushing to insulate the surface thereof against the effect of hot cylinder gases.

3,695,236
Patent Not Issued For This Number

3,695,237
ROTARY INTERNAL COMBUSTION ENGINE

Erwin N. Londo, Tenneriffe Mountain Road, Milton, N.H.

Filed June 7, 1971, Ser. No. 150,439
Int. Cl. F02b 57/04
U.S. Cl. 123—43 A 6 Claims

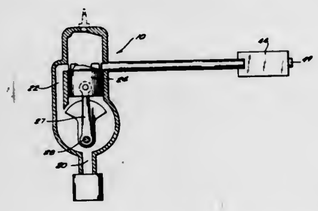


The characteristic feature of the present engine is a circular array of cylinders arranged to rotate about a fixed support. Each of the piston rods is connected by a ball and socket connection to a rotatable plate set at such an angle that the stroke of the piston equals the base of a right triangle defined by the rotatable plate and the base of the cylinders. A power shaft projects from the plate. Alignment is maintained through a constant velocity universal joint. Substantially vibrationless operation is achieved.

3,695,238
INTERNAL COMBUSTION ENGINE EXHAUST GAS DISCHARGE SYSTEM

Michael J. Boerma, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed April 9, 1970, Ser. No. 26,843
Int. Cl. F02b 27/00; F01n 7/08
U.S. Cl. 123—65 E 18 Claims

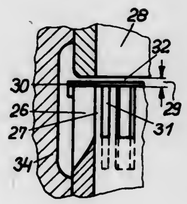


Disclosed herein is an exhaust receiver for a two-cycle internal combustion engine. The exhaust receiver is generally in the form of a hollow U-shaped tube with each leg of the tube communicating with one of the exhaust ports of a two cylinder engine. Rarefaction waves are reflected to the exhaust ports from an expansion chamber at the web or bight of the U-tube during engine scavenging to reduce the pressures at the exhaust ports and facilitate removal of the exhaust gases. Compressive waves originating from one cylinder are reflected by the piston skirt of the other cylinder when the piston is the closing port. The reflected compression waves return to the originating cylinder just prior to the closing of the port of the originating cylinder during the compression stroke to increase the compression of the fuel-air mixtures.

3,695,239
TWO-STROKE INTERNAL COMBUSTION ENGINE

Hermann E. R. Papst, 7742 St. Georgen, Schwarzw, Germany

Filed Sept. 10, 1970, Ser. No. 70,992
Claims priority, application Germany, Sept. 10, 1969, P 19 45 720.6
Int. Cl. F02b 25/14
U.S. Cl. 125—65 PD 42 Claims

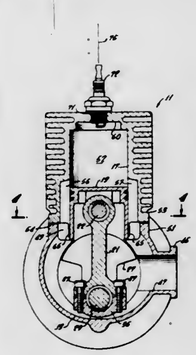


A two-stroke internal combustion engine in which the gas exchange is controlled by means of inlet and exhaust ports or valves in conjunction with one or two flat pistons, whereby the flank portions adjoining the upper edge of the parts are so constructed that the inlet ports form together with the peripheral surface of the piston or with an insert, a nozzle that directs from the beginning of the opening the inflowing fresh gas jets over the piston head in a substantially flat manner.

3,695,240
REVERSIBLE ENGINE MOUNT

Cecil T. Cookson, 918 Cornell Drive, Burbank, Calif.

Filed Aug. 31, 1970, Ser. No. 68,349
Int. Cl. F02b 33/04
U.S. Cl. 123—73 A 4 Claims

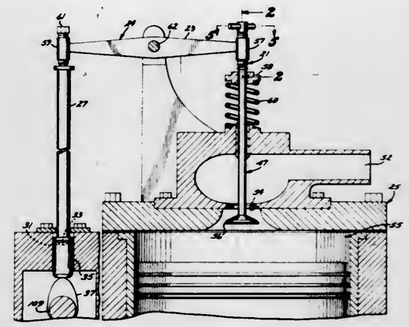


A two-cycle gasoline engine having a cylinder block mountable in several alternative positions about its axis so as to allow variable orientations of its exhaust.

3,695,241
VALVE SHOCK DAMPENER

Rex W. Peterson, 11591 Davenport Road, Los Alamitos, Calif.

Filed June 8, 1970, Ser. No. 44,211
Int. Cl. F01l 1/18, 1/20, 1/24
U.S. Cl. 123—90.45 7 Claims

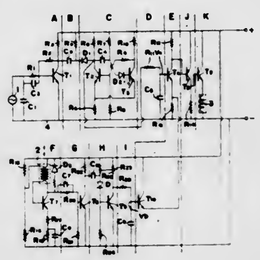


A valve chock dampener for installation at one end of a rocker arm in a linkage for controlling opening and closing of a valve in an internal combustion engine. The dampener includes a housing formed with an open ended piston-receiving chamber and a piston is slidably received in such chamber and is formed with a head end for engaging an adjacent control member for controlling the valve.

3,695,242
ELECTRONIC GOVERNOR FOR FUEL-INJECTION TYPE INTERNAL COMBUSTION ENGINES

Yoshiharu Tada, and Minoru Sawada, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,087
Claims priority, application Japan, Sept. 4, 1969, 44/83640
Int. Cl. F02m 51/00
U.S. Cl. 123—102 1 Claim



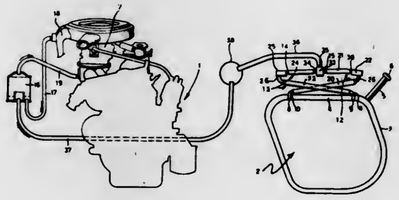
An electronic governor for fuel-injection type internal combustion engines in which an output voltage inversely proportional to a rotation speed of engine and an output voltage of a blocking oscillator correlated to a position of an accelerator lever of the engine are applied to a differential amplifying circuit whose output is connected to an electromagnetic fuel control mechanism actuating a fuel regulating rod.

3,695,243

FUEL TANK VENTILATION IN MOTOR VEHICLES

Giovanni Torazza, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 12, 1970, Ser. No. 88,733
Claims priority, application Italy, Nov. 14, 1969, 54033 A/69
Int. Cl. B65d 25/00; F02m 21/00
U.S. Cl. 123—136 3 Claims



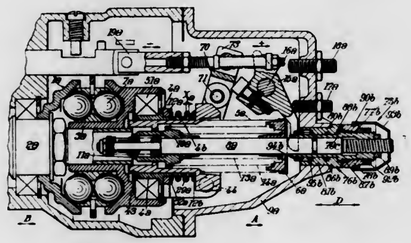
A ventilation system for the fuel tank of a motor vehicle, wherein the fuel tank has a plurality of holes in its upper surface. Each hole is connected to a manifold by a two-part tube, each tube having a container of enlarged diameter between its first and second parts. The two parts of the tube are inclined relative to each other, with the first part being inclined upwards from one side of the tank to the other. The manifold is, in turn, connected to a fuel vapor trap.

3,695,244

FUEL REGULATING DEVICES FOR INTERNAL COMBUSTION ENGINES

Andre Vauille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Applique S.I.G.M.A., Paris, France

Filed March 26, 1970, Ser. No. 22,784
Claims priority, application France, March 25, 1969, 6908796
Int. Cl. F02d 1/04, 1/06
U.S. Cl. 123—140 VS 12 Claims



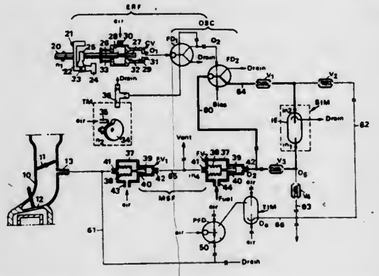
The regulating device includes an active element, sensitive to the speed of rotation of the engine, an adjusting element for the flow of fuel per revolution connected to the active element, a sleeve connected flexibly to the active element and a linking mechanism attached on the active element, the sleeve and the adjusting element. Means for the setting of several values of the flow include a member provided with two inclined ramps and stop means provided with two ramps complementary to the preceding ramps. The regulating device may be of "any speed" or of the "mini-maxi" type. It can include control means which can be servocoupled to a parameter such as the density of the fuel used by the engine.

3,695,245

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takashi Ishida, Ohi-machi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,618
Claims priority, application Japan, Nov. 22, 1969, 44/93814
Int. Cl. F02d 1/04; F02b 33/00
U.S. Cl. 123—140 MC 5 Claims



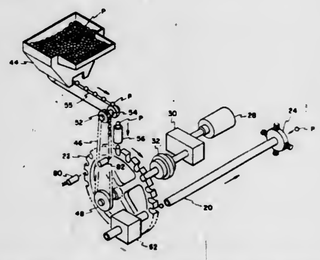
A fuel supply system for internal combustion engines comprising an engine rpm function control circuit for controlling fuel flow in conformity with the rpm of the engine, a manifold boosted pressure function control circuit for controlling fuel flow in conformity with the boosted pressure in the manifold, a summing impact modulator for causing fuel controlled by said two circuits to be injected, and a transverse impact modulator for supplying air in amounts such that proper proportions of air and fuel can be obtained in conformity with the boosted pressure.

3,695,246

PNEUMATIC MACHINE GUN WITH PHOTO CELL INTERRUPTED CIRCUIT

Ernest A. Filippi; Jack B. Watson, and Larry E. Hughes, all of Newhall, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 10, 1971, Ser. No. 151,681
Int. Cl. F41f 1/02
U.S. Cl. 124—11 4 Claims



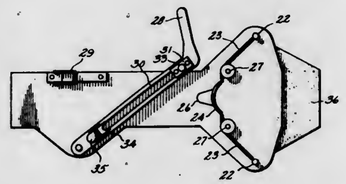
A pellet firing pneumatic machine gun wherein a toothed wheel carries pellets from a hopper and conveyer assembly to a position adjacent one end of a barrel through which the pellets are propelled by an air blast from a solenoid valve, the periodic energization of which is effected by a photo-cell exposed to a light source, wherein the light source is placed on the opposite side of the periphery of the pellet delivering wheel from the photo-cell such that upon rotation of the wheel, the teeth thereof act to interrupt light from the light source falling on the photo-cell. In addition, a pellet slitting device mounted on the other end of the barrel, wherein the device includes adjustable blades which score the skin of dye containing pellets shot from a gun to render the pellets more frangible upon impact.

3,695,247

ELASTIC BAND TYPE PROJECTING DEVICE

Henry G. Tucker, Norwalk, and Paul J. Donoski, Bridgeport, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 29, 1970, Ser. No. 85,022
Int. Cl. F41b 7/00
U.S. Cl. 124—17 3 Claims



A target launcher having a pivoted lever arm that is manually pivoted to tension elastic members for projecting a target. The lever arm has a slidable block with a vertically movable fin which is manually actuated to release the elastic members when the lever arm is in a cocked position.

3,695,248

VIBRATION DAMPENING CORE FOR AN ARCHERY BOW

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed July 24, 1970, Ser. No. 57,998
Int. Cl. F41b 5/00
U.S. Cl. 124—30 R 4 Claims



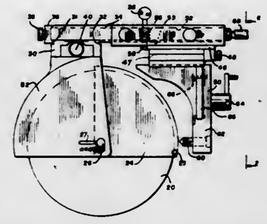
A core of composite structures is employed as a vibration absorbing section of an archery bow comprising ordinarily two relatively hard but flexible elongated members made of for instance, maple wood, beech wood, bamboo, or a resilient synthetic resin reinforced with glassfibers and a resilient sheet member made of, for instance, rubber or a synthetic resin such as ABS resin interposed between said two elongated members in a manner to extend in a lengthwise direction thereof, all of said members are bonded together to form one composite structure having a configuration generally flat and of rhombic or triangular form with a maximum thickness at an intermediate portion thereof and gradually reduced thickness toward both ends thereof. The composite structures are positioned between the handle and a bow limb so as to absorb vibrations developed in a bow limb.

3,695,249

GRINDING WHEEL DRESSING APPARATUS

Henry F. Swenson, 22 Holmehill Lane, Roseland, N.J.

Filed Aug. 12, 1970, Ser. No. 63,060
Int. Cl. B24h 53/14
U.S. Cl. 125—11 CD 14 Claims



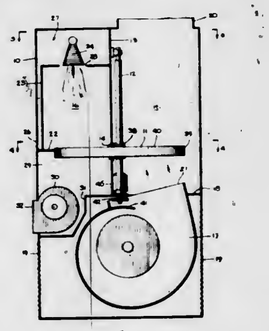
A wheel guard or pedestal support is disposed for mounting on a grinding machine and provides a dovetail guide into which there may be removably mounted a diamond dresser; a contour forming device; an edge deburring support and like grinding wheel dressing apparatus. Precision lead screws are mounted in member portions of the support, said screws being disposed to be rotated to move a mounted dressing device into a desired precise position. A plunger pin is carried by a member and cooperates with an aperture in a mating member to permit a dressing device to be removed during grinding operations and to be reinstalled at the precise prior dressing position. In one embodiment a contour dressing mechanism is provided in which a diamond-surfaced precisely contoured wheel is rotated in the same direction as the grinding wheel is rotated but at a speed differential of about 400 surface feet per minute. This operation of the contour dressing mechanism provides a dressing of the grinding wheel whereby the wheels and dresser are kept at a relatively cool condition and the diamond wear is at a very low rate.

3,695,250

ROTARY REGENERATIVE SPACE HEATER

Marvin K. Rohrs, Fanwood; Robert J. Neary, Westfield, both of N.J.; Robert B. Rosenberg, Evergreen Park, Ill.; Alan Kardas, Chicago, Ill., and William R. Staats, Naperville, Ill., assignors to Arco-Flow Dynamics, Inc. (The Wing Company Division), Linden, N.J.

Filed Dec. 3, 1970, Ser. No. 94,911
Int. Cl. F24h 3/06
U.S. Cl. 126—110 R 17 Claims



A rotary regenerative type gas-fired space heater in which a line-type raw gas burner is mounted atop and fires downwardly within a combustion chamber, the bottom of which is in direct communication with one side of a low ther-

mal mass regenerative heat exchange wheel. The burner, chamber and wheel are mounted within a housing partitioned to provide two vertically disposed, parallel air passages, the burner and chamber being in one passage and the horizontally disposed wheel extending into both and passing through the partition. High velocity air for both combustion and dilution is induced by an exhaust fan to enter openings in the housing and to flow upwardly through a space between the housing walls and the combustion chamber before mixing with the fuel and downwardly flowing combustion products which are then drawn by the fan through the heat exchange wheel and exhausted. Another fan located below the wheel in the other passage introduces air to be heated by drawing it in through bottom openings in the housing, projecting it upwardly through the wheel, and expelling it through an outlet grille at the top of the housing or into connected heated-air ducting.

3,695,251

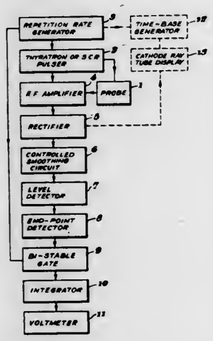
Patent Not Issued For This Number

3,695,252

ULTRASONIC DIAGNOSTIC APPARATUS

George Andrew Douglas Gordon, Friston House, 25 Church Road, Richmond, England

Filed Aug. 31, 1907, Ser. No. 68,209
Claims priority, application Great Britain, Sept. 26, 1969, 47,387/69
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V 5 Claims



The invention relates to diagnostic apparatus capable of giving an easily-interpreted indication differentiating normal lung tissue from abnormal tissue.

Periodic pulses of ultrasonic energy are transmitted by means of a probe and reflected pulses are rectified and smoothed. Rectangular pulses are produced from the smoothed signals and further pulses are derived from the trailing edge of each of said rectangular signals.

A bistable trigger circuit is set by each of the transmitted pulses and unset by each of said further pulses so that the on/off ratio of the bistable trigger circuit depends on the length of time for which the reflected signals remain above a predetermined level.

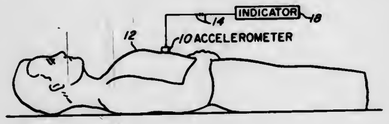
Additional reflections received after the first fall below said predetermined level are ignored. The bistable circuit controls a current-measuring device through an integrator.

3,695,253

APPARATUS FOR PHYSIOLOGICAL INVESTIGATION

Harold G. Vielhauer, 1359 Fudge Drive, Xenia, Ohio

Continuation of Ser. No. 586,117, Oct. 12, 1966, abandoned.
This application June 29, 1970, Ser. No. 50,542
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P 5 Claims



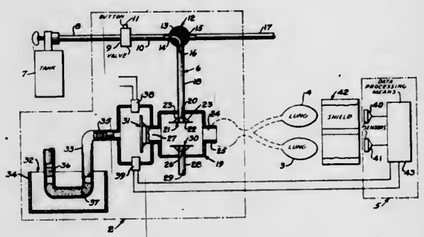
Accelerometer transducer apparatus, of the type which is resistive, complete balanced bridge, unbonded strain gage, is positioned in engagement with the chest wall of a subject in the region of the heart. The accelerometer transducer has a primary response in a direction substantially normal to the chest of the subject. Sensing mechanism which senses frequencies in the range of between two and thirty cycles per second is connected to the accelerometer transducer, the signal output thus being a function of the precordial vibrations associated with the chest wall of the subject.

3,695,254

METHOD AND APPARATUS FOR DETERMINING VOLUME OF A LUNG

Alvin S. Blum, Coral Gables, Fla., assignor to Ohio Nuclear, Inc., Mentor, Ohio

Continuation of Ser. No. 710,818, March 6, 1968, abandoned.
This application June 7, 1971, Ser. No. 150,785
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 15 Claims



A method and apparatus for dispensing a known and unknown volume of gas into the lungs of a vertebrate, for processing pulsatile input data from a sensing system for direct digital calibration and readout of the measurement, and for externally determining the volume and gas flow rate of each lung in a vertebrate.

3,695,255

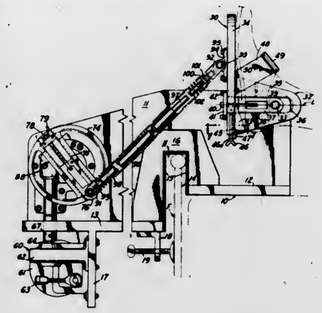
FOOT EXERCISING DEVICE

Edward J. Rodgers, 5705 Tannahill Circle, and Rolland G. Sturm, 132 Forbes Drive, both of Huntsville, Ala.

Filed May 14, 1970, Ser. No. 37,223
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 B 8 Claims

A foot exercising device for use on persons confined to bed and including an exercising device having a pair of foot supporting means pivotally supported and attachable to a bed in a position to receive the feet of a person lying in bed. Oscillating control means is operatively connected to each of the foot support means for effecting an oscillating movement of the

foot support means and the foot supported thereon of a limited moment of force about the foot ankle joint to exercise



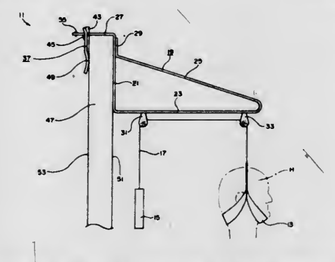
the body muscles associated with the oscillating foot movement.

3,695,256

OVER-A-DOOR SUPPORT FOR CERVICAL TRACTION APPARATUS

James P. Brower, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Nov. 16, 1970, Ser. No. 89,839
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 6 Claims



A device intended to be removably attached to the top of a door for supporting cervical traction apparatus. The device is particularly directed toward applying cervical traction at home or in a doctor's office or where more elaborate traction support structure commonly found in a hospital, or the like, is unavailable. The device includes adjustable structure that adapts it to a variety of different doors having various thicknesses, i.e., it fits all common doors without the use of normal attaching devices and/or tools, e.g., screws, threaded clamps, screwdrivers, etc. A significant feature of the device is that it may be repeatedly attached to a door without marring or defacing the surface thereof so that when not in active use, it may simply be lifted off the top of the door and stored in any out of the way convenient location.

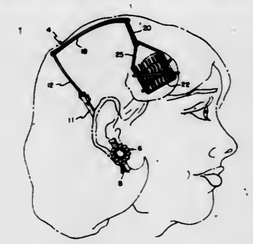
3,695,257

FACE LIFTING DEVICE

Edith A. Hale, 310 E. 44th St., New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,604
Int. Cl. A61f *5/08*
U.S. Cl. 128—76 B 3 Claims

The disclosure relates to a face lifting device attachable to pin curls at both temple areas of the wearer's head. The device consists primarily of especially formed ear clasp connected by extensible bands to the pin curls and of combs similarly connected. The former are used to erase lines and wrinkles at the cheek and mouth areas and minimize flabbiness under the ear area and particularly the neck and underneath the chin. The latter depending on their placement inside the hair line are employed to remove facial wrinkles and if desired may be adjusted to raise the outer corners of the eyes affording the so-called almond eye effect. The device is also useful for lifting the face that has been paralyzed as the result of a stroke or the like.

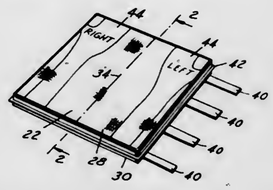


3,695,258

DISPOSABLE SPLINT

Maurice E. Castle, 20211 Greenfield, Southfield, Mich.

Filed July 27, 1970, Ser. No. 58,408
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 R 13 Claims



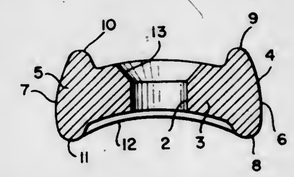
A disposable external splint adapted to be wrapped around a body member, such as an arm or leg, to protect and immobolize the body member. The splint includes a consumable support pad which is relatively rigid about one axis, to support and immobolize the body member, and is flexible about an axis perpendicular to the rigid axis, such that the pad may be wrapped around the body member and secured. The pad is received in a disposable envelope, which preferably includes an absorbent layer adapt to contact the body member.

3,695,259

BONE PLATE

Clyde E. Yost, 700 S. Villa Drive, Evansville, Ind.

Filed Nov. 10, 1970, Ser. No. 88,337
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 D 6 Claims



The invention relates to a plate adapted to be secured to a bone surface in order to set broken bones, the plate having a

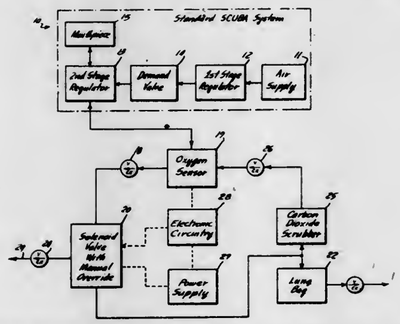
modified I configuration in cross section for maximum strength characteristics and to enable the plate to be fitted against bones of varying surface contours, while the plate is of minimum thickness. The plate is provided with a plurality of countersunk apertures or slots to enable the plate to be secured to the bone by means of screws.

3,695,260
LAPAROTOMY SHEET
Dan D. Endres, Memphis, Tenn., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed March 30, 1970, Ser. No. 23,570
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **5 Claims**



A disposable laparotomy sheet comprises a major sheet of porous nonwoven fabric and a minor sheet of opaque, glare-resistant plastic near the center of the major sheet and including a fenestration to define the operative area.

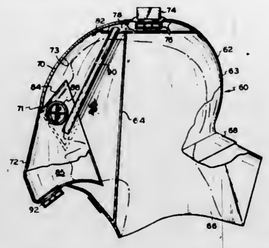
3,695,261
SEMI-CLOSED REBREATHING APPARATUS
Donald R. Emmons, 11222 Astronaut Boulevard, c/o Central Florida Industrial Park, Orlando, Fla.
Filed Oct. 12, 1970, Ser. No. 79,775
Int. Cl. A62b *7/04*
U.S. Cl. 128—142.2 **9 Claims**



A rebreathing apparatus adapted for connection to an open circuit demand type scuba device in which a rebreather system is used with compressed air supply tanks and demand regulators The rebreathing system has a lung bag for breathing into and out of connected in series with a CO_2 scrubber for removing CO_2 and an oxygen sensor for sensing the level of oxygen in the air of the rebreather. When the oxygen reaches a predetermined level, a solenoid actuates one or more exhaust valves for exhausting gas in the rebreather system allowing the demand regulator to draw additional air from the air supply tank. A manual over-rise is provided as is special solid state electronics for use in actuating the solenoid and warning lights or meters may be used.

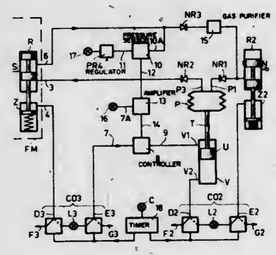
3,695,262
LIFESAVING HELMET
John F. Haviland, 731 S.W. Salmon St., Portland, Oreg.
Filed May 18, 1970, Ser. No. 38,134
Int. Cl. A62b *7/00*
U.S. Cl. 128—145 R **2 Claims**

A lifesaving helmet has an inlet valve positioned above an enclosure for the head and a conduit communicating at one end with the inlet valve, the other end of the conduit being so located as to discharge air in the region of the nose and mouth of the wearer, but terminating short of the mouth to enable normal functioning thereof. An outlet valve is positioned at



the bottom of the enclosure and below the discharge end of the conduit. The outlet valve is adapted to exhaust both air and water from within the enclosure under normal exhalation pressure.

3,695,263
CLOSED CIRCUIT MEDICAL RESPIRATORS
Barry John Kipling, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Jan. 29, 1970, Ser. No. 6,845
Claims priority, application Great Britain, Jan. 30, 1969, 5,110/69
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.6 **13 Claims**

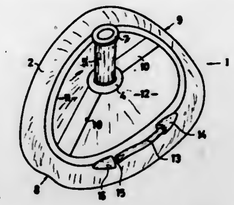


A closed circuit medical respirator provided with a face mask for applying patient gas to a patient and for transmitting exhaled gas to the respirator. A closed path extends from the face mask to a gas purifier, a bellows and back to the face mask. Appropriate drive means are connected with the bellows for causing flow of gas to and from the patient so as to create a positive pressure in the path during one part of the respiratory cycle and a negative pressure during the other part. A gas flow sensor is provided in the path and is connected to a controller for operating the drive means of the bellows. Changeover switches connected with a multi-vibrator are provided for connection with the controller and inspiratory and expiratory valves so as to alternately operate the flow of gas in accordance with the required respiratory cycle.

3,695,264
RESPIRATORY MASK
Asmund S. Laeral, Stavanger, Norway
Filed Aug. 26, 1970, Ser. No. 67,104
Claims priority, application Germany, Sept. 2, 1969, P 19 44 548.8
Int. Cl. A62b *7/00*
U.S. Cl. 128—145.5 **8 Claims**

A respiration mask formed with a domed-shaped portion of flexible material provided at its peripheral edge with a supple

ridge which can be inflated as desired, which in the deflated



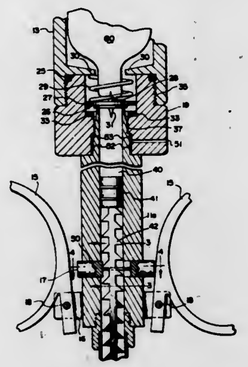
state allows the mask readily to assume a flat shape, and in the inflated state keeps the mask stretched open.

3,695,265
FACE MASK
Elmer Lawrence Brevik, 201 Via Nice, Newport Beach, Calif.
Filed Oct. 26, 1970, Ser. No. 83,693
Int. Cl. A62b *23/00*
U.S. Cl. 128—146.2 **9 Claims**



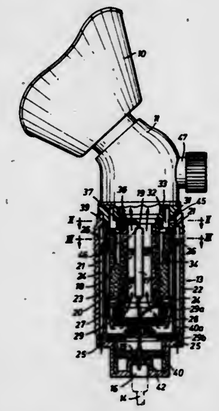
A mask for removing particulate airborne matter during inhalation employing a unique method of attachment to the face of the user consisting of an adhesive patch which attaches to the nose of the user.

3,695,266
NEEDLELESS SEQUENTIAL DOSING SYRINGE
Maurice G. Lussier, 222 Maple St., Lynn, Mass.
Filed June 18, 1970, Ser. No. 47,419
Int. Cl. A61m *5/22, 5/30*
U.S. Cl. 128—173 H **9 Claims**



This invention relates to a needleless syringe for the application of a plurality of sequential doses of medicament in rapid succession without reloading, wherein the driving force is a pressurized fluid.

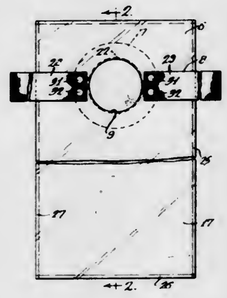
3,695,267
INHALATOR FOR MOIST AIR
Hans Hirtz, Bonner Strasse 180, Koln-Bayenthal, and Hanns Joachim Hirtz, Peter Ebercham-Strasse 5, 5 Koln-Deckstein, both of Germany
Filed June 29, 1970, Ser. No. 50,730
Claims priority, application Germany, July 1, 1969, P 19 33 350.7; Apr. 27, 1970, P 20 20 435.7
Int. Cl. A61m *15/00*
U.S. Cl. 128—192 **19 Claims**



An inhalator has a tubular heating element through which inhaled air passes after flowing in countercurrent through an annular air passage between a tubular housing wall and a tubular porous body surrounding and abutting the tubular heating element. The porous body has capillary passages for absorbing a liquid whose vapor is added to the inhaled air in the annular passage

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3,695,268
DISPOSABLE DRAINAGE POUCH FOR COLOSTOMY AND THE LIKE AND METHOD OF MAKING
Arthur E. Marsan, 1265 S. Bellare St., Denver, Colo.
Filed June 5, 1970, Ser. No. 43,676
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **12 Claims**



This invention provides a drainage pouch for use in the medical field in caring for patients having colostomy conditions and the like, characterized by a pouch of plastic film

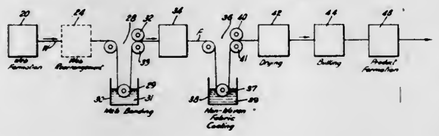
such as polyethylene, a ring-shaped retainer positioned inside the pouch and united to the inner side thereof around its stoma opening, the internal edge of the retainer being covered by an annular portion of the film pressed into the pouch to provide a protective wall which prevents the retainer from cutting and injuring the stoma; together with a method of making the pouch which promotes low cost of manufacture and provides a pouch so economical in cost as to be entirely disposable after a single use.

3,695,269

METHOD OF MAKING ABSORBENT PRODUCTS WITH HIGHLY ABSORBENT CORES AND RELATIVELY DRY FACINGS

Frank E. Malaney, Somerville, N.J., assignor to Johnson & Johnson

Filed Feb. 12, 1970, Ser. No. 10,840
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **1 Claim**



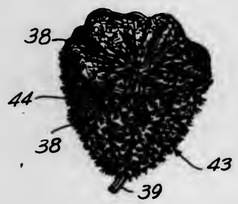
Absorbent products comprising at least two fibrous layers: one layer comprising a highly absorbent fibrous mass having excellent absorption and retention capacity for body fluids and exudates; and a second layer comprising a relatively dry, non-adherent, nonwoven fabric facing made of relatively non-absorbent, hydrophobic, synthetic fibers bonded with a hydrophobic binder material and processed so as to be provided with increased loft and bulk properties.

3,695,270

SANITARY TAMPON

Zdenek Denny Dostal, Dover, Del., assignor to International Playtex Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,080
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **3 Claims**



An absorbent material and method of constructing such material is disclosed. The absorbent material includes at least two united constituents, one of which contains filaments with a portion of such filaments transferred through openings in the other constituent.

The transference may be effected through the use of transfer needles, which not only transfers filaments but additionally provides the openings through which the filaments extend.

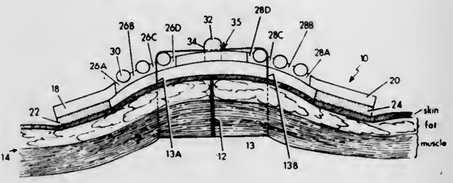
The absorbent material is particularly adapted for use in a tampon or other other catamenial device. Other uses, such as in disposable diapers or in other products where a relatively high degree of absorbency in a relatively economical product is desirable are also contemplated.

3,695,271

RETENTION SUTURE BRIDGE

Ingram S. Chodorow, New York, N.Y., assignor to Technalytics Incorporated, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,008
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **22 Claims**



This invention is a retention-suture bridge designed to position and secure a retention-suture above and out of contact with an incision closure and suture exit points while maintaining lateral fixation of the suture at the points where it exits the skin, and thus effectively to join the corresponding tissue layers, approximate the original marginal pressure of the skin and underlying tissues, and ultimately prevent or reduce infection and scarring.

3,695,272

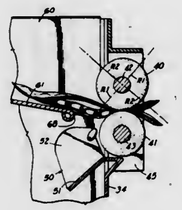
Patent Not Issued For This Number

3,695,273

FOOD PROCESSING APPARATUS

George F. Taylor, P.O. Box 625, Moultrie, Ga.

Filed Nov. 23, 1970, Ser. No. 91,662
Int. Cl. A01d
U.S. Cl. 130—30 G **14 Claims**



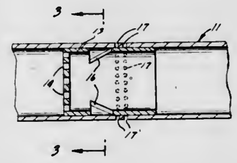
A food processing apparatus capable of separating peas, beans or the like from their pods during a processing operation. The food processing apparatus includes a support base having a number of releasable connecting elements and an operable drive means. A processing unit is provided having a number of releasable connecting elements complementary to and detailed for connecting engagement with the connectable elements on the base support means. The processing unit includes a pair of oppositely drive roller elements defining a nip therebetween for separating peas from pods in response to a pod being advanced therethrough in a processing operation. One of the rollers is of larger diameter than the other roller and the rollers are driven whereby the peripheral speed of one roller is greater than the peripheral speed of the other roller. At least one of said rollers is elliptical in cross-section whereby the nip defined between the rollers will be cyclically increased and decreased in a processing operation.

3,695,274

PISTON TYPE CIGARETTE FILTER

Thomas W. Summers, Jeffersontown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 30, 1970, Ser. No. 93,560
Int. Cl. A24d *01/04*; A24f *13/04*
U.S. Cl. 131—10 A **8 Claims**



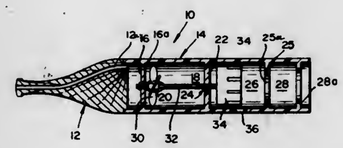
A piston-type mouthpiece for a cigarette or cigarette holder includes an outer tube in which is a slidable cup-like piston with the open end facing the smoker. The piston face has a plurality of perforations which act as a filter. As the perforations become blocked and as the density of puffs increases during the smoking of the cigarette, the vacuum created in drawing on the cigarette gradually draws the piston toward the smoker. As the piston slides toward the smoker, openings in the cylindrical wall of the piston become aligned with openings in the outer tube so that air is drawn from the atmosphere directly into the smoker's mouth through these openings rather than through the tobacco column.

3,695,275

CIGARET SMOKING DEVICE

Leonard Hayward, 32 W. 82nd St., New York, N.Y.

Filed July 30, 1970, Ser. No. 59,572
Int. Cl. A24f *47/00*
U.S. Cl. 131—171 **1 Claim**



A smoking device having a mouthpiece attached to a cylindrical member. The cylindrical member includes two chambers with one chamber being located adjacent the mouthpiece. The second chamber is located adjacent the free end of the member and a cigaret receiving compartment is located thereat. Each chamber is communicated separately to ambient and means is provided so that when a person inhales on the mouthpiece air is drawn into the first chamber and through the mouthpiece, and smoke is drawn from a cigaret which is in the cigaret receiving compartment into the second chamber where it is discharged to ambient.

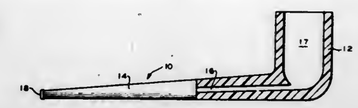
3,695,276

POLY(ARYLENE SULFIDE) SMOKING ELEMENT

Harold D. Coale, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1970, Ser. No. 73,071
Int. Cl. A24f *01/18, 01/28, 01/32*
U.S. Cl. 131—191 **10 Claims**

A smoking elemen: is made partially or wholly of a poly(arylene sulfide) composition. The ease of molding such a composition allows molding said element in a conventional shape for a tobacco pipe or in a cigar shape.

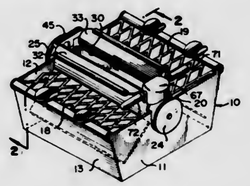


3,695,277

CIGARETTE EXTINGUISHER

Dominick Moffa, 1300 Schwab Road, Hatfield, Pa.

Filed March 16, 1970, Ser. No. 19,749
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R **7 Claims**



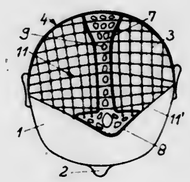
A cigarette extinguisher is constructed to receive a lighted cigarette, hold the cigarette in an extinguishing chamber in which combustion cannot be supported, and subsequently discharge the extinguished cigarette and accompanying ashes into a receptacle. A pocketed carrier rotates within a cylindrical casing bore, the casing having an upper cigarette receiving opening and a lower discharge opening. An operating and ratcheting mechanism moves the carrier stepwise in one direction of rotation only, so that a deposited cigarette may not inadvertently be returned to the receiving opening. A double ended operating arm drives the ratcheting mechanism in the said one direction irrespective of which end of the operating arm is depressed by the user. The extinguisher is combined with a receiver for the reception and collection of extinguished cigarettes. Other embodiments incorporating a button type drive and a pedestal type ash tray are also disclosed.

3,695,278

DEVICE FOR COVERING A PARTIAL BALDNESS

Arnulf Rieger, Hauptstrasse 7, 7166 Fornsbach, and Fritz Rohm, Rechte Brandstrasse 49, 89 Augsburg, both of Germany

Filed Oct. 27, 1970, Ser. No. 84,402
Claims priority, application Germany, Oct. 28, 1969, P 19 54 258.6; Nov. 13, 1969, P 19 57 182.5
Int. Cl. A41g *5/00*
U.S. Cl. 132—53 **18 Claims**



A device for covering a partial baldness of a person's head with a hairpiece comprising a hair carrier to which the false or

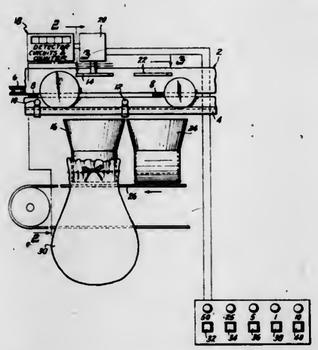
wig hair may be secured and which has a front part which extends to the normal hairline on a person's forehead and remains firmly connected to the head even when subjected to a strong blast of wind. This hair carrier may be secured to the head by two or more strips of plastic or the like which are sewed together with some of the hair of the fringe remaining on the person's head and are adapted to be wound up so as to engage flat against the head.

3,695,279

HIGH SPEED COIN COUNTING AND SORTING

Thomas J. Black, Reston, and Carl B. Sawyer, Springfield, both of Va., assignors to Werner F. Westermann, Falls Church, Va.

Filed June 14, 1971, Ser. No. 152,692
Int. Cl. G07d *3/04*
U.S. Cl. 133—3 **5 Claims**



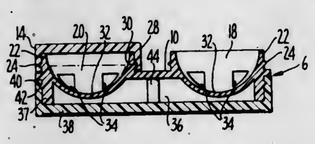
A series of coins, of randomly different denominations, is advanced along a path in controlled spaced relation and speed. As each coin passes a first position it generates a count signal that is stored long enough for the coin to reach or pass a second position. Coins of a selected denomination are deflected from the path between the first and second positions. Any coin reaching the second position generates a control signal which erases the stored count signal generated by it. Each count signal not erased by a control signal is applied to a counter to thus totalize the number of coins of said selected denomination deflected from said path, without counting coins not deflected.

3,695,280

CONTACT LENS CASE

Robert G. Sturgeon, Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

Filed Jan. 15, 1971, Ser. No. 106,842
Int. Cl. A45c *11/04*; B08b *3/04*
U.S. Cl. 134—166 R **4 Claims**



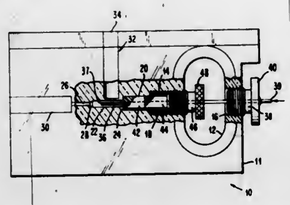
A contact lens case made of a soft plastic is described having a reservoir therein so that the lenses can be kept immersed in a soaking solution. A simple two piece structure is provided which is easily made by injection molding and an abutment means is provided between the top and bottom of the case to prevent collapse of the case.

3,695,281

METHOD AND APPARATUS FOR FLUID INJECTION

Luis P. Leon, Ossining, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,753
Int. Cl. F16k *19/00*; F17d *1/08*
U.S. Cl. 137—1 **5 Claims**



A fluid injection device for incorporation in automated apparatus for the quantitative analysis of a substance transported in a flowing liquid stream segmented by gas bubbles or other immiscible fluid segments. The device includes a body defining an elongated fluid passageway portion. One end of the passageway portion provides an inlet for fluid or gas under pressure through a tube extending into the passageway portion from the last-mentioned end toward the other end thereof, which tube has a discharge end portion received axially within the passageway portion. An inlet for unsegmented liquid under pressure communicates with the passageway portion, upstream of the aforementioned discharge end portion of the tube, providing for axial injection of gas into the stream of liquid flowing from the liquid inlet toward the other end of the passageway portion. By varying the resistance to liquid flow in the area around the discharge end of the tube the size of the bubbles injected into the liquid stream may be changed.

3,695,282

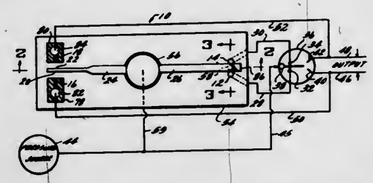
Patent Not Issued For This Number

3,695,283

FLUIDIC OSCILLATOR

Carl G. Ringwall, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 804,924, March 6, 1969, abandoned. This application Dec. 2, 1970, Ser. No. 94,266
Int. Cl. F16c *3/12*
U.S. Cl. 137—81.5 **7 Claims**



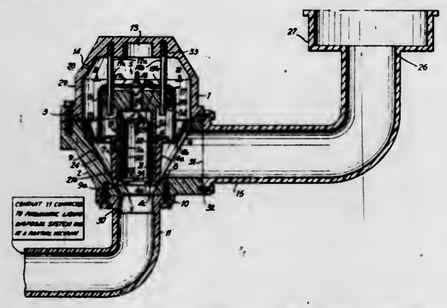
A fluidic oscillator is disclosed which incorporates a flexurally mounted jet pipe adapted to oscillate and discharge alternately into a pair of receivers. The jet pipe includes a pair of opposed reaction surfaces radially displaced from its rotational axis and aligned with a pair of driving ports. Output from the jet pipe receivers is amplified by a proportional fluid amplifier, and a negative feedback is provided whereby fluid output from the proportional amplifier is directed to the driving ports and issued therefrom as a pulsating jet stream to promote oscillation of the jet pipe. In an alternative embodiment, the proportional fluid amplifier is replaced by a digital fluid amplifier.

3,695,284

VALVE STRUCTURE FOR CONTROLLING FLOW OF LIQUID INTO A PNEUMATIC LIQUID DISPOSAL SYSTEM

Harald Anton Ake Wallgren, Alvsjo, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed June 11, 1971, Ser. No. 152,276
Claims priority, application Sweden, June 18, 1970, 8434/70
Int. Cl. F16t *1/12*
U.S. Cl. 137—188 **19 Claims**



Liquid is discharged into a conduit of a pneumatic liquid disposal system from an inlet conduit. Valve structure is interposed between the inlet conduit and liquid disposal system which opens when a sufficient quantity of liquid is present in the inlet conduit and closes when the flow of liquid thereto stops. The valve structure has a flexible diaphragm which functions as a pressure sensing means and initially flexes responsive to the presence of liquid in the inlet conduit and acting on one side of the diaphragm. Such initial flexing movement of the diaphragm causes the pressure at the opposite side of the diaphragm to be reduced below atmospheric pressure and establish a pressure differential across the diaphragm to effect further movement thereof and open a main valve to enable liquid from the inlet conduit to be discharged into the pneumatic liquid disposal system.

3,695,285

Patent Not Issued For This Number

3,695,286

SHUT OFF VALVE OF LARGE DIAMETER PARTICULARLY A HOT-BLAST SLIDE VALVE

Johannes Uerlichs, Woffelsbach, and Rudolf Muller, Merzenich, both of Germany, assignors to Hermann Rappold & Co. G.m.b.H., Duren-Birkesdorf, Germany

Filed March 30, 1970, Ser. No. 23,683
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 **1 Claim**



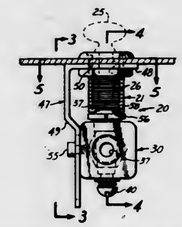
A large-diameter hot blast slide valve assembly embodying a slide valve member operable within a seat formed within a double walled casing or frame for the purpose of accommodating a coolant fluid introducable thereinto, and having a large diameter central flow passage way formed by an inner jacket wall which also forms the valve seat. One end of a cleanout/control tube is rigidly and sealingly connected with said inner jacket around an aperture formed therein generally opposite the slide valve member and its seat, and the tube projects generally radially through the outer wall of the casing or frame by passing freely through a clearance aperture therein. An outer portion of the cleanout control tube is sealingly connected but in a non-rigid manner to the outer wall of the casing by means of a relatively thin resilient or semi-flexible membrane which may in one form include an annular bellows-like construction, to thereby provide for thermal expansion and contraction movements of the tube relative to both the inner and outer casing walls to relieve potential structural stress and to preclude resultant damage otherwise attendant such thermal-stressed-induced fracturing of such valve assemblies.

3,695,287

THIEF PROOF FUEL SYSTEM

Richard T. Reese, 31701 W. Kentfield Court, Westlake Village, Calif., and Nile Ray Weatherman, 12830 Montague St., Pacoima, Calif.

Filed Nov. 27, 1970, Ser. No. 93,178
Int. Cl. B60r *25/04*; F16k *35/06*
U.S. Cl. 137—354 **2 Claims**



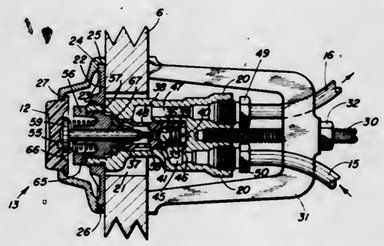
A thief proof fuel system involving the flow of gasoline from a fuel tank to an engine wherein a valve is included in the fuel line, which valve can be closed and kept locked in its closed condition. Preferably, the valve is on the opposite side of a bulkhead from the key slot, and in the preferred embodiment is under the floorboard where in modern cars there is too little clearance for a thief to tamper with the device in a practical length of time.

3,695,288

REMOTELY ACTUATED FLUSH VALVES

Henry R. Billeter, Deerfield, and Charles S. Allen, Oak Park, both of Ill., assignors to Sloan Valve Company

Filed Sept. 23, 1970, Ser. No. 74,606
Int. Cl. F16k *31/143*
U.S. Cl. 137—360 **7 Claims**



The flush valve is located behind a wall and is hydraulically actuated by a push button on the front wall. The operating

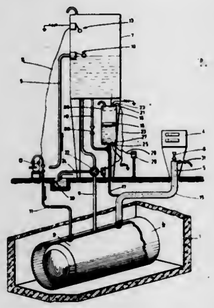
button is connected to the inlet supply line and to a piston in the flush valve handle coupling, over a pair of small copper tubes. The tubes allow for variations in roughing-in measurement and wall thickness, and can be of any length.

3,695,289

SAFETY DEVICE FOR THE STORAGE AND DISTRIBUTION OF LIQUIDS, PARTICULARLY HYDROCARBONS, MAKING USE OF A PRESSURIZED AUXILIARY FLUID

Pierre Capdevielle, Garches, and Jean Weissmann, Maisons, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Ruell Malmaison (Huats de Seine), France

Filed Oct. 14, 1970, Ser. No. 80,695
Claims priority, application France, Oct. 16, 1969, 6935560
Int. Cl. F16k *27/00*
U.S. Cl. 137—375 **9 Claims**



This invention relates to a safety device for the storage and distribution of liquids, particularly hydrocarbons with the use of a pressurized auxiliary fluid, immiscible with any fluid to be distributed and/or separated therefrom by means of a membrane.

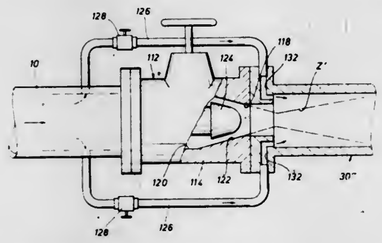
This safety device is particularly suitable for use with the storage and distribution system of the type described in the patent application entitled "New tank structure for the storage and distribution of a plurality of fluids, in particular of hydrocarbons" Ser. No. 887,679, although the use of the device according to the invention is not dependent on any particular structure of the tank for the liquid storage.

3,695,290

NOISE SUPPRESSING DEVICE FOR FLUID FLOW LINES

Kenneth R. Evans, 7015 Neff St., Houston, Tex.

Filed July 22, 1970, Ser. No. 57,233
Int. Cl. F16k *47/08*
U.S. Cl. 137—563 **2 Claims**



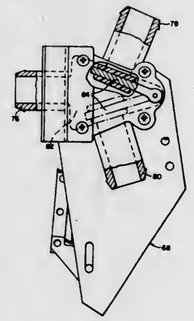
A noise suppressing device for use in flow lines in which a zone of reduced pressure is produced downstream of a restriction in the flowway, such as may be caused by the use of a flow regulating device such as a valve or orifice device in the line, and comprising means forming a passageway for the flow of fluid into said zone from a location of higher pressure. The location from which fluid flows into the reduced pressure zone may be either upstream or downstream from the zone in the flow line or from a source outside of the flow line, and means may be provided for regulating such flow. The method of the invention comprises the decreasing of noise in a flow line caused by the formation of a zone of reduced pressure therein through which fluid under pressure flows through the line, by introducing fluid into said zone at a higher pressure than the pressure in the zone.

3,695,291

SUDS SAVING SYSTEM FOR AUTOMATIC WASHER

Robert J. Sims, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1970, Ser. No. 75,335
Int. Cl. D06f *39/08*
U.S. Cl. 137—571 **6 Claims**



The instant invention provides an automatic washer which has washing, rinsing and sud saving modes. In the suds saving mode, the wash water is pumped into a supplementary laundry tub for later reuse in the automatic washer to reduce the overall wash water requirements for the washer. A purge or "burp" function is provided for in the automatic washer after the sudsy water has been pumped into the supplementary storage receptacle so as to insure the elimination of suds within the line leading to it and also within the pump. This purging action is accomplished by the pumping of rinse water, for a short time duration, towards the supplementary storage receptacle after the rinse cycle has been completed. By the use of such an extra step with the conventional suds save mode, the pumping arrangement for the pumping of sudsy water from the supplementary storage receptacle may effectively handle the returning detergent carrying water without being disabled by air locking caused by a large amount of suds initially disposed within the pump or conduit extending to the supplementary laundry tub.

3,695,292

Patent Not Issued For This Number

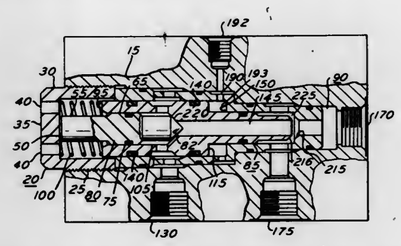
3,695,293

PRESSURE DIVERTING VALVE ASSEMBLY

Kenneth W. Zeuner, Newtown, Pa., assignor to Control Concepts, Inc., Pike Richboro, Pa.

Filed Sept. 9, 1970, Ser. No. 70,232
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 **7 Claims**

A pressure diverting valve assembly permitting fluid flow through the assembly during operation and to reduce pressure surges which may occur within inlet and outlet lines. A centrally bored valve element in the assembly has a valve seat which closes the centrally bored opening when the assembly is actuated. When the assembly is deactuated the valve element moves forward releasing the valve seat from the opening.



Movement of the poppet valve provides equal fluid volume changes on opposing ends of the valve element resulting in fluid flow diversion from one set of ports to another within the valve assembly with a resulting minimum pressure surge through the lines.

3,695,294

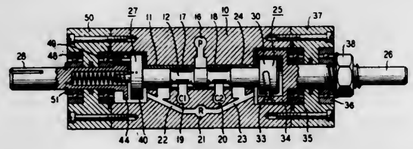
Patent Not Issued For This Number

3,695,295

ROTARY INPUT/FEEDBACK MECHANICAL SERVO VALVE

Benny Olsen, Plainville, and Zenny Olsen, Southington, both of Conn., assignors to Allied Control Company Incorporated, Plantsville, Conn.

Filed Sept. 24, 1970, Ser. No. 75,088
Int. Cl. F17d
U.S. Cl. 137—625.69 **5 Claims**



A rotary input/feedback mechanical servo valve is disclosed which comprises a four-way linear motion spool valve, the spool of which is coupled to the rotary input shaft through a rotary-to-linear translator and to the rotary feedback shaft through a universal coupler so that rotary motion input and rotary motion feedback are translated into linear movement of the spool.

3,695,296

LIQUID PRESSURE ACCUMULATOR SYSTEMS

Victor Frederick Smith, Highett, Victoria, Australia, assignor to F. W. Davey and Company Proprietary Limited, Huntingdale, Victoria, Australia

Filed Aug. 10, 1970, Ser. No. 62,498
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **1 Claim**

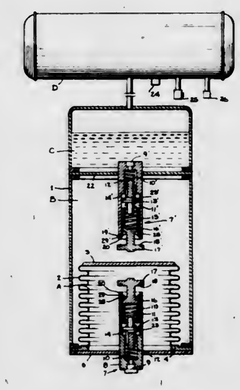
A liquid pressure tank is provided for storing liquid under pressure for use in domestic or commercial reticulated supply of the type having an impervious bladder dividing the tank into an air chamber and a liquid chamber, a constant amount of air being maintained in the chamber under pressure. A liquid pump and pressure switch system is provided for maintaining liquid in the chamber between preset pressure limits, and the tank includes a liquid outlet control comprising a seat member and a resilient disc member mounted in spaced relation from the seat and arranged to be deformed around the seat when contacted by the bladder mounted therearound to at least partially close the outlet and prevent rupturing of the bladder when liquid is substantially exhausted from the tank.

3,695,297

COMPENSATING PRESSURE TANK FOR OIL-FILLED POWER CABLES

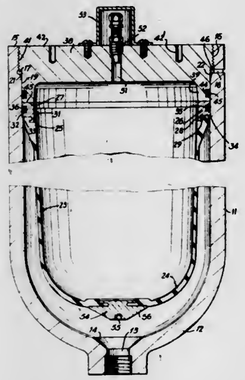
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed May 24, 1971, Ser. No. 146,295
Claims priority, application Italy, May 23, 1970, 25005 A/70
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **13 Claims**



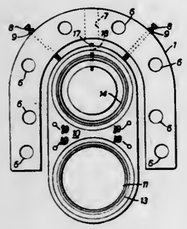
A tank contains a first chamber having a bellows-type elastic wall and has a normally open valve through which the chamber is connected to an oil-filled cable and when the chamber wall contracts sufficiently the valve is engaged by the wall and closed. The first chamber is surrounded by a fluid filled second chamber which is connected to a source of fluid through a similar valve which is normally open but which is closed by contact with a wall of the first chamber when the wall thereof expands by a predetermined amount.

3,695,298
PRESSURE VESSEL
Abduz Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.
Filed June 1, 1971, Ser. No. 148,523
Int. Cl. F16l 55/04
U.S. Cl. 138—30 10 Claims



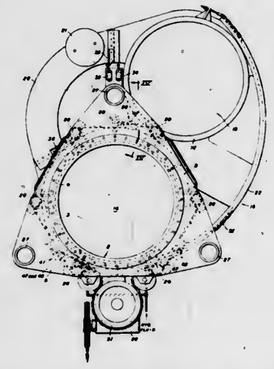
This invention relates to the art of pressure vessels, more particularly of the type using a deformable bladder having a cylindrical mouth of relatively large diameter to which is bonded a rigid annular retaining member, the latter having an annular groove in its outer periphery in which an O-ring is positioned to define a seal with respect to the side wall of the container in which the bladder is positioned.

3,695,299
VALVES
Wilfred Newrick Rodgers, Littleover, England, assignor to International Combustion (Holdings) Limited, London, England
Filed July 20, 1970, Ser. No. 56,284
Claims priority, application Great Britain, July 30, 1969, 38280/69
Int. Cl. F16l 55/10
U.S. Cl. 138—94.5 1 Claim



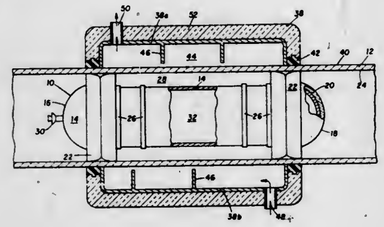
A pipe-line blind valve, for blanking off pipe-lines, in which a plate having a hole of the same diameter as the pipe-line is movable from one position, in which the hole is aligned with the bore of the pipe-line, to a second position in which the pipe-line is blanked off, there being a seal to seal between the pipe-line and the plate.

3,695,300
GOGGLE VALVE WITH LIMIT SWITCH
Norman F. Bradel, Scott Township, Allegheny County, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.
Filed June 1, 1971, Ser. No. 148,832
Int. Cl. F16l 55/00; H01h 3/16
U.S. Cl. 138—94.3 8 Claims



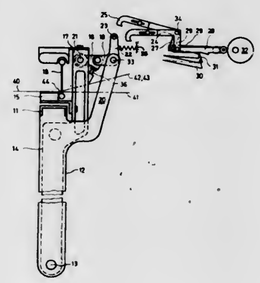
In a goggle type valve having a valve plate movable transversely of the passage through the valve between a fully open and a fully closed position with the valve body having a fixed end section at each end and an intermediate section axially movable into and out of valve plate-clamping position, there is provided a limit switch arrangement to assure proper sequencing of the axial travel of the movable member and the operation of the valve plate from one position to the other, including means for effectively amplifying the slight axial movement of the intermediate section to the desired extent for operation of the limit switches.

3,695,301
APPARATUS AND METHOD FOR PIPELINE TESTING
Forrest C. Pittman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed June 7, 1971, Ser. No. 150,313
Int. Cl. F16l 55/10
U.S. Cl. 138—97 11 Claims



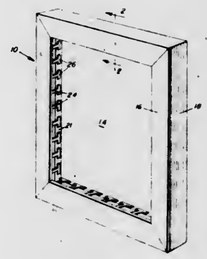
The invention relates to an apparatus and method of freezing a section of fluid-filled pipeline. The apparatus disclosed herein consists of a cylindrical body which is pumped down the pipeline to the section to be frozen. The body so positioned reduces the volume of fluid required to be frozen while shaped discs attached to each end of the body prevents fluid circulation. Also disclosed is a tank positioned around the exterior of the pipe line which contains refrigerants to freeze the fluid within the pipeline.

3,695,302
METHOD AND APPARATUS FOR PRODUCING A TERRY FABRIC ON A LOOM
Karl Jud, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti/Zurich, Switzerland
Filed Jan. 9, 1970, Ser. No. 1,602
Claims priority, application Switzerland, Jan. 31, 1969, 1523/69
Int. Cl. D03d 39/22
U.S. Cl. 139—27 8 Claims



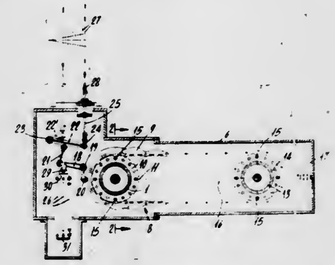
A method of producing a terry towelling on a loom wherein weft threads are beaten up in a repeating sequence at various distances from a reference fabric beat-up which comprises beating up the first weft thread of a sequence at a predetermined distance from the fabric beat-up, beating up the second weft thread of the sequence at a distance somewhat less than said predetermined distance from the fabric beat-up, beating up the last weft thread of the sequence at a distance from the fabric beat-up that corresponds to the distance of a beat-up in the case of plain weaving, and looping terry warp threads round the second weft thread. Also, apparatus for carrying out this method is disclosed.

3,695,303
HAND LOOM AND COMBINATION DISPLAY DEVICE
Donald P. Dunn, and Helen T. Dunn, both of 45 Christopher St., New York, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,265
Int. Cl. D03d 29/00; D06c 3/08; G09f 7/06
U.S. Cl. 139—34 5 Claims



A combination loom and display device comprising a frame defining a central opening and having substantially flat front and rear surfaces spaced by connecting side walls. Yarn holding fingers extending from front wall to the rear wall but not beyond the confines of the planes of the front and rear walls.

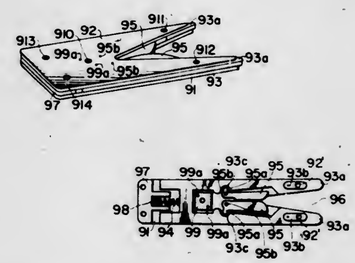
3,695,304
DOBBY MECHANISM FOR LOOMS
Carlo Menegatto, Corso Sicilia 108/10, Milan, Italy
Filed May 18, 1970, Ser. No. 38,380
Claims priority, application Italy, 17880A/69
Int. Cl. D03c 5/00, 13/00
U.S. Cl. 139—78 2 Claims



Dobby having cams of a varying ratio for looms, in combination comprising a rotary cam carrying drum, interchangeably carrying a plurality of cams, each of which through a cam follower means and a suitable spring return lever system operating a corresponding heddle carrying frame in the loom. The cams may be either disc cams or chain cams at the same time winding up on a second idle drum which can be moved to or away from the first drum to accommodate chain cams of a different length for operating said chain cams.

3,695,305
Patent Not Issued For This Number

3,695,306
YARN CARRIER FOR A WEAVING MACHINE
Hiroshiro Kimura; Heiji Arimoto; Hirohisa Nara; Tsugio Miyamatsu, and Mitsuo Kitajima, all of Kyoto, Japan, assignors to Unitaka Ltd., Higashi-Honmachi, Amagasaki-shi, Japan
Filed June 24, 1970, Ser. No. 49,476
Claims priority, application Japan, June 24, 1969, 44/59605; Mar. 31, 1970, 45/27539; Mar. 31, 1970, 45/27540
Int. Cl. D03j 5/06
U.S. Cl. 139—125 2 Claims



A yarn carrier for a weaving machine which has two arms including a yarn gripping portion which grips the yarn by means of contact between the two arms which are resiliently biased toward each other at the front of the yarn carrier in the flying direction. The yarn carrier also has a mechanism for releasing the depression of the two arms of the yarn gripping portion by a force applied from outside against the resiliency so as to freely pass the yarn through a gap made between the arms. Also, the yarn carrier has a guide groove formed in such

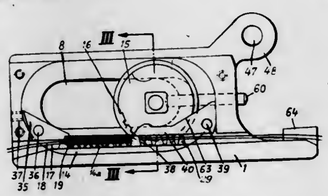
a manner that width gradually decreases from the front to the rear of the feeding direction of the yarn carrier so as to feed the yarn to the yarn gripping portion and that the yarn gripping portion is formed in parallel with the flying direction of the yarn at the end portion at the inlet portion of the yarn to the yarn gripping portion of the yarn carrier.

3,695,307

APPARATUS FOR TIGHTENING AND CONNECTING THE OVERLYING PORTIONS OF A FLEXIBLE CLOSURE BAND PLACED ABOUT A PACKAGE OR THE LIKE

Xaver Kuoni, Zurich, Switzerland, assignor to Borbe-Wanner AG, Dietikon, Switzerland

Filed June 1, 1970, Ser. No. 42,298
Claims priority, application Sweden, June 4, 1969, 8504/69
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.4 **6 Claims**



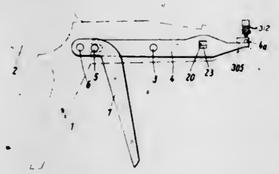
A strapping machine for tightening and connecting the overlying portions of a flexible closure band or strap placed about a package, one part of the machine serving to tension or tighten the strapping band, another part of the machine serving to interconnect the superimposed or overlapping portions of the strapping band by carrying out a common deformation thereof. According to the invention, this last-mentioned forming or deformation part of the machine consists of at least two deforming or shaping members situated at opposite sides of the band portions and wherein at least one of these deforming members incorporates means for bringing about the connection of the band portions, which means is situated in a circular orbit or path and such deforming member is mounted to be positively rotatable and displaceable in the lengthwise direction of the strapping or closure band.

3,695,308

TOOL FOR TIEING BUNDLES OF CABLES

Heinrich Kabel, Quickborn, Germany, assignor to Paul Hellermann G.m.b.H., Pinneberg, Germany

Filed Oct. 12, 1970, Ser. No. 79,967
Claims priority, application Germany, Oct. 18, 1969, P 19 52 618.2
Int. Cl. B21f *9/02, 45/00*
U.S. Cl. 140—93.4 **6 Claims**



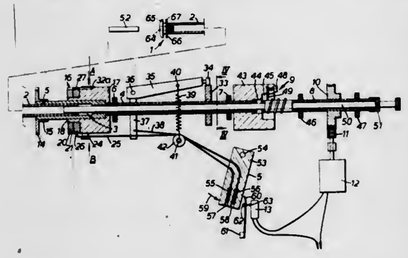
A tool having actuating means for securing the ends of tie straps on bundles of cables or the like by means of locks, and/or for cutting off excessive strap material. A linking device is provided to operatively connect the actuating means to shifting means for the locks so that the latter will be automatically transferred from a magazine to holding means during operation of the tool.

3,695,309

POWER OPERATED WIRE WRAPPING TOOLS

Frederick George Finn, Sevenoaks, Kent, England, assignor to The Post Office, London, England

Filed Aug. 28, 1970, Ser. No. 67,948
Claims priority, application Great Britain, Sept. 8, 1969, 44276/69
Int. Cl. B21f *15/04*
U.S. Cl. 140—124 **14 Claims**



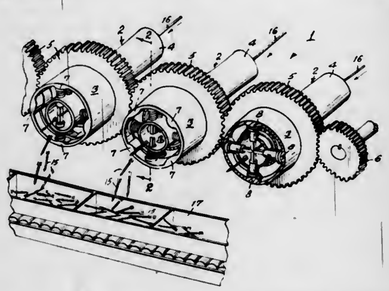
A motor-driven tool for making electrical connections by means of wrapped joints has a wire wrapping and insulation stripper head and a cutter for shearing the wire. The tool is controlled by a trigger which is also connected to the cutter. Operation of the trigger first actuates the cutter and then the motor.

3,695,310

FLECHETTE MANUFACTURING MACHINE

Vincent J. Donadio, Pompton Plains, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1970, Ser. No. 86,009
Int. Cl. B21f *45/00;* **B21g** *3/20, 3/24, 3/28*
U.S. Cl. 140—71 **2 Claims**



A machine for the mass production of flechettes consisting of a plurality of in-line units, each unit including outer and inner coaxial tubes. The outer tube being rotatable while the inner one is stationary. Axially spaced, spring loaded, radially slidable dies are carried by the inner tube and the outer tube is provided with similarly arranged cam lobes which force the dies inwardly and simultaneously or sequentially upon rotation of the outer tube to perform fin shaping, pointing and cutoff operations on a wire which is fed axially through the inner tube. All units are rotated by ring gears on the outer tubes and a single driven gear.

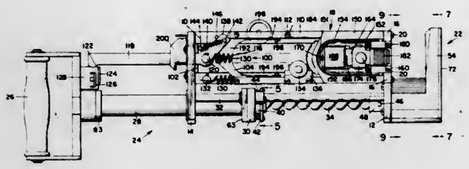
3,695,311

WIRE TIEING TOOL

Thomas J. Hanigan, 60 Greenwich Rd., Longmeadow, Mass.

Filed Nov. 10, 1970, Ser. No. 88,349
Int. Cl. B21f *9/02, 7/00, 15/04*
U.S. Cl. 140—93.6 **4 Claims**

An automatic tieing or wire twisting tool for fastening structural elements together, such as intersecting pairs of angularly disposed reinforcing rods, in a latticework common in building and road construction, by way of fitting around the rods at each intersection thereof a U-shaped staple and therefollowing twisting together the legs of the staple at their free end portions, the tool including a staple drive plate for ejecting a staple from a stack thereof and a staple separator for separating the next adjacent staple from the stack.



3,695,312

Patent Not Issued For This Number

3,695,313

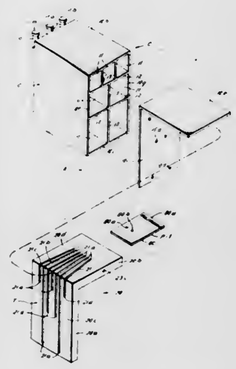
Patent Not Issued For This Number

3,695,314

LIQUID DISPENSING APPARATUS AND METHOD

Woodrow H. Watts, and George A. Bartlett, both of 8611 Glenlea, Houston, Tex.

Filed July 22, 1970, Ser. No. 57,228
Int. Cl. B67d *5/08*
U.S. Cl. 141—59 **22 Claims**



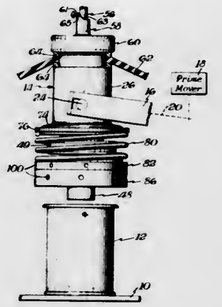
A new and improved liquid dispensing apparatus and method wherein a plurality of various liquids, such as for example, alcoholic and non-alcoholic beverages, each stored in separate containing means, are selectively chosen and permitted to flow or be drawn from the containing means into a glass or other receptacle in response to predetermined flow regulation imposed by a dispensing control apparatus to form desired combinations and mixes of the liquids.

3,695,315

CONTAINER FILLER-VALVE VOLUME ADJUSTMENT

David M. Ayars, Jr., Salem, N.J., assignor to Ayars Filler, Inc., Salem, N.J.

Filed Oct. 16, 1970, Ser. No. 81,299
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—368 **6 Claims**



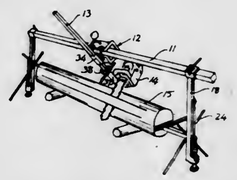
A container filling-valve includes a valve body having two generally hollow cylindrical sections mounted to have relative axial movement. The two sections are biased by a spring to have relative movement in a first sense. One of the sections (the upper) has an inlet for the filling material; the other section (the lower) has a discharge port for discharging the fluid material into a container to be filled. A valve member cooperates with the discharge port to control fluid flow therethrough and is normally biased to a closed position. A flexible diaphragm connects the two sections. When the upper section is moved sufficiently for the container to be contacted, the valve is opened. The valve has a seal means which engages the upper rim of the container to be filled. The seal means includes an annular flange-like member threadedly engaged to the lower valve section such that rotation of the annular member permits it to be axially positioned along the lower section thereby to adjust the extent to which the lower valve section can extend into the container and thus control the volume of fluid deposited in the container. A friction locking nut adapted to frictionally engage the flange-like member permits the flange-like member to be locked into its adjusted position.

3,695,316

SAWING TIMBER

Patrick J. Pluckhahn, Cnr. Reef & Templeton St., Maldon 3463, Australia

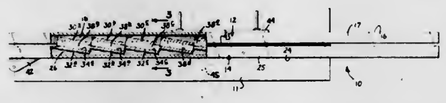
Filed May 19, 1970, Ser. No. 38,852
Claims priority, application Australia, June 2, 1969, 55910/69
Int. Cl. B27b *17/00*
U.S. Cl. 143—32 Q **13 Claims**



The present invention provides a portable timber milling jig the use of which makes it possible to obtain sawn timber from felled logs. The jig comprises a beam along which runs a carriage adapted to support a chain saw, circular saw or reciprocating saw. The beam is supported at either end by a vertical stand which is also clamped into an end of a log to be

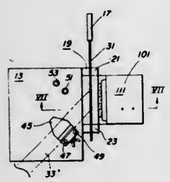
sawn, the log being positioned below the beam. As the carriage is moved along the beam, the saw supported by the carriage cuts through the log. By making a number of parallel cuts at right angles to each other, sawn timber is obtained.

3,695,317
WEDGE CUTTING JIG
Edwin F. Timmers, 681 Sims Ave., St. Paul, Minn.
Filed Aug. 7, 1970, Ser. No. 62,097
Int. Cl. B27b *5/00*
U.S. Cl. 143—51 A **7 Claims**



A wedge cutting jig including two laterally spaced complementary members each longitudinally extended and having a plurality of longitudinally spaced wedged-shaped recesses along adjacent vertical faces thereof. The wedge-shaped recesses of one member are oppositely disposed from the wedge-shaped recesses of the other member and each pair of oppositely disposed recesses is complementary so as to form a plurality of rectangular openings for holding pre-cut rectangular pieces of wood. A power saw is run between the adjacent first faces cutting each rectangular piece of wood into two wedges which are then deposited into a receptacle through the open bottom of the jig.

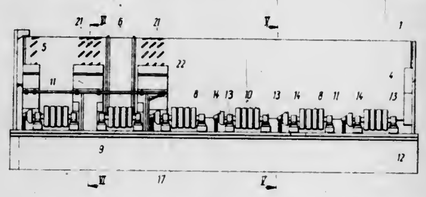
3,695,318
COMPOUND MITERING DEVICE
Lawson D. Maury, 510 Colonial Rd., Memphis, Tenn.
Filed Oct. 21, 1970, Ser. No. 82,740
Int. Cl. B27b *27/06*; **B25b** *5/14*
U.S. Cl. 144—35 **9 Claims**



A device for precision mitering or cutting linear framing material to specified lengths suitable for framing different size openings, e.g., a painting having a length of 40 inches and a width of 20 inches. The device includes structure for facilitating compound mitering or more specifically for properly aligning and holding while severing the generally recognized standard framing material, i.e., the painting being framed is supported close to the wall with the major plane of the frame being directed outwardly from the wall and/or the surface of the painting, and the less popular or reverse framing material, i.e., the painting being framed is usually supported a greater distance from the wall with the major plane of the frame being directed inwardly toward the wall from the surface of the painting. The holding structure clampingly holds two pieces of framing material simultaneously so that the one end of opposite sides of the frame, e.g., the two 40 inch pieces may be simultaneously mitered with one pass of the severing means and the other end of the two 40 inch sides may be mitered with a second pass of the severing means then the two 20 inch sides are likewise mitered resulting in precision fitted joints at the corners of the frame. The device also includes drill guide

structure for accurately guiding a drill while a dowel pin hole is drilled into the severed butt end of the pieces of framing material. The accurately placed dowel pin greatly simplifies the task of rigidly joining the adjacent sides to a precision fit.

3,695,319
DRUM BARKER
Rolf Erik Tuuha, Lansipuisto 20 C, Pori, Finland
Filed Nov. 2, 1970, Ser. No. 86,044
Claims priority, application Finland, Nov. 6, 1969, 3206/69
Int. Cl. B27l *1/04*
U.S. Cl. 144—208 B **4 Claims**



A drum barker including a cylindrical drum having debarking means. The drum is supported by wheels on both sides, the wheels including elastic outer portions. A guide ring assembly is provided on the drum periphery for contacting wheel portions to resist axial drum movement. The guide ring assembly includes at least two guiding faces which extend obliquely from the drum periphery in a direction away from the wheel portions to reduce wearing of the wheel portions and to cushion the forces imparted during axial contact of the wheel portions and guide faces.

3,695,320
METHOD FOR IMPROVED PRODUCTION OF WOOD FLAKES
Donald L. Johnson, 1816 N. Lenore Dr., Tacoma, Wash.
Division of Ser. No. 630,396, April 12, 1967, Pat. No. 3,526,258. This application Aug. 27, 1970, Ser. No. 67,303
Int. Cl. B27l *11/04*
U.S. Cl. 144—326 **3 Claims**

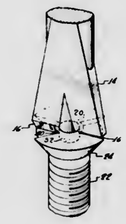


Method for producing a flat face on the side of a log or cant and including hogging away protuberances, slicing of wood flakes to a predetermined thickness and length, jet breaking of the flakes from the parent wood to desired width and then fluid conveying the flakes away from the cutterhead assembly.

3,695,321
CAVITY HEAD SCREW AND DRIVING TOOL THEREFOR
Jacob W. Garehime, Jr., 1700 Griffith St., Las Vegas, Nev.
Continuation-in-part of Ser. No. 827,627, May 26, 1969. This application June 30, 1970, Ser. No. 51,152
Int. Cl. B25b *15/02*; **F16b** *23/00*
U.S. Cl. 145—50 **6 Claims**

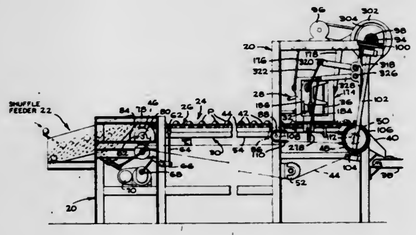
The upper surface of the head of a screw has wedge-shaped cavities arranged on either side of, or around, a central hub or land. The cavities have undercut sidewalls, and the land has a central hole, preferably circular. A driving tool such as a screwdriver, or the like, is provided with multiple blades which are spaced apart on either side of or around a central

aperture. A central pin depends from the shank of the screwdriver and is adapted to engage the hole in the central land of the screw. The bottoms of the screwdriver blades are of expanded thickness so that when these blades are inserted in and engage the screwhead cavities, the expanded bottom portions of the blades will lock under the undercut sidewalls of the cavities. Mating of the screwdriver blades and the screw



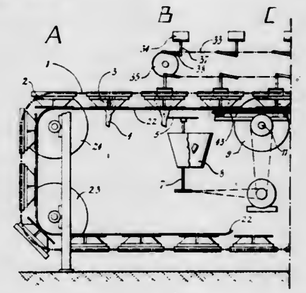
head cavities is guided, aligned and axially stabilized by engagement of the screwdriver central pin in the hole in the central land of the screwhead surface. Expandable pin sections maintained under tension may be employed to temporarily lock a screw onto the screwdriver blades and held in positive axial alignment with said screwdriver for insertion and withdrawal.

3,695,322
PEACH PITTER
Gerald R. Anderson, Campbell, and William C. Wann, Jr., San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Aug. 5, 1970, Ser. No. 61,210
Int. Cl. A23n *3/08*
U.S. Cl. 146—28 R **4 Claims**



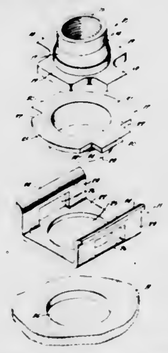
An apparatus for pitting peaches comprising a multiple lane orienter for aligning the peaches so that their suture planes are transverse to the direction of motion through the apparatus. A continuous cup conveyor has transverse rows of apertured fruit products that move with a swinging pitting head. The head has a row of bifurcated peach splitting and pit gripping blades descend on the peaches while peach incising and pit gripping blades are projected up through the cup apertures. The upper blades are then spread apart to separate the peach halves from their pits.

3,695,323
VEGETABLE TRIMMING AND CUTTING APPARATUS
Yngve Reinhold Akesson, Halsingborg, and Lars Gustaf Albert Wadell, Astorp, both of Sweden, assignors to Produits Findus S.A., Vevey, Switzerland
Filed Oct. 29, 1970, Ser. No. 85,188
Claims priority, application Great Britain, Nov. 3, 1969, 53,730/69
Int. Cl. A47j *21/00, 17/16, 43/18*
U.S. Cl. 146—81 R **9 Claims**



Apparatus for continuously trimming and cutting broccoli or similar plants, which comprises:
an endless conveyor carrying a plurality of pockets,
each pocket comprising at least two equal segments defining an axially symmetrical hollow enclosure having a wider opening and a narrower opening at opposite axial ends to receive a plant with the lower stalk protruding through the narrower opening,
the segments being separated by diametrically opposed gaps parallel to the axis of the pocket,
the segments being independently pivoted at a point adjacent said wider opening to open outwards to release the plant,
and at least one knife positioned to traverse said gaps when the gaps are aligned in the direction of motion of the conveyor to slice the planes. Other features of the invention appear in the following specification and drawings.

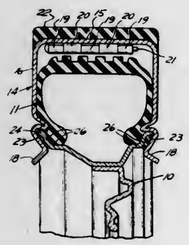
3,695,324
FLOATING NUT ASSEMBLY
Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.
Continuation-in-part of Ser. No. 855,834, Sept. 8, 1969, abandoned. This application Jan. 9, 1970, Ser. No. 1,706
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.74 **15 Claims**



A floating nut device including a receptacle portion having side openings receiving tabs projecting outwardly from a nut

and providing clearance to allow floating movement of the nut, the receptacle including an exteriorly knurled tubular portion to be extended through an opening in a workpiece and bent outwardly at its end to form a flange used in connecting the assembly to the workpiece. The nut may be retained by one member of spring material having deflectable walls to allow replacement of the nut, while the tubular portion is of malleable material to permit the flange to be bent.

3,695,325
TEMPORARY TIRE FOR AUTOMOTIVE VEHICLES
Mark Schuman, 101 G. St. S.W., Apt. 516, Washington, D.C.
Filed Nov. 23, 1970, Ser. No. 91,839
Int. Cl. B60c *27/16*
U.S. Cl. 152—225 **5 Claims**



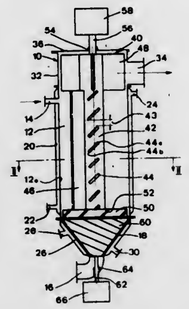
A temporary vehicle tire in the form of a wide, chain-like strip wrapped around the periphery of an automotive vehicle pneumatic tire mounted upon the rim of a vehicle wheel, the strip having spoke-like legs extending radially inwardly on opposite sides of the pneumatic tire and frictionally clamped to the side edges of the rim to form an independent outer wheel tread or tire.

3,695,326
TIRE FABRIC
Michael I. Bryant, High Point, and Charles E. Jones, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Continuation-in-part of Ser. No. 29,302, April 16, 1970. This application Jan. 12, 1971, Ser. No. 105,969
Int. Cl. B60c *9/00*
U.S. Cl. 152—358 **8 Claims**

A tire fabric comprising glass warp and filling yarns, the warp and filling yarns being bonded together at cross-over points by a thermoplastic resinous bond which essentially welds the cross-over points whereby slipping or sliding movement between the warp and filling yarns is precluded, the warp and filling yarns, including the thermoplastic bond being treated with a tie coat composition for bonding to tire rubber, the tie coat composition comprising a synthetic rubber latex and resorcinol-formaldehyde reaction product.

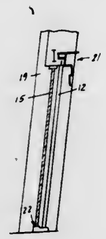
3,695,327
WIPED THIN FILM EVAPORATION AND TREATMENT APPARATUS
Fritz Widmer, Fallanden, Switzerland, assignor to Luwa AG
Filed March 18, 1970, Ser. No. 20,674
Claims priority, application Switzerland, March 21, 1969, 4281/69
Int. Cl. B01d *1/22*
U.S. Cl. 159—6 W **9 Claims**

A thin film treatment apparatus, especially for treatment of viscous materials, which is of the type comprising a rotationally symmetrical treatment chamber which is surrounded by a heating- or cooling jacket and which contains a rotor. The rotor is equipped with material conveying means which are inclined with respect to the axis of rotation of the rotor. Further, the rotor is provided with wiper means which extend generally axially and are arranged in offset fashion with respect to the conveying means in the peripheral or circumferential direction. According to an important aspect of the invention, the conveying means are formed of a plurality of vane stubs arranged in at least one axial row, wherein the confronting ends of neighboring vane stubs, viewed in the axial direction, are spaced from one another and, in each instance, form a gap. Further, the wiper means are offset in trailing fashion with respect to the row of vane stubs through an angle less than 90° in the direction of rotation of the rotor and at least partially bridge/or overlie the gap between neighboring vane stubs.



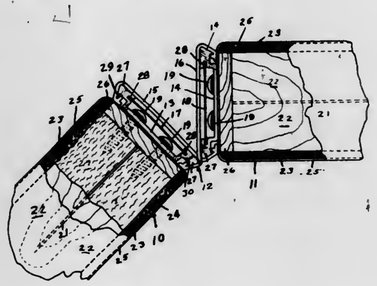
3,695,328
Patent Not Issued For This Number

3,695,329
TENSION DRAPERY
Max F. Roller, Lincolnwood, Ill., assignor to Art Drapery Studios, Inc., Chicago, Ill.
Filed March 30, 1970, Ser. No. 23,627
Int. Cl. A47h *5/00*
U.S. Cl. 160—84 **12 Claims**



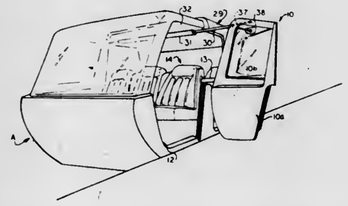
A tension drapery employs a pair of spaced-apart trackways for receiving and guiding a plurality of drapery carriers which support the drapery under tension. The trackways are mounted at an angle to the vertical requiring additional tensioning of the drapery to prevent sag of the material. The drapery has hinged apparatus adjacent the trackways to assist in defining and maintaining elongate folds therebetween. Alternate hinge sections have drapery attachment apparatus for releasably engaging mounting rods of the individual carriers. The carriers of a trackway are serially connected by cross-coupled wire springs received in each carrier by means forming shaped cavities which prevent the wire springs from turning in a reverse direction upon folding of the drapery.

3,695,330
HINGE CONNECTION FOR PANEL AND PANEL COMBINATION
Gene B. Hasbrouck, Corry, Pa., assignor to The Singer Company, Elizabeth, N.J.
Filed April 30, 1970, Ser. No. 33,215
Int. Cl. E06b *3/48*
U.S. Cl. 160—135 **5 Claims**



This specification discloses a hinge for connecting a panel or the like to a support or for connecting two panels together. In the example, the hinge is shown connecting two panels. A bracket is attached to the edge of each panel adjacent the other. These brackets extend from the top of each panel to the bottom. Flexible hinge strips are supported between the panel edges. Each hinge strip has one of its edges clamped under one edge of one of the brackets and its opposite edge clamped under the opposite edge of the bracket on the other panel. Each alternate strip has its opposite edge clamped under the opposite edge of the bracket. Thus, each strip in a sense crosses the strip above it, and the strip below it, so that the panels may swing either direction relative to each other.

3,695,331
TWO PART DOOR MOUNTING AND OPERATING MECHANISM
Charles R. McClain, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Nov. 19, 1970, Ser. No. 90,941
Int. Cl. E05b *15/28, 15/00*
U.S. Cl. 160—187 **12 Claims**



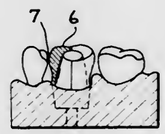
A door structure capable of widely divergent uses comprises two door portions connected together by hinged connection and mounted on the outer end of a power actuated, axially extensible and retractable thrust member. Extension of the thrust member carries the door half portions bodily outwardly from the door opening, and vice versa, while a pair of door folding links are connected at one end thereof, one to each door, and at the other end thereof to a spring biased anchor member to swing the door portions toward each other to folded condition on opposite sides of the thrust member when the latter is extended, and apart toward door closing position when the thrust member is retracted.

3,695,332
DOOR OPERATING MECHANISM
Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Filed May 25, 1970, Ser. No. 40,289
Int. Cl. E05f *15/12*
U.S. Cl. 160—188 **5 Claims**



An automatic operator for an overhead garage door gravity-biased to a closed position includes a keeper centrally positioned on the garage above the doorway, a pivotally biased latch member secured to the top of the door and spring-biased into a locking configuration wherein it is engageable with the keeper for locking the door in its closed position, a reel mounted in the garage above the top of the door centrally thereof, a cable interconnecting the reel and the latch member, a reversible electric gear head motor coupled to the reel for rotating same in a winding direction to unlock the latch and open the door and in an unwinding direction to permit closing of the door and locking thereof by the latch member, means for actuating the motor, and motor control circuitry including a screw-type limit switch responsive to rotation of the reel for deactuating the motor after opening or closing of the door.

3,695,333
METHOD OF FABRICATING DENTAL CROWNS AND BRIDGES FROM GOLD
Eugene Costa; Lucian Ene; Stelica Dumitrescu, and Ioan Covaci, all of Bucharest, Romania, assignors to Policlinica de Stomatologie Protetica, Bucharest, Romania
Filed Sept. 23, 1970, Ser. No. 74,821
Int. Cl. B22c *9/04;* **A61c** *13/20*
U.S. Cl. 164—35 **9 Claims**



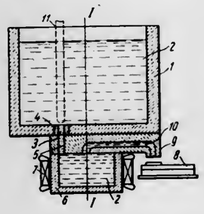
The invention refers to a fabricating method for one-piece cast dental crowns, with controlled thickness, as well as for dental bridges consisting of crowns and the bridge body. To this end a calibrated wax cylinder is placed on the tooth stump, this cylinder being flared in order to form proximal contact points with the adjoining teeth, thus realizing practically also the control of thickness; over the wax cylinder a lid is applied at the level of the occusal surface and in which the occlusal relief is fashioned in relation to the contact points of the antagonistic teeth. In the case of dental bridges, the patterns of the respective crowns are fashioned first, as above, then the pattern of the bridge body which is united with the

pattern of the crowns, after which follows the casting of the entire assembly from a gold alloy.

3,695,334
METHOD AND APPARATUS FOR CASTING WITH REVOLVING MAGNETIC FIELD CONTROLLING POURING

Alexandr Vasilievich Khripkov, Lev Borukhovich Shenderov, and Igor Borisovich Kazarinov, all of Gorky, U.S.S.R., assignors to Gorkoysky Filial Tsentralnogo nauchno-issled-ovatelskogo instituta metallurgii i Svarki, Gorky, U.S.S.R.

Filed Nov. 18, 1970, Ser. No. 90,520
Int. Cl. B22d *27/02*
U.S. Cl. 164—49 **2 Claims**



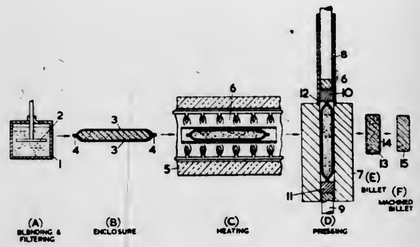
An apparatus for casting molten metal from a casting container having an outlet hole, comprises a batching container which is connected at the bottom of the casting container so that the outlet hole of the casting container is off-set from a vertical axis of the batching container towards the periphery thereof; the batching container is provided with means to generate a rotating electromagnetic field in a peripheral direction thereof to impart rotation to the metal in the batching container and to develop under the effect of centrifugal forces a counterpressure to the thrust of the metal coming into the batching container; casting of molten metal is effected from the central portion of the batching container, variation of the induction of the rotating electromagnetic field causing a variation of the rotation speed of the metal and, together with the latter, of the counterpressure to the thrust of the metal being supplied to said batching container, said counterpressure determining the batching of metal. The apparatus is characterized in that the batching container provided has an upper cover to close the container and form a chamber, the cover being provided with an entry aperture substantially near the periphery of the batching container and communicating with the outlet hole of a casting container; said cover of the batching container is also provided with a conduit for the exit of molten metal whose inlet opening is arranged in the central portion of the cover, while surrounding the batching container there is provided a means to generate a rotating magnetic field.

3,695,335
PROCESS FOR MAKING COMPOSITE MATERIALS FROM REFRACTORY FIBERS AND METAL

John Corjeag Cannell, 76, Monkswood Ave., Waltham Abbey, Essex; Rodney Seymour Leaper, Silverburn, 3, Park View, Hoddesdon, Hertfordshire, and Noel James Parratt, 18, Tycehurst Hill, Loughton, Essex, all of England

Filed Sept. 8, 1970, Ser. No. 70,455
Claims priority, application Great Britain, Sept. 10, 1969, 44,612/69
Int. Cl. B22d *19/02*
U.S. Cl. 164—97 **20 Claims**

A process for the manufacture of a composite material comprises providing in a mould an admixture of reinforcing refractory fibers and a molten metal, applying to the admixture an encapsulating pressure program until a desired densification is achieved and at least during initial application of the encapsulating pressure program arranging adjacent each path of

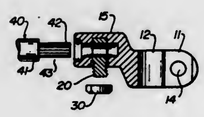


potential leakage from the mould a heat sink having a heat capacity sufficient to solidify molten metal contacting the heat sink and thereby seal the said leakage path.

3,695,336
METHOD OF MAKING BATTERY POST TERMINAL CLAMP

John K. Shannon, Kenosha, Wis., assignor to Quick Cable Corporation, Kenosha, Wis.

Division of Ser. No. 796,458, Feb. 4, 1969, Pat. No. 3,588,790.
This application July 31, 1970, Ser. No. 67,669
Int. Cl. B22d *19/00*
U.S. Cl. 164—98 **1 Claim**

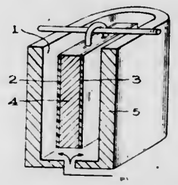


The disclosure is of a battery terminal post clamp having a pair of opposed clamping jaws with stud means at the end for securing the terminal to the battery post. The shank portion which receives the cable has a tie bolt, threaded at one end, with a cable receiving hole in the central portion aligned with a hole in the shank to receive the cable. The bottom portion of the tie bolt is threaded for engagement with a nut which, when the end of the cable is inserted in the tie bolt hole, can be turned to thereby jammingly engage the cable end forming a physical and electrical bond with the battery terminal. The method of manufacture contemplates a die casting in which the tie bolt itself serves as a core member, and an additional core is inserted through the hole in the tie bolt to the end that the tie bolt is perfectly aligned in the precast battery terminal, and in a sense is press-fittingly engaged therein, subject to dislodgment only by turning the fastening nut to engage the cable end.

3,695,337
PROCESS FOR MANUFACTURING PLATED PRODUCTS

Rene Grand, Unieux, France, assignor to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Firminy, St. Etienne, Jacob-Holtzer), Paris, France

Filed Oct. 7, 1970, Ser. No. 78,689
Claims priority, application France, Oct. 10, 1969, 6934722
Int. Cl. B22d *19/08*
U.S. Cl. 164—100 **17 Claims**

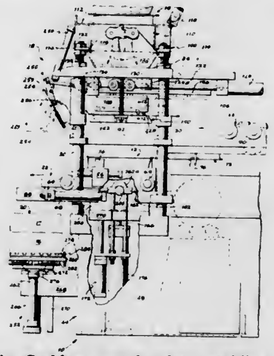


A process for manufacturing plated products of metals in which a piece of one metal has its surface to be plated coated with a substance which decomposes releasing volatile organic compounds which protect the surface from oxidation by the atmosphere, while a second metal is cast adjacent the surface whereby a plating with high bond characteristics is formed.

3,695,338
MOLDING MACHINE

Anthony S. Masi, 755 East 43rd St., Erie, Pa.

Continuation-in-part of Ser. No. 775,711, Nov. 14, 1968, abandoned. This application July 29, 1970, Ser. No. 59,181
Int. Cl. B22c *17/08*
U.S. Cl. 164—181 **24 Claims**



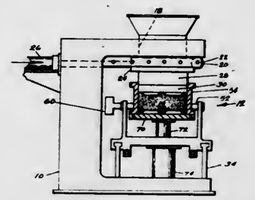
An automatic flaskless match plate molding machine wherein a drag and a cope are successively filled and squeezed within the machine to form drag and cope mold halves; transferred to an exterior core setting station whereat the drag and cope are closed to form a completed mold and the completed mold stripped from the drag and cope; and retracted into the machine to repeat the molding cycle. The machine features a universal match-plate, an improved sand dispensing, sifting and compacting arrangement, and an improved pour opening former.

3,695,339
MOLD FORMING APPARATUS

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 69,998
Int. Cl. B22c *17/00*
U.S. Cl. 164—213 **6 Claims**

One form of mold forming apparatus includes a carriage mounting a flask, the carriage being movable horizontally between a mold forming position and a position adjacent a mold discharging station. In the mold forming position, the flask and a lower pattern plate form a mold chamber into which sand is deposited. The flask and lower pattern plate are then moved vertically to compress the sand against an upper pattern plate. After the mold is formed, the flask and lower pattern plate are returned to their initial position. The lower pattern plate is then lowered away from the flask and the flask is rotated ninety degrees. The carriage is then moved to the

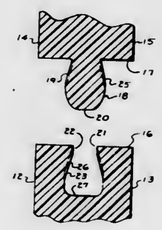


discharge station and a pusher element discharges the mold from the flask onto a support. In another form, a pair of horizontally movable carriages mount vertically movable flasks. Respective lower cope and drag pattern plates and the flasks are movable vertically upwardly to compress the sand and form molds. When returned, and the lower pattern plates are moved away from the flasks, the flasks are rotated ninety degrees. The flask carrying carriages are then moved toward the discharge station to butt the molds and thereby form the mold cavity and for discharge of the molds onto a support.

3,695,340
MULTI-PART COMBUSTIBLE CASTING PATTERN HAVING BEND-RESISTANT GLUE-LESS JOINTS

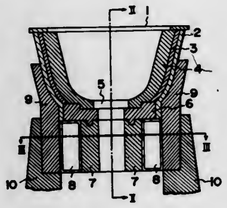
Jerome A. Gross, Clayton, Mo., assignor to John T. Parsons, Traverse City, Mich.

Filed May 4, 1970, Ser. No. 34,418
Int. Cl. B22c *7/02*
U.S. Cl. 164—246 **4 Claims**



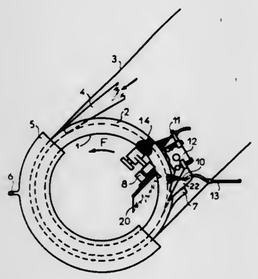
Combustible low density polystyrene casting patterns and their gate portions are securely assemble at mating surfaces, by forcing integral reverse-tapered tongues into tapered undercut grooves. A tool insertion opening into the undercut of each groove permits carving the pattern parts by a powered rotating cutting tool. The tongues and grooves are so proportioned that the partial elasticity of the low density polystyrene offsets permanent deformation suffered on assembly. Their interfit provides a tight joint sealed against the entrance of casting sand and which resists ending when sand is packed about the assembled pattern.

3,695,341
RECIPROCATING MOLD CONTINUOUS CASTING APPARATUS
Shigeki Soeda, and Hidetaro Nemoto, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Nov. 4, 1970, Ser. No. 86,896
Claims priority, application Japan, Nov. 19, 1969, 44/92411
Int. Cl. B22d *11/10*
U.S. Cl. 164—260 7 Claims



Continuously casting molten metal into a mould through an opening of a tundish, the mould is directly connected to the tundish through a refractory coupling piece secured to the tundish around the opening, reinforcing members are secured to the side surfaces of the tundish to reinforce the connection between the same and the mould and an oscillating mechanism is connected to the reinforcing members to oscillate in the vertical direction the tundish together with the mould.

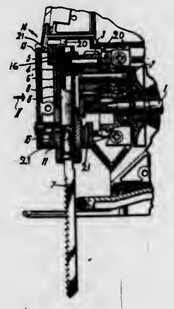
3,695,342
CONTINUOUS CASTING MACHINE WITH CONTROLLED EXTRACTOR MOVEMENT
Robert Petit, 11, rue du General Leclerc, 93 Rosny-Sous-Bois, France
Filed March 9, 1970, Ser. No. 17,624
Int. Cl. B22d *11/06*
U.S. Cl. 164—268 24 Claims



A casting machine includes a casting wheel (1), which continually rotates in the direction of the arrow F, and which has a groove (2) about its periphery. The groove (2) is surrounded by a moving belt (3) which forms a moving casting chamber into the upstream end of which molten metal is injected by a nozzle (4). A continuous cast product (7) is freed from the end of the casting chamber by an extractor wedge (22) mounted for pivoted movement about an axis parallel to the axis of the casting wheel. Nozzles (10) and (11) spray lubricant into the groove (2) to cool it and rotating brushes 14) engage the periphery of the casting wheel (1) to remove deposits of lubricant from the exterior of the wheel to prevent scale formation.

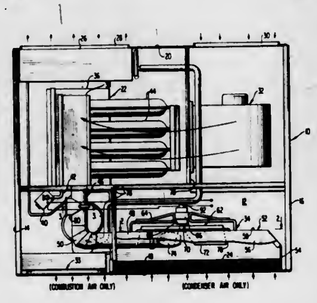
3,695,343
Patent Not Issued For This Number

3,695,344
HEAT INSULATION MEANS FOR POWER TOOLS
Albrecht Schnizler, Jr., Nuertingen, Germany, assignor to Metabowerke Kg Closs, Kauch & Schnizler, Nuertingen, Wuerttemberg, Germany
Filed Aug. 27, 1970, Ser. No. 67,410
Claims priority, application Germany, Sept. 3, 1969, G 69 34 527.3
Int. Cl. B27b *19/08*
U.S. Cl. 165—47 5 Claims



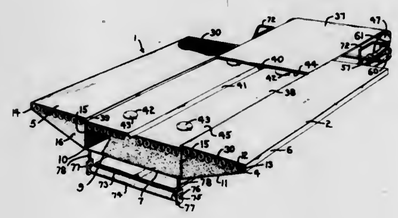
The invention relates to power tools, for example, a hand operated jig saw, having a housing of heat sensitive plastics material. A heat insulating layer of duroplastics is arranged intermediate the points of contact between said housing and members of the tool which are subject to heat-up during the operation of the tool, especially the bearing means such as a sleeve bearing.

3,695,345
CONTROLLED FORCED DRAFT ACTION TO THE FLUE OF A GAS FIRED HEAT EXCHANGER
Colby D. Moreland, Harrisonburg, Va., assignor to Dunham-Bush, Incorporated, Harrisonburg, Va.
Filed Oct. 7, 1970, Ser. No. 78,708
Int. Cl. F25g *29/00*
U.S. Cl. 165—64 6 Claims



The flue pipe leading from the combustion chamber of a gas fired heat exchanger has its discharge opening aligned with and conforming to the periphery the condenser fan for forcibly discharging the combustion products and maintaining proper draft. A damper valve within the flue pipe, intermediate of the gas fired heat exchanger and the condenser fan insures proper maintenance of the vacuum pressure within the combustion chamber regardless of wind conditions acting on the combined heating and cooling unit.

3,695,346
TABLE AND/OR TABLE CONVEYOR STRUCTURE
William A. Nichols, c/o W. A. Nichols Co., 819 West 25th St., Kansas City, Mo.
Filed Aug. 11, 1970, Ser. No. 62,942
Int. Cl. F28g *5/00*
U.S. Cl. 165—120 7 Claims

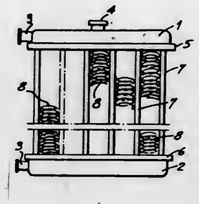


A processing table particularly for food products wherein the table is a hollow shell of non-corrosive material with all of the wells connected to provide a substantially continuous surface with no openings or joints or crevices that can collect material. The elongate table structure is supported on spaced pedestals connected to the bottom, and there is a rigid synthetic foam substantially filling the shell to form a compression resisting structure. A conveyor belt operates over pulleys mounted at the ends of the table structure with one run movable longitudinally of the table top and the other run under the shell. One of the pulleys is supported in bearings and at one end of the table structure and driven from a motor and speed reducer, the other pulley being at the other end of the table and supported in bearings mounted on arms swingably mounted relative to the table whereby said pulley may be moved from a belt slack position to a belt tightened position, said swingable arms having adjustments for adjusting the tension of the belt. Key means is arranged relative to the table and swingable arms to hold the arms in belt tightened position. The table has lateral portions providing work surfaces at each side of the top run of the belt and said table has refrigeration coils under the table top for cooling the top and thereby retarding growth of bacteria. A belt washing apparatus is arranged at one of the pedestals for cleaning the belt with provisions at said pedestal for disposal of the wash liquid.

3,695,347
CORRUGATED DISSIPATOR FOR TUBE AND DISSIPATOR RADIATOR CORE AND PROCESS FOR MANUFACTURING THE SAME
Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France
Filed Dec. 1, 1970, Ser. No. 94,238
Claims priority, application France, Dec. 3, 1969, 6941714
Int. Cl. F28b *1/10*
U.S. Cl. 165—152 7 Claims

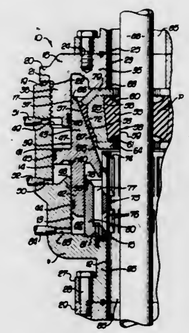
Corrugated dissipator for tube and dissipator radiator cores wherein said dissipator has continuous areas for support on adjacent tubes, folded straps connecting the continuous areas being alternately bent to be successively imbricated by each other.

Process for manufacturing corrugated dissipator for tube and dissipator core wherein parallel sets of slots are made lengthwise in a thin strip and delimit straps which are alternatively and oppositely fold. The strips are corrugated at the level of continuous areas separating each set of straps and are advancing while being retained in the corrugated portion.



3,695,348
Patent Not Issued For This Number

3,695,349
WELL BLOWOUT PREVENTER CONTROL PRESSURE MODULATOR
Fernando Murman, Palos Verdes Peninsula; George E. Lewis, Arcadia, and Charles E. O'Brien, Whittier, all of Calif., assignors to Hydril Company, Los Angeles, Calif.
Filed March 19, 1970, Ser. No. 21,130
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 37 Claims

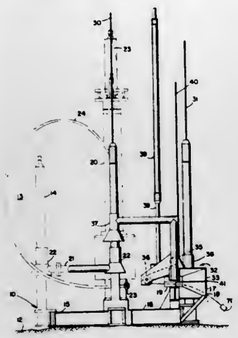


The constriction of a packer or other tool about a pipe string being run in a well is altered in such manner while a pipe joint is passing through the packer as to facilitate rapid running of the string in a well and to reduce wear of the packer.

3,695,350
METHOD AND APPARATUS FOR CONNECTING FLOWLINES TO UNDERWATER WELLHEADS
William H. Petersen, Metairie, La., assignor to Shell Oil Company, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,234
Int. Cl. E21b *43/00*
U.S. Cl. 166—.5 8 Claims

Apparatus and method for connecting flowlines to underwater wellheads by attaching a pulling head to the flowline and anchoring a pulling head fixture to the wellhead. A releasable pulling tool having a wireline in slidable engagement with the fixture on the wellhead is connected to the

flowline pulling head and the head is pulled into engagement with the fixture. When in proper position, the pulling tool is



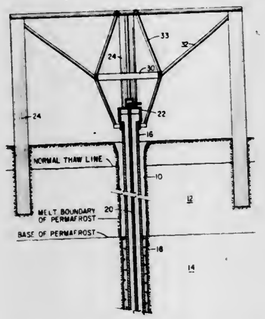
released and fluid communication may then be provided between the wellhead and the pulling head and thus with the flowline.

3,695,351

SUSPENDING CASING THROUGH PERMAFROST

Arthur Lubinski, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.

Filed June 3, 1970, Ser. No. 43,073
Int. Cl. E21b *33/03*
U.S. Cl. 166—96 **6 Claims**



Failure of casing set in wells drilled through permafrost zones can be anticipated if the casing is set in the usual manner. As the warm formation fluid is produced up through the permafrost zone, the permafrost adjacent the well thaws. In many instances the casing could be damaged by buckling when it loses its lateral support, while the upper termination of the casing moves downward due to subsidence. This problem is relieved by cementing the casing only below the permafrost zone and suspending the weight of the uncemented portion of the casing from a means at the surface which would not be affected subsidence-wise by the thawed region. A constant tension device can be used to adjust the tension on the casing.

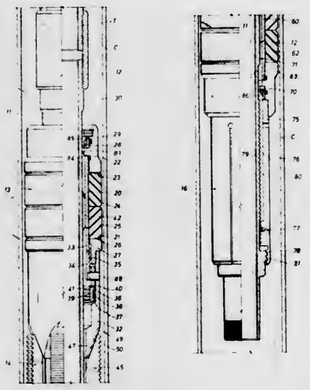
3,695,352

RETRIEVABLE WELL PACKER APPARATUS

Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,832
Int. Cl. E21b *23/06, 33/124*
U.S. Cl. 166—129 **16 Claims**

In accordance with an illustrative embodiment of the present invention, a retrievable well packer apparatus includes a body that carries upper and lower packing structures and an anchor for preventing movement in either longitudinal direction in a well bore. Each packing structure includes a settable packing element mounted on a pressure sleeve between a fixed abutment on the sleeve and a movable abutment slidable along the sleeve. A clutch means having cooperative parts on the sleeve and the movable abutment



functions to retain compression loading on the packing elements in the event of loss of packing material due to extrusion or the like. A one-way check valve system between each packing structure and the mandrel enables the pressure of fluids in the annulus space between the packing structures to equalize with the lesser pressure of fluids in the well bore above or below the packer apparatus, as the case may be.

3,695,353

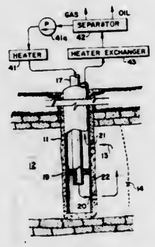
Patent Not Issued For This Number

3,695,354

HALOGENATING EXTRACTION OF OIL FROM OIL SHALE

Richard L. Dilgren, Houston, Tex., and Gary Drinkard, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,549
Int. Cl. E21b *43/24*; C10g *1/04*
U.S. Cl. 166—272 **5 Claims**



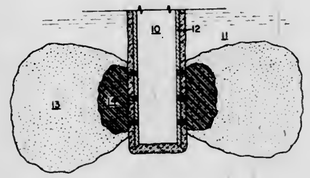
A process for recovering oil by circulating hot fluid through a permeable mass of oil shale is improved by circulating hot fluid that contains a halogenated organic compound.

3,695,355

GRAVEL PACK METHOD

Donald B. Wood, Houston, Tex., and Othar M. Kiel, Houston, Tex., assignors to Esso Production Research Company

Filed Jan. 16, 1970, Ser. No. 3,412
Int. Cl. E21b *43/04*
U.S. Cl. 166—295 **5 Claims**



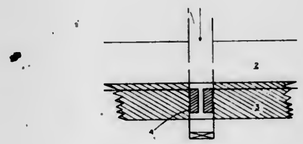
A gravel packing method wherein a viscous fluid is injected into an unconsolidated formation at such a rate and pressure to form a cavity therein and a specially graded aggregate is pressure packed in the cavity to form an outer sand exclusion zone and an inner high permeability zone. The high permeability of the inner zone permits the passage of for-mation fines which escape the sand exclusion zone.

3,695,356

PLUGGING OFF SOURCES OF WATER IN OIL RESERVOIRS

Perry A. Argabright, Sedalia, Colo.; C. Travis Presley, Littleton, Colo., and Harold C. Bixel, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 15, 1970, Ser. No. 72,288
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **12 Claims**



Water-oil ratio in production operations can be reduced by selectively plugging off sources of water within the formation by injecting solutions of chemicals which precipitate at a controlled rate, e.g., aqueous solutions of isocyanuric salts which hydrolyze.

3,695,357

Patent Not Issued For This Number

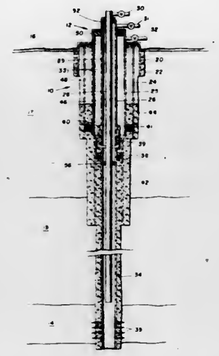
3,695,358

WELL COMPLETION SYSTEMS

Elmo M. Blount, Irving, Tex., and Nicolas J. Prueger, Spenard, Alaska, assignors to Mobil Oil Corporation

Filed July 23, 1970, Ser. No. 57,636
Int. Cl. E21b *43/24, 43/10*
U.S. Cl. 166—302 **12 Claims**

Well completion system for wells penetrating a permafrost zone in the earth. The system comprises a protective casing and a production casing extending to a subterranean formation. The production casing is suspended from the protective



casing at a downhole location in order to reduce loading at the wellhead. Also disclosed are means for supporting other tubular goods within the well rather than at the wellhead.

3,695,359

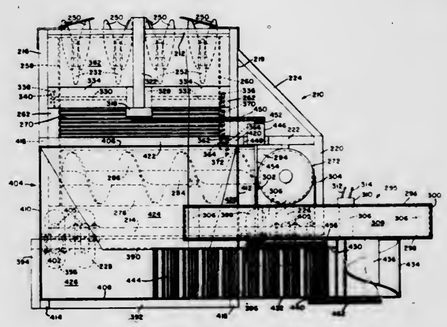
Patent Not Issued For This Number

3,695,360

ROOT CROP HARVESTER

Richard Wayne Hook, and Richard David Zaun, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

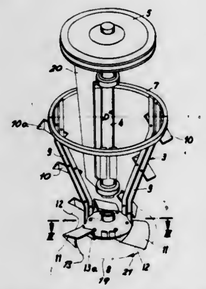
Filed Dec. 17, 1971, Ser. No. 209,123
Int. Cl. A01d *19/02*
U.S. Cl. 171—58 **14 Claims**



A root crop harvester includes a main frame, a plurality of digger wheels on the front of the main frame, conveyor means supported on the frame to receive roots from the digger wheels and deliver the same to a transversely extending auger conveyor which moves the roots to a vertical auger conveyor. An additional conveyor mounted on the upper end of the vertical auger conveyor in a root-receiving relationship therewith moves the roots laterally outwardly for deposit in a vehicle moving alongside the harvester or laterally inwardly. A tank attachment is securable to the main frame of the harvester in a position such that a portion of the tank extends under the inner end of the additional conveyor to receive roots deposited over the inner end of the additional conveyor. An unloader conveyor for the tank delivers the roots back to the

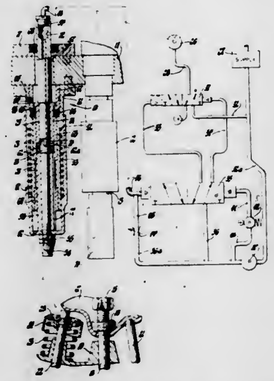
additional conveyor which will move the roots laterally outwardly for deposit into the vehicle moving alongside the harvester.

3,695,361
ROTARY PLOW
August Claas, Harsewinkel, Germany, assignor to Raussendorf & Co. G.m.b.H. Maschinenfabrik, Harz, Germany
Filed Jan. 15, 1970, Ser. No. 2,996
Claims priority, application Germany, Jan. 27, 1969, G 69 02 964.7
Int. Cl. A01b *9/00*
U.S. Cl. 172—67 **1 Claim**



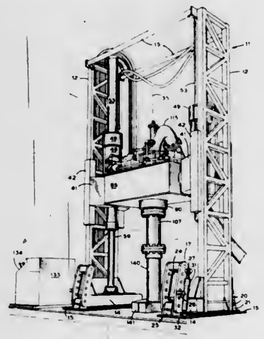
A rotary plow comprises a forwardly directed plowshare and a rotor adapted to ride behind the plowshare in the furrow formed thereby. This rotor consists of a large-diameter upper ring and a small-diameter lower disk with a plurality of tool-carrying struts extending therebetween, thus forming a downwardly converging body of revolution. Mounted on the lower disk are a plurality of angularly spaced outwardly extending blades having leading cutting edges. Each blade rises rearwardly from the cutting edge and has on its inner and outer edges downwardly extending flanges, the inner flange being formed with a lip releasably bolted to the disk.

3,695,362
AUTOMATIC SETTING MOTION-SENSING CONTROL DEVICE
Frederick C. Clarkson, Jr., Niagara-on-the-Lake, Ontario, Canada, assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1970, Ser. No. 45,290
Int. Cl. B23p *19/06*
U.S. Cl. 173—2 **3 Claims**



An automatic setting motion-sensing control device in the form of a sensing air valve which closes and sets its initial measurement point upon engagement with a workpiece and then opens upon a predetermined movement of the workpiece, relieving air pressure in the line. The resultant pressure drop is picked up by a pneumatic relay to stop the operation of a motion causing device operating on the workpiece.

3,695,363
ROTARY SHAFT DRILLING APPARATUS
Joseph L. Kelly, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Sept. 24, 1970, Ser. No. 75,025
Int. Cl. E21b *19/14*
U.S. Cl. 173—43 **4 Claims**



The apparatus has a frame and a carriage assembly. Hydraulic thrust cylinders are employed to raise and lower the carriage assembly relative to the frame. A rotary table supported by the carriage assembly moves up or down with the carriage assembly and can be pivoted about a generally horizontal axis, relative to the frame and carriage assembly.

The method is carried out by pivoting the rotary table into alignment with a generally horizontally oriented drill string section, coupling the drill string section to the rotary table, moving the rotary table to generally vertically orient the drill string section in drilling alignment, and lowering and rotating the drill string to penetrate the formation. Drill string sections are aligned for addition in the same way. Drill string is removed by reversing the procedure.

3,695,364
EARTH DRILLING MACHINE
Wilson B. Porter, Seattle, and Harold T. Klein, Bellevue, both of Wash., assignors to James S. Robbins and Associates, Inc., Seattle, Wash., a part interest
Filed Sept. 24, 1970, Ser. No. 75,020
Int. Cl. E21b *19/16*
U.S. Cl. 173—57 **9 Claims**

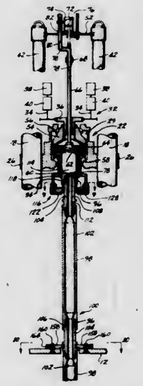
A traveling support frame is mounted for up and down travel by two parallel guide columns secured at their lower ends to a base frame. A portion of the traveling frame projects laterally of the drive columns and supports two drive motors, two reducing gearing assemblies, a collector gearing assembly and drive head means. The traveling frame and equipment carried thereby are moved up and down by triangularly arranged thrust ram means, each comprising a downwardly opening, upwardly projecting, piston chamber having a lower mounting portion originally secured to the traveling frame and a downwardly directed piston having a lower mounting portion secured to the base frame.

The drive head includes a breakout wrench having a plurality of laterally swinging wrench jaws moved in and out by linear fluid motors. The wrench jaws have radially inwardly directed wrench portions which are like spanner wrenches. The free

end of each wrench jaw makes abutting contact with a shank portion of the adjacent wrench jaw, so that in use the wrench jaws brace each other and form a compression ring surrounding the engaged drill pipe.

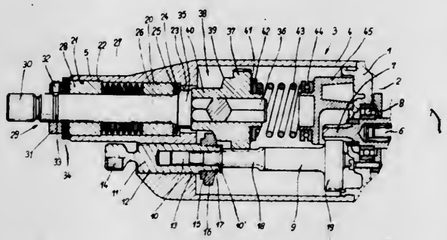
The drill head includes a tool joint component which is movable axially a limited amount relative to the traveling cross frame. A connector rod connects this tool joint component to the piston of a linear fluid motor supported axially above the drill head. Fluid is introduced into the motor below the piston for the purpose of counterbalancing the weight of the drill head and any drill pipe connected thereto.

A holding wrench is located below the turning wrench. It comprises a plurality of wrench jaws pivotally mounted for



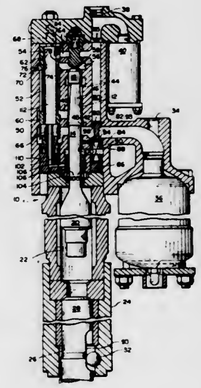
lateral swinging movement, a surrounding control ring, and individual links interconnected between each wrench jaw and the control ring. The control ring is rotated by linear fluid motors. Rotation is one direction causes the links to move the wrench jaws radially inwardly into a position of engagement with holding wrench receiving portions on drill pipe, and movement in the opposite direction causes the links to move the wrench jaws radially outwardly in space relationship from the drill pipe.

3,695,365
TORQUE AND IMPULSE TRANSMITTING MACHINE
Fritz Schadlich, Stetten, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 6, 1970, Ser. No. 87,492
Claims priority, application Germany, Nov. 14, 1969, P 19 57 288.4
Int. Cl. B25d *9/00*
U.S. Cl. 173—109 **15 Claims**



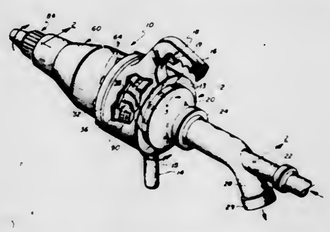
A torque and impulse transmitting machine with a built-in motor wherein the tool supporting spindle receives impulses from a rotary impeller gear which drives the spindle in response to rotation of the output shaft of the motor and is biased against a flange of the spindle by a strong helical spring. The impeller gear is moved axially rearwardly and away from the spindle during each revolution of the spindle by a shifting device which has two cams or two crown gears. One of the cams or crown gears is axially movably mounted in the housing of the machine and the other cam or crown gear forms part of a hub on the impeller gear. The latter strikes against the flange of the spindle whenever it is free to follow the bias of the helical spring.

3,695,366
HYDRAULIC HAMMER WITH BACK PRESSURE ISOLATION
Ernst F. Klessig, Racine, Wis., assignor to Worthington Corporation (Worthington Compressor and Engine International Division), Holyoke, Mass.
Filed Nov. 9, 1970, Ser. No. 87,966
Int. Cl. E21b *1/00*
U.S. Cl. 173—134 **6 Claims**



An improved hydraulic hammer constructed to eliminate frequency variations in operation due to fluctuating back pressure. A flow path from a hammer operating piston to a fluid outlet is provided with a venturi to isolate the piston from fluctuation in back pressure downstream of the restriction.

3,695,367
HYDRAULIC POWER TOOL
Fritz C. Catterfeld, Canoga Park; Sebastian B. Macaluso, Santa Susana, and Lawrence D. Weber, Northridge, all of Calif., assignors to North American Rockwell Corporation
Filed June 8, 1970, Ser. No. 44,447
Int. Cl. F01d *17/00, 15/06*; B23b *45/04*
U.S. Cl. 173—163 **8 Claims**



A hydraulically driven radial inflow turbine having power takeoff means attached thereto is actuated and controlled by

an axially translatable nozzle ring. A manually actuatable trigger mechanism admits a small amount of control fluid which is tapped from a primary source of liquid under pressure into a chamber defined by the nozzle ring and the turbine housing to move the nozzle ring in registering alignment with the primary liquid inlet apertures to the turbine impeller blades. The trigger assembly proportionately supplies hydraulic pressure to the turbine to control the flow of fluid to the turbine thereby controlling the power output.

3,695,368

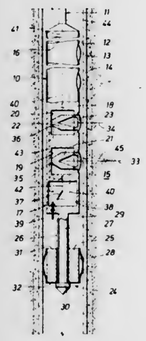
APPARATUS FOR PERFORATING EARTH FORMATIONS

C. P. Lanmon, II, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 7, 1971, Ser. No. 132,013

Int. Cl. E21b *43/116, 43/119*

U.S. Cl. 175—4.52 **14 Claims**



As representative embodiments of the present invention, each of the new and improved well tools disclosed herein include a perforator provided with one or more sets of longitudinally spaced, selectively fired perforating devices respectively directed along parallel or slightly convergent perforating axes. A wall-anchoring assembly is cooperatively arranged on the tool to permit longitudinal movement of the perforator in relation to the anchoring assembly over a distance which is slightly less than the longitudinal spacing between adjacent perforating devices. Upon positioning of the apparatus in a well bore, the first of two perforating devices in each set is actuated to produce a first perforation extending into the adjacent earth formations. By manipulating the suspension cable, the perforator is then shifted longitudinally in relation to the stationary anchoring assembly for locating the second perforating device in each set immediately adjacent to the previous position of the first perforating device. In this manner, upon actuation of the second perforating device, a second perforation will be produced which at least closely parallels the first perforation so as to be contiguous therewith for displacing compacted, crushed formation materials from the walls of the second perforation into the first perforation so that at least a portion of these walls will be cleared of such unwanted flow-blocking materials.

3,695,369

EARTH BORING MACHINE WITH A PIVOTAL HEAD

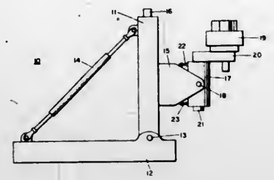
James M. Drouet, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 9, 1970, Ser. No. 70,740

Int. Cl. E21b *47/02;* **E21c** *23/00*

U.S. Cl. 175—45 **9 Claims**

The drill head of a raise drill is mounted to allow pivoting in one or more planes. Bending forces on the drill string and raise drill components are reduced, eliminated or controlled. An indicator provides the operator with information concerning alignment and misalignment.



3,695,370

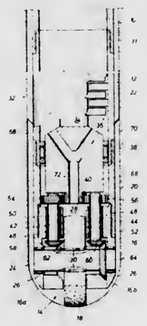
DRILLING APPARATUS

Kenneth W. Jones, Shreveport, La., assignor to Hycalog, Inc., Shreveport, La.

Filed Oct. 14, 1970, Ser. No. 80,633

Int. Cl. E21b *3/12, 9/36*

U.S. Cl. 175—106 **8 Claims**



A downhole fluid powered motor and a drill bit are connected to the lower end of the drill string. The outer housing of the motor and the body of the bit are connected together and to the drill string for rotation therewith. The drill bit includes a disc-shaped cutter wheel that is mounted on the drill body for rotation around a transverse axis that is perpendicular to the axis of rotation of the drill string. Power provided by the motor rotates the cutter wheel around the transverse axis when drilling mud is pumped down the drill string.

3,695,371

APPARATUS FOR DELIVERING SINGULATED FRUIT, WEIGHING AND BAGGING IT

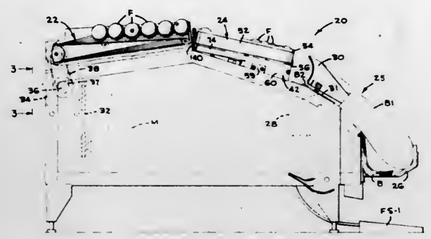
Charles E. Sheetz, Woodstock, Va., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 2, 1971, Ser. No. 168,247

Int. Cl. G01g *13/16*

U.S. Cl. 177—59 **15 Claims**

A hopper is arranged to receive a continuous supply of singulated fruit and is pivotally mounted at one end thereof so that it can be pivoted upwardly to discharge the contents thereof when a predetermined weight of fruit has been accumulated therein. The hopper is pivotally mounted upon a support structure which is, in turn, mounted upon one end of a scale beam. The other end of the scale beam mounts a device which, when actuated, serves to engage the underside of the hopper to pivot it upwardly. Pivotable gate members are provided adjacent the movable end of the hopper to catch and hold a fruit which may follow the last fruit making up said predetermined weight of fruit.



3,695,372

Patent Not Issued For This Number

3,695,373

WHEEL-SUPPORTED TRANSPORT VEHICLE HAVING MAXIMUM PERMITTED AXEL PRESSURE AND BEING ADAPTED TO TRANSPORT SIMULTANEOUSLY LOADS OF THEORETICALLY UNLIMITED TOTAL WEIGHT

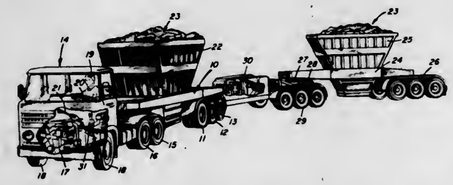
Karl-Johan Bostrom, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed March 23, 1970, Ser. No. 21,911

Claims priority, application Sweden, March 27, 1969, 4334/69

Int. Cl. B62d *59/04*

U.S. Cl. 180—14 A **13 Claims**



A wheel-supported transport vehicle which is capable of transporting loads of theoretically unlimited total weight. The vehicle comprises a manned vehicle unit, which embodies a master power unit and master gear transmission system, and a number of unmanned vehicle units, each having its own respective power unit and gear transmission system. The vehicle units are coupled together in a special manner to form a train of said units. The manned vehicle unit is provided with a master operating system, pneumatic circuitry and electrical relay system, which in combination with similar systems and circuits in the unmanned units cause the gear positions selected in the manned unit to be copied contemporaneously in the gear systems of the unmanned units and by which all gears are selected with the same force.

3,695,374

DIRIGIBLE WHEEL VEHICLE

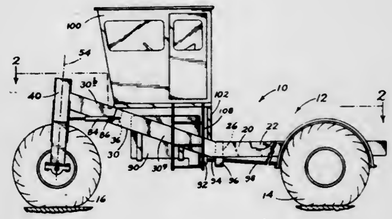
Ward T. Commons, Route 1, Box 111, Scio, Oreg.

Filed Aug. 7, 1970, Ser. No. 61,909

Int. Cl. B62d *61/08*

U.S. Cl. 180—27 **6 Claims**

A vehicle with a vehicle frame including a pair of substantially horizontal rear members extending longitudinally of the vehicle at its rear. The forward part of the vehicle frame is made up of a pair of elongated forward members joined to said rear members and projecting forwardly and inclining upwardly therefrom. The forward members have front portions which converge on each other progressing forwardly and upwardly in the vehicle thus to form a tongue. Rear wheels support the rear members of the frame, and a single dirigible wheel disposed under such tongue supports the forward part of the frame. The engine for powering the vehicle is mounted on said frame with such lodged between the forward members adjacent where they join with the rear members, and located rearwardly of the tongue. Journaling the dirigible wheel on the tongue, is an upright spindle fixed to the tongue and with the upper and lower ends projecting above and below the tongue. Stabilizing collars snugly embrace the upper and lower ends of the spindle and are also joined to the tongue, these being left unjoined to the spindle. Above and below these stabilizing collars are upper and lower bearings which are mounted on a wheel mounting bracket which supports the dirigible wheel.



3,695,375

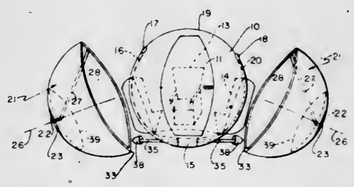
MULTI-PURPOSE VEHICLE

Thaddeus M. Splawinski, 10 Sullivan St., Saskatoon, Saskatchewan, Canada

Filed Nov. 30, 1970, Ser. No. 93,520

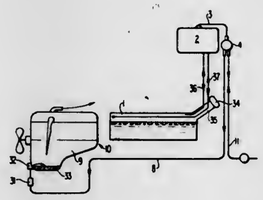
Int. Cl. B62d *61/00*

U.S. Cl. 180—29 **1 Claim**



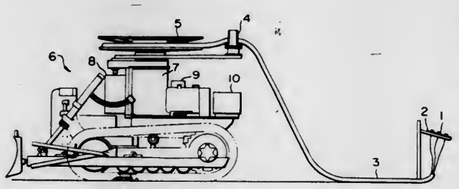
A pair of semi-spherical hollow wheels are mounted for rotation to a body with the axes of rotation being at an angle to the horizontal so that the peripheries of the two wheels are substantially together at the underside of the body. Power is transmitted from the body through an axle to each wheel, said axle carrying a friction roller engaging a circular track on the inside of each wheel.

3,695,376
SAFETY INSTALLATION FOR THE VENTING AND PRESSURE RELEASE OF CLOSED CONTAINERS
Horst Fiedler, Stuttgart-Fasanenhof, and Ludwig Fricker, Stuttgart-Feuerbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Aug. 21, 1970, Ser. No. 65,997
Claims priority, application Germany, Aug. 23, 1969, P 19 42 963.1
Int. Cl. B60k *15/02*
U.S. Cl. 180—54 R 41 Claims



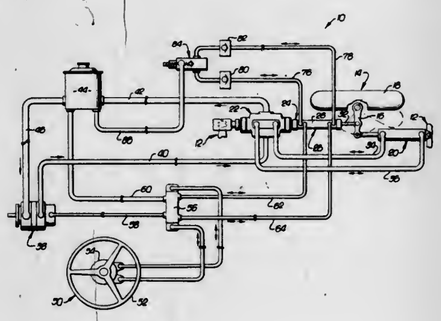
An installation for the venting and the pressure control of tanks preferably provided with an equalization container, especially of a fuel tank in motor vehicles provided with an equalization tank connected downstream thereof, in which the line coming from the equalization tank is provided with at least one venting valve and one pressure release valve of which the venting valve is connected by way of a vent line with the crankcase of the engine.

3,695,377
METHOD OF REMOTE CONTROL OF TRACTORS
Yoshiyuki Ito, and Toru Aihara, both of Sagamihara-shi, Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan
Filed Sept. 14, 1970, Ser. No. 71,877
Int. Cl. B60k *33/00*
U.S. Cl. 180—66 B 4 Claims



A method of remote control of tractors and similar earthmoving vehicles having an engine driven air compressor thereon, utilizes an umbilical control cable connected between the vehicle and the stationary control station and winds and unwinds the control cable on the vehicle as the machine moves relative to the stationary control station so that electrical signals sent through the control cable can operate relays and electro-pneumatic valves on the vehicle to route pneumatic pressure to actuating devices connected to the various controls of the vehicle.

3,695,378
CYLINDER FOR POWER STEERING SYSTEM WITH RELEASABLE HYDRAULIC STOPS
Robert A. Garrison, Newport Beach, and Leonard L. Conopa, Westminster, both of Calif., assignors to Garrison Manufacturing Co., Inc., Santa Ana, Calif.
Filed Nov. 27, 1970, Ser. No. 93,044
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R 1 Claim

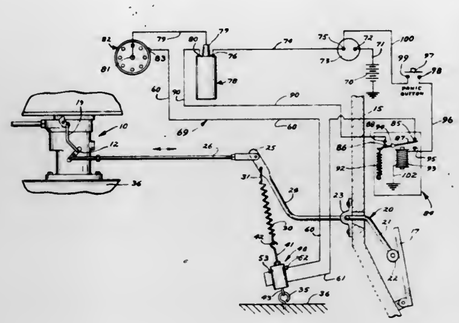


A fluid operated power steering system having a control motor for actuating a steering valve which, in turn, actuates a fluid operated steering motor, the system including manually operable control means for delivering fluid under pressure from a pump to opposite ends of the control motor selectively. The control motor includes a control cylinder having axial cylindrical recesses at its ends, and includes a control piston having on opposite sides thereof complementary axial cylindrical plungers respectively insertable into the recesses so that fluid trapped in the recesses provides hydraulic stops for the control piston at the ends of its stroke. A relief valve discharges fluid from the recesses into a reservoir in the event excessive pressures are developed in the recesses due to external forces, such as the encountering of obstructions by the steerable wheels of the vehicle on which the system is installed. Under such conditions, the control system overrides the hydraulic stops and encounters mechanical stops at the ends of the control cylinder. With this construction, the hydraulic stops normally limit the travel of the control piston, but can be overcome if necessary to permit overtravel of the steerable wheels. Under such conditions, the hydraulic stops have a cushioning effect on the control piston and limit the severity of contact with the mechanical stops.

3,695,379
IGNITION SAFETY SWITCH SYSTEM
Bernard J. Veilleux, 9028 Highway 49 Rt. 1, St. Paul, Minn.
Filed Aug. 17, 1970, Ser. No. 64,326
Int. Cl. B60k *33/00*
U.S. Cl. 180—103 1 Claim

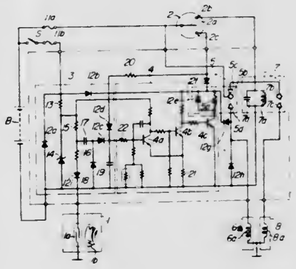
This invention relates to an automotive vehicle safety system comprising an ignition circuit breaker to be actuated in the event that the throttle of the vehicle becomes unexpectedly uncontrollable in opened position.

This system includes a pair of switches which involve the ignition circuit, said switches being normally in position as not to interrupt flow of current through the ignition circuit. One of said switches is actuated automatically to break the ignition circuit in the event of the breakage of the throttle lever spring and the other of said switches is manually energized to de-energize said first mentioned switch and to break said ignition circuit by action of the operator in the event the throttle lever is frozen resulting in unexpected loss of engine speed control.



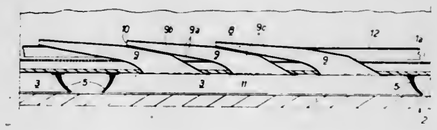
3,695,380
Patent Not Issued For This Number

3,695,381
DOOR-LOCKING SYSTEM FOR VEHICLES
Masashi Okada, and Ichita Sogabe, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan
Filed June 16, 1971, Ser. No. 153,779
Claims priority, application Japan, July 24, 1970, 45/65217
Int. Cl. B60r *21/00*
U.S. Cl. 180—112 1 Claim



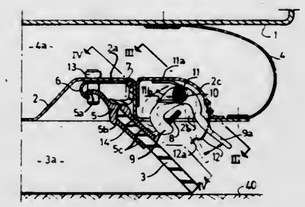
A system for locking vehicle doors in which energization of a locking cross valve and an unlocking cross valve is extended for a predetermined period of time by utilizing the charging and discharging of a capacitor even after a manual switch is opened, so that the cross valves continue to be energized for a longer period than the time by which the energization of the cross valves and servo systems may be delayed, thereby locking or unlocking the doors in a running vehicle without fail.

3,695,382
DEVICES FOR SUPPLYING THE PRESSURIZED FLUID CUSHIONS OF A GROUND-EFFECT VEHICLE
Henri Francois Marie Schmitt, Antony, and Claude Marande, Bois-D'Arcy, both of France, assignors to Societe de L'Aerotrain, Paris, France
Filed Sept. 25, 1970, Ser. No. 75,474
Claims priority, application France, Sept. 26, 1969, 6932898
Int. Cl. B61b *1/00*, *1/06*
U.S. Cl. 180—116 8 Claims



A device in a ground-effect vehicle for supplying the pressurized cushions employed to support or to guide the said vehicle, which device comprises a collector carried by the machine structure and a plurality of pick-up ducts adapted to be fed with pressurized fluid from the collector and opening into the respective cushions, wherein the pick-up ducts are divergent towards their exits, over at least a part of their lengths, in order to improve transfer and distribution of pressurized fluid between the collector and the cushions.

3,695,383
ARRANGEMENT FOR SECURING WALLS TOGETHER
Serge Alfred Joseph Cruchant, Bagneux, France, assignor to Societe de L'Aerotrain, Paris, France
Filed April 8, 1970, Ser. No. 26,722
Claims priority, application France, April 10, 1969, 6911042
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 19 Claims



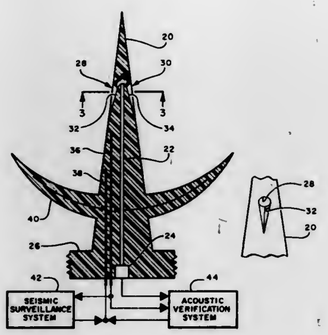
Arrangement for securing walls together.

An arrangement for disconnectably securing two walls together chiefly for securing a wall, confining laterally a compressed fluid cushion carrying or guiding a ground effect machine, with the wall confining said cushion in a plane parallel with the surface with reference to which the machine is carried or guided with the interposition of cushions. To this end, a trough rigid with last-mentioned wall engages a member carrying the other wall. Means are provided for releasably securing the two walls together and for ensuring fluidtightness for the joint between them.

3,695,384
NON-MENISCUS FORMING ORIFICES
Marcel C. Schless, 703 Quincy N.E., Albuquerque, N. Mex.
Filed Sept. 25, 1970, Ser. No. 75,384
Int. Cl. H01q *1/42*
U.S. Cl. 181—0.5 R 2 Claims

Means for freeing an opening in a base member from blocking fluids which may normally form a meniscus over an

opening including a notch in the base member with a wide portion substantially tangent to the sides of said opening and with converging edges from said wide portion. The notch may include a V-shaped groove in the base member having a depth



decreasing from said wide portion with converging edges of sharp definition. The notch may be aligned with the converging edges in the direction of forces tending to clear the fluid from the opening.

3,695,385

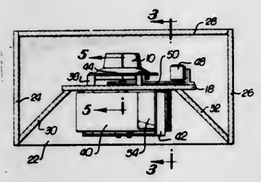
VARIABLE DISTANCE DOPPLER GENERATOR

Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed May 26, 1971, Ser. No. 147,022

Int. Cl. G10k *13/00*; **H04r** *1/28*

U.S. Cl. 181—31 B **9 Claims**



A plurality of acoustic pulsato units are mounted in a vertical stack with the axes of the pulsato rotors horizontal in spaced parallel array. Reflector walls on opposite sides not only direct the sound frontally but also serve as the primary means for producing frequency deviations by Doppler effect since the distance between the reflector walls and the mouths of the sound channels changes in accordance with the angular movement of the rotors. Pulsato sound at a high energy level is efficiently radiated.

ERRATUM

For Class 181—33 see:
Patent No. 3,695,395

3,695,386

SOUND-PROOFING COMPONENT

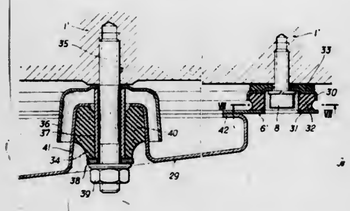
Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed March 18, 1970, Ser. No. 20,758

Claims priority, application Austria, March 20, 1969, A 2802/69

Int. Cl. F02f *7/00*; **F16m** *1/00*; **G10k** *11/00*

U.S. Cl. 181—33 K **5 Claims**



A component for sound proofing internal combustion engines having two frame members attached to the surface of the engine and arranged in spaced relation to the engine and spaced from each other with sound proofing packing between the frame members.

3,695,387

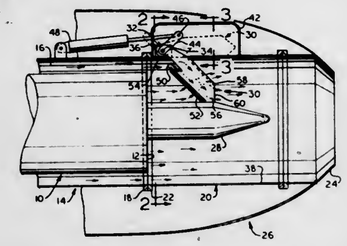
SOUND SUPPRESSION SYSTEM FOR FAN JET ENGINES

Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Sept. 8, 1970, Ser. No. 70,410

Int. Cl. B64d *33/06*

U.S. Cl. 181—33 HC **12 Claims**



A sound suppression system for a fan jet engine having a primary nozzle for discharging engine exhaust gases and a secondary nozzle surrounding and spaced from the primary nozzle to form therewith an annular flow path for fan air surrounding the exhaust gas stream. A shroud is attached to and forms a continuation of the secondary nozzle to define a discharge zone which receives and controls the exhaust gas and air streams. A plurality of circumferentially spaced elongate ducts are pivotally connected at their forward ends to the shroud to swing between stowed position just outside of the shroud wall, to deployed position converging rearwardly with their aft ends substantially in contact with each other and with a coaxial bullet to partially block rearward flow of exhaust gas and to divert it radially outwardly into the air stream through divergent passages defined by the ducts. Each duct has a forwardly facing inlet port at its forward end and a rearwardly facing outlet port in its aft end. When deployed, fan air is ramfed into the former ports, flows through the ducts and is discharged into the exhaust gas stream from the latter ports. The result is a thorough intermixing of fan air and exhaust gas prior to leaving the shroud, thereby reducing temperature and velocity of the air-gas mixture and lowering jet noise.

3,695,388

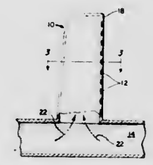
QUIET JET DISCHARGE NOZZLE

Vincent B. Paxhia, Tonawanda, and Franklin B. Bossler, Williamsville, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed June 14, 1971, Ser. No. 152,696

Int. Cl. B64d *33/06*; **F01n** *1/14, 7/20*

U.S. Cl. 181—33 F **7 Claims**



An improved air/gas jet nozzle of multiple orifice form is disclosed, the output of which is substantially inaudible to the human ear. The nozzle comprises an airfoil-shaped plenum having discharge orifices in its trailing edge. Sheaths of inaudible range vibrating air are induced to surround the discharge streams from the nozzle orifices and mask the audible range sound therein.

3,695,389

COLLAPSIBLE LADDER ASSEMBLY

Robert J. Forestal, and Jack W. Hanley, both of Indianapolis, Ind., assignors to Forestal Enterprises, Indianapolis, Ind.

Filed May 28, 1971, Ser. No. 148,031

Int. Cl. E06c *1/383*

U.S. Cl. 182—22 **12 Claims**



A collapsible ladder assembly having a ladder for use alternatively by itself or in combination with a carrying case in which said ladder is formed from a plurality of swingably interconnected scissored sections movable between a collapsed position in which they overlap each other and a fully extended position in which they are in a generally end to end relationship. The case is movable between a closed position for housing the collapsed ladder and an open position in which it can be connected to the fully extended ladder for supporting it in a generally upright position or disposed over the partially extended ladder to form an elevated platform therewith.

3,695,390

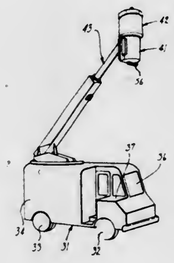
AERIAL LIFT WITH WORKMAN'S BASKET WITH PROTECTIVE COVERING

Bertram Jonathan Leigh, Redwood City, Calif., assignor to General Cable Corporation, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 74,028

Int. Cl. B66f *11/04*

U.S. Cl. 182—129 **15 Claims**



Aerial lift with workman's basket with protective covering having a boom structure, the outer end of which can be raised and lowered about a horizontal axis, rotated about a vertical axis and moved toward and away from the platform carrying the boom structure. A workman's basket having an upper open end is mounted adjacent the outer end of the boom structure. Support means is secured to the basket and includes an arm which is cantilevered over the upper end of the basket. A removable canopy is provided and means is provided for securing the canopy to the arm so that the canopy overlies and is spaced above the upper open end of the basket and means is provided for removably securing the canopy to the upper end of the basket for enclosing the space between the canopy and the upper end of the basket whereby workmen in the basket can be protected from the sun and inclement weather.

3,695,391

MOUNTING OF ROLLER BEARINGS

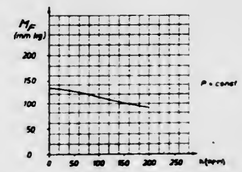
Hermann Munnich, Bad Kissingen, and Franz Markert, Schweinfurt, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Jan. 16, 1970, Ser. No. 3,274

Claims priority, application Germany, Jan. 17, 1969, P 19 02 254.9

Int. Cl. F01m *9/02*

U.S. Cl. 184—1 E **4 Claims**

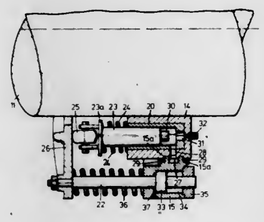


The use of a corrosion resistant oil comprising a major portion having a viscosity not exceeding 25 centistokes at 20° C to coat or lubricate the bearings of an axle pinion drive shaft permitting a more adequate and precise installation.

3,695,392
APPARATUS FOR LUBRICATING AREAS ON ROTATING PARTS

Erich Rosenthal, Hochdahl, Germany, assignor to G. Schwartz & Co., Dusseldorf, Germany

Filed Aug. 2, 1971, Ser. No. 168,282
Claims priority, application Germany, Aug. 5, 1970, P 20 38 918.8
Int. Cl. F16n *13/16*
U.S. Cl. 184—6.28 8 Claims



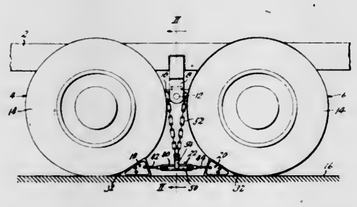
The specification discloses a device for lubricating areas of rotating parts in which a pump structure is carried by the rotating part. A stationary part surrounds the rotating part and forms a lubricating chamber connected to the pump. An actuating ring carried by the stationary part is operable for actuating the piston means of the pump structure. Conduit means lead from the pump structure to the area to be lubricated.

3,695,393
Patent Not Issued For This Number

3,695,394
LOCKING WHEEL CHOCKS FOR TANDEM WHEEL VEHICLES

Walter C. Carpenter, 14900 E. 40th St., Independence, Mo.

Filed Oct. 8, 1970, Ser. No. 79,169
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 1 Claim

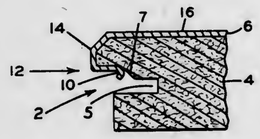


Wheel chocks for a tandem wheel vehicle consisting of a pair of oppositely directed wedges adapted to be positioned between a set of tandem wheels, each wedge being adapted to be driven between the road surface and one of said wheels, an adjustable turnbuckle extending between and interconnecting said wedges, and a chain and padlock operable both to secure said chocks to the vehicle and to prevent operation of said turnbuckle.

3,695,395
METAL-CLAD ACOUSTICAL CEILING TILE AND ITS MANUFACTURE

James C. Ollinger; Herbert Wolf, Jr., both of Lancaster, and Yves Latour, Chester County, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 7, 1970, Ser. No. 35,491
Int. Cl. E04b *1/86*; E04c *2/38*
U.S. Cl. 181—33 G 1 Claim

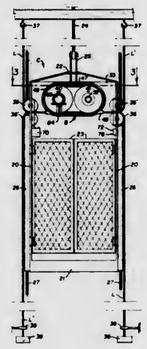


A ceiling tile is covered with a metal sheet. Around punch places acoustical openings in both the metal sheet and ceiling tile. The metal sheet is bent around the edge of the ceiling tile and tightly held thereto to fasten the metal sheet to the ceiling tile.

3,695,396
SAFETY BRAKE UNIT FOR A MINE CAGE

Robert Louis Jones, Wheat Ridge, Colo., assignor to Safety Lift Corp., Wheat Ridge, Colo.

Filed Oct. 29, 1970, Ser. No. 85,152
Int. Cl. B66b *5/16*
U.S. Cl. 187—89 9 Claims



A safety brake unit for a mine cage or similar elevator car. A safety line suspended in the elevator shaft extends through the safety brake unit mounted in the mine cage and several such units may be mounted in a single cage. The safety brake unit includes a pair of brake drums about which the safety line is wrapped. The brake drums have circumferential grooves to hold the wraps of the line and one drum is offset or tilted with respect to the other to permit the line to extend continuously about both drums. The brake drums are electrically actuated and switches are provided in the electrical circuits to close whenever the mine cage is released from its hoist or commences to drop too fast. Whenever several safety brake units are mounted in a single cage, the electrical actuating means will permit all of them to operate in unison. A mechanical fail-safe brake setting mechanism may also be included to set the brakes if the electrical system fails.

3,695,397
TORTUOUS GRIP ROPE BRAKE

Edwin L. Hobbs, 10 Lance Court, Contra Costa, Calif.

Filed May 28, 1971, Ser. No. 147,873
Int. Cl. B65h *59/14*
U.S. Cl. 188—65.4 8 Claims

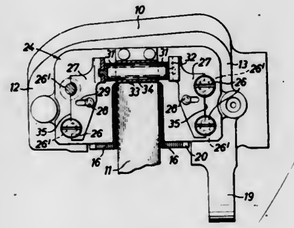


A device for use with an elongated flexible member consisting briefly of a frame having an opening adapted for connection to rings or other lines; a pair of enclosed openings one of which is openable, and side and cross members providing a plurality of friction surfaces for various line configurations to accomplish releasable engagement with a line and controllable descent on said line. A closeable gate means permits the device to be used as a hook and to prevent accidental loss of contact with a line. The device , in a modified form consists of a brake bar which provides automatic braking in descent modes and automatic holding in ascent applications.

3,695,398
BRAKE SHOE HOUSING AND RETAINER MEANS

Peter F. Crawford, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed June 22, 1970, Ser. No. 48,173
Claims priority, application Great Britain, June 24, 1969, 31,863/69
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.6 6 Claims

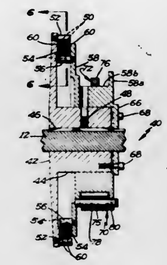


In a disc brake including pads simultaneously urged against opposite sides of a brake disc by applying means, the pads being carried by a channel-shaped housing which embraces the periphery of the brake disc, the brake pads are retained in the channel of said housing to prevent their rotation with the brake disc by end members which extend over the gaps between the side walls of the channel and the brake disc, one of said end members being retained in position by latch means so as to be readily detachable from the housing to allow removal and replacement of the brake pads.

3,695,399
OVERSPEED SAFETY BRAKE FOR ELEVATORS

Marvin R. Laing, 6009 Birchcrest Dr., Edina, Minn.

Filed Oct. 26, 1970, Ser. No. 83,703
Int. Cl. F16d *65/24*
U.S. Cl. 188—187 5 Claims



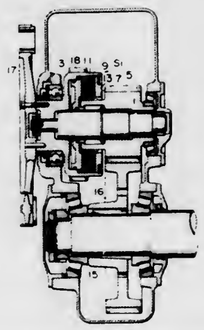
A safety brake for use on a rotary component of an elevator comprising a plurality of interleaved driving and driven discs which frictionally coact to brake the elevator to a stop at a predetermined, maximum speed of said rotary component. The aforesaid discs are clamped between an annular braking plate connected to said rotaty component and a braking clamp, the driving discs being coupled to said braking plate for rotation therewith and the driven discs being coupled to the braking clamp, with the coupling means being so constructed and arranged that the driving and driven discs are not mechanically interconnected and may be shiftably adjusted with respect to each other to provide the desired braking pressure therebetween. The stopping of the braking clamp at predetermined rotational speed by speed responsive means causes the driven discs to stop and to bring the braking plate and rotary member to a stop by frictional drag action on the driving discs.

3,695,400
Patent Not Issued For This Number

3,695,401
REVERSE AND REDUCTION GEAR FOR SHIPS

Michisuke Nagasaki, Toyonaka, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 16, 1970, Ser. No. 89,555
Claims priority, application Japan, July 22, 1968, 43/62580
Int. Cl. F16d *21/04*; F16h *3/14*
U.S. Cl. 192—21 2 Claims



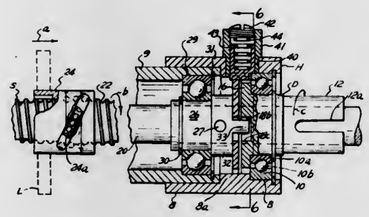
A reverse and reduction gear for ships wherein three clutch units are arranged arcuately around a large gear mounted on a

thrust shaft, each clutch unit comprising an auxiliary shaft, loosely carrying driving and driven gears, and a clutch interposed between the two gears, and the driving gear of the center clutch unit is coupled to the input shaft and meshed with the driving gears of the clutch units on both sides, said driven gears of the three clutch units being meshed with the common large gear on the thrust shaft.

3,695,402
PLUNGER STOPPED BI-DIRECTIONAL NO-BACK ASSEMBLY

Edwin O. Klemm, Saginaw, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Filed June 11, 1970, Ser. No. 45,291
Int. Cl. F16d *67/00*
U.S. Cl. 192—8 R **17 Claims**

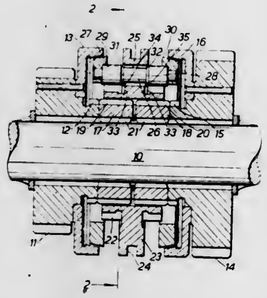


Apparatus comprising a rotatable output member, a rotatable drive member for rotating the output member in either direction, a releasable brake for substantially preventing rotation of the output member in either direction when it is not being driven by the drive member, and apparatus on the drive member is operable to release the brake upon a predetermined rotation of the drive member in either direction.

3,695,403
SYNCHRONIZING MECHANISMS FOR POWER TRANSMISSIONS

Thomas Eastwood, Meltham, England, assignor to David Brown Tractors Limited

Filed March 2, 1970, Ser. No. 15,579
Claims priority, application Great Britain, March 6, 1969, 11,914/69
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 E **8 Claims**

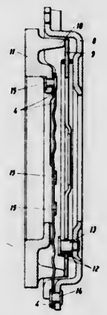


A device for synchronizing the speed of two torque transmitting members of a vehicle gearbox has a cone clutch engagable by actuating pins which pass through clearance holes in an axially slidable clutching member. Each pin has a shoulder which balks axial movement of the clutching member when the axes of the pins are moved out of alignment with the axes of the holes in said member when torque is transmitted by the cone clutch. The clutching member carries springs which centralize the pins axially of said member to ensure movement of the pins in unison with said member and to reduce wear of the pins and the clearance holes.

3,695,404
CLUTCH PLATE SUPPORTED BY STRESSED LEAF SPRINGS

Paul Maucher, Neuweier, and Klaus Steeg, Eisental, both of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Buhl (Baden), Germany

Continuation of Ser. No. 736,726, June 13, 1968, abandoned. This application Aug. 5, 1970, Ser. No. 61,446
Int. Cl. F16d *13/70*
U.S. Cl. 192—70.18 **9 Claims**



The axially displaceable pressure plate of a friction clutch is connected with the clutch cover by transmission members consisting of longitudinally wavy leaf springs which are so fastened as to be pre-stressed not only in the axial direction of the clutch but also in their own longitudinal direction. Preferably three such leaf springs are mounted in a triangular arrangement, the middle of each spring being fastened to the pressure plate and the ends of each two adjacent leaf springs being jointly fastened to the cover of the clutch.

3,695,405
CLUTCH DISC

Paul Maucher, Neuweier, and Klaus Steeg, Eisenthal, both of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Baden, Germany

Filed April 21, 1970, Ser. No. 30,482
Claims priority, application Germany, April 22, 1969, P 19 20 242.7
Int. Cl. F16d *3/14*
U.S. Cl. 192—106.2 **10 Claims**

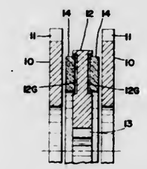


Clutch disc includes a hub, an entrainer plate coaxially disposed and turnable relative to the hub, a pair of clutch friction linings mounted coaxially to one another and to the hub, a damping device located in a force transmission path between the entrainer plate and the hub, on the one hand, and between the pair of clutch friction linings, on the other hand, the damping device comprising force storing means operatively connected to the hub and to the entrainer plate, damping lining means disposed coaxially to the hub, a spring member in stressing engagement with the damping lining means so as to frictionally connect the same to the entrainer plate, the spring member being located in a space between the relatively turnable entrainer plate and the hub and being in the form of a disc abutting the damping lining means at one side thereof and the entrainer plate at the other side thereof, the pair of clutch friction linings being carried by the spring member.

3,695,406
COUPLING WITH CARBON AND BERYLLIUM FRICTION SURFACES

Glenn R. Graham, Saddle River, N.J., and Robert W. Biggs, Chagrin Falls, Ohio, assignors to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 833,835, May 8, 1969, abandoned. This application Nov. 2, 1970, Ser. No. 86,060
Int. Cl. F16d *13/60*
U.S. Cl. 192—107 M **2 Claims**



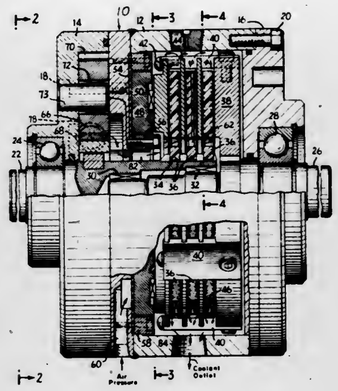
A brake or clutch for extreme heavy duty may have a friction material which is substantially all carbon and which, for periods of disengagement, is free floating rotationally between a pair of solid or segmented metal members. Said metal members may each rotate, or one may rotate while the other does not rotate. Axially short means may support the friction material and be used to serve as a visible warning of wear. Beryllium is a preferred opposing surface material when used with friction material which is substantially all carbon.

3,695,407
FRICTIONAL TORQUE TRANSFERRING APPARATUS WITH A LIQUID MERCURY COOLING SYSTEM

Walter E. Peery, Nelson Ridge Rd., Mercer County, N.J.

Filed April 23, 1970, Ser. No. 29,735
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **7 Claims**

A slip clutch assembly includes a plurality of alternately spaced input and output plates adapted for frictional engagement. The input plates comprise teflon surfaces with low stick friction to slip friction ratios and have formed therein central apertures and radial passageways coupled between the apertures and the peripheries of the plates. Also included are input and output shafts operatively coupled to the input and output

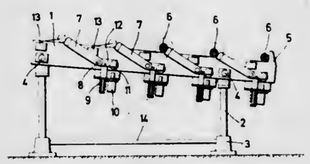


clutch plates, respectively, and a gear pump for supplying a liquid mercury coolant centrally of the clutch assembly to the apertures formed in the input clutch plates.

3,695,408
CONVEYOR TRACK FOR ROLLING ARTICLES WITH SPACED CATCHES

Jacksch Bruno, Wiesbaden, Germany, assignor to Firma W & M Automation Karl Muller, Wiesbaden, Germany

Filed March 25, 1970, Ser. No. 22,638
Claims priority, application Germany, Nov. 22, 1969, P 19 58 704.3
Int. Cl. B65g *11/20*
U.S. Cl. 193—40 **5 Claims**



The pivotal catches located along a conveyor track for rolling workpieces are provided with fluid-operated actuators under the control of switching valves at the respective stations to prevent the passage of a workpiece beyond each catch until the succeeding catch is clear.

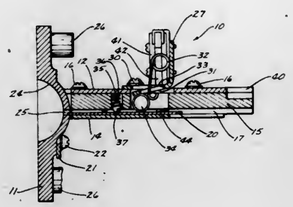
3,695,409
TOKEN-ACTUATED CONTROL CIRCUIT

Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 6, 1971, Ser. No. 205,238
Int. Cl. G07f *1/06*
U.S. Cl. 194—4 C **13 Claims**

A token-actuated control circuit operable for verifying authenticity of a token and initiating energization of a con-

trolled machine includes an SCR controlled by a neon tube and an R-C circuit. The control circuit is convertible between



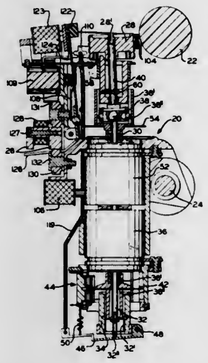
two modes of operation to selectively effect energization of the machine with invalidation of the token as a prerequisite or to effect energization without invalidation of the token.

3,695,410

SERIAL PRINTING MACHINE

Ludwig J. Kapp, Montville, N.J., assignor to I/Q Devices, Inc., Montville, N.J.

Filed Feb. 4, 1970, Ser. No. 8,617
Int. Cl. B41j *1/40*
U.S. Cl. 197—55 **1 Claim**



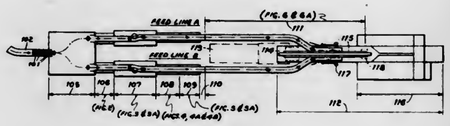
A serial printing machine having a platen and a print carriage, head assembly having a type wheel with a plurality of lines of type, means for moving the type wheel vertically with respect to the platen to select the desired line of type and means for moving the type wheel horizontally to select the desired character; a pair of endless ribbons which are selectable so that only one of them is in printing position between the type character and the platen at any particular instant; a holding coil positioned such that when current flows in the coil, the type hammer is held out of contact with the type wheel; a pair of rails of high magnetic permeability running laterally, essentially parallel to the platen, a plurality of series connected coils wound around high magnetic permeability supports between the rails such that when current flows through the coils, a magnetic field is established which stores potential energy in the type hammer assembly; when the current in the holding coil is turned off and the potential energy is released, the type hammer moves into percussive contact with the type wheel to thereby cause the selected character to be printed.

3,695,411

CONVEYING SYSTEM AND APPARATUS FOR FEEDING SOFT CAKE PRODUCTS

Hubert E. Tobey, Maywood; George O. Moller, Dumont, and Richard L. Twiford, Teaneck, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 11, 1971, Ser. No. 105,446
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **8 Claims**



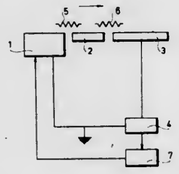
A conveying system and apparatus is disclosed for feeding soft cake products into a packaging machine for wrapping the products individually or in a twin pack. The conveying system includes a pair of feed lines which are coupled to receive the soft cake products and convey them to a packaging machine. Each of the feed lines includes an accumulating means for accumulating the received products in a first direction, a turn-around conveyor for turning the product from the first direction to the second direction, a turn-over conveyor means for orienting said product in the second direction, and means is coupled for providing a predetermined spacing between the oriented products. A turn-in conveyor in each line then feeds the products into a central feed line of a wrapping machine, and a means is provided to position the product prior to wrapping.

3,695,412

DEVICE FOR RENDERING UNIFORM THE FEED OF INCANDESCENT FILAMENTS OF LIGHT SOURCES

Imre Hollo; Sandor Lengyel; Miklos Hannauer, all of Budapest, and Bela Eross, Vac, all of Hungary, assignors to Egyesudt Izzolampa es Villamossagi/Reszvengtarsasag, Budapest, Hungary

Filed Nov. 30, 1970, Ser. No. 93,573
Claims priority, application Hungary, Nov. 28, 1969, 1753
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **10 Claims**



An arrangement for feeding successive coils of wire endwise in spaced relationship. The coils are successively fed by a vibration feeder over two longitudinally spaced electrically isolated guide sections which are connected in series with a power source, a relay, and with the motor of the vibration feeder. When two successive coils are so spaced as to overlie the vibration feeder and the first isolated path section, on the one hand, and the first and second isolated path section on the other, the vibration feeder is stopped for a predetermined period during which the first fed coil continues to travel under an effect other than that of the vibration feeder.

3,695,413

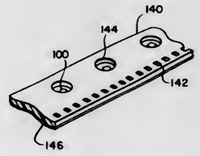
Patent Not Issued For This Number

3,695,414

DIE SORTING SYSTEM

Mordechai Wiesler, Lexington; Virgil Martinonis, Gloucester, and John S. MacIntyre, Lynnfield, all of Mass., assignors to Teledyne Incorporated, Woburn, Mass.

Filed Nov. 27, 1970, Ser. No. 92,973
Int. Cl. B65g *35/00*
U.S. Cl. 198—108 **2 Claims**



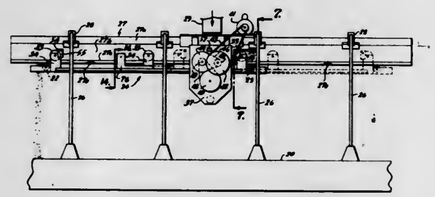
A wafer of semiconductor devices is tested to determine the quality of each device. The test data with respect to each die is electro-optically encoded and photographically recorded in a pattern corresponding to the die pattern on the wafer. Upon completion of the testing and recording operations the wafer is scored, mounted on a flexible pressure sensitive adhesive web and broken so as to separate the dies from one another while maintaining their original orientation. The dice and their respective test record are then mounted on a common frame, side by side, so that each die and its test data are readily matched. The frame is then mounted on a die sorting mechanism comprised of an XY indexing table which indexes through an electrooptical reader where the test data is read out to designate the die to a selected delivery station.

3,695,415

FEEDER FOR LIVESTOCK

Donavon L. Bakker, and Walter L. Miller, both of Fort Atkinson, Wis., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed July 28, 1970, Ser. No. 58,783
Int. Cl. A01k *5/02*; B65g *21/12, 41/02*
U.S. Cl. 198—110 **4 Claims**



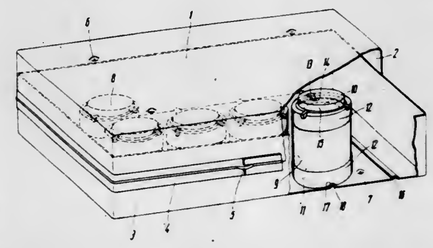
A feeder apparatus having an elongate, hooded supporting structure positioned above a feed trough. A reciprocally movable carriage of approximately one-half the length of the supporting structure is mounted thereon. A flexible conveyor belt is trained around belt guides on the carriage and the belt forms a loop about the carriage. The belt receives feed from a hopper and the feed is distributed along the trough in response to reciprocation of the carriage along the supporting structure and the accompanying shifting of the loop. In one form of the invention, the belt has permanently anchored portions. In another r form, an anchoring mechanism selectively grips portions of the conveyor belt to hold same stationary during certain phases of reciprocation of the carriage.

3,695,416

GAS MANTLE PACKAGES

Friedrich W. Klauer, Bachstelzenweg 15, 1 Berlin 33; Johannes Hugo Kroger, Helmstrasse 1, 1 Berlin 62, and Wilhelm Waldmann, Planzeile 15, 1 Berlin 38, all of Germany

Filed Aug. 4, 1970, Ser. No. 60,835
Claims priority, application Germany, Aug. 8, 1969, G 69 31 960.4
Int. Cl. B65d *25/10, 25/54, 85/30*
U.S. Cl. 206—45.14 **3 Claims**



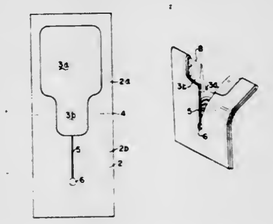
This invention relates to packages for gas mantles of the kind in which individual mantle holders are contained within an outer container. According to the invention, each holder is of the kind comprising a cylindrical sleeve member, a base and a lid and the sleeve member is non-transparent, while both the base and the lid are made from transparent, synthetic materials. The container in question has a lid that consists of a transparent, synthetic material and means are provided to ensure positive location of the individual holders in the container. The invention allows each individual gas mantle to be inspected through the transparent lid of the container to see that the mantles are intact.

3,695,417

PACKAGE WITH TRANSPARENT WINDOW

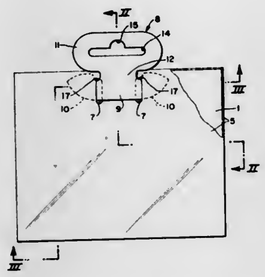
Carl B. Stoker, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 17, 1970, Ser. No. 64,453
Int. Cl. B65d *25/00, 83/00*
U.S. Cl. 206—45.31 **4 Claims**



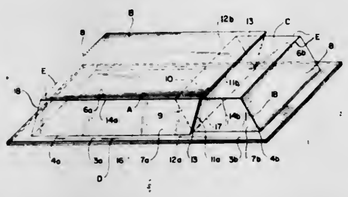
A package is formed by folding two halves of a stiff backing together with a plastic window therein. The window extends across the fold in the backing and is of narrow width in the first half of the backing and extends only a relatively short distance from the fold; in the second half of the backing the window is just as narrow at the fold and widens and extends most of the distance to the opposite edge of the backing. The first half of the backing comprises a slit which extends from the window, most of the distance to the other edge of the backing. The package is designed particularly for sterile objects, such as injection needles, tubing, etc.

3,695,418
SUSPENDED DISPLAY PACKAGE
Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.
Filed June 4, 1971, Ser. No. 149,988
Int. Cl. B65d 65/16, 25/22
U.S. Cl. 206—45.33 5 Claims



An open-front box containing an article for sale has a vertical back wall provided near its top with a central pair of laterally spaced vertical slots. The box is enclosed in a transparent plastic film. A vertically disposed hanger made from a flat resilient plastic sheet is provided with a lower portion having a central area engaging the back of the film between the slots. Tabs projecting laterally from opposite sides of this central area extend through slits in the film and the slots in the box to connect the hanger and box together. The hanger also has an upper portion extending above the box and provided with an opening for receiving a support for the hanger.

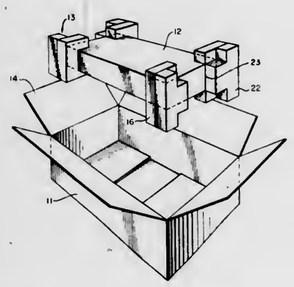
3,695,419
HINGED CONTAINER
Anton Packert, 39, Oberurseler Strasse, 6242 Schonberg/Taunus, and Werner Dietrich, 18, Utestrasse, Wiesbaden, both of Germany
Filed May 22, 1970, Ser. No. 39,784
Claims priority, application Germany, May 24, 1969, P 19 26 738.0
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 7 Claims



This invention relates to a container having a filling cavity enclosed from all sides comprising a hood-like top portion open on one side and having outwardly projecting flanges surrounding it, a flat base portion secured to said flanges, the top portion comprising two hood sections extending in the same direction from the level of the flanges, each hood section having one end wall, two partial side walls, and a partial ceiling area with the open edges of the two hood sections facing in opposite directions and the open edges of pairs of partial side walls of the two hood sections which extend in the same plane having a common pivot point, and each pair of partial side walls extending in the same plane having an overlapping zone.

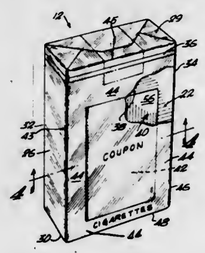
3,695,420
Patent Not Issued For This Number

3,695,421
PACKAGE ASSEMBLY AND CUSHION THEREFOR
Harry G. Wood, 849 Mesa Ave., Palo Alto, Calif.
Filed Sept. 8, 1970, Ser. No. 70,414
Int. Cl. B65d 81/04, 85/30
U.S. Cl. 206—46 FC 7 Claims



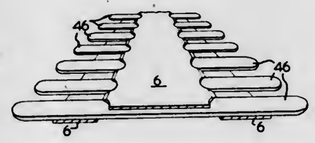
A package assembly for commodities comprising an outer container and a plurality of spaced elongated corner cushions formed of resilient energy absorbing material each having first and second portions of resilient material, a recess intermediate the ends for accomodating and holding the commodity in the container in spaced relationship to the top, bottom an sides of the container, and means including a bonding layer cooperating between said first and second portions for distributing forces between the two portions whereby to accommodate forces exerted by the commodity during handling and shipping.

3,695,422
PACKAGED ARTICLES WITH CARRIER INDICIA BEARING FOLDED STRIP
Peter R. Tripodi, Miami, Fla., assignor to Liggett & Myers Incorporated, New York, N.Y.
Filed April 15, 1970, Ser. No. 28,815
Int. Cl. A45c 15/00; B65d 79/00
U.S. Cl. 206—47 R 14 Claims



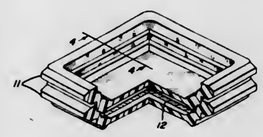
A packaged unit, such as a package of cigarettes, including a plurality of articles arranged in a parallel epipedal configuration and held together within a package which is encased in a transparent sealed wrapper. A strip of indicia bearing material folded into discrete segments of a size less than the main panel of the packaged unit is captivated in overlaying relation of the central zone of one of the display panels of the package in a dished cavity between the display panel and the transparent wrapper being held in position by the converging surfaces of the display panel and wrapper.

3,695,423
PACKAGE TAPE WITH STICKS RETAINED THEREON
Jean Paul Beaudoin, 22 Fernlea Crescent, Mount Royal, Quebec; Hiral Hogue, 7650 des Vendeen, Ville D'Anjou, Quebec, both of, and Jacques Larocque, deceased, late of 4921 Belleville, Pierrefonds, Quebec, Canada (by Patricia Powers Larocque, executrix)
Division of Ser. No. 785,854, Dec. 9, 1968. This application Sept. 4, 1970, Ser. No. 69,862
Int. Cl. B65d 73/00, 85/24
U.S. Cl. 206—56 A 4 Claims



A tensioned tape having two corresponding series of circular pre-punched holes and a series of planar elongated articles each having a substantial width in relation to its thickness are provided. The plane of each elongated article is parallel to the axis of the tape so that the tape is flatened against the opposite faces of the articles.

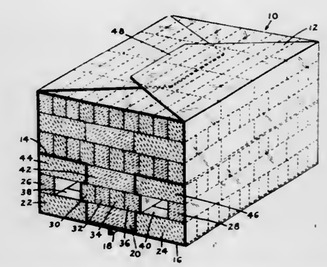
3,695,424
PACKAGE FOR FRAGILE ARTICLES
Albert B. Cristy, and Yuval Kachioff, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,701
Int. Cl. B65d 1/34, 85/30
U.S. Cl. 206—62 R 3 Claims



A protective package for photosensitive glass plates or the like. The package includes a series of similar, nestable trays, adjacent nested trays being adapted to hold therebetween a plate of the type described. Each tray bears a depending ridge and a raised ledge so positioned that the ridge of one tray and the ledge of a similar tray nested therewith cooperate in sealing engagement with the marginal areas of a plate sandwiched therebetween. Contaminant particles present at the plate edges are thus confined and prevented from reaching the central surface areas of the plate. Adjacent nested trays also cooperate to form a labyrinthine light lock to restrict the entry of light rays between the trays. The trays are retained in their nested relationship by frictional engagement.

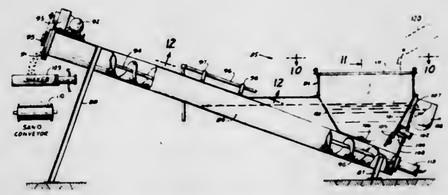
3,695,425
Patent Not Issued For This Number

3,695,426
SHRINK-ON PACKAGE FOR STACKED GOODS
Herbert Engelsberger, Viersen, Germany, assignor to Feldmuhle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany
Filed Oct. 6, 1970, Ser. No. 78,467
Int. Cl. B65d 71/00, 85/46, 85/62
U.S. Cl. 206—65 S 15 Claims



A package for stacking and transporting stacked goods of regular shape without using pallets. The package comprises plastic sheet material which is heat-shrunk over at least four surfaces including the bottom of the stack. The package also includes one or more strips of supporting material extending into the bottom portion of the stack. The supporting strips together with the wrapping rigidify select lower portions of the stack to support its upper portions. In one embodiment, the inserted strip of supporting material covers a central portion of the bottom of the stack and defines one side of each of a pair of tunnels through the stack. In other embodiments two strips envelope the outer portions of three or more bottom layers of the stack, each of the strips additionally partially defining the sides of separate tunnels through the stack.

3,695,427
CLASSIFYING SEPARATOR FOR UNPOURED, FLOWABLE ROCK-GRAVEL, SAND AND CEMENT SLURRY MIXTURE FROM CONCRETE MIXER
Rheinhardt Friesz, 6113 Cherryhill, Houston, Tex.
Filed Jan. 8, 1970, Ser. No. 1,372
Int. Cl. B03b 7/00
U.S. Cl. 209—44 7 Claims



A separator for unpoured concrete comprising a settling tank with an overflow weir on one side and a screw conveyor extending out of the other side. A washing spray is provided for the portion of the screw conveyor extending out of the settling tank and the main portion of the tank at the overflow end is separated from the upward extension of the conveyor by a screen for preventing the return of rock-gravel being conveyed upwardly into the main portion of the settling tank. The conveyor delivers sand and rock-gravel to a shaker screen for separating same.

3,695,428
Patent Not Issued For This Number

3,695,429

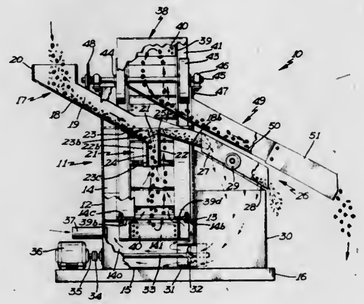
Patent Not Issued For This Number

3,695,430

APPARATUS FOR CLEANING GRAVEL AND THE LIKE

Theodore F. Garland, Crosby, Minn., assignor to Garland Manufacturing Company, Crosby, Minn.

Filed Aug. 6, 1970, Ser. No. 61,655
Int. Cl. B03b *3/34*
U.S. Cl. 209—160 **4 Claims**



Apparatus for separating and removing lightweight deleterious material from gravel, ore and the like which comprises a tank having a revolvable, generally cylindrical dewatering wheel therein. The dewatering wheel has a plurality of lifting elements thereon which receives the heavier material, such as gravel, ore and the like, from an opening in an inclined chute which extends below the surface of the water. The chute has a discharge end located below the surface of the water through which water entrained lightweight material is discharged. A discharge chute receives the dewatered, separated heavier material from the dewatering wheel and conveys the same to the exterior.

3,695,431

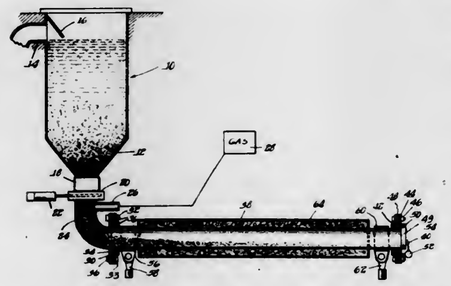
Patent Not Issued For This Number

3,695,432

SEWERAGE DISPOSAL PROCESS AND APPARATUS

Edward J. McCrink, 75 E. Lake St., Northlake, Ill.

Filed May 25, 1970, Ser. No. 40,159
Int. Cl. C02c *1/00*
U.S. Cl. 210—67 **6 Claims**



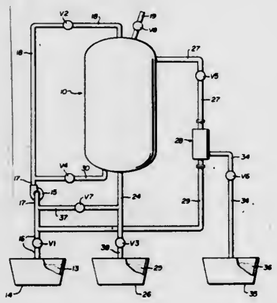
Liquid and solid organic wastes are separated by a settling process. The solid waste materials, while still wet or damp, are pumped into a heating retort along with an exothermic atmosphere such as dissociated ammonia, methane, propane, etc., and are heated to a very high temperature by electric resistance heating. This reduces the solid material to a very small amount of powdery ash. Gases from the process are passed through a flame curtain to avoid all odors.

3,695,433

METHOD OF FILTERING A MIXTURE OF LIQUID AND FIBROUS SOLID CONTAMINANTS

Gene Hirs, Birmingham, and Richard H. Wykoff, Livonia, both of Mich., assignors to Hydromation Filter Company, Livonia, Mich.

Filed Sept. 28, 1970, Ser. No. 76,654The portion of the term of this patent subsequent to Dec. 29, 1987, has been disclaimed.
Int. Cl. B01d *29/38*
U.S. Cl. 210—67 **1 Claim**



This invention presents a filter and a method of filtration which is specifically adapted for the filtration of solid fibrous contaminants from a liquid, the contaminants having a low breadth-to-length ratio. The filtration of such fibers has long posed a problem due to the tendency of such fibers to surface load existing filter media.

One aspect of the invention resides in the utilization of a relatively large granular media, i.e., an organic polymeric granular media in which the granules are essentially spherical and of an average size ranging from about 0.050 inch to 0.375 inch. It has been found that the interstices of such relatively large media granules will effectively remove fibrous materials while, at the same time, the granules are so large as to resist appreciable surface loading.

Another aspect of the invention resides in the "backwash" procedures for removing accreted fiber contaminants from the granular filter bed. This procedure involves forming the organic polymeric granules into a slurry in the liquid being filtered, while violently agitating the slurry to wash entwined and matted fibers contaminants from the individual granules and separating the fibrous contaminants from the slurry together with a portion of the liquid being filtered.

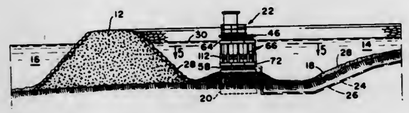
3,695,434

METHOD OF WATER PURIFICATION

George R. Whitten, Jr., 2033 Mendon Road, Cumberland, R.I.

Division of Ser. No. 865,269, Oct. 10, 1969. This application Aug. 28, 1970, Ser. No. 67,998
Int. Cl. B01d *37/00*
U.S. Cl. 210—74 **8 Claims**

A method of purifying bodies of water in the preferred embodiment of which a reservoir of purified water is prepared from a natural body of water by constructing a prefiltering levee through the water to segregate the reservoir area from the remainder of the water body, pumping water from the reservoir area into the remainder, cleaning the floor of the reservoir area if necessary, installing a water purification unit in the reservoir, and then allowing the water to filter through the levee from the remainder of the water body into the reservoir for continuous further purification and recirculation by the installed unit. The water purification unit includes a mixing chamber, a filtering chamber skimming means for intaking surface water into the mixing chamber, submerged inlets for intaking water into the mixing chamber from below the water'surface, a pump for passing water from the mixing chamber through the filtering chamber, and outlet means for passing the filtered water directly back to the reservoir. The preferred skimming means comprises a mobile skimming gutter to insure a constant intake of surface water at various reservoir water levels and a submersible pump is preferably positioned in the mixing chamber to force the mixed water through one or more filter cells provided in the filtering chamber. The outlet means are preferably disposed to set up recirculation currents using the earth rotation effect, and means are also provided for backwashing the filter cells. To insure that the pump does not run dry, the submerged inlet flow is preferably float modulated to provide the full capacity of the pump if the skimmed flow is temporarily reduced. Various purifying chemicals may be added to the processed water in its passage through the unit, and in a modified form of the invention, a portion of the purified water is passed back to the remainder of the water body for progressive purification thereof.



3,695,435

Patent Not Issued For This Number

3,695,436

Patent Not Issued For This Number

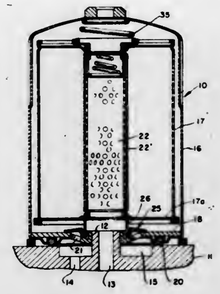
3,695,437

OIL FILTER WITH IMPROVED ANTI-DRAINBACK VALVE

Robert J. Shaltis, Hastings, Mich., assignor to Hastings Manufacturing Company, Hastings, Mich.

Continuation-in-part of Ser. Nos. 36,971, May 13, 1970, and Ser. No. 39,741, May 22, 1970, abandoned. This application Jan. 11, 1971, Ser. No. 105,426
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—136 **7 Claims**

A combined cartridge seating and oil drainback preventing member is interposed between a filter cartridge and the end plate of a cartridge casing. The member is of elastomeric material and includes a thick inner annular edge portion in engagement with the end plate between oil inlet and oil outlet openings, and a thin outer annular body portion which overlies the inlet openings but is deflectable by pressure of incoming oil The thick inner annular edge portion of the member is formed with a wide flat annular seat for a tubular adapter on the cartridge which is frictionally received in the seat so that the member may be supported on the adapter as a unit prior to and during assembly of the cartridge in the casing. The member is shaped so that upon its installation in the filter, its outer body portion is resiliently biased toward the end plate.

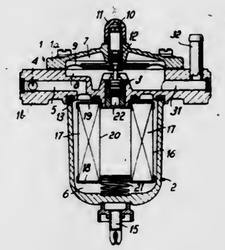


3,695,438

GASOLINE PRESSURE REGULATOR DEVICE

Alberto Malpassi, Via Montello 56, Seregno, Italy

Filed July 6, 1970, Ser. No. 52,627
Claims priority, application Italy, July 19, 1969, 9561 B/69; Feb. 14, 1970, 20863 B/70
Int. Cl. B01d *29/36*
U.S. Cl. 210—137 **1 Claim**



A petrol or gasoline pressure regulator device, particularly for motor vehicles, comprising a regulator body with two chambers separated by a diaphragm and a valve member controlling a communication duct to one of said chambers and acting on said diaphragm, the combinated effect of said valve member and of said diaphragm controlling the pressure of the petrol or gasoline inside said regulator body.

3,695,439

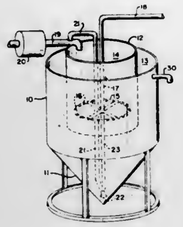
WASTE TREATMENT SYSTEMS

Herman K. Dupre, Seven Springs, Champion, Pa.

Filed Oct. 12, 1970, Ser. No. 79,746
Int. Cl. C02c *5/06*
U.S. Cl. 210—173 **6 Claims**

A sewage disposal apparatus is provided having an outer cylindrical tank on a vertical axis, a conical end closing the bottom of the cylindrical tank, an inner cylinder concentric with and within the outer tank, a source of oxygen containing gas under pressure, a gas diffuser means adjacent the bottom of the inner cylinder connected to said source of oxygen containing gas and discharging said gas within the inner cylinder, a sewage inlet line discharging into the inner cylinder with

comminuting means in the inlet line, and a pump means extending from the point adjacent the apex of the cone to the



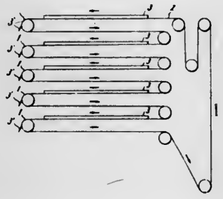
inlet line delivering fluid and solids from the cone apex to the inlet line and discharge means from the area between the outer cylindrical tank and the inner cylinder.

3,695,440

FILTER BELT WITH MEANS FORMING THEREWITH PLURAL PRESSURE FILTER CHAMBERS

Takao Mori, Nara, Japan, assignor to Inouye Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1970, Ser. No. 67,026
Claims priority, application Japan, Aug. 30, 1969, 44/68824
Int. Cl. B01d *25/12*
U.S. Cl. 210—225 **5 Claims**



A method for filtration of raw liquid comprising the steps of supplying raw liquid under pressure into a filtration chamber formed between upper and lower filter cloths arranged in opposition to produce two filtrate flows passing through said upper and lower filter cloths in upper and lower directions, respectively, and then discharging the filtrate with cakes remained in said filtration chamber and the apparatus for carrying out the same method comprising a filter frame provided at its one side with a raw liquid supply opening, two filter plates each having a filtrate discharge hole and including a partition plate provided with a filtrate passage hole communicated with said filtrate discharge hole, said filter frame being interposed between said filter plates to form a filtration chamber, and a filter cloth arranged between the filter frame and the filter plates.

3,695,441

SELF-PROPELLED FLOATING DOCK AND SEPARATOR FILTER ASSEMBLY FOR TREATING POLLUTED WATER SURFACES AND NAUTICAL WORKS

Lucien Chastan-Bagnis, 21, Avenue Isola Bella, Cannes, France

Filed Aug. 10, 1970, Ser. No. 62,568
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **3 Claims**

There is provided a self-propelled enclosure for treating polluted water surfaces. It comprises two longitudinal caissons, a bottom floor and transverse partitions to connect the longitudinal caissons and to define the enclosure. A door is pivotally mounted at the front end of the floating enclosure and is downwardly foldable between a closed position of the enclosure, intermediate positions of the door and a fully opened position thereof in a plane which substantially coincides with the plane of the bottom floor. In this manner, the upper edge of the door can be at a predetermined depth under



the water surfaces to enable polluted water to enter the enclosure. A vault is formed in the bottom floor to define a channel underneath the bottom floor and a motor-operated helix is disposed at the rear end of the channel to suck water in the channel so that upon downwardly folding the door at a level lying immediately beneath a polluting layer, the self-propelled enclosure will be seen to advance over water to cause the polluting layer to slowly enter the enclosure until it fills the same.

3,695,442

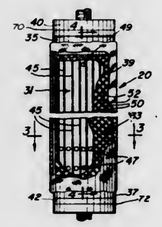
Patent Not Issued For This Number

3,695,443

FILTER APPARATUS

Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Aug. 20, 1970, Ser. No. 65,393
Int. Cl. B01d *27/00*
U.S. Cl. 210—315 **11 Claims**



A tubular filter element for use in a tube-type filter includes an externally-ribbed plastic core which is hollow throughout its length and which is surrounded by a coarsely-perforated plastic sleeve. The sleeve serves to space an outer finely-perforated cake-supporting tube from the core. A pair of plastic end members fit over and are heat welded to the core and the sleeve, the upper member being apertured. The core is apertured such that liquid passing through the outer tube and the

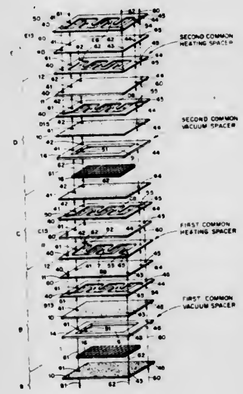
sleeve passes downwardly along the outer surface of the core and up through the hollow cavity in the core during a filtering operation and in the reverse direction during a cake removal operation.

3,695,444

MEMBRANE SUPPORT

William B. Iaconelli, Scituate, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 786,634, Dec. 24, 1968, Pat. No. 3,520,803. This application April 22, 1970, Ser. No. 30,661
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**



An apparatus for the separation of fluid mixtures having a plurality of three compartment subassemblies or units arranged in pairs, each subassembly consisting of a vapor, a heating, and a feed compartment defined from each other by separating barriers placed therebetween. The vapor compartment is placed common to a pair of subassemblies and contains therein a membrane barrier support structure, both sides of this structure placed in face to face contact with a semipermeable membrane; said vapor compartment associated with fluid inlet and outlet side ports which communicate with fluid conduits serving a pair of identical compartments located in subassemblies that are positioned on opposite sides of the common vapor compartments.

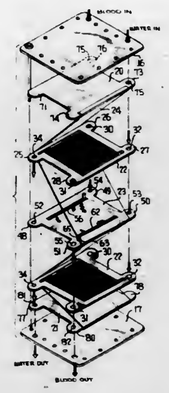
3,695,445

PLEATED MEMBRANE TRANSFER DEVICE

William G. Esmond, Baltimore, Md., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Continuation-in-part of Ser. No. 818,970, April 24, 1969, Pat. No. 3,585,131. This application July 31, 1970, Ser. No. 59,906
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **10 Claims**

This disclosure relates to an exchange device employed in desalination, ultra filtration, in the transfer of heat, the transfer of gas from the gas phase to the liquid phase, or the transfer of gases from the gas phase to another gas phase or the opposite sides of a permeable or permselective membrane, or to the traNsfer of waste products from blood to a suitable rinsing fluid. The exchange device is formed of a plurality of flow sheets or plates which are disposed between intermediate



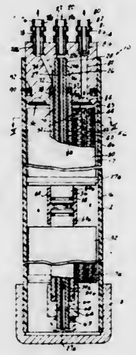
portions of a continuous pleated membrane. The flow plates have flow facilitating means formed therein and are reusable while the membrane is disposable.

3,695,446

MEMBRANE MODULE ASSEMBLY

Charles E. Lyall, Deerfield, and Stanley F. Rak, Mundelein, both of Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Oct. 15, 1970, Ser. No. 80,926
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **7 Claims**



A reverse osmosis membrane module assembly that provides a high degree of adaptability to various locations and positions as well as economical manufacture and efficient maintenance comprises a closed receptacle having a detachable first end closure through which pass all plumbing connections to the interior chamber. Membrane module means are removably supported in the receptacle chamber on an inlet tube connected to the first end closure. The membrane module means may include one or a plurality of modules each comprising a body member having a hollow tubular member extending beyond both ends of the body member. The end portions of the tubular member have connection means thereon that allows quick and simple attachment of the modules to the closure means and to each other in series. A product water passageway that provides for the removal of

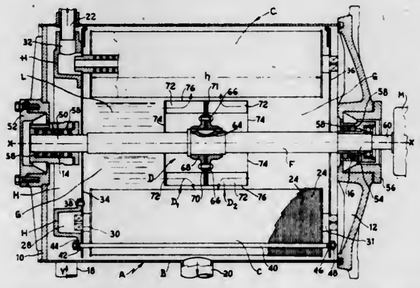
product water from the membrane module means is formed between the inside diameter of the membrane module tubular member and the outer diameter of the inlet tube. In operation feed water flows in through the first end closure means, through the inlet tube past the membrane in a first direction, enters the chamber at a point remote from the closure means, reverses direction to flow back through the chamber and through the membrane module means where product water passes through the membrane under a pressure differential and waste water flows past the membrane. Both the product water and the waste water then pass out of the chamber through the first end closure means.

3,695,447

SELF-CLEANING FILTER, PARTICULARLY FOR DRY-CLEANING PLANTS

Gino Maestrelli, 55, via Bernardo Quaranta, Milan, Italy

Filed Oct. 13, 1970, Ser. No. 80,410
Claims priority, application Italy, Dec. 15, 1969, 25801-A/69
Int. Cl. B01d *29/38*
U.S. Cl. 210—332 **9 Claims**



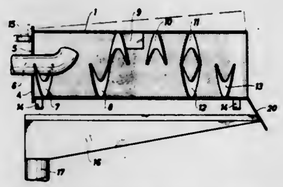
A self-cleaning filter, particularly for dry-cleaning plants, comprising a liquid filled chamber wherein a plurality of filtering elements are radially housed in a circularly arranged pattern around a central free chamber zone. At least one centrifugal impeller is fitted within said free zone and suitably driven at time intervals by a motor shaft in order to cause the liquid be moved against and through said filtering elements for the cleaning purpose thereof.

3,695,448

DEVICE FOR SEPARATING LIQUID FROM A SLURRY

Rolf Ingvar Johansson, VVS Utrustning AB, Hjorthagsg. 10 D, 413 17 Goteborg, Sweden

Filed March 30, 1970, Ser. No. 23,553
Claims priority, application Sweden, April 24, 1969, 5832/69
Int. Cl. B01d *33/38, 33/06*
U.S. Cl. 210—394 **6 Claims**



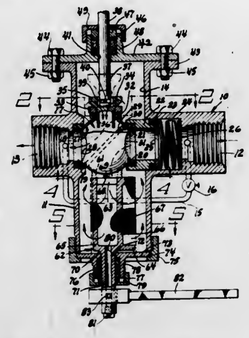
A device for separating liquid from a slurry having a perforated rotatably driven drum into which the water slurry mixture is introduced and fed along the length thereof for dewatering the slurry and having a brush extending along said drum with bristles engaging said drum for being rotated thereby with the bristles engaging and cleaning the drum perforations of foreign material.

3,695,449

REGULATING STATION VALVE

Paul J. Scaglione, 30180 Richmond Hill Dr., Farmington, Mich.

Filed April 13, 1970, Ser. No. 27,734
Int. Cl. B01d *35/02*
U.S. Cl. 210—429 **21 Claims**



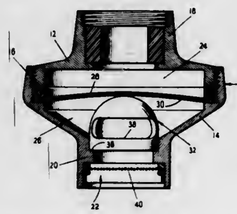
A regulating station valve which is adapted to provide the functions of four valves, namely, a strainer, a regulating valve, and two shut-off valves in a single structure. The valve comprises a valve body having a chamber therein and provided with an inlet passage and an outlet passage, a first annular seal around said outlet passage in said valve body chamber, rotatable ball or cylinder valve seated on said first annular seal and a second annular seal seated against said rotatable valve at a point diametrically opposite to said first annular seal, and means for normally biasing said second annular seal against said rotatable valve to hold said rotatable valve in position in said valve body. A strainer means is rotatably mounted in said valve body for turning said rotatable valve between an open position and a closed position. The rotatable valve is provided with a high pressure fluid inlet chamber which is divided from a low pressure fluid outlet chamber so that high pressure fluid flowing through said rotatable valve enters the inlet passage and passes through the inlet chamber in the rotatable valve and thence through the strainer and into the valve body chamber. The fluid then flows back into the outlet chamber in the rotatable valve and thence out of the rotatable valve and into said outlet passage. A regulating valve means is also provided to control the flow of fluid from the valve body chamber into the rotatable valve outlet chamber. The outer surfaces of the rotatable valve direct fluid flow and also function to allow flow or stop flow.

3,695,450

WATER TAP FILTER

Samuel Lieberman, 42 Oak Hill St., Newton, Mass.

Filed Nov. 18, 1971, Ser. No. 200,015
Int. Cl. B01d *29/00*
U.S. Cl. 210—449 **6 Claims**



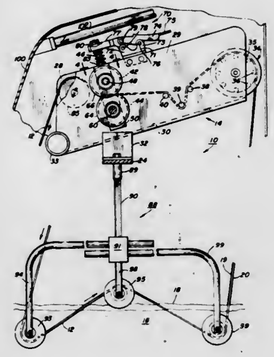
A filter-aerator for a water tap includes a specially formed internal static mixer which reduces the tendency of the water stream to splash when it strikes the sink.

3,695,451

SKIMMING DEVICE

Henry Schmidt, Jr., Hinsdale; Richard W. Crain, and James F. Zievers, both of La Grange, all of Ill., assignors to Industrial Filter & Pump Mfg. Co.

Filed Jan. 12, 1970, Ser. No. 2,125
Int. Cl. E02b *15/04*
U.S. Cl. 210—526 **4 Claims**



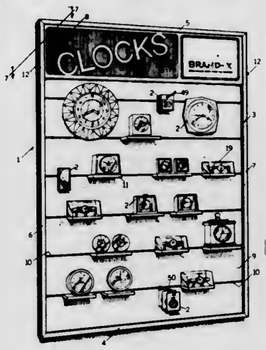
A portable skimmer utilizes a continuous flexible belt which passes through an interface between two liquids to adsorb one of the liquids and then passes between a pair of spring-loaded drive rollers which remove the liquid from the surface of the belt. These rollers are mounted in a collecting trough which directs the removed liquid to a desired location.

3,695,452

THEFT-DETERRENT MERCHANDISING DISPLAY APPARATUS

Albert A. Surman, 1534 Millard, Madison Heights, Mich.

Filed Sept. 17, 1970, Ser. No. 73,149
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **23 Claims**



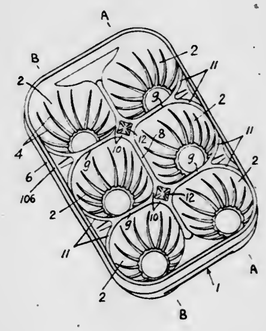
A theft-deterrent apparatus/system for displaying, merchandising and selling articles relative to a holding or "framelike" structure having a series of movable or slidable panels which retain the articles therebetween. Customers may readily view and/or handle the article but cannot remove it from the apparatus/system. A customer interested in purchasing or more closely examining (or inspecting) an article informs the salesman who can disengage or remove theft-deterrent (lock, key, handle or pull pin) stop(s) which permit the panels to freely move or slide apart thereby freeing the desired article. The articles may be displayed, in an exposed and/or enclosed condition in various affixed packages, on hooks, clips and shelves and/or displayed in packages comprising a shelf base with a transparent (pivotal and/or removable) cover affixed thereto as suits the particular theft-deterrent merchandising requirement/need.

3,695,453

FOAMED PLASTIC POCKET TRAY FOR FRUITS OR LIKE ARTICLES

Nerio Martelli, 6, via Cavaloni, Bologna, Italy

Filed Sept. 14, 1970, Ser. No. 71,921
Claims priority, application Italy, Sept. 30, 1969, 7344 A/69
Int. Cl. A47f *7/00*
U.S. Cl. 211—14 **8 Claims**



A foamed plastic tray provided with pockets separated at their tops by reinforcing ridges. The tray is provided with a large, upwardly projecting circumferential rim, of a substantially rectangular shape, which is externally flat so as to provide on its sides a flat rim for holding the tray in an upright position.

3,695,454

Patent Not Issued For This Number

3,695,455

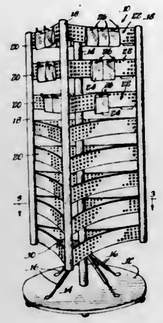
DISPLAY STAND

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

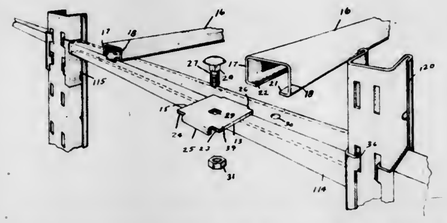
Filed Sept. 23, 1970, Ser. No. 74,767
Int. Cl. A47g *29/00*
U.S. Cl. 211—78 **10 Claims**

The present invention relates generally to display stands for articles to be sold, and more particularly to display stands upon which articles for sale may be mounted in vertically spaced relation. An embodiment of the invention disclosed herein comprises central post means having vertical frame members spaced laterally from and equally distributed about

the axis of the post means. Article display panel members extend between adjacent frame members, providing panel sections vertically spaced, so as to assure clear visibility through the stand from one side thereof to the other when articles for display are mounted thereon.



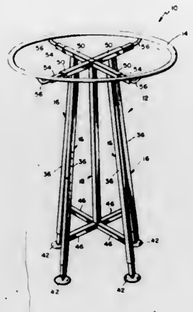
3,695,456
PALLET RACK
William L. Lewis, North East, Pa., assignor to Bernard Gloekler, North East, Pa.
Filed July 17, 1970, Ser. No. 55,659
Int. Cl. A47f 5/10; F16b 5/06
U.S. Cl. 211—148 **2 Claims**



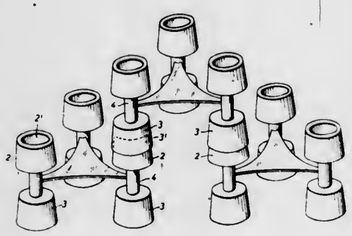
A rack for storing pallets or the like. The rack is made up of vertical columns, lateral and cantilevered structural members fixed to the vertical columns, and longitudinal rails supported on the structural members. These rails, in the preferred embodiment of the invention, are in the form of channels having their lower edges turned inward. The rails are connected to the lateral or cantilevered structural members by joints which include a clamp plate. The clamp plate has a square body which fits between the legs of the channel and the square body has two flanges, one flange at each of two opposite sides of the body. The body is received in the channel overlying the inturned edges. The flanges of the clip cradle, the top part of the transverse structural members and a bolt extends through the clip and through the structural members. Thus, the clip holds the rails rigidly to the lateral or cantilevered structural members and holds the entire assembly in rigid relation.

3,695,457
DISPLAY RACK WITH ANNULAR MOUNTING RING
Maurice Cohen, 3580 N.W. 52nd St., Miami, Fla.
Continuation of Ser. No. 633,045, April 29, 1967, abandoned. This application June 15, 1970, Ser. No. 48,874
Int. Cl. A47f 5/10
U.S. Cl. 211—177 **8 Claims**

A rack for displaying articles thereon wherein a plurality of leg units are removably interconnected and an annular ring is removably mounted on adjustable arms of said leg units at the upper ends thereof, the adjustable arms providing for mounting of different diameter rings thereon, and the entire rack being easily assembled for displaying said articles or disassembled for packaging and shipping in a knocked-down position.

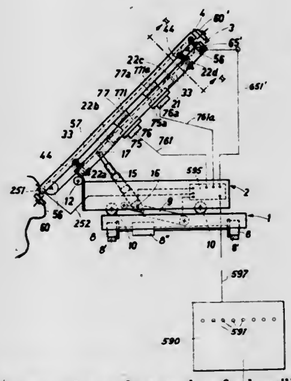


3,695,458
MODULAR CANDELABRUM
Hans Nagel, Dreilindenstrasse 1, Wesseling, Germany
Continuation of Ser. No. 861,223, Sept. 16, 1969, abandoned, which is a continuation of Ser. No. 653,525, July 14, 1967, abandoned. This application Aug. 20, 1970, Ser. No. 65,655
Claims priority, application Germany, Aug. 25, 1966, N 19 089
Int. Cl. A47f 5/10
U.S. Cl. 211—177 **8 Claims**



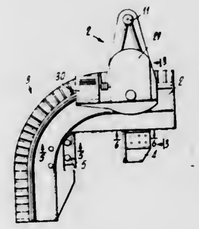
Identical modular units are provided, and having at least three upright transversely spaced rigidly connected legs. The upper ends of the legs are provided with a socket and lower end portions mate with these sockets. The units can be assembled in tiers with each higher unit having an end portion of at least one of its legs received in a socket of a lower unit, the end portions of two of the legs received in sockets of one or two of the lower units, or with the end portions of all of its legs received in the sockets of one lower unit, in sockets of two lower units, or in sockets of three lower units.

3,695,459
HANDLING DEVICE
Andre Raes, Brussels, Belgium, assignor to S. A. Glaverbel, Watermael-Boitsfort, Belgium
Filed June 17, 1970, Ser. No. 46,990
Claims priority, application Luxembourg, June 17, 1969, 58,894
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q **20 Claims**



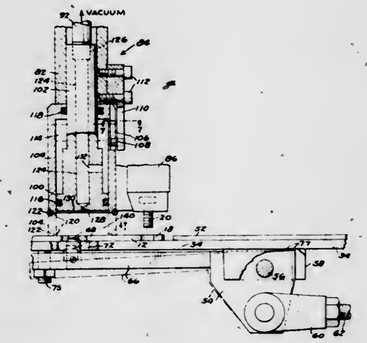
An article supporting surface, such as for handling sheets of glass provides an air cushion for supporting the sheets and suction for holding sheets against the surface. The surface is articulated and tilts and is mounted on tracks so that the sheets may be handled and moved.

3,695,460
ELECTROMECHANICAL APPARATUS FOR SLINGING AND TURNING OVER ROLL MATERIAL
Aleardo Borriello, Via Tortona, 76, Milan, Italy
Filed Oct. 6, 1970, Ser. No. 78,430
Claims priority, application Italy, Oct. 7, 1969, 23024 A/69
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QD **9 Claims**



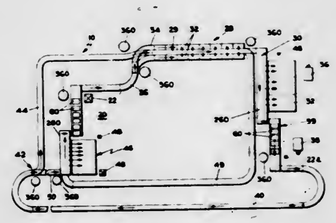
An electromechanical apparatus for turning over roll material, substantially comprising two parts movable with respect to each other and particularly a first drive part adapted to be hung to the hook of a lifting means and carrying a drive motor and a reducing unit, and a second part comprising a boxed L-beam having its legs interconnected by a circle arc section; at said connection, one leg of said L-beam carrying a fixed jaw cooperating with a jaw movable on guides along said leg to grasp a material roll to be lifted and turned over. Said L-beam has longitudinal sliding guides on the first part as well as racks meshing with suitable pinions driven by said reducing unit for longitudinally sliding with respect to said first driving part.

3,695,461
VACUUM-ACTUATED TRANSFER DEVICE AND ASSEMBLY APPARATUS
Gary D. Ginther, Leonard, Mich., assignor to Clyde Corporation, Troy, Mich.
Filed Oct. 14, 1970, Ser. No. 80,701
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BT **14 Claims**



Piston rod and piston have passageways for introducing vacuum into a cylinder at both sides of the piston. Cylinder has an open end with a sealing surface which advances against an article and then retracts with the article as a result of vacuum acting on differential effective areas of the piston. The device is mounted on a movable head so that it transports the article from a feed shuttle to a workpiece, and tools on the head secure the article to the workpiece.

3,695,462
BAGGAGE HANDLING SYSTEM
Norman M. Sullivan, Grand Rapids, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.
Filed Aug. 28, 1970, Ser. No. 67,738
Int. Cl. B65g 43/00
U.S. Cl. 214—16 B **34 Claims**



A baggage handling system utilizing four-sided open top containers each carrying only one owner's set of baggage from the check-in to the enplaning dispensing station, and from the deplaning loading station to a baggage claim area. The system contemplates, in one form, that delivery of the baggage to the

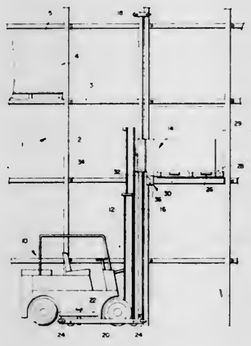
baggage claim area will occur only at the initiation of the baggage owner. A coded signal comprising a baggage identification number or in the case of a dispensing station, a flight number, is fed to a computer which compares the information in the signal with the contents of the container, pulls the appropriate container out of the container system, and causes it to discharge at the point where the coded signal was generated. The containers are located by the computer by means of a memory system which has been supplied the identity of each individual container and which at all times can determine the precise location of each individual container in the system. When the system is used for returning baggage to its claimant, the claimant provides a reader at the baggage claim station with a code identifying his particular baggage which enables the computer to direct the container having his baggage to the claimant and to discharge it to him.

3,695,463

MATERIALS HANDLING STACKER POSITIONING APPARATUS

Alexander Weisker, Easton, and Raymond L. Smith, Jr., Southbury, both of Conn., assignors to C&M Manufacturing Company, Inc., Bethesda, Md.

Filed May 8, 1970, Ser. No. 35,711
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **6 Claims**



Stacker attachments have upper and lower photoelectric devices for precisely positioning a carrier opposite a desired storage rack location. The lower photoelectric device is activated when a storage sequence of the stacker is intended. The upper photoelectric device is energized when a load retrieval sequence is intended. An operator generally positions a stacker carriage in the desired area before activating the photoelectric devices.

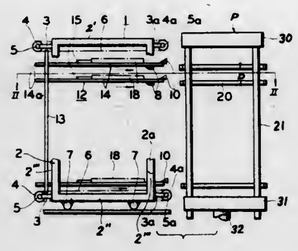
3,695,464

TRANSFER MECHANISM FOR THE SHEET MATERIAL OF A MULTIPLATEN PRESS

Seibo Kaji, Aichi-ken, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho Nagoya, Aichi-ken, Japan

Filed Nov. 23, 1970, Ser. No. 92,003
Claims priority, application Japan, Dec. 9, 1969, 44/99203
Int. Cl. B65g *47/82*
U.S. Cl. 214—16.6 **8 Claims**

A transfer system for the sheets to be fed to and discharged from a multiplaten press which includes, at each press level, a support which may be disposed at a predetermined position corresponding to the trailing edge of sheet material in the press, detent means on the support, depressable by sheet material to be fed to the press on transfer trays, and abutment means for advancing the sheet material into the press over the detent means and finally into engagement therewith as a positioning member for the trailing edge. The device is thus able to position sheet material of various sizes at desired locations of the press.



3,695,465

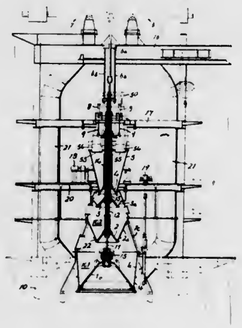
Patent Not Issued For This Number

3,695,466

CHARGING APPARATUS FOR THE FURNACE

Tsunenori Sugawara; Teiji Shibuya; Satoru Miyakado, and Jiro Mase, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1970, Ser. No. 35,775
Claims priority, application Japan, May 9, 1969, 44/35587; May 9, 1969, 44/035588; May 9, 1969, 44/35589; May 9, 1969, 44/42448
Int. Cl. B66c *17/08*
U.S. Cl. 214—37 **14 Claims**



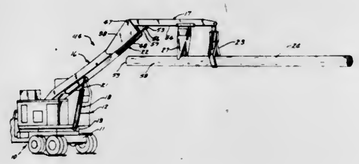
The invention is concerned with an apparatus for charging raw materials or ore rocks into a furnace, and uses four bells namely a large bell, a middle bell, a small bell and a rotating hopper bell serving as the charging apparatus for the furnace, and these bells are formed so as to provide sealing and charging or distributing functions and each of them is suitably operated to smoothly charge raw materials as well as to seal the top of the furnace to thereby fully maintain the pressure at the top of the furnace in order to provide excellant furnace operation.

3,695,467

BOOM ASSEMBLY FOR A CRANE

John L. Grundon, E. 16th & Howard Dr., Des Moines, Iowa

Filed Sept. 15, 1970, Ser. No. 72,383
Int. Cl. B66c *1/47*
U.S. Cl. 214—147 G **2 Claims**



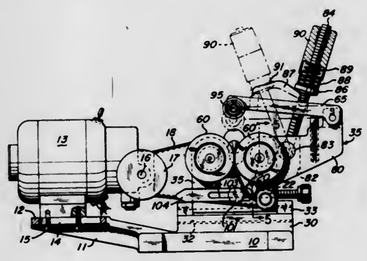
The boom assembly has a boom member and a stock member of box constructions with the stick member pivoted to the boom member adjacent the top of an upright extension provided at the free or forward end of the boom member. The actuating cylinder for the stick member is located within the boom member, and the actuating cylinder for the boom member projects transversely therethrough adjacent its rear end for pivotal connection with the upper wall of the boom member.

3,695,468

WORK HOLDER

Harry G. Stevens, 1029 Terracewood Drive, Englewood, Ohio, and Robert Earl Smith, 4224 Scrubb Drive, Kettering, Ohio

Filed April 29, 1970, Ser. No. 32,928
Int. Cl. B65g *7/00*
U.S. Cl. 214—340 **18 Claims**



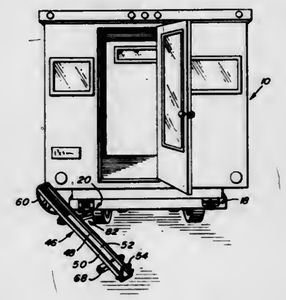
A work holder capable of holding a work piece having a generally arcuate circumferential body portion, to give location, baring, and rotating support to said body portion while presenting another body portion of said work piece for grinding and like operations. The invention device features simplified and improved holding means including unique roller modules which per se incorporate their drive means and have simple means adapting them to mount various size work pieces without loss of efficiency. It also provides a continuous drive system for such modules distinguished by precision control means affording a maximum use of applied power. It is further characterized by the application of O-rings to at least one roller module in a manner to exert a balanced and positive rotative influence to the workpiece. Means are provided to precisely reference a work piece to a cutting tool and to simply induce an angular disposition of or apply an axial driving force to a work piece during a cutting operation.

3,695,469

MOTORCYCLE CARRIER

Ronald E. Arant, 1617 Conger, Olympia, Wash.

Filed Nov. 16, 1970, Ser. No. 89,696
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **12 Claims**



An elongated support member for disposition transversely of the rear or front end of a motor vehicle or trailer for supporting a motorcycle disposed lengthwise on the support member. One end of the support member includes a wheel well for receiving one wheel of the motorcycle and the corresponding end of the support member is supported from one leg of a horizontally disposed L-shaped support arm for oscillation about an axis extending along that leg and with the leg disposed generally transverse to the elongated support member. The free end of the other leg of the L-shaped support arm is supported from a bumper mounted bracket for oscillation about an upstanding axis. Also, the elongated support member is oscillatably supported from the first-mentioned leg of the L-shaped support arm for oscillation about a vertical axis and the other end of the elongated support member is removably pivotally supported from one end portion of a second support arm whose other end is pivotally supported from a corresponding bumper mounted support bracket for oscillation about an upstanding axis. Still further, the second-mentioned leg of the L-shaped support arm is adjustable in length and the pivot axes of the first-mentioned end of the support member relative to the first-mentioned leg of the L-shaped support arm are spaced lengthwise of the support member from the wheel well toward the opposite end of the support member.

3,695,470

Patent Not Issued For This Number

3,695,471

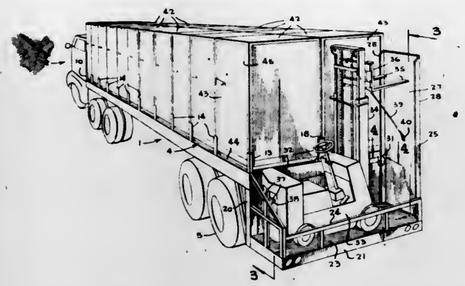
TRANSPORT VEHICLE

William C. Rivers, Jr., 2848 Village Grove Dr. South, Jacksonville, Fla.

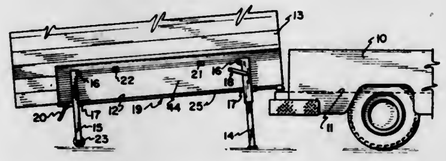
Division of Ser. No. 808,531, March 19, 1969, Pat. No. 3,561,621. This application May 15, 1970, Ser. No. 48,662
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **1 Claim**

A transport vehicle having a load bed with upstanding guides defining container positions on the bed, and containers having downwardly converging pallet bottoms for automatic

orienting at the container positions. The vehicle has an after deck carrying a load handling machine for loading and unloading containers, with a pivoted machine-loading ramp pivotally mounted on the after deck and movable to and from loading position by the load handling machine.



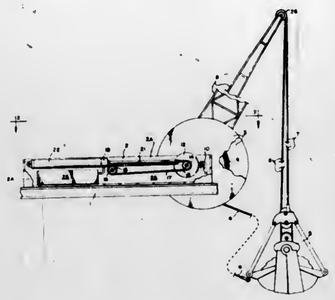
3,695,472
CAMPER LOADING AND UNLOADING DEVICE
Reed Rasmussen, 168 West Gentile St., Layton, Utah
Filed March 30, 1970, Ser. No. 23,877
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **7 Claims**



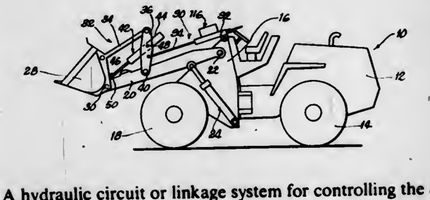
Apparatus for loading and unloading a camper onto and off of the bed of a traction vehicle which includes an elongated link member; first and second attaching means for attaching the link to the bottom of the camper proximate the camper's front end and proximate its rear end; propelling means coacting with the link for propelling a predetermined segment of the link to a first position proximate the camper's front end and to a second position proximate the camper's rear end; and connecting means secured to the bed of the traction vehicle proximate the bed's rear end for fixedly connecting the segment of the link to the vehicle's bed such that the camper is drawn onto and off of the bed by moving the link segment between the opposite ends of the camper.

3,695,473
TAG LINE CONTROL MECHANISM
Robert W. Martin, 7102 N. E. 63rd Ave., Vancouver, Wash.
Filed Oct. 28, 1970, Ser. No. 84,717
Int. Cl. B66c *23/94*
U.S. Cl. 214—657 **7 Claims**

A control mechanism for a tag line extending from a drum on the crane chassis to a clam shell bucket or similar lifting instrumentality suspended in the normal manner by the crane. The tag line drum is powered by stored hydraulic pressure for tensioning of the tag line to prevent undesired bucket movement. Drum rotation occurs as the clam shell bucket is lowered with such rotation being translated into piston movement to charge a fluid pressure accumulator. Oppositely, raising of the clam shell bucket, resulting in lessening of tag line tension, permits the stored hydraulic pressure to rewind the drum to maintain desired tension on the tag line. A sprocket and chain assembly in combination with reduction gearing serves to translate rotary drum movement into rectilinear piston movement and vice versa.



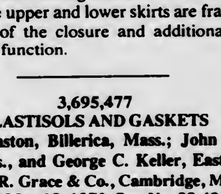
3,695,474
HYDRAULIC CONTROL LINKAGE FOR IMPLEMENT
Richard P. Blakely, Rockford, Ill., assignor to J. I. Case Company
Filed Aug. 5, 1970, Ser. No. 61,359
Int. Cl. E02f *3/00*
U.S. Cl. 214—771 **21 Claims**



A hydraulic circuit or linkage system for controlling the attitude of an implement relative to a fixed support while the implement is being raised and lowered relative to the support. The implement is pivoted on one end of a boom by a fluid ram having pressurized fluid supplied thereto through a control valve. The hydraulic control linkage includes a master piston and cylinder assembly interposed between the implement and the support with a slave piston cooperating with the valve spool of the control valve and slidable in a slave cylinder. The opposite ends of the two cylinders are interconnected so that the slave piston is moved in response to movement of the master piston to automatically maintain the predetermined attitude of the implement relative to a fixed reference plane. The hydraulic control linkage further includes mechanism for automatically stopping the bucket at a desired angular relation while it is moving between a first and a second maximum pivoted position and automatically preventing the movement of the bucket beyond the second maximum pivoted position. This is accomplished through a valve having a plurality of flow paths between the conduits interconnecting opposite ends of the two cylinders.

3,695,475
CHILD-PROOF CLOSURE
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 15, 1971, Ser. No. 153,236
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **8 Claims**

A child-proof snap-on closure for a container, the container pouring lip and the closure skirt including upper opposed beads retaining the closure on the container. The container neck and the closure skirt including lower spaced opposed threads for removal of the snap-on closure. The threaded lower skirt portion being flexible around its entire periphery and deflectable inwardly at generally diametrically opposed points to engage the threaded neck portion where upon relative rotation, the threaded skirt is driven upwardly on the threaded neck, thus forcing the skirt bead upwardly over the pouring lip bead to remove the closure.



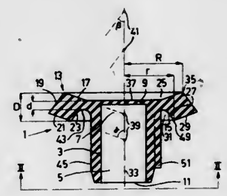
3,695,476
TAMPER-INDICATING AND CHILD-PROOF CLOSURE
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 15, 1971, Ser. No. 153,292
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **9 Claims**

A tamper-indicating and child-proof closure for a container having a threaded neck and a beaded pouring lip comprising an upper skirt and a lower skirt. The upper skirt includes an internal annular snap-on bead which seats under the pouring lip. The lower skirt includes internal threads complementary to the neck threads and outwardly spaced therefrom. The upper and lower skirts are non-severably connected along a short arc and severably connected by horizontal fracture bridges along substantially circumferential contact surface. The normal spacing of the lower skirt threads from the neck threads permits turning of the closure without removal thereof until the lower skirt is deflected inwardly to engage the threaded neck. Upon deflection of the lower skirt and a small amount of rotation, a portion of the snap-on bead is progressively uplifted over the pouring lip resulting in the eventual removal of the closure during which circumferentially spaced bridges joining the upper and lower skirts are fractured to permit the removal of the closure and additionally provide a tamper-indicating function.

3,695,477
PLASTISOLS AND GASKETS
Robert P. Edmonston, Billerica, Mass.; John W. Lefforge, Lynnfield, Mass., and George C. Keller, East Derry, N.H., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed May 18, 1970, Ser. No. 38,491
Int. Cl. C08f *29/24*, *29/12*; **B65d** *53/00*
U.S. Cl. 215—40 **3 Claims**

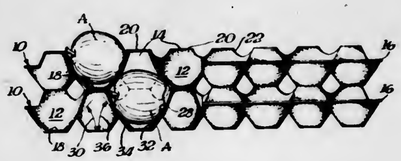
Plastisols, preferably of polyvinyl chloride, having a high yield value and low high shear viscosities are obtained by thickening conventional plastisol preparations with about 1 to 40 parts of certain block copolymers of the A-B-A type in which B is an elastomeric polymer core and A stands for a thermoplastic polymerized alkenyl aromatic compound. Tough, resilient gaskets can be manufactured from these improved materials.

3,695,478
FLEXIBLY DEFORMABLE STOPPER FOR A HYPODERMIC SYRINGE
Tjwan Khing Sie, and Hendrik Alle Post, both of Emmasingel, Eindhoven, Netherlands
Filed Aug. 10, 1970, Ser. No. 62,389
Claims priority, application Netherlands, Aug. 23, 1969, 6912907
Int. Cl. B65d *39/12*, *41/00*; **A61m** *5/28*
U.S. Cl. 215—52 **4 Claims**



A flexibly deformable stopper for a hypodermic syringe consisting of a neck having a central channel, a diaphragm at one end of the neck and an annular flange having a quadrangular cross-section at the closed end. The front face and the rear face of the flange enclose an acute angle with the neck and extend in the same direction, the outer edge projecting beyond the front side of the diaphragm in such manner that during the clamping operation of the flange the diaphragm is pre-stretched.

3,695,479
TRAY WITH REINFORCED ARTICLE POCKETS
Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine
Filed Nov. 16, 1970, Ser. No. 89,547
Int. Cl. B65d *85/34*
U.S. Cl. 217—26.5 **4 Claims**



A molded packaging tray having a plurality of downwardly dished pockets for receiving soft, round, delicate articles such as apples, peaches and tomatoes, and a plurality of upwardly tapering posts. The pockets and posts are arranged so that when two or more trays are properly oriented in a stack the flat pocket bottoms of one tray rest on the flat post tops of the next lower tray in the stack, rather than resting on the fruit packaged in the next lower tray. The pockets are substantially circular in horizontal cross-section at their approximate mid-level between the pocket bottoms and the post tops to smoothly support the delicate fruit, and the pockets are without inwardly directed protrusions. The pockets below the approximate mid-level taper inwardly to join the pocket bot-

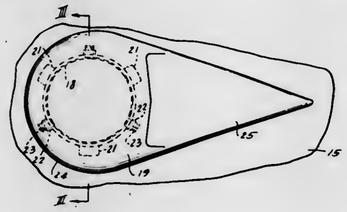
toms at a low angle not greater than about 55° from the horizontal to minimize the total height of the tray with respect to the diameter of the fruit packaged therein. Four reinforcing ribs are associated with each pocket below its mid-level, the ribs being outwardly convex in horizontal cross-section, and being joined to the pocket bottoms at their lower extremities and tapering upwardly therefrom to merge with the pockets. The pocket bottoms and the post tops are similar in shape and generally coextensive in size.

3,695,480

STREAMLINING MOTORCYCLE GAS TANK CLOSURE DEVICE

Anthony J. Castiglia, 412 Sherwood Drive, Streamwood, Ill.

Filed Nov. 19, 1970, Ser. No. 91,071
Int. Cl. B65d *39/00*
U.S. Cl. 220—24 GT **10 Claims**



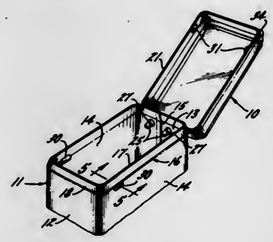
Streamlining of gas tank closure caps is effected by a device which may be provided as an optional attachment, or which may be carried as a functionally integral inseparable part of the cap structure. Not only is the cap concealed, but an appearance is afforded of streamline integrity of design with the gas tank. Additionally, the device provides a protective shield as well as a convenient operating handle for the tank closure cap.

3,695,481

HINGED PLASTIC CLOSURE FOR SHEET METAL CANS

John A. Foster, and Carl A. Filipowicz, both of Rockford, Ill., assignors to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed Oct. 8, 1970, Ser. No. 79,069
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 S **7 Claims**



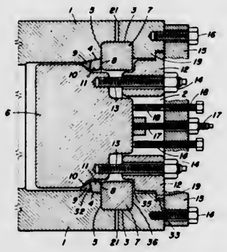
The open end of a tubular sheet metal container of rectangular cross-section is closed by telescoping down over an outwardly and downwardly turned flange near the container lip a cover of resilient plastic having a depending peripheral skirt with a tab depending from one shorter end thereof and secured against the outer side of the container wall by integral projections pressed through holes in such wall. The cover is held releasably in closed position by nibs projecting inwardly from the skirt near the free end thereof and interlocked beneath the edge of the hem flange.

3,695,482

PRESSURE VESSEL SEAL

Colin Smith, Upper Warlingham, Surrey, England, assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 836,462, June 25, 1969, abandoned. This application June 14, 1971, Ser. No. 152,553
Int. Cl. B65d *45/00, 53/00*
U.S. Cl. 220—46 MS **8 Claims**



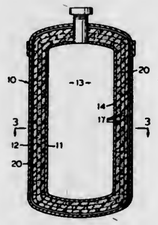
A pressure vessel including a sealing structure for the cover which comprises a triangularly-shaped gasket in sealing engagement with a curved shoulder on the cover, a gasket engaging surface of the vessel wall and a backing ring positioned between the gasket and a key-ring located in a groove in the vessel wall.

3,695,483

THERMAL INSULATION AND THERMALLY INSULATED DEVICE

Louis A. Pogorski, Toronto, Ontario, Canada, assignor to Gulf Oil Canada Limited and Chemical Projects Limited, Toronto, Ontario, Canada, part interest to each

Continuation-in-part of Ser. No. 765,471, Oct. 7, 1968, abandoned. This application Nov. 27, 1970, Ser. No. 93,365
Int. Cl. B32b *5/16;* **B65d** *11/16, 23/02*
U.S. Cl. 220—9 C **3 Claims**



A load supporting thermal insulator comprising a flexible casing that is filled with compacted material in the form of finely divided particles. The compacted material exerts a pressure of at least 1 lb. per square inch over the inner surface of the casing and has a coefficient of thermal conductivity less than that of the interstitial gas between the particles under the same conditions of temperature and pressure.

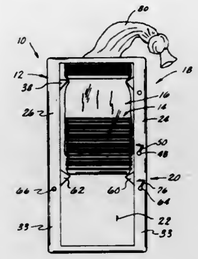
3,695,484

TRAY DISPENSER

Harvey T. Hollinger, Concordia, Kans.

Filed Aug. 24, 1970, Ser. No. 66,460
Int. Cl. B65g *59/06*
U.S. Cl. 221—296 **3 Claims**

This invention is a tray dispenser. It has a housing with a tray storage area in the upper portion thereof above a tray receiving portion. Clutches mounted in the housing hold a quantity of stacked trays in the storage area and other clutches hold and release a plurality of trays from the storage area into the receiving area. Separate controls operate the clutches independently. More particularly this invention is adapted to hold a quantity of trays in the storage area and release a small quantity of them into the receiving area.

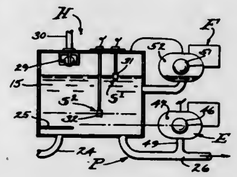


3,695,485

AUTOMATIC SAFETY FEED SYSTEM FOR LIQUIDS

Frederick G. Littlejohn, 17352 Sunset Blvd. Apt. 702D, Pacific Palisades, Calif.

Filed Sept. 21, 1970, Ser. No. 73,784
Int. Cl. B67d *5/08*
U.S. Cl. 222—68 **21 Claims**



A unit system adapted to feed any number of liquid destinations on demand, especially dangerous liquids, and comprising a protected storage of said liquid, a motor driven pump means supplying said liquid into a holding means, a safety inlet valve governing flow of liquid from said pump means and into the holding means, and a flow outlet dispensing the said liquid; the invention residing in a motor and safety inlet control means responsive to high and low level sensors in said holding means so as to maintain a normal level therein, outlet safety means responsive to excessive flow in said outlet from the holding means and closing the safety inlet valve, and overflow safety means responsive to flooding of the holding means and overriding the motor control means. Utility resides in the adaptability to multiple installations wherein the fluid circuitry of each unit remains individually operable and protected while drawing from a common storage and motor driven pump means.

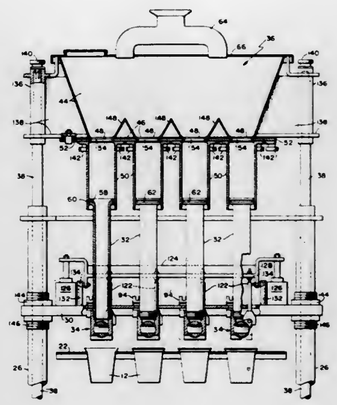
3,695,486

FOOD DISPENSER

Robert J. Warner, Lexington, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed May 28, 1970, Ser. No. 41,400
Int. Cl. B65b *3/30*
U.S. Cl. 222—162 **2 Claims**

A dispensing and packaging technique for use with fluent, semi-liquid foods of the type which must be handled gently to avoid bruising or otherwise adversely effecting the quality of the food product. The technique includes storing a quantity of the food in an elevated supply trough and then pumping the food from the trough, in measured charges, to the packaging containers. The technique includes an arrangement by which the food product advances along a straight line from the trough to the container thus avoiding any tubing bends, pressure variations, etc. which might affect adversely the food product.

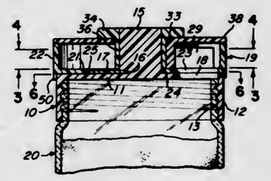


3,695,487

DISPENSER CAP

Jack E. Slayton, 5795 Rosebury Dr., Dayton, Ohio, and Eugene F. Whipp, 7704 Little Richmond, Dayton, Ohio

Filed Oct. 19, 1970, Ser. No. 81,880
Int. Cl. G01f *11/48*
U.S. Cl. 222—430 **12 Claims**



A dispenser cap for a container such as a jar, can, bottle or like receptacle containing a pourable material. The cap per se incorporates structure for dispensing measured quantities of material from the container and includes a control member settable for quantity selection purposes.

3,695,488

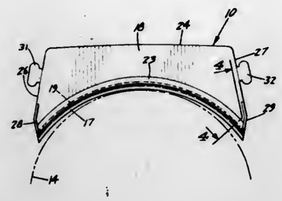
CONTAINER SPOUT

Sven O. Olsson, 7708 Glasgow Drive, Minneapolis, Minn.

Filed Oct. 26, 1970, Ser. No. 83,930
Int. Cl. B65d *5/72*
U.S. Cl. 222—570 **10 Claims**

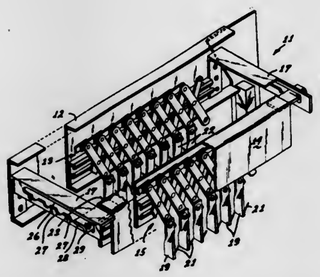
A pouring spout removably mounted on a container, as a paint can, having an upwardly directed circular lip surrounding the open top of the container. The spout is a one piece pliable plastic member having a base with an arcuate groove with

a radius of curvature larger than the radius of curvature of the container lip and a sheet chute member attached to the base.



The chute member is flexed to a generally U shaped trough configuration when the base is mounted on the lip of the container.

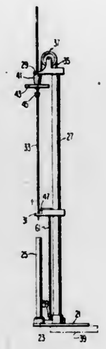
3,695,489
DRAPERY SUPPORT APPARATUS FOR RUFFLETTE AND SHIRRED DRAPERIES
Robert M. Kirche, 411 Arbor Vitae, Inglewood, Calif.
Filed Jan. 12, 1972, Ser. No. 217,147
Int. Cl. A41h *43/00*; D05b *35/08*; D06j *1/00*
U.S. Cl. 223—34 **9 Claims**



A drapery support assembly for use with apparatus for pleating, folding and stretching draperies of the shirred and rufflette types. A variable range of predetermined fixed distances is provided by securing one point at the upper portion of a shirred or rufflette drapery at a forward location on the assembly and then directing the upper most portion of the drapery back to a fixed predetermined rearward location on the assembly where it is folded and returned back to the forward location where it is then pinned at a point adjacent to said first point.

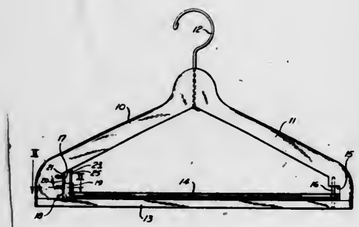
3,695,490
FABRIC ARTICLE EVERTING DEVICE HAVING LATCHING MEANS WITH REMOTELY-ACTUATED RELEASE
Aaron Glassman, Scranton, Pa., assignor to Pennsylvania Sewing Research Corp.
Filed July 16, 1970, Ser. No. 55,473
Int. Cl. A41h *43/00*
U.S. Cl. 223—40 **4 Claims**

A device comprising a rigid tube adapted to receive a tubular fabric article thereon and a rod, slidable into the tube and adapted to evert the article into the tube. The device has a means for latching the rod at the end of its travel and means,



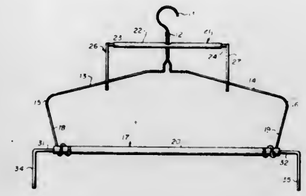
remote from the latching means, for actuating the release of the rod to permit it to return to its original position.

3,695,491
GARMENT HANGER
Charles J. Orlando, P.O. Box 121, Ormond Beach, Fla.
Filed Oct. 16, 1970, Ser. No. 81,439
Int. Cl. A47j *51/094*
U.S. Cl. 223—91 **1 Claim**



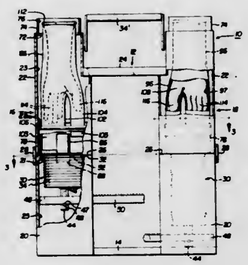
A garment hanger has a main frame provided with oppositely extending arms and a garment supporting bar connected between the ends of these bars. The hanger has another garment holding bar extending above the supporting bar. The holding bar may extend parallel to the supporting bar and may be swung at right angles thereto. This is accomplished by the use of a pin extending freely through the holding bar and having one end fixed to the supporting bar and the other end fixed to an adjacent arm. The opposite end of the holding bar is received and is enclosed by a holder fixed between the supporting bar and the other arm. The holder has an opening permitting the passage of said recessed end.

3,695,492
ADJUSTABLE GARMENT SHAPE-RETAINING HANGER
Helen Sheba, 320 S. Harrison St., East Orange, N.J.
Filed June 22, 1970, Ser. No. 48,128
Int. Cl. A47j *51/12*
U.S. Cl. 223—94 **10 Claims**



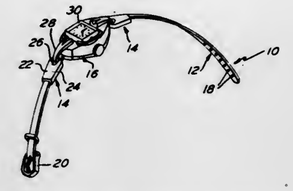
An adjustable, garment shape-retaining hanger having a laterally expandable neck shaping support mounted beneath a hook, a pair of opposed, shoulder supports and sleeve shapers and, a laterally adjustable side seam-shaping support mounted to and between the bottom ends of the sleeve shapers.

3,695,493
METHOD AND APPARATUS FOR APPLYING OR REMOVING GLOVES
Robert J. Karr, 1605 Sixteenth St., Wyandotte, Mich.
Filed Aug. 31, 1970, Ser. No. 68,173
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 **7 Claims**



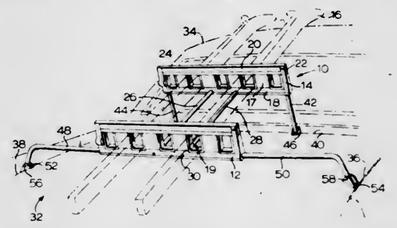
This invention relates to a mechanism for and method of applying and removing fluid impermeable gloves without the necessity of manually contacting the exterior of the gloves. The mechanism employed comprises a means for suspending and sealing a glove within a vacuum chamber and means for evacuating the chamber to outwardly distend the glove to a size greater than that of the user's hand. After the insertion of the hand into the distended glove, the chamber is restored to atmospheric pressure and the glove fits the hand due to the inherent resiliency of the previously distended glove. The hand, with the glove applied thereto, is simply removed from the chamber. A reversal of this procedure, i.e., inserting the gloved hand into the chamber evacuating the chamber, and removing the hand, leaves the glove suspended in the chamber. The present disclosure provides a novel, inexpensive, pedal-operated device for carrying out these functions simultaneously on both hands of a user.

3,695,494
REMOVABLE WATCH BAND
Mates A. Bruner, 1113 Wynnbrook Place, Secane, Pa.
Continuation-in-part of Ser. No. 865,325, Oct. 10, 1969. This application Feb. 20, 1970, Ser. No. 12,984
Int. Cl. G04b *37/12*
U.S. Cl. 224—4 E **4 Claims**



A removable watch band adapted to be secured on a watch casing of a woman's watch which has a circular opening at the top and bottom thereof. The watch band includes a coupling at each end thereof that comprises a ring-shaped member having an opening at one portion thereof. The ring-shaped member is movable from a first position wherein the ring can be inserted in the circular opening to a second position wherein the ring is retained on the casing at the opening. Detent means are provided for releaseably securing the ring-shaped member in its retaining position.

3,695,495
CARRIAGE FOR SKIS
Ronald W. Parsons, Newmarket, Ontario, Canada, assignor to Allcock, Laight & Westwood Limited, Bramalea, Ontario, Canada
Filed Oct. 28, 1970, Ser. No. 84,770
Int. Cl. B60r *9/00*
U.S. Cl. 224—29 R **13 Claims**

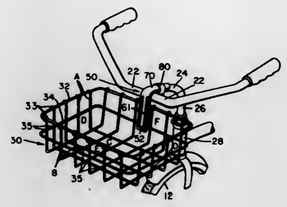


A ski carrier is provided for mounting on a trunk lid of a motor vehicle. The carrier includes a first and second ski holders spaced apart from each other and capable of holding skis in substantially fixed relation to the holders. The holders are mounted on the trunk lid by mounting means including feet which engage and are held by the sides and at least one of ends of the trunk lid. At least one of the mounting means having feet engaging the sides of the trunk lid is adjustable to accommodate trunk lids of varying width.

3,695,496
BICYCLE BASKET
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed Oct. 5, 1970, Ser. No. 78,041
Int. Cl. B62j *7/06*
U.S. Cl. 224—36 **3 Claims**

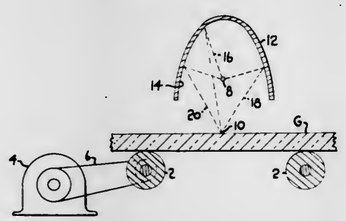
Means in the form of a single, rigid mounting bracket having a first, depending leg secured to and carried by a bicycle

basket and a second, rearwardly projecting mounting leg adapted to overlie the upper surface of the central portion of a velocipede handlebar is provided for eliminating the need for



leather straps, metal clamps and the like as heretofore used for securing portions of the basket, per se, to those side portions of a handlebar which are on opposite sides of the central or stern portion thereof.

3,695,497
METHOD OF SEVERING GLASS
Terrence A. Dear, Newark, Del., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 708,952, Feb. 28, 1968, abandoned. This application Aug. 26, 1970, Ser. No. 66,940
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **27 Claims**

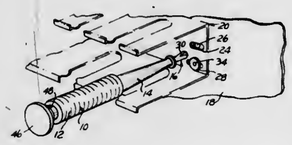


This invention relates to a non-contact thermal-score, mechanical snap method and apparatus for reliably cutting glass yielding pieces of glass having a high edge strength. A delineated infrared source is positioned at one focus of an elliptical reflector means, thereby causing its energy to be concentrated at a focus locus that is caused to coincide with one surface of the piece of glass to be cut along an intended line of fracture, creating a thermal score or heat path. The piece of glass is then severed by applying a bending moment around the heat path.

3,695,498
NON-CONTACT THERMAL CUTTING
Terrence A. Dear, Newark, Del., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 708,952, Feb. 28, 1968, abandoned. This application Aug. 26, 1970, Ser. No. 66,941
Int. Cl. B26f *3/14*
U.S. Cl. 225—1 **10 Claims**

Non-contact thermal cutting is done reliably, yielding cut pieces of glass having edge strength never hitherto reliably achieved. A suitably delineated infrared source is positioned at one focus of an elliptical reflector means, thereby causing its energy to be concentrated at a focus locus that is caused to coincide with one surface of the piece of glass to be cut along an intended line of fracture, the infrared source being such as to generate in the piece of glass to be severed a stress of at least 725 grams per square millimeter.

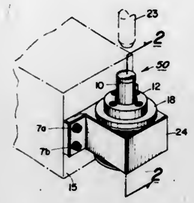
3,695,499
FASTENER INSTALLATION
Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.
Filed June 9, 1971, Ser. No. 151,283
Int. Cl. B21j *15/10*
U.S. Cl. 227—52 **8 Claims**



A manually operated installation tool for fasteners such as expansion rivets of the type provided with an expander pin normally projecting from the rivet head and adapted to be forcibly driven into the rivet shank for expanding the shank. The installation tool comprises a hollow housing in which is disposed a reciprocable plunger. One end of the housing has a bore resiliently or frictionally accepting the expander pin projecting from the rivet head, with one end of the plunger proximate the end of the rivet pin, such that the tool is used for inserting the rivet into the rivet accepting apertures of a mechanical assembly, and the expander pin is subsequently forcibly driven into the rivet shank for expanding the shank as a result of manually displacing the plunger by manually applying pressure on the other end of the plunger provided with an appropriate knob.

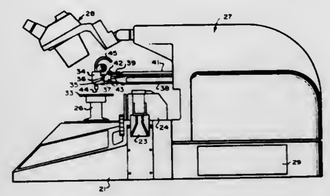
3,695,500
CONTRA-RESONANT ANVIL
Thomas A. Walraven; Nicholas Maropis, both of West Chester; William C. Elmore, Swarthmore, and Janet Devine, West Chester, all of Pa., assignors to Aeroprojects Incorporated, West Chester, Pa.
Continuation-in-part of Ser. No. 717,295, March 29, 1968, abandoned. This application June 1, 1970, Ser. No. 42,518
Int. Cl. B23k *1/06, 5/20*
U.S. Cl. 228—1 **8 Claims**

Apparatus and method are disclosed for welding metal members by means of vibratory energy. Reliability of such welding apparatus is improved by provision of an anvil designed for regulated response to excitation by an ultrasoni-



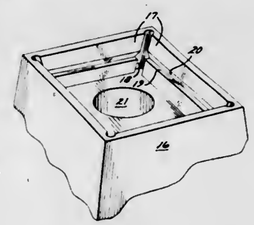
cally-powered sonotrode. The anvil is mounted in an assembly which contributes appropriate support, restraint and isolation.

3,695,501
DIE BONDER APPARATUS
William Radobenko, Scottsdale, Ariz., assignor to Automated Equipment Corp., Phoenix, Ariz.
Filed May 21, 1970, Ser. No. 39,403
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **34 Claims**



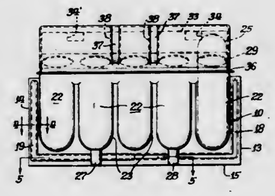
A high speed, reliable die bonder is provided for picking up dice from a loading position and transporting them to a bonding position and for thermocompression bonding the dice to a transistor strip. A low-inertia, straight-line reciprocating ram mechanism operated by a modified sine-curve, motor-driven cam serves as the transport mechanism. Apparatus driven from the cam lifts and lowers the die pick-up mechanism, which is mounted on the ram mechanism. The transistor strip is indexed with the ram mechanism to synchronize the transistor strip with the die pick-up and die bonding.

3,695,502
BONDING TOOL
Floyd E. Gaiser, 12552 Singingwood Drive, Santa Ana, Calif.
Filed Sept. 14, 1970, Ser. No. 71,662
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **6 Claims**



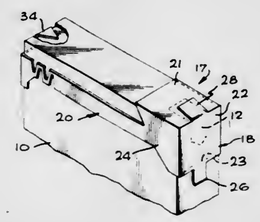
A microcircuit wafer or die bonding tool for use in microcircuit bonding apparatus to transport, locate and orient a microcircuit wafer. A working surface within the tip of the tool is characterized by a plurality of inclined facets adapted to engage parametrical edges of an upper surface of the wafer and undercut to provide both positive control of and minimum contact pressure upon the surfaces of the wafer during bonding of the wafer to a substrate.

3,695,503
MANIFOLD CASE
Joseph A. Mascetti, Jr., Geneva, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Nov. 20, 1970, Ser. No. 91,231
Int. Cl. B65d *1/00*
U.S. Cl. 229—2.5 **8 Claims**



Two identical package halves are vacuum formed from a relatively thin plastic sheet. Along the bottom and along two side edges there are flanges with mating protuberances and sockets which snap together to hold the two halves together. Between the two ends there are a plurality of vertical pockets in each half. At the top of the pockets there is a slanting wall having openings therein through which the objects to be held in the pockets extend. A cap fits over the top of these objects and the slanting walls and snaps into place. At two locations along the bottom edge are a pair of bulges forming feet.

3,695,504
ATTACHABLE CONTAINER CLOSURE
James E. Simpson, 1757 South Spaulding Ave., Los Angeles, Calif.
Filed Nov. 20, 1970, Ser. No. 91,234
Int. Cl. B65d *17/16*
U.S. Cl. 229—7 **3 Claims**



An attachable container closure used in conjunction with and for the purpose of closing the opening in boxes or containers of the type used for packaging granular, powdered or flaked materials which are poured from the container through a nonreclosable opening typically made by the user's pressing against an aperture panel which is defined by a plurality of perforations in one wall of the container.

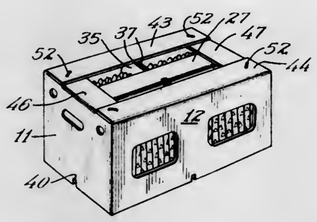
ERRATUM

For Class 229—2.5 see:
Patent No. 3,695,561

3,695,505
ASPARAGUS CONTAINER

Donald G. Wolf, Salinas, Calif., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Sept. 17, 1970, Ser. No. 73,139
Int. Cl. B65d 5/48
U.S. Cl. 229—37 R 10 Claims

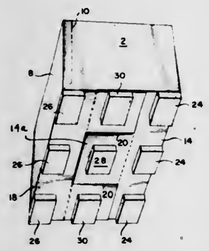


An asparagus container is provided including rectangularly arranged side and end walls. Closure flaps are provided on each side wall extending to the center of the bottom, partition flaps are hinged to the abutting ends of these bottom flaps, and supporting flaps are hinged to the upper ends of the partition flaps. Aligned slots extend across the side wall closure flaps and vertically through the partition walls. Bottom closure flaps are hinged to the end walls and underlie the side wall closure flaps. End wall partition flaps extend vertically through the slots. When filled, the side wall closure flaps and supporting flaps may be folded into upwardly diverging relation to divide the cross-sectional area into a center triangular strut and trapezoidal compartments on opposite sides thereof.

3,695,506
PALLETIZED CONTAINER BOTTOM CONSTRUCTION

Charles F. Cook, Boise, Idaho, assignor to Boise Cascade Corporation, Boise, Idaho

Filed June 2, 1971, Ser. No. 149,201
Int. Cl. B65d 5/02, 19/20
U.S. Cl. 229—37 8 Claims



An improved palletized container construction, characterized by the provision of overlapping interlocked bottom flaps to which are secured support blocks for supporting the container in an elevated position relative to a fixed surface. More particularly, a first side bottom flap is slotted at its free extremity to define a center interlocking portion contained between a pair of outer interlocking portions. The center interlocking portion carries at least one support block that is arranged for longitudinal alignment with corresponding support blocks carried by the other side bottom wall adjacent its free corner portions. Additional rows of support blocks are carried by said side bottom flaps adjacent and parallel with their hinge lines.

3,695,507
SURVIVAL BAG

Ronald G. Sams, Conduit Lane, Hoddesdon, England

Filed Jan. 26, 1970, Ser. No. 5,961
Int. Cl. B65d 33/00
U.S. Cl. 229—53 1 Claim

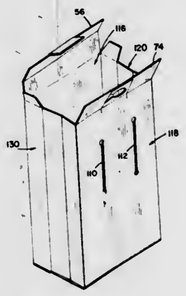


Protective clothing in the form of a survival bag is fabricated from a plastics film having a metallic coating applied to the surface.

3,695,508
EXPANSIBLE CARTON

Homer Douglas Hocking, 5719 Oakgrove Ave., Alameda, Calif.

Filed Oct. 16, 1970, Ser. No. 81,471
Int. Cl. B65d 5/08
U.S. Cl. 229—38 15 Claims

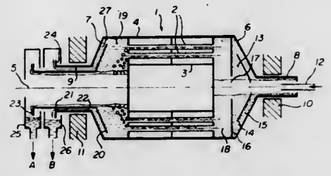


A blank foldable into an expansible carton, which blank provides a plurality of panels and a set of flaps, for the formation of a carton, having front and rear walls; two opposite side walls; and two opposite end walls. One of the side and end walls of the carton formed is openable. Each of the other side and end walls of the carton formed provides a pair of mutually-overlying pleats. The panels and flaps are adapted to be secured together in wall-forming positions. The carton formed is designed for triple expansion, by opening of the openable wall; and unfolding of each pair of mutually-overlying pleats.

3,695,509
CENTRIFUGAL SEPARATOR FOR SEPARATING EMULSIONS

Alain Ferdinand Javet, Geneve, Switzerland, assignor to Termomeccanica Italiana S.p.A., La Spezia, Italy

Filed July 23, 1970, Ser. No. 57,718
Claims priority, application Switzerland, Aug. 8, 1969, 12071/69
Int. Cl. B04b 1/00
U.S. Cl. 233—30 6 Claims

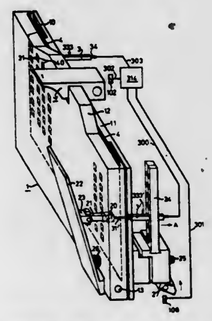


A centrifugal separator for emulsions comprises a rotating drum with an admission chamber at one end thereof, connected to atmosphere via an axial supply inlet, and a multitude of separating tubes arranged around an axial hub to extend longitudinally from the common admission chamber to a common outlet chamber at the other end of the drum. One or more outlets connected to atmosphere are arranged to discharge the lighter constituent of the emulsion from the discharge chamber at a radial distance lying between the radius of the supply inlet and that of the hub. An outlet duct connected to atmosphere extends from the periphery of the outlet chamber towards the drum axis so as to discharge the heavier constituent at a radial distance slightly greater than that of the discharge outlet for the lighter constituent of the emulsion. Liquid movement through the separator is provided through centrifugal force only. Emulsion supplied to the admission chamber is driven radially outward and forms therein a coaxial liquid level at atmospheric pressure. The lighter constituent forms in the outlet chamber a coaxial overflow level at atmospheric pressure at the discharge outlet. The heavier constituent forms a further coaxial overflow level at atmosphere pressure, at the discharge end of the outlet duct.

3,695,510
APPARATUS FOR READING PUNCHED CARDS

Ferdinand Ruesch, St. Gall, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sept. 1, 1970, Ser. No. 68,603
Claims priority, application Sweden, Sept. 8, 1969, 13639/69
Int. Cl. G06k 1/04
U.S. Cl. 234—30 15 Claims



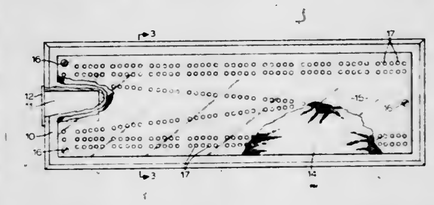
Apparatus for reading punched cards is equipped with a punch mechanism for punching a hole at a specified area of a card to indicate implementation of the instructions stored on the card and read by the apparatus. The apparatus also has a sensing mechanism acting at the specified area of the card to check whether a hole already exists there when the card is inserted in the apparatus. The sensing of the presence of such a hole, indicating that the instructions on the card have already been implemented, prevents a repeated implementation of the instructions. Upon a card, not having a hole in the specified area, being accepted in the apparatus for reading of the instructions therefrom, the punch mechanism is locked against operation until a signal indicating implementation of the instructions is received. The apparatus finds particular application in process control.

3,695,511
Patent Not Issued For This Number

3,695,512
CRIBBAGE BOARDS AND LIKE PEG-BOARD DEVICES

John L. Trudel, 255 Bold St., Apt. 806, Hamilton, Ontario, Canada

Filed Oct. 28, 1971, Ser. No. 193,431
Int. Cl. A63f 1/18
U.S. Cl. 235—90 4 Claims

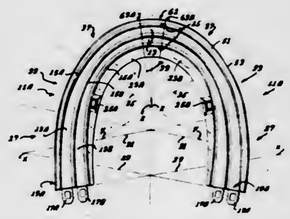


A cribbage board or like peg-board device has a layer of resilient material interposed between a lamina base and the perforated lamina to assist in preventing the pegs from sticking in the holes of the perforated lamina.

3,695,513
CURVE TRACK SYSTEM FOR TOY VEHICLES

William R. Baynes; Harvey W. LaBranche, both of Palos Verdes Peninsula, and George Soulakis, Pasadena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

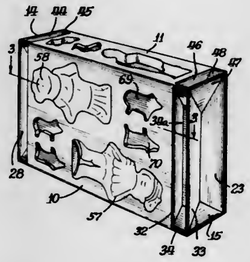
Filed Oct. 1, 1970, Ser. No. 77,159
U.S. Cl. 238—10 E 17 Claims



Curved elongated track sections including curved upper vehicle supporting face portions with spaced vehicle guiding flanges are described. The curved track sections are banked and have a successively changing radius of curvature for stablely changing the direction of travel of self-powered and freely rolling toy vehicles in a relatively small amount of space. Also described is a dual lane configuration and an

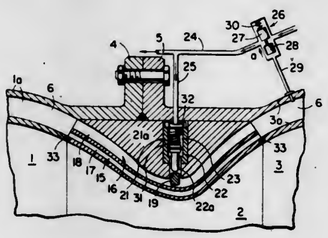
added curve segment feature which provides additional vehicle direction change – from 180° to 197°, for example.

3,695,514
SINGLE SHEET PLASTIC BOX
Joseph A. Mascetti, Jr., Geneva, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Nov. 20, 1970, Ser. No. 91,283
Int. Cl. B65d *1/00*
U.S. Cl. 229—2.5 **5 Claims**



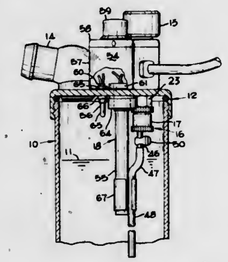
A box has two long sides, two short sides, and two ends and is molded from a single sheet of plastic. On the sides adjacent the ends are configurations which define a reentrant pocket on the exterior face, and a corresponding protuberance on the opposite face. When the blank is folded into the box these protuberances meet together to define the ends of the box. At the distal edges of the distal sides of the blank are flaps for securing the distal edges together when the blank is formed into a box. One flap can have molded buttons and the other flap mating molded sockets; or, alternatively, the flaps can be heat welded to each other. Where the blank is to be folded between the sides there are longitudinal grooves on the inner side to provide a hinge. On the face of the sides between the end configurations are a plurality of depressions which add rigidity to the sides. These depressions can be in a form to provide cut-outs or molds for children.

3,695,515
FLUID COOLED THRUST NOZZLE FOR A ROCKET
Karl Stockel, Ranhazweg 21, 8012 Ottobrunn, Germany
Division of Ser. No. 743,473, July 9, 1968, Pat. No. 3,605,412.
This application April 21, 1970, Ser. No. 48,703
Claims priority, application Germany, July 19, 1967, P 16 26 063.2
Int. Cl. B64d *33/04*
U.S. Cl. 239—127.1 **5 Claims**



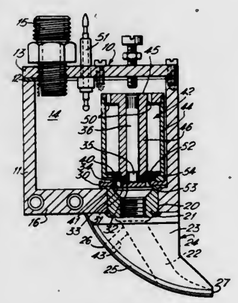
A fluid cooled combustion chamber for a rocket engine is composed of walls forming a longitudinally extending convergent-divergent thrust nozzle having a neck portion at its narrowest section. A radially inner row and a radially outer row of cooling ducts encircle the interior surface of the thrust nozzle at its neck portion with the ducts extending longitudinally into the convergent and divergent portions. The outlet end of the inner row of cooling ducts may be arranged to direct coolant fluid into the thrust nozzle with means providing a twist to the fluid as it enters the nozzle.

3,695,516
HEATED NEBULIZER SPRAY UNIT
Gerald L. Rogers, Ballwin, Mo., assignor to Stile-Craft Manufacturers, Inc., St. Louis, Mo.
Filed Nov. 19, 1970, Ser. No. 90,902
Int. Cl. B05b *1/24*
U.S. Cl. 239—135 **4 Claims**



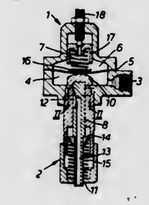
This spray unit includes a container and a closure cap. A nebulizer unit and a heater unit are attached to the closure cap and so arranged that the heater element and the aspirator tube of said units are located side-by-side and project into the container parallel to each other. The heater element and the aspirator tube are clamped together so that the column of liquid passing up the aspirator tube is subjected to localized, rapid heating.

3,695,517
APPARATUS FOR CONTROLLING A FLOW OF A PRESSURE FLUID
Thomas Henry Chapman, Sanderstead, England, assignor to Gunson's Sortex Limited, London, England
Filed Jan. 11, 1971, Ser. No. 105,566
Claims priority, application Great Britain, Feb. 11, 1970, 6,550/70
Int. Cl. B05b *1/30*
U.S. Cl. 239—583 **8 Claims**



The invention concerns apparatus for controlling a flow of pressure fluid, the apparatus comprising a chamber having an inlet and an outlet through which the pressure fluid may respectively be supplied to and may issue from the interior of the chamber, a valve member which is movable between open and closed positions in which a flow of pressure fluid from the interior of the chamber to the outlet is respectively permitted and prevented, the valve member having first and second oppositely disposed pressure surfaces which, in the said closed position, are respectively subjected to the pressures prevailing in the interior of the chamber and in the outlet, whereby the valve member is pressure urged towards the closed position, and means for respectively moving the valve member into the open position, the outlet having at least one vent therein to reduce the pressure acting on the said second pressure surface, whereby to assist closing movement of the valve member, a portion only of the fluid in the outlet passing to said vent.

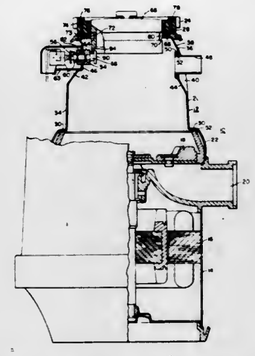
3,695,518
FUEL INJECTOR DEVICES
Harold Ernest Jackson, Plympton St. Mary, England, assignor to Petrol Injection Limited, Plymouth, Devon, England
Filed Nov. 27, 1970, Ser. No. 92,987
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **9 Claims**



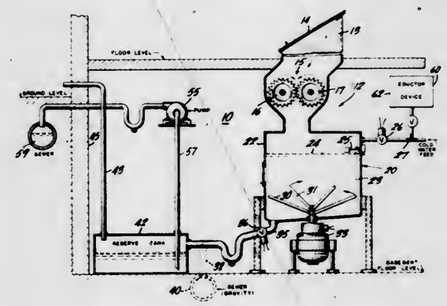
A fuel injector device in which the fuel flow path through the device includes a variable area metering orifice, the area of the orifice being adjusted in response to changes in fuel pressure at the injector device inlet. The orifice is formed by cooperation between one valve member and a fuel port in another valve member. The valve members are movable relative to each other and the fuel port extends in the direction of the relative movement and has a cross-sectional area which varies in that direction. A pressure-responsive member, for example a resilient diaphragm, senses the fuel pressure at the injector device inlet and causes relative movement between the valve members in response to changes in that pressure, to vary the area of the metering orifice. The fuel port may have a triangular cross-section, with both the base and height of the triangle increasing together along the fuel port in the direction of relative movement, whereby changes in the area of the metering orifice bear a "square law" relationship to changes in the inlet fuel pressure of the injector device.

3,695,519
HOPPER ASSEMBLY FOR BATCH DISPOSER
Jack E. Bebinger, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 6, 1970, Ser. No. 87,429
Int. Cl. B02c *18/42*
U.S. Cl. 241—46 B **6 Claims**

The invention provides a batch feed type food waste disposer having a unitized assembly of its hopper and hopper flange, with these two elements shaped so as to be formed from a non-corrosive sheet material such as stainless steel and rolled together or welded at their abutting edges to form a water-tight joint which includes, at the periphery of the joint, a cooperating opening for the stopper-switch that actuates the food waste disposer to an active comminuting condition.



3,695,520
PERMANENT GARBAGE DISPOSAL APPARATUS FOR DISPOSAL OF LARGE VOLUMES OF GARBAGE
Thomas G. Mauro, 1315 Kearney Ave., Bronx, N.Y.
Filed Nov. 6, 1970, Ser. No. 87,538
Int. Cl. B02c *4/08, 13/18*
U.S. Cl. 241—43 **3 Claims**

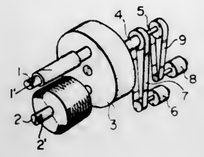


A garbage disposal apparatus permanently installed in a building for grinding bulk garbage in large quantities and blending the ground garbage in a water bath and disposing of the blended mixture in a sewer line. The apparatus is provided with a bulk garbage feed and grinder device and a permanently installed blender having sets of large blades driven counter-rotationally in a water bath for blending garbage discharged from the feed and grinder device to the blender.

3,695,521
APPARATUS AND METHOD OF AUTOMATIC SPINDLE EXCHANGE ON A TEXTILE MACHINE
Soichi Torii, and Haruyoshi Ishikawa, both of Kyoto-shi, Japan, assignors to Torii Winding Machine Co., Ltd., Kyoto, Japan
Filed Jan. 20, 1970, Ser. No. 4,243
Claims priority, application Japan, Sept. 5, 1969, 44/69996
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **4 Claims**

An apparatus and method for automatically carrying out substitution of a bare bobbin spindle for a fully packaged bob-

bin spindle through rotation of two spindles arranged in pairs around a common axis and transfer of a processing yarn from the old to the new bobbin while maintaining a continuous supply of the yarn as soon as the fully packaged condition is sensed, wherein both spindles are alternately braked after completion of this motion.



3,695,522

DRIVER DRUM IN YARN WINDING MACHINES

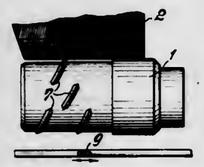
Albert Tho Pesch, Monchengladbach, and Wilhelm Maassen, Monchengladbach-Hardt, both of Germany, assignors to Walter Reiners, Monchengladbach, Germany

Continuation of Ser. No. 747,421, July 11, 1968, abandoned, which is a continuation-in-part of Ser. No. 475,442, July 28, 1965, abandoned. This application Sept. 15, 1970, Ser. No. 72,517

Claims priority, application Germany, July 11, 1968, R 38492

Int. Cl. B65h *54/42, 54/48*

U.S. Cl. 242—18 DD **3 Claims**



Rotatable driver drum in a yarn winding machine for producing conical yarn packages has a single peripheral surface portion drivingly engageable with the yarn package, the drum having a recess located at one end thereof, and at least one elongated protuberance extending from the recess and engageable with the yarn package, the elongated protuberance cooperating with the peripheral surface portion for driving the yarn package.

3,695,523

STRAND HANDLING APPARATUS

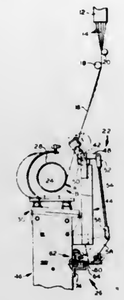
Samuel Richard Genson, Weston; Svend Aage Petersen, and Robert Lee Currier, both of Toledo, all of Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,807

Int. Cl. B65h *54/02, 54/28*

U.S. Cl. 242—18 R **4 Claims**

A strand guide for strand winding machines arranged on a mounting movable away from the winding mandrel at a rate corresponding to the strand buildup whereby the angle of introduction of the strand to the wound package is maintained constant to avoid changes in winding tension. The strand guide mount is moved as a timed function in one example through the medium of a fluid drive including a precision control check.



3,695,524

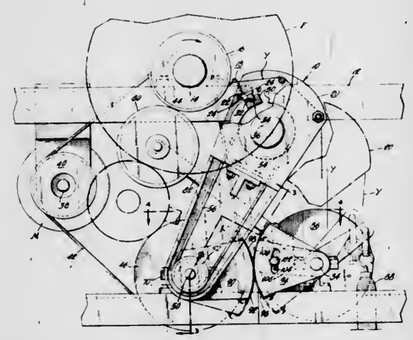
YARN WINDING APPARATUS

Ingham S. Roberts, 412 Harrison St., Ridley Park, Pa.

Filed Nov. 12, 1970, Ser. No. 88,875

Int. Cl. B65h *54/08*

U.S. Cl. 242—18 R **13 Claims**



For use in yarn winding apparatus having takeup means for forming yarn into a package and traversing means for reciprocating the yarn to form helical wrappings on the package, a structural arrangement whereby the traverse assembly is pivoted on a first axis for movement of the traverse guide path toward and away from the package spindle and whereby a roller bail is mounted on a frame which is pivoted on a second axis for movement of the roller bail toward and away from the package spindle and whereby a segment attached to the traverse assembly and having an arcuate face centered on said first axis is operatively associated with a segment attached to the roller bail frame and having an arcuate face centered on said second axis so that movement of the roller bail away from the package spindle during package formation produces equal movement of the traverse guide path away from the package spindle to maintain a preset clearance between the guide path and the surface of the package.

3,695,525

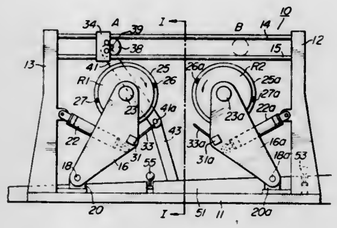
APPARATUS FOR CONTINUOUSLY WINDING UP A LINEAR PRODUCT SUCH AS WIRE

Yasuhiko Otani, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 17, 1970, Ser. No. 20,230

Int. Cl. B65h *54/02*

U.S. Cl. 242—25 A **7 Claims**



A continuous wire take-up apparatus having pair of rockable reel supporting frames. A disc is mounted on each pair of reel supporting frames adjacent one end of the reel for rotation therewith. One of the pairs of the frames is rocked down when the associated reel becomes substantially full of the wire. At the same time, a wire guiding sheave is moved axially of the reels to the above of the discs. A wire shifting rod is moved between the reels axially thereof to shift the wire beyond the discs. Claws project from the discs to engage the thus shifted wire and arrest it on the discs. The rotation of the discs cuts the wire between the discs. The cut end of the wire arrested on the disc for the empty reel causes a further length of the wire to be wound up thereon.

3,695,526

APPARATUS FOR CONTINUOUSLY WINDING UP LINEAR PRODUCTS SUCH AS WIRE

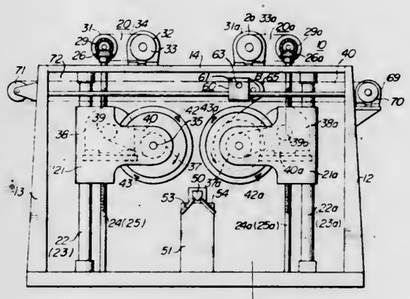
Yasuhiko Otani, Kobe, and Yoshio Ikegami, Nishinomiya, both of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 16, 1970, Ser. No. 19,679

Claims priority, application Japan, March 22, 1969, 44/25688

Int. Cl. B65h *54/00*

U.S. Cl. 242—25 A **13 Claims**



A wire take-up apparatus having a pair of reel supporting frames operable in such a manner that one of the frames is moved to its lowermost position when a reel thereon is substantially full of the wire while the other frame is moved upwardly with an empty reel thereon. A wire guiding sheeve is shifted to its axially endmost position above one ends of the reels when one of the reels becomes full of the wire and a wire shifting bar is simultaneously moved axially of the reels for causing the wire to be engaged and arrested on the empty reel by a claw on a rotatable disc provided adjacent said one end of the empty reel whereby the wire is transferred from the full reel to the empty one.

3,695,527

REEL SWITCHING DEVICE FOR A DOUBLE-REEL PARALLEL-SHAFT TYPE CONTINUOUS WINDING MACHINE

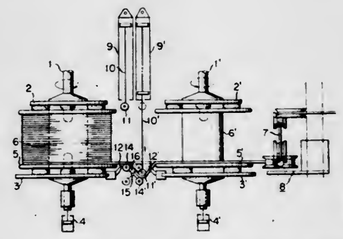
Sakae Kobayashi, Tokyo; Hiroshi Hori, Yokoham, and Toshio Matsunaga, Yokosuka, all of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Nov. 16, 1970, Ser. No. 89,947

Claims priority, application Japan, Nov. 25, 1969, 44/94522

Int. Cl. B65h *54/00*

U.S. Cl. 242—25 A **3 Claims**



In a reel switching device for a double-reel parallel-shaft type continuous winding machine a set of pushing rollers and a set of guide rollers are provided to operate in association with the movement of a traverser to guide a wire from a fully wound reel to an empty reel at the position of one of its flanges, whereby simultaneously with the movement of the traverser, one of the pushing rollers is actuated to push the wire outwardly over the flange of the empty reel and one of the guide rollers is actuated to push the wire inwardly away from the flange of the fully wound reel.

3,695,528

SNAGGER FOR A CONTINUOUS WINDING MACHINE

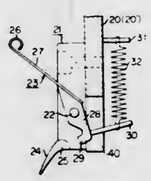
Toshio Taki, Yokohama, and Toshio Matsunaga, Yokosuka, both of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Nov. 16, 1970, Ser. No. 89,946

Claims priority, application Japan, Nov. 25, 1969, 44/112039

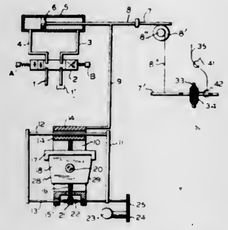
Int. Cl. B65w *54/00*

U.S. Cl. 242—25 A **5 Claims**



A snagger comprises a stationary element adapted to be secured to the periphery of the snagger plate of the winding machine and a movable element pivotally secured to the stationary element. Both elements are provided with a curved surface to cooperate with each other to form a wedge to grasp a wire between them when the movable element is placed in an operative position by a reel mounted to the snagger plate.

3,695,529
TRAVERSE DEVICE IN PACKAGE WINDING APPARATUS
Kikuo Hori; Hiroshi Yamada, and Hiroshi Itoh, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan
Filed April 8, 1970, Ser. No. 26,581
Claims priority, application Japan, Apr. 12, 1969, 44/28528; Apr. 23, 1969, 44/37354
Int. Cl. B65h *54/36*
U.S. Cl. 242—26.3 **6 Claims**



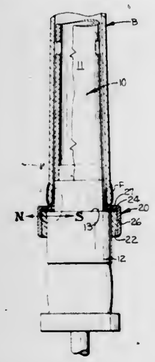
Traverse device for a package winding apparatus whereby the mode of yarn traversing motions in the traversing mechanism of the package winding apparatus is controlled by the relative motion, interlocked with said traversing mechanism, of a pattern member and a photo-electric system, and the mode of yarn traversing motion and consequently the build-up of a package is accurately controlled to a desired shape.

3,695,530
Patent Not Issued For This Number

ERRATUM

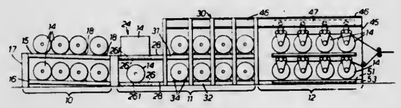
For Class 242—46 see:
Patent No. 3,695,561

3,695,531
TEXTILE BOBBIN AND SPINDLE ASSEMBLY HAVING A MAGNETIC BOBBIN SEATER
Alvin C. Whitehead, Atlanta, Ga., assignor to Spring Mills, Inc., Fort Mills, S.C.
Filed Nov. 19, 1970, Ser. No. 91,029
Int. Cl. B65h *75/30*
U.S. Cl. 242—46.21 **2 Claims**



In a textile bobbin and spindle assembly for rotating to effect winding or other processing of yarn on a bobbin, the combination of a spindle for receiving a hollow bobbin thereon and having a bobbin receiving upper portion and a lower portion of greater diameter than the bobbin and the upper portion for defining a generally flat seating surface extending perpendicular to the longitudinal axis of the spindle at the juncture of the upper and lower portions thereof, and a magnetic bobbin seater positioned on the spindle at the seating surface for rotation with the spindle and for receiving the lower metallic end of the bobbin. The magnetic bobbin seater comprises a magnetized member and a non-magnetized member so arranged for establishing a magnetic circuit which passes through the magnetized member, partially through the spindle and through the lower portion of the bobbin for magnetically seating the bobbin on the spindle for yarn processing and which permits easy breaking of the magnetic seating for easy doffing of the bobbin from the spindle.

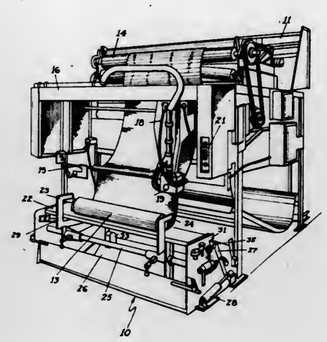
3,695,532
APPARATUS FOR PREPARING REELS OF SHEET MATERIAL FOR UNWINDING
Horst Karl Lindstaedt, London, England, assignor to Mason Scott Thrissell Engineering Limited
Filed July 2, 1970, Ser. No. 51,837
Claims priority, application Great Britain, July 5, 1969, 33,987/69
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **4 Claims**



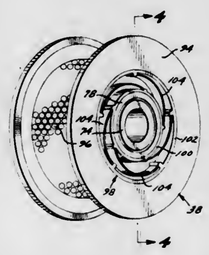
Apparatus for preparing large and heavy reels of sheet material such as paper or thin board for a subsequent unwinding operation, comprise a stand for supporting a reel and allowing the reel to rotate about a horizontal axis and means to allow pivotal movement of the stand about a vertical axis, so that damaged outer layers of the reel can be removed and the reel can be turned through 180° if necessary to ensure that the direction of web pull-off is correct. The stand preferably also comprises weighing means for indicating the weight of the reel and of any waste material removed from it. A jack and rollers may be used to allow the reel to be rotated. A support unit with an individual elevating jack may be used to raise each reel to the correct height for engagement with supporting means on a transporter which carries the prepared reels to an unwind station.

3,695,533
CRADLE
Albert T. Shedyak, Spencer, Mass., assignor to Curtis & Marble Machine Company, Worcester, Mass.
Filed Nov. 5, 1970, Ser. No. 87,087
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **6 Claims**

This invention has to do with a cradle for use with rolls of flexible material, such as fabric, and, more particularly, to a cradle for use in the textile industry for use at the entrance to a scray, the cradle having a table which is tiltable to cause the roll to fall into a trough, after which a guide bar is moved into contact with the material leaving the roll.

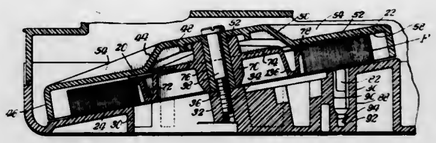


3,695,534
FILM FEED MECHANISM
John C. Treise, 10436 Ruffner Ave., Granada Hills, Calif.
Filed March 9, 1970, Ser. No. 17,376
Int. Cl. B65h *75/00*
U.S. Cl. 242—55.01 **2 Claims**



In a film transport system employed for automatic motion picture film processing, film feed spools or rollers which are spring mounted to the hub portions thereof so as to be deflectable in response to increased film tension into peripheral driving engagement with a resilient overdrive roller. The film feed spools have a central, tubular core or hub adapted to be mounted on a shaft, an inner roller body ball-bearing mounted on the hub for free rolling movement, and an outer roller body against which the film rides which is supported on the inner roller body by annular spring units comprising at least five relatively short and stiff arcuate leaf springs disposed in regularly spaced relationship, the leaf springs being arranged for radial deflection relative to the axis of the roller to permit shifting of the roller into engagement with the resilient drive roller, but being resistant to torsional displacement or "windup" so that when film tension is relaxed, release from the drive roller is substantially instantaneous, involving substantially only translational movement of the outer feed roller body relative to the drive roller and not requiring a combination of both rotational unwinding movement and translational movement.

3,695,535
FILM FEEDING DEVICE
George J. Zahradnik, Wheaton, and Mel E. Maurer, Glenview, both of Ill., assignors to Elco Corporation, Jenkintown, Pa.
Filed May 27, 1970, Ser. No. 40,820
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **3 Claims**

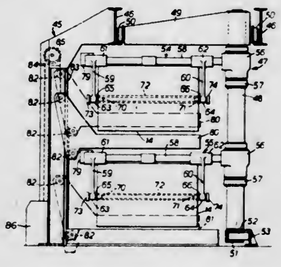


A film cartridge designed to carry on endless film which, when inserted in a movie projector, provides a film drive system for feeding the inner ends of the film's spiral roll into a film guide passageway that directs the film towards a film gate. The film drive system frictionally drives the spiral roll by using a disc member having an annular rim portion about which the spiral roll of film is disposed and having two spaced stationary support surfaces to loosely contain the spiral roll. The inner end of the spiral roll is pushed off the annular rim portion and pushed towards the film gate by driving the disc member at a constant speed such that the film is fed at a greater rate than can be accommodated by the film picker mechanism of the movie projector to provide intermittently a compensated loop of film in the film guide passageway and thereby provide a constant supply of film for the film picker mechanism as it advances the film frame by frame to the film gate.

3,695,536
Patent Not Issued For This Number

3,695,537
Patent Not Issued For This Number

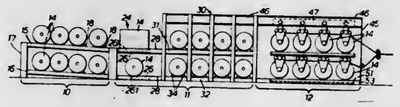
3,695,538
MEANS FOR UNWINDING REELS OF SHEET MATERIAL
Horst Karl Lindstaedt, London, England, assignor to Masson Scott Thrissell Engineering Limited
Filed July 2, 1970, Ser. No. 51,838
Claims priority, application Great Britain, July 5, 1969, 33,985/69
Int. Cl. B65h *19/30*
U.S. Cl. 242—58.6 **7 Claims**



An unwind stand, for unwinding webs of sheet materials such as paper or thin board from large and heavy reels for subsequent processing, wherein a pair of shaftless heads are ar-

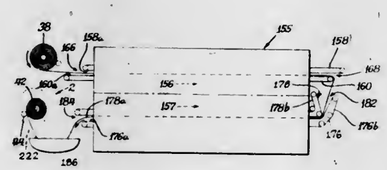
ranged to engage opposite ends of a reel, both heads being connected to a common alignment arm so as to be capable of swinging or pivoting about an axis transverse to the length of the alignment arm, for adjusting the reel to allow the web to run true. The alignment arm is supported as a cantilever from one end and is mounted on a transporter capable of moving in a direction parallel to the direction of web run-off between an unwind station and a reel preparation station. Two or more pairs of shaftless heads are mounted on the transporter so that a full set of prepared reels can be moved simultaneously into the unwind station.

3,695,539
MULTIPLE REEL UNWIND STANDS
Horst Karl Lindstaedt, London, England, assignor to Masson Scott Thrissell Engineering Limited
Filed July 2, 1970, Ser. No. 51,839
Claims priority, application Great Britain, July 5, 1969, 33,986/69
Int. Cl. B65h *19/30*
U.S. Cl. 242—58.6 **5 Claims**



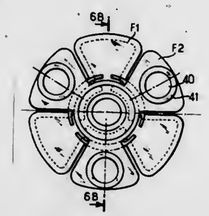
An unwind stand, for unwinding multiple webs of sheet materials such as paper or thin board simultaneously from a plurality of large and heavy reels, in which the reels are mounted for the unwinding operation in a single set of pairs of shaftless heads which correspond in number to the reels, and a transporter or conveyor is provided for moving the reels from a reel preparation station to the unwind station. The shaftless heads may be stationarily mounted on the transporter or conveyor, which moves in the direction of web run-off, e.g., back and forth or in a closed loop. The shaftless heads are preferably mounted on cantilever supports pivotable about a vertical axis for squaring adjustment of the reels.

3,695,540
LAUNDRY TOWEL ROLLING MEANS
Paulette Grantham, 1830 White Oak Drive, Menlo Park, Calif.
Continuation-in-part of Ser. No. 510,596, Nov. 30, 1965, abandoned. This application Oct. 19, 1970, Ser. No. 81,671
Int. Cl. B65h *17/20, 75/24*
U.S. Cl. 242—65 **7 Claims**



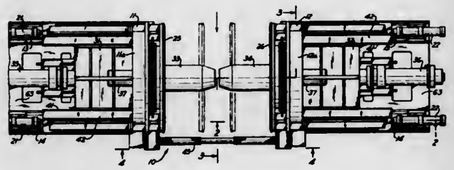
Means for rolling a continuous or long towel, after being laundered, including a roller or core on which the towel is rolled, and driving or pulling means engaging the towel on the roller and working it into a roll, including a laterally shiftable unit having side plates engaging the sides of the towel and the ends of the roll, the unit shifting so as to accommodate the inherent weaving or lateral shifting movements of the towel and thereby to form an even-end roll.

3,695,541
APPARATUS FOR THE RECEIVING, STORING AND RESTITUTION OF RECORDING TAPES
Elsie Chang Lee, Phoenix, Ariz., assignor to Societe Industrielle Bull-General Electric (Societe anonyme), Paris, France
Filed March 18, 1970, Ser. No. 20,569
Int. Cl. B65h *75/14, 75/28*
U.S. Cl. 242—71.8 **1 Claim**



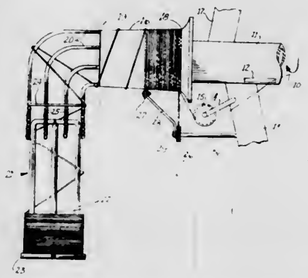
A recording tape receiving, storing, and supplying device for use with a computer terminal having a tape punch and a tape reader, wherein a first tape storage reel is disposed to receive recorded tape emerging from either the punch or the reader, and a second tape storage reel is disposed to receive andinvert tape from the first reel and to supply recorded ed tape to the reader, andwherein each of these reels includes a hub for grasping one end of the tape stored thereon and a pair of flanges, each of the flanges consisting of a plurality of blades spaced apart around the periphery of the hub, the blades of one flange of each reel being provided with recesses to receive the tip of a finger for revolving the reel.

3,695,542
STRIP COIL FEEDING DEVICE
Albert Theodore Briggs, Tarentum, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Aug. 10, 1970, Ser. No. 62,476
Int. Cl. B21c *47/16*
U.S. Cl. 242—78.6 **9 Claims**



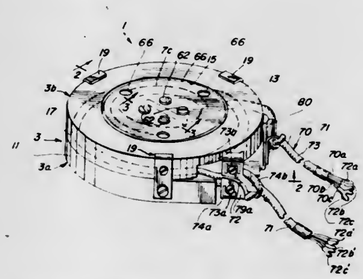
The disclosure of this invention relates to a combined uncoiler-coil device employed in the rolling mill industry for feeding coils of metalic strip to the mill. The uncoiler-coil box disclosed includes a pair of cooperative but independently moving opposed mandrels and disks, the mandrels passing into the opening of tight coils for rotatably supporting and feeding them to the mill, while the disks are caused to engage the sides of loose coils to restrain the coils while being fed to the mill by a pair of driven rotatable rollers arranged between the disks and below the coil. The device also includes a single equalizing screw shaft mechanization for the disks which controls the opposed movement thereof.

3,695,543
MEANS FOR REGULATING THE ESCAPE OF WIRE FROM A DEAD BLOCK ONTO AN ACCUMULATOR
Marvin L. Stark, Lexington, Mo., assignor to Armco Steel Corporation, Middletown, Ohio
Filed March 16, 1970, Ser. No. 19,846
Int. Cl. B21c *47/10*
U.S. Cl. 242—82 **2 Claims**



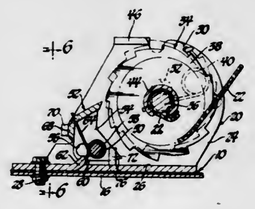
A wire receiving mechanism receives wire from any line wherein it is desired to accumulate such wire in coils for any further purpose. The wire so received may come from a wire drawing machine, a high carbon finished spring wire apparatus, a continuous wire coating set-up or any other source. The wire may be accumulated in neat coils for delivery to the customer, for storage, for transfer to another operating station or for any other reason. The receiving mechanism comprises a rotating shaft which carries with it a flyer arm to which is mounted a roller system for placing successive rings of wire onto a non-rotating, dead block. A pay-off assembly is mounted on and rotates with the flyer arm. The assembly may include a roller which contacts and rides on the surface of the dead block, contact being maintained by use of a torsion spring. As the flyer rotates through one revolution, thereby placing one ring of wire on the dead block, the pay-off roller also makes one revolution, thereby allowing one ring of wire to pay off the dead block onto the apparatus which accumulates such wire in neat coils.

3,695,544
RETRACTABLE CORD REEL ASSEMBLY
William J. Morey, Sr., Elmhurst, Ill., assignor to Morey Corporation, Downers Grove, Ill.
Filed Oct. 5, 1970, Ser. No. 78,055
Int. Cl. B65h *75/48*
U.S. Cl. 242—107 R **7 Claims**



A reel body rotatably supported on a frame and spring-urged into a given reference position includes a main peripheral cord storage compartment having an axial and radial extent each equal to a number of cord thicknesses, a cord take-up compartment positioned alongside said main cord storage compartment and having an axial extent of only about one cord thickness. The main cord storage and cord take-up compartments respectively having hub portions around which different portions of the same cord are wound initially in the same direction, the ub portion of the main cord storage compartment being positioned substantially outwardly of the hub portion of the cord take-up compartment. The cord wound around the hub portion of the main cord storage compartment has an inner winding connected to the first or inner winding on the hub portion of the cord take-up compartment which joins a number of windings which is only a fraction of the number of windings in the main cord storage compartment.

3,695,545
SEAT BELT RETRACTOR
Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 10, 1970, Ser. No. 53,740
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **5 Claims**



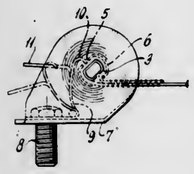
A seat belt retractor includes a U-shaped support having generally vertically disposed closed end slots in the side walls thereof. A reel having ratchet toothed end plates and a shaft mounts a seat belt. The ends of the shaft are received within the slots of the support walls and torsion springs bias the shaft ends into engagement with the lower ends of the slots. The reel is spring biased in a belt retracting direction. A fixed shaft extends between the side walls of the support. A pawl includes closed end slots in the side walls thereof receiving the shaft for various modes of movement of the pawl relative to the shaft. In one mode of movement the pawl shifts bodily with respect to the shaft. In a mode of movement, the pawl pivots with respect to the shaft about an axis normal to the shaft axis and located adjacent one end of the pawl. In a third mode of movement, the pawl rotates about the axis of the fixed shaft. A spring normally locates the pawl in spaced parallel relationship to the toothed end plates of the reel and with the slots in the pawl side walls having one end thereof in engagement with the fixed shaft. When belt accleration or movement of the belt in an extending direction exceeds a predetermined rate, the reel moves bodily upwardly with respect to the support as the shaft ends move upwardly within the slots of the support walls and the end plates of the reel engage cooperating teeth on the support walls to block further rotation of the reel in a belt extending direction. When the pawl is subjected to an acceleration pulse of predetermined amplitude and time directed laterally thereof and generally normal to the direction of bodily movement of the reel, the pawl shifts bodily relative to the fixed shaft and engages the end plates of the reel. A slight rotation of the reel in belt extending direction rotates the pawl about the fixed shaft until the side walls of the pawl engage the support. The pawl then provides a fulcrum for movement of the reel bodily upwardly so that the end plates of the reel engage the cooperating teeth on the support walls. When the pawl is subjected to an acceleration pulse of predetermined amplitude and time directed generally longitudinally thereof, the pawl pivots about one end thereof with respect to the fixed shaft so that the other end of the pawl en-

gages the ratchet plates of the reel and provides a fulcrum for movement of the reel bodily upwardly after slight rotation of the reel in a belt extending direction rotates the pawl to engage the side plate of the other end of the pawl with the support.

3,695,546
SAFETY BELT RETRACTOR REEL LOCKING MECHANISM

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1970, Ser. No. 94,375
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **7 Claims**



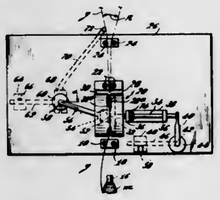
A spring rewound safety belt retraction reel is releasably locked in a belt retracted condition, to relieve the spring rewinding tension on the extended belt, by a swingable latching member which is spring urged into engagement with a reel mounted abutment when the belt is partially or fully withdrawn. In one form the locking abutment is covered by the wound belt and is exposed for locking engagement when the belt is fully withdrawn and in another form the abutment is located on the reel flange and the latching member is held by the wound belt out of locking engagement with the abutment until the belt is at least partially withdrawn. A selectively manipulated member is connected to the locking member to facilitate its release.

3,695,547
Patent Not Issued For This Number

3,695,548
TENSIONING DEVICE FOR YARN PACKAGING MACHINERY

Samuel L. Abbott, Wilton, N.H., assignor to Abbotts Machine Co., Inc., Wilton, N.H.

Filed Jan. 8, 1970, Ser. No. 1,423
Int. Cl. B65h *59/24*
U.S. Cl. 242—150 **2 Claims**

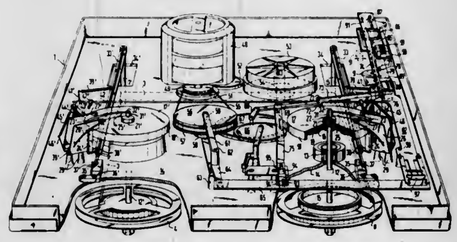


In a yarn packaging machine tension discs between which the yarn travels on its way to be wound to form a yarn package, one at least of the discs being supported for movement toward the other to enable varying the pressure which may be applied to the running yarn, thereby to increase or decrease the frictional resistance to movement between the discs, a lever arm connected to the movable disc adapted to support an adjustable weight by means of which the pressure of the one disc against the other may be adjusted and a second lever arm connected thereto, said second lever arm having a part situated in the path of the running yarn operable by a lateral displacement of the running yarn to increase or decrease the pressure applied by the weight.

3,695,549
TAPE TENSION CONTROL MEANS WITH SENSING LEVERS, PARTICULARLY FOR MAGNETIC SOUND RECORDERS

Wolf Freiherr Von Hornstein, Ottostrasse 4a, Starnberg; Hubert O. Richt, Buchenweg 4, Soecking, and Albert Liebl, Am Muhleich 12, Starnberg, all of Germany

Filed April 7, 1970, Ser. No. 26,299
Claims priority, application Germany, Aug. 24, 1967, P 15 49 041.2
Int. Cl. B65h *25/04, 25/22*; G11b *15/46*
U.S. Cl. 242—189 **10 Claims**

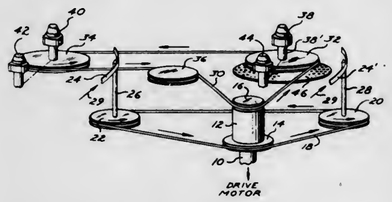


A drive for a tape recorder by means of which a recording tape can be fed from a storage reel to a take-up reel or vice versa at different speeds corresponding to the operating functions 'normal operation', 'rapid wind' and 'rapid re-wind.' The tape runs over two tension sensers associated with the storage and take-up reels. The sensers set the tension in the tape to different values for the different operating functions, the tension being changed by springs associated with the sensers. The movement of the sensers is transmitted to variable friction clutches associated with the take-up and storage plates.

3,695,550
TAPE DRIVE SHUT-OFF

Thomas M. Lennox, Mentor, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed May 20, 1970, Ser. No. 39,013
Int. Cl. B65h *25/32, 25/10*; G11b *15/54*
U.S. Cl. 242—191 **5 Claims**

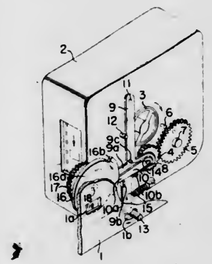


A tape drive shut-off mechanism and circuit for use in a tape recorder-reproducer system is described as including, in cooperation with means for reproducing the audio information from a master tape onto a "slave" tape, a mechanism for sensing the completion of the winding of the master tape from its feed spindle to its take-up spindle. Also disclosed is a means for acquiring a signal from the aforementioned mechanism in response to the completion of winding and the use of such a signal in terminating the operation of a common drive motor for both the master tape and the "slave" tape. In this way, the "slave" tape winding is terminated in response to the termination of winding of the master tape.

3,695,551
FILM WINDING DEVICE FOR MOTION-PICTURE CAMERAS

Yozo Iida, and Hideyo Nozawa, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 11, 1970, Ser. No. 71,484
Claims priority, application Japan, Sept. 16, 1969, 44/72748
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—194 **10 Claims**

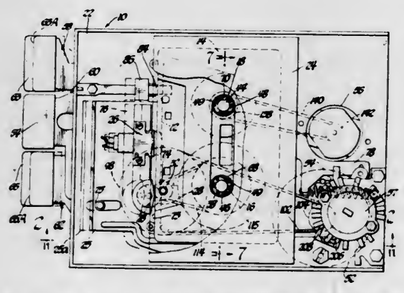


A film winding device for motion-picture cameras has a film counter and a signal means located in the film counter corresponding to the graduated scales of the film counter to signal when only a small length of the film from the leading or trailing ends of the film, respectively, is contained on the take-up or supply chambers in the magazine. Power transmission means is provided for transmitting the rotation of the drive means to the take-up spool in the film magazine and includes means for stopping rotation of the take-up spool which is responsive to the signal means.

3,695,552
TAPE TRANSPORT ASSEMBLY FOR CASSETTE TAPE PLAYERS HAVING FAST FORWARD AND FAST REVERSE MODES

James H. Guyton, and Arthur R. Lammers, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 7, 1971, Ser. No. 150,571
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—198 **3 Claims**

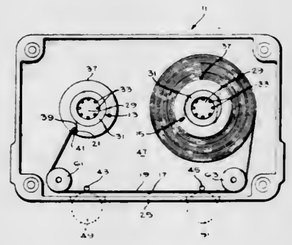


A tape transport assembly for cassette tape players having a capstan drive and also takeup and supply spindles for receiving a pair of tape carrying reels contained in a cassette cartridge wherein both the takeup and supply spindles are axially shiftable between forward and reverse drive positions. In the forward drive position, the takeup spindle drives one of the reels in a tape play direction during both a tape play mode and a fast forward mode. In the reverse drive position, the supply spindle drives the other reel in an opposite direction to effect a fast reverse mode. Forward and reverse drive sources rotate the spindles in opposite directions. A tape advance slide assembly is manually operable to initiate the fast forward mode by releasing the tape from engagement with the capstan drive. A tape reverse slide assembly is manually operable to initiate the fast reverse mode by concurrently shifting the spindles from the forward drive position to the reverse drive position, releasing the tape from the capstan drive, and activating the reverse drive source.

3,695,553
CASSETTE TAPE ASSEMBLY

Thomas David Everett, Lombard, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 24, 1970, Ser. No. 66,402
Int. Cl. G11b *5/72, 23/10*
U.S. Cl. 242—199 **2 Claims**



By adhering a reinforcing strip to each end of a magnetic tape and attaching these reinforced tape ends to supply and take-up reels in a cassette housing, the use of special leaders and the splicing thereof to the tape ends has been eliminated. The reinforced tape ends are of sufficient length to extend from its associated reel, when emptied, across the front of the cassette housing to a capstan receiving opening to reinforce the tape against breakage due to wear by the capstan and preferably to and about the outer convolution of tape on the other reel to aid in withstanding tensile forces.

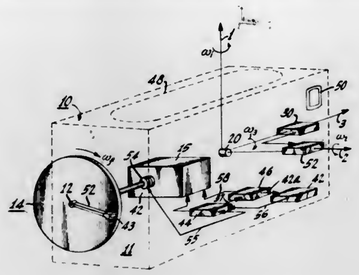
3,695,554
NUTATION DAMPING IN DUAL-SPIN SPACECRAFT

Kevin John Phillips, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,450
Int. Cl. B64c
U.S. Cl. 244—15 A **11 Claims**

A dual-spin spacecraft having a de-spun platform is arranged to vary the torque on the stabilizing wheel by means of a motor whose speed is varied in accordance with a signal representing nutation motion to damp or attenuate the nuta-

tion motion substantially to zero very rapidly. By arranging the mass distribution such that significant cross products of inertia



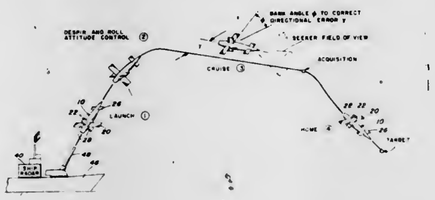
exist, the effects of such products are utilized in a closed loop control system to effect the desired attenuation or damping.

3,695,555

GUN-LAUNCHED GLIDE VEHICLE WITH A MID-COURSE AND TERMINAL GUIDANCE CONTROL SYSTEM

William R. Chadwick, Dukinfield, England, assignor to The United States of America as represented by the Secretary of the Navy

Filed June 12, 1970, Ser. No. 45,736
Int. Cl. F41g *7/14, 7/06;* **F11g** *9/00*
U.S. Cl. 244—3.14 **9 Claims**



The system comprises an eight-inch full-bore glide vehicle having retractable aerodynamic lifting surfaces which increase range performance and accuracy. The glide vehicle can be fired to a maximum range of 135 miles without guidance or to a range of 100 miles with accurate terminal guidance. An infrared horizon scanner provides feedback information to small bang-bang servo-operated roll-tabs for vehicle despin and roll-attitude stabilization. Target acquisition occurs from the glide path with ship-based radar providing information for mid-course lateral guidance control. A forward observer illuminates the target with laser energy and the vehicle homes in on the target using bang-bang monoplane control.

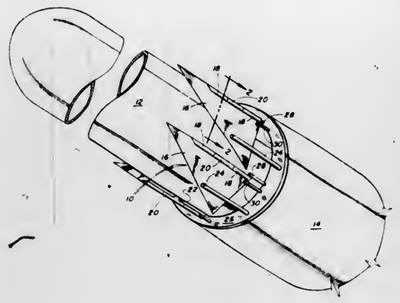
3,695,556

HINGED STABILITY AND CONTROL FIN ASSEMBLY

Harry J. Gauzza, Silver Spring, and Eugene V. Horanoff, Clarksville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 3, 1970, Ser. No. 60,475
Int. Cl. F42b *13/24, 15/16*
U.S. Cl. 244—3.29 **3 Claims**

A hinged fin assembly for an ordnance vehicle wherein each fin is pivotally mounted for rotational movement about two mutually perpendicular axes. Upon separation of a booster motor from the vehicle, a fin holding mechanism disengages from the fins to permit resilient biasing springs to pivot the fins about axes parallel to the longitudinal axis of the vehicle from a folded position to an erected position and to be locked in the



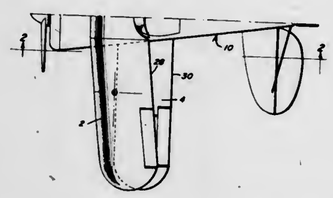
erected position. When erected, the fins are controllably rotated about axes perpendicular to the vehicle's longitudinal axis to directionally control the flight of the vehicle.

3,695,557

BIPLANE CONSTRUCTION

Curtis H. Pitts, P.O. Box 548, Homestead, Fla.

Filed Aug. 28, 1970, Ser. No. 67,847
Int. Cl. B64c *3/06*
U.S. Cl. 244—45 R **4 Claims**



The design of the wings of a biplane wherein the inverted flight characteristics are more nearly equal to normal flight characteristics by use of essentially symmetrical airfoils which have substantially the same relationships between lift and angle of attack inverted as they do right side up. This invention achieves desired stability characteristics in the pitching mode both inverted and right side up by properly designing an essentially symmetrical airfoil forward wing having different aerodynamic characteristics from the essentially symmetrical airfoil rearward wing thereby attaining the desirable flight characteristics.

3,695,558

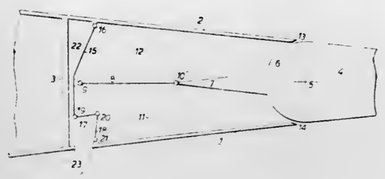
AIRCRAFT

David Milwain McRae, and Andrew Douglas Watt, both of Hatfield, England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

Filed May 18, 1970, Ser. No. 37,972
Int. Cl. B64c *13/16, 9/30*
U.S. Cl. 244—83 D **8 Claims**

An arrangement for the aerodynamic balancing of aircraft control surfaces in which the control surface has forward extension into a chamber within the airframe. This forward extension is coupled to a diaphragm which spans the chamber in a fore-and-aft direction and is in substantial sealing relationship with the fore-and-aft walls of the chamber. The

diaphragm moves laterally with movement of the control surface, and the chamber is thereby effectively partitioned into



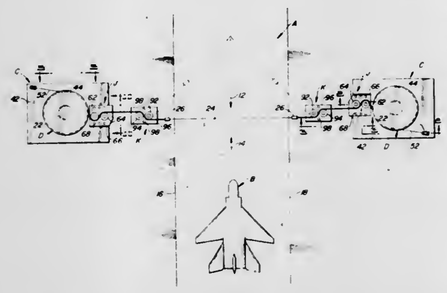
two variable volume spaces to which are admitted the respective external pressures at opposite sides of the control surface.

3,695,559

AIRCRAFT ARRESTING APPARATUS

Robert W. Cruger, Springfield, and Floyd G. Silver, Wallingford, both of Pa., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed May 20, 1970, Ser. No. 39,047
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **12 Claims**



An aircraft arresting apparatus includes a pair of rotatable reels mounted on vertical axes on opposite sides of an aircraft runway. Flat elongated fabric tapes are wound upon the reels in layer-by-layer convolutions. The free ends of the tapes are connected with a pendant which is stretched in tension across the runway. Lead-off sheave means are located closely adjacent each reel and the tapes are guided over the lead-off sheave means. Each lead-off sheave means is arranged so that each tape is in contact with a lead-off sheave means over a sufficient angle of wrap to reflect any lateral or vertical tape wave motions and prevent them from going past the lead-off sheave means toward the reels.

3,695,560

Patent Not Issued For This Number

3,695,561

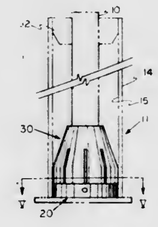
TEXTILE PACKAGE ADAPTOR

Bobby L. Pitts, Route 1, Wellford, S.C.

Filed Oct. 19, 1970, Ser. No. 81,921
Int. Cl. B65h *75/30, 79/00*
U.S. Cl. 242—46.4 **12 Claims**

An adaptor for a textile package is disclosed. The present adaptor is positioned over a spindle on a textile machine and receives a tube around which textile yarn is to wrapped. Initially, the tube is very lightly held by the adaptor, but when the spindle begins to rotate, the adaptor is driven and a portion thereof expands against the inside wall of the tube to hold same tightly and to expand the tube very slightly. At the appropriate time for doffing or removal of the tube from the spindle, the spindle ceases to rotate and the adaptor assumes or is easily adjustable to a non-driving position whereby the fit between the adaptor and the tube is again only very slight so as to permit the tube to be easily removed therefrom.

A preferred form of the adaptor is a collar that is received



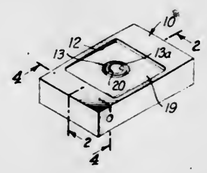
around and secured to the spindle. The collar has an intermediate portion thereof in the shape of a multi-sided figure such as, for example, an octagon and a top portion thereof that defines a lip. A second component of the preferred adaptor is a package engaging member which resides over the collar and snap fits thereto at the lip. The package engaging member has a series of slots therearound, the number of slots corresponding to the number of edges on the multi-sided figure and defining fingers therebetween. The fingers between the slots are resilient and expand to tightly engage the tube therearound when contact by the driving edges of the collar.

3,695,562

ADJUSTABLE SUPPORT

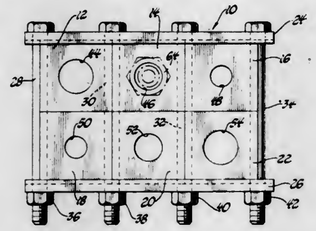
Cecil A. Daniel, 2006 Calle Cantara, El Cajon, Calif.

Filed Aug. 26, 1970, Ser. No. 66,993
Int. Cl. F16m *5/00*
U.S. Cl. 248—23 **8 Claims**



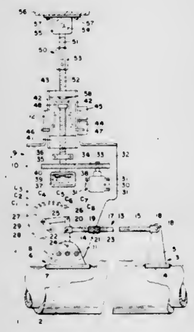
An adjustable support for mounting machinery or equipment. A housing has a ball enclosure with an open top, over which a support platform is mounted for universal tilting movement on a central post. The platform is supported by a large number of loose balls held within the ball enclosure. The load being supported exerts downward pressure on the platform to shift the balls and permit the platform to adjust to any desired angle. The height of the platform is adjusted by adding to or subtracting from the supply of balls within the ball enclosure by screw threaded operation of pusher blocks in a pair of ball storage chambers connected to the corners of the ball enclosure.

3,695,563
HYDRAULIC LINE FITTING SUPPORT APPARATUS
Theodore D. Evans, 15134 29 Mile Road, Romeo, Mich.
Filed June 1, 1970, Ser. No. 42,201
Int. Cl. F16l 5/00
U.S. Cl. 248—56 **1 Claim**



Apparatus for securing hydraulic lines and the like including bulkhead plates which receive standard hydraulic fittings, channel members for supporting a two-dimensional array of plates and bolts for interconnecting the channel members and plates into a rigid assembly.

3,695,564
THERMO-ELECTROMECHANICAL MULTI-FUNCTION SUPPORT DEVICE
Leonard S. Suozzo, 366 Maple Hill Drive, Hackensack, N.J.
Continuation-in-part of Ser. No. 807,048, March 13, 1969, Pat. No. 3,539,136. This application Aug. 17, 1970, Ser. No. 64,320
Int. Cl. F16l 3/20
U.S. Cl. 248—59 **3 Claims**



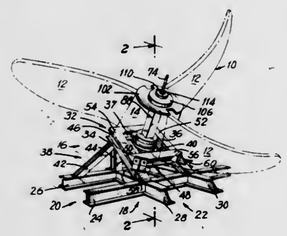
A device for use with piping or other equipment that is subject to changes in position due to variations in its thermal condition. The device comprises actuating means, which is secured to the piping at spaced first and second locations and is movable relative to the piping in response and in direct proportion to expansion or contraction resulting from said variations in thermal condition, and coupling means. The actuating means includes a rigid member connected at one end to the piping at the first location and a lever pivotally connected to the piping at the second location and to the other end of the rigid member. The coupling means is variable in effective length and is connected at one end to the lever and at its other end to a stationary support. The coupling means includes an electric motor which is cooperatively associated with the lever. The parts are so constructed and arranged that increments of movement of the actuating means cause corresponding variations in the effective length of the coupling means.

3,695,565
PLASTIC GARBAGE BAG HOLDER AND SEALER
John Hodges, 556 Hamilton Road, London, Ontario, Canada
Filed Oct. 12, 1970, Ser. No. 80,065
Int. Cl. B65b 67/12
U.S. Cl. 248—97 **2 Claims**



A holder for plastic garbage bags is disclosed. The holder is capable of constantly holding the mouth of the bag in "open" position by its resistance friction but capable of permitting the bag to be disposed such that the mouth appears to be displayed in open configuration even though the mouth remains open.

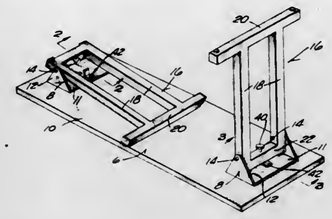
3,695,566
PROPELLER STAND
Alfred Lee, Cedar Grove, N.J., assignor to Main Trucking & Rigging Co., Inc., Paterson, N.J.
Filed March 25, 1970, Ser. No. 22,484
Int. Cl. B60p 7/08
U.S. Cl. 248—119 R **9 Claims**



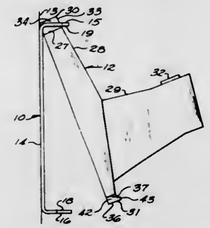
A propeller stand for hauling ship and airplane propellers. The stand includes a horizontally disposed base member with an inclined platform attached thereto. A draw bar is threaded through a selected spacer assembly, selected in accordance with the dimensions of the propeller and the propeller is loaded onto the platform and spacer assembly. The draw bar is then firmly secured in position with a bearing plate abutting the propeller firmly holding it in position.

3,695,567
FOLDING TABLE LEG
James A. Weagle, Tupelo, Mich., assignor to Krueger Metal Products, Inc., Green Bay, Wis.
Filed Oct. 21, 1970, Ser. No. 82,745
Int. Cl. A17b 3/00; F16m 11/38
U.S. Cl. 248—188.6 **5 Claims**

Each of two folding leg standards constituting supports for a table is pivoted to its own bracket on the under side of the table and folds between upright and generally horizontal positions. A stop connected to the bracket defines the upright position while at the same time a dog slidable in a portion of the standard becomes engaged with a detent to hold the standard erect. When it is desired to fold the standard against the table, a single handle connected with the dog retracts the dog against pressure of a spring to release it from the detent.

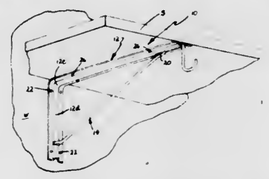


3,695,568
WALL BRACKET BASE ASSEMBLY
Herbert C. Hogrebe, St. Louis, Mo., assignor to Dazor Manufacturing Corp., St. Louis, Mo.
Filed July 24, 1970, Ser. No. 58,105
Int. Cl. F16m 13/00
U.S. Cl. 248—223 **5 Claims**



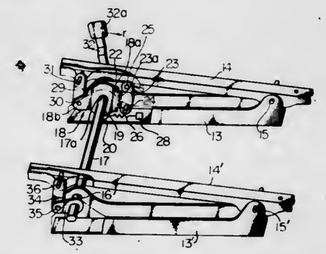
The assembly includes an adaptor for attachment to a wall and a base detachably mounted to the adaptor. The adaptor is channel-shaped and includes upper and lower flanges each having an aperture. The base includes an upper end received within the upper aperture and a lower end seated upon the lower flange adjacent the lower aperture. The base also includes upper and lower shoulder portions engageable with associated abutment portions on the adaptor to preclude rotation of the base relative to the adaptor in directions both parallel and transverse to the wall.

3,695,569
BRACKET CONSTRUCTION
Ronald C. Pullan, Grand Rapids, Mich., assignor to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.
Filed May 14, 1970, Ser. No. 37,180
Int. Cl. A47b 96/06
U.S. Cl. 248—235 **2 Claims**



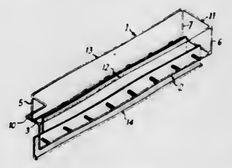
A versatile, collapsible shelf bracket having a separable compressive diagonal brace interconnected with the bracket in a special manner providing lateral stability and enabling the brace to form a special added end support, the load placed thereon being supported on the bracket upper leg.

3,695,570
ADJUSTABLE RECLINING SEAT
Hideo Ishida, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan; Fuji Kiko Company, and Ikedo Bussan Company, Limited, Yokohama, Japan
Filed Oct. 19, 1970, Ser. No. 81,806
Claims priority, application Japan, Oct. 22, 1969, 44/100103
Int. Cl. B60n 1/02
U.S. Cl. 248—397 **3 Claims**



An adjustable reclining seat for major use in a motor vehicle, comprising a seat structure and support structure carrying the seat structure, the support structure including a latch mechanism which is adapted to finely adjust the tilting angle of the seat structure through manipulation of a lever which is manually operated.

3,695,571
BRICKLAYING DEVICES
David Preiskel, 27 Aylestone Ave., London, N.W. 6, England
Filed June 16, 1970, Ser. No. 46,788
Claims priority, application Great Britain, June 18, 1969, 30,935/69
Int. Cl. B29c 11/00
U.S. Cl. 249—53 **13 Claims**

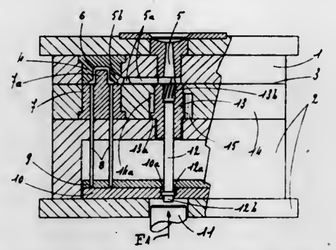


A device for accurately laying bricks comprising a frame positionable on a previously laid course of bricks or a wall base, a maintained in position by means of clamping devices. The device may be used for building single or cavity walls. Means are provided on the device for ensuring accurate positioning of the bricks in the horizontal and vertical planes, and for pointing the horizontal and vertical joints between the bricks.

3,695,572
AUTOMATIC MOLD FOR PARTS OF PLASTIC MATERIAL
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed July 22, 1970, Ser. No. 57,135
Claims priority, application France, July 29, 1969, 6925993
Int. Cl. B28b 7/10
U.S. Cl. 249—68 **3 Claims**

A mold for objects of plastic material in which a main injection passage has separate passages extending radially

therefrom and which open into the mold cavities, and in which a mechanical element sweeps the space located above the ejectors when the mold is open so that the molded parts which may have remained attached to the ejectors are caused to fall, the said mechanical sweeping element being constituted by the sprue formed by the material which fills the injection and

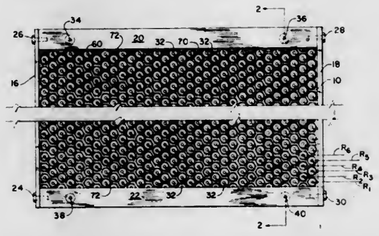


which are formed by the material filling lateral passages located substantially in the joint plane of the mold and provided with radial extensions, while the means for ejecting the sprue are so arranged as to impart a movement of rotation about the axis of the sprue to the assembly which is formed by the sprue and the sprue arms.

3,695,573
CASTING MOLD FOR FABRICATING A FLEXIBLE PRODUCT

James E. Huffaker, Kingsport, Tenn.; Ernest L. Myers, Hilton, Va.; Brian D. Dillon, and Cecil W. Dolen, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,106
Int. Cl. B28b *7/16*
U.S. Cl. 249—142 **4 Claims**



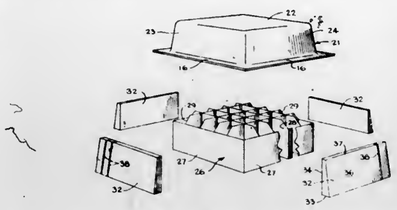
A mold for casting solidifiable materials and method of fabricating a continuous belt from molded sections is disclosed. In the mold, a plurality of apertures are provided in a special pattern, each of which is adapted to receive a core member. The core members are easily removable. Removable end plates are provided which enable the pattern to be continued to the very edge of the mold. A continuous belt mold is fabricated by butting and connecting edges of molded sections.

3,695,574
CONCRETE PAN FORMS

J. Edson Charlier, 1231 Jersey St., Denver, Colo., and Elmer H. Schell, 3451 W. 94th St., Westminster, Colo.

Filed Sept. 9, 1970, Ser. No. 70,708
Int. Cl. B28b *7/28*
U.S. Cl. 249—175 **2 Claims**

A pan construction for concrete forming operations in which a mold formed and nestable skin or cover of pliable material that would otherwise be distorted by the weight of concrete being poured is maintained in place above form supports by a cellular core structure that may itself be shipped

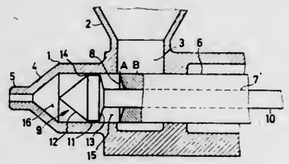


and handled in a compact relation. Wedge elements provide support for side walls of said pan cover. Core and pan removal are facilitated by use of materials having inherent or cooperative lubricity characteristics.

3,695,575
INJECTION MOLDING MACHINE HAVING A PLASTICIZING PLUNGER

Rudolf Martin Hauser, Zurich, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Zurich, Switzerland

Filed June 16, 1970, Ser. No. 46,787
Claims priority, application Switzerland, June 18, 1969, 9335/69
Int. Cl. B29f *3/02*
U.S. Cl. 259—185 **8 Claims**



An injection molding machine for processing plasticizable plastics material comprises an injection cylinder opening into an injection nozzle, and a plasticizing plunger movable in the injection cylinder towards and away from the injection nozzle. A constricted passage is provided between the plasticizing plunger and the internal wall of the injection cylinder. At the rear of the plasticizing plunger a filling plunger is provided in the injection cylinder and arranged to effect a pulsating reciprocatory movement in the injection cylinder in the range of a hopper discharge opening into the cylinder for supplying granular plastics material into the cylinder. The plasticizing plunger is provided with a plunger rod which is slidingly mounted in a coaxial bore of the filling plunger.

3,695,576
REINFORCED BOOT FOR SLURRY TYPE PINCH VALVE

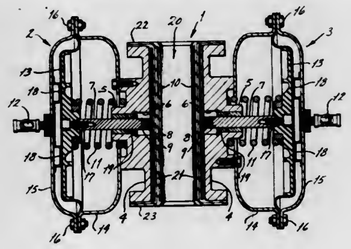
Robert R. Kane, Marshalltown, Iowa, and Charles J. Glaser, Jr., Lafayett Hill, Pa., assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Jan. 12, 1970, Ser. No. 2,076
Int. Cl. F16k *7/07*
U.S. Cl. 251—5 **8 Claims**

In a slurry type pinch valve for use in controlling the flow of materials, the valve is formed from various plies of a resilient composition, such as elastomer material, and embedded within the plies of said composition are one or more plies of fabric which contains reinforcing cords that are arranged approximately parallel within each ply, but which cords are free from contiguous contact with each other; at least one ply of

the fabric has cords maintained longitudinally of the valve, and the ends of said ply are turned approximately perpendicularly to provide for their integral embedment within the elastomeric formed flanges provided at each end of the valve. This valve may be used in conjunction with a pair of valve actuators that are disposed diametrically approximate the midpoint of the valve, so that each actuator is capable of simultaneously compressing the valve approximately half of its diameter to curtail flow of materials therethrough.

In the process of forming said valve, at least one ply of the

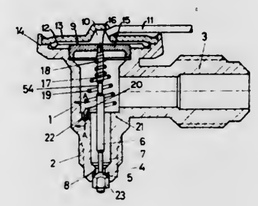


elastomeric composition is wound around a core, the ply of fabric having cords maintained longitudinally of the valve is subsequently wound around said first ply, and then additional plies of elastomeric composition and of fabric having cords aligned circumferentially of the valve may be wound around said core to complete the valve; the extended ends of the longitudinally corded fabric are turned for disposition intermediate a pair of elastomeric annuluses provided at each end of the valve, and then the entire fabricated valve is placed within a mold and heated to cure the valve into an integral unit.

3,695,577
VALVE, PARTICULARLY A THERMOSTATIC EXPANSION VALVE FOR REFRIGERATING EQUIPMENT

Hans Jorgen Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 16, 1970, Ser. No. 89,832
Claims priority, application Germany, Nov. 27, 1969, P 19 59 547.2
Int. Cl. F16k *31/145*
U.S. Cl. 251—61.4 **7 Claims**

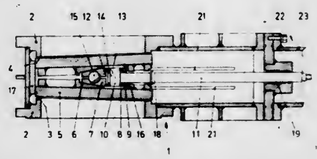


The invention relates to a thermostatic valve or the like of the type in which a spindle having a valve closure element at one end thereof is acted upon in one direction by a pressure responsive element and is biased in the other direction by a spring. The spindle is provided with screw threads and the spring which is conically shaped, has a coil portion complementary to and threadably engageable with the screw threads. The tension of the spring is adjusted by rotation of the spindle with a screwdriver or wrench depending on the type of tool engaging fitting the spindle is provided with at the lower end thereof.

3,695,578
GATE VALVE INCLUDING FLUID OPERATED LOCKING DEVICE

Ludwig Walther, Niederau; Matthias Esser, Duren, and Helmut Zilken, Derichsweiler, all of Germany, assignors to Firma Zimmermann & Jansen GmbH, Duren, Germany

Filed May 19, 1970, Ser. No. 38,794
Claims priority, application Germany, May 22, 1969, G 69 20 611.7; Dec. 11, 1969, P 19 62 121.7
Int. Cl. F16k *3/14*
U.S. Cl. 251—94 **7 Claims**

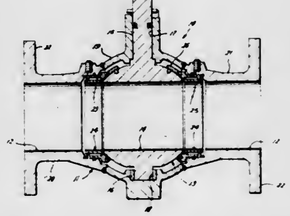


This invention relates to a gate valve and, more particularly, to fluid flow control apparatus having a sliding gate operated by a hydraulic actuator and an arresting mechanism for determining the limits of gate sliding motion.

3,695,579
VALVE

Herbert Allen, P.O. Box 1212, Houston, Tex.

Filed June 1, 1971, Ser. No. 148,698
Int. Cl. F16k *5/06*
U.S. Cl. 251—174 **8 Claims**



A valve having a bearing ring of low friction material between each seat and the flowway through the valve body. Rings of elastomeric material seal between the bearing ring and each of the seat and flowway.

3,695,580
Patent Not Issued For This Number

3,695,581
Patent Not Issued For This Number

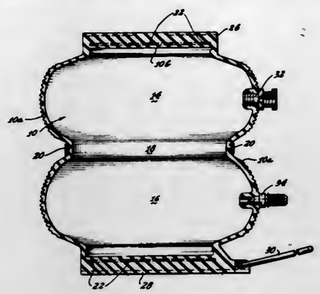
3,695,582
PNEUMATIC JACK FOR MOTOR VEHICLES

Robert A. Clay, Costa Mesa, Calif., assignor to Max R. Wheeler, Costa Mesa, Calif., a part interest

Filed Nov. 2, 1970, Ser. No. 86,035
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 HP **4 Claims**

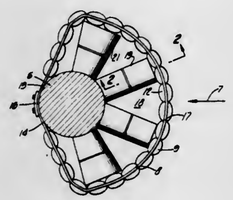
An improved lifting jack for motor vehicles and other uses, is provided which uses fluid pressure for operating power, and

which is used to raise a wheel of a motor vehicle up off the ground when the need arises to change the wheel or the tire of the vehicle. The vehicle jack of the invention is advantageous in that it incorporates a hollow flexible plastic body unit which



has a closed end integral construction so as to be easy to mold, and so that air leakage problems are obviated. The jack to be described is also constructed to be compressible to a minimal height when not in use.

3,695,583
SHOCK ABSORBING STRUCTURE
Grant W. Walker; Duane B. Ford; Lester N. Meinzer, all of Sacramento, and Reid S. Larsen, Fair Oaks, all of Calif., assignors to Dynamics Research and Manufacturing, Inc.
Filed Sept. 4, 1970, Ser. No. 69,872
Int. Cl. E01f *15/00*
U.S. Cl. 256—1 **11 Claims**

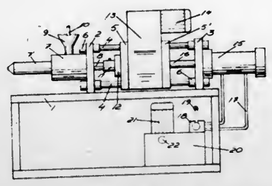


For use with an upright abutment, a belt at its ends is mounted on the abutment and has its intermediate portion disposed with the belt web vertical and cantilevered out from and spaced away from the abutment. Frangible energy absorbers are disposed between the belt and the abutment and are supported thereon. Vertical cleats reinforce the belt web. In large installations, vertical diaphragm walls or belts are used between adjacent energy absorbers. Anchor cables may pass through and engage the diaphragms or belts.

3,695,584
Patent Not Issued For This Number

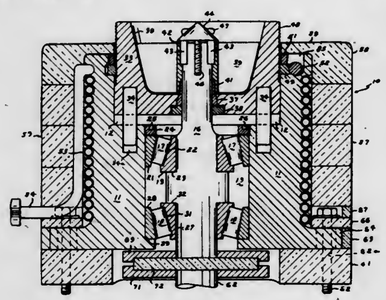
3,695,585
MIXING AND PLASTICIZING MACHINE AND PROCESS FOR OPERATING SAID MACHINE
Henrik Nielander, Bahnhofstrasse 94, CH-8001 Zurich, Switzerland
Filed May 19, 1970, Ser. No. 38,678
Claims priority, application Switzerland, May 23, 1969, 7776/69
Int. Cl. B01f *5/06*
U.S. Cl. 259—5 **17 Claims**

A mixing and plasticizing machine which comprises at least one mixing and plasticizing cylinder together with at least one screw cylinder and at least one axially movable mixing and plasticizing rotor with passages. The shaft of said mixing and plasticizing rotor is connected to a rotary drive outside the



mixing and plasticizing cylinder. At least one axially movable, rotary screw is coaxially connected to said mixing and plasticizing rotor.

3,695,586
MIXING APPARATUS
Warren R. Griffin, 4949 Concordia Circle, Dayton, Ohio
Filed Nov. 5, 1970, Ser. No. 87,218
Int. Cl. B01f *7/16*
U.S. Cl. 259—24 **14 Claims**

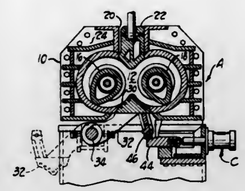


A mixing apparatus is provided that comprises a metal body having a central, vertical opening extending throughout its length. The opening has a circular horizontal cross section with the upper portion of the opening having a larger diameter than its lower portion. Positioned in the opening and extending throughout its length is a vertical, rotatable shaft. There is a mixing cup disposed in the upper, enlarged position of the opening, the cup having a hole in its bottom through which the shaft extends and in which the shaft is free to rotate. Attached to the shaft within the cup is a spiral rotor. The mixing cup is not free to rotate, but means are provided for raising and lowering the cup relative to the rotor. A heat exchange means associated with the body makes it possible to either heat or cool the mixing cup. A motor operatively connected to the lower end of the shaft provides means for rotating the shaft and the attached rotor. A glass dome having gas and liquid ports and an airtight means for introducing solids can be attached to the upper end of the mixing cup. The mixing apparatus is particularly suitable for use in mixing small quantities of elastomers and compounding ingredients under controlled conditions.

3,695,587
MATERIAL MIXER
Robert Frank De Marco, Mentor, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio
Filed June 18, 1971, Ser. No. 154,407
Int. Cl. B01f *7/08*
U.S. Cl. 259—41 **7 Claims**

A plastic mixer of the internal or closed mixing chamber-type having a bladed rotor in the mixing chamber and a

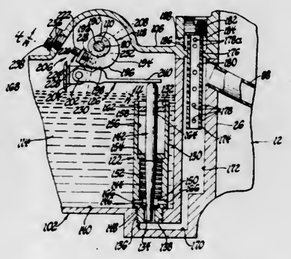
material discharge swinging door at the bottom of the mixing chamber, which door is fixed to a shaft oscillatable by a vane-type hydraulic motor and secured in closed position by a slidable bolt reciprocated by a hydraulic motor. The material



discharge door is relatively heavy and is moved rapidly by the door operating vane-type motor. The hydraulic system for actuating the door includes a device for controlling deceleration of the door.

3,695,588
Patent Not Issued For This Number

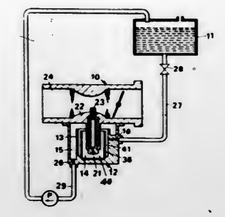
3,695,589
AIR VALVE CARBURETOR
Herbert T. Lamore, Detroit, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed March 2, 1970, Ser. No. 15,427
Int. Cl. F02m *11/02*
U.S. Cl. 261—23 A **7 Claims**



An air valve carburetor has an air valve secured to an air valve shaft for pivotal rotation therewith; a pair of fuel metering valve assemblies are respectively situated between the carburetor fuel bowl means and the respective fuel nozzles situated within first and second air induction passages formed in the carburetor body; and a pair of cam assemblies carried by the air valve shaft are adjustable with respect to each other and with respect to the air valve and air valve shaft; the cam assemblies are operatively connected to and effective for variably positioning valving members of the fuel metering valve assemblies in accordance with the positions assumed by the air valve during engine operation.

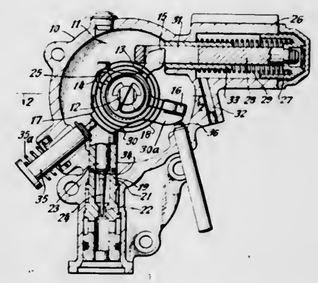
3,695,590
CARBURETER OF THE OVERFLOW TYPE
Yoshio Nishihara, 2-32, Hishinuma Kaigan, Kanagawa Pref., Chigasaki, Japan
Filed Nov. 12, 1970, Ser. No. 88,698
Claims priority, application Japan, June 8, 1970, 45/56368
Int. Cl. F02m *37/06*
U.S. Cl. 261—36 A **2 Claims**

A carbureter of the overflow type which is provided with a partition wall and/or a screen in a fuel chamber of the carbu-



reter for controlling the flow of fuel so as to stabilize a fuel layer in the vicinity of a fuel jet of the carbureter.

3,695,591
AUTOMATIC COLD STARTING DEVICES FOR INTERNAL COMBUSTION ENGINES
Charles Frederick Caisley, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, England
Filed March 23, 1970, Ser. No. 21,909
Int. Cl. F02m *1/04*
U.S. Cl. 261—39 D **6 Claims**

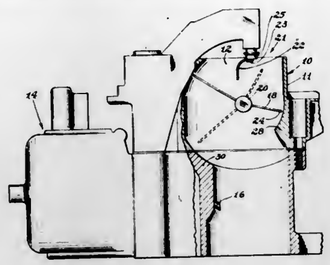


An automatic cold starting device for an internal combustion engine providing an auxiliary starting fuel supply which is a maximum for initial starting and decreases as the engine warms up, in which a fuel supply orifice is controlled by area-varying means the position of which is determined by a temperature sensitive device, a device responsive to actual starting of the engine holding the area varying means in a position to provide the maximum orifice area when the engine is not running and releasing the said means for control by the temperature sensitive device as soon as the engine starts. The temperature sensitive device may also control a fast-idle stop for the throttle valve of an associated carburetor providing the normal fuel/air mixture for the engine.

3,695,592
PLATE-TYPE AIR VALVE CARBURETOR
John Quatrano, Watkins Glen, N.Y., assignor to The Bendix Corporation
Filed June 8, 1970, Ser. No. 44,302
Int. Cl. F02m *7/22*
U.S. Cl. 261—50 A **2 Claims**

In a plate-type air valve carburetor having a variable direction air flow, air foil means are provided to compensate for the apparent change in direction of air flow from intermediate to high air flow conditions. As the plate-type air valve aligns itself with the direction of air flow, the upstream edge of the air valve plate encounters the low pressure region below

an air foil means and is rapidly snapped or drawn to its full open position. The air foil is positioned sufficiently upstream



of the air valve so that its net effect on the apparent direction of air flow is negligible.

3,695,593

CARBURETTOR CONTAINING POROUS MATERIAL E. G. FOAMED PLASTIC

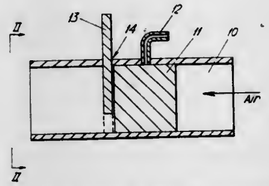
Harvey Ernest Postlethwaite, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,130

Claims priority, application Great Britain, Sept. 15, 1969, 45,290/69

Int. Cl. F02m 9/02

U.S. Cl. 261—96 **13 Claims**



A carburettor, particularly for use with a petrol driven internal combustion engine, having a porous member, means for supplying petrol to it via a metering orifice from a constant level reservoir, means whereby the vacuum produced by the engine draws air through the porous member to produce a petrol/air mixture and a shutter located close to the downstream face of the porous member and adapted to move across the said face so as to shield progressively a variable area thereof and thus concentrate the air flow through certain zones of the porous member. The carburettor should be cheaper to manufacture than conventional carburettors, with which its performance compares favorably.

3,695,594

METHOD AND APPARATUS FOR OPERATING A PUSHER TYPE FURNACE

Frans Hollander, Castricum, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.

Filed June 16, 1970, Ser. No. 46,650

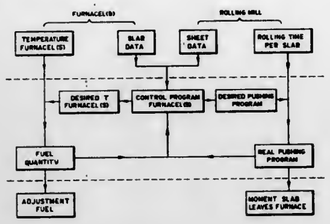
Claims priority, application Netherlands, Aug. 13, 1969, 6912326; Jan. 19, 1970, 7000722

Int. Cl. F27b 9/14

U.S. Cl. 263—6 R **10 Claims**

A method and an apparatus for operating a pusher type furnace for reheating metal slabs for rolling sheet or strip therefrom, including an advance control of fuel quantity supplied to different zones of the furnace and an advance control of the pushing speed through the furnace on the basis of information about the slabs, the final product to be obtained and the rolling practice, such information being processed during the rolling.

For a mill with cogging and finishing train the control data for the pushing speed are calculated from an optimum rolling and coiling program in and behind the finishing train, and the temperatures are calculated backwards from the required coiling temperature to the average slab temperature to derive furnace conditions from the calculated pushing speed and this



last temperature. This advance control of the furnace is, during heating and rolling, adjusted by real pushing speed and real temperature of the slabs in the furnace. Disturbances or delays in rolling entrain first a lower fuel supply, and after the delay is over, the heating, pushing and rolling are speeded up until the arrears are overcome.

3,695,595

METHOD AND MEANS FOR SINTERING MATERIALS, PARTICULARLY DOLOMITE AND MAGNESITE, IN A SHAFT FURNACE

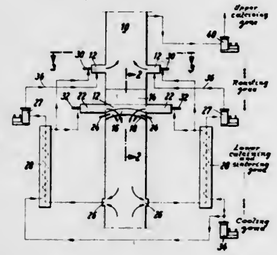
Karl Beckenbach, Meererbusch Hildegundisallee 33, Buderich/Dusseldorf, Germany

Filed Nov. 30, 1970, Ser. No. 93,578

Claims priority, application Germany, Dec. 10, 1969, P 19 61 789.1

Int. Cl. F27b 1/00

U.S. Cl. 263—29 **9 Claims**



A material, such as dolomite or magnesite, is sintered in an oil- or gas- fired shaft furnace by passing the material down the furnace through a calcining zone, a sintering zone and a cooling zone. The material is subjected to the action of gases flowing in counter-current to the material in the calcining zone, is sintered in the sintering zone by gases flowing in co-current, and is cooled in the cooling zone by gases flowing in counter-current. The exhaust gases are discharged from the lower end of the sintering zone while cooling air discharged from the upper end of the cooling zone is extracted from the furnace and is reintroduced therein together with fuel at the lower end of the calcining zone to provide the gases required to calcine the material. A fuel gas-air mixture containing substantially no exhaust gas is introduced into the upper end of the sintering zone and, depending on whether the fuel gas-air mixture contains an excess of oxygen or fuel, additional fuel or air is introduced into the material in the sintering zone so as to increase the combustion therein and heat the calcined material to the sintering temperature.

3,695,596

Patent Not Issued For This Number

3,695,597

FURNACE FOR HEAT TREATING OBJECTS UNDER PRESSURE

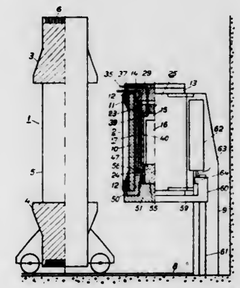
Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 866,885, Oct. 16, 1969, abandoned. This application Sept. 1, 1970, Ser. No. 68,665

Claims priority, application Sweden, Oct. 24, 1968, 14368/68

Int. Cl. C21d 1/00

U.S. Cl. 266—2 R **14 Claims**



In manufacturing sintered bodies, a compacted charge of powder forming a billet is enclosed in a sealed casing of soft metal such as steel from which the air has been evacuated. The casing and powder are subjected to pressure at high temperature in a furnace chamber to sinter the powder. Before its introduction into the chamber, the charge is heated outside the furnace to treating temperature. The charge is inserted from below into the furnace, after which the bottom opening of the furnace is closed and pressure medium is introduced. The furnace has an insulating sheath within the furnace chamber depending from the top of the chamber and terminating near its bottom. The material of the casing is so chosen that there will be substantially no interchange of material especially of carbon, with the material of the compacted billet.

3,695,598

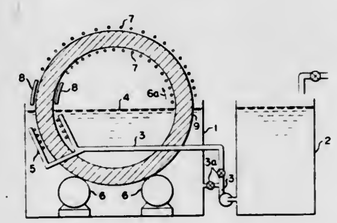
METHOD AND APPARATUS FOR QUENCHING A TUBULAR SHAPED STRUCTURE

Akira Ujue, No. 7-4, Tsukimiyamahon-machi 1-chome, Sumaku, Kobe-shi, Japan

Division of Ser. No. 716,646, March 27, 1968, Pat. No. 3,556,877. This application May 6, 1970, Ser. No. 47,925

Int. Cl. C21d 1/66

U.S. Cl. 266—4 A **3 Claims**



Apparatus for continuously quenching a thick-walled tubular structure having electromagnetic induction heating means above a quench tank wherein the workpiece is rotated through the heating and quenching means.

3,695,599

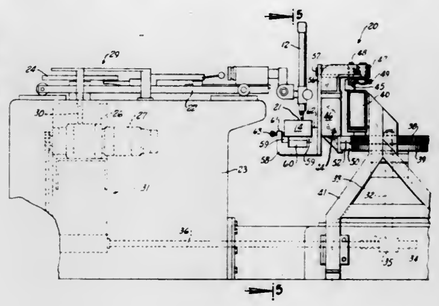
MACHINE FOR FLAME CUTTING GEAR RACKS

Glenway Maxon, Jr., and William H. B. Wright, III, both of 3129 W. Mill Road, Milwaukee, Wis.

Continuation-in-part of Ser. No. 843,725, July 22, 1969, abandoned. This application March 6, 1970, Ser. No. 17,126

Int. Cl. B23k 5/00, 7/00

U.S. Cl. 266—23 K **11 Claims**



The flame of a cutting torch is passed through a central longitudinal zone of an elongated blank so that the kerf forms two rack sections with substantially identical teeth thereon. Rack sections with such flame cut teeth are secured together in side-by-side relationship, with their teeth in endwise register, to form a rack exceeding the thickness of the blanks from which the rack sections are cut. Before flame cutting of the teeth is commenced, thin slices are flame cut from opposite faces of the blank which are to become the backs of the rack sections, to prevent warping of the flame cut rack sections along their lengths. The machine from which the rack sections are cut is provided with a carriage to support a blank for lengthwise movement through a zone in which the torch is moved back and forth crosswise of the path of blank motion. Blank supporting means on the carriage permits free lengthwise expansion of the blank toward that end thereof which is first moved into the cutting zone, as the blank becomes heated by the flame of the torch, but precludes expansion of the blank toward its opposite end.

3,695,600

APPARATUS FOR FLAME SCARFING THE SURFACES OF CRUDE BLOCKS, BILLETS, INGOTS AND SIMILAR WORKPIECES

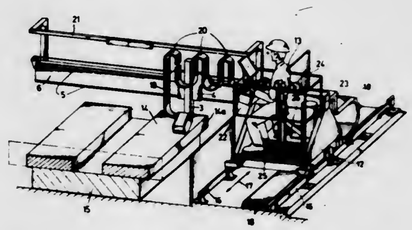
Gerhard Munch, Frankfurt am Main, and Albert Jager, Rommelhausen, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Sept. 4, 1970, Ser. No. 69,821

Claims priority, application Germany, Oct. 18, 1969, P 19 47 284.5

Int. Cl. B23k 7/06

U.S. Cl. 266—23 H **7 Claims**



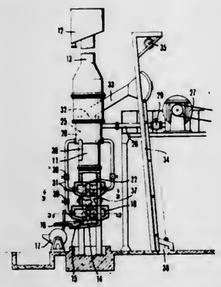
An apparatus for flame scarfing the surfaces of crude blocks, billets, ingots and like workpieces, consisting of an

operating carriage movable in guides and, a jib arm secured on the operating carriage and extending over the workpieces which are to be flame scarfed, carrying a vertically and horizontally adjustable scarfing torch assembly, having a torch head mounted for rotation about an axis coaxial with the direction of feed of the torch.

3,695,601
CUPOLA

Kazuo Okuda, No. 249, Aza Kamitahara, Shijonawate, and Syozo Kagimoto, No. 286-13, Nishiboshima, Minoo, both of Japan

Filed June 2, 1971, Ser. No. 149,170
Int. Cl. C21b *11/02*
U.S. Cl. 266—25 **2 Claims**

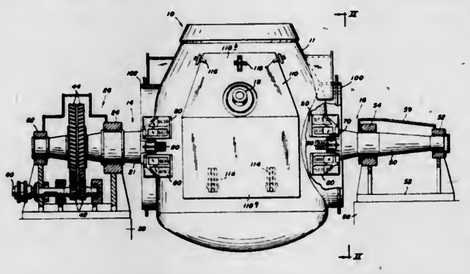


A cupola for melting pig iron or steel scrap. The cupola has a belly having a tapping hole at the lower portion thereof, a plurality of more than two spiral combustion chambers provided outside of belly burners. The burners use creosote oil as fuel and direct flame into these combustion chambers. The combustion chambers are provided with tuyeres for blowing flame from the burners into the belly, and the space under the belly is filled with a large number of block-shaped elements of refractory material having a high degree of refractoriness.

3,695,602
METAL CONVERTING FURNACE APPARATUS

Ernst A. Mevissen, Robinson Township, Allegheny County, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1970, Ser. No. 65,651
Int. Cl. C21c *5/42*
U.S. Cl. 266—36 P **25 Claims**

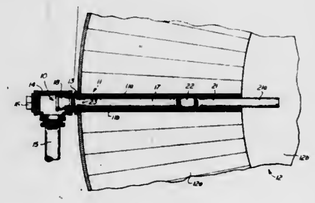


The combination of a metal converting furnace and a pair of diametrically opposed support assemblies mounted thereon is disclosed. Each of the support assemblies includes brackets mounted directly on the outer surface of the furnace and arranged to define a central pocket and slots extending radially outwardly from the pocket. A shaft has a hub formed on the inner end thereof and is shaped and sized to fit within the pocket, and lugs extending radially outwardly from the hub and shaped and sized to be received in the slots. The slots and lugs are shaped and sized to permit a reasonable amount of misalignment therebetween whereby mating of the shaft to the brackets is in the nature of a flexible connection. A heat shield is mounted on the outer surface of the furnace with the shield surrounding the tap spout of the furnace and enclosing an area around the spout. The shield serves as a heat sink for the heat radiated from molten metal poured into a ladle. Finally, the metal shell of the furnace is thickened in the area surrounding the tap spout. The thickened wall serves to resist distortion due to the thermal expansion concentrated in the area of the wall where the molten metal flows during tap off.

3,695,603
REPLACEABLE INSERT FOR TUYERE PIPES OF METAL-REFINING FURNACES

George A. Walk, and Clifford V. Jones, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,283
Int. Cl. F27k *5/16*
U.S. Cl. 266—41 **3 Claims**



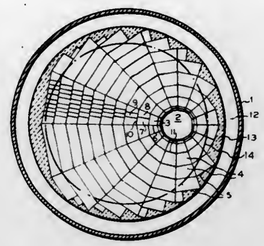
An assembly of insert piping for a tuyere pipe of a metal refining furnace comprises a length of pipe flared outwardly at one end to approximately the internal diameter of the tuyere pipe of the furnace, so as to fit snugly therein. The length of pipe is provided at its flared end with means for connection with a pipe puller and has its other end provided with means for temporary connection with a length of injection pipe that is adapted to project several inches into the furnace. The flared end of the flared pipe is preferably a bell-end adapter pipe fitting into which a pipe puller can be screwed, and the opposite end of such flared pipe is preferably connected to the injection pipe by means of a sleeve pipe coupling. The flared length of pipe is preferably of black iron perforated along its length to permit gas circulation therearound.

3,695,604
REFRACTORY LINING FOR THE FLOOR OF METALLURGICAL VESSELS

Hermann Stein, Mulheim-Saarn, Germany, assignor to Didier-Werke AG, Wiesbaden, Germany

Filed May 26, 1971, Ser. No. 147,037
Claims priority, application Germany, June 13, 1970, P 20 29 245.9
Int. Cl. F27d *1/16*
U.S. Cl. 266—43 **9 Claims**

A refractory lining for the floor of a metallurgical vessel wherein the floor slopes down to a central or eccentrically offset outlet. The floor is divided into a plurality of sectors radiating from the center of the outlet orifice. Each sector has a plurality of courses having the same angular size. The left and right hand edges of each sector are formed by straight courses of bricks and a brick is aligned across the width of each sector adjacent the outlet. Each straight course of bricks comprises at least a pair of wedge shaped bricks defining the left and right hand sides of each sector and the faces of the wedge-shaped bricks which face inwardly are parallel to each other. The outside faces of the wedge-shaped bricks defining the sides of the sectors are inclined at an angle determined by the

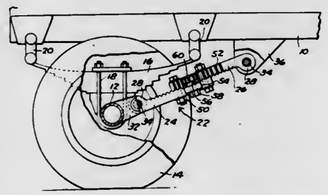


number and slope of the sectors so that the outside faces of adjoining sectors are in contact with each other.

3,695,605
RADIUS ROD FOR VEHICLE AXLE

Antonio Grossi, 18025 Albion Ave., Detroit, Mich.

Filed June 11, 1971, Ser. No. 152,335
Int. Cl. B60g *1/00*
U.S. Cl. 267—66 **10 Claims**

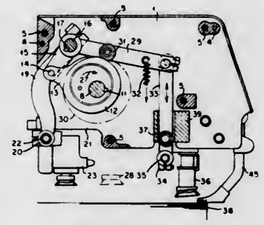


A radius rod for a vehicle axle comprising two links arranged in overlapping relation with interengaged teeth on their confronting faces. The links are adapted to be clamped together and a gear is mounted on one of the links meshing with a gear rack portion on the other link for adjusting the length of the radius rod.

3,695,606
SUCTION HEAD IN SHEET FEED SYSTEMS FOR SHEET PROCESSING MACHINES

Arno Wirz, Schwetzingen, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberger, Germany

Filed June 10, 1970, Ser. No. 45,061
Claims priority, application Germany, June 11, 1969, P 19 29 714.4; June 11, 1969, P 19 29 715.5
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 R **6 Claims**



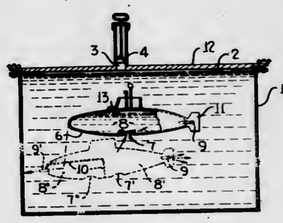
Suction head in a sheet feed system for sheet processing machines includes a drive shaft mounting a cam disc, a lever system periodically driven by the cam disc against the bias of a spring, separating suckers for raising sheets from a pile thereof automatically adjustable to a given level, and conveyer suckers for transporting the sheets to further conveying means of the sheet feed system. The lever system includes a steering lever having a free end whereon the separating suckers are carried and which are guidable in a vertical guide by an encapsulated anti-friction bearing. The suction head also includes a pair of oscillating levers, an eccentric mounted on the drive shaft and operatively connected to the oscillating levers for oscillating the same, and a holder carrying the conveyer suckers and rotatably mounted on respective free ends of the oscillating levers.

The suction head includes a suction head housing through which a free end of the drive shaft projects. A rotary valve for regulating flow of blowing and suction air is secured to the free end of the drive shaft outside the suction head housing, and a valve housing covering the rotary valve is releasably connected to the suction head housing by quick-opening locking means.

3,695,607
FLUID DRIVEN PNEUMATIC DISPLAYS

Ronald Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Continuation of Ser. No. 716,378, March 27, 1968, abandoned. This application May 7, 1970, Ser. No. 37,382
Int. Cl. A63h *23/06*
U.S. Cl. 272—8 D **6 Claims**



The apparatus comprises a display device comprising a hollow body having an air bubble trapped therein. The body is located in a tank substantially filled with liquid. Apparatus is provided for selectively pressurizing the tank to force water into the body through a flap valve to increase its weight and cause it to sink. Release of pressure permits the pressurized water in the body to bleed out through a rear vent pipe permitting the body to rise. By fluctuating the pressure, water exiting through the vent pipe propels the body at a speed determined by the rate of fluctuations. The level of the body is determined by the average pressure maintained in the tank and steering is effected by the duty cycle of the pressure fluctuations, a rudder tending to produce rotation of the body in one direction and water being expelled through the vent pipe tending to produce rotation of the body in the opposite direction.

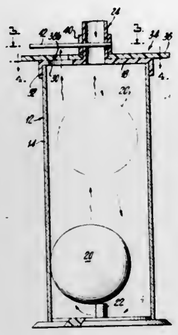
3,695,608
DEVICE FOR PRACTICING BREATH CONTROL

Harold E. Hanson, New York, N.Y., assignor to Lourie Visual Etudes, Inc.

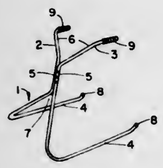
Filed Aug. 17, 1970, Ser. No. 64,452
Int. Cl. A63h *29/16*
U.S. Cl. 272—57 R **9 Claims**

A device enabling an individual to practice breath control. A container which has a transparent wall accommodates in its interior a light-weight article such as a ball which can be raised by currents of air blown into the container. The air can discharge out of the container through an opening with which a second opening of a selected size can be placed in registry.

so that by selecting an opening of a suitable size to be placed in registry with the first opening it is possible to control the resistance to discharge of air out of the container, thus enabling the operator to practice breath control.



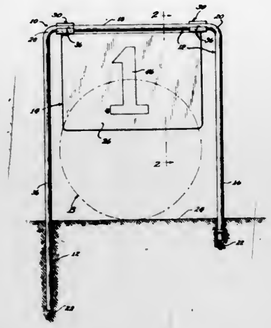
3,695,609
ICE SKATING AID
Barbara J. Rothe, Box 38, 53 Mills Terrace, Nahant, Mass.
Filed Aug. 17, 1970, Ser. No. 64,375
Int. Cl. A63c 3/04
U.S. Cl. 272—70.3 4 Claims



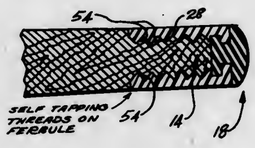
A skating aid formed by bending two base sections to form a runner and a vertical support section. The vertical support sections are joined to fix the runners apart and generally coextensive. A handle is attached to the vertical support section and can be formed integrally therewith. Wheels can be attached to the runners. The aid is useful in training persons to ice skate or roller skate.

3,695,610
CROQUET WICKET ASSEMBLY
Arnold M. Thompson, Box 172A, Gary Ave., Wheaton, Ill.
Filed Sept. 21, 1970, Ser. No. 73,708
Int. Cl. A63d 1/00
U.S. Cl. 273—56 1 Claim

A croquet wicket assembly including a wicket frame which is formed of heavy rod stock, is of right angle configuration, i.e., U-shaped and is provided with a removable snap-on plastic flag which is attached to and suspended with stable equilibrium from the horizontal bridge portion of the frame so that it projects into the path of such croquet balls as may pass through the wicket frame for displacement thereby in order to verify such passage. Numerical indicia on the opposite faces of the flag identify the procedural order of wicket use when the wicket assembly is employed in conjunction with a full complement of similar croquet wickets. The vertical dimension of the flag and its positional relationship with respect to the horizontal bridge portion of the wicket frame are such that the mid-point of such dimension lies in a horizontal plane which is spaced from the ground a distance approximately equal to the diameter of a croquet ball.



3,695,611
BILLIARD CUE AND CUE TIP ASSEMBLY
John H. Lower, Glendora, and Peter Lagus, Altadena, both of Calif., assignors to Deneb Products Engineering, Glendora, Calif.
Filed Feb. 12, 1970, Ser. No. 10,755
Int. Cl. A63d 15/12
U.S. Cl. 273—70 1 Claim

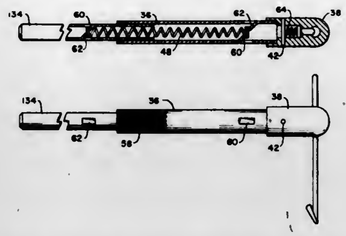


An improved billiard cue comprising a cue stick having a doweled portion at one end, a ferrule for sleeve-like engagement with the doweled portion and a synthetic elastomer tip of a specific configuration in locking engagement with the tip end of the ferrule and the doweled portion of the cue stick. The tip has three components or parts, a head, neck and base and is formed from a material such as neoprene with the neck extending through a reduced diameter portion at the tip end of the ferrule. The tip base and head components engage and seat against interior and exterior shoulders formed at the tip end of the ferrule. The side of the tip base component opposite the neck component engages and seats against the end of the doweled portion of the cue stick.

3,695,612
GOLF GAME WITH CLUB STROKER
David Joseph Barrios, 5825 N. Kenmore, Chicago, Ill.
Filed Sept. 21, 1970, Ser. No. 73,850
Int. Cl. A63f 7/06, 7/10
U.S. Cl. 273—87.2 4 Claims

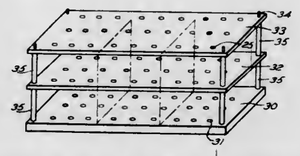
An indoor game played according to the rules of golf utilizing manually actuatable strokers to which miniature-sized golf clubs are releasably mounted for propelling a ball across a flexible playing surface which may be rolled into cylindrical form for storage. The playing surface has areas representing fairways, greens and hazards of a typical golf course, said areas being differently textured to affect the roll of a ball stroked thereacross. In one embodiment the club is secured to the stroker by interacting portions on the stroker and club respectively comprising a non-circular opening with locating

portions therein in the stroker and a circular club having cut-out portions engaged by the locating portions. In a second embodiment the stroker has a spring biased detent extending into an opening and the club has a recess in its shaft engaged by the detent.



3,695,613
Patent Not Issued For This Number

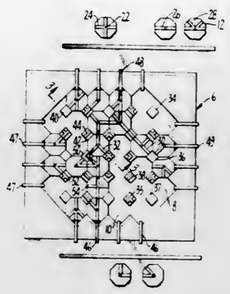
3,695,614
BOARD GAME APPARATUS
David W. Brisson, 142 Rochambeau Ave., Providence, R.I.
Filed June 5, 1970, Ser. No. 43,860
Int. Cl. A63f 3/00
U.S. Cl. 273—130 AC 1 Claim



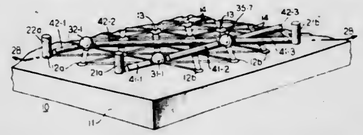
A two-dimensional game board which represents a four-space hypercube has a flat base upon which eighty-one recesses are formed with the recesses being laid out in a square pattern having rows of nine recesses perpendicular to each other. This two-dimensional game board with its pattern of 81 recesses is the basic unit with which the two-dimensional game board for the five-space hyper hypercube is represented and with which further *n*-space configurations may be represented by adding predetermined additional multiples of the basic unit. The three-dimensional game board which represents the four-space hypercube has a rectangular base with 27 recesses thereon laid out in a line of reoccurring square patterns with each square having three lines of three recesses each. Support posts extending up from the base support two vertically spaced platforms with each platform having 27 recesses vertically aligned with the 27 recesses on the base.

3,695,615
BOARD GAME APPARATUS
Philip L. Shoptaugh, 3317 Florida St., Oakland, Calif.
Filed June 12, 1970, Ser. No. 45,755
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 10 Claims

A game apparatus having a number of octagonal playing pieces which two or more players can alternately place on a premarked game board having a plurality of parallel starting lines on each side and end thereof. Four such octagonal pieces when placed together will leave a square at the center thereof. Each of the playing pieces has at least one line across the piece in different configurations. The squares at the centers of the octagonal pieces also may have lines across them in different configurations. The object of the game is to lien up the pieces in such a way that a continuous line is formed across the board from one starting line to another and making use of both the lines on the octagonal playing pieces and on the squares, and the first player to complete a line wins.

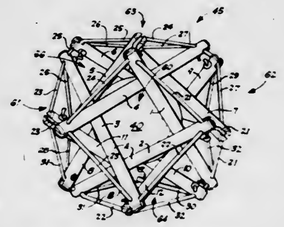


3,695,616
GAME STRUCTURE EMPLOYING MARKERS AND LINKS
Joseph H. Weber, 11 Powder Horn Court, Holmdel, N.J.
Filed Nov. 9, 1970, Ser. No. 87,678
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 9 Claims



A game structure which makes use of an apertured and channeled playing board and a multiplicity of markers and link members which constitute playing pieces that are arrangeable on the game board in the apertures and channels, respectively, to realize a desired configuration in accordance with a specified set of rules. The apertures form a grid and are connected by the channels.

3,695,617
TENSEGRITY STRUCTURE PUZZLE
Geoffrey A. Mogilner, 2070 California St., W., San Diego, Calif., and Rodney D. Johnson, San Diego, Calif., assignors to said Mogilner, by said Johnson
Filed June 11, 1971, Ser. No. 152,055
Int. Cl. A63f 9/08
U.S. Cl. 273—156 13 Claims



A puzzle comprising a cage-like tensegrity structure including a plurality of rigid columns having flexible tension members connected between the opposite ends thereof and having a slot at each end thereof. Each of the columns is slidably sup-

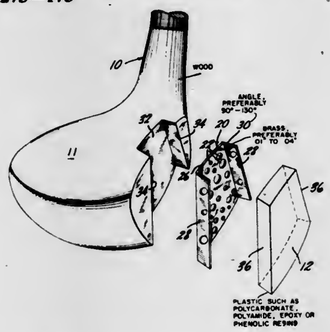
ported at opposite ends thereof by the tension members of adjacent columns, which tension members extend through the slots in the columns. A solid or hollow object is positioned within the cage-like structure, the object having an outer dimension which is sufficiently large so as to prevent removal thereof from the structure except when the structure is manipulated to one of a limited number of geometric shapes. According to a preferred embodiment of the present invention, the structure comprises twelve columns and forms a polyhedron having six quadrilateral sides and eight hexagonal sides. The object may be removed from the cage-like structure by contracting four of the six quadrilateral sides and then expanding one of the two remaining quadrilateral sides.

3,695,618

GOLF CLUB WOOD WITH FACE PLATE INSERT

Edward R. Woolley, Rancho Santa Fe, Calif., and William H. Thompson, Escondido, Calif., assignors to Acushnet Company

Filed Aug. 25, 1970, Ser. No. 66,843
Int. Cl. A63b 53/04
U.S. Cl. 273—173 **5 Claims**



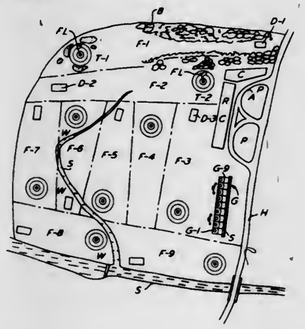
A new and useful improvement in the construction of the head of a wooden golf club is disclosed. The improvement comprises a metallic insert with a plurality of holes therein between the club head block and a plastic face plate.

3,695,619

GOLF COURSE WITH TARGET GREENS AND SEPARATE PUTTING GREENS

Scott Brobston, 1201-B Keller Road, Wind Gap, Pa.

Filed Sept. 7, 1971, Ser. No. 178,167
Int. Cl. A63b 67/02
U.S. Cl. 273—176 A **6 Claims**



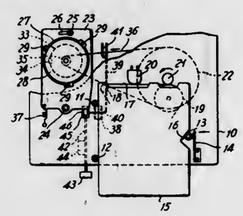
A golf course with regulation size fairways has target greens at the end of each fairway marked into concentric zones of proximity to the cup. Each fairway has its tee section adjacent the target green of the preceding airway. The course includes a separate group of putting greens corresponding to the number of fairways. The putting greens also have zone markers at distances from the hole correlated to distance provided for markers of the target greens. The target greens have concentric circular zone markers and the putting greens may include a circular inner zone marker and arcuate outer zone markers. The zones on the putting green are about two-thirds the size of the zones on the target greens. The target greens have the same shape, size and relation to obstacles as conventional greens, while the putting greens can either be of conventional design or merely rectangular sections of an elongate strip of ground.

3,695,620

TAPE DRIVE SPEED CHANGING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed April 14, 1970, Ser. No. 28,403
Claims priority, application Japan, Apr. 17, 1969, 44/34685
Int. Cl. G11b 15/44
U.S. Cl. 274—4 D **5 Claims**



A tape drive speed changing apparatus for a magnetic tape player comprising a motor mounted on a movable support, bias device for biasing the motor in one direction, a small and large drive pulley connected to the output shaft of the motor, a flywheel attached to a capstan for driving a magnetic tape, a belt normally trained between the small drive pulley and the flywheel, shift device for moving the belt to the position where the belt is shifted from the small drive pulley to the large drive pulley, a lock for locking the shift device in the condition in which the belt is trained to the large drive pulley, and a control device controlling operation of the lock whereby the belt is selectively shifted from the small to the large drive pulley or vice versa to drive the magnetic tape at normal playing speed or fast speed.

3,695,621

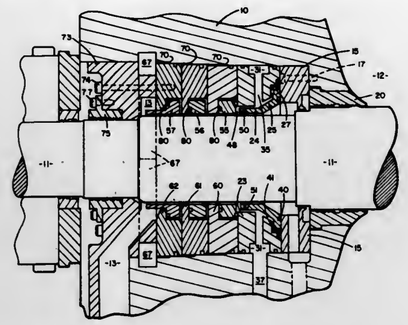
SHAFT SEAL FOR FLUID HANDLING MACHINE

Leonard P. Damratowski, Monroeville, and Eugene L. Huesgen, Jeannette, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,936
Int. Cl. F16j 15/44
U.S. Cl. 277—75 **5 Claims**

The invention relates to a sealing system for the impeller shaft of a fluid handling machine such as a compressor or turbine. A floating seal sleeve is mounted in an annular seal stator member fixed in the machine casing. The seal sleeve has limited axial and radial movement within the stator and is formed with a cylindrical portion, the bore of which has running clearance with the shaft. The surface area of the bore of the sleeve is less than the area of the outer surface of the sleeve. Seal oil under pressure flows between the seal stator and the seal sleeve and is passed through the sleeve to a groove formed in the bore of the sleeve, and also around one end of the sleeve to the shaft. The pressurized seal oil in the groove effectively blocks passage of process gas along the

shaft, and by flowing over the outer diameter of the seal sleeve removes heat generated by oil shearing and maintains the seal



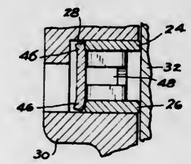
sleeve at an acceptable temperature at high speed and pressure operation with long life expectancy.

3,695,622

PISTON RING CONSTRUCTION

Lewis M. Davis, and Donald M. Hesling, both of Muskegon, Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Dec. 18, 1970, Ser. No. 99,571
Int. Cl. F02j 5/00
U.S. Cl. 277—139 **25 Claims**



An improved spacer-expander for a piston ring featuring a latch which guides the ends of the spacer-expander into and out of abutment so that they will not become overlapped during assembly to a piston and assembly of the piston and ring assembly into an engine cylinder.

3,695,623

SAFETY SKI BINDING

Lorenzo Covini, Milan, Italy, assignor to Cober Fabbrica Articoli Sportivi, Milan, Italy

Filed May 27, 1970, Ser. No. 40,779
Claims priority, application Italy, May 28, 1969, 17440 A/69; April 14, 1970, 23280 A/70
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 D **10 Claims**



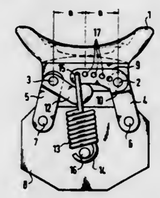
A safety ski binding which consists mainly of a hollow sole plate attached to the boot of the skier and releasably fastened to two longitudinally spaced brackets on the skis by longitudinally slidable locking pins whose cam-shaped outer ends are received in apertures of the brackets, a spring arrangement being interposed between the inner ends of the pins in the hollow interior of the sole plate. The tension of the spring can be adjusted from the outside by shifting spring seats.

3,695,624

TOE IRON FOR SAFETY SKI BINDINGS

Roland Jungkind, Farchant, Germany, assignor to Hannes Marker, Garmisch-Parlenkicken, Germany

Filed Aug. 4, 1970, Ser. No. 60,847
Claims priority, application Germany, Aug. 5, 1969, P 19 39 843.7
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **7 Claims**



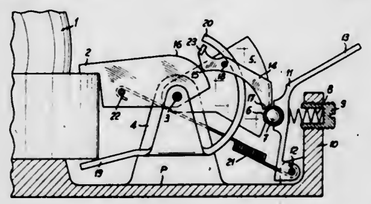
A soleholder member constitutes a coupling link of a four-bar linkage, which is movable from its normal position against the force of a spring and which comprises levers that are pivoted to a carrying plate which constitutes or is pivoted to a baseplate to be secured to the ski. One of the pivot pins which connect the coupling link to the levers and which in the normal position of the toe iron are symmetrically disposed with respect to the longitudinal center line of the toe iron carries an arm which is capable of a limited pivotal movement and which in the normal position of the toe iron assumes an end position in which the free end of said arm overlaps and in one point disposed on the longitudinal center line of the toe iron contacts the free end of another arm, which is connected to the lever that carries the other pivot pin. The spring is held at one end on the carrying plate or on the coupling link and at its other end engages the first-mentioned arm. This arm is provided with a series of spring-connecting means, which are selectively connectable to the spring and which do not influence the initial stress of the spring.

3,695,625

SKI BINDING

Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Annecy, France

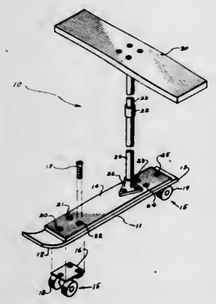
Filed Nov. 23, 1970, Ser. No. 91,768
Claims priority, application Switzerland, Dec. 12, 1969, 18497/69
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **24 Claims**



A boot heel holding member of a ski safety binding is pivotally mounted and urged by a spring either downwardly towards an operative boot holding position, or upwardly towards an inoperative boot releasing position. A second pivotally mounted member can be releasably locked in a fixed position by adjustable locking means such as a spring-urged ball engaging in a recess. One-direction movement means act between the holding and second members so that when the

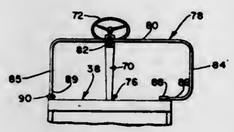
second member is locked in position the holding member can move towards the operative position under the action of the spring, whilst for movement of the first member towards the inoperative position the holding member is angularly locked with the second member. The binding can thus automatically adapt to different heel thickness and can accomodate a layer of snow the maximum thickness of which is independent of the spring strength. The one-direction movement means can be a pawl cooperating with a locking surface or any free-wheel mechanism.

3,695,626
UNI-RUNNER RECREATION DEVICE
Kenneth W. Alexander, Jr., 3042 McHenry Avenue, Cincinnati, Ohio
Filed Nov. 2, 1970, Ser. No. 85,859
Int. Cl. B62b *17/00*
U.S. Cl. 280—12 K **2 Claims**



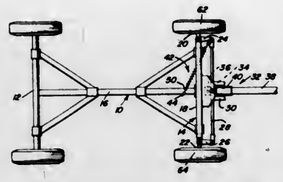
A ski member is provided with detachably mounted wheel assemblies and a detachably mounted and adjustable seat or handlebar element. The wheels may be removed for skiing, or secured thereto for skating or scooting. The seat member may be raised to serve as a handlebar or completely removed so the device can serve as a skateboard.

3,695,627
ADJUSTABLE STEERING COLUMN FOR AN AGRICULTURAL MACHINE
Darwin Carl Bichel, 872 38th Avenue; Robert La Verne Malcolm, R. R. 1, Box 327, both of Moline, Ill., and Wayne Eldon Slaverns, 3517 26th Avenue, Moline, Ill.
Division of Ser. No. 767,689, Oct. 15, 1968, Pat. No. 3,583,518. This application April 27, 1970, Ser. No. 43,278
Int. Cl. B62d *1/18*
U.S. Cl. 280—87 A **2 Claims**



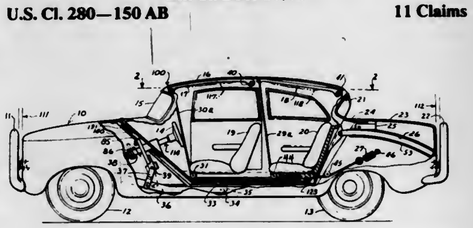
A self-propelled combine has a forward transverse engine adjacent the operator's station. The engine drives the various combine functions through several drive systems having inputs mounted on the engine output shaft and covered by an enclosure with a raisable top on which the operator's seat is mounted. The seat is also shiftable rearwardly to permit standup operation of the combine, which is facilitated by an adjustable steering column. The handrail at the front of the operator's station is attached to and moves with the steering column.

3,695,628
FARM WAGON STEERING STABILIZER
James C. Fisher, R.F.D. # 1, Shelbina, Mo.
Filed July 1, 1970, Ser. No. 51,603
Int. Cl. B62d *13/04*
U.S. Cl. 280—103 **7 Claims**



An elongated tension member having at least one elastic section. One end of the tension member is anchored to the center coupling pole of a four-wheel farm wagon and the other end of the tension member is connected to the outer end of the steering arm carried by one of the spindle assemblies of the front wheels of the wagon in order to apply a pull on the one steering arm to a first side of the wagon while applying a pull in the opposite direction on the rear end of the coupling pole. Further, a pull in the first direction is also applied to the forward end portion of the associated wagon tongue to which the tie rod for the front wheels of the wagon is secured and thus a thrust in the first direction is applied to the rear end of the towing vehicle to which the forward end of the wagon tongue is secured.

3,695,629
SAFETY VEHICLE FOR PASSENGERS
Samuel L. Schlanger, 110-11 Queens Blvd., Forest Hills, N.Y.
Filed Sept. 28, 1970, Ser. No. 75,984
Int. Cl. B60r *21/06*
U.S. Cl. 280—150 AB **11 Claims**

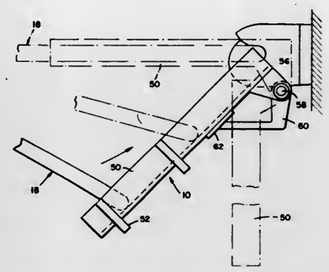


A safety vehicle for passengers having a movable passenger compartment which includes life-saving nets or cushions which become disposed in front of the passengers when the passenger compartment detaches itself from the vehicle and assumes its inclined position. The invention also includes release means connected to the front and rear bumpers for actively releasing the passenger compartment upon collision or impact as well as releasing the controls and steering wheel of the vehicle. A rack and pinion combination are also provided for connecting the passenger compartment to the vehicle to assure a parallel detachment of the compartment during a collision.

3,695,630
DEVICE FOR FACILITATING ATTACHMENT OF TRUCK CONVERTER AND TRAILER
Mark L. Zucca, 1608 Lafayette St., Alameda, Calif.
Filed May 28, 1971, Ser. No. 147,791
Int. Cl. B62d *53/00*; **B60d** *1/14*
U.S. Cl. 280—474 **5 Claims**

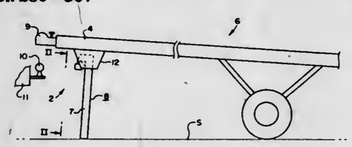
A device attached to a truck adjacent the hook or coupling thereof. The device is provided with a bottom wall and opposed side walls adapted to receive a portion of the tongue or

draft bar of a truck converter adjacent the eye or socket of such bar. Means are provided for releasably securing the bar in said device whereby the converter is locked in said device with the bar substantially horizontal and without any lateral movement permitted therebetween, to facilitate movement of



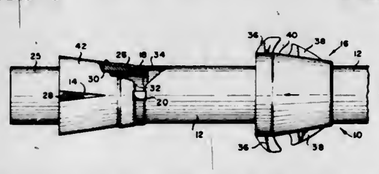
the truck and now attached converter into position with another trailer. In one embodiment of the invention, the device is pivotally attached to the truck and movable between a plurality of positions about a horizontal axis to facilitate the guiding of the bar eye into engagement with the coupling.

3,695,631
ANTI-THEFT DEVICE FOR TRAILER
John E. Schwaiger, 7556 Raleigh-la Grange Road, Cordova, Tenn.
Filed Nov. 3, 1970, Ser. No. 86,505
Int. Cl. B60d *7/00*
U.S. Cl. 280—507 **8 Claims**



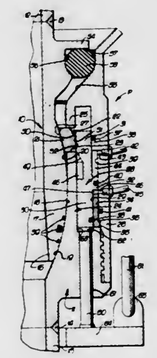
A device for attachment to a trailer comprising a U-shaped member having a flange mounted between the sides thereof to which a support member may be locked to maintain the support member in a position perpendicular to the tongue of the trailer and whereby the tongue of the trailer is maintained at an angle oblique to the surface upon which the trailer is resting. The support member may also be locked to the flange in a storage position.

3,695,632
HOSE COUPLER
Frederick V. Kruse, Kilbourne, and James D. Pichon, Havana, both of Ill., assignors to Ag-Rain, Inc., Havana, Ill.
Filed June 11, 1970, Ser. No. 45,336
Int. Cl. F16l *33/20*
U.S. Cl. 285—5 **2 Claims**



A hose coupler wherein the end of a hose member is slit longitudinally in a plurality of locations in order to permit it to be flared over a frusto-conical surface of a male coupling member. The latter is also provided with a roughened exterior surface in order to help prevent the slit end of the hose member from slipping off the frusto-conical surface. The male coupler member is provided with a substantially cylindrical surface region wherein a watertight seal is effected between the flexible hose member and the coupler. A female coupling member is provided with a frusto-conical inner surface so that it may be placed in telescoping relationship with respect to the slit end flexible hose and pulled toward the frusto-conical external surface on the male coupling member to establish a wedge fit therewith. In this manner it is possible to effect a watertight seal at one point and pull the assembly at another point whereby a leak does not develop if the end pull causes physical damage to the inner tube portion of the hose in the area of the hose where pull is effected.

3,695,633
REMOTELY CONTROLLED HYDRAULICALLY OPERATED CONNECTIBLE AND DISCONNECTIBLE FLEXIBLE JOINT
James W. E. Hanes, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed March 19, 1970, Ser. No. 20,920
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **7 Claims**



A flexible ball and socket joint for incorporation in a marine riser adapted to extend from a blowout preventer attached to an underwater wellhead to a drilling vessel. A lock ring on the socket or box of the joint engages the ball or pin of the joint to hold the joint assembled, the ring being retained in such position by a piston slidable in a cylinder. Conducting fluid under pressure into one portion of the cylinder from a remote point shifts the piston to a non-holding position, permitting the lock ring to expand and the pin and box to separate from one another. Conducting fluid under pressure to another cylinder portion shifts the piston in the opposite direction to contract the lock ring against the pin and retain the pin and box assembled. If the fluid pressure system fails, the piston is shiftable to its releasing position mechanically.

3,695,634
ADJUSTABLE LENGTH COUPLING
William E. White, Jr., Houston, Tex., assignor to Hydro Tech Services, Inc., Houston, Tex.
Filed Oct. 19, 1970, Ser. No. 81,681
Int. Cl. F16l *21/00*
U.S. Cl. 285—31 **1 Claim**

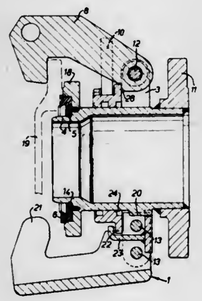
Adjustable length coupling including coaxial telescoping housings arranged for connection at their axially outward ends to other members. Tapered slips and radially deformable packers located in an annulus between the housings are arranged for actuation by an hydraulic force into restraining and

sealing engagement between the housings to prevent relative movement between the housings after installation. The



coupling may be used in construction of structures and to make connections between pipe sections.

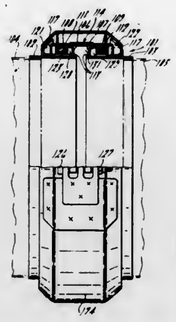
3,695,635
PIPE COUPLING
Arthur L. Paddington, Thorpe Willoughby, near Selby, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
Filed Sept. 1, 1970, Ser. No. 68,718
Int. Cl. F16l *35/00*
U.S. Cl. 285—38 **5 Claims**



A quick-release pipe coupling comprises a hollow cylindrical body having a collar axially slidable thereon and supporting a plurality of hooks for engaging the flange of a pipe to be coupled to the hollow cylindrical body, and an annular thrust member mounted on the body adjacent to the collar and in screw-threaded engagement with the body, so that rotation of the thrust member causes axial displacement of the collar and forces the hooks to clamp the flanged pipe against the body.

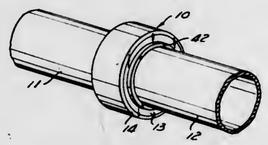
3,695,636
FLEXIBLE TUBE JOINT USING SEGMENTED COUPLING
Robert W. Graves, Woodland Hills, Calif., assignor to Aeroquip Corporation, Jackson, Mich.
Filed April 3, 1970, Ser. No. 25,333
Int. Cl. F16l *5/00*
U.S. Cl. 285—47 **5 Claims**

A hot air duct connection which allows for tube expansion and contraction. A pair of flanges are secured to the ducts and support seals which engage a surrounding sleeve. The flanges carry ball segment members which are surrounded by a complementary retainer to permit limited rocking action of the



flanges while restraining them against axial separation and maintaining the seal.

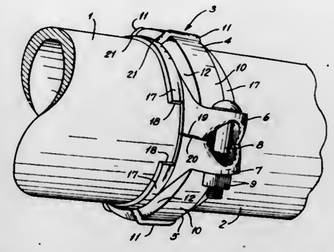
3,695,637
INFLATABLE COUPLING
James Glenn Satterthwaite, 5011 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 River Drive, Morehead City, N.C.
Filed May 6, 1970, Ser. No. 35,164
Int. Cl. F16l *17/00*
U.S. Cl. 285—97 **10 Claims**



An inflatable coupling for connecting adjacent members is disclosed. Such coupling may be used to releasably connect pipes or the like providing a fluid tight connection therebetween. When required, the coupling can accommodate swiveling movement or the like. The coupling may also be used to transmit torque between two adjacent members to serve as a brake, clutch or power drive connection. The coupling includes a closed loop gas-impervious body of elastomeric material providing a continuous chamber which is pressurized when coupling is required, and exhausted when release of the coupling is required. Flexible wall means assume a release position when the chamber is exhausted and move to a position for engagement with the associated members to be coupled when the chamber is pressurized.

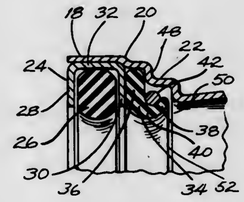
3,695,638
COUPLING FOR PLASTIC PIPE
James Blakeley, Thornhill, Ontario, Canada, assignor to Victaulic Company of America, South Plainfield, N.J.
Filed March 18, 1970, Ser. No. 20,531
Int. Cl. F16l *17/00*
U.S. Cl. 285—112 **9 Claims**

A mechanical clamp type coupling and joint for joining together the ends of sections of plastic pipe incorporates elements to maintain an effective joint regardless of stress concentration and the effects of flexural or bending forces on the joint. The pipe sections are grooved circumferentially at a position adjacent their ends to receive the key sections of cylindrical segmented coupling housings. A pressure responsive gasket mounted within the housing has lips engaging the exterior of the pipe sections between their grooves and opposed ends. Shoulders forming circumferential sections extend laterally outwardly from the sides of the coupling housings to overlie the pipe outwardly of the grooves. The interior



surfaces of these shoulders and the exterior surface of the pipe are concentric and the clearance between them is restricted preferably to a definite tolerance to protect the joint from opening up under flexing or bending forces.

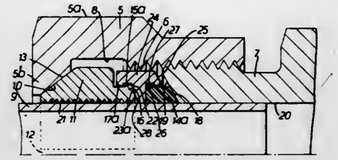
3,695,639
CONNECTOR
Harold Shire, Los Angeles, and Ira R. Newman, Lakeview Terrace, both of Calif., assignors to General Connectors Corporation, Burbank, Calif.
Filed Aug. 7, 1970, Ser. No. 62,003
Int. Cl. F16l *13/04*
U.S. Cl. 285—114 **14 Claims**



The invention is characterized by two generally ring shaped seals mounted in spaced side by side relationship at the end of a connector housing. The outer seal is generally circular in cross-section and the inner seal is generally channel shaped in cross-section and includes a first leg, and a second smaller leg connected together by a web portion. The end of the connector tube is provided with formations for holding the seals in the housing. These formations may include first and second counterbores for positioning the inner seal in the end of the connector housing. The base of the second counterbore is normally in spaced relation to the inner side of the second leg to permit the legs of the inner seal to flex when a pipe mounted in the connector pivots or vibrates.

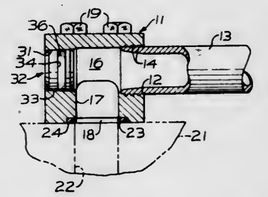
3,695,640
PIPE COUPLINGS
John Henry Clague, Douglas Isle of Man, Great Britain, assignor to Mannin Engineering Limited, Douglas Isle of Man, Great Britain
Continuation of Ser. No. 695,467, Jan. 3, 1968, abandoned. This application April 22, 1970, Ser. No. 28,283. The portion of the term of this patent subsequent to June 1, 1988, has been disclaimed.
Claims priority, application Great Britain, Aug. 26, 1967, 39371/67
Int. Cl. F16l *19/06*
U.S. Cl. 285—116 **18 Claims**

A pipe coupling comprises a screw-threaded member to surround the pipe and adapted for threaded engagement with a body bored to receive the extremity of the pipe, a tapered split collar for engagement with a corresponding taper on an inner surface of the threaded member to permit contraction on the collar into gripping engagement with the pipe and a separate non-split sealing device attached to the split collar to effect sealing engagement between the pipe and the body. The seal-



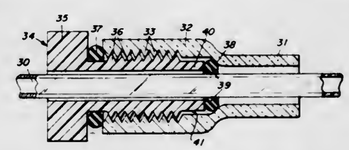
ing device is removably attached to the split collar by being sprung into engagement therewith under radial contraction of the collar which expands again when a lip and rebate formation between the collar and the sealing device comes into operation.

3,695,641
TUBE FITTING HAVING TAPERED ACCESS OPENING AND CLOSURE PLUG
Frederick S. Engelking, and Calvin D. Loyd, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 2, 1970, Ser. No. 69,029
Int. Cl. F16l *55/12*
U.S. Cl. 285—121 **6 Claims**



In an elbow fitting for receiving an expandible tube, an access opening is provided to permit internal access to the tube opening for an expander tool, the access opening having an outwardly converging, tapered bore with a tapered plug being arranged in the access opening after the tube is secured within the tube opening in order to seal the fitting.

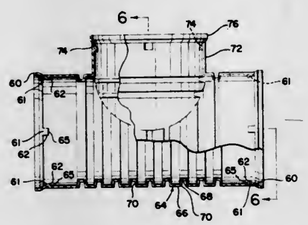
3,695,642
FLEXIBLE PRESSURE-TYPE JOINT FOR RIGID TUBING
Charles M. DeWoody, Vineland, N.J., assignor to Ace Glass Incorporated, Vineland, N.J.
Continuation-in-part of Ser. No. 673,376, Oct. 6, 1967, Pat. No. 3,499,670. This application Jan. 7, 1970, Ser. No. 1,226
Int. Cl. F16l *47/00*
U.S. Cl. 285—133 R **6 Claims**



A pressure-type joint for connecting one tubular element formed of non-flexible plastics material and provided with an externally threaded male portion, into a second tubular element formed of glass and having an internally threaded female

portion. The externally threaded element is provided with a central, longitudinal bore for receiving a thermometer or the like, and the threads of this element are of sufficiently reduced dimensions with respect to the internal threads of the other element to provide an annular clearance between the threads to permit relative angular movement of the joined elements so as to minimize chances of breaking the thermometer or the like. Compressible O-rings are interposed between the threaded end of each element and a radial shoulder formed on the opposite element to insure a tight seal of the joint, despite relative annular movement of the joined elements, one of the O-rings surrounding the thermometer in the externally threaded element and serving the dual function of sealing the joint and also the inserted thermometer or the like.

3,695,643
CORRUGATED TUBE COUPLING MEANS
John D. Schmunk, Findlay, Ohio, assignor to The Hancock Brick & Tile Company, Findlay, Ohio
Filed May 18, 1970, Ser. No. 38,437
Int. Cl. F16l 21/00, 41/00
U.S. Cl. 285—156 **8 Claims**

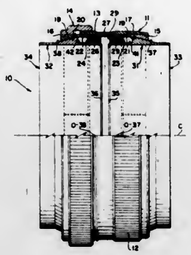


A thermoplastic coupling for corrugated plastic tubing having an elongated generally cylindrical body and mouth at either end. The inside diameter of the cylindrical body approximates the outside major diameter of the corrugated tubing. Cleats along the inner circumference of the mouth have inwardly directed vertical faces and inwardly converging camming surfaces in order to permit the tubing to enter the coupling but impede its removal. Optionally the coupling may have a corrugated body. Where the coupling feature of this invention is employed in connection with a fitting such as a Tee it is preferred that the body be corrugated. A Tee coupling may be formed by including a branch which protrudes outwardly from the side of and in fluid communication with the cylindrical coupling body.

3,695,644
BALL TYPE FLEXIBLE COUPLING FOR RIGID CONDUITS
Leonard Z. Goldberg, Canoga Park, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed March 30, 1970, Ser. No. 23,811
Int. Cl. F16l 27/04
U.S. Cl. 285—233 **3 Claims**

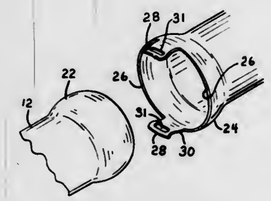
A coupling designed to provide a pressure tight connection between a pair of rigid tubular conduits despite misalignment. The coupling includes cylindrical sealing surfaces as well as mating spherical surfaces, one integral with or secured to the conduit and the second being a part of the coupling housing. The disclosure shows the use of conventional 0 ring type seals positioned between cylindrical sealing surfaces. The centers of the spherical surfaces are located at the axis of the conduit and aligned with the seal portion so that relative movement of the conduit with respect to the coupling also produces longitudinal movement of the conduit and minimal compressive loading of the 0 ring seal.

An arrangement of coupling parts employing split or C ring



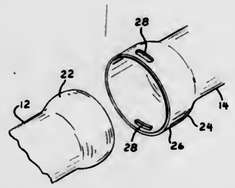
parts and cooperating wedge ring is disclosed to provide non-captive mounting parts.

3,695,645
BALL AND SOCKET PIPE JOINT UTILIZING TWO RESILIENT FINGERS WITH CLIP SPRING REINFORCEMENT
Adolph C. Mommsen, Minneapolis, Minn., assignor to Metal-Matic, Inc., Minneapolis, Minn.
Filed June 17, 1970, Ser. No. 46,879
Int. Cl. F16l 27/04
U.S. Cl. 285—261 **7 Claims**



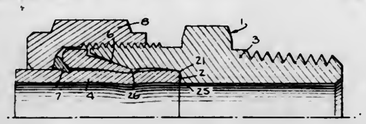
The ball portion of a pipe section is received in a socket portion having a single pair of diametrically located resilient fingers. A clip spring has its ends in engagement with the two fingers to enhance the holding action thereof.

3,695,646
BALL AND SOCKET PIPE JOINT WITH CLIP SPRING
Adolph C. Mommsen, Minneapolis, Minn., assignor to Metal-Matic, Inc., Minneapolis, Minn.
Filed June 18, 1970, Ser. No. 47,284
Int. Cl. F16l 27/04
U.S. Cl. 285—261 **5 Claims**



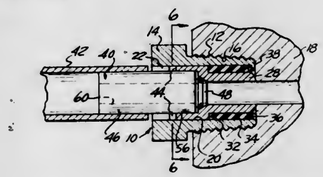
Curved ends of a clip spring extend through diametrically disposed slots in the socket portion of a pipe section, thereby resiliently holding the ball portion of a second pipe section.

3,695,647
PIPE COUPLING
Joseph A. Pugliese, Fairview, N.J., assignor to Hoke Incorporated, Cresskill, N.J.
Filed July 16, 1970, Ser. No. 55,428
Int. Cl. F16l 19/06
U.S. Cl. 285—341 **3 Claims**



A compression coupling for a pipe or tube having improved uncoupling and recoupling capabilities. The coupling is of the type wherein a tube is received into a body portion and is attached thereto by the action of one or more ring-like ferrules which are wedged between the tube and the body by a coupling nut. The improvement is principally in the shape of the tube receiving bore in the body which is made with angularly positioned tube sizing and tube braking surfaces. This shaping of the bore causes the tube when initially attached to and seated on the body to have a selective reshaping which facilitates tube removal and reinsertion regardless of dimensional variations in the body and tube sizes.

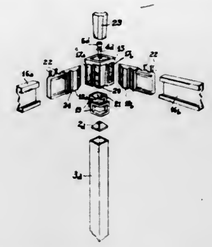
3,695,648
COUPLING
Andre Marosy, 24731 Kipling, Oak Park, Mich.
Filed Aug. 6, 1970, Ser. No. 61,546
Int. Cl. F16l 37/00
U.S. Cl. 285—376 **7 Claims**



A quickly attachable and detachable coupling for connecting a hose or the like to a fitting in a fluid tight relationship. The coupling includes a male member attached to the hose and having a pair of spaced ears and the fitting is provided with a female portion having slots to receive the ears and to produce a locking connection between the fitting and the male member upon relative rotation of the members through an approximately one quarter turn. During the turn the ears engage a cam surface to move an inner sleeve of the fitting into compressing engagement with a seal to provide a sealing fit between the sleeve and the fitting. The sleeve is also provided with a conical seat which receives an O-ring carried by the male member to provide a fluid tight connection between the male member and the fitting.

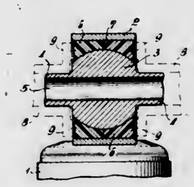
3,695,649
DEVICE FOR ASSEMBLING TUBULAR MEMBERS
Rene Georges Lavergne, 19 Avenue Henri Barbusse, Champrosay, Essonne, France
Filed June 5, 1970, Ser. No. 43,804
Claims priority, application France, June 19, 1969, 6920569; April 29, 1970, 7015684
Int. Cl. F16b 2/14
U.S. Cl. 287—54 A **4 Claims**

An assembling device for securing a tubular member to any other member, comprising a pair of wedging members adapted to be engaged into said tubular member and having externally the same shape as the inner section of said tubular member. Said wedging members consist of a pair of complementary half-shells forming between them a cavity of which the internal wall is inclined. An expansion core is disposed into said cavity and of its external wall have the same inclination as the internal wall of said cavity. A control screw is engaged in an axial hole formed into said core, and said screw is



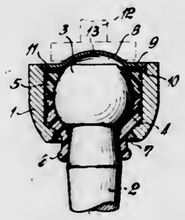
adapted to caUse an axial movement of said expansion core in said cavity for obtaining the expansion of said complementary half-shells.

3,695,650
BALL JOINT FOR OMNI-DIRECTIONAL MOTION ATTACHMENTS
Klaus Stuck, Buderich, Germany, assignor to A. Ehrenreich & Cie., Duesseldorf-Oberkassel, Germany
Filed Sept. 22, 1970, Ser. No. 74,324
Claims priority, application Germany, Oct. 23, 1969, P 19 53 397.2
Int. Cl. F16c 11/06
U.S. Cl. 287—88 **3 Claims**



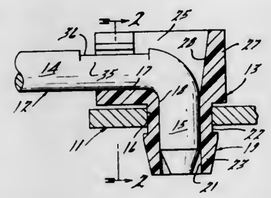
A ball joint having a ball element surrounded by a pair of ball cups of plastic material which are friction welded along the equator of the ball element and having a sleeve surrounding the ball cups.

3,695,651
BALL JOINT WITH COVER PLATE
Klaus Stuck, Buderich, Germany, assignor to A. Ehrenreich & Cie., Duesseldorf-Oberkassel, Germany
Filed Sept. 22, 1970, Ser. No. 74,325
Claims priority, application Germany, Oct. 21, 1969, P 19 53 000.8
Int. Cl. F16c 11/06
U.S. Cl. 287—87 **8 Claims**



A ball and socket joint having a cover plate connected to the peripheral edge of the joint housing by a friction weld.

3,695,652
ACTUATOR ROD CONNECTOR
Jonas Ratnikas, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 21, 1971, Ser. No. 191,268
Int. Cl. F16c 11/00
U.S. Cl. 287—93 4 Claims

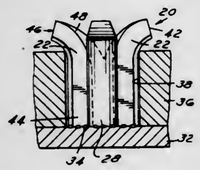


A pivoted lever member having an aperture at one end, an elongated substantially L-shaped actuating rod for swinging the lever member, and an integrally molded plastic connecting device for coupling the actuating rod to the apertured end of the lever member.

The connecting device comprises a base member having an actuating rod receiving aperture at one end and cylindrical retention means insertable through the lever member aperture for holding the connecting means on the latter. The cylindrical retention means projects from the apertured end of the base member and has a bore axially aligned with the aperture adapted to receive a short leg of the L-shaped actuating rod. The base member has spaced upstanding side walls adapted to receive a long leg of the L-shaped actuating rod therebetween. The side walls of the base member terminate in opposed retention flanges having a space therebetween less than the thickness of the actuating rod whereby the long leg of the L-shaped rod must be forced between the retention flanges as its short leg is inserted into the cylindrical means bore for a permanent connection to be made. Coating retention means on the long leg of the actuating rod are engageable by the retention flanges to inhibit separation of the actuating rod from the connecting device.

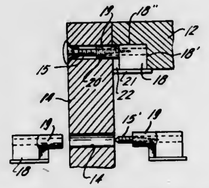
3,695,653
Patent Not Issued For This Number

3,695,654
SOLID CYLINDRICAL MALE FASTENER AND STRUCTURAL ASSEMBLY
Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clemens, Mich.
Continuation-in-part of Ser. No. 766,200, Oct. 9, 1968, abandoned. This application April 9, 1970, Ser. No. 26,855
Int. Cl. F16b 5/04
U.S. Cl. 287—189.36 R 8 Claims



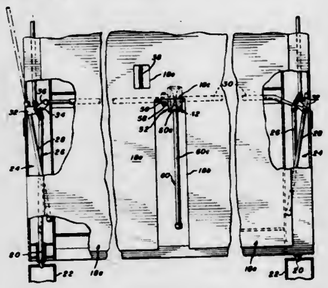
A male fastener adapted to secure a structural member to a support without perforation of the support includes a plurality of elongated resistingly deformable, ductile segments arranged in parallel contiguous relation and united along their lines of contiguity around a common axis providing an integral but axially separable generally cylindrical fastener with one end of the segments adapted to be welded or otherwise permanently secured to the support and with the opposite ends adapted to be axially split apart and deformed radially outwardly and downwardly to secure an underlying member to the support. The segments may be defined by radial grooves formed in one integral cylindrical member. The segments preferably are united in their integral relation within a radial dimension measured from the axis of the cylindrical fastener lying in a range of from 10 to 50 percent of the radius of the fastener.

3,695,655
DISCONNECTABLE RIGID CONNECTION OF MOUNTING PARTS ESPECIALLY FURNITURE WALLS
Josef Wippermann, Paderborn, Germany, assignor to Richard Heinze, Herford/Westphalia, Germany
Filed Jan. 29, 1970, Ser. No. 6,684
Claims priority, application Germany, June 11, 1969, P 19 29 685.6
Int. Cl. F16b 12/14
U.S. Cl. 287—20.92 F 11 Claims



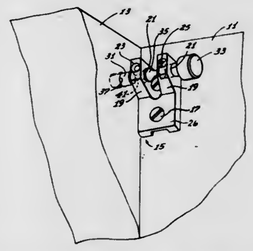
Improved connection between two mounting parts. There is used at least one connecting element attached to one of the mounting parts which has a pin protruding into a bore of the other mounting part and thereby taking up the shear forces while additional tensioning means, acting in direction of the bore are provided to tighten both mounting parts against each other.

3,695,656
LATCH OPERATING MECHANISM FOR BULKHEADS
Samuel H. Enochian, Thornton, Ill., assignor to Unarco Industries Inc.
Filed Oct. 16, 1970, Ser. No. 81,294
Int. Cl. E05c 1/06, 9/16
U.S. Cl. 292—36 9 Claims



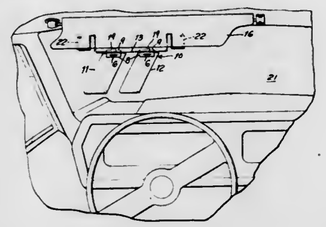
An improved mechanism for operating the latches of a bulkhead, by means of a third handle spaced between the upright edges of the bulkhead, is provided by cam means that effects selective reciprocation of a cross rod which interconnects the two latch-operating handles that are normally provided at the edges of the bulkhead. The cam means include and cooperate with a handle that pivots relative to the cross rod that is to be reciprocated. The cam means normally bias the handle to a stored-away position within the confines of the bulkhead.

3,695,657
SLIDE LOCK
Ruth Rosen, Marina del Rey, Calif., assignor to Automatic Packaging Machinery Co., El Segundo, Calif.
Filed April 27, 1970, Ser. No. 32,079
Int. Cl. E05c 1/04
U.S. Cl. 292—57 11 Claims



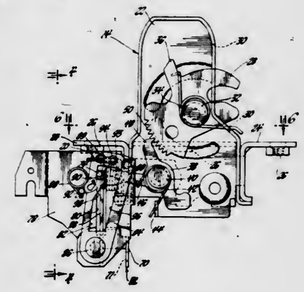
A cast having one or more mounting holes through which a screw may be passed for mounting the casting on a jamb. A pair of upstanding ears are formed with coaxial apertures therein for axial movement of a sliding bar therethrough. The bar is provided with a machined intermediate section which may be positioned between the upstanding ears so that the shackle of a padlock may be positioned about the machined portion to prevent the bar from being withdrawn. Each ear is provided with a threaded bore which receives a screw or bolt so as to control the distance which the bar may be moved by abutting shoulders formed on the bar at its opposite limits of travel. Adjacent one side of the machined portion, and intermediate the shoulders, a cam surface is formed which may be moved past the screw when the lowest portion of the cam is aligned therewith. When the bar is rotated about its axis, the cam surface and the screw will enter into contact to prevent inadvertent axial movement or slippage of the bar. A center punch is formed on the leading end of the bar to aid in locating the centers of bores which must be drilled in a closure member which is locked against movement when the bar extends into such bores.

3,695,658
GLARE SHIELD
Fred Vacha, Lincoln Drive, Concord, N.H.
Filed Nov. 9, 1970, Ser. No. 87,891
Int. Cl. B60j 3/02
U.S. Cl. 296—97 C 4 Claims



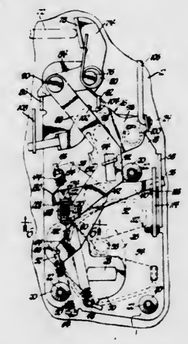
This disclosure relates to a tinted glare shield device which is adapted to be attached to an automobile sun visor and which is constructed so that a driver's eyes are shielded against glare from oncoming headlights while retaining unimpaired clear vision in his lane.

3,695,659
HOOD LATCH ASSEMBLY
Edmond R. Gionet, Warren, and Neil A. Hull, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 27, 1970, Ser. No. 58,358
Int. Cl. E05c 3/24
U.S. Cl. 292—216 5 Claims



A vehicle body hood latch assembly includes a blocking lever pivoted on a latch housing and biased to either a blocked position or an unblocked position by an overcenter spring. The blocking lever includes a blocking edge which, when the blocking lever is in blocked position, is engaged by a tab mounted on a release lever to prevent movement of the release lever from an unreleased position to a released position and consequent undetenting of a bolt. Movement of the blocking lever to unblocked position moves the blocking edge out of the path of the tab and allows movement of the release lever to the released position and the undetenting of the bolt. The tab slides along a return edge of the blocking lever during this movement of the release lever and moves the blocking lever back toward blocked position such that the spring moves overcenter and returns the blocking lever to blocked position substantially concomitant with the undetenting of the bolt.

3,695,660
VEHICLE BODY DOOR LOCK
Harry H. Fetters, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 31, 1970, Ser. No. 68,123
Int. Cl. E05c 3/26
U.S. Cl. 292—216 5 Claims



A vehicle body door lock includes a fork bolt and toothed plate mounted on the frame for movement between latched and unlatched positions. Coaxially mounted primary and secondary detents engage a tooth of the plate to maintain the bolt in latched position. An outside push button lever is

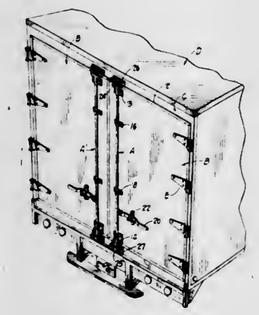
pivoted to an intermittent member. A locking lever is also coupled to the intermittent member to move the intermittent member about its pivot between coupled and uncoupled positions. An abutment lever is pivoted to the intermittent member and is normally spring biased to a position laterally of the intermittent member. When the intermittent member is in coupled position, shifting movement of the intermittent member by the push button lever engages the abutment lever with the detents to release the detents from the plate. When the intermittent member is moved to uncoupled position, the abutment lever bypasses the detents when the push button lever is operated. Upon simultaneous actuation of the push button lever and locking lever when the intermittent member is in uncoupled position, the abutment lever engages the detents and swings past the detents against the action of the biasing spring to permit movement of the intermittent member to coupled position upon release of the push button lever.

3,695,661

DOOR CONTROL MECHANISM

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed March 16, 1970, Ser. No. 19,867
Int. Cl. E05c *3/04, 3/02*
U.S. Cl. 292—218 **8 Claims**



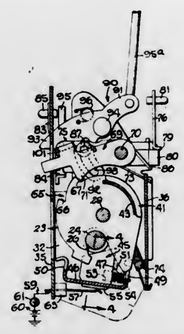
A door control mechanism for use with a pivoted door and associated frame, and a combination door, door frame and door control mechanism especially as embodied in a truck or cargo container. The control mechanism is comprised of identical cam-type latches on opposite ends of a shaft rotatably connected to a pivoted door by bearing members engaged by the latches, and keepers secured to the door frame adjacent edges of the door that are transverse to the door pivot axis. The shaft can be turned about its longitudinal axis to engage and disengage the latches and keepers. Each cam or latch is symmetrical about the axis of the shaft and has a central U-shaped body portion which is welded to the shaft by welds running lengthwise of the shaft and two oppositely projecting forked portions. The keepers have two spaced post portions that are straddled by the forked portions of the cam when in a latching position. Tapered surfaces of the posts are cooperable with tapered surfaces of the forked portions during latching to shift the door into alignment with the frame and to prevent lateral shifting or distorting of the frame relative to the door after latching. One post portion of each keeper has projecting flange portions with concave surfaces that receive and cover ends of the associated cam, and retain the door in a closed position. The latching cams and keepers are constructed so they can be forged for economic manufacture.

3,695,662

LATCH FOR VEHICLE DOORS

Leonard K. Ploughman, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 751,194, Aug. 8, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,312
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **16 Claims**



A free-wheeling and concealed latch for a vehicle door includes a force transmitting connector pin mounted for controlled floating within slots formed in a locking lever and a contactor, the locking lever being operable to shift the pin within the slot in the contactor between positions coupling and uncoupling the contactor with a pawl for releasing the latch. When the connector pin is in its coupling position, actuation of the contactor causes the pin to shift in one portion of the slot in the locking lever to release the pawl and, when the pin is in its uncoupling position, actuation of the contactor causes the pin to shift within a different portion of the locking lever slot and to pass by the pawl without releasing the latter so that the contactor free-wheels to leave the latch in a locked condition. In one embodiment, the latch is restored automatically to an unlocked condition when the door is closed unless the contactor is first actuated to place the connector pin in a predetermined position in the locking lever slot.

Also disclosed are (1) a unique retaining arrangement for preventing the latching element of the latch from tearing out of the latch base in case of an accident; (2) a simplified mounting for a striker-engaging wedge; and (3) a novel arrangement responsive to the position of the wedge for signaling if the door is not fully closed and latched.

3,695,663

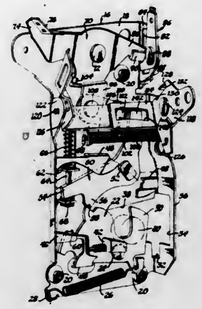
CLOSURE LATCH

Stanley D. Cockburn, 4713 Lutz Drive, Warren, Mich.

Filed Oct. 28, 1970, Ser. No. 84,763
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**

A door lock includes a main frame having spaced side flanges. An operating lever is intermediately pivoted to the main frame between the side flanges, and the arms of the lever are respectively connected to the inside remote handle and outside release handle. The lever further includes a laterally extending arm to which is pivoted one end of an intermittent member having a laterally extending tab at the free end thereof. A locking lever is pivoted to the side flanges of the frame for movement between locked and unlocked positions and is located in each position by the cooperative action of an overcenter type torsion spring and the engagement of shoulders of the lever with a tab of the frame. The locking lever includes an arcuate slot in which is received the tab of the intermittent member. An inverted fork bolt is mounted on the frame for movement between latched and unlatched positions and a detent for the bolt is also pivoted to the main frame and includes a lateral arm. The locking lever slot in the unlocked

position of such lever proscribes a path about the detent pivot. Movement of the operating lever when the locking lever is in unlocked position bodily shifts the intermittent member and engages the intermittent member tab with the detent arm to



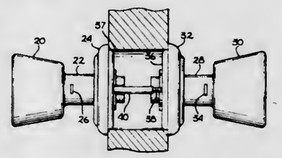
release the detent When the locking lever is in locked position, the slot thereof pivots the intermittent lever about the operating lever so that the intermittent member tab bypasses the detent arm.

3,695,664

DOOR KNOB RETAINING APPARATUS

Roger J. Nolin, Monterey Park, Calif., assignor to Tool Research & Engineering, Beverly Hills, Calif.

Filed Jan. 7, 1971, Ser. No. 104,685
Int. Cl. E05b *3/00*
U.S. Cl. 292—352 **14 Claims**



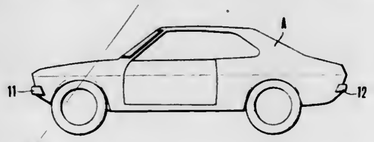
Door knob retaining apparatus comprised of a spring loaded member adapted for movement within a rosette assembly of a door latch unit. The spring loaded member is urged to a first axial position so as to prevent the release of a door knob engaging finger and is adapted to be moved to and retained at a second axial position to allow the release of the door knob engaging finger. Using this door knob retaining apparatus, an outside door knob may not be released and removed from the outside, but may be readily released and removed from the inside by using a special tool for this purpose.

3,695,665

SHOCK ABSORBING BUFFER

Hirotsugu Matsuura, 1-32, 5-chome, Kudo, Ojl-cho, Kitakatsuragi-gun, Nara-ken, Japan

Filed Sept. 14, 1970, Ser. No. 71,723
Int. Cl. B60r *19/08;* **B61f** *19/04;* **B61q** *11/12*
U.S. Cl. 293—70 **4 Claims**



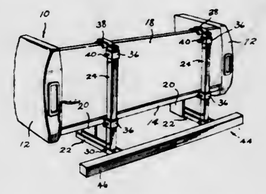
A bumper of the shock absorbing system to be attached to the front and the rear of the automobile, said bumper being a tubular hollow member consisting of an elastic material, such as a soft synthetic resin and the like, the inside thereof being filled with fluid, e.g., liquid or gas, it being so arranged that the fluid inside said tubular hollow member can flow into an absorbing hollow member communicating with said tubular hollow member through a resistance tube or a check valve exclusively when the bumper receives a shock.

3,695,666

TAILGATE BUMPER MOUNT

Claude E. Corson, Middlebury, Ind., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Filed Sept. 21, 1970, Ser. No. 74,062
Int. Cl. B60r *19/04*
U.S. Cl. 293—73 **10 Claims**



A tailgate bumper device for attachment to a truck or similar vehicle. The tailgate bumper device includes a support member which is adapted for securement to the vehicle below the bed thereof and adjacent the bed opening. The support member includes an extension part and a pivotal part which is located rearwardly of the bed opening and which is connected to the extension part so as to be shiftable about a substantially horizontal pivotal axis fore and aft of the vehicle. The pivotal part carries means for securing the tailgate of the vehicle thereto and is shiftable about its pivot connection between a first position in which the tailgate is caused to span the bed opening and a second position in which the tailgate is located below the bed opening to expose the bed of the truck. A bumper is carried by the support member and is attachable first to the extension part of the support member when the pivotal part thereof is positioned in its first position and secondly to the pivotal member when the pivotal member is positioned in its second position.

3,695,667

LIFTING DEVICES

Gordon Dempsey, Auckland, New Zealand, assignor to Frederick George Ullrich and Zeola Edna Ullrich, Christchusch, New Zealand

Filed Aug. 31, 1970, Ser. No. 68,159
Claims priority, application New Zealand, June 16, 1970, 160,505
Int. Cl. B66c *1/28*
U.S. Cl. 294—67 DA **7 Claims**



A jig for combination with a lifting means, the jig comprising a frame, a plurality of assemblies mounted on the frame at spaced positions, first shafts journalled in pairs of the assemblies, second shafts journalled in such pairs of assemblies, a third shaft geared to the second shafts, lift arms mounted on the first shafts and adapted for connection to a lifting means, control and controlled members mounted on the second shafts

for operative engagement with the respective lift arms and actuating levers pivoted to the particular lift arms for operating the control members, the construction and arrangement being such that on the lift arms being connected to a lift means and a lifting force exerted by such means, the levers actuate the control members to hold the lift arms at an article lifting position or when the lifting force is released, the lift arms are allowed to move to an article release position.

3,695,668

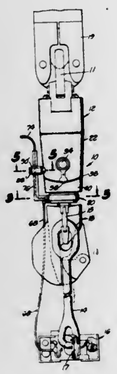
Patent Not Issued For This Number

3,695,669

FLUID TRANSFER APPARATUS FOR WELL PIPE ELEVATOR

Faustyn C. Langowski, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Oct. 30, 1970, Ser. No. 85,594
Int. Cl. F16l 27/00
U.S. Cl. 294—82 R **11 Claims**



Apparatus for conducting pressurized fluid from a hook structure having a swiveling hook to a fluid operated well pipe elevator attached to the swiveling hook with such apparatus being mounted in sheltered and shielded relation with respect to the swiveling hook and the adjacent body of the hook structure.

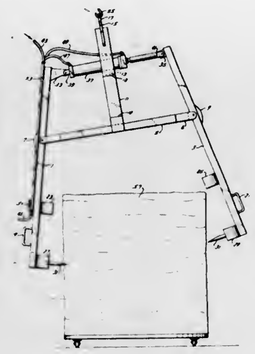
3,695,670

HOGSHEAD SPLITTER

Joseph Barnett, Wilson, N.C., and John D. Smith, Richmond, Va., assignors to Export Leaf Tobacco Company, Richmond, Va.

Filed Jan. 8, 1971, Ser. No. 104,910
Int. Cl. B66c 1/10
U.S. Cl. 294—88 **7 Claims**

Two arms are pivotally mounted to ends of a cross member and each have a pair of inwardly directed probes mounted on the lower ends thereof. A pneumatic cylinder connects the upper ends of the arms so that the entire device forms a jaw-like apparatus that is opened and closed by the pneumatic cylinder in response to operation of a control valve. The entire



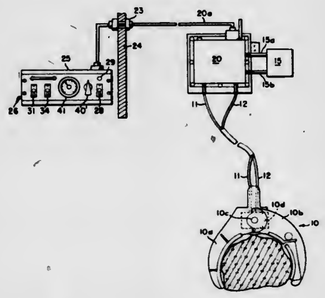
device is supported by an electrical hoist for positioning the device vertically and horizontally.

3,695,671

HYDRAULIC CLAW CONTROL SWITCHING ARRANGEMENT

Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1971, Ser. No. 151,328
Int. Cl. B25j 15/02
U.S. Cl. 294—88 **3 Claims**



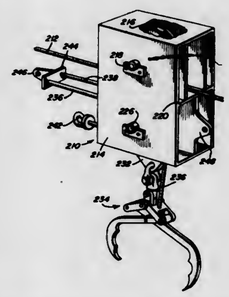
A remotely disposed electro-hydraulically actuated claw is controllable from the interior of a submersible by a switching arrangement which minimizes the possibility of inadvertently switching the claw to exert a crushing, gripping force on a fragile object. Two physically separated switches are independently actuated to position the claw in the open or closed position, or to exert a grip-no grip force, respectively. Once the grip force has been exerted through a closed claw, a separate dial is included to allow an increase or decrease of the gripping force as determined by the object's weight or its fragility. Being thusly physically disposed and electrically interconnected, the possibility of the claw's being inadvertently switched to an unwanted mode of operation is minimized.

3,695,672

REMOTE CONTROL GRAPPLE CARRIAGE OPERATED BY YARDING MACHINE

John H. Mitchell, 400 W. Curtis St., Aberdeen, Wash.

Division of Ser. No. 783,015, Dec. 11, 1968, Pat. No. 3,540,770. This application June 17, 1970, Ser. No. 47,105
Int. Cl. B66c 21/00
U.S. Cl. 294—112 **3 Claims**



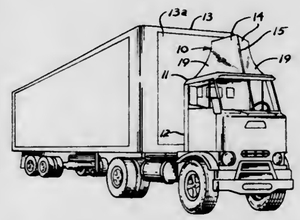
A grapple carriage riding on a skyline capable of being slackened and tightened, and having a grapple supported thereon with means for opening and closing the grapple for gripping and releasing a log, the means includes a remote control associated with a yarding machine so that an operator may cause opening or closing of the grapple from the yarding machine and also move the carriage along the skyline and for positioning the grapple during a logging operation.

3,695,673

AIR-FLOW DIVERTER FOR TRACTOR-TRAILER RIG

James H. Meadows, 113 Locust Ave., Spencer, W. Va.

Filed Sept. 11, 1970, Ser. No. 71,469
Int. Cl. B60j 9/04
U.S. Cl. 296—1 S **3 Claims**



Air-flow diverter affixed on tractor cabin roof of tractor-trailer rig, is generally plow-shaped to present rearwardly divergent concave surfaces, lower portions of which are presented upwardly. Air-flow against forwardly moving rig is diverted to fan around the top and adjacent side edges of trailer, while air-flow resultantly applied against said upwardly presented lower portions applies downward steadying pressure against cabin roof, and thereby tending to amplify tractional capability of tractor.

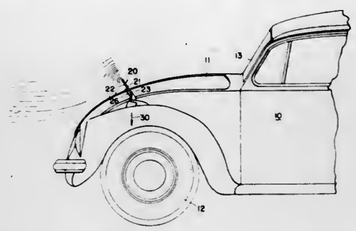
3,695,674

COMBINATION VEHICLE STABILIZER AND BUG DEFLECTOR

William W. Baker, 601 W. Mead, Yakima, Wash.

Filed Oct. 9, 1970, Ser. No. 79,521
Int. Cl. B60j 1/20; B62d 37/02
U.S. Cl. 296—1 S **7 Claims**

A blade-like deflector adapted to extend laterally across the front deck lid of vehicles which are comparatively light on the front wheels and subject to wind sway, for example, the "Volkswagen bug." The deflector directs air upwardly and the reaction force produces a downward moment on the front



wheels thus stabilizing the steering. The upward flow of deflected air also elevates many air-borne insects and causes them to pass over the vehicle instead of hitting the windshield.

3,695,675

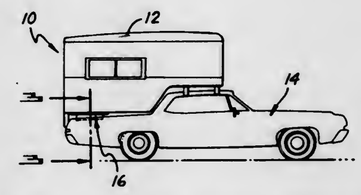
Patent Not Issued For This Number

3,695,676

AUTOMOBILE CAMPER MOUNTING

Arthur C. Clark, and Ted Timmons, both of San Jose, Calif., assignors to Holiday Vehicle Specialties, Inc., Mountain View, Calif.

Filed June 10, 1971, Ser. No. 151,795
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC **10 Claims**



An adjustable arrangement for mounting a camper unit to varying conventional automobile trunk openings by easily adjustable mounting units which mount along the rain gutter at the edge of the automobile trunk opening to provide distributed load transmission between the camper unit and the trunk rain gutter.

3,695,677

Patent Not Issued For This Number

3,695,678

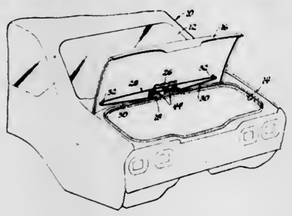
INTEGRAL HINGE AND TORQUE ROD

Bela Gergoe, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1970, Ser. No. 70,633
Int. Cl. B62d 25/10
U.S. Cl. 296—76 **4 Claims**

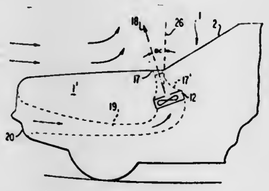
An integral hinge and torque rod includes a pair of oppositely extending generally U-shaped hairpin portions whose first ends respectively terminate in a common generally U-shaped bight portion that extends transversely of the hairpin portions. The respective second ends of the hairpin portions terminate in respective generally offset portions that include respective aligned pintle portions and respective mounting portions. Body and lid mounted members include pairs of aligned apertures respectively adjacent the hairpin portions

and laterally spaced from each other substantially the same distance as the distance between the pintle portions. The rod is deflected to allow lateral outward movement of the offset portions and subsequent lateral inward movement to respectively move the pintle portions within the spaced pairs of aligned apertures respective the hairpin portions and the mounting portions into lateral engagement with the body mounted member to pivotally mount the lid on the body for



movement between open and closed positions and to hold the rod against bodily shifting movement with respect to the body. The open and closed ends of the bight portion respectively engage portions of the lid mounted member to bias the lid toward open position. In an alternate embodiment, the second ends of the hairpin portions overlap each other and the pintle portions are respectively received within the opposite pairs of aligned apertures respective the hairpin portions.

3,695,679
MOTOR VEHICLE BODY
Karl Wilfert, 43 Fritz-von-Gravenitz-Strasse, 7016 Gerlingen-Waldstadt, Germany
Division of Ser. No. 666,387, Sept. 8, 1967, Pat. No. 3,516,707. This application Jan. 22, 1970, Ser. No. 4,853
Claims priority, application Germany, Sept. 8, 1966, D 51 055; Nov. 11, 1966, D 51 525
Int. Cl. B60j 9/04
U.S. Cl. 296—91 **14 Claims**

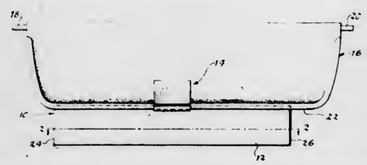


A motor vehicle body which includes a windshield and a body structure located in front thereof, especially for passenger motor vehicles, in which the windshield and/or other parts of the vehicle are kept substantially free of dust and dirt by providing apertures in the body structure in front of the windshield through which either at least a part of the dynamic air flow, which would normally flow against the windshield and/or other part to be kept clean, is sucked off into and through the vehicle body or an additional air stream or air flow is blown directly toward the windshield and/or other vehicle wall to be kept clean.

ERRATUM

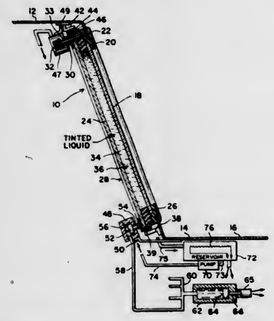
For Class 296—76 see:
Patent No. 3,695,658

3,695,680
BINOCULAR GLARE SHIELD
John Van Sickle, 1841 Billington Road, East Aurora, N.Y.
Filed June 4, 1970, Ser. No. 43,449
Int. Cl. B60j 3/00
U.S. Cl. 296—97 F **8 Claims**



A glare reducing device for viewing having for its main body portion a sheet of transparent glare reducing material so constructed that no image of either of its side edges will be visible to either eye of the observer.

3,695,681
SELF-DEFROSTING WINDSHIELD WITH AUTOMATICALLY VARIABLE TRANSPARENCY
Walter E. Dockery, 2120 La Vera Drive, Tuscaloosa, Ala.
Filed Aug. 21, 1970, Ser. No. 65,884
Int. Cl. B60j 3/04
U.S. Cl. 296—97 F **4 Claims**



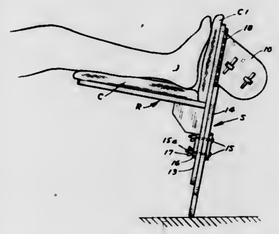
A windshield assembly includes two window panes with an elastic peripheral cushion therebetween defining a compartment through which a heated, tinted liquid is circulated under thermostat control. Hydraulically operated cylinders connected to one window pane moves it with respect to the other window pane under control of a photoresponsive device for changing the transparency of the liquid in the compartment.

3,695,682
Patent Not Issued For This Number

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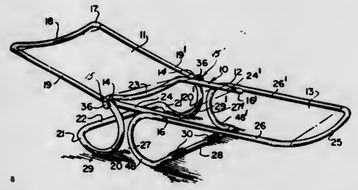
3,695,684
MULTI-USE, BODY-RELAXING FURNITURE UNIT
Vernon G. Barberg, Rte. 2-Box 16, Cokato, Minn.
Filed July 2, 1970, Ser. No. 51,756
Int. Cl. A47c 13/00
U.S. Cl. 297—1 **2 Claims**

A multi-use furniture unit for providing comfort and relaxation to the human body comprises essentially three main components, to wit; first, an elongate preferably adjustable support adapted in one use to be tiltably positioned uprightly as a sand and in another use to constitute a base and seat support for a chair; secondly, a body-rest member adapted to be held substantially perpendicularly to said support to act as an



elevated foot and leg support in one position of the unit, and as the backrest of a chair in a second position of the unit; and thirdly, a front chair-support medium extending laterally from an end portion of said elongate support and in a direction opposite from that of said body-rest member.

3,695,685
LOUNGE CHAIR
Thomas L. Lamb, 36 Wellington St., East Toronto, Ontario, Canada
Filed Oct. 16, 1970, Ser. No. 81,385
Claims priority, application Canada, Oct. 17, 1969, 065176
Int. Cl. A47c 1/034
U.S. Cl. 297—29 **10 Claims**

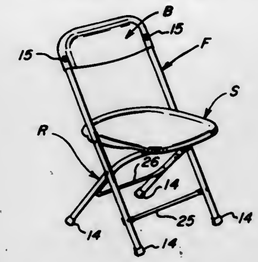


A chaise lounge having a seat, a back and a footrest, the back and the footrest being pivoted to the seat. A rocker is rigidly attached to the back so that the occupant can rock himself. Adjusting means are provided for locking the assembly in a desired position, the whole assembly being so balanced that an occupant can adjust it while seated.

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Patent Not Issued For This Number

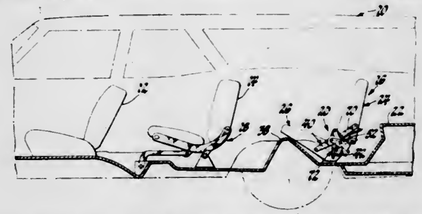
3,695,687
STACKABLE FOLDING CHAIR
Tim M. Uyeda, South San Gabriel, Calif., assignor to Samsonite Corporation, Denver, Colo.
Continuation-in-part of Ser. No. 753,393, Aug. 19, 1968, abandoned. This application Sept. 9, 1970, Ser. No. 70,817
Int. Cl. A47c 4/24
U.S. Cl. 297—56 **16 Claims**

A stackable folding chair having a non-metallic back rest and non-metallic feet at the bottom of each leg to prevent metal to metal contact when two such chairs are placed side by side in use and also when two or more of such chairs are folded and stacked one on top of the other or in an upright row. A molded plastic seat has a metal guide beneath for a top



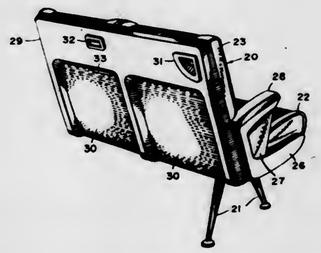
bar of a rear leg frame and a depending rim engaged by an angular support which encircles the rim.

3,695,688
MULTI-POSITION VEHICLE SEAT
Gary A. Wize, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 9, 1971, Ser. No. 151,357
Int. Cl. B60n 1/10
U.S. Cl. 297—92 **6 Claims**



A multi-position seat for a vehicle including a seat back cushion and a seat cushion supported by a linkage which provides a first position wherein the seat faces forwardly, a second position wherein the seat faces rearwardly, and a third position wherein one of the seat cushions is rotated to an overlying position to permit the back portion thereof to provide a cargo area.

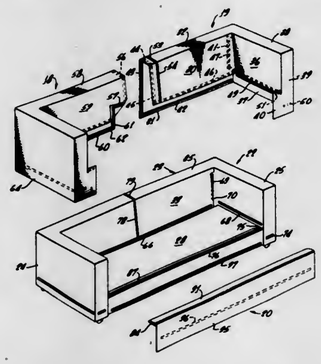
3,695,689
VEHICULAR SAFETY CHAIR
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed April 22, 1970, Ser. No. 30,634
Int. Cl. A47c 1/12
U.S. Cl. 297—191 **4 Claims**



A vehicle chair having a high back frame with cushions is provided with a rear panel of yieldable material anchored to the frame with a space between the panel and cushions, the

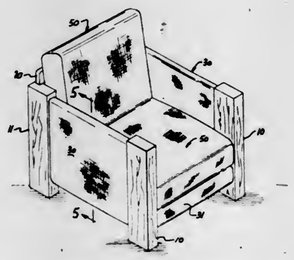
panel being cut away at an inner corner to provide a hand grip and laterally thereof provided with an ash channel opening, the panel being preferably formed to provide knee recesses into one of which the ash channel opens and the arm rest being provided with a supporting cigarette-snuffing metal panel.

3,695,690
FURNITURE COVERING ARRANGEMENT
Robert M. Carson, Pasadena, Calif., assignor to Marge Carson, Inc., Rosemead, Calif.
Filed June 11, 1971, Ser. No. 152,249
Int. Cl. A47c *31/10*
U.S. Cl. 297—218 **19 Claims**



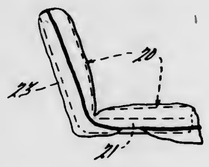
A furniture covering arrangement in which covering material is in two sections adapted to fit on opposite sides of a chair, sofa or the like, with the two sections overlapping at the center of the back where they are held together and to the frame by pressure-engageable tension-releasable fasteners, with additional fasteners holding the edges of the material sections to other portions of the frame, including the inner corners of the arms, where they are accessible through cutouts at the forward and rearward surfaces of the seat back, a removable rail at the forward edge of the seat portion carrying a removable skirt which extends downwardly along the front face of the frame.

3,695,691
REVERSIBLE CHAIR WITH A REVERSIBLE CUSHION COVER
Monroe P. Putnam, Rural Route #2, Aurora, Ind.
Filed Aug. 31, 1970, Ser. No. 68,367
Int. Cl. A47c *31/10*
U.S. Cl. 297—223 **11 Claims**



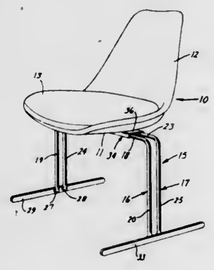
The chair has seat and back cushions with reversible covers, and reversible upholstered front, back and side panels. By reversing the covers and the panels, the decorum of the chair can be completely changed. The reversible covers have inner and outer layers of upholstery material with a layer of padding in between. The cover has two seams with the marginal edges disposed between the inner and outer layers. The method of making the cover includes placing side panels between two larger panels of a length to extend around the cushion, placing the layer of padding in overlying relationship, sewing through the stack along three sides of the side panels, and transposing the surfaces of the larger panels.

3,695,692
AUTOMOBILE SEAT COVER
Robert J. Williams, Birmingham, Mich., assignor to Cadillac Products, Inc, Warren, Mich.
Filed Sept. 28, 1970, Ser. No. 76,150
Int. Cl. A47c *31/10*
U.S. Cl. 297—229 **10 Claims**



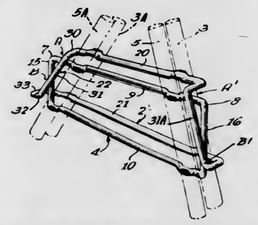
A method of preparing and using a temporary plastic seat cover for installation on automobile and vehicular seats during assembly line production, with the plastic seat cover being made, for example, of polyethylene.

3,695,693
SEAT CONSTRUCTION
Hugh C. Acton, Ross Township, Kalamazoo County, and Roy W. Fink, Portage, both of Mich., assignors to Tartan Corporation, Kalamazoo, Mich.
Filed Aug. 6, 1970, Ser. No. 61,707
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **9 Claims**



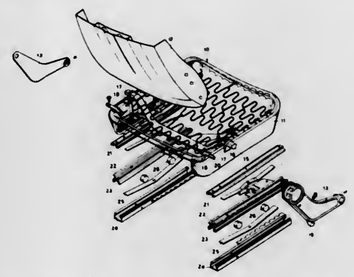
Base structure for seat means including a U-shaped support member having four upright legs defining two substantially parallel planes, said member being secured by connection means to a rigid, substantially horizontal frame member of the seat means. Said base structure and seat means may be arranged to permit stacking. A pair of runners are attached near the central portions thereof to the lower ends of the legs in parallel relationship to each other and transversely of said planes for engagement with a supporting surface.

3,695,694
GANGING AND STACKING CHAIR
Robert G. Mohr, Grand Rapids, Mich., assignor to Tartan Corporation, Kalamazoo, Mich.
Filed Oct. 12, 1970, Ser. No. 79,732
Int. Cl. A47c *1/124*
U.S. Cl. 297—248 **10 Claims**



The invention is a ganging and stacking chair featuring new and improved ganging fixtures. The chairs stack vertically legs-upon-legs, with the ganging device aiding in maintaining the vertical orientation of the stack. The ganging fixtures extend across and extend beyond the side legs of the chair, to engage in front and in back of the side legs. The male section of the ganger is a rectangular wire loop, the outer ends of which extend, respectively, in front of and in back of the chair legs forming ears which are engaged by the female section. The female section is a trapezoidal wire loop with sides which slant in toward the top, and end portions which wrap over and laterally around the ears of the male sections.

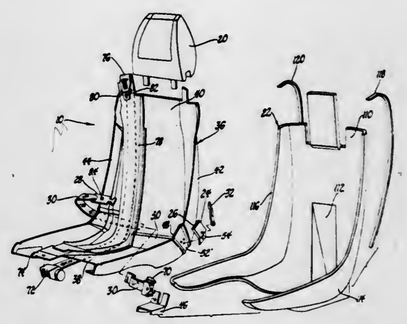
3,695,695
SEAT FOR MOTOR VEHICLES
Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy
Filed March 18, 1970, Ser. No. 20,529
Claims priority, application Italy, Oct. 22, 1969, 23725A/69
Int. Cl. A47c *1/02*
U.S. Cl. 297—341 **4 Claims**



A seat in particular a front seat for motor vehicles provided with a hinged tiltable back in which as the back tilts there is a corresponding sliding displacement of the seat in the same direction, and likewise on restoring the back into the normal position there is a corresponding sliding displacement of the seat in the direction opposite the preceding, thereby to provide better access for any back seats in two-doored motor vehicles.

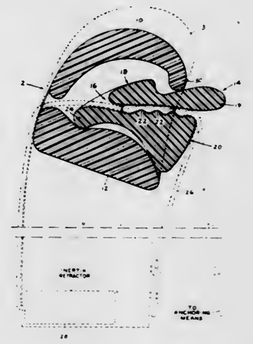
3,695,696
VEHICLE SEAT WITH INTEGRAL SEAT AND BACK PORTIONS
Thomas E. Lohr, Warren, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,816
Int. Cl. A62b *35/02*
U.S. Cl. 297—388 **7 Claims**

A self-contained seat and restraint system including a semirigid seat shell having a channel about the rear and sides thereof, a fixed, beltless buckle in one side of the channel, and a retractable lap belt guided through and by the other side of



the channel. A shoulder belt and a particular buckle design is also disclosed.

3,695,697
CONTROLLED MEMORY KEEPER
Robert W. Stoffel, Ferndale, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,097
Int. Cl. A47c *31/00*
U.S. Cl. 297—389 **10 Claims**

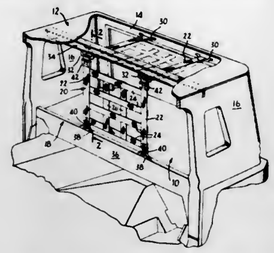


A movable gripping device which is used with a shoulder strap in a motor vehicle safety seat belt restraint system.

3,695,698
RESTRAINT DEVICE FOR VEHICLE CAB SLEEPER BUNK
Norman M. Trump, Emmaus, Pa., assignor to Mark Trucks, Inc., Allentown, Pa.
Filed June 1, 1971, Ser. No. 148,384
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 **8 Claims**

A restraint device for protecting the occupant of the sleeper bunk of a vehicle cab includes a web-like harness, constructed of flexible straps, that is supported within and attached to the cab structure so as to provide a vertical leg extending across the open front side of the bunk and a horizontal leg extending over the bunk to the rear cab structure. This harness arrangement transmits a portion of any forwardly directed forces received by the harness to the rear cab structure, thus reducing the horizontal load imposed on the supports for the vertical leg. Quick release buckles are provided in the harness to

allow the occupant ready egress from the bunk. The harness

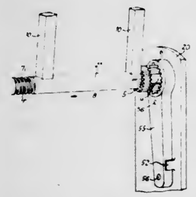


also converts into a hammock-type storage area when the bunk is not in use.

3,695,699
TILTING DEVICE FOR HEAD REST, IN PARTICULAR FOR VEHICLE SEATS

Wolfgang Mertens, Karlsruhe, Germany, assignor to Firma Kurt Herzer, Karlsruhe, Germany

Filed March 2, 1970, Ser. No. 15,458
Claims priority, application Germany, Sept. 2, 1969, P 19 44 412.3
Int. Cl. A47b *89/00*
U.S. Cl. 297—408 **4 Claims**

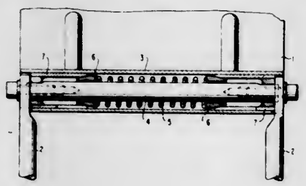


The invention relates to an angularly adjustable head rest which is secured to the structure of the back rest of a motor vehicle seat. The head rest includes elements providing for lateral and tilting movement of the rest subsequent to uncoupling of elements provided adjacent one side of the rest.

3,695,700
HEADREST, ESPECIALLY FOR SEATS IN MOTOR VEHICLES

Rolf Flach, Gartringen Wurtemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed April 13, 1970, Ser. No. 27,747
Claims priority, application Germany, April 12, 1969, P 19 18 680.2
Int. Cl. A47c *1/10*
U.S. Cl. 297—408 **19 Claims**

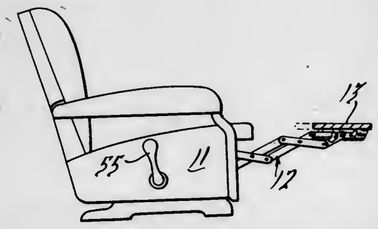


A headrest, especially for the seats in motor vehicles, in which the headrest is adjustable in its inclination against a constantly acting friction force; the adjustment is preferably stepless.

3,695,701
ADJUSTABLE LEG REST

Edward M. Knabusch; Edwin J. Shoemaker; David B. White, all of Monroe, and Harold P. Ruble, Deerfield, all of Mich., assignors to La-Z-Boy Chair Company

Filed Oct. 21, 1970, Ser. No. 82,587
Int. Cl. A27c *7/50*
U.S. Cl. 297—429 **12 Claims**

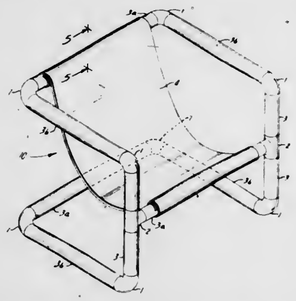


The leg rest of the chair is extensible from a position against the front of the seat to a position forwardly thereof. A pair of spaced scissor links support the leg rest in retracted and extended positions when actuated by a movable member such as a chair back, handle or the like. The leg rest is supported on the scissor links for forward movement thereon when extended to position the leg rest a greater distance from the front of the chair. The forward movement of the leg rest tensions springs and operate latches which retain the leg rest in a selected one of a plurality of forward positions. The latches are automatically released upon the operation of the scissor links to retract the leg rest to its position adjacent to the front of the chair which permits the springs to return the leg rest to its initial position before the end of the retractive movement of the links.

3,695,702
ADJUSTABLE FURNITURE

Joseph Frank Ingellis, 50-22 40th St., Sunnyside, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,947
Int. Cl. A47c *7/00*
U.S. Cl. 297—441 **7 Claims**



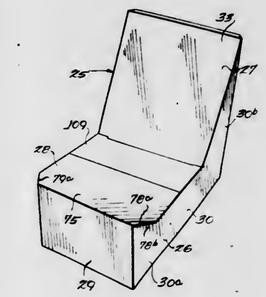
An adjustable piece of furniture comprising three basic structural components adapted to be joined to each other for providing the basic frame structure of the piece of furniture. The three basic components are as follows: (a) an elbow-joint, (b) a T-joint and (c) a piece of tubing. The piece of furniture comprises two U-shaped components arranged parallel to each other which are joined by means of three pieces of tubing, two of said pieces of tubing joining respectively the ends

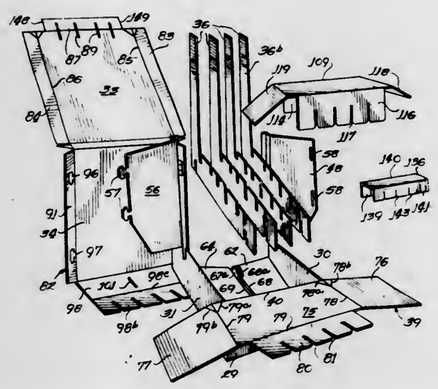
of the legs of the U-shaped components to each other, whereas the third piece of tubing joins the base members of the two U-shaped components to each other substantially at their midpoints. The legs of each one of the U-shaped components are joined to the base member by elbows. The base member, in turn, comprises a T-joint at substantially its midpoint which is joined to the elbows at opposite ends of the base member by pieces of tubing of suitable length. The T-joint in each base member has a leg extending therefrom which is joined to the leg of the other T-joint by means of a piece of tubing. The piece of tubing joining the legs of the T-joints in each base member of the U-shaped components serves as a support for a flexible supporting surface, whereas one of the pieces of tubings joining opposite ends of legs of the U-shaped components serves as the other support for the flexible support member.

3,695,703
FIBER BOARD CHAIR

Michael F. Notko, North Riverside, Ill., assignor to Druth Packaging Corp., Chicago, Ill.

Filed Oct. 12, 1970, Ser. No. 80,005
Int. Cl. A47c *4/02*
U.S. Cl. 297—442 **12 Claims**





A chair is formed from three blanks of sheet material of corrugated fiber board, solid fiber board, or the like, and a plurality of reinforcing ribs. The blanks are folded and interconnected to provide a base portion, a seat portion, and a back portion which entirely enclose the interior reinforcing ribs, and each edge of the chair is formed by a folded portion of the sheet material so that the flutes or interior layers of the sheet material are not exposed.

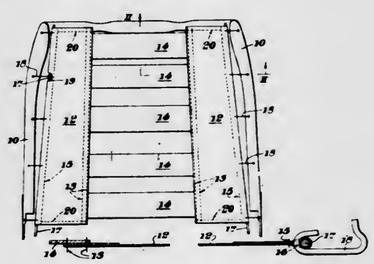
3,695,704
Patent Not Issued For This Number

3,695,705
Patent Not Issued For This Number

3,695,706
UPHOLSTERY SUPPORTS AND THE MANUFACTURE THEREOF AND STRUCTURES INCORPORATING SUCH UPHOLSTERY SUPPORTS

Hedley James Basher, 14 Aragen Road, Ampthill, and Leonard Robert Edwards, 25 Simpson Road, Lichfield, both of England

Filed June 1, 1970, Ser. No. 41,903
Claims priority, application Great Britain, May 30, 1969, 27,392/69
Int. Cl. A47c *7/20, 7/14*
U.S. Cl. 297—452 **8 Claims**



An upholstery support which comprises at least two flexible elements (e.g. of calico) to corresponding first locations on which there are firmly secured the ends of a number of separate strips of resilient strip material (e.g. of rubberized fabric), pockets being formed at second locations on the flexible elements and support rods being accommodated or being intended to be accommodated in said pockets, whereby the opposite ends of each of a number of hooked attachment arms can be caused to engage one of said support rods and a portion of an adjacent supporting frame.

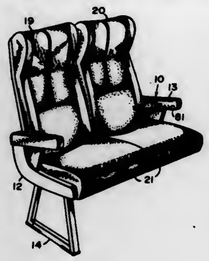
3,695,707
RECLINER VEHICLE SEAT

Chester J. Barecki, Grand Rapids, and Kenneth W. Hozeski, Grandville, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Continuation of Ser. No. 776,470, Nov. 18, 1968, Pat. No. 3,586,372. This application Nov. 19, 1970, Ser. No. 91,126
Int. Cl. A47c *3/00*; B60n *1/06*
U.S. Cl. 297—460 **4 Claims**

A vehicle seat has a base on which is pivotally mounted a seat back having a rigid back frame and to the back frame is releasably secured a cushion frame. A crash pad is secured to

the rigid back frame, the pad being formed of thin deformable metal covered with a plastic coating and the pad extending





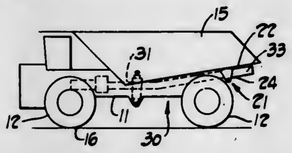
over and interlocking with the frame top. A torsion spring in the frame urges the seat back forwardly.

3,695,708

EXHAUST SYSTEM FOR A LOAD DUMPING VEHICLE

Henry E. Vincenty, Willoughby Hills, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Aug. 13, 1970, Ser. No. 63,444
Int. Cl. F02b *75/10*
U.S. Cl. 298—1 H **15 Claims**



A load dumping vehicle including a frame, a gas turbine engine supported by the frame and a dump body pivotally connected to the frame for movement relative to the frame between a load carrying position and a dump position. Exhaust from the engine is ducted under the dump body through first and second exhaust ducts. Part of the exhaust flows into the dump body to heat the load. The ducts are connected at adjacent ends by a coupling structure which seals the juncture of the exhaust ducts when the dump body is in its load carrying and in its dump positions.

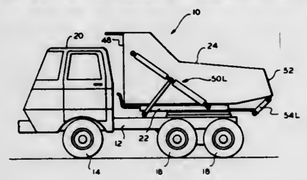
3,695,709

DUMP VEHICLE

Robert L. Reinhardt, Lubbock, Tex., assignor to Clark Equipment Company

Filed Oct. 15, 1970, Ser. No. 80,867
Int. Cl. B60p *1/30*
U.S. Cl. 298—9 **10 Claims**

A lifting mechanism for use with a vehicle adapted to transport and discharge material. The mechanism provides means for raising the elevatable end of the vehicle dump body a distance sufficient for clean dumping and for shifting the body in a selected direction relative to the vehicle so that there is a reduced tendency for the vehicle to overturn during material discharge. The mechanism comprises a first linear actuator pivotally connected at one end to the elevatable end of the dump body and an expandable truss structure connected



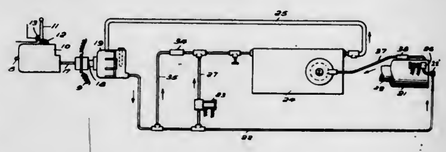
between the vehicle frame and the other end of the first actuator. The truss structure includes a second linear actuator pivotally connected between the vehicle frame and the other end of the first actuator, and a link pivotally connected at one end to the frame at a point forward of the second actuator and connected at the other end to the other end of the first actuator.

3,695,710

HYDRAULIC LIFT CONTROLS

Paul A. Cresci, 180 Ewingville Road, Vineland, N.J., and Thomas H. Paris, Oak and Boulevard, Trenton, N.J.

Continuation-in-part of Ser. No. 811,460, March 28, 1969, abandoned. This application Sept. 22, 1970, Ser. No. 74,326
Int. Cl. B60p *01/16*
U.S. Cl. 298—22 R **7 Claims**



A control apparatus for hydraulic lifts of the type associated with elevating mechanism for vehicle bodies or dump trucks. Fluid under pressure is supplied to the hydraulic cylinder only when the gear shift lever of the transmission is in neutral position and the brakes of the vehicle have been applied. An electric clutch is interposed between the transmission power takeoff and the pump which supplies fluid to the lift cylinder and this clutch is actuated only when the gear shift lever is in neutral position.

3,695,711

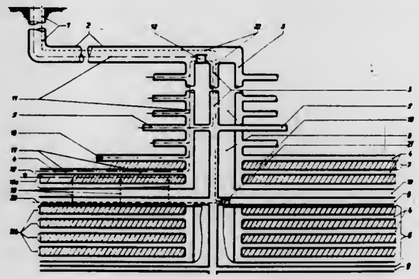
METHOD OF RECOVERING UNDERGROUND DEPOSITS OF SOLUBLE MINERALS, AND APPARATUS FOR CARRYING OUT THE METHOD

Ernst Messer, Wathlingen, and Arno Singewald, Kassel-Wilh., Germany, assignors to Wintershall Aktiengesellschaft, Kassel, Germany

Filed Jan. 21, 1970, Ser. No. 4,727
Int. Cl. E21b *43/28*
U.S. Cl. 299—2 **15 Claims**

A method of recovering underground deposits of soluble minerals, and an apparatus for carrying out the method. An access shaft is sunk to the region of the deposit and a tunnel is driven from the shaft to the deposit, whereupon an upright working shaft is advanced from the tunnel into the deposit. From the working shaft a plurality of vertically spaced substantially horizontal and at least substantially parallel flushing passages are driven into the deposit, and intermediate these

passages the deposit is formed with a plurality of slots each connecting two adjacent ones of the passages and inclined thereto. Water is forced through the passages and slots to dissolve soluble minerals from the deposit and the thus-obtained solution is collected in the respectively lower of the passages. The collected solution is at least substantially saturated with dissolved minerals by supplying it together with fresh water



through the deposit to the next lower of the passages. The saturated solution is collected underground and thereupon pumped from below ground to above ground where the dissolved minerals are recovered and where residual water remaining after recovery of the minerals is returned into the passages. An apparatus for carrying out the method is also disclosed.

3,695,712

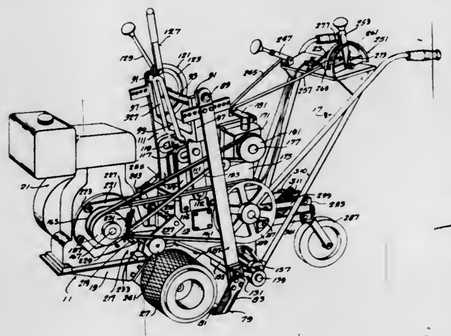
Patent Not Issued For This Number

3,695,713

ROOFING REMOVAL PROCESS AND MACHINE

Raymond C. Rothi, W. St. Paul, Minn., and William D. Wright, Detroit, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed March 2, 1970, Ser. No. 15,645
Int. Cl. E04d *15/00*
U.S. Cl. 299—10 **36 Claims**



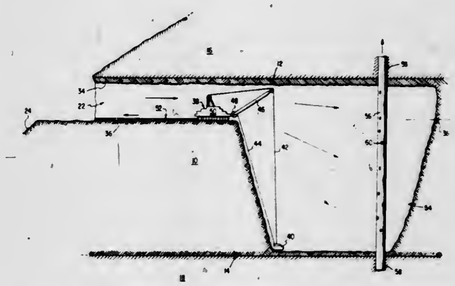
Disclosed herein is a method for stripping roofs and a roof stripping machine which includes a double-edged blade reciprocal along the path of advance of the roof stripper and means for independently advancing the stripper forwardly and rearwardly at speeds independent of blade reciprocation and of the rate of blade reciprocation and simultaneously with such reciprocation.

3,695,714

MINING VENTILATION METHOD

Cullen R. Thompson, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,302
Int. Cl. E21f *1/00*; E21c *41/00*
U.S. Cl. 299—12 **10 Claims**



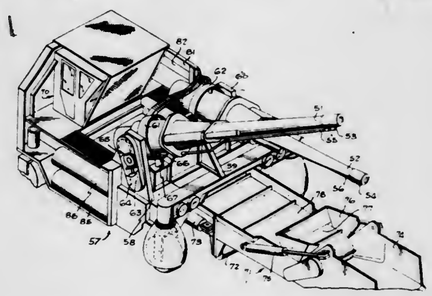
There is disclosed a method for mining relatively thick mineral seams comprising removing seam material adjacent the seam top in an advancing direction to form a passage in the seam and then removing seam material from the passage floor in a retreating direction.

3,695,715

ROCK FRACTURING METHOD AND APPARATUS FOR EXCAVATION

Charles S. Godfrey, Berkeley, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed April 1, 1970, Ser. No. 24,562
Int. Cl. E21c *37/00*
U.S. Cl. 299—13 **20 Claims**



A rock fracturing method and apparatus is disclosed for excavation using hypervelocity projectiles of large mass fired against the rock from a gun using a mixture of a gaseous carbonaceous fuel, such as methane, and oxygen in the gun breech, and detonating the mixture with an electrical spark. The projectiles are formed of concrete with a plastic casing having an annular shear lip.

3,695,716

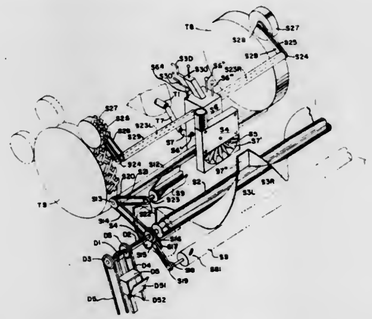
TRACTOR ATTACHMENT WITH VARIABLE SPEED DRIVE UNIT

Phillip A. Meyer, R.R. #1, Box 171, Palatine, Ill.

Filed Oct. 28, 1970, Ser. No. 84,826
Int. Cl. E01b *5/12*; A01b *49/00*
U.S. Cl. 299—25 **14 Claims**

An attachment for operation by a conventional tractor having the three arm support or similar attachment means and a power take-off which support and drive a material removal

machine which is power-driven by the power take-off. The material removal machine includes a screw which moves the material from the sides towards the center into a centrifugal blower which disposes of the material. The attachment also includes driving wheels which engage the driving wheels of the tractor and which is driven by an infinite control speed changer to drive the tractor wheels in either a forward or reverse direction at extremely slow speeds, whereby the material removal machine can be moved toward the material such as a snow bank at the very slow speed to provide maximum efficiency of the equipment. An ice breaker is mounted on a horizontally extending shaft and has teeth which are



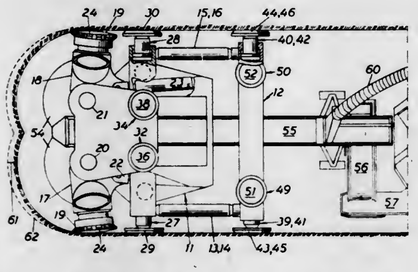
swingable to break the ice. A ditch excavating attachment is adapted for mounting on the material removal machine and driven thereby taking advantage of the slow movement of the tractor by the infinite speed adjustment. This arrangement provides for slow speed movement of the tractor with maximum speed of the material collecting, processing and blowing means and also of the ditch digging attachment. The attachment also provides an auxilliary power take-off for spraying equipment and the like. Also by simple exchanging of other shafts for the collector screw and/or ice breaking shaft, a myriad of other functions can be efficiently performed, such as lawn raking, sweeping and vacuuming, rototilling, harvesting, aeration, etc.

3,695,717

TUNNELING MACHINE

Josef Birrer, Thun, Switzerland, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed July 21, 1970, Ser. No. 56,909
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **8 Claims**



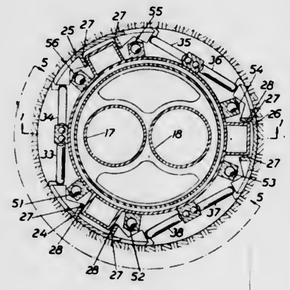
A tunneling machine having a front portion on which two swinging frames with rotating cutter heads are mounted. Four parallelly arranged double-acting hydraulic advance jacks interconnect pivotably the front portion and a rear portion. Both the front portion and the rear portion can be immobilized in the tunnel by means of gripper jacks. The advance strokes of the four advance jacks can be pre-set individually so that these jacks steer the front portion relative to the immobilized rear portion simultaneously with advancing the front portion.

3,695,718

RAISE BORING MACHINE

Ernst Abraham Lauber, 8 Meisenweg, 3600 Thun, Switzerland, and Pieter Barendsen, 12, Ejdervag, 130 10 Ektorp, Sweden

Filed Nov. 9, 1970, Ser. No. 88,069
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **17 Claims**



A raise boring machine for producing a raise of circular cross section has a main frame with a rotating drum which has two rotating tangentially cutting heads. Three wall engaging shoes are suspended in rods in toggle arrangements and they are biased outwardly against the wall of the raise by means of spring devices braced between the shoes. By this arrangement these shoes guide the machine by sliding on the wall during a cutting advance of the main frame effected by means of six advance jacks connected between the main frame and a rear anchoring frame. During the time that the anchoring frame is released from the raise and pulled forward by the advance jacks, however, the same shoes hold the main frame firmly in the raise as a result of the action of the toggle joints. Steering is effected by moving the rear portion of the main frame sidewise in the anchoring frame in any desired direction.

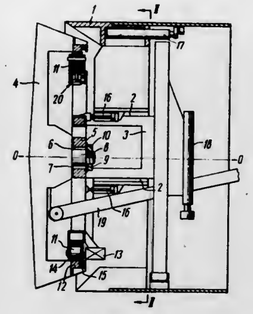
3,695,719

TUNNELLING SHIELD WITH JACK FOR VERTICAL ADJUSTMENT OF CUTTER DRUM

Evgeny Moiseevich Bolotin, Otkrytoe shosse, 24, korpus 25, kv. 12; Boris Nikolaevich Ierusalimsky, Otkrytoe shosse, 24, korpus 5-a, kv. 45; Igor Semenovich Ostrovsky, Otkrytoe shosse, 24, korpus 31, kv. 21; Vladimir Ivanovich Razmerov, Leningradskoe shosse, 62, kv. 90; Valentin Isidorovich Ratin, Studenitsky proezd, 6, kv. 12; Mikhail Evseevich Rivilis, Otkrytoe shosse, 24, korpus 32, kv. 4; Leonid Ivanovich Saveliev, Otkrytoe shosse, 29, korpus 11, kv. 58; Leonid Konstantinovich Khaidurov, Otkrytoe shosse, 24, korpus 5-g, kv. 31; Vladimir Alexandrovich Khodosh, ulitsa Burdenko, 16, kv. 16, and Nikolai Dmitrievich Pisarev, Otkrytoe shosse, 24, korpus 5-a, kv. 20, all of Moscow, U.S.S.R.

Filed Aug. 17, 1970, Ser. No. 64,265
Int. Cl. E01g *3/03*
U.S. Cl. 299—33 **8 Claims**

A tunnelling shield comprising a means for vertical displacement of the rotary rock-cutting member with respect to its frame and the shield axis.

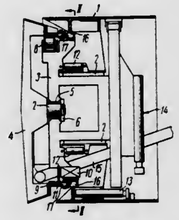


3,695,720

TUNNELLING SHIELD

Evgeny Moiseevich Bolotin, Otkrytoe shosse, 24, korpus 25, kv. 12; Boris Nikolaevich Ierusalimsky, Otkrytoe shosse, 24, korpus 5-a, kv. 45; Igor Semenovich Ostrovsky, Otkrytoe shosse, 24, korpus 31, kv. 21; Vladimir Ivanovich Razmerov, Leningradskoe shosse, 62, kv. 90; Valentin Isidorovich Ratin, Studenitsky Proezd, 6, kv. 12; Mikhail Evseevich Rivilis, Otkrytoe shosse, 24, korpus 32, kv. 4; Leonid Ivanovich Saveliev, Otkrytoe shosse, 29, korpus 11, kv. 58; Leonid Konstantinovich Khaidurov, Otkrytoe shosse, 24, korpus 5-g, kv. 31; Vladimir Alexandrovich Khodosh, ulitsa Burdenko, 16, kv. 16, and Nikolai Dmitrievich Pisarev, Otkrytoe shosse, 24, korpus 5-a, kv. 20, all of Moscow, U.S.S.R.

Filed Aug. 21, 1970, Ser. No. 66,033
Int. Cl. E01g *3/04*
U.S. Cl. 299—33 **9 Claims**



A tunnelling shield provided with shock absorbing supports in the form of hydraulic jacks which via freely rotating rollers are in constant contact with the periphery of the back side of the rotary rock-cutting member.

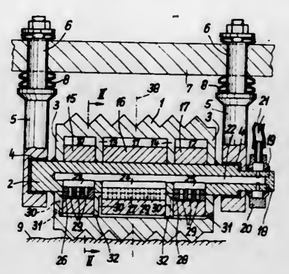
3,695,721

INTERNALLY VIBRATED ROLLER CUTTER APPARATUS FOR CUTTING EARTH AND ROCK

Heinrich Jungel, Rheinhausen, Germany, assignor to Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 13, 1970, Ser. No. 80,398
Claims priority, application Germany, Oct. 24, 1969, P 19 53 550.3
Int. Cl. E21c *25/10*
U.S. Cl. 299—37 **11 Claims**

A roller tool, such as a chisel, especially for mining in which vibratory forces are developed inside the tool in the working direction thereof for enhancing the cutting effect thereof on a formation to which the tool is presented.

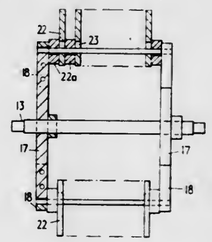


3,695,722

APPARATUS FOR TREATING OR DIGGING INTO SURFACES AND CUTTING MEMBERS FOR THIS APPARATUS

Ernest Sidney Fairweather, London, and Jim Furby, Kirby Muxloe, both of England, assignors to Errut Products Limited, London, England

Filed Feb. 18, 1970, Ser. No. 12,336
Claims priority, application Great Britain, Feb. 27, 1969, 10,628/69
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **13 Claims**



Apparatus for planing or cutting a surface of hard material including a plurality of support rods mounted between two support members and extending parallel to each other, each support shaft carrying a plurality of cutting members or tines rotatably mounted thereon through elongated aperatures and moving means for rotating the support members in an orbital path so that, after impact with the surface of material, the cutting members can be returned to a position approximately along the radial component extending outwardly from the orbital path before the next succeeding impact of that cutting member.

3,695,723

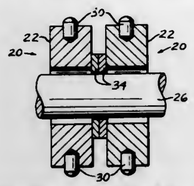
ABRADING TOOL

John F. Kita, and James W. Heaton, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed July 28, 1970, Ser. No. 58,925
Int. Cl. B24b *23/00;* **E01c** *23/09*
U.S. Cl. 299—40 **7 Claims**

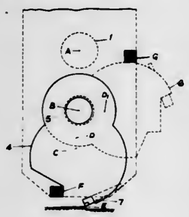
The specification discloses an abrading tool in which rings having hard metallic carbide inserts therein are loosely mounted in side by side relation on a shaft and which shaft, in

turn, is mounted in a reel together with other like shafts so that as the reel rotates on an axis parallel to the shafts, the abrading



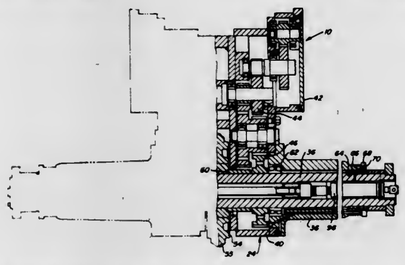
elements will be brought into engagement with a surface to be abraded and the carbide inserts will effect the abrading.

3,695,724
ROTARY IMPACT ROCK BREAKING EQUIPMENT
Richard Francis Taylor, Johannesburg, Transvaal Province, Republic of South Africa; assignor to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Republic of South Africa
Continuation-in-part of Ser. No. 774,061, Nov. 7, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,309
Int. Cl. E21c *25/02*
U.S. Cl. 299—69 **12 Claims**



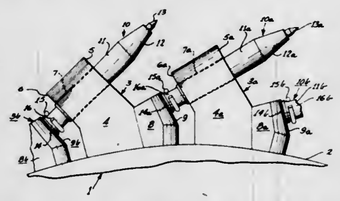
Rock breaking equipment wherein a power driven rotor has hammers pivotally secured thereto with each hammer carrying a striking tip. The hammers are designed as compound pendulums with the striking tip on the major axis of symmetry for the pendulum. The hammers are also made to ensure that they are also capable of a combination of radial and rotational movement relative to the axis of rotation of the rotor. As a result of the unique construction of the hammers and rotor, the operational impact loading applied to the hammer pivot is only a minor proportion of that applied to the hammer striking tip.

3,695,725
MINING MACHINE DRUM CUTTER
Eugene F. Pendolino, 419 Eleventh St., Franklin, Pa.
Filed Sept. 23, 1970, Ser. No. 74,766
Int. Cl. E21c *25/10*
U.S. Cl. 299—80 **10 Claims**



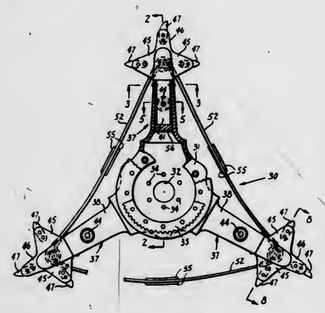
A mining and loading apparatus and more particularly a continuous mining apparatus having improved means for supporting and driving the cutter drum assembly from a floating axle shaft at the forward end thereof.

3,695,726
MOUNTING MEANS FOR CUTTER BITS
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio
Division of Ser. No. 2,874, Jan. 14, 1970, Pat. No. 3,627,381.
This application Dec. 13, 1971, Ser. No. 207,410
Int. Cl. E21c *25/46*
U.S. Cl. 299—86 **10 Claims**



Mounting means for cutting tools of the type having an elongated shank of circular cross section, a hard cutting tip at one end and an abutment surface at the other end. The mounting means comprises a body having a forward surface, a rearward surface and a shank receiving perforation extending through the body from the forward surface to the rearward surface. The shank receiving perforation is of such diameter as to permit free rotation of the cutting tool shank therein and is of such length that the abutment end of the cutting tool shank extends beyond the rear surface of the body. The body is mounted on a driven element of a mining machine. An abutment means is provided in association with the driven element, the abutment means presenting an abutment surface cooperating with the abutment surface on the cutting tool shank and spaced from the rear surface of the mounting means body.

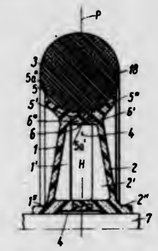
3,695,727
TRACTION ATTACHMENT FOR VEHICLES
Julius Sesky, CMR 2515 456 AMMS, Beale Air Force Base, Calif., and Charles J. Clark, 3023 Winlock Road, Torrance, Calif.
Filed Sept. 25, 1970, Ser. No. 75,444
Int. Cl. B60b *15/22*
U.S. Cl. 301—43 **7 Claims**



A traction attachment for vehicles which consists of a spoked hub having three or more spokes extending outwardly therefrom and mounted on a center rotatable hub for meshing with obstacles in the terrain. The hub is provided with a sprocket or gear over which a drive chain or actuator is trained extending from an engine. The axis of the spoked hub

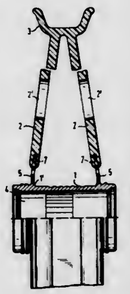
varies from the horizontal to nearly vertical. In a modified form of the invention a belt is secured to the spoked hub to extend thereabout for improved floatative traction. The spoked hub can be attached to any type of land vehicle, water vehicle or snow and ice vehicles as required.

3,695,728
DOUBLE-DISK VEHICLE WHEEL
Berthold Haussels, Tente/Rhineland, Germany, assignor to Happe & Co., Tonisheide, Germany
Filed April 27, 1970, Ser. No. 32,208
Claims priority, application Germany, April 29, 1969, P 19 21 736.8
Int. Cl. B60b *5/02*
U.S. Cl. 301—63 DD **4 Claims**



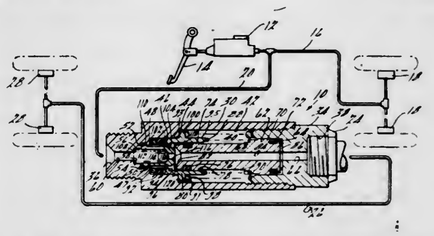
A double-disk vehicle wheel whose synthetic-resin wheel disks are centered upon a common axis and are mutually juxtaposed to define a tire seat along the outer peripheries of the disks. An annular tire is mounted upon the tire seat, and an axially extending barb, connected with one of the disks and a recess formed in the other disk for receiving the barb define a resiliently deformable snap coupling joining the disks together.

3,695,729
PLASTIC BICYCLE WHEEL ASSEMBLY AND MOLD FOR MAKING THE SAME
Hans Joachim Schwerdhofer, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed May 27, 1971, Ser. No. 147,511
Claims priority, application Germany, June 2, 1970, P 20 26 837.5
Int. Cl. B60f *5/02*
U.S. Cl. 301—63 PW **16 Claims**



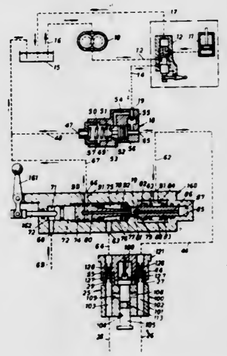
The hub shell and rim of a bicycle wheel are connected by a spoke system of thermoplastic synthetic resin composition forming a unitary body with the rim. The spoke system may consist either of two conical discs or two conical sets of four individual spokes defining therebetween gaps axially aligned with the spokes of the other set. Flanges on the hub are embedded in the discs or spokes. The transmission of thermal energy generated by friction in a transmission or a brake within the hub to the plastic spoke system is impeded by air-filled recesses in the flanges or elsewhere radially between the hub and the spoke system, or by the use of small engaged contact faces on the hub and flange.

3,695,730
PROPORTIONING DEVICE
David T. Ayers, Jr., Birmingham, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Aug. 24, 1970, Ser. No. 66,250
Int. Cl. B60t *8/26*
U.S. Cl. 303—6 C **18 Claims**



A device for varying the proportion of brake pressure delivered to the front and rear brakes of a vehicle having a differential area piston for decreasing the proportion delivered to the rear brake between first and second inlet pressures, and an additional member for abutment with the differential area piston to provide a composite structure having a lesser area differential so as to establish an increasing, fixed or decreasing offset between the pressure delivered to the front and rear brakes above the second inlet pressure.

3,695,731
VEHICLE BRAKING SYSTEM
Michael John England, 15 Eastleigh Croft, Walmley Sutton Coldfield; Derrick Donnell, 73 Rosslyn Ave., Coundon Conventry, and Eric Charles Hales, 16 Gunners Lane, Studley, all of England
Division of Ser. No. 795,104, Jan. 29, 1969, abandoned. This application Oct. 8, 1970, Ser. No. 79,245
Int. Cl. B60t *13/14*
U.S. Cl. 303—7 **12 Claims**



A dual purpose hydraulic accumulator is adapted to store hydraulic fluid and to release a spring to apply vehicle brakes mechanically in the event of loss of hydraulic pressure. A cylindrical cavity in a fixed body member is divided by a free

piston into a pressure chamber for hydraulic fluid and a spring chamber, preferably a gas cushion. A second piston exposed to one of these chambers serves to compress the brake spring.

The dual purpose accumulator may be fitted to a trailer having hydraulic brakes and adapted to be hitched to a tractor. A metering valve on the tractor serves to controllably connect the accumulator to the hydraulic actuators. The tractor and trailer lines are releasably interconnected by a quick-release, twin-line, self-sealing hydraulic coupling. The accumulator and brake lines on the trailer are automatically interconnected to apply the trailer brakes hydraulically in the event of trailer breakaway. The accumulator can be charged from a constant volume hydraulic pump utilizing an unloader valve.

3,695,732

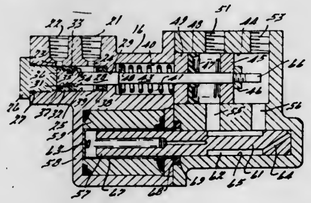
PRESSURE MODULATING DEVICE FOR USE IN ANTI-SKID BRAKE SYSTEM

William Stelzer, Bloomfield Hills, Mich., assignor to Kelsey-Hayes Company

Continuation of Ser. No. 592,688, Oct. 20, 1966, abandoned. This application Jan. 12, 1970, Ser. No. 1,968

Int. Cl. B60t *8/12, 8/26*

U.S. Cl. 303—21 F **11 Claims**



A pressure proportioning and control mechanism for the fluid supplied to the cylinders of the brakes at the front and rear wheels of a vehicle, the mechanism including a proportioning device having a plungerand adapted to reduce the pressure on the rear wheels relative to the front wheels as the master cylinder pressure is increased, a piston on the plunger, a cylinder for the piston having an inlet and outlet port, means including a source of actuating fluid ancillary to the brake actuating fluid and responsive to a rapid deceleration of a wheel to rapidly reduce the braking pressure thereon, and a solenoid valve controlling the flow of fluid between the ports.

3,695,733

BRAKING SYSTEMS

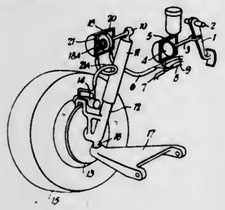
Howard Kenneth Alderton, Luton, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Feb. 17, 1970, Ser. No. 12,092

Claims priority, application Great Britain, Feb. 18, 1969, 8,697/69; Dec. 12, 1969, 60,673/69

Int. Cl. B60t *8/18, 8/00*

U.S. Cl. 303—21 A **9 Claims**



A braking system in which pressure from a master cylinder acting in slave cylinders at the brakes carries initial or low-force braking dependent on the driver's pedal force, there being a mechanical feed-back mechanism which increases the braking pressure in accordance with the mechanical force resulting from brake reaction in the vehicle, e.g. torque or drag. The hydraulic braking force is therefore augmented by fed-back force and in that sense provides a servo effect.

3,695,734

ANTI-WHEEL SLIDE APPARATUS FOR VEHICLES

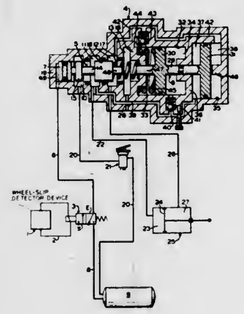
Karl-Friedrich Hennig, Ricklingen; Erich Reinecke, Beinhorn; Herbert Merz, Hannover; Egon Werner, Bordenau; Fritz Isernhagen, Letter; Erwin Holthusen, Berenbostel, and Alfred Klatt, Wettbergen, all of Germany, assignors to Westinghouse Bremsen und Apparatebau G.m.b.H., Hannover, Germany

Filed Aug. 3, 1970, Ser. No. 60,286

Claims priority, application Germany, Sept. 15, 1969, P 19 46 635.4

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 F **10 Claims**



Apparatus for preventing vehicle wheel-slide during braking operations by detecting occurrence of wheel-slip and responding to such wheel-slip at a degree short of wheel-lock or slide, said degree being determined by the condition of the road surface, for effecting, in timed cycles, reduction and reapplication of brake-applying pressure, the degree of said reduction and reapplication of brake-applying pressure varying according to variance in road conditions, until the vehicle is brought to a stop or to the desired state of retardation.

3,695,735

BRAKING PRESSURE CORRECTING VALVE CONTROL DEVICES

Michel Guettier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

Filed May 18, 1970, Ser. No. 38,307

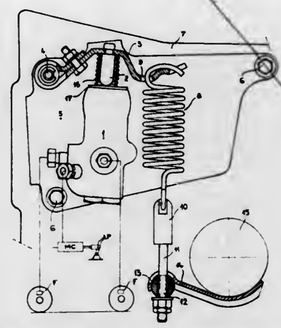
Claims priority, application France, June 4, 1969, 6918314

Int. Cl. B60t *8/22*

U.S. Cl. 303—22 R **5 Claims**

A device for controlling a braking pressure correcting valve which comprises a movable member such as a piston, the position of which determines the operating characteristics of the braking pressure correcting valve, and the device includes such a valve mounted between a sprung portion and an unsprung portion of a vehicle and includes a resilient member

and a push member cooperatively acting with a movable piston wherein the resilient member exerts a permanent force



against the piston and the push member exerts only a temporary force against the piston.

3,695,736

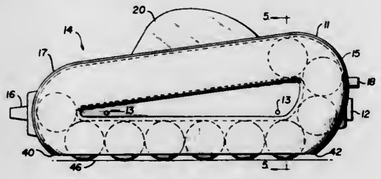
ENDLESS-TRACK-SUPPORTED VEHICLE

Arnold E. Brown, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.

Filed Sept. 3, 1970, Ser. No. 69,313

Int. Cl. B62d *55/18*

U.S. Cl. 305—18 **5 Claims**



A supporting endless track for vehicles of any type comprising a plurality of ground engaging balls or rollers which are confined in a race and which successively move into ground engagement during vehicle movement.

3,695,737

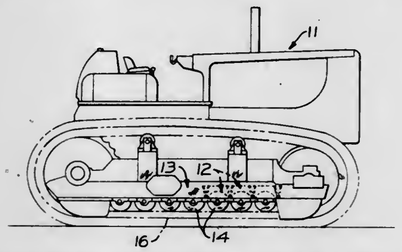
RESILIENT MOUNTING FOR TRACK ROLLERS

George F. Alexander, Pekin; Orville E. Kessinger, Jr., Mackinaw; John R. Rediger, Washington, and Harold L. Reinsma, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 2, 1970, Ser. No. 69,028

Int. Cl. B62d *55/16*

U.S. Cl. 305—27 **6 Claims**



An arrangement for resiliently mounting track rollers to the track roller frame of a tractor or other track laying vehicle wherein preloaded resilient pads are employed to provide a firm mounting under normal conditions while deflecting under shock loads to dampen shock load vibrations. The mounting permits independent removal of each roller without disturbing its preload condition.

3,695,738

Patent Not Issued For This Number

3,695,739

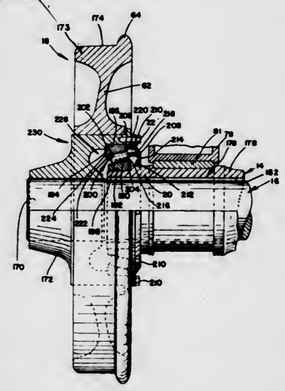
ROLLER BEARING ARRANGEMENT FOR RAILROAD CAR TRUCK

Alfred H. Oelkers, deceased, late of 424 Normandy, San Antonio, Tex., and Thomas C. Gerber, independent executor, Houston, Tex.

Division of Ser. No. 688,037, Dec. 5, 1967, Pat. No. 3,570,409. This application May 22, 1970, Ser. No. 38,645

Int. Cl. F16c *19/14*

U.S. Cl. 308—211 **3 Claims**



The invention relates to a railroad car truck in which the side frames are carried inboard of the wheels on supports that are stationary relative to the side frames. The side frames are provided with spring seats that are substantially aligned with the planes of the wheels on either side of the truck and support through spring groups a bolster of special design that supports the weight of the car body at two points on either side of the bolster, which points are aligned with the respective spring groups. The truck bolster is pivoted to the car body bolster by the usual kingpin, but the coupling arrangement involved is such that none of the body weight is supported at the customary center plate area of the bolster, which area is eliminated in the present truck. The truck bolster at its midportion includes a socket structure into which a projection of the body bolster fits for applying longitudinally and laterally acting forces to the bolster from which they are transferred to the side frames through suitable engaging surfaces.

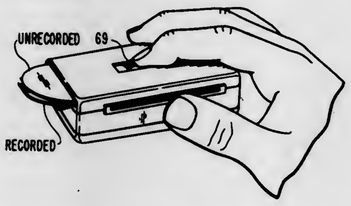
In one form of the invention, the side frames are mounted on tubular housings for the axles, which housings are journalled relative to the wheels through special roller bearing or friction bearing arrangements that are herein disclosed.

In another form of the invention, the side frames are mounted directly on the axles, which are stationary relative thereto, and which have the truck wheels journalled on the respective ends through a special friction type bearing arrangement, with the result that the truck wheels rotate independently of each other.

3,695,740

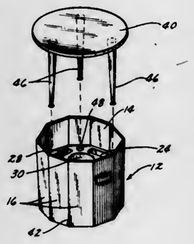
Patent Not Issued For This Number

3,695,741
MINATURE DISC DICTATION MACHINE FEATURING INTEGRAL DISC STORAGE
William L. Dollenmayer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 18, 1970, Ser. No. 99,567
Int. Cl. A47b 81/06
U.S. Cl. 312—10 2 Claims



A miniaturized dictation machine has complete facilities for recording and reproducing sound from a magnetic disc record medium. The machine features an integrally formed storage area comprising a compartment for unrecorded discs and a compartment for recorded discs with separator, guide, and eject means.

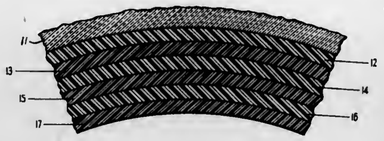
3,695,742
COMBINATION TABLE BAR CABINET
Elmo Paul Allen, 401 Elm St., Ankeny, Iowa
Filed May 20, 1970, Ser. No. 39,099
Int. Cl. A47b 83/00, 85/04; A47c 9/00
U.S. Cl. 312—237 9 Claims



A furniture unit including a cabinet enclosure having a chamber therein and a shelf in the chamber intermediate the ends to provide a top and bottom compartment. A table top member having legs is adapted to cover the chamber with the legs extending through openings in the shelf. In another position the table top member may be used as a table separate from the cabinet and thereby exposing the chamber and shelf in the cabinet. A plurality of receptacles are provided in the shelf for storing ice and bottles when the top member is on the cabinet and exposing them for use when the top member has been removed.

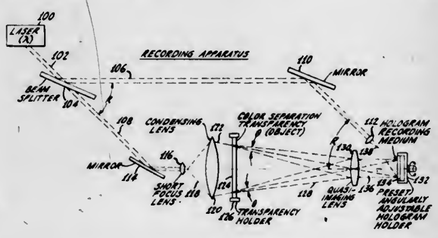
3,695,743
OPTICAL REFLECTOR
Arthur I. Bodkins, Winthrop, Mass., assignor to M. James Zelman, Boston, Mass., trustee
Filed March 16, 1970, Ser. No. 19,763
Int. Cl. G02b 13/14, 5/28
U.S. Cl. 350—1 1 Claim

An optical reflector is disclosed having a glass base substrate which may be in a spherical form. The substrate has six thin alternate high and low index of refraction dielectric layers vacuum deposited on it. The high index material is first



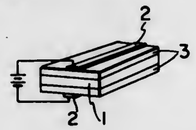
deposited directly on the substrate and the finally deposited is of a low index of refraction material.

3,695,744
HOLOGRAPHIC MULTICOLOR TECHNIQUE
Burton Ross Clay, Wayland, Mass., assignor to RCA Corporation
Filed Jan. 14, 1971, Ser. No. 106,485
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 5 Claims



By successively recording a plurality of surface holograms, each of which manifests a different color component of any multicolor scene, on the same area of a recording medium, the multicolor scene is recorded in holographic form without any undesirable interaction among the various recorded holograms. This is accomplished by choosing a different meridional angle with respect to the recording medium for each separate hologram. During playback, by simultaneously illuminating the recorded multicolor scene in holographic form with separate beams of light, which need not be coherent, each of which corresponds in color to the color manifested by a different one of the plurality of recorded holograms, a multicolored image of the recorded scene is reconstructed. This is accomplished by angularly orienting each of the colored beams of light with respect to the recording medium in correspondence with the meridional angle of the one of the plurality of holograms manifesting that color.

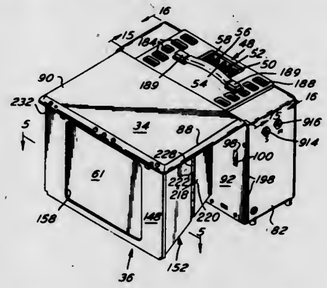
3,695,745
LIGHT WAVE GUIDE CIRCUIT
Motoaki Furukawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 18, 1970, Ser. No. 106,989
Claims priority, application Japan, Jan. 23, 1970, 45/6652
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 8 Claims



A light wave guide circuit includes a transparent body capable of exhibiting the electro-optical effect. Electrodes are

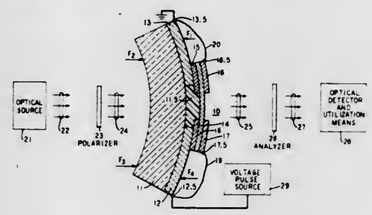
formed according to a preselected pattern on at least one surface of the body such that when a voltage is applied to the electrode, a variation is produced in the index of refraction of that portion of the body lying beneath the electrode thereby forming a selective light path in the body.

3,695,746
COLLAPSIBLE SCREEN ASSEMBLY
Donald A. Youngblood, 111 Dolly Lane, Chalfont, Pa.
Division of Ser. No. 739,909, June 14, 1968, abandoned, which is a continuation of Ser. No. 535,149, , abandoned. This application April 6, 1970, Ser. No. 31,071
Int. Cl. G03b 21/58
U.S. Cl. 350—124 8 Claims



A collapsible screen assembly for a self-contained audio-visual apparatus comprising a forward wall having a translucent screen, a pair of foldable, spring-loaded side walls securing said forward wall to opposite sides of a projection opening in a front wall of the apparatus, and a hood pivotably secured to said front wall above said side walls so as to enclose said forward and side walls when folded and provide a light shield above said forward and side walls when the latter are opened. One side wall can be detached from said front wall and secured to the other side of said projection opening, thereby to provide a front screen projector. The assembly includes various brackets, locating posts, and other members, for facilitating operation, locking, and alignment of the screen assembly.

3,695,747
OPTICAL TRANSMISSION SYSTEM INCLUDING STRAIN-BIASED ELECTROOPTIC CERAMIC DEVICES
Juan Ramon Maldonado, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J.
Filed June 4, 1971, Ser. No. 149,996
Int. Cl. G02f 1/24
U.S. Cl. 350—150 13 Claims



A polycrystalline electrooptic plate, such as a fine grain ferroelectric ceramic plane parallel plate, is subjected to a constant (in time) and uniform (in space) tensile stress along an axis of tension in the plane of the plate. A pair of electrode layers on a major surface of the plate define a gap in the plate, the gap running along a direction at an oblique angle with respect to the axis of tension. Control voltage pulses are applied across these electrodes to produce electric fields in the plane of the plate across the gap, thereby producing a controllable birefringence in the plate with respect to optical radiation propagating normal to the plate in the gap. By locating this place between an optical polarizer and analyzer, an optical switch ("light gate") can be formed with simple electrical access to the electrode layers.

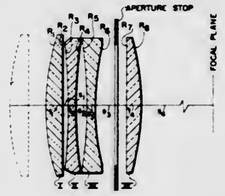
3,695,748
Patent Not Issued For This Number

3,695,749
APPARATUS FOR PRODUCING AN INTERFERENCE PATTERN
Thomas T. Stapleton, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 7, 1970, Ser. No. 62,012
Int. Cl. G02b 27/00
U.S. Cl. 350—163 4 Claims



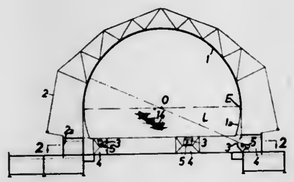
A beam splitter and a mirror form from a laser beam a pair of converging collimated beams directed to the primary focal point of a spreading lens. The lens combines and spreads the beams so that they overlap to produce an interference zone. A device is provided for adjustably moving the above-mentioned optical elements to vary the fringe spacing of the interference pattern.

3,695,750
COMPACT FOUR ELEMENT OBJECTIVE LENS
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 774,141, Nov. 7, 1968, Pat. No. 3,619,036. This application July 28, 1971, Ser. No. 166,933
Int. Cl. G02b 9/36
U.S. Cl. 350—221 2 Claims



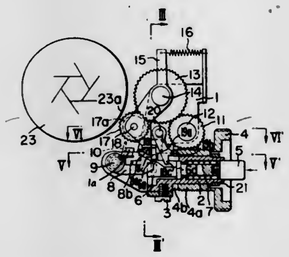
A compact air-spaced four element photographic objective lens is shown with an overall length less than one-tenth its focal length. Chromatic and spherical aberrations, coma, astigmatism, field curvature, and distortion are corrected. Focusing is accomplished by a movable first element. The corrections are optimum when the objective focuses a subject approximately nine focal lengths distant. The ratio of the minimum Abbe ν value of the first and fourth elements to the maximum Abbe ν value of the second and third elements (i.e., Baker's Ratio) is 0.91. The Petzval sum is 0.199.

3,695,751
HEMISPHERICAL MOTION PICTURE SCREEN
Toshio Watanuki, Tokyo, Japan, assignor to The MIDORI-KAI Co., Ltd., Minamiku, Osaka, Japan
Filed Oct. 26, 1970, Ser. No. 84,050
Claims priority, application Japan, Oct. 30, 1969, 44/87438; Oct. 30, 1969, 44/87439
Int. Cl. G03b 37/04
U.S. Cl. 352—70 3 Claims



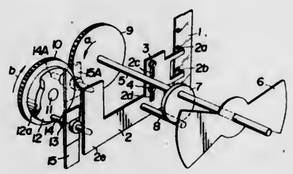
A hemispherical motion picture screen is provided with a spherical or arcuate lower extension, and the screen is comprised of a plurality of individual screen strips. The screen is in the form of a sphere which is truncated below the equator, the lower extension extending downwardly below the equator of the screen and being a continuation of the spherical shape so that dead zones in the projected image are eliminated. The spherical shape of the screen is provided by a plurality of frame units, each of which includes a plurality of generally horizontally disclosed screen strips. The screen strips are positioned in overlapping relationship with their disclosed faces directed downward.

3,695,752
CINE CAMERA
Hideyo Nozawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Aug. 10, 1970, Ser. No. 62,309
Claims priority, application Japan, Aug. 16, 1969, 44/77980
Int. Cl. G03b 7/08
U.S. Cl. 352—141 10 Claims



A cine camera with an automatic exposure control system has a device for temporarily maintaining the aperture diaphragm in a desired stop position or for manually controlling the diaphragm. A shaft is manually displaced along a path of travel against a biasing force to provide manual engagement with the diaphragm to maintain or position the diaphragm and to disconnect the automatic exposure control circuit.

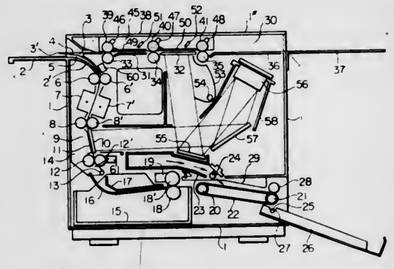
3,695,753
MECHANISM FOR MOVING MOVIE PROJECTOR FILM INTERMITTENTLY IN NORMAL AND REVERSE DIRECTIONS
Makoto Kurasawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Nov. 5, 1970, Ser. No. 87,275
Claims priority, application Japan, Nov. 20, 1969, 44/110899
Int. Cl. G03b 1/22
U.S. Cl. 352—173 3 Claims



A mechanism for moving film intermittently in normal and reverse directions, for a movie projector of the type having a film feed member operated by first and second cams, with the first cam reciprocating the feed member longitudinally of the film and the second cam reciprocating the feed member toward and away from the film, the two cams being driven by a shutter operating shaft, includes a follower interposed between the film feed member and the second cam. The direction in which the film is moved by the feed member can be switched between normal and reverse by shifting the follower on the surface of the second cam through an angle of at least 120° with respect to the axis of the cam. The angle through which the follower is shifted varies in dependence on the number of blades of the shutter of the projector.

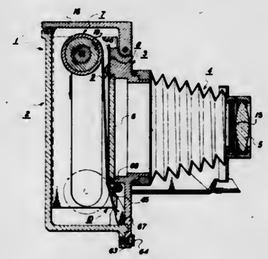
ERRATUM
For Class 353—19 see:
Patent No. 3,695,580

3,695,754
ELECTROPHOTOGRAPHIC APPARATUS FOR COPYING DOCUMENTS OF VARIOUS THICKNESSES
Takaji Washio, Toyonaka; Yasusuke Tohi, Ikeda, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Higashi-ku, Osaka, Japan
Filed May 25, 1970, Ser. No. 40,009
Claims priority, application Japan, May 28, 1969, 44/41452
Int. Cl. G03g 15/00
U.S. Cl. 355—3 8 Claims



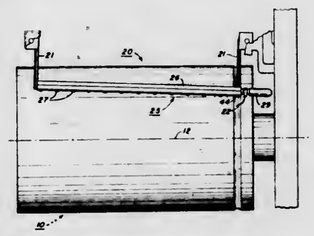
An electrostatic copying machine including apparatus for transporting single sheet original documents or books past an exposure station. All originals are transported and supported by a set of drive rollers along a horizontal path at the top of the machine. To transport single sheet originals a set of opposing idler rollers, each extending adjacent to the central portion of a drive roller and biased downward toward that roller, cooperates with the drive rollers. Slightly thicker materials, such as pamphlets, are placed on a rigid transparent platform having a protective light-blocking cover sheet and are driven between the drive rollers and a set of narrow idler rollers which are located adjacent to both ends of the first idler rollers and which contact the edges of the platform. For books and other still thicker originals the top panel of the machine, to which the first idler rollers are attached, is removed so that those rollers do not interfere with the transporting of the book; the book is placed on the rigid carrier as before, with the narrow edge rollers cooperating as before to transport the carrier.

3,695,755
PHOTOELECTROPHORETIC CAMERA
Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 28, 1970, Ser. No. 84,715
Int. Cl. G03g 15/00
U.S. Cl. 355—3 8 Claims



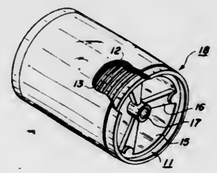
A camera employing the photoelectrophoretic process has a roller mounted to travel over a transparent flat plate. A disposable film sheet containing an ink pod is stretched over the flat plate and a disposable processor sheet is anchored at one end and coupled to the roller at the other. Photoelectrophoretic ink in the film sheet ink pod is spread over the film sheet when the roller is moved across the film sheet. The ink between the processor and film sheets is exposed to light and electric field as the roller travels over the flat plate thereby forming images on the film sheet and the processor sheet. The processor sheet is wound onto the roller during the travel of the roller over the flat plate.

3,695,756
SHEET STRIPPING APPARATUS
Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 29, 1970, Ser. No. 85,052
Int. Cl. G03g 15/00
U.S. Cl. 355—3 3 Claims



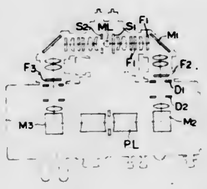
Apparatus for separating a copy sheet, supporting a toner image, from a rotating xerographic drum structure wherein the bond between the sheet and the drum is principally electrostatic. The apparatus includes a manifold having a linear array of spaced discharge orifices or nozzles supported in a spaced relationship relative to the surface of the xerographic drum structure. An elongated depression or recess provided in the circumference of the drum structure is disposed opposite one of the nozzles, to thereby provide means for the air discharged from the nozzle to be introduced between the xerographic drum structure and the copy sheet overlying the depression or recess.

3,695,757
XEROGRAPHIC PLATE
Paul M. Gregory, Cheltenham, England, assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,160
Int. Cl. G03g 15/00
U.S. Cl. 355—3 3 Claims



A xerographic plate including a mandrel and a photoconductive sleeve mounted thereon. The mandrel has an inflatable tube mounted in a groove for securing the sleeve to the mandrel.

3,695,758
ILLUMINATION DEVICE FOR PROJECTOR TYPE IC PRINTER
Hiroshi Tanaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed June 22, 1970, Ser. No. 48,010
Claims priority, application Japan, June 30, 1969, 44/61038
Int. Cl. G03b 27/76
U.S. Cl. 355—71 4 Claims



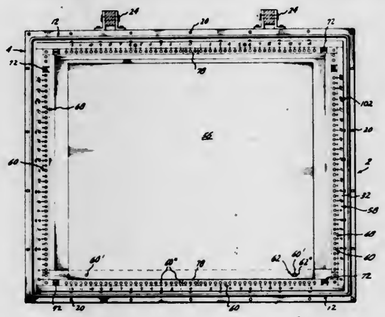
An improved IC printer which projects the pattern of an integrated circuit from a mask to form an image on a wafer includes a pair of similar illuminating optical systems arranged symmetrically with respect to a single light source and which are thermally isolated therefrom. One of the illuminating optical systems is used for illuminating the wafer when aligning the mask and wafer, the other is used for illuminating the mask when projecting the pattern of the mask on the wafer.

3,695,759
Patent Not Issued For This Number

3,695,760
PHOTOLITHOGRAPHICAL IMAGE PROCESSING APPARATUS

Alexander L. Orr, Seattle, Wash., assignor to Renton Engineering Company, Kent, Wash.

Division of Ser. No. 884,235, Dec. 11, 1969. This application Aug. 17, 1970, Ser. No. 64,208
Int. Cl. G03b 27/04
U.S. Cl. 355—95 9 Claims



A chase for use with a tabbed image carrier in a step and repeat photolithographical image processing operation. The chase comprises a flat-faced frame having a platen formed therein for supporting the image carrier, and an indexing system rigidly upstanding on the face thereof, along opposite edges of the platen, comprising series of spaced attachment elements individually aligned with one another on spaced parallel courses from one edge of the platen to the other, and substantially coextensive with the platen at each edge.

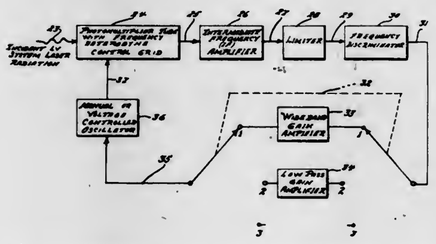
ERRATUM

For Class 356—208 see:
Patent No. 3,694,936

3,695,761
PHOTOMULTIPLIER FOR A LASER VELOCIMETER

Frank L. Crosswy, Tullahoma, and Henry T. Kalb, Manchester, both of Tenn., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 31, 1970, Ser. No. 59,964
Int. Cl. H01j 39/12; H04b 9/00; G01p 3/36
U.S. Cl. 356—28 2 Claims

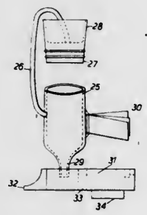


A photomultiplier (PM) tube for a laser velocimeter in which electrodes are utilized in conjunction with a local oscillator signal to permit frequency heterodyning to extend the useful frequency response range of the photomultiplier tube. The heterodyne PM tube is then used as a component in a superheterodyne type signal conditioning instrument for a doppler shift laser velocimeter (LV).

3,695,762
DEVICE FOR DISPENSING PARTICULATE MATERIAL UPON A MOVING SURFACE

Jozef Kazimierz Tylko, and Charles Peter Heanley, both of c/o Development Company Limited, 13, Park Place, St. James, London S.W.1., England

Continuation of Ser. No. 703,140, Feb. 2, 1968, abandoned. This application April 21, 1970, Ser. No. 28,277
Int. Cl. G01n 1/00
U.S. Cl. 356—36 3 Claims

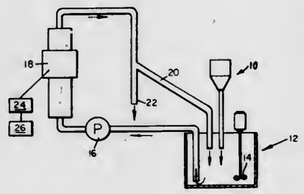


Apparatus for the examination of a stream of material which is required to be presented to a sensor responsive to electromagnetic radiations that are modified by the presence of the material, the apparatus comprising means for moving the material past the sensor whilst supported on a thin flexible strip.

3,695,763
A METHOD OF DETERMINING ONE OR MORE PROPERTIES OF ASBESTOS FIBERS TURBIDITY MEASUREMENT

Jerome Chung Hsuing Shiuh, Highland Park, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,002
Int. Cl. G01n 1/10
U.S. Cl. 356—36 17 Claims

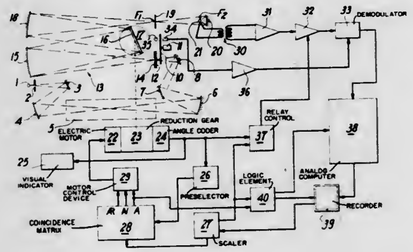


An improved procedure for determining strength and drainage properties of asbestos slurry. The test sample can be either an asbestos fiber slurry or the effluent from an asbestos fiber wet screening. The turbidity reading varies directly with the amount of fine particles present in the dispersion, which amount is related to the fiber strength. Correlation curves can be made from known fiber samples in order to predict the properties of an unknown asbestos fiber. The drainage properties of the fiber can be determined from the rate of fines removal measured as a change in the turbidity of a slurry. Correlation curves for drainage properties can also be made. The test procedure eliminates errors in filtering, drying, weighing and calculating which could arise in previously used tests.

3,695,764
AUTOMATIC SPECTROPHOTOMETRIC ABSORPTION ANALYZER

Pierre Delmas, La Soubeyranne E5, 07 Bourg St. Andeol, and Pierre Imbert, Chemin des Galettes, 84 Orange, both of France

Filed Dec. 1, 1970, Ser. No. 93,941
Claims priority, application France, Dec. 5, 1969, 6942150
Int. Cl. G01j 3/42; G01n 21/04; G01j 3/12
U.S. Cl. 356—97 5 Claims

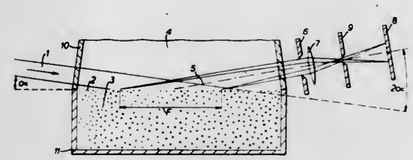


An automatic spectrophotometric absorption analyzer for continuous determination of a plurality of components of a fluid sample, comprising a monochromator with a diffraction grating receiving the light transmitted by a vessel with transparent faces which contains said sample, a photoelectric converter so arranged that the light beam emerging from the monochromator falls on its sensitive element, a unit for determining cyclically a plurality of stop positions of said diffraction grating which define wavelengths corresponding to the absorption lines of components of said sample, and means for automatic computation of the concentration of said components from the signal which is delivered by the converter.

3,695,765
METHOD FOR MEASURING AND/OR MONITORING THE SIZE OF PARTICLES IN SUSPENSION

Jan Paul Bol, Kelkheim; Joseph Gebhart, Frankfurt, Main, and Gunther Seger, Kelkheim, all of Germany, assignors to Laporte Industries Limited, London, England

Filed April 22, 1970, Ser. No. 30,783
Claims priority, application Germany, April 25, 1969, P 19 21 149.5
Int. Cl. G01n 15/02
U.S. Cl. 356—102 7 Claims

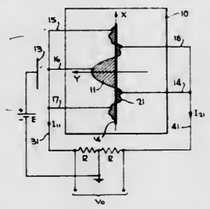


A method for measuring the diameter of particles in a suspension wherein a particle-free layer having substantially the same refractive index as the suspending medium is provided directly above the suspension and the upper surface of the suspension is illuminated at a large angle of incidence by a beam of radiation passing through the particle-free layer and the intensity of radiation that is scattered by the suspended particles and then re-enters the layer is measured for one or more small scattering angles. These measurements of scattered radiation provide a measure of the mean particle diameter of the suspended particles that is substantially independent of the concentration of particles in the suspension.

3,695,766
PHOTOSENSITIVE SURFACE SHAPING FOR OPTICAL HETERODYNING

Dominick Giglio, Hyattsville, Md., and Glen Wade, Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 14, 1970, Ser. No. 2,699
Int. Cl. G01b 9/02; H01j 39/12
U.S. Cl. 356—141 7 Claims

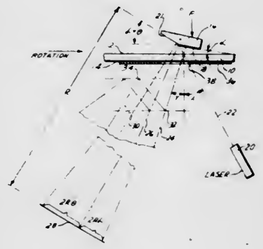


A method and apparatus for optical heterodyning with photosensitive surfaces in which the amplitude of the output current is any desired function of the angle of incidence of the incident light beams. This is accomplished by shaping a photosensitive surface in accordance with the inverse Fourier transform of the desired amplitude of current response. The photosensitive surface is divided into two sections, each section containing one or more photosensitive regions. The sum of all currents produced in the first section is substracted from the sum of all currents produced in the second section and the difference current is applied to a resistor to produce the desired output voltage.

3,695,767
APPARATUS FOR MEASURING MAGNETIC HEAD ANGLE OF A MAGNETIC DISC FILE

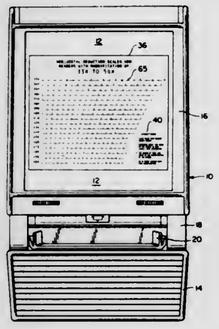
David J. George, Westlake Village, and Wilfred D. Iwan, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,702
Int. Cl. G01b 11/26; G11b 5/00
U.S. Cl. 356—154 5 Claims



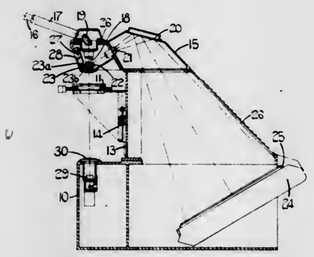
There is described apparatus for measuring the flying angle of a pneumatically supported magnetic head relative to a recording disc in which a laser beam is directed toward a transparent rotating disc. The beam is split by the rotating disc into a reflected beam and an incident beam which falls on an adjacent surface of the recording head associated with the disc. A second reflected beam is formed by the recording head. By measuring the distance between the two reflected beams on a screen, the angle between the disc and the magnetic head can be determined.

3,695,768
METHOD AND APPARATUS FOR DETERMINING MAGNIFICATION RATIO OF MICROFORM READER
Thomas A. Kyle, 2317 Barnett Drive, Bellbrook, Ohio, and Charles T. Croy, 5585 Winshire Terrace, Dayton, Ohio
Filed June 11, 1971, Ser. No. 152,203
Int. Cl. G01b 9/08
U.S. Cl. 356—165 9 Claims



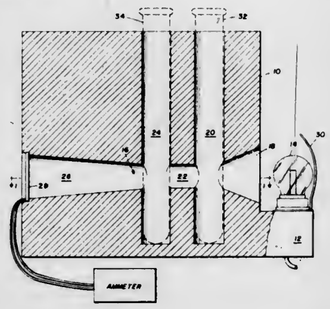
A microform reader chart having a plurality of microimages thereon is used to determine the magnification ratio of a reader and for displaying various size character samples. The character font and spacing is duplicated in a plurality of frames of data, each frame being recorded at a different reduction ratio. The placing of the chart in a reader enables the user to determine in precise manner the magnification of the reader and to observe display of different print sizes and spacing thereof.

3,695,769
OPTICAL COMPARATORS
Peter Alan Mason, Kenilworth, Warwickshire, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England
Filed Jan. 12, 1971, Ser. No. 105,844
Claims priority, application Great Britain, Jan. 30, 1970, 4,537/70
Int. Cl. G01b 0/04
U.S. Cl. 356—168 7 Claims



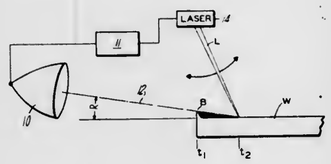
An optical comparator having workpiece support and a platform on which an enlarged layout of a profile can be laid and optical elements for reducing the image and causing it to coincide with an image of the workpiece itself, both the images being visible at the same scale through a microscope of the machine.

3,695,770
METHOD AND APPARATUS FOR DEMONSTRATING PHOTOMETRIC PROCEDURES
Charles R. Granger, 742 Hawkeye Drive, Iowa City, Iowa
Filed July 13, 1970, Ser. No. 54,423
Int. Cl. G01j 3/50; G01n 21/24
U.S. Cl. 356—180 3 Claims



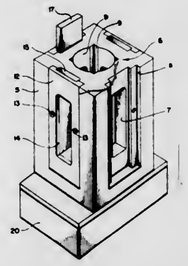
A method and apparatus for demonstrating photometric procedures and conducting colorimetric analysis. The apparatus provides a confined light path from a light source, and a test tube containing a known colored solution and a second tube containing the pure solvent to be used for an unknown concentration of the solute are placed in the light path. Transmission of the light through the tubes is measured, and then an unknown concentration of the solute is added to the second tube and the light transmission again measured and compared with the first measurement. The difference in light transmission can then be used by well known physical laws to determine the unknown concentration.

3,695,771
METHOD AND APPARATUS FOR INSPECTING SURFACES
Andras M. Bardos, 28 Stafford Avenue, Bristol, Conn.
Filed Aug. 6, 1970, Ser. No. 61,580
Int. Cl. G01n 21/32
U.S. Cl. 356—210 10 Claims



Method and apparatus for inspecting the surface of a workpiece for the presence of burrs. A focused laser beam is swept across the surface of the workpiece while a photodetector positioned at an acute angle to the workpiece surface senses reflections produced by the beam. The photodetector, when positioned in the plane swept by the beam, observes reflections from the tip of the burr and from the portion of the path on the surface which is not obscured by the burr. The length of the path portion from which reflections are obscured by the burr is directly proportional to the height of the burr. Suitable logic and measuring networks calibrated to the sweep velocity on the workpiece and triggered by the reflections are capable of determining the length of the obscured portion and therefore the height of the burr.

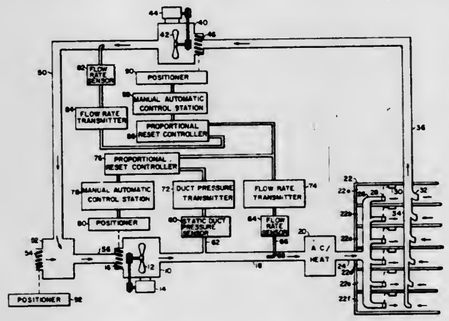
3,695,772
SAMPLE CELL HOLDER FOR RADIANT ENERGY ANALYZERS
Constantine G. Spyropoulos, Westwood, Calif., assignor to Beckman Instruments Inc.
Filed Nov. 16, 1970, Ser. No. 89,901
Int. Cl. G01n 1/10
U.S. Cl. 356—246 8 Claims



A sample cell holder for radiant energy analyzers is provided having four apertures as mutual right angles therein. A longitudinal cell receiving opening is provided which is defined by arced wall portions along the apertures and right-angle corner portions located said way between the apertures to support both circular and square sample cells therein. Removable aperture plates are provided over each aperture and form a channel between the aperture plate and the main cell body for receiving beam modifying means over each aperture. The cell is also provided with conduits for thermostatting fluid.

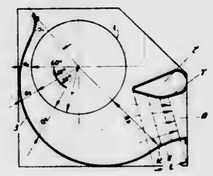
3,695,773
Patent Not Issued For This Number

3,695,774
BLOWER SYSTEM AND CONTROL SYSTEM THEREFOR
Lyle F. Martz, 506 Foltz Drive, Verona, Pa., and John W. Nanz, 3129 Ashlyn St., Pittsburgh, Pa.
Filed June 1, 1971, Ser. No. 148,581
Int. Cl. F01b 25/00
U.S. Cl. 415—17 16 Claims



An automatic control system for high pressure blower applications prevents surging under variable supply flow rate requirements and achieves maximum efficiency of operation. The supply flow rate establishes the set point of a proportional plus reset controller, the latter receiving a feedback signal corresponding to the static discharge pressure of the supply blower and responding thereto for controlling the output of the supply blower. A return blower is controlled either through a characterizer relay in proportion to the control of the supply blower to maintain a fixed precalibrated relationship between supply and return flow rates or by a further proportional plus reset controller responsive to the supply flow rate, for establishing the set point thereof, and to the return flow rate, as a feedback signal thereto, for controlling the output of the return blower.

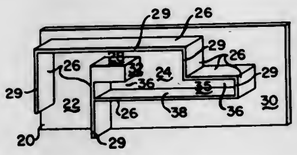
3,695,775
CROSS FLOW BLOWER
Dr.-Ing. Kurt Zenkner, Hertzstr. 12, Ettlingen, Germany
Filed Oct. 9, 1970, Ser. No. 79,453
Claims priority, application Germany, Oct. 10, 1969, P 19 51 115.0
Int. Cl. F04d 17/08, 29/40, 29/66
U.S. Cl. 415—53 12 Claims



A cross flow blower has a plate guide which extends along a spiral curve the distances from which to the periphery of the rotor increase gradually from the beginning of the spiral at the point of the smallest distance between the guide sheet and the periphery of the rotor up to a maximum, this distance to the periphery of the rotor corresponding at the beginning of the spiral approximately to 10 – 30 percent of the radius of the rotor, then increasing after a central angle of about 60° by a further 5 to 30 percent of the radius of the rotor, then again increasing after a central angle of about 30° by about 10 – 30 percent of the radius of the rotor, and increasing thereafter after a further central angle of about 30° by about 20 to 35 percent, whereafter it increases up to reaching the end of the spiral by about 20 to 50 percent of the radius of the rotor, the end of the spiral being reached after a central angle of about 140 to 190° as seen from the beginning or starting point of the guide sheet, the part of this guide plate extending beyond the said – of the spiral either in direction of the tangent to the end of the spiral or along a curve the point of inflection of which lies in the area of the end of the spiral, the distance between the point of the vortex forming tongue lying next to the periphery of the rotor and the periphery of the rotor corresponding to about 5 to 15 percent of the outer diameter of the rotor, and the central angle on the suction side between the beginning or starting point of the spiral and the point of the vortex forming tongue closest to the periphery of the rotor being between 130° – 180°.

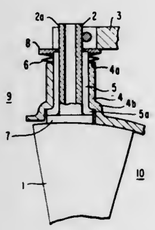
The leg of the vortex forming tongue on the suction side has a finely porous wall permeable to air so that through it finely distributed and energy containing air arrives on the suction side of the blower which air comes from the pressure side of the blower through openings in the pressure side leg, which also consists of a finely porous wall permeable to air, thereby preventing the generation of a boundary layer within the incoming flow. Between the wall on the suction side and the wall on the pressure side there is arranged a filtering substance pervious for air and producing pressure losses.

3,695,776
SELF-PRIMING CENTRIFUGAL PUMP
Clinton Rule, Leather Lane, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.
Filed Oct. 16, 1970, Ser. No. 81,226
Int. Cl. F04d *1/00, 9/00*
U.S. Cl. 415—206 **4 Claims**



A centrifugal pump is described wherein the pumping face of the impeller is disposed vertically and wherein integral self-priming means are provided.

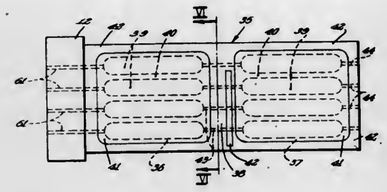
3,695,777
SUPPORTING DEVICE FOR PIVOTAL GUIDE BLADES IN THERMAL TURBO-MACHINES
Bernd Westphal, Wellsville, N.Y., and George Kandler, Munich, Germany, assignors to Motoren-Und Turbinen-Union GmbH, Munich, Germany
Filed May 20, 1970, Ser. No. 39,088
Claims priority, application Germany, May 23, 1969, P 19 26 338.8
Int. Cl. F01d *1/02*; **F01b** *25/02, 17/12*
U.S. Cl. 415—216 **29 Claims**



A device for supporting and sealing pivotal guide blades of turbo-machines, particularly of small gas turbines, in which the blade shaft serving as adjusting shaft for the guide blade is supported in a bearing bush which is fitted within the bearing support of a housing; the blade shaft, the bearing bush and the bearing support are thereby so dimensioned and selected from such materials as regards their coefficients of expansion that the necessary clearance for proper operation will exist at every operating temperature in at least one of the resulting fits.

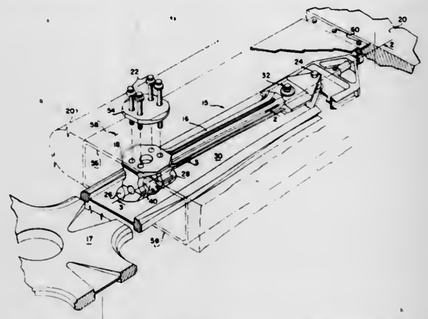
3,695,778
TURBINE BLADE
John E. M. Taylor, Pepper Pike, Ohio, assignor to TRW Inc., Cleveland, Ohio
Division of Ser. No. 764,207, Oct. 1, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,658
Int. Cl. F01d *5/18*
U.S. Cl. 416—92 **12 Claims**

A lightweight turbine blade having a metallic center body and root section with hollowed areas through the center body. The center body is covered by a composite skin interfitted with the center body adjacent the edges of the blade to provide a smooth surface. The edges of the blade are formed by portions of the center body. The skin is attached to the body



by diffusion bonding, adhesives, or other means and the hollowed areas may be filled with plastic foam or other low density material, or may be left hollow.

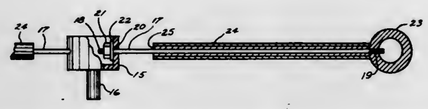
3,695,779
ROTOR SYSTEM INCLUDING A BLADE RETENTION MEMBER
Howard Kastan, Northridge, and Joe C. Pena, La Canada, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 18, 1970, Ser. No. 38,396
Int. Cl. B64c *27/38*
U.S. Cl. 416—135 **13 Claims**



In a helicopter rotor system, a hub assembly including a blade retention member which is compressible and torsionable in installation and operation of such rotor system, the torsional stiffness of the member decreasing with increasing rotor blade speed, the compressible stress not exceeding the strength of the material out of which the member is fabricated. Its inboard end is fixedly connected to either the rotor blade or a movable hub enveloping it at its inboard end, while its outboard end is fixedly connected to the fixed hub or extension thereof in the rotor system. Means are also provided in the system for isolating bearing means supporting the blade from the blade retention member. The member itself comprises a plurality of rails spacedly disposed radially equidistant from a common centerline coincident with the feathering axis for the blade.

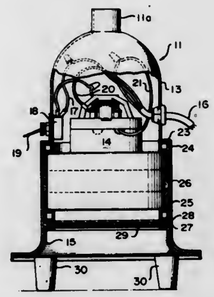
3,695,780
WHEEL-TYPE AIRSCREW HAVING PRE-TENSIONED BLADE SUPPORTS
Henry R. Velkoff, 6715 Beren St., Worthington, Ohio
Filed Oct. 19, 1970, Ser. No. 82,016
Int. Cl. B64c *27/20*
U.S. Cl. 416—189 **10 Claims**

A wheel-shaped rotor for a helicopter or similar aircraft characterized by an inner hub, a plurality of airfoil blades extending outwardly from the hub portion, an outer rim or ring connected with and joining the outer end portions of the



blades, and wherein the blades are supported by pre-tensioned spoke members extending between the hub and outer rim members of the rotor.

3,695,781
GAS MEDIUM CIRCULATING ASSEMBLY
Joseph A. LaBarber, Kern City, Calif., assignor to Henry Weiland, Hacienda Heights, Calif.
Filed Sept. 1, 1970, Ser. No. 68,742
Int. Cl. F04b *49/00, 35/04*
U.S. Cl. 417—12 **7 Claims**

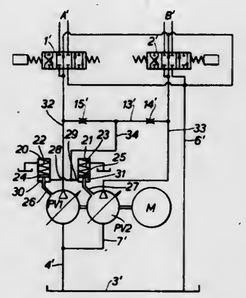


The assembly includes a motor for producing a flow of gas medium that is freely disposed in a housing. Retaining means is used to hold the freely disposed motor in place within the housing. In a specific embodiment of the assembly, the motor is freely disposed against an abutment means. The retaining means includes a rim means or section detachably connected to the bottom of the housing to provide support for the motor. An opening located in the rim means forms an inlet through which a flow of air may pass. Means is attached to the housing for supporting the housing a spaced distance from the surface against which the assembly is to be placed. Means is provided for directing the flow of air outwardly from the housing. In a more specific embodiment, the outwardly directing means for the gas medium includes a tubing passage having holes located therein. The tubing passage may be placed in a bath container for providing a hydromassage to a person in the bath container.

3,695,782
Patent Not Issued For This Number

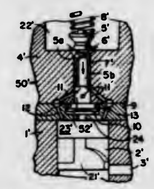
3,695,783
MEANS FOR REGULATING POWER FOR PUMPS
Ingebret Soyland, and Kristian Soyland, both of 4340 Bryne, Norway
Filed Nov. 3, 1970, Ser. No. 86,412
Claims priority, application Norway, Dec. 3, 1969, 4777
Int. Cl. F04b *49/00*
U.S. Cl. 417—216 **3 Claims**

Means for additive power regulation for at least two pumps comprising a control conduit which is connected to the main pump conduits and is provided with throttle means so adjusted to the volume-flows of the pumps that a pressure set up in the control conduit will be proportional to the sum of the effects



of the pumps, said pressure actuating regulating means for connecting the main flow from one of the pumps to the main flow to the other pump.

3,695,784
FUEL INJECTION PUMP CONSTRUCTION
Mataji Tateishi, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 1, 1970, Ser. No. 41,874
Claims priority, application Japan, June 9, 1969, 44/44670
Int. Cl. F04b *49/00, 21/02*
U.S. Cl. 417—296 **4 Claims**

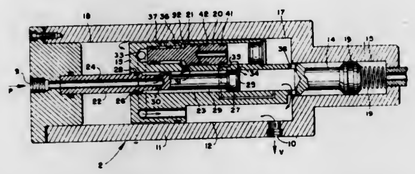


A fuel injection pump includes a fuel pump plunger which is movable to direct the fuel under pressure through a passage which is regulated by a delivery valve. The delivery valve includes a collar portion which, upon the return movement of the delivery valve, causes a sucking back or unloading action on the fuel in a direction toward the pump plunger chamber. The invention provides means for varying the fuel flow area in the return direction of movement of the delivery valve in accordance with the lift of the delivery valve during its operative opening movement. In one arrangement the delivery valve is constructed to close one or more escape ports during its downward return movement for slowing the return flow of the fuel to the plunger chamber and in another embodiment the delivery valve includes an end portion which provides a variable throttling action on a port communicating with the delivery valve passage and the pump plunger chamber.

3,695,785
RECIPROCATING PUMP
Robert Dale Vanderlaan, 724 Fineview Avenue, Kalamazoo, Mich.
Filed Nov. 23, 1970, Ser. No. 91,653
Int. Cl. F04b *17/00, 35/00*; **F01b** *7/18*
U.S. Cl. 417—400 **16 Claims**

Reciprocating pump includes a piston contained in a cylinder which is continuously vented at one end, and the

other end is alternately subjected to pressure and vented through a simplified valve and porting arrangement. During the pressure phase, the piston is moved in the direction of the continuously vented end, whereas return movement of the piston is caused by an external applied force upon venting the



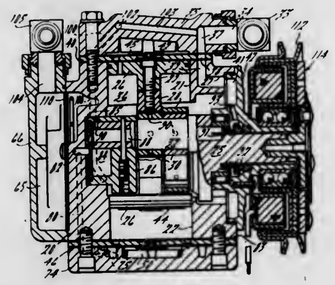
pressure. The valving is located in the piston for maximum simplicity and most direct porting, and a small diameter fixed porting tube may be used to supply pressure to the valving in the piston through porting. The valving and porting relationships between elements assure against pump stalling.

3,695,786

COMPRESSOR AND METHOD OF LUBRICATION

Edwin L. Gannaway, Sidney, Ohio, assignor to Copeland Refrigeration Corporation

Filed Jan. 27, 1970, Ser. No. 6,158
Int. Cl. F16n *13/00*
U.S. Cl. 417—437 **7 Claims**



A Scotch yoke refrigeration compressor of the four cylinder X-type has a rear discharge chamber containing a high pressure oil sump from which oil is led through a capillary tube to a cavity in the body containing a low pressure oil sump from which the oil is led to the parts to be lubricated. The pressure of oil in the low pressure sump is materially reduced but somewhat higher than the pressure in the areas of the lubricated parts. A high point of the low pressure sump is vented to a compressor inlet passage area having a pressure slightly below that in the low pressure sump and slightly above that in the areas of the lubricated parts.

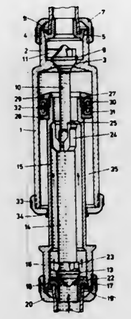
3,695,787

THROUGH RUNNING AND PRESSURE PUMP

Johann Kraus, Innsbruck, Austria

Filed June 4, 1970, Ser. No. 43,354
Int. Cl. F04b *39/10*
U.S. Cl. 417—547 **3 Claims**

The specification describes a reciprocating piston pump for manual or power driven operation. It comprises a piston, a cylinder for the piston, a piston tube carrying the piston and valves adjacent to an outer end of the piston tube ad to the other end of the pump for regulating flow through the pump.



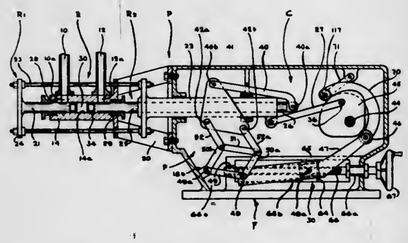
The valves are provided with means for operating them by mechanical friction on relative movement taking place between the piston tube and the cylinder.

3,695,788

APPARATUS FOR PUMPING FLUIDS

Bernard A. Loomans, 3403 Weiss St., Saginaw, Mich.

Filed Jan. 9, 1970, Ser. No. 1,707
Int. Cl. F04b *37/00, 19/00*
U.S. Cl. 417—488 **11 Claims**



This disclosure relates to a fluid pump for pumping fluids with opposed reciprocating pistons which periodically displace fluid between inlet and outlet ports. The pistons, which are mounted in a passage communicating with the ports, may be moved apart to provide an opening for accepting fluid from the inlet port. The pistons are next moved to a location adjacent the outlet port while the volume of the opening remains constant. The pistons are then moved together to close the opening and force the fluid through the outlet port. The volume of fluid displaced may be selectively varied.

3,695,789

BALANCING MECHANISM FOR FLUID TRANSLATING DEVICE

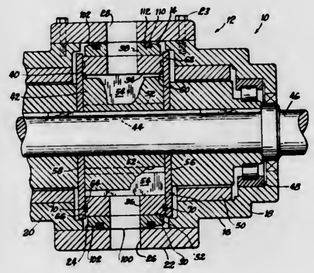
Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company

Filed April 13, 1970, Ser. No. 27,733
Int. Cl. F01c *21/00*; F03c *3/00*; F04c *27/00*
U.S. Cl. 418—75 **14 Claims**

A fluid translating device having a rotor rotatably mounted within a bore in a camblock that is supported within a housing. The rotor is spaced from the bore to define an annular space and has plates extending from opposite ends thereof with the end portions of the side plates being in overlapping spaced

relationship with the opposed surfaces of the camblock. The opposed surfaces of the camblock have a plurality of circumferentially spaced recesses formed therein with each of the recesses communicating with the annular space through a slot. Thus, fluid being translated between inlet and outlet ports flows in the spaces between the end portions of the plate and the adjacent surfaces of the camblock and seals the annular space, while some of the pressure fluid is received in the respective recesses to maintain the camblock in a centered position between the respective end portions of the plates.

In one embodiment, the recesses are arcuate and located on



a common diameter greater than the diameter of the bore. In an alternate embodiment, the recesses are arcuate and one end of each recess is closer to the surface of the bore than the opposite end while the camblock has cutout portions extending from the bore surface and from the outer surface, so that all portions of the plate end portions are exposed to the fluid. In a further embodiment, the recesses are substantially longitudinal and extend chordally of the center of the bore.

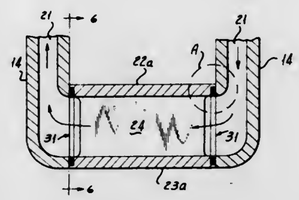
The camblock also has surfaces adjacent the housing opening which are beveled from a center point to produce substantial line contact between the housing opening and the camblock.

3,695,790

HOUSING SEALING MEANS FOR ROTARY ENGINES

Charles Jones, 208 Forest Drive, Hillsdale, N.J.

Filed May 24, 1971, Ser. No. 146,051
Int. Cl. F01c *21/06, 19/00*
U.S. Cl. 418—83 **5 Claims**



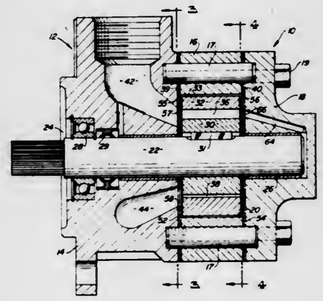
A means of sealing two abutting portions of an engine housing at a location where the available space for sealing means is restricted, by providing a generally annular thin plate having perforations for coolant flow and having an elastomeric gasket applied to each of the inner and outer peripheral edges of the plate, which is positioned in a congruent recess in one of the two abutting housing portions.

3,695,791

VARIABLE SEALED HYDRAULIC PUMP OR MOTOR

Robert Wesley Brundage, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 883,769, Dec. 10, 1969, abandoned. This application Sept. 18, 1970, Ser. No. 73,307
Int. Cl. F01c *19/08*; F03c *3/00*; F04c *27/00*
U.S. Cl. 418—131 **14 Claims**



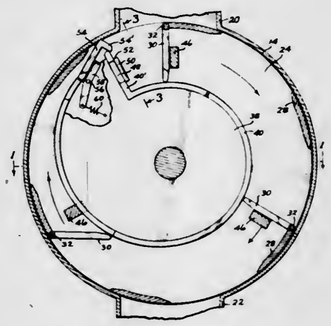
An internal gear pump employs plates at opposite ends of the gears with the plates normally slightly spaced from the axial ends of the gears but deformable into sealing relationship with the gears in response to pressure and/or temperature. The outer periphery of the plates is fixed to the housing and, in the preferred embodiment, the plates are bi-metallic so that as they heat they move to close the space. High pressure is communicated to the side of the plates remote from the gears so as to pressure bias the plates toward the gears. The plates provide an automatic adjustment of the running clearances as the temperature and/or pressures of the device change.

3,695,792

FLUID PRESSURE ENGINE

Iver H. Iverson, Box 41, 3909 East Fourth Plain Blvd., Vancouver, Wash.

Filed Oct. 22, 1970, Ser. No. 83,091
Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*
U.S. Cl. 418—176 **2 Claims**



A stationary, hollow, cylindrical housing having a fluid inlet and a fluid outlet confines within it a rotary vane support which mounts a plurality of circumferentially spaced vanes pivoted thereto adjacent the periphery of the housing on axes parallel to the rotational axis of the vane support. Also within the housing is a fixed core member arranged to provide an an-

nular passageway between it and the housing, the radial dimension of which passageway is substantially uniform from the inlet to the outlet and decreases progressively from the outlet to the inlet in the direction of rotation of the vane assembly. The vanes extend across and substantially close this annular passageway and pivot to allow them to accommodate to the change in radial dimension of the passageway. Fluid under pressure enters the annular passageway through the inlet and applies pressure against each vane as it rotates toward the outlet where the fluid pressure is exhausted. A valve closes the restricted annular passageway releasably adjacent the inlet to prevent fluid under pressure from the reacting counter to the direction of rotation of the vane assembly.

3,695,793

Patent Not Issued For This Number

3,695,794

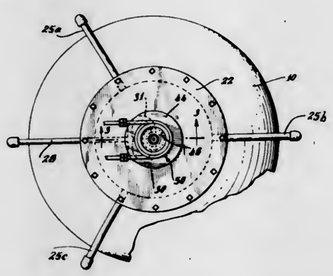
Patent Not Issued For This Number

3,695,795

PRODUCTION OF POWDERED METAL

James L. Jossick, Newtown, Conn., assignor to Conn. Engineering Assoc. Corp., Newtown, Conn.

Filed March 20, 1970, Ser. No. 21,439
Int. Cl. C21c 7/00
U.S. Cl. 425—7 **10 Claims**



Miniaturized apparatus for producing powdered metal of exceptional purity and controlled particle size and shape. The atomizing tank is surmounted by a secondary gas chamber which separates the atomizing nozzle from the molten metal source. The molten metal stream falls through the secondary gas chamber and through the atomizing nozzle into the tank. High velocity gas from the nozzle atomizes the stream and creates a low pressure region within the tank. Gas from the secondary gas chamber passes through the nozzle along with the molten metal stream into the tank. The cooling effect of the high volume of gas permits use of a smaller atomizing tank than those used in prior art units.

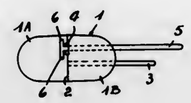
3,695,796

REPAIR PIECE FOR AUTOMOBILE BODIES

Willy Schneider, 74 rue de Kinkempois, a Liege, Belgium

Filed June 1, 1970, Ser. No. 42,016
Claims priority, application Belgium, May 30, 1969, 733,917
Int. Cl. B29h 5/04
U.S. Cl. 425—12 **2 Claims**

A repair piece for automobile bodies comprising a substantially thin plate of foldable material. The plate is folded upon itself along a folding line. A pivot tab is secured to one half of the plate. A rod for unfolding the other half and having a pair



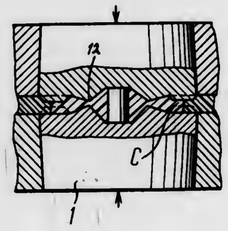
of lateral projections extends freely, through a hole located at the folding line, between the halves.

3,695,797

METHOD AND DEVICE FOR PROVIDING HIGH PRESSURE AND HIGH TEMPERATURE

Valentin Nikolaevich Bakul; Alexei Iosifovich Alexei Prikhna; Alexandr Alexandrovich Shulzhenko, and Alexei Vladimirovich Gerasimovich, all of Kiev, U.S.S.R., assignors to Ukrainsky Nauchno-Issledovatelsky Konsbruktorsko-Tekhnologichesky Institut Sinteticheskikh Sverkhtverdykh Materialov i Instrumenta GOSPLANA, Kiev, U.S.S.R.

Filed Aug. 26, 1970, Ser. No. 66,912
Int. Cl. B30b 11/32
U.S. Cl. 425—77 **6 Claims**



A die pair for use in high temperature high pressure apparatus for use in the synthesis of super hard materials such as diamonds, cubic boron nitride or the like in which the dies include an annular step structure on confronting cooperating faces of the dies to afford over an extended period of time stable, repetitive temperatures in the order of thousands of degrees centigrade and pressures in the order of 60 thousand atmospheres; the confronting die faces having recesses forming a pressure chamber and step structure cooperating with a deformable container of a thermo-and-electro-insulating material such as lithographic stone etc. which deforms as heated and has pressure applied thereto to form an annular sealing "burr" of a greater volume than an outer surrounding annular slot filled with a porous plastic, electro-insulating material such as "technical rubber" etc.; the deformable container being of a volume to fill the space both inwardly and outwardly of the material being treated up to the confronting edge of annular surrounding steps; the outer steps having radial, transverse slots; staggered in confronting relation; for readily accommodating the porous plastic outer seal.

3,695,798

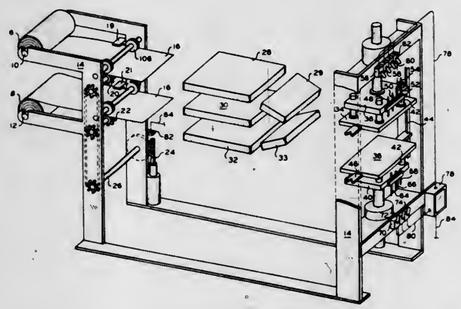
Patent Not Issued For This Number

3,695,799

APPARATUS FOR VACUUM FORMING HOLLOW ARTICLES FROM TWO SHEETS OF THERMOPLASTIC MATERIAL

Edward C. Held, Jr., Bartlesville, Okla., assignor to Philips Petroleum Company

Division of Ser. No. 622,615, March 13, 1967, Pat. No. 3,548,043. This application July 23, 1970, Ser. No. 57,490
Int. Cl. B29c 17/03
U.S. Cl. 425—109 **7 Claims**



Hollow articles are fabricated from two flat sheets by passing said sheets through a heating zone while in a spaced relationship, and thence advancing said sheets forwardly and inwardly into a closer space relationship between two mold halves; said mold halves then being brought together as a vacuum is pulled on each sheet to cause it to conform to the shape of its respective mold. The molds can have means to draw the sheet up to the peripheral edges of the mold so as to minimize scrap. The resulting parts are then severed from the connecting web, such as by shearing with a dull plate. Manifolds are provided in the molds to vent each hollow article when using multicavity molds. In embodiments wherein the sheets are disposed horizontally, the positioning of said sheets relative to said heaters, molds, and the like is adjusted to compensate for the unsymmetrical nature of the heat transfer and sagging. The sheets can be fed from floating rolls to aid in alignment. The entire molding cycle is operated on a combination of time and sequence control so as to eliminate wasted time and allow greater flexibility in adjusting process conditions.

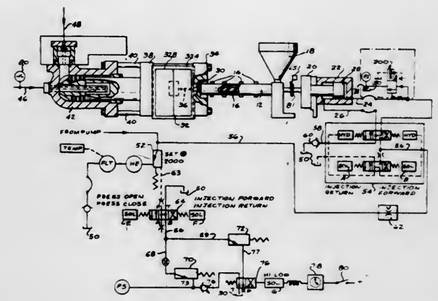
3,695,800

TIME MONITORED INJECTION MOLDING CONTROL APPARATUS

Herman R. Hutchinson, Wyncote; Vasken F. Arpajian, Huntingdon Valley, and Robert S. Malcomson, Lansdale, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 18,142, March 10, 1970. This application July 30, 1970, Ser. No. 59,499
Int. Cl. B29f 1/06
U.S. Cl. 425—146 **17 Claims**

Process control for injection molding machines in which the viscosity of the plasticized material in a shot being prepared is monitored as a function of ram injection speed (rate of melt flow) at constant hydraulic pressure. The interval is measured during ram advancement between the time at which a pressure relief valve opens and the time that the mold cavities are substantially filled (when ram is at end of stroke). If the time period exceeds or falls below predetermined limits, either (1) the heat input to subsequent shots being prepared may be respectively raised or lowered in increments, (2) high pressure injection time may be respectively added or subtracted in increments to increase or decrease the point in time at which lower secondary hydraulic pressure is applied, or (3) injection pressure may be respectively raised or lowered.

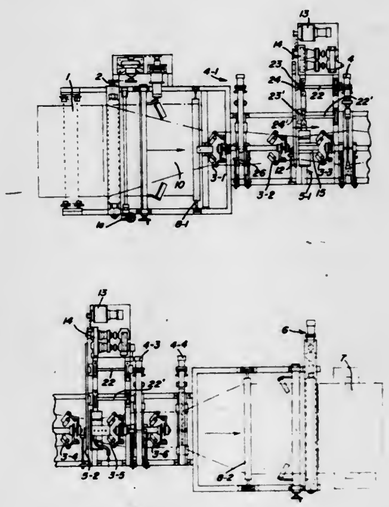


3,695,801

APPARATUS FOR CRUMPLING SHEET-LIKE MATERIALS

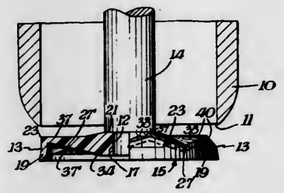
Hidekatsu Matsushita, Kyoto, and Kenichi Ouba, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Osaka, Japan

Filed Aug. 25, 1970, Ser. No. 66,673
Claims priority, application Japan, Aug. 25, 1969, 44/67445
Int. Cl. B29c 17/02
U.S. Cl. 425—193 **15 Claims**



A machine for producing wrinkles in a continuously moving web of sheet material comprises one or more sets of feeding mechanisms for the sheet material cooperating with a pair of semi-circular sinuously slotted dies, one of the dies being fixed and the other being moved in an orbital circular path transverse to the plane of the fixed die but spaced from it and without altering its angular relationship thereto.

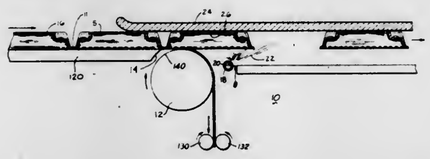
3,695,802
CUTTER AND VALVE DISC FOR RECIPROCATING DOUGHNUT AND CRULLER FORMERS
Chace D. Gilmore, 1224 Pottstown Pike, West Chester, Pa.
Filed Oct. 16, 1970, Ser. No. 81,298
Int. Cl. A21c 3/04, 11/16
U.S. Cl. 425—287 **5 Claims**



A thin, relatively flat cylindrical disc for use with a reciprocating doughnut cutter sleeve is formed to have ridged, radially extending protuberances forming flutes on the upper surface of the disc so as to stroke the dough as it is being extruded to form the raw dough ring thereby creasing the dough formation without breaking its skin formation. This insures uniform cooking of the dough mass around the hole in the cooked dough. The fluted disc is formed of stiffly flexible material preferably having a relatively low heat conductivity. To increase the axial stiffness of the flexible disc and to enhance clean cuts of the dough, an outwardly flared, downwardly extending peripheral flange is formed at the tips of the protuberances. This aids in the positioning of the disc and in effecting a seal between the disc and the reciprocating sleeve and insures that the dough is cut off cleanly. The axial peripheral flexibility of the disc enables the disc, as it flexes slightly during operation, to dislodge particles of dough that tend to adhere to its upper surface thereby enhancing the operation of the disc. Secondly, by forming the disc of a material having a low heat conductivity there is less tendency for the dough on the upper surface of the disc to become heat dried and stuck to the disc which events degrade its proper operation.

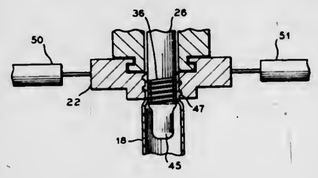
3,695,803
Patent Not Issued For This Number

3,695,804
SHEET MOLDING APPARATUS INCLUDING MEANS FOR REMOVING MOLDED ARTICLES FROM THE SHEET MATERIAL
Lee R. Layman, Windsor Locks, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed March 25, 1970, Ser. No. 22,599
Int. Cl. B22c 17/04
U.S. Cl. 425—292 **3 Claims**



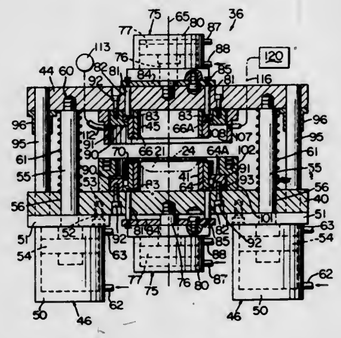
Articles formed from sheet material in a trim in place thermoforming operation are separated from the remainder of the sheet and rapidly removed from the place of separation by a method which involves angularly directing a jet of high velocity gas at the article as the sheet with the article partially separated therefrom is passing over a stripping surface. The apparatus includes a conduit immediately adjacent the stripping surface with a series of angularly oriented openings formed therein for passage of the gas therethrough.

3,695,805
FORMING PLUG FOR BLOW MOLDING ORIENTED ARTICLES
Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company
Continuation-in-part of Ser. No. 880,326, Nov. 26, 1969, Pat. No. 3,649,150. This application Feb. 17, 1970, Ser. No. 12,023. The portion of the term of this patent subsequent to March 14, 1989, has been disclaimed.
Int. Cl. B29c 1/04, 17/07
U.S. Cl. 425—393 **6 Claims**



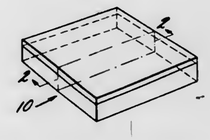
A first end portion of a tubular parison free form which has been heated to orientation temperature is expanded out into conformity with neck or thread forming jaws by inserting into one end of said parison a first end portion of a plug, closing the jaws over the first end portions of the parison and the plug, and thereafter forcing the first end portion and other portions of the plug into the parison.

3,695,806
APPARATUS FOR FORMING A PERIPHERAL BEAD IN FLANGE MEANS OF A PREFORMED CONTAINER
Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of Ser. No. 854,108, Aug. 29, 1969, abandoned. This application June 24, 1970, Ser. No. 49,492
Int. Cl. B29c 17/00
U.S. Cl. 425—398 **1 Claim**



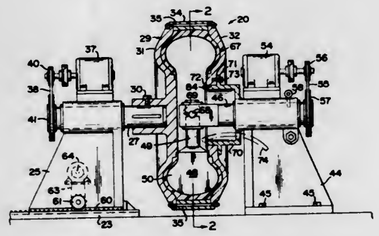
A closure having a peripheral flange portion provided with an annular bottom surface is sealed by the application of heat and pressure to a dish-like container having a peripheral flange portion provided with a cooperating annular top surface so as to define a high quality bonded lamination comprised of the flange portions. The outer portion of the lamination is then curled to form a high strength annular bead which defines the peripheral outline of the side wall of a sealed container.

3,695,807
MOLDING A PLASTIC PRINTING PLAQUE
Robert L. Sorensen, Westport, Conn., and John Casanova, Racine, Wis., assignors to Time, Incorporated, New York, N.Y.
Filed Aug. 17, 1970, Ser. No. 64,244
Int. Cl. B29c 3/00
U.S. Cl. 425—407 **7 Claims**



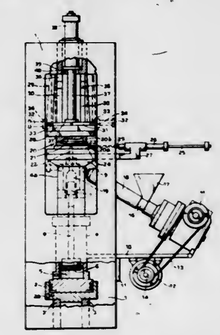
A flat, generally rectangular plastic printing plaque is made in a mold formed with a shallow, generally rectangular cavity for receiving and molding a plastic substance. The mold has a flexible portion and is movable between open and closed positions. A press encloses the mold and holds it closed under pressure to facilitate molding of the plastic substance. The relative conformation of the mold and press is such as to leave an insulating space between the flexible portion and the press. The mold is overcharged so that there is a total lateral deformation of the flexible portion which is within the range of 0.002 inches to 0.020 inches and preferably within the range of 0.006 inches to 0.010 inches.

3,695,808
APPARATUS FOR MAKING TIRES
Heinz Wilhelm Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 796,466, Feb. 4, 1969, Pat. No. 3,555,141. This application April 27, 1970, Ser. No. 43,281
Int. Cl. B29c 5/00; B29h 3/08
U.S. Cl. 425—426 **10 Claims**



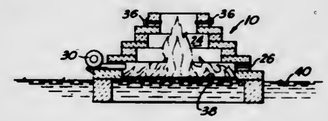
An apparatus for making tires which include a separable mold which has an inner surface which defines the outer shape of a tire to be formed. A generally flat paddle shaped template member extends generally radially within the mold when it is assembled and the cross sectional shape of the tire is determined by the space between the template and the inner surface of the mold. The mold is rotated about its axis while the template member is preferably held in a fixed position. A flowable and hardenable elastomeric material suitable for use in constructing tires (such as polyurethane) is introduced into the rotating mold and centrifugal force urges the flowable material to the inner surface of the mold and when sufficient elastomeric material has been added, the wiping action of the template member on the elastomeric material forms the inner shape of the tire. The material hardens and the mold, the template member and finished tire are separated. The template member is preferably held in a fixed position, however, it may be rotated at a slower speed than the mold or in a reverse direction.

3,695,809
VERTICALLY CLOSING PRESS FOR INJECTION MOLDING THERMOPLASTIC, THERMOSETTING AND ELASTOMERIC MATERIALS
Dino Vicini, Milan, Italy, assignor to Mas Hydraulic & Vulcanizing Machinery Co., S.R.L., Milan, Italy
Filed July 31, 1970, Ser. No. 60,010
Int. Cl. B29c 1/16
U.S. Cl. 425—450 **4 Claims**



A vertically closing press for injection molding comprising an upper platen and a lower platen, an upwardly mounted hydraulic cylinder for producing a quick approach of the upper platen to the lower platen, a transfer chamber fast with and located below the lower platen, and a combination of a hydraulic cylinder for closing and clamping a mold between the platens having a piston forming a further cylinder the piston rod of which provides a transfer plunger in the transfer chamber. An adjustable backing-up device for the upper platen is provided between the latter and the upper beam of the frame, the device being retractable laterally to permit raising of the upper platen.

3,695,810
METHOD AND APPARATUS FOR BURNING COMBUSTIBLE LIQUIDS WITHIN A CONFINED BURNING AREA
Richard B. Heagler, Salem Tsh., Westmoreland County, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Filed Nov. 17, 1970, Ser. No. 90,348
Int. Cl. F23d 21/00
U.S. Cl. 431—2 **13 Claims**



Oil residues and emulsions floating on a body of water are burned by confining the layer of residue within a furnace

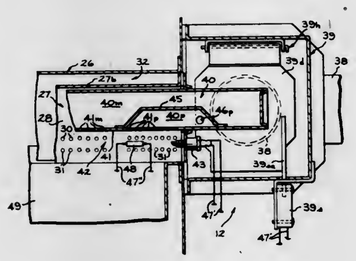
chamber. The furnace has combustion air inlet means adjacent the upper surface of the residue and a stack with inlets for a combustible gas. The combustible gas burns the combustible material in the gasses evolved from the combustion of the liquid residue to provide a relatively smokeless combustion process. The furnace is fabricated from a refractory material having insulating properties so that a substantial portion of the heat given off by the combustion of the residue is retained within the furnace to propogate further combustion of the residue and aid in the complete combustion of the difficult to burn portions of the residue. The furnace is preferably fabricated from a material that permits the furnace to float partially submerged in the body of water and may be easily transported from one location on the body of water to another location thereon. The furnace may be supported from suitable pilings and the residue conveyed directly into the furnace chamber. For certain types of difficult to burn residues, a layer of cellular glass nodules with a textured outer surface is positioned to float on the upper surface of the residue within the furnace chamber.

3,695,811

PILOT AND MAIN FUEL GAS SUPPLY MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER

Theodore C. Brandt, Whitehouse, Tex., and James L. Schulze, Sr., Middletown, Ky., assignors to General Electric Company

Filed Nov. 30, 1970, Ser. No. 93,722
Int. Cl. F23q *9/08*
U.S. Cl. 431—43 **5 Claims**



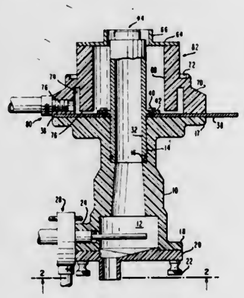
This invention provides novel means for supplying pilot and main fuel gas to the fuel gas-combustion air mixing area of a gas-fired space heater employing pressurized combustor means. The pressurized combustor means include an elongate trough having an imperforate base wall and long side walls that are pierced by a plurality of pressurized combustion air inlet apertures, and a fuel gas supply conduit which extends generally longitudinally through the trough. The fuel gas supply conduit has a long surface that is pierced by a plurality of apertures through which fuel gas can enter the trough and be turbulently mixed with pressurized combustion air in a fuel gas-air mixing area, defined by the apertured trough side walls and the apertured fuel gas supply conduit surface, and can be ignited therein to produce an extremely intense heat source flame that is discharged into the space heater heat exchanger means via hollow interconnecting conduit means. The present invention preferably provides its novel pilot and main fuel gas supply means by installing partition means which divide the hollow fuel gas supply conduit into a pilot and a main gas supply potion. And, control and igniter means are also preferably pivoted in accordance with the present invention such that fuel gas will be first supplied to the mixing area via the pilot portion and ignited before any fuel gas is supplied via the main portion.

3,695,812

BURNER CONSTRUCTION FOR FLAME SPECTROPHOTOMETER AND SYSTEM THEREFOR

Rand E. Herron, Stamford, Conn., and Jack M. Olich, Putnam Valley, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,347
Int. Cl. F23n *3/00*
U.S. Cl. 431—90 **22 Claims**



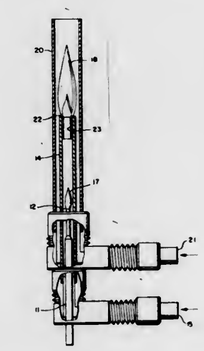
There is provided a spectral flame burner of the preatomizer type having a sample tube the outlet of which is disposed within a carrier gas conduit terminating in a nozzle. The spacing between the outlet of the sample tube and the outlet of the nozzle is adjustable during the normal operation of the analyzer system, including the burner. Improved means is provided to withdraw the outlet of the sample tube to a position in which sufficient gas pressure is developed in the sample tube to blow out any obstruction in the latter, including a lead screw mechanism operatively associated with the sample tube. The burner has an improved cap construction and a control system is provided for the burner to safely shut down the burner when a defect is detected in the burner system.

3,695,813

BURNER AND METHOD FOR DETECTION OF HALOGENS

Paul A. Griffith, La Habra, and David A. Rohrer, Whittier, both of Calif., assignors to Beckman Instruments, Inc.

Filed Nov. 27, 1970, Ser. No. 93,337
Int. Cl. F23j *7/00*
U.S. Cl. 431—126 **4 Claims**



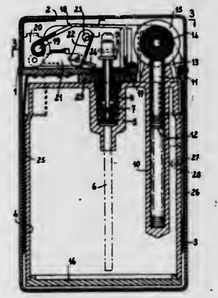
An improved burner and method of construction is disclosed for use in detecting halogen and halogen containing compounds. A ring of indium is coated on the inner surface of a secondary flame supporting structure. A primary flame supporting structure is located within the secondary flame supporting structure. The indium ring is coated over a palladium, gold or rhodium base coating deposited on the secondary flame supporting structure. The method of coating the indium ring is also disclosed.

3,695,814

GAS CIGARETTE LIGHTER

Jean Genoud, Saint-Cyr-Au-Mont-D'OR, France, assignor to Etablissments Genoud & Cie, Venissieux, France

Filed Jan. 8, 1971, Ser. No. 104,925
Claims priority, application France, Mar. 16, 1970, 7009358
Int. Cl. F23q *2/16*
U.S. Cl. 431—131 **2 Claims**



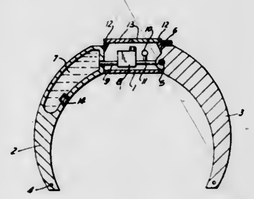
In this novel gas cigarette-lighter arrangement comprising an external case having any desired, refined or luxury appearance, to be kept permanently, and an inner, unitary structure of the so-called "los" type, i.e. adapted to be thrown away and replaced by a new one when the gas initially introduced into the reservoir thereof is exhausted, said inner structure comprises as conventional a head and a reservoir with the mechanism usually associated therewith, such as the pressure reducing device, the valve and the flint and wheel system, and is characterized by a cover pivotally mounted to said head and so arranged that its opening movement causes a forked lever to lift the valve stem and burner member by engaging from underneath the projection usually formed on said member.

3,695,815

LIGHTER

Hans-Joachim Schaefer, 426 Sane, Jokosuka, Japan

Filed May 15, 1970, Ser. No. 37,519
Claims priority, application Austria, May 21, 1969, A 4848/69
Int. Cl. F23q *2/02*
U.S. Cl. 431—135 **5 Claims**



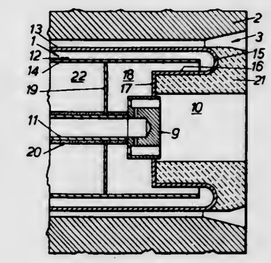
A lighter is attached to the wrist or to a finger by a pair of arms, at least one of which is spring-loaded, while the other arm contains a fuel tank. The lighter may be ignited by operation of one of the arms.

3,695,816

SELF-RECUPERATIVE BURNERS

Brian Oeppen; John Edmondson, and Stanley Sourbutts, all of Warwickshire, England, assignors to The Gas Council, London, England

Filed Oct. 30, 1970, Ser. No. 85,619
Claims priority, application Great Britain, Nov. 1, 1969, 53,674/69
Int. Cl. F23c *7/06*
U.S. Cl. 431—166 **5 Claims**



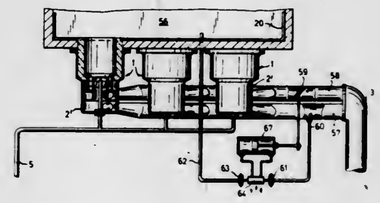
A furnace has a self-recuperative burner mounted in a port in a wall of the furnace so as to form a products passage to conduct products of combustion from the furnace chamber to outside the furnace. The burner includes an air passage which leads to a nozzle mounted in the inlet of a combustion chamber and which is in heat-exchange relationship with the products passage. The air passage extends at first forwards beyond the inlet of the combustion chamber and then rearwards to the nozzle so that the air-heating surface area is more effective and metal in the hottest part of the products passage is cooled.

3,695,817

MUFFLE BURNER

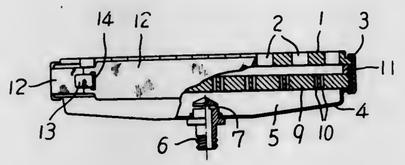
Harendra Nath Sharan, Seuzach, Switzerland, assignor to Sulzer Brothers, Ltd., Wintherthur, Switzerland

Continuation-in-part of Ser. No. 880,683, Nov. 28, 1969. This application May 18, 1970, Ser. No. 38,123
Claims priority, application Switzerland, May 22, 1969, 17646/68
Int. Cl. F23c *5/08*
U.S. Cl. 431—178 **5 Claims**



The muffle burner has a tubular member to divide the burner into two concentric air flow ducts about the fuel line. The ducts are supplied with air over separate lines from a common duct. The air flow in the line for the inner flow duct is regulated by the adjustment of the amount of air flow in the other line via the flow adjusting valve.

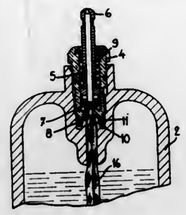
3,695,818
RADIANT BURNER
Katsushi Mizutani, Inazawa, Japan, assignor to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Aichi-ken, Japan
Filed Oct. 30, 1970, Ser. No. 85,323
Claims priority, application Japan, Oct. 31, 1969, 44/86924
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **4 Claims**



A radiant burner comprises a casing with an open chamber supplied with gaseous fuel, and a heating place and burner plate mounted in spaced relation in the casing across the open chamber, the heating plate facing the outside. The heating plate is made of a fire-resisting material and has a large number of circular holes of equal size arranged at equal intervals throughout the entire extent thereof. The burner plate is also made of a fire-resisting material and it has a large number of holes arranged to face the solid portions of the heating plate between the circular holes.

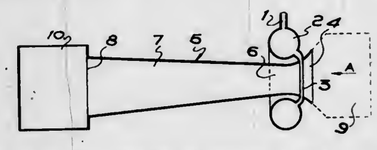
3,695,819
FLAME-ADJUSTER OF GAS CIGARETTE-LIGHTER
Jean Gaston Tricot, 53, Rue du Val d'Oshe, Saint Maurice, France
Filed Jan. 8, 1971, Ser. No. 104,926
Claims priority, application Great Britain, Feb. 2, 1970, 7004384/70
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **6 Claims**

In a gas cigarette-lighter a device for adjusting the flame is provided in the form of spaced resilient lugs projecting from the bottom of the well formed at the upper portion of the gas reservoir constituting the body of the cigarette-lighter, said lugs being disposed concentrically at spaced angular intervals about the axis of the bore connecting the bottom of said well to the inner space of the reservoir. A tapered seat member movable within said well under the control of the valve body is



adapted to cap said lugs and move same more or less towards one another thus modifying accordingly the cross-sectional passage for the gas and therefore the gas output.

3,695,820
GAS BURNERS
Ivor Hawkes, Box 127, Lyme, N.H., and Joshua Swithenbank, Bryce Hill Lane, Hathersage, England
Filed April 20, 1970, Ser. No. 30,030
Claims priority, application Great Britain, April 19, 1969, 20,110/69
Int. Cl. F23d *13/40*
U.S. Cl. 431—354 **8 Claims**



A gas burner comprises an annular chamber surrounding the fuel and air inlet end of a throated nozzle, with a circular slit orifice opening from the chamber into the nozzle upstream of the throat, and a flame stabilizer at one end of the nozzle, fuel gas passing through the slit expanding to form a Coanda wall jet around the inlet peripheral converging wall of the nozzle and inducing a flow of air down the center of the nozzle, the radial pressure gradient created by the jet sheet following the converging wall of the nozzle to its throat bringing about a high degree of air entrainment, whereby stable combustion results, at a point determined by the flame stabilizer.

CHEMICAL

3,695,821
PROCESS FOR FAST DYEING OF FIBRES AND SHAPED ARTICLES
Nobuhiko Kuroki, Sakai, Kiroku Komatsu, Higashiosaka, Shuji Tamura, Kishiwada, and Hiroyuki Matsumoto, Yono, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Nov. 18, 1970, Ser. No. 90,873
Claims priority, application Japan, Nov. 22, 1969, 44/93,357
Int. Cl. D06p *3/10*
U.S. Cl. 8—2 **4 Claims**

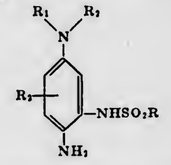
Fibers or shaped articles made from fibers of hydrophobic polymeric hydrocarbon, chlorinated polymeric hydrocarbon or polyester which do not contain a polar group but which do contain a methyl, methylene or methine group or a benzene nucleus may be fast dyed by dyeing the fibers or shaped articles with a dyestuff containing a sulfon azide group by a conventional dyeing process, treating the dyed article to decompose the sulfon azide to sulfonyl nitrene which forms a covalent bond with the fiber and washing the fast dyed fiber to remove the excess dyestuff.

3,695,822
METHOD OF COLORING A SHAPED BODY OF POLY-γ-ALKYL GLUTAMATE
Akira Akamatsu, Yasuo Takagi, and Makoto Iwatsuki, Kanagawa, Yoko Kida, Tokyo, and Kazuhisa Takeshita, Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 27,421, Apr. 10, 1970. This application Sept. 22, 1970, Ser. No. 74,481
Claims priority, application Japan, Apr. 16, 1969, 44/29,519
Int. Cl. D06p *3/00*
U.S. Cl. 8—4 **7 Claims**

When a shaped body of a polymer essentially consisting of repeating units of γ-alkyl glutamate is brought into contact with a solution of a basic, acid, or metal complex dye and of a polyamide in a solvent capable of reversibly swelling the surface layer of the polymer body, the solution is absorbed by the layer. After removal of the solvent, the dye and polyamide are locked in the surface layer. The resulting coloring of the body resists light, water, drycleaning fluids, and abrasion. The method is applicable to fibers and artificial leather based on polyglutamates.

3,695,823
DYEING HUMAN HAIR WITH N-ARYLSULFONAMIDES AND AROMATIC AMINES
Rolf Rehberg, Niederhofheim, and Erik Wiskott, Bottmingen, Switzerland, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany
No Drawing. Filed Feb. 11, 1970, Ser. No. 10,642
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 **4 Claims**

In an aqueous composition for dyeing human hair comprising an oxidation dyestuffs combination of a developer component and a coupling component and customary dyestuff adjuvants, the improvement which comprises utilizing as said oxidation dyestuff combination, from 0.3% to 5% by weight of an oxidation dyestuff combination of (a) a developer component compound having the formula



wherein R is a member selected from the group consisting of a hydrocarbon having from 1 to 10 carbon atoms and an oxygenated hydrocarbon having from 7 to 10 carbon atoms, R_1 and R_2 are alkyl having from 1 to 4 carbon atoms and R_3 is a member selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms and alkoxy having from 1 to 4 carbon atoms, and (b) a coupling component compound, known for hair dyes, having the formula

X—Ar—Y

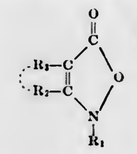
wherein Ar represents an aromatic nucleus, X represents a member selected from the group consisting of hydrogen, amino, dialkylamino having from 1 to 4 carbon atoms in the alkyls and hydroxyl, and Y represents a member selected from the group consisting of amino, dialkylamino having from 1 to 4 carbon atoms in the alkyls and hydroxyl, as well as the method of dyeing human hair utilizing said oxidation dyestuff combination of a developer component and a coupling component.

3,695,824
DYEING HUMAN HAIR WITH ISOXAZOLONE COUPLING COMPONENT
Rolf Rehberg, Brunnenstrasse 5, Heidesiedlung, 6231 Niederhofheim, Germany
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,236
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 **3 Claims**

In an aqueous composition for dyeing human hair comprising an oxidation dyestuffs combination of a developer component and a coupling component and customary dyestuff adjuvants, the improvement which comprises utilizing as said oxidation dyestuffs combination, from 0.6% to 10% by weight of an oxidation dyestuffs combination of (a) a developer component compound, known for hair dyes, having the formula

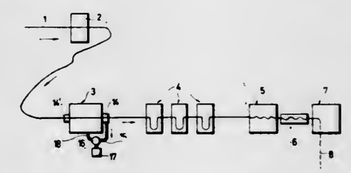
$(X)_nAr—NH_2$

wherein Ar represents an aromatic nucleus, X represents a member selected from the group consisting of hydrogen, amino, dialkylamino having from 1 to 2 carbon atoms in the alkyls, alkoxy having from 1 to 2 carbon atoms, alkyl having from 1 to 2 carbon atoms and hydroxyl and n is an integer from 1 to 2, and (b) a coupling component compound having the formula



wherein R_1 is selected from the group consisting of hydrogen and an acid group capable of being hydrolytically cleaved, R_2 represents a hydrocarbonyl, R_3 represents a member selected from the group consisting of hydrogen and a hydrocarbonyl and R_2 and R_3 together represent the residue of a six membered ring, as well as the method of dyeing human hair utilizing said oxidation dyestuffs combination of a developer component and a coupling component.

3,695,825
ACOUSTIC METHOD FOR THE POSTTREATMENT OF FIBERS
Pal Greguss and Sandor B. Nagy, Budapest, and Janos Erdei and Lajos Toth, Nyergesujfalu, Hungary, assignors to Magyar Viscosa Gyar, Nyergesujfalu, Hungary
Continuation-in-part of application Ser. No. 616,205, Feb. 15, 1967. This application Mar. 30, 1970, Ser. No. 23,878
Inc. Cl. D01c
U.S. Cl. 8—137 **6 Claims**



An apparatus and a method for the posttreatment of fibers including the removal of valuable, reusable impurities from the fibers wherein the fibers are led through a wash-liquor in which an acoustic field is excited.

3,695,826
MOISTURE- AND HIGH-TEMPERATURE TREATMENT OF FABRICS BEFORE FINISHING OPERATIONS
Christian August Meier-Windhorst, Hamburg, Germany, assignor to Artos Dr. Ing. Meier-Windhorst Kommanditgesellschaft, Heidenkampsweg, Germany
No Drawing. Filed June 9, 1971, Ser. No. 151,533
Int. Cl. D06c *1/06*
U.S. Cl. 8—149.3 **6 Claims**

In a process for the finishing or conditioning of textiles in fabric form, including bleaching, dyeing, treatment after printing or final or advanced finishing in which the treated fabric is, after impregnation with the treatment medium, exposed to a heat treatment, the improvement which comprises the fabric to be treated after impregnation and before undergoing a heat treatment to a moisture content, ranging from 10 percent above to 15 percent below saturation content in the case of fabrics consisting predominantly of natural or absorbent fibers

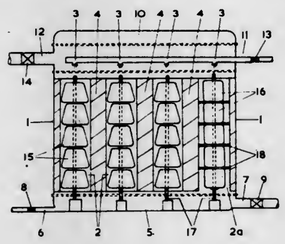
and which ranges from 10 percent below to 10 percent above saturation in the case of fabric consisting of predominantly less absorbent chemical or man-made fibers and thereupon subjecting the fabric to a treatment by heat in a medium consisting of steam or a steam/air mixture under super pressure, the vapor pressure or partial pressure whereof does not exceed 25 atmospheres absolute.

3,695,827

TREATMENT OF PACKAGES

Geoffrey Charles Morton Byrd, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 7, 1970, Ser. No. 1,084
Claims priority, application Great Britain, Jan. 15, 1969, 2,425/69
Int. Cl. B05c *8/02*
U.S. Cl. 8—155.2 **12 Claims**



A process for the treatment of a substantially cylindrical package which comprises passing a processing fluid through the package in a direction substantially parallel to its longitudinal axis.

3,695,828

METHOD OF PURIFICATION OF EXHAUST GASES FROM NITRIC OXIDES

Petr Petrovich Gertsen and Taisia Georgievna Suvernewa, Perm, U.S.S.R., assignors to Permsky Politekhnichesky Institut, Perm, U.S.S.R.

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,523
Int. Cl. B01d *53/34*
U.S. Cl. 423—239 **7 Claims**

A method of purification of exhaust gases from nitric oxides wherein the exhaust gases are subjected to sorption with an alkaline reagent for removing higher oxides, then the gas is contacted with pyrite FeS_2 sprayed with water, in which case the basic portion of the nitric oxide is reduced to elementary nitrogen, after which the purified gas with residual nitric oxide is contacted with carbon monoxide so that the residual nitric oxide is reduced to elementary nitrogen.

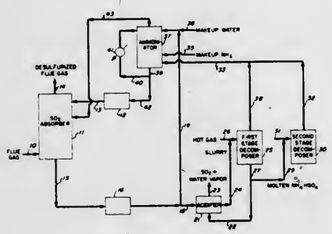
3,695,829

TWO STAGE AMMONIUM SULFATE DECOMPOSITION IN FLUE GAS DESULFURIZATION PROCESS

Lindsay I. Griffin, Jr., Summit, and Albert B. Welty, Jr., Westfield, N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 869,226, Oct. 26, 1969. This application June 1, 1970, Ser. No. 41,941
Int. Cl. C01b *17/50, 17/60*
U.S. Cl. 423—242 **2 Claims**

Buildup of sulfate ions in a flue gas desulfurization process employing an aqueous ammoniacal absorbent is prevented by reducing a portion of the sulfate to sulfur dioxide. Sulfur dioxide is removed from flue gas by absorption in an aqueous solution of ammonium sulfite or ammonia. Some oxidation of tetravalent sulfur to hexavalent sulfur takes place. At least a portion of the absorber effluent solution is regenerated by acidification with ammonium bisulfate to liberate sulfur dioxide and to form an aqueous ammonium sulfate-ammonium bisulfate slurry. This slurry is decomposed in two stages. In the first stage, water is evaporated and the ammonium



sulfate content is decomposed into ammonium bisulfate. A major portion of this ammonium bisulfate is returned to the acidifier. A minor portion, equivalent to the amount of sulfite oxidized to sulfate in the sulfur dioxide absorber plus the amount of sulfur trioxide in the entering flue gas, is decomposed into a completely gaseous product mixture comprising ammonia, nitrogen, and sulfur dioxide. The gaseous decomposition products from the two decomposition stages are used in the preparation of fresh aqueous absorbent solution.

3,695,830

METHOD OF TREATING SODIUM BICARBONATE RECOVERED FROM ADIPONITRILE PRODUCING REACTION SOLUTIONS TO RECOVER SODIUM CARBONATE AND ORGANIC SUBSTANCES DEPOSITED THEREON

Hiroo Watanabe, Fujisawa, Koosuke Yamamoto, Kamakura, Takeshi Abe, Fujisawa, and Motoo Kawamata, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed May 26, 1969, Ser. No. 827,895
Claims priority, application Japan, May 31, 1968, 43/36,670; June 1, 1968, 43/37,062
Int. Cl. C07c *121/26;* **C01d** *7/12*
U.S. Cl. 423—206 **9 Claims**

Method of treating sodium bicarbonate by-produced in the production of adiponitrile by hydrodimerizing acrylonitrile by means of sodium amalgam and carbon dioxide in an aqueous solution of acrylonitrile in the presence of a catalyst and/or solvent, comprising the steps of separating by-produced sodium bicarbonate from the reaction solution, washing it with acrylonitrile and calcining the washed sodium bicarbonate at a temperature of 70 to 300° C. to convert it to sodium carbonate and at the same time to recover the organic substances deposited on the sodium bicarbonate.

3,695,831

ABSORPTIVE SODA ASH

David Goldstein, East Brunswick, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,778
Int. Cl. C01d *7/14*
U.S. Cl. 423—189 **8 Claims**

A low bulk density, highly absorptive soda ash, suitable for use in detergent formulations, is produced by agglomerating fine soda ash particles with water, carbonating the resulting wet sodium carbonate monohydrate to produce predominantly sodium sesquicarbonate, and calcining the resulting carbonated mixture to soda ash.

3,695,832

PROCESS FOR REDUCING THE THIOUREA AND SULFATE CONTENT OF ALKALI AND ALKALINE EARTH-METAL RHODANIDES

Hans-Dieter Rupp, Mozartstr. 1, Erlenbach, Germany; and Gerhard Meyer, Blumenstr. 26; and Helmut Magerlein, Blumenstr. 40, both of Obernburg, Germany

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,029
Claims priority, application Germany, Nov. 20, 1970, P 20 56 995.3
Int. Cl. C01c *3/20;* **C07c** *157/00*
U.S. Cl. 423—366 **10 Claims**

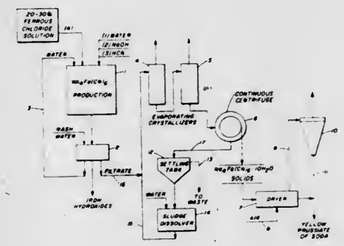
The process for reducing the content of both thiourea and the sulfate ion in a crude alkali or alkaline earth-metal rhodanide wherein the impure or crude rhodanide is heated in an aqueous solution at elevated pressures and temperatures while maintaining the molar ratio of thiourea:sulfate of the initial aqueous solution at a value of at least 3:1, thereby converting both thiourea and sulfate ion into gaseous reaction products and sulfur which are then separated or given off from the reaction mixture. The remaining liquid solution is concentrated, filtered and cooled for separation of a purified rhodanide, and the resulting mother liquor is preferably recycled for combination with fresh crude rhodanide.

3,695,833

PRODUCTION OF ALKALI METAL FERROCYANIDE

Oscar Fontaine Wiedeman, New Orleans, La., and Kenneth Worden Saunders, Darien, and Michael Niall O'Connor, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of abandoned application Ser. No. 823,672, May 12, 1969. This application June 16, 1971, Ser. No. 153,861
Int. Cl. C01c *3/10, 3/12;* **C01g** *49/10*
U.S. Cl. 423—367 **14 Claims**



An aqueous alkali metal cyanide solution is reacted with a solution of ferrous chloride in the presence of free alkali metal hydroxide. This produces a solution of alkali metal ferrocyanide and alkali metal chloride and a precipitate of iron hydroxide, which is filtered off. The filtrate is evaporated to give crystals of alkali metal ferrocyanide, preferably under vacuum, and at solution temperatures at which anhydrous alkali metal ferrocyanide will not form; the resulting crystals of alkali metal ferrocyanide are separated and dried.

3,695,834

CATION EXCHANGE CONVERSION OF HYDROXYLAMINE SULFATE TO HYDROXYLAMINE NITRATE

Earl J. Wheelwright, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,499
Int. Cl. C01b *21/14*
U.S. Cl. 423—395 **6 Claims**

Hydroxylamine sulfate is converted to hydroxylamine nitrate by passing an aqueous hydroxylamine sulfate solution through a cation exchange resin bed which adsorbs the hydroxylamine, washing the sulfate ion from the resin bed and eluting the hydroxylamine as hydroxylamine nitrate with nitric acid.

3,695,835

AMMONIUM POLYPHOSPHATE MANUFACTURE

Tommy Carter Kearns, 5225 Clover Drive, Lisle, Ill. 60532, and Yang Joo Kim, 928 Sharon Drive, Addison, Ill. 60101

No Drawing. Filed May 6, 1970, Ser. No. 35,223
Int. Cl. C01b *25/28, 25/38*
U.S. Cl. 423—310 **8 Claims**

A method is disclosed for forming ammonium polyphosphates having self-sequestering properties by quickly heating and converting a stream containing ammonium phosphate to ammonium polyphosphate. In one embodiment, ammonia and phosphoric acid are combined in a restricted reaction zone so as to form ammonium phosphates, steam and in some instances free ammonia, and are then subjected to hot gases so as to raise the temperature of the reaction mass to above about 450° F. whereby said ammonium phosphates are converted to ammonium polyphosphate.

3,695,836

SYNTHESIS OF PURE MINERAL SPHENE IN THE FORM OF UNIFORMLY SIZED PARTICLES

Julie Chi-Sun Yang, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed May 26, 1970, Ser. No. 40,711
Int. Cl. C01b *33/24, 33/20*
U.S. Cl. 423—331 **7 Claims**

Method of synthesizing a pure mineral sphene in the form of uniformly sized particles adaptable for use as paint type pigments which are stable under exaggerated thermal and other aggressive conditions, comprising prereacting at ambient temperatures a mixture of oxides of the constituents consisting of lime, titania, and silica, and thereafter hydrothermally reacting at high temperature and pressure, within an atmosphere of substantially saturated water vapor.

3,695,837
PREPARATION OF CRYSTALLINE SYNTHETIC ZEOLITES
Stephen Sunderland, Widnes, Lancashire, and Thomas V. Whittam, Yarn-on-Tees, Yorkshire, England, assignors to Laporte Industries Limited, London, England
Filed May 28, 1970, Ser. No. 41,428
Claims priority, application Great Britain, May 29, 1969, 27,131/69
Int. Cl. C01b *33/28*
U.S. Cl. 423—328 13 Claims

Crystalline synthetic zeolites are prepared by reacting in an aqueous reaction mixture in suitable proportions a siliceous component, an alumina component, and an alkali metal component, a portion of the siliceous component being provided by a crystalline aluminosiliceous compound obtained by partially removing aluminum from the lattice of a crystalline zeolite with an acid while retaining at least some crystallinity.

3,695,838
PROCESS FOR RECOVERING MERCURY FROM WASTE WATERS OF INDUSTRIAL PROCESSES
Wilhelm Knepper, Marl, and Severin Austin, Sythen, Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Germany
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,775
Claims priority, application Germany, Oct. 31, 1969, P 19 54 828.8
Int. Cl. C22b *43/00*
U.S. Cl. 425—106 6 Claims

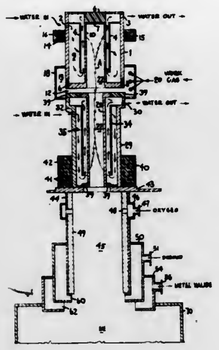
Mercury present in waste waters from industrial processes, such as the electrolysis of alkaline-chlorides using the amalgam method, is recovered to prevent losses thereof and to prevent ecological contamination of waterways. Recovery is accomplished by converting the mercury to low-water-solubility compounds and/or to metallic mercury by the use of precipitants and subsequent separation thereof from the waste water.

3,695,839
PROCESS OF PRODUCING CHLORINE DIOXIDE
Joseph Callerame, Rochester, N.Y., assignor to Chemical Generators Inc., Rochester, N.Y.
No Drawing. Filed Apr. 27, 1970, Ser. No. 32,366
Int. Cl. C01b *11/00*; C01d *9/16*; C01f *11/36*
U.S. Cl. 423—479 5 Claims

Chlorine dioxide is produced by passing the reaction product of nitric acid and a chlorate of an alkali metal or alkaline earth metal through a cationic exchange resin or by heating the reaction product at a temperature of about 110° C. The reaction product of nitric acid and the chlorate contains chloric acid which may be utilized per se.

3,695,840
METHOD OF PREPARING METAL OXIDES WITH ARC GAS HEATERS
Emil Pfender, Minneapolis, Minn., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 4, 1970, Ser. No. 34,436
Int. Cl. C01g *23/04*
U.S. Cl. 423—613 21 Claims

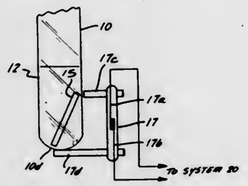
Metal oxides, such as titanium dioxide, are prepared by vapor phase oxidation of corresponding metal halides in a reaction space supplied with heat energy from a gas stream heated by electrical energy. Arc gas heaters having front and back electrodes are described. Magnetic field means about the front electrode are used for preventing elongation of the arc struck between the front and back electrode and preventing location of the arc foot on the external surface of the front electrode of the arc gas heater.



3,695,841
PURIFYING HYDROGEN
Guenter Zirker, 78 Schelmenzeile; Walter Sanne, 24 Ungsteiner Strasse; Kurt Pilch, 56 Rheinrugenstrasse; and Gerhard Schulze, 46 Leuschnerstrasse, all of 6700 Ludwigshafen, Germany
No Drawing. Filed July 29, 1970, Ser. No. 58,991
Int. Cl. C01b *1/30*
U.S. Cl. 423—651 5 Claims

Hydrogen which has been obtained in the dehydrogenation of hydrocarbons or their derivatives is purified by passing it at elevated temperature over a supported catalyst which contains as the active ingredient nickel and as the carrier aluminum oxide, magnesium oxide or a mixture of the two.

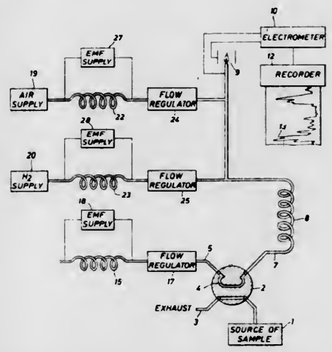
3,695,842
METHOD AND SYSTEM FOR ANALYZING A LIQUID
Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.
Filed Mar. 12, 1970, Ser. No. 19,003
Int. Cl. G01n *11/10, 33/16*
U.S. Cl. 23—230 R 32 Claims



An analysis of the time duration it takes for a liquid to transform itself to a gelatinous or solid mass. A vessel contains a magnetically permeable member immersed in the liquid and magnetic flux lines are passed through the member and the zone. To agitate the liquid, a relative motion is produced between the zone and the member. A predetermined change in the magnetic flux lines is detected when the liquid transforms itself and a signal is generated at the time of such detection.

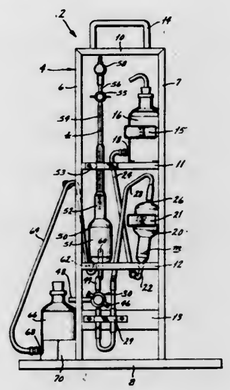
3,695,843
Patent Not Issued For This Number

3,695,844
GAS CLEANING CONDUIT
Harold L. Wise, Arley Walters, and Ray G. Cook, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 28, 1970, Ser. No. 75,858
Int. Cl. G01n *31/08, 31/12*
U.S. Cl. 23—232 C 2 Claims



A gaseous fluid is freed of a heat-sensitive contaminant by flowing the fluid through a capillary sized conduit having metal walls through which an electric current is flowed to heat the fluid within the conduit to at least about 700° C.

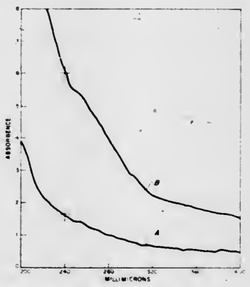
3,695,845
APPARATUS AND PROCESS FOR MEASURING THE AMOUNT OF AIR IN GASEOUS MIXTURES OF CARBON DIOXIDE AND AIR
Martin C. Watz, Worthington, Ohio, assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.
Filed Oct. 6, 1970, Ser. No. 78,511
Int. Cl. G01n *31/06*
U.S. Cl. 23—232 R 18 Claims



The amount of air in a gaseous mixture of carbon dioxide and air is determined by filling a calibrated vessel or burette with a potassium hydroxide solution and similarly filling a reservoir of known volume with water. Then the gaseous mixture is introduced into the reservoir, displacing the water therefrom, until the mixture occupies the known volume of the reservoir. The water so displaced, however, maintains the gaseous mixture under pressure and when a valve which is disposed between the reservoir and the vessel is turned, the displaced water forces the known volume of the gaseous mixture into the vessel, causing the mixture to bubble into the potassium hydroxide solution therein. As the gaseous mixture bubbles into the potassium hydroxide solution, the carbon dioxide is absorbed while the air passes completely through the solution and collects above it in the upper end of the calibrated vessel. By comparing the volume of air collected in the vessel with the volume of the gaseous mixture initially in the reservoir, it is possible to ascertain the purity of the carbon dioxide mixture.

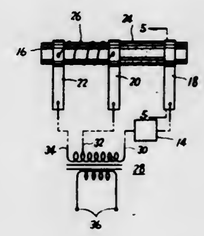
3,695,846
Patent Not Issued For This Number

3,695,847
HYDROCARBON DETECTOR
Tomas Hirschfeld, 1155 Concord St., Framingham, Mass. 01701
Continuation-in-part of abandoned application Ser. No. 138,717, Apr. 29, 1971. This application Nov. 15, 1971, Ser. No. 198,982
Int. Cl. G01n *21/38, 33/22*
U.S. Cl. 23—232 R 18 Claims



Method of detecting the vapors of aromatic and unsaturated hydrocarbon by reacting the vapor with a film of polytetrafluorethylene sulfonic acid, and examining the ultraviolet transmission characteristics of the reacted film.

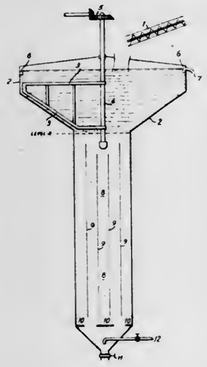
3,695,848
GAS DETECTING DEVICE
Naoyoshi Taguchi, 1-2 Hedauemachi, Nagata-ku, Kobe, Japan
Filed Apr. 7, 1970, Ser. No. 26,228
Int. Cl. G01n *27/16*
U.S. Cl. 23—254 E 6 Claims



A gas detecting device for detecting inflammable gases which includes a semiconductor material, means for

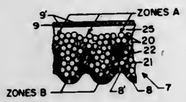
passing a current through the semiconductor material to determine changes in resistivity caused by the presence of the inflammable gas, and heating means for heating the semiconductor material to obtain an optimum sensitivity characteristic.

3,695,849
LEACHING PROCESS
Jorge Rodriguez, Las Tranqueras 7714, Santiago, Chile
Filed Aug. 13, 1970, Ser. No. 63,556
Claims priority, application Chile, Aug. 13, 1969, 23,823
Int. Cl. B01d *11/02*
U.S. Cl. 23—270 **6 Claims**



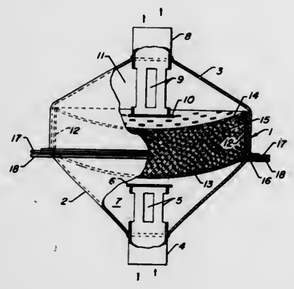
To wash leaching residues, they are placed in a tower through which washing fluid is directed. Vertical and perhaps horizontal elements are placed in the tower to control flow of the washing fluid through the residues.

3,695,850
SELF-CLEANING CATALYTIC CONVERTER
Martin W. Perga, Hoffman Estates, and Ted V. De Palma, Roselle, Ill. (both of 30 Algonquin Road, Des Plaines, Ill. 60016)
Filed Aug. 31, 1970, Ser. No. 72,249
Int. Cl. F01m *3/16*
U.S. Cl. 23—288 F **4 Claims**



A self-cleaning catalytic converter for conversion of soot-laden exhaust gases. The converter has a catalyst retaining section with catalyst material therein. Adjacent flow zones are established through the catalyst material, with each flow zone having a different flow resistance than the adjacent one. Thus, the mass flow velocity through one flow zone will be greater than through an adjacent one. The catalyst material is packed loosely which permits movement of the catalyst material. As the pressure drop increases in some of the flow zones from soot deposition, the catalyst material will move from each flow zone to an adjacent flow zone thus permitting more efficient conversion of the soot within the exhaust gases.

3,695,851
EXHAUST GAS CATALYTIC CONVERTER
Martin W. Perga, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 795,122, Jan. 29, 1969. This application Oct. 26, 1970, Ser. No. 84,013
The portion of the term of the patent subsequent to Mar. 2, 1988, has been disclaimed
Int. Cl. B01j *9/04;* **F01n** *3/14*
U.S. Cl. 23—288 F **4 Claims**



In a catalytic converter unit for a gaseous stream having a fixed bed of catalyst particles, the improved construction which uses a pair of uniformly spaced apart perforated members to support the catalyst therebetween and each of the perforated members is of a dished design. The member adjacent the gas inlet section is concave with respect to the catalyst and the downstream member is such as to be convex inwardly toward the particles, such that the particles will be held in a tight non-settling manner when the unit is subjected to expansion from high temperature catalytic conversion of the gas stream.

3,695,852
Patent Not Issued For This Number

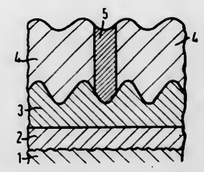
3,695,853
TRANSITION METAL COMPLEXES OF PHOSPHINE
Frank Karl Klanberg, Frankfurt am Main, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 704,267, Feb. 9, 1968. This application Apr. 1, 1970, Ser. No. 24,811
Int. Cl. C01b *25/06;* **C07f** *11/00, 15/00*
U.S. Cl. 423—299 **18 Claims**

Transition metal complexes of phosphine are formed by displacement of ligands from certain transition metal complexes with phosphine. The products are useful as sources of phosphine and as catalysts for the polymerization of olefins.

3,695,854
METHOD OF PRODUCING A MAGNETIC LAYER AND RESULTANT PRODUCT
Viktor Egger, Arnulf Lill, and Werner Metzdorf, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 8, 1970, Ser. No. 44,398
Claims priority, application Germany, June 11, 1969, P 19 29 687.8
Int. Cl. G11c *11/04;* **C23b** *5/50, 5/58*
U.S. Cl. 29—183.5 **12 Claims**

Method of producing a magnetic storage layer having uniaxial anisotropy which involves depositing a fine

grained smooth surfaced non-magnetic metal onto a carrier wire, applying a second non-magnetic layer having



a roughened surface over the first layer, and then applying a ferro-magnetic layer over the roughened surface.

3,695,855
DOPED ELECTRICAL CURRENT-CARRYING CONDUCTIVE MATERIAL
Norman G. Ainslie, Poughkeepsie, George Cheroff, Hopewell Junction, William S. Graff, Poughkeepsie, and James Kent Howard, Fishkill, N.Y., and Rupert F. Ross, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 8, 1970, Ser. No. 1,502
Int. Cl. H01b *1/02*
U.S. Cl. 29—191.6 **10 Claims**

This invention provides a means of increasing the time-to-failure of doped conductive stripes by depositing regions of dopant rejuvenant upon regions in the stripe wherein dopant depletion is most apt to occur under current stress. This invention also provides a means of rejuvenating regions wherein dopant depletion has occurred by periodically applying heat to a microelectronic configuration containing doped conductive thin films for interconnection purposes, said thin films containing local, discontinuous deposits of dopant rejuvenant over regions within the film wherein temperature gradients or diffusion barriers arise under current stress resulting in mass flux divergences in said regions, i.e., a resultant efflux of dopant from said region. Application of heat in this manner permits diffusion of dopant rejuvenant from the localized dopant rejuvenant source into the region from which dopant has migrated during service, thereby rejuvenating the microelectronic configuration and enabling its continued use.

3,695,856
MAGNESIA SUPPORTS FOR CATALYSTS IN HYDROCARBON REFORMING
Claude Paul and Henri Cheron, Toulouse, France, assignors to Azote et Produits Chimiques, Toulouse, France
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,213
Claims priority, application France, Mar. 20, 1969, 6907428
Int. Cl. B01j *11/06, 11/22;* **C01b** *2/14*
U.S. Cl. 48—214 **8 Claims**

For the catalytic steam reforming of hydrocarbons, a novel catalyst composition substantially free of alkali metal oxide and

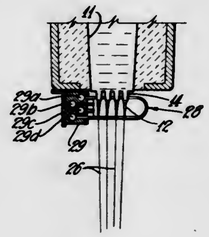
(a) a carrier comprising 70–100% uncombined magnesia, 0.30% of a spinelle, the latter being a product of magnesia combined with an oxide of trivalent metal, and 0–15% of SiO_2 in the form of an aluminum silicate, and

(b) a catalytically active metal selected from the group consisting of cobalt, nickel and mixtures thereof.

At least a portion of the active metal is in the form of a coating on the internal porous surfaces of the carrier. This catalyst has a long life and in particular does not lead to carbon black formation.

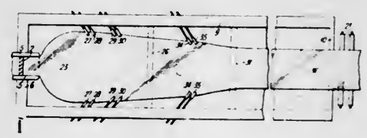
3,695,857
Patent Not Issued For This Number

3,695,858
METHOD AND APPARATUS FOR PRODUCTION OF GLASS FIBERS
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 82,077, Oct. 19, 1970, which is a continuation of application Ser. No. 759,278, Sept. 12, 1968, both now abandoned. This application Oct. 29, 1971, Ser. No. 193,964
Int. Cl. C03b *37/10*
U.S. Cl. 65—2 **31 Claims**



Method and apparatus for producing filaments of heat-softenable material including a feeder for feeding material in molten form, the feeder having orifices from which streams of material flow. The streams are attenuated into filaments in an attenuation zone adjacent the feeder. Gaseous material for controlling or altering the environment is released into the zone of attenuation of the stream. The temperature of the gaseous material is controlled in the attenuation zone before release by conducting a heat-exchange medium in heat exchange relationship with the gaseous material in the attenuation zone.

3,695,859
MANUFACTURE OF FLOAT GLASS
George Alfred Dickinson, Bryn Mair, Prescot Road, St. Helens, England, and Harold Charnock, 89 Chequer Lane, Up Holland, near Wigan, England
Filed July 24, 1970, Ser. No. 57,928
Claims priority, application Great Britain, July 28, 1969, 37,860/69
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **7 Claims**



A method of manufacturing float glass of a desired width and thickness wherein molten glass is delivered at a controlled mass flow onto a molten metal bath to establish a molten glass layer and, while permitting the molten glass to flow freely laterally to its limit width and thickness, a glass ribbon is developed and subjected

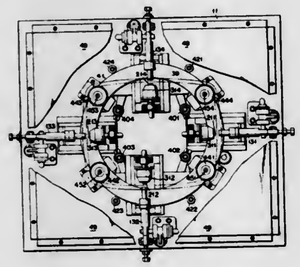
to a temperature regime while tractive force and outwardly and longitudinally directed forces are applied thereto. The ribbon advanced by the tractive force is discharged as a ribbon of a desired width and thickness at the same mass flow rate and with an increased final velocity. The advancing ribbon, which has a smooth edge profile defined by a never increasing width, includes an initial region contiguous with the molten glass layer and a terminal region contiguous with an attenuation region comprised of at least a downstream portion of the initial region. The outwardly and longitudinally directed forces are applied to the glass margins in the attenuation region where the glass is in a deformable state and is simultaneously thinned and reduced in width. Throughout the initial region, the glass is in a deformable or more fluid state. The magnitude of the outwardly and longitudinally directed forces is set, in relation to the applied tractive force and to the interfacial reaction forces between bath and ribbon, at a magnitude to progressively and gradually control simultaneous decrease in ribbon width and thickness throughout the attenuation region and to maintain the smooth edge profile defined by a never increasing width.

3,695,860

APPARATUS FOR EMBEDDING METAL PINS IN A GLASS PANEL

Tadao Katuta, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 22, 1970, Ser. No. 57,113
Int. Cl. C03c *27/02*
U.S. Cl. 65—154 **10 Claims**



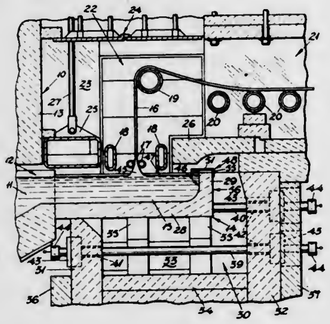
An apparatus for embedding metal pins in a glass panel having a base frame on the surface of which is performed the work of embedding one end of metal pins for fitting other members by the opposite end thereof in the inner wall of a glass panel having a skirt portion formed substantially vertically around its outer peripheral surface. A plurality of first pin chuck means selectively rotatable to lie substantially in a predetermined horizontal position and other positions respectively outwardly of a setting portion on the base frame of the glass panel, are positioned so as to securely carry each one end of a metal pin by subjecting the forward ends thereof to selective energization by a vacuum source. A plurality of second pin chuck means are provided, and, when each first pin chuck means is rotated to the horizontal position, the second pin chuck means are capable of receiving and securely carrying the opposite end of each metal pin from each first pin chuck means by subjecting the forward ends thereof to selective energization by the vacuum source, the opposite end being mounted by the other members, and which are movable in back and forth directions. A plurality of heating sources are also provided about the forward end of each second pin chuck means.

3,695,861

DRAW POT SKIMMER

James T. Zellers, Jr., Charleston, W. Va., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed June 12, 1970, Ser. No. 45,622
The portion of the term of the patent subsequent to Mar. 22, 1977, has been disclaimed
Int. Cl. C03b *5/20*
U.S. Cl. 65—206 **5 Claims**



Skimming the surface of the pool of molten glass adjacent the rear wall of the draw pot in an electrically heated, Colburn type sheet glass producing apparatus. An L-shaped skimmer supported upon the rear pot wall includes a vertical leg extending into the pool of molten glass along the length of the rear pot wall parallel to and at a short distance therefrom to trap particles of refractory eroded from the surface of the rear pot wall and prevent the particles from being drawn into the sheet and forming pot lines therein.

3,695,862

Patent Not Issued For This Number

3,695,863

STEELMAKING

Arnold Metcalf, 16 The Chase, Clarkdell, Sheffield 10, England, and Willis Bateman, 96 Kilton Hill, Worksop, England

Filed Jan. 13, 1963, Ser. No. 337,355
Int. Cl. C21c *5/28*
U.S. Cl. 75—60 **6 Claims**

5. In a process for the manufacture of steel which includes the step of refining a molten ferrous metal charge by top blowing it with at least one stream of oxygen, the improvement comprising introducing into said oxygen stream, continuously throughout said refining step, a non-gaseous fluidized fuel in an amount sufficient to suppress the formation of iron oxide fumes.

3,695,864

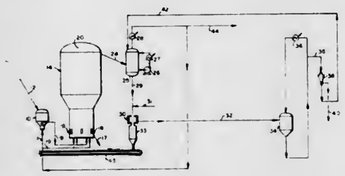
ALKALI METAL PRODUCTION

Hal B. H. Cooper, 4234 Chevy Chase Drive, Pasadena, Calif. 91103

Continuation of application Ser. No. 613,373, Dec. 28, 1966, which is a continuation-in-part of application Ser. No. 498,061, Oct. 19, 1965. This application Apr. 29, 1970, Ser. No. 33,089
Int. Cl. C27b *27/00, 5/16*
U.S. Cl. 75—66 **9 Claims**

Method for producing elemental alkali metal from a reducible alkali metal compound in a carbothermic reduction furnace involving, in a preferred embodiment,

passing a downwardly moving bed through a heating zone of the furnace with a reducible alkali metal compound and a carbon reducing metal dispersed in the bed in particles smaller than the electrically-conductive balls with the reducible alkali metal compound comprising on a weight basis less than 50% of the bed, heating the bed with electric current to a temperature in the range of about 900° C. to about 1500° C. to effect reduction of the alkali metal compound to produce alkali metal vapors



which are removed overhead. The reducible alkali metal compound may be an alkali metal carbonate, an alkali metal hydroxide, and an alkali metal compound (such as borax) having a negative group containing an amphoteric metal which latter compound provides upon reduction the alkali metal vapor and the amphoteric metal in a reduced solid electricaly-conductive form. The latter alkali metal-amphoteric metal compounds in providing electrically-conductive solid residue upon reduction are processible in beds of varying types.

3,695,865

PROCESS FOR THE PRODUCTION OF CYLINDRICAL HOLLOW BODIES IN THE CENTRIFUGAL CASTING PROCESS

Karl Wölker, Zell, Wiesental, Germany, assignor to Pleuco-Gesellschaft mbH, Stuttgart-Unterturkheim, Germany

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,181
Claims priority, application Germany, Feb. 21, 1969, P 19 08 856.3
Int. Cl. B22d *13/02;* **C22c** *37/00*
U.S. Cl. 75—130 R **8 Claims**

Process for the production of cylindrical hollow bodies with a pearlitic structure from cast iron material by superheating a eutectic or hypereutectic melt after adding alloying elements so that in subsequent casting a mixture supersaturated with carbon results, and the products thereof.

3,695,866

VANADIUM-BASE ALLOY HAVING A HIGH CREEP-RUPTURE STRENGTH AND AN IMPROVED RESISTANCE TO CORROSION

Peter Winclerz, Fullerstr. 22, Oberursel, Taunus, Germany; Manfred Rühle, Robert-Blum-Str. 10; and Heinz Küchler, Freiligrathstr. 17, both of Frankfurt am Main, Germany; Hans Ulrich Borgstedt, Konigsbergerstrasse, Karlsruhe-Waldstadt, Germany; and Horst Otto Böhm, Pastor Felke Str. 1, Karlsruhe, Germany

No Drawing. Filed May 26, 1969, Ser. No. 827,916
Claims priority, application Germany, May 25, 1968, P 17 58 402.0
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 V **8 Claims**

An alloy containing traces to 5% titanium, traces to 1.2% zirconium, traces to 1.2% hafnium, said elements titanium, zirconium, and hafnium totaling at least 0.1%, a total of 5–20% of the elements chromium and molybdenum, traces to 2% silicon, traces to 4% germanium, balance vanadium, traces of usual metallic impurities which are due to the process of producing the vanadium and, based on the vanadium content, 400–3000 p.p.m. oxygen, 100–1500 p.p.m. nitrogen, and 100–1500 p.p.m. carbon, the total of oxygen, nitrogen, and carbon being not in excess of 4000 p.p.m.

3,695,867

THERMOELECTRIC ALLOYS

Emanuel Andrew Skrabek, Baltimore, and Donald Smith Trimmer, Timonium, Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Continuation-in-part of application Ser. No. 593,469, Nov. 10, 1966, which is a continuation-in-part of application Ser. No. 509,511, Nov. 24, 1965. This application Feb. 2, 1970, Ser. No. 8,043
Int. Cl. C22c *31/00*
U.S. Cl. 75—134 G **2 Claims**

Improved alloys suitable for thermoelectric applications and having the general formula:

$$(AgSbTe_2)_{1-x}+(GeTe)_x$$

wherein x has a value of about .80 and .85, have been found to possess unexpectedly high thermoelectric properties such as efficiency index, as well as other improved physical properties.

3,695,868

PREPARATION OF POWDER METALLURGY COMPOSITIONS CONTAINING DISPERSED REFRACTORY OXIDES AND PRECIPITATION HARDENING ELEMENTS

Leon F. Norris, Fort Saskatchewan, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Province of Ontario, Canada

No Drawing. Filed June 22, 1970, Ser. No. 48,528
Int. Cl. B22f *1/00*
U.S. Cl. 75—206 **5 Claims**

Nickel-chromium alloy compositions containing dispersed refractory oxide particles and precipitation hardening elements such as aluminum are prepared by blending nickel-chromium alloy-refractory oxide powder with composite nickel coated aluminum powder or nickel-aluminum alloy powder and, optionally, with titanium hydride powder. This powder blend is compacted and vacuum sintered to reduce the oxygen content to less than 1000 parts per million and place the aluminum (and titanium when present) in solution with the nickel-chromium alloy.

The product is suitable for processing in accordance with prior art fabrication methods to produce wrought dispersion and precipitation strengthened nickel-chromium alloy products.

3,695,869

METHODS OF PREPARING FIBROUS METAL MATERIALS AND TO MATERIALS PREPARED THEREBY

Andre Hivert, Pontoise, Pierre Lepetit, Saint-Vrain, and Andre Walder, Bourg-la-Reine, France, assignors to Office National d'Etudes et de Recherches, Chatillon-sous-Bagneux, France

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,613
Claims priority, application France, Sept. 23, 1969, 6932391
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **15 Claims**

The invention provides a method of preparing a fibrous metal material, which comprises, firstly, covering an electrically conductive carbon skeleton, having a general shape corresponding to that of the finished material which it is desired to obtain, with a deposit of a slightly electropositive metal or alloy, the electropositivity not being greater than 0.7 and, secondly, eliminating the afore-mentioned skeleton by oxidation at a high temperature leaving the deposited metal or alloy only, having a fibrous texture.

3,695,870

PROCESS OF PRODUCING A LATENT IMAGE

Takashi Wakabayashi, Ibaragi, Shiro Hozumi, Sakai, and Kanji Sugihara, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 17, 1970, Ser. No. 90,331
Claims priority, application Japan, Dec. 2, 1969, 44/97,417, 44/97,418
Int. Cl. G03g 13/22
U.S. Cl. 96—1 E 7 Claims

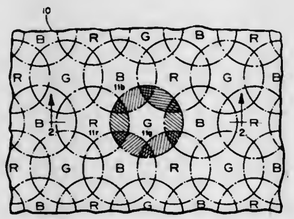
A process of producing a latent image. An electric field is applied in the shape of the desired image to an insulating memory plate comprising resin having finely divided conductive particles dispersed therein whereby the electric field-struck area has the electrical resistivity thereof changed from a high electrical resistance to a low electrical resistance. An electric current is supplied to said electric field-struck area whereby said low electrical resistance is preserved permanently as a memorized image.

3,695,871

METHOD OF SCREENING A COLOR IMAGE REPRODUCING DEVICE

Howard G. Lange, 1731 N. Stratford Road, Arlington Heights, Ill. 60004

Original application June 4, 1969, Ser. No. 830,288. Divided and this application Nov. 27, 1970, Ser. No. 93,305
Int. Cl. G03g 13/22
U.S. Cl. 96—1.2 9 Claims



The screen of a three gun shadow mask type of color cathode-ray tube is formed of three interleaved sets of filters, with the filters of each set predominantly transmissive of an assigned one of the primary colors green, blue and red. The filters are circular and are of such diameter that their outer peripheral portions overlap, leaving a central section of each filter free to accept a phosphor that emits light of a wavelength for which the associated filter is predominantly transmissive. The screen, in effect, has a multiplicity of elemental picture areas grouped to form color triads and individually surrounded by a filter that attenuates substantially all visible light.

Screening is accomplished with photosensitive coatings that are selectively exposed by actinic energy projected through the shadow mask. Each such exposure develops an image of one set of filters which is then developed. This process is conducted for each of the three colors to form three sets of filters with overlapping peripheral portions. Thereafter or essentially at the same time, the phosphor materials are deposited with the emission of each phosphor material properly correlated colorimetrically with the filter over which it is superposed.

3,695,872

Patent Not Issued For This Number

3,695,873

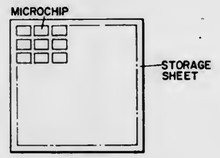
Patent Not Issued For This Number

3,695,874

MICROELECTROPHOTOGRAPHIC SHEET

Lee Allen Carlson, Southboro, and Richard George Miekka, Sudbury, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 11, 1971, Ser. No. 105,370
Int. Cl. G03g 7/00
U.S. Cl. 96—1.8 12 Claims



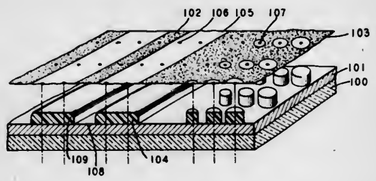
Microelectrophotographic sheet, comprising an electrophotographic layer of zinc oxide particles in an insulator binder on a conductive base sheet, for producing microelectrophotographs for storage and retrieval of information and in which the surface of the base sheet to which the electrophotographic layer is applied has a maximum Sheffield Smoothness of 40 and no more than 5% by volume of the photoconductive zinc oxide has an agglomerate particle size greater than 10 microns.

3,695,875

CONTRAST IN COMPUTER GENERATED PHOTOETCHING MASKS

William Charles Gormley Ortel, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Oct. 27, 1970, Ser. No. 84,433
Int. Cl. G03c 5/04, 5/00
U.S. Cl. 96—27 4 Claims



A method for producing high contrast photographic images. From the low contrast original, a first copy is made on high contrast film, thereby reversing the image. Exposure time is controlled in order to underexpose the lightest areas which should have been opaque in the original. From this copy, a second copy is made on high contrast film, again reversing the image. Again, the lightest areas of the first copy which should have been opaque are underexposed by controlling the exposure time. These areas correspond to the darkest areas in the original transparency which should have been light. By correctly controlling the exposure times of these two steps, a transparency is produced with nearly binary density scale, thus producing a high contrast mask suitable for photoetching.

3,695,876

PHOTOSENSITIVE LAYER FROM THE ELECTROLYSIS OF SILVER AND HALIDE IONS

Arnold Hoffman, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,439
Int. Cl. G03c 5/54
U.S. Cl. 96—29 19 Claims

A photosensitive element suitable for use in diffusion transfer processes is prepared by imposing a constant current to a layer of silver in the presence of halide ions. The thus-produced photosensitive element comprises a layer of silver wherein a depth of at least three microns apparent thickness (based on Faraday's law for the number of coulombs consumed for forming silver halide having a density of about 6) is converted to silver halide.

3,695,877

PHOTOPOLYMERIZABLE RESIN COMPOSITIONS

Yasuo Taneda, Kiyomi Naka, and Akihiro Horike, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,643
Claims priority, application Japan, Aug. 13, 1969, 44/64,059
Int. Cl. G03c 1/68
U.S. Cl. 96—35.1 10 Claims

Photopolymerizable resin compositions composed essentially of unsaturated polyester, crosslinking agent and optical sensitizer, which is characterized in that said unsaturated polyester is a carboxyl group-containing unsaturated polyester obtained by polycondensation of an acid component comprising:

(1)(a) At least 5 mol percent to the total acid component of aromatic polycarboxylic acid containing at least three carboxyl groups, or functional derivative thereof, (b) at least 30 mol percent to the total acid component of ethylenically unsaturated dicarboxylic acid or functional derivative thereof, and (c) zero to 50 mol percent to the total acid component of dicarboxylic acid containing no ethylenic unsaturation, or functional derivative thereof,

and an alcoholic component composed substantially of

(2) Aliphatic glycol.

The photopolymerizable resin compositions of the present invention exhibit excellent properties such as solvent resistance, strength, hardness and dimensional stability.

3,695,878

METHOD OF PRODUCING AUTOSTEREO PICTURES

Walter L. Salyer and James E. Huffaker, both of P.O. Box 511, Kingsport, Tenn. 37662

Original application May 26, 1967, Ser. No. 641,554, now Patent No. 3,520,588. Divided and this application Apr. 22, 1970, Ser. No. 38,630
Int. Cl. G03c 9/00
U.S. Cl. 96—40 10 Claims

An autostereo picture composed of a plurality of separate picture images some of which contain parallax, thus giving a stereo illusion to the combined composite picture. Combinations may include images appearing at a point of convergence (in the plane of the picture, support, or frame), in addition to others at various positions either behind or in front of the point of convergence. The final picture form may also include various special relationships between two and three-dimensional images, for example: (1) a two-dimensional in the plane of the point of convergence and a three-dimensional appearing behind that plane, and (2) a three-dimensional in front of the plane of the point of convergence, a three-dimensional behind that plane and a two-dimensional in that plane.

The method for the production of such autostereograms may include the conversion of at least one two-dimensional picture image into a lineiform record containing parallax. This can be accomplished by correctly focusing such a subject or object image upon the photosensitive layer or film of an autostereographic device and thereafter providing the relative motions within that device and with respect to the object image. Pictures thus formed are then combined with others or combinations of others, either similar in construction or of the two-dimensional type, to form a finished autostereographic picture.

3,695,879

HOLOGRAM LIFE EXTENSION

Frank P. Laming and Solomon L. Levine, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,306
Int. Cl. G03c 5/24
U.S. Cl. 96—48 16 Claims

Laser-interrogated holograms produced in silver halide emulsions by an etch-bleach development process have desirable properties of light diffraction efficiency but are subject to rapid loss of diffraction effectiveness over periods of exposure to high energy density levels of interrogation light. It has been found that post-development hardening, especially by successive application of a hardening solution and heat, can prolong effectiveness half-life by a considerable factor. The heating step is most effective when carried out in vacuum or inert gaseous atmosphere.

3,695,880

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Hans-Joachim Kabbe and Anita von König, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 27, 1970, Ser. No. 41,084
Claims priority, application Germany, June 19, 1969, P 19 31 056.6
Int. Cl. G03c 7/00
U.S. Cl. 96—52 5 Claims

Processed photographic silver images are stabilized by the addition of antibronzing agents against loss of density and changes in image tone upon high gloss drying at high temperatures. Compounds with a high antibronzing effect are compounds of the dimercapto-pyrazolo-pyrimidine series.

3,695,881

POSITIVE IMAGE PRODUCTION WITH UNFOGGED INTERNAL IMAGE SILVER HALIDE EMULSION CONTAINING MERCAPTAN RETARDER AND A SURFACE LATENT IMAGE SILVER HALIDE EMULSION

George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,907
Int. Cl. G03c 1/76, 3/00, 5/54
U.S. Cl. 96—29 12 Claims

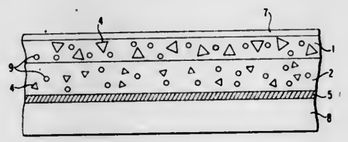
Exposed grains of a silver iodohalide coating such as a surface image emulsion containing silver iodo bromide are developed, releasing iodide ions. The iodide ions released imagewise in contact with a different, unexposed silver halide layer, such as an internal image emulsion, accelerate solution of these unexposed silver halide grains which have been treated with a heterocyclic nitrogen compound which retards solution of the silver halide grains in a silver halide solvent such as sodium thiosulfate. Thus, fixing of the unexposed layer produces a

positive image of silver halide. Positive or negative images can be produced from this silver halide image by methods known in the art such as solvent transfer, dye bleach, dye transfer, reduction and incorporated coupler systems. X-ray images can also be enhanced using the system described in this invention.

3,695,882
HIGH-SPEED FINE GRAIN LIGHT-SENSITIVE MATERIAL

Akira Kumai and Takaaki Terashita, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 3, 1970, Ser. No. 60,437
Claims priority, application Japan, Aug. 1, 1969, 44/60,806
Int. Cl. G03c *1/76*
U.S. Cl. 96—68 6 Claims



A high-speed fine grain silver halide light-sensitive material for black-and-white photography, comprising a support having superposed thereon at least two gelatino-silver halide photographic emulsion layers, each of said silver halide emulsion layers containing at least one non-diffusing color coupler capable of forming a dye through the reaction with the oxidation product of an aromatic primary amino color developing agent, and each of said silver halide emulsion layers being spectrally sensitized to substantially the same region of the spectrum selected from the group consisting of blue and green, blue and red, and blue, green and red, wherein each of said silver halide emulsion layers has a different speed and a different silver halide-coupler molar ratio.

3,695,883
IMAGEWISE EXPOSED GELATINO SILVER HALIDE EMULSION TREATED WITH PYRUVIC ALDEHYDE HARDENER

Nobuo Yamamoto, Tadao Hatano, Isao Shimamura, and Haruhiko Iwano, all of 210 Nakanuma, Minami Ashigara-machi, Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Aug. 27, 1970, Ser. No. 67,620
Claims priority, application Japan, Aug. 27, 1969, 44/67,798
Int. Cl. G03c *5/26, 5/30*
U.S. Cl. 96—50 11 Claims

A process for the hardening treatment of a silver halide photographic material comprising treating the silver halide photographic material with pyruvic aldehyde during a photographic processing step is disclosed.

3,695,884
PHOTOGRAPHIC FLUID CONTAINER MANUFACTURED BY FREEZING AND SEALING LIQUID

Edwin Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 18, 1970, Ser. No. 47,452
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C 18 Claims

The rupturable container of viscous processing liquid of a self-developing photographic film assemblage is formed and filled with an accurately predetermined quantity of the liquid by freezing the liquid to form a solidified body, forming and sealing the walls of the container around the solidified body and then thawing the solid body to return it to a viscous, liquid state. A method of assembling a film unit is described in which a wall of the container comprises a portion of another component of the film unit.

3,695,885
HEAT DEVELOPABLE DIAZOTYPE COPYING MATERIAL

Shoji Maryama, 4100 Isobe, Sagamihara-shi, Japan; Tadashi Saito, 30 Kitamigata, Kawasaki-shi, Japan; and Tomiaki Asami, 280 Hiyoshi-cho, Kohoku-ku, Yokohama-shi, Japan

No Drawing. Filed June 5, 1970, Ser. No. 43,968
Claims priority, application Japan, June 7, 1969, 44/17,475; Feb. 28, 1970, 45/44,745
Int. Cl. G03c *1/54, 1/58, 1/60*
U.S. Cl. 96—91 R 27 Claims

A heat developable diazotype copying material comprising a support and a light-sensitive layer formed onto one surface of said support, said layer containing a coupler which activated during the heat development of the copying material and at least two kinds of diazonium compounds forming a black azo dye as a result of a reaction between said coupler and said diazonium compounds.

3,695,886
HIGH SPEED AZIDE RESISTS

Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, Calif., and Wayne M. Moreau, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,398
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 N 10 Claims

Light sensitive photoresist compositions particularly useful for projection exposure applications include a photocrosslinkable polymer and novel sensitizers which are bis-p-azido cinnamylidene derivatives of cyclic and linear ketones.

3,695,887
PHOTOIMAGING MATERIAL COMPRISING POLYAMIDE

Viron V. Jones, Caldwell, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

No Drawing. Filed July 8, 1970, Ser. No. 53,276
Int. Cl. G03c *1/70*
U.S. Cl. 96—115 R 5 Claims

Alkoxy methylated polyamide resin layers are imagewise insolubilized by exposure to light in the presence of halogenated organic photoinitiator compounds. The compositions are greatly improved in light sensitivity by the addition of dyes, and exposed layers are developable by selective dissolution in unexposed areas with aqueous developer solutions to form direct images, resists, or reprographic masters.

3,695,888
PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSIONS

Gary L. Hiller, Hilton, Cynthia G. Ulbing, Fairport, and John E. Starr, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 860,394, Sept. 23, 1969. This application May 28, 1970, Ser. No. 41,569
Int. Cl. G03c *1/10*
U.S. Cl. 96—123 10 Claims

Light-sensitive photographic silver halide emulsions are spectrally sensitized with a tricarbocyanine dye in which

the meso carbon atom of the methine linkage of the dye is attached to the nitrogen atom of an amino group which forms an enamine with the methine linkage of the dye; said emulsion containing, as supersensitizer, a sulfonated polynuclear aromatic organic compound, a silver halide reducing agent, an azaindene or a combination of such supersensitizers.

3,695,889
EMULSIFIER SYSTEM FOR SUBSTITUTE DAIRY PRODUCTS

Philip F. Ingerson, Merced, Calif., assignor to Avoset Food Corporation, Oakland, Calif.

No Drawing. Filed June 5, 1970, Ser. No. 43,966
Int. Cl. A23c *11/00*
U.S. Cl. 99—63 8 Claims

An emulsifier system useful in non-whipping type substitute food and dairy products which contain a higher ratio of polyunsaturated fats to saturates. The system comprises in combination polysorbate 60, propylene glycol monostearate, and a fatty acid lactylate alkali metal salt.

3,695,890
COLLAGEN PULP BEVERAGE TEXTURIZER

Albert T. Miller, Somerville, N.J., assignor to Devro, Inc.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,369
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 17 Claims

Synthetic juice pulp is formed from pulp-sized discrete flake-like particles of an edible, cold water insoluble, acid-swellable, regenerated collagen. The synthetic pulp consists of particles of regenerated collagen which differ in their swelling characteristics according to their size or amount of curing or tanning. The synthetic pulp is incorporated into dry beverage powders, beverage concentrates, or into the aqueous beverage itself.

3,695,891
METHOD OF TREATING SOYBEANS

Wayne F. Fox, Des Moines, Iowa, assignor to Triple F, Inc., Des Moines, Iowa

Filed Apr. 6, 1970, Ser. No. 25,948
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 2 Claims

Treating raw, untreated whole soybeans to remove the heat labile growth inhibitors and beany bitterness without destroying amino acids by introducing into an extruder at ambient temperature and augering under progressively increasing pressures so that resultant friction and pressure alone develop a cooking heat in the beans of at least 240° F. The cooked material is expelled from the die head of the extruder and into the atmosphere. The initial moisture of the raw bean having entrained therein the heat labile growth inhibitors are released into the atmosphere so that the resultant product, which consists of loose agglomerates, may be fed directly to humans, livestock and poultry upon cooling.

3,695,892
METHOD OF PRODUCING AN IMPROVED FLAVORED POULTRY PRODUCT

William C. Reinke, University City, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed Apr. 21, 1970, Ser. No. 30,584
Int. Cl. A22c *21/00*
U.S. Cl. 99—107 5 Claims

An improved flavored poultry product, such as turkey, and process for producing same is disclosed. Parts such as necks, backs, and deboned carcasses are cooked in water to obtain a broth, such as turkey broth. The substantially clear liquid portion of the broth is then separated from the fat, mixed with other flavoring materials, and injected into the carcass of the whole birds.

3,695,893
METHOD AND APPARATUS FOR PROCESSING CURD IN THE MANUFACTURE OF CHEESE

Joseph Czulak, Greenslopes Nepean Highway, Mount Eliza, Victoria, Australia; Norman H. Freeman, 475 Moreland Road Moorabbin, Victoria, Australia; and James R. O'Connell, 3 Porter Road, Pascoe Vale South, Victoria, Australia

Filed Jan. 29, 1970, Ser. No. 6,915
Claims priority, application Australia, Feb. 5, 1969, 50,076/69
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 10 Claims

Apparatus and method for processing cheese curd and whey in manufacture of cheddar cheese by passing curds and whey over a screen to drain off the bulk of the whey, feeding the separated curd to a conveyor so that it forms a layer thereon and stirring the layer to facilitate further drainage of whey, cutting blocks from the layer and compressing the blocks in respective containers each of which is large enough to permit its block to flow under compression to produce fibre development of the curd.

3,695,894
METHOD OF GLAZING HARD CANDY COATINGS

Allen S. Hum, Minneapolis, Minn., assignor to General Mills, Inc.

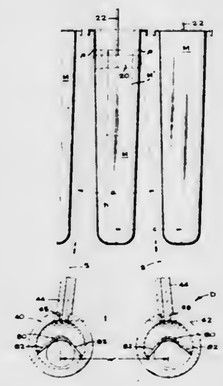
No Drawing. Filed May 27, 1970, Ser. No. 41,097
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 R 3 Claims

Glazing hard candy coatings by means of infrared heat and exposure.

3,695,895
MOLDING MACHINE WITH SPRAY DEFROST

John S. Brown, Sacramento, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 29, 1970, Ser. No. 85,004
Int. Cl. F25c *7/04*
U.S. Cl. 99—136 11 Claims



In a frozen food molding machine, molds are lifted from an immersion freezing tank and advanced to a position above parallel headers which straddle the molds. Streams of heated water are continuously converged against the

pre-wetted sides of said molds by nozzles projecting up from the headers. The angularity of nozzle convergence is adjustable, and baffles extend inside the nozzle headers.

3,695,896
PRESERVATION OF VOLATILE FOODSTUFF FLAVOURS
Hiroshi Sugisawa, Summerland, British Columbia, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
No Drawing. Filed Jan. 21, 1970, Ser. No. 4,776
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **38 Claims**

The invention is concerned with the preservation of volatile flavours and aromas in a stable, dry form. A sugars-containing mixture comprising at least 50% sucrose is heated to a temperature and for a period of time sufficient to cause formation of oligo-saccharide sugar polymers. The resultant base is cooled, and the desired flavour and aroma essences together with a binding agent are blended therewith. The final product having the flavour and aroma essences entrapped with the sugar polymers is dried to give a stable, dry food product.

3,695,897
METHOD OF SEPARATING AND COLLECTING FLAVOR COMPONENTS CONTAINED IN FOODS
Kinji Uchida and Koya Mogi, both of 101 Myazaki, Noda, Japan, and Tamotsu Yokotsuka, 1–134 Edogawadai, Nagareyama, Japan
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,787
Claims priority, application Japan, Sept. 1, 1969, 44/68,625
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **9 Claims**

A method of separating and collecting food flavor components which comprises contacting liquid paraffin with a volatile food flavor components-containing starting material selected from the group consisting of gaseous and liquid materials to effect the absorption by said liquid paraffin of said flavor component, submitting the liquid paraffin, which has thus absorbed the flavor components, to ethanol vapor distillation under reduced pressure, and thereafter collecting the flavor components-containing ethanol that distills off.

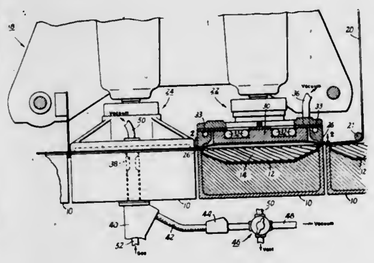
3,695,898
SWEETENING COMPOSITIONS CONTAINING SACCHARIN AND DIPEPTIDES
John A. Hill, New Brunswick, and Anthony L. La Via, East Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,686
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **13 Claims**

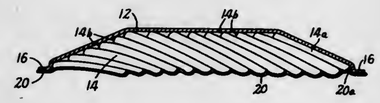
Sweetening compositions which mask the aftertaste of saccharin and potentiate its sweet taste contain saccharin together with an amount of a sweet tasting dipeptide in a quantity effective to mask the aftertaste of saccharin.

3,695,899
METHOD OF PRESERVING FOOD
Chi-Hang Lee, Spring Valley, and Jacob Richard Feldman, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 18, 1970, Ser. No. 38,593
Int. Cl. A23l *3/00, 7/00*
U.S. Cl. 99—150 **4 Claims**

Food spoilage caused by the undesirable growth of microorganisms can be prevented by adding small amounts of thioisomaltol or hydrolyzable derivatives of thioisomaltol to the food.

3,695,900
EVACUATED HERMETICALLY SEALED PACKAGE WITH SEMIRIGID SHELL AND STRETCHABLE CLOSURE
William E. Young, Stamford, Conn., and Reid A. Mahaffy, Montclair, N.J., assignors to Reid A. Mahaffy, John R. Harder, and American Can Company, fractional part interest to each
Continuation of application Ser. No. 484,249, Sept. 1, 1965. This application July 22, 1970, Ser. No. 64,034
Int. Cl. B65b *25/06, 31/02*
U.S. Cl. 99—174 **19 Claims**



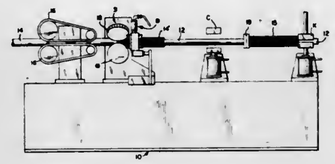


Evacuated hermetically sealed package comprising a top of stretchable plastic film sealed to a semi-rigid shell containing a product with the stretchable top in tight contact with the upper surface of the product. The package is formed by apparatus including a packaging head having preliminary and final sealing means. The preliminary sealing means include heat seal bars extending part way around the periphery of the shell and a heating element mounted within the space interiorly of the seal bars which softens the top and renders it readily stretchable in the area inboard of the seal line. Final seal means including an evacuating chamber and means to complete the seal between the top and shell. The application of atmospheric pressure upon venting the evacuation chamber causes the top to stretch inwardly against the product.

3,695,901
COHERENT STICK OF SHIRRED TUBING
Louis L. Winokur, 741 Brummel St., Evanston, Ill. 60202
Filed May 7, 1970, Ser. No. 35,443
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **8 Claims**

A shirred stick of flexible tubing having a straight bore and an ordered pattern of shirred pleats has an improved coherency and is provided with one or more longitudinal grooves formed and extending on its outer surface from one end of the stick to the other. The grooves are formed

by passing the shirred tubing through a restraining device comprising one or more blades disposed about a shirring

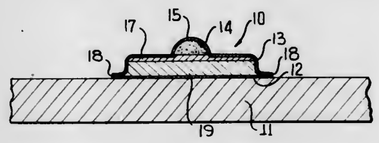


mandrel to engage and longitudinally indent the outer surface of the shirred tubing.

3,695,902
EDIBLE FILMS AND CASINGS OF COLLAGEN AND CASEIN
Joseph L. Shank, 4110 206th St., Matteson, Ill. 60443
No Drawing. Application Sept. 18, 1969, Ser. No. 859,480, now Patent No. 3,533,817, dated Oct. 13, 1970, which is a continuation of application Ser. No. 570,758, Aug. 8, 1966. Divided and this application May 28, 1970, Ser. No. 41,615
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **9 Claims**

A method of preparing continuous edible films from mixtures containing collagen and casein which are pressure sealable and formable into tubes or casings is disclosed herein. A flowable paste of about one part collagen to from about 0.2 to 4 parts casein is treated with a material selected from the group consisting of a plasticizing agent and a lubricating material. The resulting flowable paste is cast to a form a continuous film and then dried. The dried film may be further processed by sealing the edge of the film to form a tube or casing and then treating the tube with a good grade cross-linking agent.

3,695,903
TIME/TEMPERATURE INDICATORS
Maria Telkes, Washington, D.C., and Henry Hahn, Fairfax, Va., assignors to American Standard Inc., Falls Church, Va.
Filed May 4, 1970, Ser. No. 34,262
Int. Cl. G01k *1/02, 3/00, 11/00*
U.S. Cl. 99—192 TT **14 Claims**

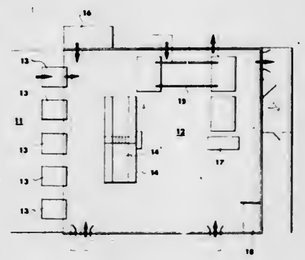


A device for detection and indication of thawing of a frozen object. The device is attached to the frozen food and includes an indicator and a sensor which undergoes color change upon thawing to a preselected temperature below 100° F. In particular, a small transparent container of sensing material, comprising an organic gel exhibiting syneresis, in combination with an inorganic salt hydrate, is converted to the frozen state in proximity to a pH indicator, and the entire combination attached to the frozen food package or other frozen object. When the package or other object is exposed for a predetermined time to temperatures above that at which the sensing material melts, the latter becomes liquid and reacts with the pH indicator to produce a color change therein which is readily visible through the transparent container. Refreezing has no effect on the color change.

3,695,904
METHOD OF IMPROVING COLORING AGENT CROCKING FASTNESS OF POLYMERIC ALCOHOL FILMS
Harold R. Coleman, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 697,592, Jan. 15, 1968. This application June 8, 1970, Ser. No. 44,556
The portion of the term of the patent subsequent to Nov. 10, 1987, has been disclaimed
Int. Cl. A22c *13/00;* **C08j** *1/38*
U.S. Cl. 99—176 **20 Claims**

The overcoating of a colored polymeric alcohol film substrate, such as a cellulosic sausage casing, while in the gel state, with a coating solution containing a water-soluble polymer having at least two reactive functional groups therein (e.g. gelatin, gum arabic, gum tragacanth, or egg albumin) and a difunctional or polyfunctional cross-linking agent (e.g. diisocyanates or polyepoxides, etc.), followed by heating and drying the coating to insolubilize the same, improves the coloring agent crocking fastness and the adhesion of printing ink subsequently applied thereto. The polymer and cross-linking agent in the solution must be compatible, i.e. not reactive with water or with each other at ambient temperatures. A similar effect can be obtained by first coating the gel polymeric alcohol film substrate with an aqueous solution of the water-soluble polymer and insolubilizing the coating by treatment with a cross-linking agent in a separate step.

3,695,905
APPARATUS FOR PRODUCTION OF CASTELLA OR SOFT CAKE
Kanehiro Hirakawa, 2–10 Fujigaya 2-chome, Kugenuma Fujisawa-shi, Kanagawa-ken, Japan
Original application Apr. 22, 1970, Ser. No. 30,820. Divided and this application July 26, 1971, Ser. No. 166,000
Int. Cl. B65b *55/12*
U.S. Cl. 99—356 **4 Claims**



In producing castella or soft cake, it is baked in an oven positioned between an operation room and a sterilization room which is sealed from the surrounding atmosphere. After removal from the oven into the sterilization room, the castella is first cut to size, its surface is rapidly dried, and finally the castella is packed and hermetically sealed in synthetic resin containers.

3,695,906
CONCRETE HARDENING METHOD AND COMPOSITION

Ray F. McCune, 1710 Alta Vista Drive, Alhambra, Calif. 91803, and Richard C. Porter, 310 S. 3rd E., Preston, Idaho 83263

No Drawing. Filed May 28, 1971, Ser. No. 148,215
Int. Cl. C09k 3/100
U.S. Cl. 106—12 3 Claims

Uncured cement-containing material is treated by the method:

(a) preparing a dilute aqueous solution containing sodium silicate, an alkali fluoride, and hydrofluoric acid, and

(b) applying said solution to the surface of said uncured material,

(c) the amounts of said silicate, alkali fluoride and hydrofluoric acid being such that hardening of the material during curing is enhanced.

3,695,907
PROCESS OF PREPARING TITANIUM PIGMENT OF IMPROVED RESISTANCE TO PHOTO-REDUCTION

Monroe M. Solomka and Gabriel Puente Fernandez, Bilbao, Spain, assignors to Dow-Unquinesa S.A., Bilbao, Spain

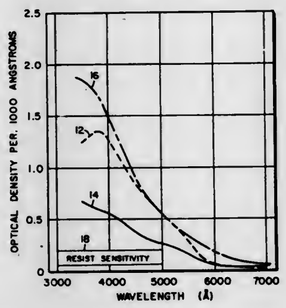
No Drawing. Filed Nov. 19, 1970, Ser. No. 91,198
Claims priority, application Spain, Nov. 22, 1969, 373,808
Int. Cl. C09c 1/36
U.S. Cl. 106—300 23 Claims

Titanium dioxide pigments of improved resistance to photo-reduction are produced by incorporating with the pigment at least about 0.05% by weight of a metal halate or perhalate.

3,695,908
THIN FILMS OF ALPHA Fe_2O_3 AND METHOD OF FORMING

Raymond E. Szupillo, 266 Orchard Drive, Big Flats, N.Y. 14814

Filed June 29, 1970, Ser. No. 50,669
Int. Cl. B44c 1/22
U.S. Cl. 117—8 10 Claims

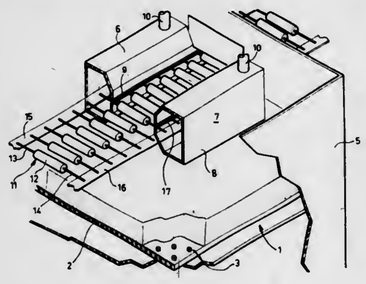


A method of making thin films of alpha Fe_2O_3 by applying to an unheated substrate a film of a highly permeable non-crystalline form of iron oxide by subjecting the substrate to vapor produced by evaporating a source of iron oxide at a pressure less than 10^{-4} torr and thereafter heating the deposited film in an oxidizing atmosphere at a temperature of at least 425° C. for a period of time sufficient to convert it to a stable, crystalline film of hematite, alpha Fe_2O_3. A film of hematite so formed having a thickness in the range of 1000 A.–3600 A. on a substrate of transparent, alkali-free glass may be patterned to form a microcircuit mask having increased transmission in the visible portion of the spectrum.

3,695,909
METHOD FOR ELECTROSTATIC COATING OF OBJECTS WITH A POWDER COATING MATERIAL

Pierre Fabre, Grenoble, Robert Giroud-Garampon, Vourey, Michel Gondrand, Grenoble, and Fernand Raymond, Meyland, France, assignors to Tunzini Amelioratr Thermique, Aeraulique, Mecanique (T.A.M.), Paris, France

Filed May 18, 1970, Ser. No. 37,971
Claims priority, application France, May 23, 1969, 6916009
Int. Cl. B44d 1/094, 1/095; B05b 5/02
U.S. Cl. 117—17.5 5 Claims

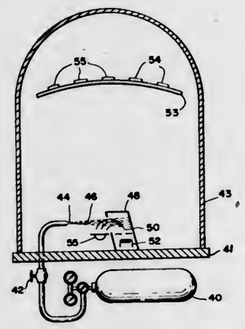


The present invention relates to a method and apparatus for the partial surface coating of objects, such as electrical components, moving past an electrostatic coating station where they are coated with electrified particles of coating material. According to the invention the portion or portions of the components which are not to be coated, e.g. the connecting wires of electrical components, are maintained in a zone of pneumatic overpressure during their passage through the coating station, whereby such portions do not become coated.

3,695,910
METHOD OF APPLYING A MULTILAYER ANTI-REFLECTION COATING TO A SUBSTRATE

Anthony W. Louderback, 286 Corona Ave., Long Beach, Calif. 90803, and Morris A. Zook, Jr., 814 E. Mooney Drive, Monterey Park, Calif. 91754

Original application Jan. 21, 1969, Ser. No. 792,543, now Patent No. 3,604,784, dated Sept. 14, 1971. Divided and this application May 28, 1970, Ser. No. 50,010
Int. Cl. B29d 11/00; B44d 5/06
U.S. Cl. 117—33.3 8 Claims



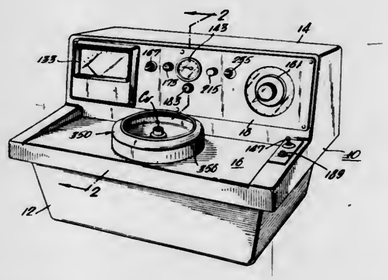
A method for vacuum depositing antireflection layers on a substrate using an electron beam is disclosed. All

coating materials are placed in the vacuum chamber. A metallic oxide is evaporated onto the substrate as a first layer. A mixture of at least two oxides is evaporated onto the first layer and oxygen is directed from an oxygen source to the electron beam during the evaporation of the second layer. The metallic fluoride is then evaporated onto the second layer.

3,695,911
METHOD FOR APPLYING A FLOWABLE SUBSTANCE TO A WORKPIECE

Jerry Polin, Melrose Park, Pa., assignor to Alco Standard Corporation, Cleveland, Ohio

Original application Dec. 12, 1967, Ser. No. 690,012. Divided and this application Nov. 9, 1970, Ser. No. 87,871
Int. Cl. B44d 1/02
U.S. Cl. 117—34 4 Claims

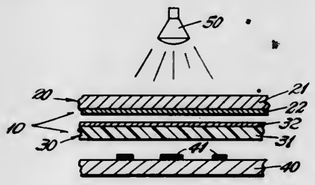


A method for coating a surface of a workpiece with a flowable substance comprising the steps of depositing a quantity of the substance on a surface of the workpiece while the workpiece is at rest, rapidly rotating the workpiece at a high rate of acceleration of as high as 1,000 r.p.m. per ms. whereby the substance is dispersed over the surface of the workpiece to form a layer thereon of predetermined thickness and uniform throughout.

3,695,912
THERMAL COPYING METHOD AND PRODUCTS

Peter De Laurentis, Massapequa, and Douglas A. Newman, Glen Cove, N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,730
Int. Cl. B41m 5/22
U.S. Cl. 117—36.2 10 Claims



Heat-sensitive color-forming projection transparency assemblies for the production of stable colored transparency copies of an imaged original by means of infrared radiation. The assemblies comprise a transfer sheet carrying a heat-transferable aromatic acid and a plastic film receptor sheet coated with an acid-sensitive dye precursor in a resinous binder system comprising a mixture of a minor amount of a vinylidene chloride polymer and a major amount of a second polymer which is compatible therewith.

3,695,913
Patent Not Issued For This Number

3,695,914
Patent Not Issued For This Number

3,695,915
PROCESS FOR IMPROVING THE ADHESION OF POLYOLEFIN SURFACES

Carolyn Ethel Mary Morris, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 23, 1970, Ser. No. 49,116
Claims priority, application Great Britain, July 8, 1969, 34,417/69; Nov. 6, 1969, 54,430/69; Apr. 3, 1970, 15,962/70
Int. Cl. B44d 1/092, 1/24
U.S. Cl. 117—47 A 16 Claims

A process of modifying a polyolefin surface to improve the strength of the bond which may be obtained between it and another surface, which may or may not be a polyolefin, which comprises contacting said surface with an aqueous solution which contains peroxydisulphuric acid or a salt of said acid, preferably present in a concentration of between 1% and 25% by weight, and optionally, in the case where the polyolefin is polyethylene or poly(4-methyl pentene-1), in which the aqueous solution also contains at least one metal salt capable of activating peroxydisulphate oxidations.

3,695,916
PROCESS FOR REGENERATING SURFACE ACTIVITY IN OXIDATIVELY TREATED GRAPHITE FIBERS

Roscoe A. Pike, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed July 8, 1970, Ser. No. 53,273
Int. Cl. B44d 1/092; C01c 31/07
U.S. Cl. 117—47 R 3 Claims

A process for regenerating the surface activity in oxidatively treated graphite fibers adapted for reinforcing resin matrix composites to increase the strength properties of the composite comprising passing the graphite fiber through a dilute solution of an organic isocyanate in a low boiling solvent, the isocyanate consisting of a compound defined by the formula $R(NCB)_x$ wherein x is an integer of 1 or more, B is an atom of sulfur or oxygen and R is a polyvalent organic radical having a valence of x with the valence bonds being from hydrocarbon moieties, and drying the treated fiber in air.

3,695,917
PLATABLE POLYPROPYLENE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,127
Int. Cl. B44d 1/092; C23c 3/02
U.S. Cl. 117—47 A 3 Claims

A process for plating polypropylene including the step of introducing about 2 to about 15% methyl abietate into the polymer.

3,695,918
HEAT SEALABLE FILM AND PROCESS FOR MAKING SAME

Peter Manners Ward, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England

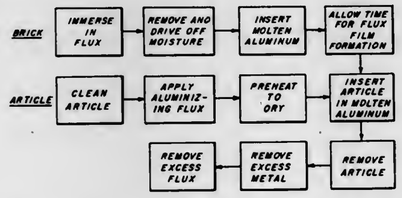
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,206
Claims priority, application Great Britain, Oct. 2, 1969, 48,460/69
Int. Cl. B32b *27/40*; C09j *7/00*
U.S. Cl. 117—47 A 14 Claims

Using resins containing an isocyanate ended polyurethane of average molecular weight more than 1000 and an organic polyisocyanate containing isocyanurate rings and having an average of more than two isocyanate groups per molecule as an intermediate adhesive coat between a thermoplastic film and a coating of a heat sealable material.

3,695,919
METAL COATING PROCESS

Kenneth J. Brondyke, Oakmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,387
Int. Cl. B44d *1/34*; C23c *1/00*
U.S. Cl. 117—52 9 Claims



A process for aluminizing an article by immersion in a vessel containing a bath of molten aluminum. Providing at least one foraminous refractory brick impregnated with a flux material having a density less than the molten aluminum bath. Introducing the brick into the vessel in contact with the aluminum to initiate discharge of the flux from the refractory brick into the aluminum. Retaining the brick in the vessel for a sufficiently long period of time to establish a thin film of the flux on the surface of the molten aluminum. Subsequently introducing the article to be aluminized into the molten aluminum and retaining it therein for a period of time sufficient to coat the article with the molten aluminum. Thereafter removing the article at a sufficiently low rate of speed to cause flux pickup to provide a flux coating on the coated article and thereby minimizing oxide formation on the cooled part. The foraminous refractory brick is preferably thermally stable at the molten aluminum bath temperature and the flux preferably has a melting temperature not less than the temperature of the molten aluminum bath.

3,695,920
ESTHETIC WOOD PRODUCT

Robert E. Hill, Clayton, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.

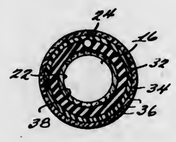
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,349
Int. Cl. B44d *1/16*
U.S. Cl. 117—69 11 Claims

Method for the preparation of wood having long lasting esthetic value and resistance to wood destroying organisms comprising imparting color to non-preserved wood with an aqueous pigment composition prior to treatment with an organic preserving system and the resulting wood products.

3,695,921
METHOD OF COATING A CATHETER

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

Division of application Ser. No. 752,221, Aug. 13, 1968, now Patent No. 3,566,874, and a continuation-in-part of applications Ser. No. 576,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 4, 1967. This application Sept. 9, 1970, Ser. No. 70,722
Int. Cl. A61m *25/00*; B44d *1/22*
U.S. Cl. 117—72 14 Claims



Catheters are provided with coating of a hydrophilic acrylate or methacrylate polymer. The coating reduces the irritation and infection normally accompanying the use of catheters. Infection can be reduced still further by absorbing an antibiotic in the coating.

3,695,922
COATED POLYOLEFIN FILMS AND PROCESS FOR PREPARING SAME

Kiyoshi Chujo, Tetsuo Ishihara, and Hiroshi Osawa, Saitama, Japan, assignors to Diacel Ltd., Osaka, Japan

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,504
Claims priority, application Japan, Apr. 17, 1969, 44/29,854
Int. Cl. B32b *27/32*; B44d *1/14*
U.S. Cl. 117—76 F 21 Claims

A process for the production of a heat-sealable, gas and water-vapor impermeable polyolefinic film which comprises applying a coating or coatings being on at least one surface of the film, the coating or coatings composed essentially of a copolymer of vinylidene chloride and a graft copolymer of a chlorinated polypropylene with an aromatic vinyl monomer such as styrene.

3,695,923
COMPOSITE SHEET

Donald F. Thompson, Elburn, and George D. Quartermus, Woodridge, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,755
Int. Cl. B32b *27/32*, *27/36*
U.S. Cl. 117—76 F 10 Claims

An oriented thermoplastic base sheet having:

(I) a primer coating on at least one side thereof comprising:

(A) from 50 to 80 parts by weight of an interpolymer comprising from 45 to 60 weight percent of a C_1–C_4 alkyl methacrylate, from 50 to 35 weight percent of a C_1–C_4 alkyl acrylate, and from 1 to 5 weight percent of methacrylic, acrylic, or itaconic acid; and

(B) from 50 to 20 parts by weight of either (1) an adduct of rosin and an alpha-beta unsaturated dicarboxylic acid having an acid number between about 115 and about 140 and a melting point between about 110° C. and about 180° C.; (2) partial esters of said adduct and a polyhydric alcohol; or (3) combinations of said adduct and said partial esters; and

(C) either 0.5% to 15% (by weight of (B)) of paraffin wax, microcrystalline wax or a mixture of carnauba wax and stearic acid wherein the weight ratio of wax to acid is from 82:18 to 89:11; and

(II) a moisture-vapor and gas barrier coating providing heat-sealing properties applied to said primer comprising 100 parts vinylidene chloride polymer (including copolymers), between about 2% and about 3% clay, and between about 2% and about 3% of either (1) paraffin wax, (2) carnauba wax, or (3) microcrystalline hydrocarbon wax (clay and wax percentages based on vinylidene chloride polymer weight).

3,695,924
PROCESS FOR TEXTILE TREATMENT AND TREATED TEXTILE

George Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Dec. 21, 1967, Ser. No. 692,322. Divided and this application Nov. 25, 1970, Ser. No. 92,857
Int. Cl. D06m *15/00*
U.S. Cl. 117—76 T 9 Claims

A composition, suitable for use in treating textiles, which comprises a stable water emulsion of a polyurethane-polyurea polymer. The composition may be formed by emulsifying a pre-polymer containing at least two free NCO groups in water and effecting reaction of the NCO groups with the water. This composition is desirably used in combination with a crosslinking resin, such as a melamine formaldehyde resin, to treat textile materials, and particularly cellulosic textiles, to impart wash and wear and durable press characteristics thereto. The abrasion resistance of the treated textile material is found to be appreciably greater than that of similar materials treated only with the crosslinking resin.

3,695,925
PROCESS FOR FLAMEPROOFING TEXTILES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,499
Int. Cl. B44d *1/50*; C09k *3/28*
U.S. Cl. 117—93.31 15 Claims

The present invention provides a process for flameproofing textiles which comprises passing a textile through an aqueous padding solution containing at least one vinylphosphonate monomer and at least one nitrogen containing derivative of acrylic or methacrylic acid, and curing said monomer and acrylic acid derivative on said textile, and thereby rendering the textile flame retardant.

3,695,926
FLAME RETARDANT DUST CONTROL FABRIC

Alexander A. Scarborough, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

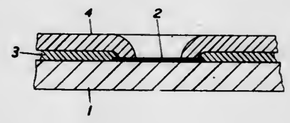
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,972
Int. Cl. C09k *3/28*, *3/22*
U.S. Cl. 117—136 7 Claims

Emulsifiable flame retarding compositions for preparing dust control fabrics are disclosed. The compositions comprise an oil having a flash point above about 150° C., a flame retarding organic phosphate ester and emulsifying agent. These compositions readily form aqueous emulsions from which the oil composition is exhausted onto dust control fabrics such as cloths and mops. Such treated dust control fabrics exhibit improved flame retardancy and dust collecting properties.

3,695,927
ELECTRODEPOSITION PROCESS FOR PRODUCING PERFORATED FOILS WITH RAISED PORTIONS AT THE EDGES OF THE HOLES

Bodo Futterer, Luzern, Switzerland, assignor to The Gillette Company, Boston, Mass.

Original application July 6, 1967, Ser. No. 651,548. Divided and this application July 7, 1970, Ser. No. 52,809
Claims priority, application Switzerland, July 6, 1966, 9,843/66
Int. Cl. C23b *7/08*
U.S. Cl. 117—212 2 Claims



A repairable master negative and a process for producing a master negative suitable for the production of a number of perforated foils and for regenerating such a master negative when it is worn, comprising applying insulating material to one surface of a metallic base plate that is stable in a bath of an alkali at selected areas thereof which conform with the perforations in the foils to be produced, applying a coating of a metal which is erodable in a bath of an alkali which is built up on the metallic base plate after the insulating areas have been applied to it, and passivating the metallic coating. When the master negative is worn due to the production of a number of perforated foils, it is repaired by stripping off electrolytically in a bath of an alkali the metallic coating and a new metallic coating is electrodeposited on the metallic base plate without disturbing the insulated areas.

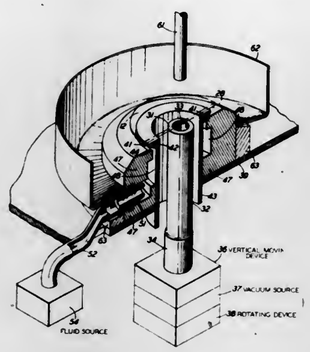
3,695,928
SELECTIVE COATING

Lynn Forrest Boyer, Reading, and Anderson Forbes Johnson, Jr., Sinking Spring, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,821
Int. Cl. B44d *1/18*, *1/52*; B05c *11/12*
U.S. Cl. 117—212 12 Claims

In making a diode array target for a television camera tube from a silicon substrate, the face of the substrate is flooded with a photoresist masking material and the substrate is then spun to form a uniform coating of the material on the face. Due to the overflowing, breaking down and scattering of the material on the substrate and due to leakage from a vacuum spindle holding the substrate, the material often creeps over, or splashes on, the backside of the substrate opposite the face. This results in a decrease in the uniformity of the diode array and requires an additional processing step to make the target. To prevent the material from creeping over, or splashing on, the backside and thereby reduce the processing steps and increase the uniformity of the diode array, a fluid is forced radially outward in an annular pattern from the center of the substrate and against the back-

side as it is spun. An apparatus for effecting this flow includes an annular nozzle positioned beneath the sub-



strate and formed by an upper beveled flange and a co-acting chamfered portion of a pair of tubular members.

3,695,929

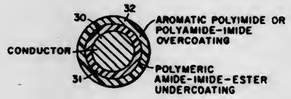
CONDUCTORS INSULATED WITH A POLYMERIC AMIDE-IMIDE-ESTER AND AN AROMATIC POLYIMIDE OR AROMATIC POLYAMIDE-IMIDE OVERCOAT

Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 21, 1968, Ser. No. 730,833, now Patent No. 3,555,113. Divided and this application Aug. 5, 1970, Ser. No. 61,116

Int. Cl. B32b *15/08;* **H01b** *3/30*

U.S. Cl. 117—218 **20 Claims**



Polymeric amide-imide-ester wire enameling compositions are prepared from (1) a monoanhydride of an aromatic tricarboxylic acid, e.g. trimellitic anhydride, (2) an aromatic primary diamine compound and (3) either polyfunctional acids and polyhydroxy compounds or the polyesters thereof. At least a portion of the polyol or polyhydroxy compound is a tris (hydroxyalkyl) isocyanurate, e.g. tris (hydroxyethyl) isocyanurate. The polyfunctional acids (3) comprise an acid component selected from the group consisting of trimellitic anhydride, isophthalic acid and esters of isophthalic and terephthalic acid. The polymeric amide-imide-ester may be blended with terephthalate or isophthalate polyesters, polyisocyanates and other materials. One particularly suitable polyisocyanate is prepared from dimethylterephthalate, tris (2-hydroxyethyl) isocyanurate and tolylene diisocyanate. Small amounts of aliphatic amino compounds, aliphatic polyols and other flexibilizing materials may be incorporated into either the polymeric amide-imide-ester or the polyester blended therewith. A variety of block and modified block polymers may be made. Imidization occurs during the preparation of the polymeric amide-imide-ester so that the condensed water is removed before the fluid compositions are applied and cured.

3,695,930

Patent Not Issued For This Number

3,695,931

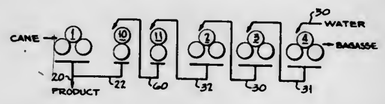
WET MILLING EXTRACTION PROCESS AND APPARATUS THEREFOR

Thomas M. Hamill, 343 Dune Circle, Kailua, Hawaii 96734

Filed Mar. 31, 1970, Ser. No. 24,139

Int. Cl. C13d *1/02, 1/04, 1/12*

U.S. Cl. 127—4 **31 Claims**



Milling process and apparatus, for extracting a liquid or a solid from a fibrous material having the liquid or solid entrapped therein. The fibrous material is macerated before each mill with an imbibition liquid which is capable of displacing the entrapped liquid or solid. The macerated fibre is then passed through a series of mills, some which exert high pressure causing expression of the juice and rupture of the fibre cells, and others which exert low pressure causing expression of the juice but without any substantial amount of cell rupture. The juice expressed by each mill with the exception of the product mill is collected and returned to be used as the imbibition liquid for the fibre at a prior mill in the train. This process has particular use in the sugar industry to remove sugar bearing liquid from cane.

3,695,932

SUCROSE NUCLEATION COMPOSITION AND METHOD OF PREPARATION

Alan D. Randolph and Rufus W. Crawford, Tucson, Ariz., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed July 29, 1970, Ser. No. 59,233

Int. Cl. C13f *1/02*

U.S. Cl. 127—30 **16 Claims**

A sucrose nucleation composition for crystallizing sucrose comprises sucrose nuclei having at least 90% as single crystals, a crystal population density expressed as particles per cubic centimeter per micron of at least about 10,000 at a crystal size of ten microns, a population-weighted mean size of between about 10 and about 30 microns, and a total number concentration of at least about 100,000 particles per cubic centimeter. The nucleation composition may be produced in batch or continuously, but preferably continuously, by mixing a critical amount of low molecular weight polar organic compound, preferably ethanol and a sucrose feed syrup comprising a major amount of sucrose and water.

3,695,933

PROCFSS FOR THE PRODUCTION OF A DEFATTED STARCH CONVERSION PRODUCT

Irving F. Deaton, La Grange, Ill., assignor to CPC International Inc.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,263

Int. Cl. C13k *1/06*

U.S. Cl. 127—32 **9 Claims**

Process for the production of a defatted starch conversion product which comprises heating a starch conversion liquor having a solids content of from about 10% to about 50% by weight and a D.E. of from about 1 to about 20 on a dry basis to a temperature of from about 212° F. to about 300° F.; defatting the heated liquor to a fat content below about 0.3% on a dry basis.

3,695,934

MAGNETIC CLEANING

James F. Feldhaus, Marine on the St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1970, Ser. No. 86,158

Int. Cl. B08b *3/10;* **B24c** *1/08*

U.S. Cl. 134—1 **10 Claims**

Articles are cleaned by immersion in a moving magnetic fluid containing a cleaner, the movement being induced by an alternating gradient electro-magnetic field acting upon magnetic particles.

3,695,935

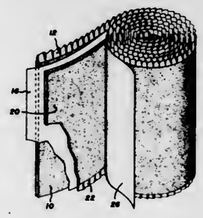
BATTERY COIL CONSTRUCTION HAVING A RUFFLED EDGE ELECTRODE

George Phillip Cromer, Keystone Heights, Fla., assignor to General Electric Company

Filed Oct. 7, 1970, Ser. No. 78,807

Int. Cl. H01m *35/16*

U.S. Cl. 136—13 **4 Claims**



An improved cell construction is utilized in which a ruffled edge of the negative plate extends longitudinally beyond the edge of the positive plate at one end of the battery coil and a ruffled edge of the positive plate extends longitudinally beyond the edge of the negative plate at the opposite end of the battery coil. Terminal straps are attached to the extending ruffled edges of the respective plates.

3,695,936

MANUFACTURE OF GAS ELECTRODES FOR FUEL CELLS

Robert Chevet, Chilly-Mazarin, and Jacques Goualard, Fresnes, France, assignors to Compagnie Generale de Electricite, Paris, France

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,239

Claims priority, application France, Nov. 21, 1969, 6940156

Int. Cl. H01m *13/04*

U.S. Cl. 136—122 **10 Claims**

A process for the manufacture of a gas combustion-assisting electrode for fuel cells, said electrode comprising a porous active conductive layer catalytically deposited upon a conductive support through which a liquid can be passed, said porous layer containing a water-repellent agent, which process comprises,

preparing a liquid suspension comprising a powder of the material intended to constitute the active layer, said water-repellent agent and a fibrous compound capable of being carbonized,

depositing said suspension onto said conductive support,

drying said suspension by applying a vacuum to said support and by heating,

compressing the resulting assembly under a pressure of about 10 kg./cm.^{2}, and

consolidating the resulting electrode by heating, whereby said fibrous compound is carbonized.

3,695,937

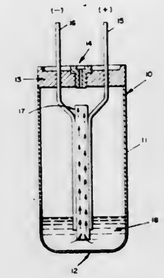
BATTERY SEPARATORS

John J. Rowlette, Arcadia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 9, 1970, Ser. No. 17,683

Int. Cl. H01m *3/02*

U.S. Cl. 136—146 **8 Claims**



Improved battery separator of hydrophobic synthetic fibers having a black manganese dioxide hydrophilic coating, method of prefabrication and improved batteries provided therewith.

3,695,938

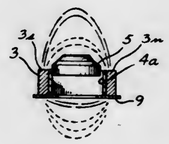
MAGNETIC BATTERY MOUNTING

Richard A. Brodie, 180 S. Rosemead Blvd., Pasadena, Calif. 91107

Filed Oct. 19, 1970, Ser. No. 81,837

Int. Cl. H01m *1/04*

U.S. Cl. 136—173 **5 Claims**



A magnetized ring particularly suitable for receiving a miniaturized battery therein, is mounted adjacent an electronic system such as a hearing aid in a manner so as to provide power thereto.

3,695,939

PROCESS AND MACHINE FOR MANUFACTURING ELECTRIC STORAGE BATTERIES

Richard A. Buttke, Anthony Sabatino, and Daniel Orlando, Milwaukee, and William H. Behrens, Racine, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

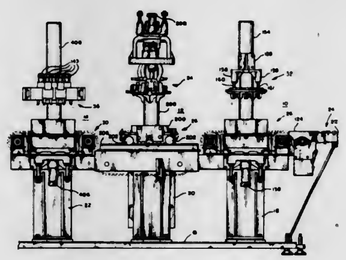
Original application Mar. 27, 1963, Ser. No. 268,359. Divided and this application Sept. 4, 1970, Ser. No. 69,749

Int. Cl. H01m *1/00*

U.S. Cl. 136—176 **10 Claims**

Batteries having cell element assemblies electrically connected by a welded joint between adjacent cell element assemblies are manufactured in an automated machine including align, weld, test, and reject stations and a conveyor for transporting a battery case containing cell element assemblies to the stations with the transportation of the battery case being synchronized with operations at the various stations. A battery case, containing

cell element assemblies, is transported to the align station wherein the cell element assemblies are aligned for welding. A test of the position of the cell element assemblies relative to each other and to the battery case and also of the electrical condition of the individual cell element assemblies is performed. The so aligned and tested battery cases are transported on the conveyor to the weld stations wherein the aligned conductive portions are



pressed into engagement and welded. Upon completion of the welding, the battery case is transported, again on the conveyor, to the test station wherein the connections between adjacent cell element assemblies are tested both electrically and mechanically. The tested battery cases are then transported, on the conveyor, to the reject station where they are rejected if prior testing shows them to have been defective or allowed to pass out of the machine if acceptable.

3,695,940

Patent Not Issued For This Number

3,695,941

PREPARATION OF EUTECTIC MATERIAL

Geoffrey William Green, 5 Piers Close, and Donald Thomas James Hurle, Grithacre, Marlbank Road, both of Malvern, England

Continuation-in-part of application Ser. No. 668,587, Sept. 18, 1967. This application May 4, 1970, Ser. No. 34,102

Claims priority, application Great Britain, Sept. 20, 1966, 41,836/66, Patent 1,192,736

Int. Cl. B01j *17/06*

U.S. Cl. 148—1.6 **8 Claims**

A method of preparing solid eutectic material by controlled solidification from the melt includes the application of a steady directional magnetic field to the liquid-solid interface in order to reduce banding perpendicular to the direction of growth. The method is applied when no external source of electric current is electrically connected to the material, and the solidification process may include pulling from the melt, zone melting or normal freezing.

3,695,942

ZIRCONIUM RINSE FOR PHOSPHATE COATED METAL SURFACES

Robert Eric Binns, Abington, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,531

Int. Cl. C23f *11/00*

U.S. Cl. 148—6.15 R **5 Claims**

A metal surface upon which a conversion coating has already been formed, is treated by contacting the surface with an aqueous solution consisting of a soluble zirconium containing compound, thereby improving the qualities of the conversion coating.

3,695,943

Patent Not Issued For This Number

3,695,944

IRON COBALT VANADIUM ALLOY

Carl P. Stroble, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 17, 1970, Ser. No. 47,126

Int. Cl. H01f *1/14*

U.S. Cl. 148—31.55 **2 Claims**

Described herein is a novel and improved alloy containing cobalt, iron and vanadium and controlled quantities of carbon.

3,695,945

METHOD OF PRODUCING A SINTERED COBALT-RARE EARTH INTERMETALLIC PRODUCT

Mark G. Benz, Burnt Hills, N.Y., assignor to General Electric Company

Filed Apr. 30, 1970, Ser. No. 33,224

Int. Cl. H01f *1/08*

U.S. Cl. 148—103 **12 Claims**

A process for preparing novel sintered cobalt-rare earth intermetallic products which can be magnetized to form permanent magnets having stable improved magnetic properties. A cobalt-rare earth metal alloy is formed having a composition which at sintering temperature falls outside the composition covered by the single Co_5R intermetallic phase on the rare earth richer side. The alloy contains a major amount of the Co_5R intermetallic phase and a second solid CoR phase which is richer in rare earth metal content than the Co_5R phase. The specific cobalt and rare earth metal content of the alloy is substantially the same as that desired in the sintered product. The alloy, in particulate form, is pressed into compacts and sintered to the desired density. The sintered product is comprised of a major amount of the Co_5R solid intermetallic phase and up to about 35 percent by weight of the product of the second solid CoR intermetallic phase which is richer in rare earth metal content than the Co_5R phase.

3,695,946

METHOD OF MANUFACTURING ORIENTED GRAIN MAGNETIC STEEL SHEETS

Jean Demeaux, Lozere, France, assignor to Compagnie des Ateliers et Forges de la Loire (St.-Chamond, Firminy, St.-Etienne, Jacob Holtzer), Paris, France

No Drawing. Continuation of abandoned application Ser. No. 823,526, May 9, 1969. This application Nov. 24, 1971, Ser. No. 202,008

Int. Cl. H01f *1/16;* **C21c** *7/02*

U.S. Cl. 148—111 **1 Claim**

Method of elaborating metal sheets for magnetic applications and more particularly sheets having a single or double grain orientation, which consists in elaborating a carbon steel having a very low sulfur content, i.e. less than .005% and preferably less than .003%, reheating this metal in a steelwork furnace and strongly oxidizing the metal in a controlled manner, while avoiding any resulfurization, recarburizing the steel in the ladle and in vacuum to obtain very low carbon contents, preferably less than .005% C, subsequently adding the necessary alloying elements, silicon and/or aluminium, homogenizing

this addition by stirring, casting into ingot moulds, preferably without ambient air contact, the extra-mild steel thus obtained, and finally rolling the resulting ingots to convert them into sheets having a single—or double grain structure orientation.

3,695,947

AQUEOUS EXPLOSIVE COMPRISING HIGHER AMINE, GELLING AGENT AND INORGANIC OXIDIZER SALT

Donald W. Edwards, Lehighton, Pa., assignor to Atlas Chemicals Industries, Inc., Wilmington, Del.

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,093

Int. Cl. C06b *19/04*

U.S. Cl. 149—2 **11 Claims**

An explosive composition containing a surfactant, a gelling agent, an aqueous medium, and an oxidizer. The surfactant promotes the rapid gelation of the gelling agent so that the gelling process is complete before the components of the composition have segregated.

3,695,948

CAST EXPLOSIVE COMPOSITION CONTAINING THIOUREA

Willard F. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 22, 1970, Ser. No. 39,904

Int. Cl. C06b *19/00*

U.S. Cl. 149—2 **10 Claims**

An explosive composition which comprises thiourea and an inorganic oxidizing salt; more specifically the composition includes water to provide a composition which will set up into a stiff to hard mass within a predetermined period of time. The composition is waterproof and can be detonated at low temperatures.

3,695,949

BLACK SMOKE MARKER

Donald J. Freeman, Parsippany, N.J., Ambrose A. Fulkerson, Evansville, Ind., Kenneth J. Grall, Stevensville, Mich., and Samuel J. Pearson, Nashville, Tenn., assignors to the United States of America as represented by the Secretary of the Army

Filed Aug. 2, 1971, Ser. No. 168,047

Int. Cl. C06d *3/00*

U.S. Cl. 149—15 **9 Claims**

A black smoke marker pellet for projectiles comprises an igniter composition composed of boron powder, potassium nitrate and a binder superimposed directly on a novel black smoke composition consisting essentially of hexachlorocyclopentadiene dimer and/or hexachlorobenzene, a polycyclic aromatic hydrocarbon such as anthracene, a powdered metallic fuel such as magnesium and an inorganic oxidizer such as strontium nitrate.

3,695,950

AMINO-ALDEHYDE RESIN BLASTING COMPOSITION CONTAINING GASEOUS VOIDS

Willard F. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 15, 1970, Ser. No. 37,839

Int. Cl. C06b *1/00;* **F42b** *1/00*

U.S. Cl. 149—19 **16 Claims**

A blasting agent is provided which can be cast into pre-formed shapes and forms. The blasting agent comprises at least one particulate inorganic oxidizing salt bound together with an amino resin to form a cohesive mass which is explosive.

3,695,951

PYROTECHNIC COMPOSITION

Horace H. Helms, Jr., Silver Spring, and Alexander G. Rozner, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 25, 1970, Ser. No. 49,980

Int. Cl. C06d *1/02*

U.S. Cl. 149—19 **15 Claims**

A pyrotechnic composition comprising (1) nickel, (2) a metal oxide or mixture of metal oxides, (3) a component selected from the group consisting of (a) aluminum and (b) a mixture of aluminum and a metal selected from the group consisting of magnesium, zirconium, bismuth, beryllium, boron and mixtures thereof provided that aluminum comprises at least 50% of said mixture and (4) a source of a gas.

3,695,952

SOLID PROPELLANT COMPOSITIONS CONTAINING HYDROXYMETHYL-TERMINATED POLYDIENES

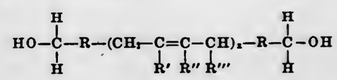
Henry C. Allen, Decatur, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 30, 1964, Ser. No. 364,890

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **8 Claims**

1. A solid composite propellant composition consisting essentially of a cured intimate admixture of at least one hydroxymethyl-terminated polydiene cured through the urethane linkage with at least one organic polyisocyanate curing agent; and at least one powdered inorganic oxidizing agent selected from the group consisting of inorganic chromates, inorganic permanganates, inorganic nitrates, inorganic chlorates, and inorganic perchlorates; said hydroxymethyl-terminated polydiene corresponding to the formula



wherein R′, R″, and R‴ are each selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo. aryl, lower alkyl substituted aryl, lower alkoxy substituted aryl, halo substituted aryl, and aralkyl; R is selected from the group consisting of tetramethylene, pentamethylene, and hexamethylene; and x is a positive whole number greater than one such that the average molecular weight of said polydiene is from about 2,000 to about 10,000.

3,695,953

METHOD FOR THE PRODUCTION OF EXPLOSIVES

Sigfrid Rontsch, Schonebeck (Elbe), Germany, assignor to VEB Sprengstoffwerk Schonebock

Filed Mar. 9, 1970, Ser. No. 17,835

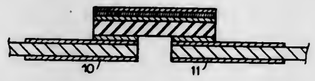
Int. Cl. C06b *1/04*

U.S. Cl. 149—56 **4 Claims**

Components of an explosive composition are mixed to form the explosive composition by charging the components into a first container having an open side facing upwards, sealing a second container over the first container, the second container being provided with mixing means, rotating the resultant assembly about 180° whereby the containers are inverted relative to each other and the contents of the first container fall into the second container, mixing the components together in the second container by operation of the mixing means, rotating the assembly again about 180° whereby the first container again assumes the bottom position and the mixed explosive composition falls from the second container into the first con-

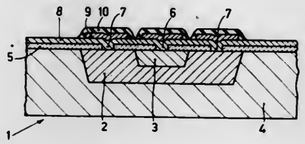
tainer, disassembling the first container from the second container and transporting the first container away from the second container.

3,695,954
PROCESS FOR MANUFACTURING MICROWAVE CAPACITORS
Jean-Claude Resneau, Paris, France, assignor to Thomson-CSF
Filed Aug. 27, 1970, Ser. No. 67,334
Claims priority, application France, Sept. 30, 1969, 6933274
Int. Cl. H05k *3/06*
U.S. Cl. 156—3 **3 Claims**



The present invention relates to a method of manufacturing UHF capacitors. Upon an annealed copper foil 1, there are produced by successive vaporisation, layers of chrome 4, silica, chrome 6 and copper 7. Then, by photographic techniques and electrolysis, gold is deposited to define the capacitor electrodes. The copper and the chrome of the ungilded parts are eliminated by chemical attack.

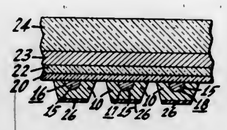
3,695,955
METHOD OF MANUFACTURING AN ELECTRIC DEVICE e.g. A SEMICONDUCTOR DEVICE
Pieter Johannes Wilhelmus Jochems and Reinier de Werdt, both of Emmasingel, Eindhoven, Netherlands
Filed Mar. 10, 1970, Ser. No. 18,197
Claims priority, application Netherlands, Mar. 14, 1969, 6903930
Int. Cl. H01l *7/00, 7/50;* **C23f** *17/00*
U.S. Cl. 156—11 **7 Claims**



The invention relates to a method of manufacturing an electric device, in which a substrate has to be provided by etching for example with a fine contact pattern in two layers consisting of a less noble metal and a nobler metal respectively. It has been found that presumably due to the formation of a galvanic element the less noble metal layer dissolves particularly rapidly. This can be prevented by covering the nobler metal layer and a strip of the less noble metal layer with an insulating layer prior to etching of the last-mentioned layer.

3,695,956
METHOD FOR FORMING ISOLATED SEMICONDUCTOR DEVICES
Robert Ray Speers, Trenton, N.J., assignor to RCA Corporation
Filed May 25, 1970, Ser. No. 40,038
Int. Cl. H01l *7/50;* **H05k** *3/06*
U.S. Cl. 156—11 **2 Claims**

An array of semiconductor devices is formed in a surface of a silicon wafer. A first protective layer of silicon nitride is deposited over the surface of the wafer, and a second protective layer of silicon is deposited on the first protective layer. A glass handle body is sealed to the second protective layer. A portion of the wafer between adjacent devices is etched away to isolate the

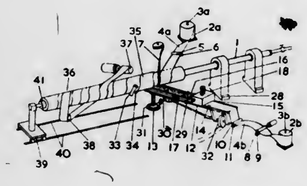


devices and a bond of glass is hot-pressed into the array of isolated devices. The handle body and the protective layers are then removed each with an etchant which does not attack the material there beneath.

3,695,957
Patent Not Issued For This Number

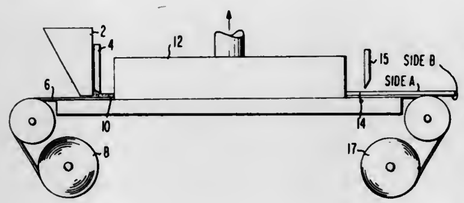
3,695,958
Patent Not Issued For This Number

3,695,959
METHOD OF MAKING SPIRAL WOUND PLASTIC FORM TUBE
Donald George Keith, Billingham, and Horst Egon Fred Ludwig Maack and Douglas Barrett Morris, Runcorn, England, assignors to Imperial Chemical Industries, Limited, London, England
Filed Feb. 16, 1970, Ser. No. 11,430
Claims priority, application Great Britain, Feb. 25, 1969, 9,957/69
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 **11 Claims**



A method of forming spirally wound tube having at least one annular layer of foamed plastic which comprises (a) successively supplying tangentally to a mandrel and at an angle of less than 90° to the longitudinal axis thereof two or more plies at least one of which bears a coating of at least one fluid foamable plastic composition which may be in an at least partly expanded state, the order of succession and the manner of offering the plies to the mandrel being such that the foamable plastic composition lies between two plies on the mandrel, (b) rotation or lapping the plies round the mandrel to form ply windings thereon and simultaneously axially progressing the resultant ply windings along the mandrel whereby a spirally wound tube is formed, (c) causing or allowing the foam composition to complete its expansion and to set, and (d) supporting the spirally wound tube on the mandrel until the foam is sufficiently set for the tube to be self-supporting. Machinery for carrying out the method is also disclosed.

3,695,960
FABRICATING RELATIVELY THICK CERAMIC ARTICLES
Fred Eric Richter, Indianapolis, Ind., assignor to RCA Corporation
Filed Apr. 8, 1970, Ser. No. 26,758
Int. Cl. C04b *33/34*
U.S. Cl. 156—89 **8 Claims**



A relatively thick ceramic article is fabricated by casting a ribbon of slip upon a smooth surface; drying the slip to form a sheet of green ceramic; cutting the green ceramic sheet into pieces; positioning two of the pieces together so that those surfaces contact each other that formerly faced the smooth surface; passing the pair of pieces through the rolls of a calender to form a laminate; and firing the laminate to mature the ceramic.

3,695,961
METHOD OF PRODUCING AN IMPROVED INNER TUBE
Paul O. Pfeiffer, Cuyahoga Falls, and Frank J. Grucella, Akron, Ohio, assignors to The General Tire & Rubber Company
Original application Aug. 22, 1967, Ser. No. 662,362, now Patent No. 3,608,603, dated Sept. 28, 1971. Divided and this application Sept. 30, 1970, Ser. No. 76,889
Int. Cl. B29h *15/04*
U.S. Cl. 156—122 **2 Claims**



This invention relates to an improved inner tube for radial ply tires in which the ends of the tube, which are to be spliced together, lie at an acute angle with respect to the longitudinal axis of the tube.

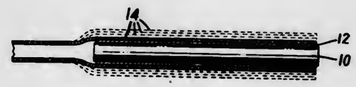
3,695,962
METHOD OF MAKING PILE FABRICS
Lin-Luc J. S. Oosterlynck, Kuurne, Belgium, assignor to S.A. Cotexma N.V., Heirweg, Kuurne, Belgium
Filed Mar. 10, 1970, Ser. No. 18,271
Claims priority, application Great Britain, Mar. 10, 1969, 12,533/69
Int. Cl. B32b *31/14*
U.S. Cl. 156—148 **12 Claims**



A method of producing a pile fabric by needling a structure comprised of a layer of fibrous material, a foundation layer and a strippable layer, bonding the needled fibers in the structure, and removing the strippable layer.

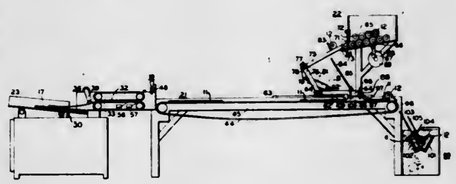
3,695,963
Patent Not Issued For This Number

3,695,964
SUPPORT FOR SEMIPERMEABLE MEMBRANE
Alfred Shaines, Fanwood, Robert L. Kalish, East Brunswick, and Edward A. G. Hamer, Metuchen, N.J., assignors to Abcor Water Management Company, Inc., Cambridge, Mass.
Application Oct. 28, 1968, Ser. No. 770,979, which is a continuation-in-part of application Ser. No. 508,307, Nov. 16, 1965. Divided and this application Jan. 16, 1970, Ser. No. 3,295
Int. Cl. B32b *31/12;* **B29c** *27/00*
U.S. Cl. 156—161 **20 Claims**



The invention provides a cylindrical rigid porous support for an osmotic or ultrafiltration membrane. The support is made of braided fiber sleeves, which are intimately conformed to a mandrel by axial lengthening and consequent radial shrinkage of the braided fibers around the mandrel and which are then permanently cemented together in such conformed position with a limited amount of cement to leave open interstices between the fiber crossover points.

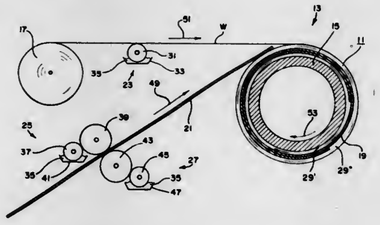
3,695,965
METHOD FOR FEEDING AND WRAPPING SHEET MATERIAL
John Marvin Current, Jerry City, and Rodney Roger Smalley, Holland, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,598
Int. Cl. B65c *9/04;* **B65h** *81/00*
U.S. Cl. 156—187 **19 Claims**



Tubes of fibrous, thermal insulation are jacketed with sheet material by adhering the material to the tubes over a major portion of their surface while leaving an exposed longitudinal sector of the wall free of jacketing. The exposed sector is slit to enable the cylinders to be fitted on pipes. A tab extension of the jacket, free of the exposed sector and extending thereacross, enables the mounted tubes to be sealed by adhesive bonding of the tab across the slit. Precut sheets coated with a dormant and activatable adhesive are individually removed from a stack, conveyed across a region in which selected regions of the adhesive in the sheet are activated, conveyed across a reaction region and conveyed to a station in which

individual insulation tubes are rolled across each sheet to pick up the tackey surfaced portion thereof. Tubes wrapped with the sheet can be conveyed to a slitter which registers the exposed sector with the slitter blade and advances the sector into the blade longitudinally to sever one wall of the tube.

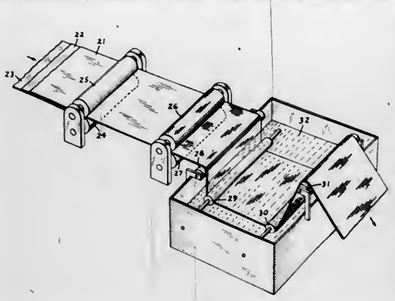
3,695,966
METHOD OF MANUFACTURING FURNITURE FABRICATION CORES
Frederick S. Kuhns, Memphis, Tenn., assignor to Southern Laminating Co., and Tri-State Veneer & Plywood Co., Memphis, Tenn., fractional part interest to each
Filed May 5, 1970, Ser. No. 34,836
Int. Cl. B65h *81/02*
U.S. Cl. 156—190 **8 Claims**



A method used to manufacture an elongated tubular core, having a wood veneer surface thereon, that can be used in fabricating a basic component for composite furniture or the like. The cores, each being tubular in cross section, are built in a variety of shapes for different intended uses, e.g., a transversely severed portion of a round or octangular tubular core might be made use of to form the vertical walls of a drum-type end table or a transversely severed portion of a rectangular core might be used to form the four sides of a television or stereo console cabinet. The method includes the utilization of at least one flexible sheet of wood veneer, a web of paper and a rotating mandrel and comprises providing the web of paper in roll form, placing the roll and the mandrel in a substantial parallel arrangement, yieldably unwinding the paper from the roll and advancing it past a first work station toward a second work station at the mandrel, coating the underside of the paper with a bonding agent as it passes the first work station, convolutely winding the paper about the mandrel as the paper reaches the second work station, providing a predetermined length of a flexible sheet of wood veneer, placing the sheet of veneer in an approach path having a direction of travel lying in a plane substantially perpendicular to the longitudinal axis of the mandrel, advancing the sheet of veneer past a third work station and thence subjacent and together with the paper, coating the sheet of veneer with a bonding agent as it passes the third work station and simultaneously interjecting the sheet of veneer between one circumferential winding and a succeeding winding of the paper at the second work station.

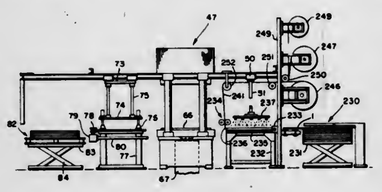
3,695,967
METHOD OF PREPARING AIR-PERMEABLE LAMINATE
Stanley E. Ross, Passaic, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,810
Int. Cl. B32b *3/10*
U.S. Cl. 156—209 **11 Claims**

An air-permeable laminated material is prepared by bonding one or more layers of fibrous material to a thermoplastic film. The bonding step is carried out by subjecting an assembly of the above components to pressure while heating at a temperature and for a period of time sufficient to perforate the thermoplastic film and simultaneously bond it to the fibrous material. One or



more of the surfaces applying pressure has a multiplicity of closely spaced raised areas thereon. The laminated product is a fabric-like material useful in the production of textile articles such as clothing, industrial fabrics and home furnishing fabrics.

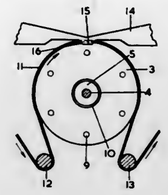
3,695,968
METHOD OF MAKING A FIBROUS GLASS PLASTIC ENCAPSULATED PLYWOOD OR LIKE CORE PANEL
Robert S. Morrison, Ashtabula, Ohio, assignor to Morrison Industries, Inc., Ashtabula, Ohio
Continuation-in-part of abandoned application Ser. No. 727,808, May 9, 1968. This application Nov. 10, 1970, Ser. No. 88,409
Int. Cl. B32b *3/04*
U.S. Cl. 156—216 **6 Claims**



A reinforced plastic encapsulated plywood and like core panel cured and formed in matched metal dies, the preferred form of which includes fibrous glass roving wrapped about each of the edges of the plywood; method and apparatus for making the same which include winding the roving from side to side and end to end about the plywood core, applying the resin, and forming and curing the resin in a press having such dies, and then removing flash from the finished product.

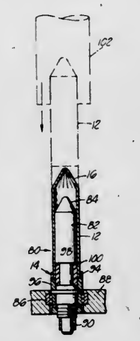
3,695,969
PLASTICS WEB SLITTING AND SEALING
Peter Edward Highfield and Gordon John Hill, Stevenage, England, assignors to British Visqueen Limited, London, England
Filed Aug. 20, 1970, Ser. No. 65,585
Claims priority, application Great Britain, Sept. 8, 1969, 44,342/69
Int. Cl. B32b *31/00*; B29c *17/00*
U.S. Cl. 156—251 **9 Claims**

A method and device for slitting a plastics web by advancing it continuously past a hot knife intersecting its path, to slit the web and form a bead seal along the slit edges, in which a current of air is passed continuously



through the slit in the web, in the vicinity of the knife, to prevent or reduce build up of deposits on the knife.

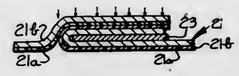
3,695,970
REINFORCED HYGIENIC MEDIUM APPLICATOR TUBES AND METHODS FOR FABRICATING SAME
Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis.; said Voss assignor to Kimberly-Clark Corporation, Neenah, Wis.
Original application May 10, 1968, Ser. No. 728,290. Divided and this application Apr. 20, 1970, Ser. No. 38,616
Int. Cl. H05b *9/00*; A61f *13/20*
U.S. Cl. 156—272 **4 Claims**



A tubular, hygienic medium applicator device is disclosed including a thin-walled, ring-reinforced external tube. The reinforcing ring is a laminated structure composed of five concentric plies including three plies of paper surrounding a ply of electrically conductive foil coated on its inner surface with a ply of thermoplastic resin material. In the fabrication of the reinforced tube, the ring is telescoped over the exterior surface of the external tube flush with the rear edge thereof. The ring is then bonded in place by inductively heating the foil to heat the thermoplastic resin and fuse the resin to the tube surface.

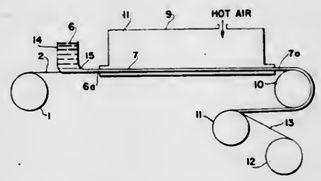
3,695,971
METHOD FOR FORMING TUBULAR CONTAINER BODY AND TUBULAR CONTAINER BODY PRODUCED THEREBY
Robert C. Corning, Jr., Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.
Filed Jan. 5, 1970, Ser. No. 609
Int. Cl. B29c *19/02*; H05b *5/00*
U.S. Cl. 156—275 **4 Claims**

At least one ply of material having at least one marginal portion thereof coated with a heat reactive sealant is spirally wound while forming convolutions having adjacent marginal portions of adjacent convolutions in overlapping relation, preferably with one of the marginal portions being reversely folded, so that at least one of the overlapping marginal portions is coated with a heat reactive sealant. A relatively narrow strip of an electrical-



ly conductive material is positioned in close proximity to the overlapping marginal portions and is subjected to a high frequency alternating electromagnetic field which generates heat in the electrically conductive material for activating the heat reactive sealant and sealing the overlapping marginal portions of adjacent convolutions in overlapping relation.

3,695,972
PROCESS FOR THE CONTINUOUS PRODUCTION OF A FLEXIBLE POROUS MULTILAYER WEB HAVING A HIGH-GLOSS OUTER SURFACE
Heinrich Lind, Diedenbergen, Hans Mahl, Wiesbaden, and Ekkehard Beer, Bad Schwalbach, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Aug. 12, 1970, Ser. No. 63,054
Claims priority, application Germany, Aug. 14, 1969, P 19 41 412.1
Int. Cl. B44d *1/14*; D06n *3/08*
U.S. Cl. 156—324 **18 Claims**



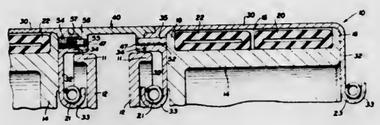
This invention relates to a process for the continuous production of a flexible, porous multilayer web having a high-gloss outer surface; and to the material so produced, which process comprises continuously applying a liquid layer of a urethane prepolymer solution at a uniform thickness to the surface of a microporous layer of a polymer based on polyurethane on a fiber fleece web moving at a constant speed, and heating the layer to polymerize the prepolymer. The layer may then be cooled, covered with a smooth high-gloss film, and wound onto a supply roll.

3,695,973
Patent Not Issued For This Number

3,695,974
TIRE BUILDING DRUM
Virgil E. Henley, Akron, Ohio, assignor to The General Tire & Rubber Company
Filed Mar. 9, 1970, Ser. No. 17,662
Int. Cl. B29h *17/16*
U.S. Cl. 156—415 **2 Claims**

A tire building drum, in which axially spaced cylindrical arrays of surface segments are axially adjustable to

vary the over-all length or set of the drum, is provided with a plurality of annularly disposed spacing or bridging segments between the cylindrical arrays which are changed each time the drum set is changed. The surface segments of the respective arrays are situated so as to form axially aligned pairs of segments with the adjacent axial ends defining a gap which changes with a change in



drum set. Each of these gaps is spanned or bridged by a spacer segment. The drum is adjusted to a predetermined length and the spacer segments are snapped onto the surface between the surface segments of the axially aligned pairs. To remove the spacer segments for replacement, the drum is increased in length and the spacer segments simply fall from the drum.

3,695,975

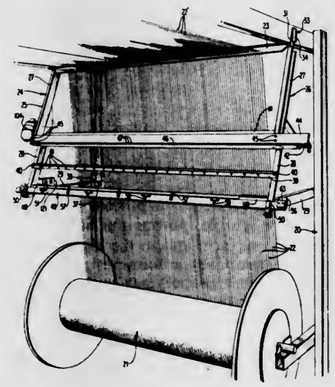
APPARATUS FOR RAPIDLY SPLICING A MULTITUDE OF THERMOPLASTIC YARN ENDS

Willie Vincent Williams, P.O. Box 687, Dalton, Ga. 30720

Continuation-in-part of application Ser. No. 773,773, Nov. 6, 1968. This application Oct. 16, 1970, Ser. No. 81,265

Int. Cl. B65l *69/06*

U.S. Cl. 156—433 **24 Claims**



A support frame for the yarn splicing apparatus is portable and adapted to be suspended directly on the rack which supports the beams of yarn whose yarn ends are being fed into a carpet tufting machine. The apparatus frame may be attached to the beam rack at the location of a spent beam which is to be removed from the rack and replaced by a full beam. The splicing apparatus has means for aligning and securing the yarn ends trailing from the carpet with a like number of yarn ends on a full beam and a radiant heat splicing carriage is propelled across a guide track in close proximity to the ends to be fused or spliced.

3,695,976

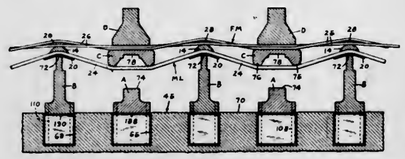
APPARATUS FOR MANUFACTURING OF SEPARABLE FASTENER ELEMENTS

George H. Erb, Cuttingsville, Vt., assignor to Velcro S.A., Nyon, Switzerland

Original application June 22, 1967, Ser. No. 648,118, now Patent No. 3,562,770, dated Feb. 9, 1971. Divided and this application May 21, 1970, Ser. No. 39,467

Int. Cl. D04h *11/08;* **A14b** *17/00*

U.S. Cl. 156—435 **7 Claims**



A three level hermaphrodite separable fastener element having a flexible base sheet, a large number of closely spaced flexible and resilient hooks secured to and extending vertically from the base sheet and a network of crisscrossed, relatively movable, flexible, resilient strands secured to the base sheet and lying in a plane between the open ends of the hooks and the backing sheet. When two such fastener elements are pressed together to form a closure the hooks of each element become enmeshed with the strands of the other. Also, apparatus for continuous forming of such fastened element from three continuous prefabricated webs of hook-forming, mesh-forming and base sheet-forming materials respectively. The apparatus includes multiple sets of shaped metal bands which converge with the hook-forming and mesh-forming webs, longitudinally corrugating the webs and holding them in predetermined shape while being heat set and secured to the base-sheet-forming web.

3,695,977

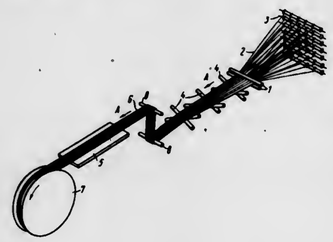
DEVICE TO PRODUCE NONWOVEN CONTINUOUS RIBBONS FROM THREADS

David Georgievich Kandelaki, ulitsa Ordzhonikidze 14; Tenzig Sergeevich Chargeishvili, prospekt V. Pshavela IV kvartal, korpus 21, kv. 26; and Georgy Alexandrovich Skvortsov, prospekt Chavchavadze 19, all of Tbilisi, U.S.S.R.

Filed Mar. 17, 1970, Ser. No. 20,273

Int. Cl. B29h *9/02*

U.S. Cl. 156—441 **6 Claims**



A device to produce continuous nonwoven ribbons from threads, comprising several pairs of successively mounted cylindrical elements each having a smooth surface, the elements in each pair being disposed in parallel vertical planes spaced apart by not more than the diameter of one element, and being inclined at an angle to one another such that the angle between the generatrices of these elements is greater than 90°, and less than 180°, this angle providing for a transverse shift of the threads from the periphery toward the center, thus forming the ribbon.

3,695,978

Patent Not Issued For This Number

3,695,979

Patent Not Issued For This Number

3,695,980

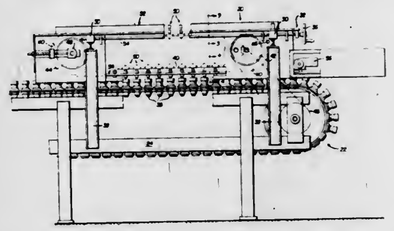
BASE SEALER

Frederick L. Wallington, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.

Filed July 22, 1970, Ser. No. 57,200

Int. Cl. B30b *15/34;* **B02c** *11/08*

U.S. Cl. 156—583 **10 Claims**



Apparatus for sealing vent openings in the bottom of plastic base elements of composite containers. A series of heated sealing tips are linked together into an endless chain and driven along an endless path having one run which extends above a conveyor upon which the composite containers are conveyed in an inverted position. During their transit of this one run, the tips are engaged with the base elements to heat seal the vent openings. Regulation of the amount of heat applied to the base elements is achieved by maintaining the tip temperature within a predetermined range and contacting the tip and base element for a fixed time interval. The apparatus includes means for maintaining the contact time between tip and base element constant regardless of the conveyor speed.

3,695,981

DISPENSER FOR SELF-ADHERING LABEL

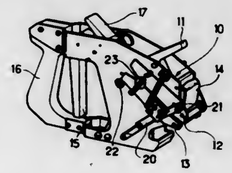
Hubert Boucris, Vigneux, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Jan. 12, 1970, Ser. No. 2,093

Claims priority, application France, Jan. 10, 1969, 6900299

Int. Cl. B32b *31/20;* **B65h** *5/28*

U.S. Cl. 156—584 **5 Claims**



A self-adhering label having a protective covering member over an adhesive coating thereon and an aperture in one of two readily separable portions thereof capable of carrying data in written or coded form and a dispenser of such labels capable of automatically dispensing labels one at a time and removing the protective covering member prior to application of the label to an object.

3,695,982

THREE-DIMENSIONAL PLASTIC COLORED ARTICLE

Norman M. Brody, Los Angeles, Calif., assignor to Norman Industries, Inc., Santa Fe Springs, Calif.

Filed July 10, 1970, Ser. No. 53,918

Int. Cl. B44f *1/08, 7/00*

U.S. Cl. 161—5 **11 Claims**



Three dimensional plastic colored article, e.g. reproduction of a cartoon character and the like, useful for decorative purposes such as wall plaques, comprising a clear transparent polyester cast resin body having a colored fiber glass paper inlay embedded in the resin, such inlay preferably being a silk screened multicolored configuration or characterization, the cast resin body having an external shape corresponding to the external shape of the colored inlay, forming a three dimensional plastic duplicate of the colored inlay having the corresponding coloration and outlines of the colored fiber glass paper inlay, and creating a three dimensional effect to the eye of an observer. Process for making such article wherein a clear polyester liquid resin is poured into a mold having the outlines of the colored inlay to be reproduced, such as a carton character, the colored, e.g. multicolored silk screened, fiber glass paper inlay is then embedded in the wet resin in the mold, and the resin is allowed to set therein.

3,695,983

WOVEN ARTICLE AS A CARPET SCRIM

William J. Hogg, Dalton, and Charles A. Jackson, Sterling, N.J., and Septimus A. Harvin and Joseph C. Whitesel, Waynesboro, Va., assignors to Thiokol Chemical Corporation, Bristol, Pa.

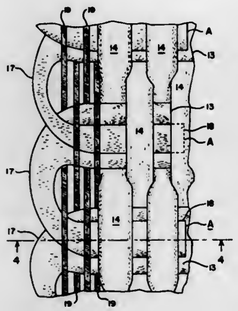
Filed Aug. 10, 1970, Ser. No. 69,508

Int. Cl. D03d *11/00, 13/00;* **B32b** *5/00*

U.S. Cl. 161—71 **15 Claims**

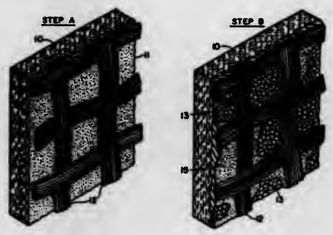
A backing or scrim woven from yarns of synthetic plastic, useful in particular for needle punch carpet products and the like is disclosed. The invention is characterized by the yarns in the warp of the scrim being "crowded" and dimensionally selected to have a width to thickness relationship to insure minimum foldover, thereby resulting in a loose warp, despite crowding and possessing a high degree of "springiness" to inhibit width reduction due to mechanical working when woven and used in the carpet

product. A further characteristic is the use of a heat soaked fill yarn, wherein the heat soaking is accomplished prior to weaving, to reduce shrinking in the fill direction.



The final scrim fabric is remarkably non-shrinkable, even when subjected to hot latexing and dyeing procedures in carpet manufacture.

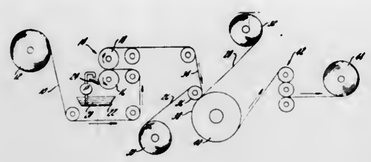
3,695,984
NOVEL MICACEOUS INSULATION
Dow A. Rogers, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application Jan. 8, 1968, Ser. No. 700,339, now Patent No. 3,586,557, dated June 22, 1971. Divided and this application Jan. 11, 1971, Ser. No. 105,548
Int. Cl. B32b *3/10, 5/16*
U.S. Cl. 161—93 **6 Claims**



A thin solid thermoplastic binder sheet is sandwiched between a sheet of micaceous insulation and a fibrous substrate or backing sheet such as polyester fiber webbing or glass fiber cloth. The composite is heated and pressed together. The thermoplastic binder sheet softens and bonds the fibers of the backing to the mica sheet. The thermoplastic sheet also shrinks so that film discontinuities are formed in areas between the fibers of the backing. The resulting composite insulation has excellent physical and electrical properties and is permeable to liquid insulating varnishes or resins.

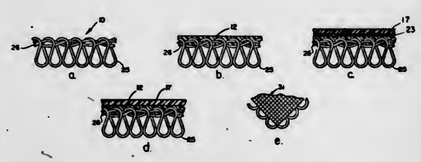
3,695,985
HIGH BULK LAMINATES
Robert J. Brock, Appleton, and Gordon D. Thomas, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed July 29, 1970, Ser. No. 59,147
Int. Cl. B32b *3/28*
U.S. Cl. 161—129 **9 Claims**

A high bulk, high strength, resilient nonwoven laminate comprised of an intermittently bonded web of continuous thermoplastic polymer filaments and a cellulosic web, the laminates preferably containing three plies, wherein the outer plies are the same, and having been hot embossed under controlled conditions to set the thermoplastic polymer web into a predetermined pattern. The bulk, strength and resilience is retained under wet conditions; and the laminates may be advantageously employed as toweling and the like.



3,695,986
Patent Not Issued For This Number

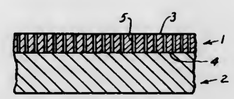
3,695,987
FOAM-BACKED CARPETS
Reuben Wisotzky, Lexington, and Richard E. Petersen, Concord, Mass., assignors to Pandel, Inc., Lowell, Mass.
Original application Dec. 4, 1967, Ser. No. 687,608, now Patent No. 3,560,284, dated Feb. 2, 1971. Divided and this application Sept. 15, 1970, Ser. No. 72,519
Int. Cl. D03d *27/00;* **B32b** *5/18*
U.S. Cl. 161—67 **18 Claims**



An integral tufted carpet, which carpet comprises in combination: a base fabric sheet comprising thermoplastic fibers, which fibers are subject to shrinkage at temperatures in excess of about 200° F.; tufted yarns secured through and to said base fabric sheet to provide a tufted pile face surface and yarn loops on the back surface; a layer of a fused vinyl chloride resin plastisol composition bonded to the back surface, the fused layer substantially filling the interstices between the tufted yarn loops and the base fabric, the fused plastisol composition the sole adhesive employed to lock the tufted yarns to the base fabric, the thermoplastic fibers of the base fabric maintained in substantially nonheat-shrinkable form; and a layer of a thermoplastic foam, one surface of the foam sheet bonded to the surface of the fused plastisol composition, the layers bonded to each other solely by the melted and cooled surfaces of the thermoplastic vinyl chloride resin and the foam.

3,695,988
LAMINATED IMITATION LEATHER
Karl Heinz Steigerwald, Mozartstrasse 27, Lochham, near Munich, Germany
Original application Dec. 8, 1966, Ser. No. 600,122, now Patent No. 3,554,837, dated Jan. 12, 1971. Divided and this application Sept. 2, 1970, Ser. No. 68,999
Int. Cl. B32b *3/10*
U.S. Cl. 161—109 **8 Claims**

A laminated imitation leather comprises a first ply of material which is normally substantially impervious and a second ply of pervious material bonded to the first ply, in which said first ply has been rendered pervious to water vapor to a degree comparable to natural leather by forming a large number of small perforation holes therein,

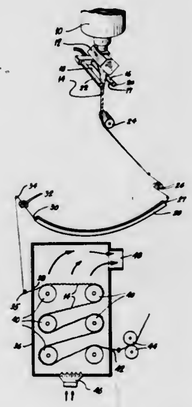


and in which said holes penetrate only the first ply and not the second and are characterized by removal from the first ply of material corresponding in volume to the volume of said holes.

3,695,989
COLD WATER SOLUBLE FOAM PLASTIC PACKAGE
Robert E. Albert, 321 Hampton Road, Wilmington, Del. 19803
No Drawing. Filed Aug. 12, 1970, Ser. No. 63,285
Int. Cl. B32b *5/18*
U.S. Cl. 161—160 **8 Claims**

Cold water soluble packages can be made from foamed films of polyvinyl alcohol, polyvinyl pyrrolidone or mixtures of the two. The film has dispersed within it a volume of gas equal to from 80 to 99% of the total volume of the film in the form of bubbles having an average diameter less than ⅓ of the thickness of the film.

3,695,990
CRINKLED AND FIBRILLATED RIBBON
Sohinder Nath Chopra, Saint Bruno, Quebec, and Hilaire Marcel Turmel, Drummondville, Quebec, Canada, assignors to Chemcell Limited, Montreal, Quebec, Canada
Original application Jan. 11, 1968, Ser. No. 697,209, now Patent No. 3,562,369, dated Feb. 9, 1971. Divided and this application Sept. 10, 1970, Ser. No. 71,235
Int. Cl. D01d *1/00*
U.S. Cl. 161—168 **2 Claims**



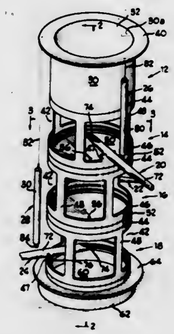
A fibrillated and crinkled ribbon is disclosed and claimed which includes a central portion made up of closely superimposed loosely bound crinkled filaments and fibrils forming an irregular sinusoidal pattern and yarn like hem portions consisting of closely tied filaments irregularly rotating so as to form an elongated helix; the claimed ribbons are useful in the textile industry such as for upholstery, carpet pile and knitting yarn.

3,695,991
Patent Not Issued For This Number

3,695,992
POROUS AROMATIC POLYAMIDE FIBER
Gordon M. Moulds, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 856,183, Sept. 8, 1969. This application Aug. 26, 1970, Ser. No. 71,286
Int. Cl. D01f *7/00*
U.S. Cl. 161—178 **4 Claims**

Porous fibers of an aromatic polyamide in which the void volume for pores having pore diameters of 0.12 micron or less is greater than 0.03 cc./gm., and the void volume for pores having pore diameters of more than 0.12 micron is less than 0.02 cc./gm. Such fibers are prepared by a process wherein freshly spun fibers are drawn and extracted in one or more solvent-containing aqueous baths of specified composition and temperature, subjected to steam when the drawing step is carried out at certain conditions, and are then dried. Such fibers are dyeable without the use of superatmospheric pressures or dyeing assistants.

3,695,993
FLUID OPERATED CHIMES
Norman T. McFarland, Urbana, Ill., assignor to Marvin Glass & Associates
Filed Feb. 4, 1971, Ser. No. 112,683
Int. Cl. A63h *29/14*
U.S. Cl. 161—7 **10 Claims**



A novelty device characterized by the provision of vertically arranged chambers with outlets in communication with subjacent chambers and movable striker elements in the path of fluid flow from the outlets to the next subjacent chamber. The movable striker elements are pivoted to the chambers and chime elements are connected to the exterior of the device in a position to be engaged by the movable striker elements as the striker elements move responsive to reception of a predetermined quantity of fluid.

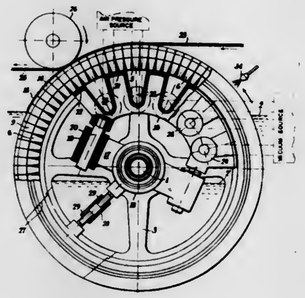
3,695,994
IMPREGNATION OF WOOD CHIPS WITH A CELLULOSE PROTECTOR FOLLOWED BY A SODA-OXYGEN PULPING STAGE
Hans Edmund Worster, Richmond, British Columbia, and Marian Franciszek Pudek, Coquitlam, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,004
Int. Cl. D21c 9/10
U.S. Cl. 162—65 6 Claims

Impregnating wood chips with an aqueous solution of an inorganic salt of magnesium or calcium as cellulose protector and thereafter pulping the wood chips with sodium hydroxide in the presence of an excess of oxygen.

3,695,995
OXYGEN-PERACETIC ACID-CHLORINE DIOXIDE PULP BLEACHING SEQUENCE
Sunanda K. Roymoulik, Suffern, N.Y., assignor to International Paper Company, New York, N.Y.
No Drawing. Filed May 25, 1970, Ser. No. 40,404
Int. Cl. D21c 9/10, 9/12, 9/16
U.S. Cl. 162—65 16 Claims

A process of bleaching chemical pulps which comprises a first stage of bleaching with oxygen in the presence of $Na_2S_2O_4$ or Na_2S_x, wherein x is an integer from 1 to 4, and optionally NaOH, followed by a peracetic acid second stage, results in a pulp having a brightness of about 60% or above which is suitable for newsprint furnish. A further bleaching stage employing chlorine dioxide results in a pulp having a brightness of about 80% or above which is suitable for dissolving pulp and writing and bond papers.

3,695,996
PAPERMAKING MACHINE SHAPING CYLINDER HAVING TRAPEZOIDAL-SHAPED PERIPHERAL TROUGH-LIKE BOXES
Armando Frezzotti, Fabriano, Italy, assignor to Fibrostanpa S.r.l., Milan, Italy
Filed Feb. 12, 1970, Ser. No. 10,853
Claims priority, application Italy, Feb. 18, 1969, 35,084/69
Int. Cl. D21f 1/60
U.S. Cl. 162—273 5 Claims



A papermaking machine shaping cylinder which includes a plurality of trapezoidal-shaped trough-like boxes at the periphery which are open to a wire mesh circumferentially disposed on the cylinder over the boxes. The boxes are connected by rings to twin wheels spaced apart from one another, and which are themselves connected to the shaft of the cylinder. Two distributor members are urged against openings in the rings so as to communicate either compressed air or vacuum to the interior of the boxes in a fashion to adher fibers from a slurry onto the wire mesh and then to transfer the formed fibrous sheet onto a felt contacting the cylinder. A screw-threaded bush mounted on two aligned pins allows a displaceable segment of the cylinder periphery to move toward and away from the shaft to facilitate assembly and disassembly of the mesh.

3,695,997
Patent Not Issued For This Number

3,695,998
Patent Not Issued For This Number

3,695,999
ISOLATION OF ENZYMES FROM AQUEOUS MEDIA BY MEANS OF POLYANIONS
Peter Salvatore Forgione, 120 Little Hill Drive 06905, and Nelda Marjorie Smyth, 444 Bedford St. 06902, both of Stamford, Conn.
No Drawing. Filed July 22, 1970, Ser. No. 57,343
Int. Cl. C07g 7/02
U.S. Cl. 195—63 5 Claims

Proteolytic enzymes, and particularly alkali stable proteases such as those produced by the fermentation of various microorganisms, are separated from the fermentation liquor by adding polyanions thereto. The polyanion forms with the enzyme a reversible ionic complex which precipitates upon acidification or upon the addition of a polycationic flocculating agent. For the most important uses, in soaps and detergents, it is unnecessary to separate the enzyme from the complex with the polymer.

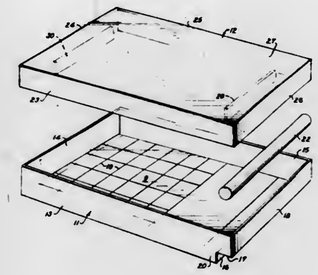
3,696,000
PROCESS FOR THE PRODUCTION OF ALKALINE PROTEINASE
Guido M. Miescher, Terre Haute, Ind., assignor to Commercial Solvents Corporation
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,236
Int. Cl. C12d 13/10
U.S. Cl. 195—65 2 Claims

An improved process for the production of alkaline proteinase by the cultivation of a *Bacillus subtilis* type of organism on a nutrient fermentation medium by continuously introducing carbohydrate to the fermentor after the 14th hour to the end of the fermentation, thereby producing greatly improved yields of proteinase.

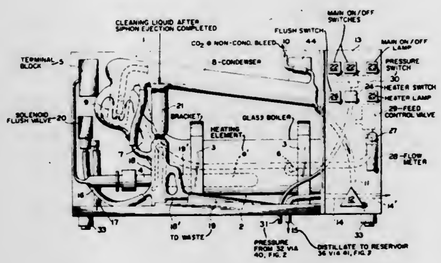
3,696,001
Patent Not Issued For This Number

3,696,002
MICROBIOLOGICAL ISOLATOR
Raymond E. Grimes, Santa Ana, and Robert W. Bruen, Laguna Niguel, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Nov. 24, 1970, Ser. No. 92,364
Int. Cl. C12k 1/00
U.S. Cl. 195—139 13 Claims

A relatively flat rectangularly shaped container assembly having a cover, preferably of transparent material, which cover has a depending skirt that encompasses upwardly extending walls of the container. The container is constructed to contain a quantity of gelled material as a culture medium for bacteria and other microorganisms. A roller is positioned at one side for gravity movement from that side to the other side when the cover is removed and the container is inclined, whereby colonies of the microorganisms can be rapidly and uniformly isolated for identification and enumeration.

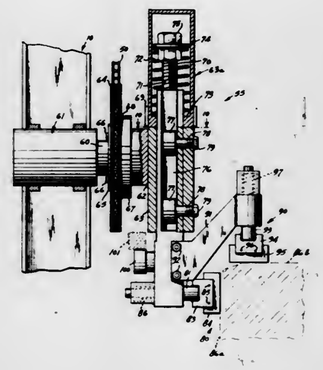


3,696,003
DISTILLATION APPARATUS
Stanley Frederick Fitch, Loughborough, and Dara Derrick Phiroz St. John, Quorn, England, assignors to Fisons Limited, Felixstowe, England
Filed Mar. 11, 1970, Ser. No. 18,641
Claims priority, application Great Britain, Mar. 19, 1969, 14,417/69; June 13, 1969, 30,034/69
Int. Cl. B01d 3/00, 3/12
U.S. Cl. 202—160 8 Claims



A distillation apparatus which may be cleaned without having to be dismantled and which is provided with means for preventing overheating in the event of failure in the liquid feed to the boiler which apparatus comprises a boiler provided with heating means which may be shut off by means of a thermostatic switch, a condenser which feeds a reservoir optionally fitted with a level sensing device so that operation of the apparatus only occurs when the level of distillate in the reservoir falls below a given level, and a syphon which may be actuated to drain distill and from the boiler to permit flushing of the boiler with a cleaning or de-furring liquid which is in turn drained from the boiler by the syphon.

3,696,004
OSCILLATING SCRAPING MECHANISMS FOR COKE OVEN JAMBS
Charles D. McCullough, Metropolis, Ill., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 15, 1970, Ser. No. 55,127
Int. Cl. C10b 43/04
U.S. Cl. 202—241 21 Claims



In apparatus for mechanically scraping formed deposits from the jamb of a coke oven, an oscillating scraping mechanism for scraping said deposits from substantially right angular surfaces extending along either the jamb top or bottom walls, and arcuate corner portions contiguous therewith. The mechanism features a shaft which is provided within a housing and has one end extending therefrom with a scraper unit thereon. In response to the oscillation of the housing, the shaft reciprocates linearly in following a cam means thereby resulting in a scraping of said deposits.

3,696,005
PURIFICATION OF 2,2-DIMETHYL-1,3-PROPANEDIOL MONOHYDROXYPIVALIC ESTER BY DISTILLATION WITH SULPHURIC OR SULPHONIC ACID
Werner Fuchs, 30b Muenchbuschweg, and Franz Merger, 8 Homburger Strasse, both of 6700 Ludwigshafen, Germany
Filed June 17, 1970, Ser. No. 47,150
Claims priority, application Germany, June 26, 1969, P 19 32 420.0
Int. Cl. B01d 3/34; C07c 69/66
U.S. Cl. 203—35 7 Claims



Purification of 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester by distilling the crude product in the presence of an acid compound. 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester purified by the invention is a starting material for synthetic resins, plasticizers and plastics auxiliaries and may be employed for uses which

require very high purity such as the production of colorless polyesters for the plastics, surface coatings and plasticizer industries.

3,696,006

o-BENZYL-p-CHLOROPHENOL SUBSTANTIALLY COMPLETELY FREE FROM p-CHLOROPHENOL AS AN IMPURITY AND ITS PRODUCTION BY DISTILLATION WITH ACETOPHENONE

Werner Schulte-Huermann, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,466
Claims priority, application Germany, May 2, 1969, P 19 22 410.3
Int. Cl. B01d *3/34*
U.S. Cl. 203—62 **10 Claims**

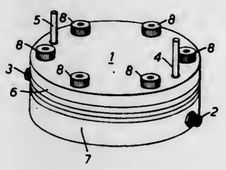
o-Benzyl-p-chlorophenol which is substantially completely free from p-chlorophenol as an impurity is produced by distilling o-benzyl-p-chlorophenol containing p-chlorophenol as an impurity with a small proportion of acetophenone, separating the first runnings and recovering the o-benzyl-p-chlorophenol which is thus substantially completely free from p-chlorophenol as an impurity.

3,696,007

ELECTROLYTIC HYGROMETER CELLS AND METHOD OF USING SAME

Frank Bennett, Croftways, Long St., Williton, Taunton, Somerset, England, and Ivor John Conibear, Millard's Hill House, Instow, Bideford, North Devon, England

Filed Feb. 3, 1970, Ser. No. 8,216
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **16 Claims**



An improved method of measurement of the moisture content of a gas by passing the gas through an improved form of electrolytic hygrometer cell wherein the area of contact of the gas with the detector element of the cell progressively decreases in size from the inlet to the outlet in the direction of flow and an improved form of detecting element for such a cell wherein the interdigitated electrode pattern is embedded in the surface of a non-conductive substrate.

3,696,008

ELECTROLYTIC PRODUCTION OF ALUMINUM

Jacob Levitan, Highland Park, Ill., assignor to Institute of Gas Technology

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,572
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **8 Claims**

An improved electrolytic process for the production of aluminum from a molten salt electrolyte involving the use of hydrogen as an anodic reactant on non-carbon electrodes. The anode may be either porous or non-porous metallic or other conductive material. The reaction occurring on the cathode surface involves the reduction of aluminum cations to form substantially impurity-free aluminum. At the anode, hydrogen is oxidized to water vapor which is driven off and collected from above the cryolite melt.

3,696,009

ELECTRO SYNTHESIS OF TETRAORGANOLEAD COMPOUNDS

Evan A. Mayerle and James R. Minderhout, Lake Jackson, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,360
Int. Cl. C07b *29/06*
U.S. Cl. 204—72 **6 Claims**

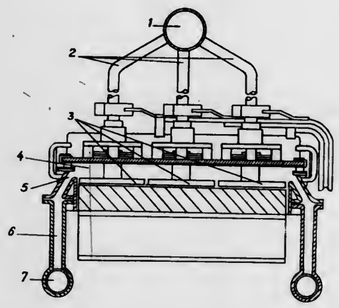
Tetraorganolead compounds may be prepared by electrolyzing aqueous solutions of triorganolead salts.

3,696,010

METHOD AND APPARATUS FOR REMOVING GAS FROM AN ALKALINE CHLORIDE ELECTROLYSIS CELL

Franz Glos, Salzgitter, and Joachim Mischke, Dortmund, Germany, assignors to Friedrich Uhde G.m.b.H., Dortmund, Germany

Filed Aug. 24, 1970, Ser. No. 66,441
Claims priority, application Germany, Oct. 24, 1969, P 19 53 627.7
Int. Cl. C01d *1/12*; B01k *3/00*; C22d *1/04*
U.S. Cl. 204—99 **3 Claims**



Chlorine gas mixed with brine and in the form of foam is withdrawn from an alkaline chloride electrolysis cell with a mercury cathode through pipes leading from a certain number of anodes and arranged on opposite sides of the cell. The foam is delivered to a tank or vessel wherein the gas is separated from the brine by diluted hydrochloric acid and centrifugal action. The gas and brine are then separately discharged from the tank.

3,696,011

PROCESS FOR ELECTRODEPOSITING MANGANESE METAL

San-Cheng Lai, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,936
Int. Cl. C22d *1/24*
U.S. Cl. 204—105 M **3 Claims**

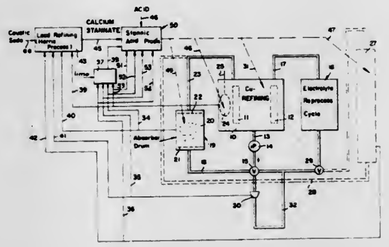
A process for electrodepositing manganese metal wherein a selenium compound is added to a conventional manganese metal electrolyte to increase the current efficiency of the cell and a small quantity of sulfur dioxide is introduced to maintain the selenium compound in solution in the electrolyte.

3,696,012

PROCESS FOR PREVENTING SUPERSATURATION OF ELECTROLYTES WITH ARSENIC, ANTIMONY AND BISMUTH

Reinhold Schulze, Hamburg, Germany, assignor to Norddeutsche Affinrie, Hamburg, Germany

Filed Jan. 12, 1971, Ser. No. 105,847
Claims priority, application Germany, Jan. 31, 1970, P 20 04 410.4
Int. Cl. C22d *1/16*
U.S. Cl. 204—108 **9 Claims**



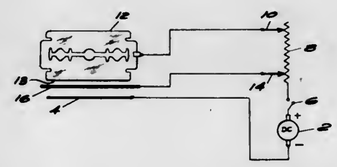
A process for preventing excessive accumulation of arsenic, antimony and bismuth in electrolytes used in the electrolytic refining of nonferrous metals, especially copper. The process involves adsorbing these impurities upon a chemical adsorbent in the form of a low-solubility metal-oxide hydrate (especially stannic acid) stable in the presence of sulfuric acid.

3,696,013

PROCESSES FOR SHARPENING RAZOR BLADES

Bernard Tafapolsky, Newton, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of application Ser. No. 609,862, Jan. 17, 1967. This application Jan. 6, 1970, Ser. No. 1,015
Int. Cl. B23p *1/10*
U.S. Cl. 204—129.55 **8 Claims**



The present invention is concerned with providing improved electrosharpening processes. Generally, the improvements are brought about by positioning an electropositive control electrode adjacent the edge or point being formed. The use of such electrodes enables one to produce sharpened points and edges of especially desirable geometry.

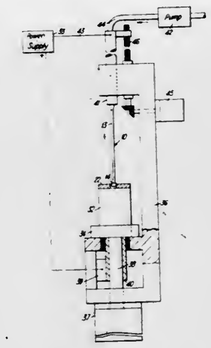
3,696,014

ELECTROLYTIC DRILLING

John Goodard, Bristol, England, John Francis Wilson, West Peabody, Mass., and Derek Aubrey Glew, Bristol, England, assignors to Rolls-Royce Limited, Moor Lane, Derby, England

Filed Apr. 27, 1970, Ser. No. 32,112
Int. Cl. B23p *1/00, 1/02, 1/12*
U.S. Cl. 204—143 M **10 Claims**

Electrolytic drilling wherein the electrode is continuously rotated relatively to the workpiece, and lateral pressing contact is continuously maintained between a predetermined side only of an insulated part of the electrode, adjacent to the operating part, and the side wall of the hole.



3,696,015

PROCESS FOR REDUCING THE CONCENTRATION OF 2 - DICHLOROBUTADIENE-(1,3) IN 1,2-DICHLOROETHANE RECOVERED IN THE INCOMPLETE THERMAL CRACKING INTO VINYL CHLORIDE

Peter Wirtz, Cologne-Lindenthal, Armin Jacobowsky, Knapsack, near Cologne, Werner Mittler, Hermulheim, near Cologne, and Wilfried Gerhardt, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

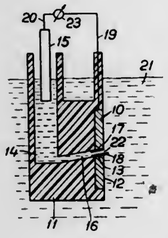
Filed Nov. 18, 1970, Ser. No. 90,716
Claims priority, application Germany, Nov. 26, 1969, P 19 59 211.1
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R **3 Claims**

The concentration of 2-chlorobutadiene-(1,3) in 1,2-dichloroethane recovered in the incomplete thermal cracking of 1,2-dichloroethane into vinyl chloride and being contaminated with low boilers boiling at a temperature lower than 83.7° C. (760 mm. Hg) and high boilers boiling at a temperature higher than 83.7° C. (760 mm. Hg), is reduced by transforming the 2-chlorobutadiene-(1,3) low boiler into a high boiler contaminant. To this end, the 1,2-dichloroethane is distillatively freed from its low boiler contaminants in a low boiler column; all or a portion of the low boiler contaminants concentrating near the head of the low boiler column is continuously withdrawn therefrom; the low boiler concentrate withdrawn from the low boiler column is treated with gaseous chlorine at temperatures of between 10 and 120° C., under pressures of between 1 and 3 atmospheres absolute, with irradiation of ultraviolet and/or visible light in the absence of catalysts, and the chlorine-treated low boiler concentrate recycled to the said low boiler column; material accumulating in the base of the said low boiler column is continuously delivered from the low boiler column to a high boiler column; and pure dichloroethane is distilled off from the high boiler contaminants in the high boiler column.

3,696,016

Patent Not Issued For This Number

3,696,017
MEANS FOR ELECTROLYTICALLY DEPOSITING METAL ON AN OBJECT OR FOR ANODIC OXIDATION OF AN OBJECT
Bengt Wallen, Vasteras, Sweden, assignor to Allmanua Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed May 21, 1970, Ser. No. 39,319
Claims priority, application Sweden, May 27, 1969, 7,388/69
Int. Cl. B01k *3/02, 3/04;* **G01n** *27/30*
U.S. Cl. 204—195 R **1 Claim**



A device for electrolytically depositing metal on an object or for anodic oxidation of an object immersed in an electrolytic bath, having a reference electrode in contact with the electrolyte in the bath through an ion-conducting connection to measure the potential of the object. An auxiliary electrode is placed close to the outlet of the ion-conducting connection to simulate the conditions at the surface of the object. The potential can then be measured from the auxiliary electrode.

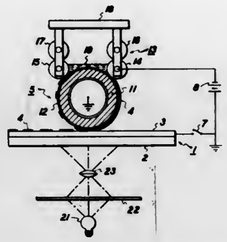
3,696,018
Patent Not Issued For This Number

3,696,019
THALLIUM ALLOY ELECTRODE
James R. Arrington, Muskego, and Karl Lewis King, Milwaukee, Wis., assignors to American Limnetics Instruments, Inc.
Filed June 5, 1970, Ser. No. 43,863
Int. Cl. B01k *3/04, 3/06*
U.S. Cl. 204—290 R **4 Claims**

An electrode for sensing dissolved oxygen in an electrolytic media is composed of a core having a major portion of thallium and a minor amount of mercury and an outer coating of a saturated thallium-mercury amalgam thereon. The electrode core is formed as a solid electrode and the preferred amount of thallium is 87% by weight with the mercury being present in the amount of 13%. The electrode composition is employed to sense dissolved oxygen in an electrolytic media and is substantially unaffected by wide variations in temperature, pH, pressure, salinity and flow rate.

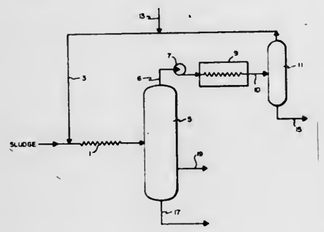
3,696,020
ELECTROPHORETIC IMAGING APPARATUS INCLUDING MEANS TO COAT AND ELECTRIFY THE IMAGING ELECTRODE
Leonard M. Carreira, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Jan. 2, 1969, Ser. No. 789,088. Divided and this application Aug. 24, 1970, Ser. No. 66,207
Int. Cl. B01k *5/00;* **G03g** *15/00*
U.S. Cl. 204—300 **5 Claims**

It has been determined that by applying DC voltage to a coating means in the electrophoretic imaging system that it is possible to establish the necessary field for imaging as well as eliminating the buildup of unwanted residual charge on the surface of the blocking electrode.



In addition, the application of the potential in this manner has been found to decrease mottling of the imaging suspension on the surface of the blocking electrode.

3,696,021
CONTINUOUS PROCESS FOR SEPARATING OILY SLUDGES
Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed June 12, 1970, Ser. No. 45,742
Int. Cl. C01g *33/04*
U.S. Cl. 208—13 **9 Claims**

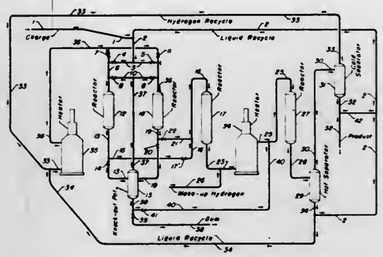


Oily sludges are mixed with light hydrocarbons differing substantially in specific gravity therefrom to separate the sludges into an oil-hydrocarbons phase and a water-solids phase. The oil-hydrocarbons phase is heated to a temperature above the critical temperature of the hydrocarbons to remove the light hydrocarbons which are recycled for mixing with additional sludge and the oil is recovered for further use. The water-solids phase is treated to obtain water of reduced Chemical Oxygen Demand which can be discharged in receiving bodies of water without polluting the same. The solids slurried with water which are recovered find utility, inter alia, as land fill.

3,696,022
SWING-BED GUARD CHAMBER IN HYDROGENERATING AND HYDROREFINING COKE-FORMING HYDROCARBON CHARGE STOCK
Leroi E. Hutchings, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 27, 1970, Ser. No. 58,443
Int. Cl. C10g *23/00*
U.S. Cl. 208—57 **9 Claims**

A process for hydrorefining sulfurous hydrocarbon distillates containing mono-olefinic, di-olefinic and aromatic hydrocarbons. Particularly directed toward the stabilization of a pyrolysis naphtha, the process makes use of a multiple-stage system. Ease of operation, increased

catalyst stability throughout the process and various economic advantages are obtained through the utilization of a swing-bed reaction zone system which constitutes the initial portion of the process. In combination with the



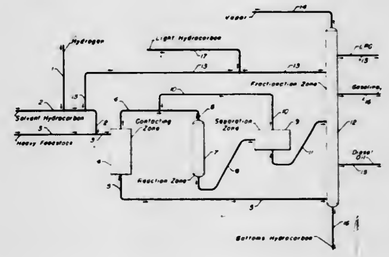
first principal reaction zone, following the swing-bed section, each of the smaller guard chamber reactors in the latter contain from 5.0% to about 25.0% of the total catalyst.

3,696,023
CRACKING OF A GAS OIL WITH ZEOLITE AND NONZEOLITE CATALYST
Robert W. Koch, Verona, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed July 23, 1970, Ser. No. 57,507
Int. Cl. C10g *11/04*
U.S. Cl. 208—87 **4 Claims**

A gas oil is passed through a solvent extraction zone to separate an aromatics-rich extract fraction from an aromatics-lean raffinate fraction. The aromatics-rich extract fraction is distilled to separate a light gas oil extract fraction from a heavy gas oil extract fraction. The aromatics-lean raffinate fraction and the light gas oil extract fraction are cracked in a fluid zeolite reaction zone without added hydrogen to produce a first gasoline product. The heavy gas oil extract fraction is cracked in a fluid nonzeolite cracking zone without added hydrogen to produce a second gasoline product. The first and second gasoline products are blended.

3,696,024
PETROLEUM CRUDE OIL CONVERSION PROCESS
Laurence O. Stine, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 758,217, Sept. 9, 1968. This application July 27, 1970, Ser. No. 58,480
Int. Cl. C10g *31/14*
U.S. Cl. 208—87 **16 Claims**

A heavy hydrocarbon feedstock is converted into more valuable hydrocarbon product by a combination extraction and hydrorefining process which includes the contacting of the feedstock in a liquid-liquid contacting zone with a light hydrocarbon solvent under conditions sufficient to produce a low density liquid phase comprising solvent and a low boiling fraction of the feedstock, and a high density liquid phase comprising solvent and a high boiling fraction of the feedstock. The low density phase is passed to a hydrorefining reaction zone and the resulting effluent contains hydrorefined hydrocarbon and solvent. The effluent and the high density phase are passed to a fractionation zone wherein the high boiling fraction of



the feedstock is recovered, hydrorefined product is recovered, and light hydrocarbon solvent is recovered for recycle to the contacting zone. The light hydrocarbon solvent contains hydrocarbons having from three to ten carbon atoms per molecule, and preferably from five to eight carbon atoms per molecule. The process has particular application to hydrotreating and hydrocracking heavy feedstocks containing a significant quantity of asphaltic materials, organo-metallic complexes, sulfur compounds, and nitrogen compounds, wherein at least about 10% by volume of the feedstock boils at a temperature in excess of about 1050° F.

3,696,025
CATALYTIC CRACKING BY ADDITION OF TITANIUM TO CATALYST
Donald O. Chessmore, Pleasant Hill, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,230
Int. Cl. C10g *11/04;* **B01j** *11/68*
U.S. Cl. 208—113 **3 Claims**

In a catalytic cracking process wherein hydrocarbons are cracked at an elevated temperature in the presence of cracking catalyst and the cracking catalyst is regenerated by burning coke off the catalyst using oxygen to obtain regenerator effluent gas containing CO_2 and CO, a method for increasing the coke burning rate and the CO_2/CO ratio in the regenerator effluent gases which comprises adding titanium or a titanium compound to the cracking catalyst during the catalytic cracking process.

3,696,026
METHOD FOR ACTIVATING A HYDROCRACKING CATALYST
Algie J. Conner, Downers Grove, and Frank H. Adams, La Grange Park, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 799,100, Feb. 13, 1969, now Patent No. 3,586,620. This application June 1, 1970, Ser. No. 42,588
The portion of the term of the patent subsequent to June 22, 1987, has been disclaimed
Int. Cl. C10g *23/02;* **B01j** *11/40*
U.S. Cl. 208—111 **10 Claims**

A hydrocracking catalyst in an oxidized state is activated by a method which gives a superior performing

hydrocracking catalyst. The hydrocracking catalyst is reduced and sulfided by a procedure whereby a liquid hydrocarbon stream is contacted with the hydrocracking catalyst during reduction and sulfiding. The presence of the liquid hydrocarbon stream reduces the effects of native water and water of reduction. Sulfur addition may be continued during steady-state operation.

3,696,027

MULTI-STAGE DESULFURIZATION

Alan G. Bridge, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 743,568, July 9, 1968, now Patent No. 3,496,099, which is a continuation-in-part of application Ser. No. 668,046, Sept. 15, 1967, now abandoned. This application Jan. 12, 1970, Ser. No. 2,096

Int. Cl. C10g *23/02*

U.S. Cl. 208—210 **5 Claims**

A process for hydrodesulfurization of a metals-contaminated heavy oil by the following steps carried out under hydroconverting conditions: (a) passing the heavy oil through a fixed bed of macroporous catalyst particles having high metals capacity and low desulfurization activity, (b) passing effluent from the macroporous catalyst bed through a fixed bed of moderately active desulfurization catalyst particles, and (c) passing effluent from the bed of moderately active desulfurization catalyst particles through a fixed bed of highly active desulfurization catalyst particles.

3,696,028

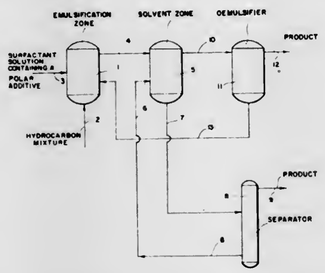
LIQUID MEMBRANE SEPARATION PROCESS

Norman N. Li, 158 Oakwood Ave., Edison, N.J. 08817, and Robert B. Long, 249 E. Highland Ave., Atlantic Highlands, N.J. 07716

Continuation-in-part of application Ser. No. 791,586, Jan. 16, 1969. This application Aug. 24, 1970, Ser. No. 66,549

Int. Cl. C10g *21/10;* **B01j** *17/34*

U.S. Cl. 208—308 **11 Claims**



A process for separating components of a hydrocarbon mixture by selective permeation through a liquid surfactant membrane containing a polar additive.

3,696,029

DEEP TANK AERATION USING EDUCTOR TUBES OF ELONGATE CROSS-SECTION

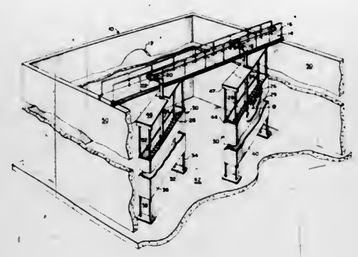
James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company

Filed Mar. 16, 1970, Ser. No. 19,989

Int. Cl. C02c *1/12*

U.S. Cl. 210—14 **19 Claims**

Aeration of huge quantities of sewage in very deep tanks is made practicable by efficient use of eductor tubes. The air is liberated at only a moderate depth, the tubes extend downwardly from only slightly above the level of liberation, and the tubes are elongate in horizontal cross-



section for effective utilization of the full cross-section. There is a baffle at surface level above the tubes.

3,696,030

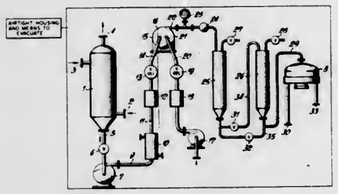
PROCESS AND APPARATUS FOR DE-SLIMING VEGETABLE OILS

Heinz Otto Schumacher, 26 Hoperfeld, 205 Hamburg 80, Germany

Filed Sept. 15, 1970, Ser. No. 72,419

Int. Cl. B01d *11/04*

U.S. Cl. 210—21 **9 Claims**



A process for de-sliming vegetable oils which are obtained by extraction and Miscella distillation, particularly for de-sliming soy bean oil, in which the oil to be deslimed is reacted with water in swelling or steeping containers. The oil is separated from the water-soluble phosphatides in a separating stage. Gas-free oil and gas-free water are used for the de-sliming operation. The de-sliming operation and the subsequent separation of the oil from the phosphatides is carried out in a gas-free medium.

3,696,031

OSMOSIS PROCESS

Lino Credali, Bologna, and Paolo Parrini, Novara, Italy, assignors to Consiglio Nazionale Delle Ricerche and Montecatini Edison S.p.A.

No Drawing. Filed July 6, 1970, Ser. No. 52,748

Claims priority, application Italy, July 8, 1969, 19,318/69

Int. Cl. B01d *13/00*

U.S. Cl. 210—23 **2 Claims**

Osmosis process utilizing as the semi-permeable membrane a polyamide comprising the reaction product of a piperazine with a dicarboxylic acid or acid anhydride.

3,696,032

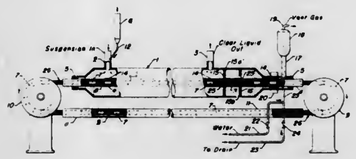
PROCESS FOR THE SEPARATION OF MAGNETIC PARTICLES FROM A FLUID STREAM

Vladimir Haensel, Hinsdale, Ill. (30 Algonquin Road, Des Plaines, Ill. 62516)

Filed Nov. 9, 1970, Ser. No. 87,693

Int. Cl. B01d *17/06*

U.S. Cl. 210—42 **4 Claims**



A process in which relatively large pre-magnetized iron particles are introduced into a fluid stream to scavenge smaller magnetic particles therefrom. The fluid stream is then passed through an annular space created by an open-ended conduit supported within a casing. A train of permanent magnets is moved through the conduit to attract the scavenged magnetic particles to the outer surface thereof, and the particles are swept along said surface by the traveling magnetic field to a particle collecting chamber.

3,696,033

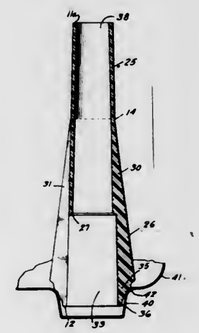
LINT FILTER

Dominic J. De Fano, Palatine, and Robert I. Kallman, Elburn, Ill., assignors to De Fano Kallman Design, Inc., Oak Park, Ill.

Filed June 1, 1971, Ser. No. 148,425

Int. Cl. B01d *23/00*

U.S. Cl. 210—460 **9 Claims**



A lint filter for mounting upright in a tub, sink or the like basin by insertion into standard sized drain openings which has an elongated body portion with a plurality of axially elongated circumferentially spaced radial fins increasing in diameter from a level below the open top of the tube and projecting beyond the bottom end of the tube thereby providing drain slots therebetween and being progressively stepped at their bottom ends to fit a wide range of drain sizes.

3,696,034

MIXED ALKANOLAMIDE FABRIC SOFTENING COMPOSITIONS

Gordon Trent Hewitt, Upper Montclair, and Annie Sue Giordano, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,244

Int. Cl. C09k *3/16;* **D06m** *13/40*

U.S. Cl. 252—8.8 **4 Claims**

A method of conditioning fibrous materials, such as laundry, comprises tumbling them in contact with an article coated on a surface thereof with an alkanolamide conditioning agent. Preferably, the conditioning is softening of the laundry or treating it to make it antistatic, the coated article is used in an automatic dryer, and the coating is on an exterior surface of the base of the article and does not impregnate the interior thereof. Also preferably, the alkanolamide softening compound is employed in mixture with other such alkanolamide softeners, it being particularly preferred to employ mixtures of various higher fatty acid mono-lower alkanolamides and mixtures of higher fatty acid mono-lower alkanolamide and higher fatty acid di-lower alkanolamide.

Also disclosed are the article used in the treatment of the laundry and a method of manufacturing it by coating a base with a melt of alkanolamide, especially a melt of a balanced composition which has a softening point chosen to provide best treating effects in normal dryer operations.

3,696,035

WELL TREATMENTS WITH THICKENED AQUEOUS ALCOHOL MIXTURES

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 666,853, Sept. 11, 1967. This application Nov. 4, 1970, Ser. No. 86,925

Int. Cl. E21b *43/25, 43/26*

U.S. Cl. 252—8.55 R **7 Claims**

A novel thickened liquid composition and method of treating wells is described herein. The liquid composition comprises an aqueous-alcohol mixture thickened with a cellulose derivative thickener and containing as an internal breaker a periodic acid and/or a water soluble salt thereof.

3,696,036

ORGANIC COMPOSITIONS CONTAINING TETRA-OCTYL-(DIMETHYL-AMINO) METHYLENE DIPHOSPHONATE AS ANTIWEAR AGENT

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Apr. 21, 1970, Ser. No. 30,573

Int. Cl. C10m *1/46, 5/24*

U.S. Cl. 252—49.9 **12 Claims**

Organic compositions are provided containing tetra-octyl-(dimethyl-amino) methylene diphosphonate, as an antiwear agent. Particularly contemplated are mineral oil-

based organic compositions such as fuel oils, lubricating oils and greases containing anti-wear amounts of tetra-octyl-(dimethyl-amino) methylene diphosphonate.

3,696,037
ANHYDROUS ELECTROLYTE FOR ELECTROLYTIC CAPACITORS

Bengt Åke Lagercrantz, Stocksund, and Kåre Andersen, Stockholm, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

No Drawing. Filed June 10, 1970, Ser. No. 45,209
Claims priority, application Sweden, June 19, 1969, 8,797/69
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 **2 Claims**

Electrolyte for electrolytic capacitor, consisting of a solution of phthalic acid in an amide, the phthalic acid being at least partly neutralized with an amine.

3,696,038
PROCESS FOR PREPARING SINGLE CRYSTALLINE Ag_3AsS_3 AND Ag_3, SbS_3 AND SOLID SOLUTIONS THEREOF

Philip Hywel Davies, 108 Leigh Sinton Road; Maurice Vernon Hobden, 6 Cockshot Road; Kenneth Fraser Hulme, 29 Whitborn Close; and Oliver Jones, 17 Denison Close, all of Malvern, England

Continuation-in-part of application Ser. No. 689,175, Dec. 8, 1967. This application Sept. 14, 1970, Ser. No. 71,666
Claims priority, application Great Britain, Dec. 9, 1966, 55,201/66
Int. Cl. C01b *27/00, 29/00;* **B01j** *17/20;* **H03f** *7/00*
U.S. Cl. 252—62.9 **5 Claims**

The substances proustite Ag_3AsS_3 and pyrargyrite Ag_3SbS_3 and solid solutions of the two are useful non-linear materials and have applications in non-linear devices. They occur in nature but in a small and optically imperfect form. However, they may be prepared having a good optical quality and a large size by synthetic growth from the melt such as by Stockbarger growth, provided that steps are taken to alleviate the problem of cellular growth. The materials grown in such a form may be used not only in non-linear devices but also in linear devices such as polarising prisms.

3,696,039
PROCESS FOR THE PRODUCTION OF FERROMAGNETIC CHROMIUM DIOXIDE

Fritz Rodi, Kaldenhausen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 28, 1970, Ser. No. 32,648
Claims priority, application Germany, May 2, 1969, P 17 22 409.0
Int. Cl. C01g *37/02*
U.S. Cl. 252—62.51 **9 Claims**

A method for the production of ferromagnetic chromium dioxide by dehydrating and tampering chromium oxide hydrate green which is obtained by reducing a chromium (VI)-solution with a reducing organic substance at a temperature of from 300° C. to 400° C. and at a pressure of from 250 to 350 kg./cm.². The obtained finely divided chromium oxide in which the average oxidation state of the chromium is in the range of from 3 to 4 is heated together with an oxidising agent under hydrothermal conditions at a temperature of from 50° C. to 400° C. and at a pressure of from 50 to 500 kg./cm.², optionally in the presence of a substance, which acts as a modifier.

3,696,040
COMPOSITION FOR REMOVAL OF CALCIUM SULFATE DEPOSITS

Frank H. Mayo, Breauxbridge, La., assignor to Champion Chemicals, Inc., Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 775,129, Nov. 12, 1968. This application Jan. 16, 1970, Ser. No. 3,486
Int. Cl. C02b *5/06*
U.S. Cl. 252—87 **7 Claims**

A composition of matter suitable for removal of mineral deposits such as gypsum and the like comprising a salt formed from a base and an organic acid having from 2 to 12 carbon atoms inclusive and water. In the preferred case, the acid is one having a dissociation constant of $>1.0\times10^{-5}$ and may be for example glycolic acid. The composition may further contain an acid or a base and a surfactant.

3,696,041
DISHWASHING COMPOSITIONS

Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed May 28, 1970, Ser. No. 41,551
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **6 Claims**

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of inhibiting overglaze attack containing as an essential ingredient aluminum chlorhydroxide.

3,696,042
PROCESS FOR SIMULTANEOUSLY CLEANING WINDSHIELDS AND CONDITIONING WIPER BLADES

Sheldon A. Wright, Morton Grove, Ill., assignor to STP Corporation

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,274
Int. Cl. C11d *1/66*
U.S. Cl. 252—153 **6 Claims**

A process and composition useful for simultaneously cleaning vehicle windshields and conditioning rubber windshield wiper blades. The composition includes a major proportion of a lower alcohol cleaning agent, such as methyl alcohol, and a minor proportion of diethylene glycol, which not only acts as a freezing point depressant, but also acts to treat the rubber wiper blades so as to renew old blades and lengthen the life expectancy of new wiper blades.

3,696,043
CLEANING COMPOSITION FOR GLASS AND REFLECTIVE SURFACES

Robert G. Labarge, Syamalarao Evani, and Alden W. Hanson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,815
Int. Cl. C09k *3/18;* **C11d** *3/30*
U.S. Cl. 252—153 **8 Claims**

The incorporation of a water soluble polymeric salt, such as the neutralization product of diethanol amine with an equimolar copolymer of styrene-maleic acid, in an aqueous surfactant cleaning formulation for glass and reflective surfaces improves the formulations by decreasing the streaking and enhancing the antifog characteristics.

3,696,044
SEQUESTRANT COMPOSITIONS

Thomas F. Rutledge, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed July 2, 1970, Ser. No. 52,088
Int. Cl. C02b *5/06;* **C23g** *1/02*
U.S. Cl. 252—180 **10 Claims**

Disclosed are sequestrant compositions comprising a mixture of (1) a compound selected from the group consisting of citric acid, tartaric acid, polyhydroxy monocarboxylic acids containing from 6 to 8 carbon atoms, and the water soluble salts of said acids and (2) a compound selected from the group consisting of polyhydroxy dicarboxylic acids containing from 5 to 8 carbon atoms and polyhydroxy monocarboxylic ketoacids containing from 6 to 8 carbon atoms and the water-soluble salts of said acids.

3,696,045
Patent Not Issued For This Number

3,696,046
NITRO OR NITROSO AROMATIC COMPOSITION

Donald M. Fenton, 2861 Alden Place, Anaheim, Calif. 92806

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,720
Int. Cl. C07b *3/00;* **C07c** *79/10*
U.S. Cl. 252—186 **10 Claims**

The oxidation of organic compounds using a nitro or nitroso aromatic as an oxidant in the presence of a non-aqueous reaction medium containing a ruthenium or rhenium catalyst and alkaline conditions is disclosed. Preferably, the catalytically active metal is in complex association with a biphyllic ligand. Examples of oxidizable substrates are aryl and alkyl substituted aromatics; condensed ring aromatics; phenols; olefins; alkynes; saturated hydrocarbyl alcohols, ketones, aldehydes, halides, ethers, amines and carboxylic acids and halides and alkyl esters thereof; and heterocyclic amines. The oxidation is performed under relatively mild conditions including temperatures from 50° to 350° C. and pressures from 0.1 to 1000 atmospheres.

3,696,047
CHEMICAL REDUCING AGENTS OF ENHANCED HYDROCARBON SOLUBILITY

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 15, 1970, Ser. No. 81,164
Int. Cl. C09k *3/00*
U.S. Cl. 252—188 **23 Claims**

The hydrocarbon solubility of alkali metal aluminum dialkyl dihydrides, chemical reducing agents, is enhanced by including in the solution a small quantity of a suitable innocuous Lewis base.

3,696,048
CORROSION INHIBITING COMPOSITION AND USE THEREOF

Rudolf H. Hausler, Arlington Heights, and Leonard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,077
Int. Cl. C23f *11/00*
U.S. Cl. 252—392 **9 Claims**

A corrosion inhibiting composition of (1) a salt of dicarboxylic acid and aliphatic amine and (2) a solvating compound containing at least one hydroxyl. The composition is incorporated in any substrate which contacts metal and serves to inhibit corrosion of the metal.

3,696,049
CORROSION INHIBITING COMPOSITION AND USE THEREOF

Rudolf H. Hausler, Arlington Heights, and Leonard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,078
Int. Cl. C23f *11/00*
U.S. Cl. 252—392 **10 Claims**

A corrosion inhibiting composition of (1) a salt of dicarboxylic acid and aliphatic amine and (2) polymeric reaction product of an epihalohydrin compound and aliphatic amine. The composition is incorporated in any substrate which contacts metal and serves to inhibit corrosion of the metal.

3,696,050
POLYMERIZATION INHIBITORS FOR VINYL MONOMERS AND UNSATURATED POLYESTERS

Arthur P. Werts III, and John E. Besser, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,638
Int. Cl. C08f *45/60*
U.S. Cl. 252—403 **3 Claims**

Undesired polymerization of vinyl monomers, either in storage or while being processed, such as by distillation of the monomeric material, is prevented by adding to the monomer as a polymerization inhibitor small amounts of an N-substituted p-aminophenol, either alone or in combination with a phenol, substituted phenol, dihydric phenol, or substituted dihydric phenol, whereby a synergistic effect is realized. Preferably, the N-substituted p-aminophenol is either N-butyl p-aminophenol or N-cyclohexyl p-aminophenol. These inhibitors do not interfere in any way with subsequent processing of the stabilized monomer into the ultimate product.

3,696,051
METHOD OF REMOVING OIL FROM THE SURFACE OF WATER AND COMPOSITION THEREFOR

Robert J. McGuire, Monroeville, Edward Mitchell, Valencia, and John P. Pellegrini, Jr., Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,364
Int. Cl. F23d *3/08, 21/00*
U.S. Cl. 252—425.5 **11 Claims**

Oils floating on the surface of open bodies of water can be removed by burning them in situ in the presence of an oleophilic particulate material such as vermiculite which has been treated with a metallo cyclopentadienyl compound such as dicyclopentadienyliron.

3,696,052
CATALYST FOR EPOXIDATION PROCESS

John F. Harrod, Mont St. Hilaire, Quebec, Allan R. Knight, Petrolia, Ontario, and John S. McIntyre, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 4,037, Jan. 19, 1970, now Patent No. 3,654,317. This application June 2, 1971, Ser. No. 149,377
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 252—428 **6 Claims**

A process for producing epoxides comprising oxidizing in the liquid phase an olefin via an organic hydroperoxide

in the presence of at least one of $Mo(CO)_6$ and $W(CO)_6$ as a catalyst, wherein a solution of the olefin and the catalyst have been heated to a temperature of from 50° C. to the reflux temperature of the olefin for at least 5 minutes prior to the epoxidation. The resulting activated catalyst allows epoxidation reactions at lower temperatures or shorter contact times, thereby lowering hydroperoxide losses through decomposition.

3,696,053

POROUS SILICA CONTAINING FOREIGN IONS AND METHOD FOR PREPARATION FOR SAME

Madeleine A. Le Page, Paris, Raymond Beau, Massy, and Jacques Duchene, Maison-Alfort, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Continuation-in-part of application Ser. No. 610,786, Jan. 23, 1967. This application Mar. 18, 1970, Ser. No. 20,850

Int. Cl. B01j *11/82, 11/36*

U.S. Cl. 252—437 **20 Claims**

This invention is addressed to silica gel grains containing foreign ions including an alkali metal cation, wherein the alkali metal is selected from a group consisting of lithium, sodium, potassium and cesium, along with an acidic anion selected from a group consisting of sulfate, phosphate, chloride, bromide and iodide anions, and to methods for their preparation.

3,696,054

PAINT COMPOSITIONS

John Allen Saunders, Teddington, England, assignor to The Research Association of British Paint, Colour & Varnish Manufacturers, Teddington, England

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,154

Claims priority, application Great Britain, Apr. 18, 1969, 20,041/69

Int. Cl. H01b *1/06;* **B44c** *1/00;* **C01b** *31/00*

U.S. Cl. 252—511 **7 Claims**

This invention discloses paint compositions and the preparation of paint compositions which can be spread and dried to give electrically conductive films. The paint compositions contain colloidal carbon particles. The graphite is wet ground and this is found to give a particular shape to the resulting particles and a particle size distribution such that the dried conductive films have a low resistivity in the range of about 0.1 to 10 ohms/square, Such films produce useful heat outputs when relatively low voltage currents are passed through them and so they are suitable for application to the walls of a building for use as a central heating system.

3,696,055

Patent Not Issued For This Number

3,696,056

TERNARY FOAM CONTROL SYSTEMS WITH AMINES OR AMIDES AND DETERGENT COMPOSITIONS CONTAINING SAME

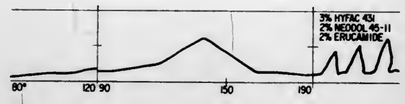
Jack Thomas Inamorato, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 41,308, which is a continuation-in-part of applications Ser. No. 41,359, and Ser. No. 41,601, all May 28, 1970. This application May 28, 1970, Ser. No. 41,392

Int. Cl. B01d *19/04;* **C11d** *3/065, 3/26*

U.S. Cl. 252—525 **32 Claims**

A detergent composition having excellent foam control at low and high temperatures is disclosed, as well as a ternary composition for accomplishing this result when added to a detergent system. The controlled suds are provided by a synergistic mixture of a fatty acid, a poly-



ethoxylated linear alcohol and a high molecular weight amide or a primary, secondary or tertiary amine.

3,696,057

ANTI-FOAMING COMPOSITIONS AND CLEANING COMPOSITIONS CONTAINING THEM

Hans-Joachim Schussler, Dusseldorf-Holthausen, and Rolf Scharf, Monheim, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,721

Claims priority, application Germany, Sept. 3, 1969, P 19 44 569.3

Int. Cl. C11d *7/18*

U.S. Cl. 252—544 **10 Claims**

A synergistic anti-foaming composition consisting of a mixture of (a) a reaction product of ethylenediamine with ethylene oxide and propylene oxide in any sequence, having a turbidity point of from 10° C. to 35° C., and (b) a fatty component selected from the group consisting of fatty alcohols having 12 to 18 carbon atoms and water-insoluble reaction products thereof with ethylene oxide; said components (a) and (b) being present in a proportion by weight selected from the group consisting of 5:1 to 20:1 and 1:5 to 1:20, as well as aqueous cleaning compositions containing from 0.1 to 1 gm. per liter of said anti-foaming composition.

3,696,058

PROCESS FOR POLYMER RECOVERY

John Teti, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 10, 1971, Ser. No. 151,900

Int. Cl. C08f *47/24;* **C08g** *53/22*

U.S. Cl. 260—2.3 **5 Claims**

A process for recovering solid scrap thermoplastic polymer such as polyamides, polyesters, polyacrylonitriles and polyacetals by dissolving the polymer in hexafluoroisopropanol, filtering the polymer solution, mixing the polymer solution with an excess of water at 60° to 100° C. and separating the precipitated polymer from the aqueous mixture.

3,696,059

PROCESS FOR PREPARING OLEFIN POLYMER FOAMS

Kirokuro Hosoda, Kanagawa-ken, Naonori Shiina and Yoshio Kadowaki, Tokyo, and Hiroyuki Nakae, Kanagawa-ken, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed June 5, 1969, Ser. No. 830,816

Claims priority, application Japan, June 13, 1968, 43/40,794

Int. Cl. C08f *47/10, 29/12;* **C08d** *13/10*

U.S. Cl. 260—2.5 HA **25 Claims**

This invention provides a process for preparing olefin polymer foams by heating to cause foaming of a composition consisting of olefin polymers, polybutadiene and a foaming agent. The product of this invention is a white and uniform foam including a number of independent cells and the product olefin polymer foam combines the excellent characteristics of both the olefin polymer and the polybutadiene.

3,696,060

PRODUCTION OF FOAMABLE RESINS

Patrick V. Burt, Newport, England, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 700,361, Jan. 25, 1968, which is a continuation-in-part of application Ser. No. 418,319, Dec. 14, 1964. This application Apr. 9, 1970, Ser. No. 27,148

Claims priority, application Great Britain, Dec. 13, 1963, 49,234/63

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 B **7 Claims**

A suspension polymerization process for preparing foamable beads of a thermoplastic styrene polymer by conducting the polymerization in the presence of 65–95% of the total amount of the blowing agent until the stage of 45% conversion to polymer is attained, adding the remainder of the blowing agent during the stage of 45–85% conversion, and continuing the polymerization. The late add of blowing agent is made over a period of time during which about 20–30% conversion takes place so that at least a portion of the blowing agent is added during the stage of 65–75% conversion.

3,696,061

METHOD FOR FORMING FLOWABLE POWDER PROCESSABLE INTO MICROPOROUS OBJECT

James Quinn Selsor, Franklin Lakes, N.J., Edward Wayne Turner, Deerfield, Mass., and Bruce Saul Goldberg, Clifton, N.J., assignors to Amerace Esna Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,842

Int. Cl. C08f *47/08, 29/18, 45/34*

U.S. Cl. 260—2.5 M **18 Claims**

Method for forming a free flowing powder blend of vinyl resins and silica by adding a volatile organic solvent to the blend at a rate below the maximum absorption rate of the silica and thereafter adding non-solvent to the mix at a rate sufficient to prevent release of the absorbed solvent.

3,696,062

COMPOSITIONS CONTAINING AMORPHOUS 1,2-POLYBUTADIENE

Jean Lesage, Le Vesinet, and Francois Dawans, Bougival, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Hauts-de-Seine), France

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,286

Claims priority, application France, Oct. 21, 1969, 6936148

Int. Cl. C08c *9/04*

U.S. Cl. 260—5 **6 Claims**

The new compositions consisting of 50–95% by weight of natural rubber and 5–50% by weight of amorphous 1,2-polybutadiene may be subjected to vulcanization treatments, thus resulting in vulcanizates of improved mechanical properties and stability.

3,696,063

THERMOSETTING REFLOW RESINS OF COPOLYMERS OF ALKYL METHACRYLATES

Ludwig Mott, Leverkusen, Richard Muller, Bergisch-Neukirchen, Karl Dinges, Odenthal, and Heinz-Walter Krauss, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 13, 1970, Ser. No. 37,051

Claims priority, application Germany, May 23, 1969, P 19 26 563.5

Int. Cl. C09d *3/14, 3/80*

U.S. Cl. 260—17 R **2 Claims**

Solvent containing spontaneously crosslinking coating agent comprising a copolymer of an alkyl ester of methacrylic acid, an alkyl ester of acrylic acid and N-hydroxymethyl-acrylamide or methacrylamide and/or an alkyl ether thereof, said copolymer optionally containing an α,β-unsaturated carboxylic acid amide and/or an α,β-unsaturated monocarboxylic or dicarboxylic acid.

3,696,064

STABLE PHENOLIC ADHESIVE MIX

Jerry Peter Re, Eugene, Oreg., assignor to Borden, Inc., New York, N.Y.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,126

Int. Cl. C08g *51/14*

U.S. Cl. 260—17.2 **11 Claims**

In the art of preparing phenolic adhesive mixes by mixing a phenolic resin with conventional adhesive adities which include an extender and an amylaceous material, the improvement comprising heating said mix to a temperature in the range of 30–105° C. for a period of time sufficient to solubilize said amylaceous material for the purpose of improving stability of the adhesive mix.

3,696,065

REMOISTENING ADHESIVE COMPOSITIONS

Paul Hoffman, Gainesville, and Herbert W. Craig, Palatka, Fla., assignors to Hudson Pulp & Paper Corp., New York, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 25,573

Int. Cl. C08f *15/00*

U.S. Cl. 260—17.4 ST **3 Claims**

Remoistening adhesive compositions having improved quick tack and comprising a starch substantially free of amylose and at least 0.25 percent by weight of a copolymer of vinyl pyrrolidone and vinyl acetate.

3,696,066

PLASTICIZED COMPOSITIONS

Ross E. Morris, Vallejo, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of application Ser. No. 822,696, May 7, 1969. This application Jan. 8, 1971, Ser. No. 105,131

Int. Cl. C08c *11/66, 11/72;* **C08d** *11/02*

U.S. Cl. 260—23.7 H **3 Claims**

A rubber having a plasticizer that exceeds the solubility limit of the plasticizer in the rubber. The plasticizer is selected so that it will plasticize the paint and since it exceeds the solubility limit of the plasticizer in the rubber, it will gradually migrate to the surface of the rubber and act as a softening agent for the paint and maintain the paint in a soft or unhardened condition.

3,696,067

VINYLIDENE CHLORIDE COPOLYMER LATEX COATING COMPOSITION

Alex Trofimow, 16 Stetson St., Brookline, Mass. 02146

Filed Nov. 8, 1971, Ser. No. 196,444

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 D **5 Claims**

Improved barrier coating compositions of the vinylidene chloride copolymer latex type are prepared by conducting the aqueous polymerization of vinylidene chloride and other comonomers in the presence of a small amount of emulsified paraffin wax.

3,696,068

ORGANOSILOXANE ELASTOMERS

Charles Edward Creamer, Ridgefield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 18, 1970, Ser. No. 38,475

Int. Cl. C08g *47/06, 51/50;* **C08f** *35/02*

U.S. Cl. 260—29.1 B **30 Claims**

Crosslinked silicone elastomers; vinyl containing linear organosiloxane copolymer fluids said vinyl radicals con-

stituting from about 5 to about 10 weight percent of the copolymer fluids; and heat-curable silicone gumstock compositions comprising (1) a crosslinkable diorganopolysiloxane gum containing vinylsiloxy units and (2) vinyl containing linear organosiloxane copolymer fluids said vinyl radicals constituting from about 3 to about 17 weight percent of the copolymer fluids, for use in the production of said silicone elastomers.

3,696,069

SYNERGISTIC BLENDS OF MODIFIED POLYOLEFINS AND UNMODIFIED POLYOLEFINS

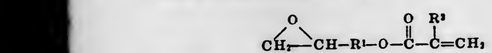
Albert Schrage, East Orange, and Arnold B. Finestone, Woodcliff Lake, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed May 26, 1971, Ser. No. 147,187

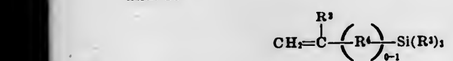
Int. Cl. C08g *45/04*

U.S. Cl. 260—41 R **9 Claims**

Synergistic effects in certain physical properties have been found in blends of unmodified polyolefins with polyolefins which have been modified by reaction with polymerizable compounds defined by



and/or



in the presence of an organic peroxide. The blends are particularly suitable in applications requiring good adhesion to polar surfaces such as metal and glass.

3,696,070

Patent Not Issued For This Number

3,696,071

MANUFACTURE OF POLYETHYLENE TEREPHTHALATE

Brian A. Dementi, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 30, 1970, Ser. No. 59,685

Int. Cl. C08g *17/015, 39/04*

U.S. Cl. 260—45.75 C **9 Claims**

The preparation of linear high-molecular weight, film and fiber forming polyester and copolyesters wherein the reaction of polycarboxylic acid with a polyol takes place in the presence of cuprous and cupric inorganic salts to improve processing and end product characteristics.

3,696,072

LIGHT-SENSITIVE POLYMERS

George A. Reynolds, Thomas M. Laakso, Douglas G. Borden, and Jack L. R. Williams, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 854,303, Aug. 29, 1969. This application Jan. 16, 1970, Ser. No. 3,536

Int. Cl. C08f *27/00*; C08g *43/00*

U.S. Cl. 260—47 EP **17 Claims**

Novel light-sensitive polymers contain as the light-sensitive moiety a side chain which contains two ethylenically unsaturated groups conjugated to each other through an arylene group. Photosensitive compositions and elements prepared with these polymers are useful in the preparation of photomechanical images such as photoresists and lithographic printing plates.

3,696,073

Patent Not Issued For This Number

3,696,074

COPOLYAMIDE FROM (a) DODECAMETHYLENE DIAMINE, (b) HEXAMETHYLENE DIAMINE, (c) TEREPHTHALIC ACID AND (d) ADIPIC ACID

Yoshizo Tsuda and Akinori Yamamoto, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 24, 1970, Ser. No. 22,273

Claims priority, application Japan, Mar. 25, 1969, 44/22,072

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **7 Claims**

A novel copolyamide useful as a textile fiber is synthesized from (a) dodecamethylenediamine, (b) hexamethylenediamine, (c) terephthalic acid and (d) adipic acid.

3,696,075

LACTAM POLYMERIZATION WITH DIACYL METHANE INITIATORS

Markus Matzner, Edison, and James E. McGrath, Somerville, N.J., and Robert M. Manyik, St. Albans, and Wellington E. Walker, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,077

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **5 Claims**

Substituted diacyl methanes are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide for a rapid polymerization process with an initiator having a low order of toxicity.

3,696,076

FORMATION OF CAST FILMS OF AROMATIC POLYAMIDES

Elliot A. Vogelfanger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed May 22, 1970, Ser. No. 39,869

The portion of the term of the patent subsequent to July 25, 1989, has been disclaimed

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **11 Claims**

Aromatic diamines and aromatic diacid halides are reacted to form high-molecular weight polyamides in a mutual solvent system comprising anhydrous gamma-butyrolactone and at least one amine acid acceptor, a dipolar solvent is added, the mixture is neutralized with a base, filtered and the mixture cast directly onto a substrate and cured to form clear films.

3,696,077

AROMATIC POLYAMIDE-IMIDES SOLUBLE IN PHENOLIC SOLVENTS AND PROCESS FOR PRODUCING SAME

Munehiko Suzuki, Yokosuka, Etsuo Hosokawa, Yokohama, Misao Waki, Kawasaki, and Masatada Fukushima, Yokohama, Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki-shi, Japan

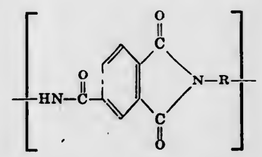
Filed June 11, 1970, Ser. No. 45,346

Claims priority, application Japan, June 13, 1969, 44/47,125

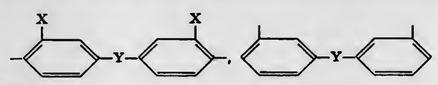
Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **15 Claims**

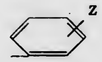
A novel aromatic polyamide-imide consists essentially of the recurring unit represented by the formula:



wherein R is a divalent radical having benzene unsaturation, the two linkages of which are attached to different carbon atoms of the benzene ring, at least 30 mole percent of R being at least one member selected from the group consisting of divalent radicals represented by the formulas:



and



wherein X is at least one member selected from the group consisting of lower alkyl groups, lower alkoxy groups, halogen atoms, —COOH, —OH and —SO_3H; Y is at least one member selected from the group consisting of —CH_2—, —O—, —S—, —SO_2— and



and Z is a lower alkyl group, said polyamide-imide having an inherent viscosity of at least 0.1 as measured in m-cresol at 30° C. at a concentration of 0.5 g./100 ml. Said aromatic polyamide-imide can directly be dissolved in a phenolic solvent, and the resulting solution may be used as a varnish for the formation of a heat-resistant film in various fields, such as magnet wire.

3,696,078

ANTISTATIC NYLON FILAMENTS

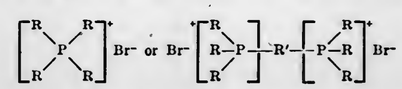
Andrew I. Smith and Roland J. Bryan, Jr., Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,664

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 S **7 Claims**

The antistatic property of nylon filaments containing from about 2% to 15% by weight of a poly(alkylene ether, polyethoxylated hydrogenated castor oil, or polyethoxylated distearylamine dispersed therein) is greatly improved by also dispersing into the nylon from 0.5 to 5% by weight of a phosphonium bromide of the formula



where R' and each R are hydrocarbon radicals.

3,696,079

PROCESS FOR THE PREPARATION OF POLYVINYL CHLORIDE POLYMERIZATES SUITABLE FOR VINYL PASTES

Jobst Possberg, 65 Erkesstrasse, 5 Cologne, Germany; Kai Rostock, 65 Erkesstrasse, 5 Cologne-Longerich, Germany; Eligius Nickl, 87 Lindacherstrasse, 8263 Burghausen, Germany; and Otmar Zajicek and Helmut Klapp, both of 99 Alte Romerstrasse, 5 Cologne 71, Germany

No Drawing. Filed May 27, 1971, Ser. No. 147,657

Claims priority, application Germany, May 27, 1970, P 20 26 023.5

Int. Cl. C08f *3/30, 15/30, 47/02*

U.S. Cl. 260—78.5 CL **2 Claims**

A process for the preparation of vinyl chloride polymerizates suitable for vinyl pastes which consists essentially of applying a thin layer of an aqueous vinyl chloride polymerizate dispersion prepared by polymerization of a stable, aqueous monomeric dispersion of vinyl chloride containing up to 20% by weight of ethylenically-unsaturated monomers copolymerizable with vinyl chloride prehomogenized in the presence of emulsifiers and oil-soluble catalysts to a roller drier by means of an application roller in contact with said aqueous polymerizate dispersion, drying said aqueous polymerizate dispersion in said thin layer on said roller drier at a temperature between about 90° C. to 110° C. to a moisture content of from 3% to 12% by weight, removing said partially dried vinyl chloride polymerizate powder from said drier roller, grinding said powder in an air stream at a temperature between 20° C.–40° C. until said powder has a moisture content of 0.3% by weight maximum and recovering a powdered vinyl chloride polymerizate suitable for vinyl pastes.

3,696,080

CYCLOBUTENE HOMOPOLYMERS AND COPOLYMERS

David M. Gale, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

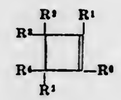
No Drawing. Continuation-in-part of application Ser. No. 828,788, May 28, 1969, which is a continuation-in-part of application Ser. No. 599,730, Dec. 7, 1966. This application Sept. 8, 1970, Ser. No. 70,565

Int. Cl. C08f *5/00, 17/00*

U.S. Cl. 260—78.5 N **31 Claims**

Described herein are

(1) copolymers formed by copolymerization of (a) compounds of the formula



where the groups R^1, R^2, R^3, R^4, R^5 represent hydrogen or a variety of other substitutents and R^6 is acetoxy, phenyl, lower alkoxy, chloro, cyano or its common analogs such as carboxyl, alkoxycarbonyl, carbamoyl or N-alkylcarbamoyl with

(b) unsaturated or strained ring comonomers,

(2) alkoxycyclobutenes,

(3) homopolymers and copolymers of alkoxycyclobutenes, and

(4) a process for preparing the alkoxycyclobutenes.

The homopolymers and copolymers are useful as molded objects, films or fibers.

3,696,081

HEXAFLUOROISOPROPANOL ACRYLAMIDE

Elemer Domba, Olympia Fields, and Thaddeus A. Krolikiewicz, Westchester, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 828,786, May 28, 1967. This application Sept. 22, 1970, Ser. No. 74,510

Int. Cl. C08f *3/90, 15/02*

U.S. Cl. 260—78.5 BB **4 Claims**

The homopolymers and polymers of the new compound hexafluoroisopropanol acrylamide.

3,696,082

VINYLIDENE CHLORIDE-LONG CHAIN ALKYL ESTER POLYMER

David R. Smith, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed June 3, 1970, Ser. No. 43,227

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.8 **11 Claims**

Vinylidene chloride emulsion copolymers in which 89–95 percent of the monomers consists of 88–94 parts vinylidene chloride and 1–5 parts C_{10-24} alkyl ester of alpha, beta-ethylenically unsaturated carboxylic acids. The copolymer emulsions yield films, especially coatings on glassine paper, having valuable oxygen-barrier, heat-seal, and slip characteristics.

3,696,083

POLYMERCAPTAN MODIFIER VINYL HALIDE POLYMERS

Jesse C. H. Hwa, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 664,903, Sept. 1, 1967. This application Oct. 27, 1970, Ser. No. 84,470

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **12 Claims**

Vinyl halide polymers which exhibit improved processing characteristics without sacrificing physical properties are prepared by polymerizing vinyl halide monomer in the presence of an aliphatic polymercaptan having at least three mercaptan groups in an amount based on —SH equivalence of from about 0.00015 to about 0.05 equivalence —SH per mole of monomeric material. The monomer is preferably 100% vinyl chloride though mixtures containing a predominant amount of vinyl chloride with minor amounts of other ethylenically unsaturated monomers can also be used.

3,696,084

PROCESS FOR REPLACING CHLORIDE GROUPS IN POLYVINYL CHLORIDE

Ronnie D. Gordon, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,249

Int. Cl. C08f *27/06, 27/08, 3/30*

U.S. Cl. 260—79.3 R **9 Claims**

A portion of the chloride ions in polyvinyl chloride is replaced by a different nucleophylic functional group by heating the polyvinyl chloride polymer and a material containing the replacing functional group in the presence of a quaternary phosphonium or arsonium salt catalyst at a temperature of from about 25° C. to about 200° C., with or without a solvent, for a period from about two hours to about forty-eight hours.

3,696,085

PROCESS FOR PRODUCING POLYMERS OF TERTIARY AMIDES

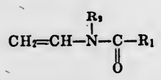
Michael Lederer, Frankfurt am Main, and Sommer Siegfried, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 822,044, May 5, 1969. This application Sept. 4, 1970, Ser. No. 69,991

Int. Cl. C08f *1/11, 3/90, 15/00*

U.S. Cl. 260—80.3 N **5 Claims**

A process for producing polymers of tertiary amides selected from the group consisting of N-vinyl lactams and N-vinyl amides of the formula:



in which R_1 represents a member selected from the group consisting of hydrogen and an aliphatic group containing 1 to 20 carbon atoms and R_2 represents an aliphatic group containing 1 to 20 carbon atoms is disclosed. The polymers may be homopolymers or copolymers of the tertiary amides with up to 50 percent calculated on the weight of the tertiary amides of monoolefinically unsaturated comonomers. Polymerization may be effected at a temperature of 0° to 150° C. in the presence of 0.001 to 5% by weight, based on the weight of monomers, of a free radical polymerization catalyst and in the presence of a saturated aliphatic hydrocarbon containing 3 to 20 carbon atoms. The polymers obtained are in pulverulent form and their aqueous solutions exhibit relatively low surface tensions.

3,696,086

PROCESS FOR PREPARING COPOLYMERS OF ETHYLENE AND ALPHA-OLEFINS

Joseph Wagensommer, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed July 28, 1970, Ser. No. 59,038

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **19 Claims**

This invention is directed to a novel process for preparing copolymers of ethylene and certain alpha olefins (including terpolymers with dienes) by reaction in the presence of vanadium or titanium catalysts together with aluminum cocatalysts.

3,696,087

PROCESS FOR THE DEFINED INCREASE OF THE MOLECULAR WEIGHT OF SOLID, UNSATURATED ELASTOMERS

Karl-Heinz Nordsiek, Marl, Germany, assignor to Chemische Werke Huls, Aktiengesellschaft, Marl, Germany

No Drawing. Filed May 22, 1970, Ser. No. 39,862

Claims priority, application Germany, May 23, 1969, P 19 26 322.0

Int. Cl. C08d *5/02*

U.S. Cl. 260—85.1 **21 Claims**

The molecular weight of solid hydrocarbon elastomers, e.g., polybutadienes, is increased step-wise in a defined manner by subjecting them to thermal-mechanical treatment in which the elastomer is subjected to strong shearing forces at, e.g., 80–220° C., in the presence of a non-basic metallic compound as catalyst and a basic compound as cocatalyst.

3,696,088

HYDROGENATION PROCESS

Albert N. De Vault, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,629

Int. Cl. C08d *5/00;* **C08f** *27/24, 27/25*

U.S. Cl. 260—85.1 **5 Claims**

Unsaturated polymers such as butadiene-styrene copolymers are hydrogenated in solution using a soluble organometal catalyst system in a reactor in which the solution of polymer and catalyst is trickled over a bed of inert packing in a hydrogen atmosphere.

3,696,089

SOLUTIONS CONTAINING A BASIC DYESTUFF AND AN α- OR β-HYDROXY- OR LOWER ALKOXY LOWER ALKYLNITRILE

Roderich Raue, Leverkusen, and Karlheinz Wolf, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 550,919, May 18, 1966. This application Mar. 24, 1970, Ser. No. 20,462

Int. Cl. C09b *67/00;* **D06p** *1/64, 1/86*

U.S. Cl. 260—156 **4 Claims**

Solutions of basic dyestuffs containing 20 to 80% of basic dyestuff, 5 to 80% of a lower α- or β-hydroxy-alkylnitrile or α- or β-lower alkoxy lower alkylnitrile.

3,696,090

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,265

Int. Cl. C08f *21/01*

U.S. Cl. 260—18 S **13 Claims**

A room temperature vulcanizable silicone rubber composition comprising (a) a high molecular weight liquid diorganopolysiloxane having terminal hydroxy groups bonded to the silicon atom and a viscosity of 3×10^6 to 2×10^8 centipoise at 25° C., (b) 0–60% by weight of said high molecular weight organopolysiloxane of a low molecular weight liquid organopolysiloxane having terminal hydroxy groups bonded to the silicon atoms and a viscosity of 100 to 3.0×10^5 centipoise at 25° C. There is also present a filler and an alkyl silicate which acts as the cross-linking agent during curing of the composition. As a catalyst there is used a metallic salt of an organic monocarboxylic acid. The composition may be mixed and placed in the ear canal to form an ear plug in situ.

3,696,091

NOVEL CARDIAC-ACTIVE PRINCIPLES OF THE CARDENOLIDE GLYCOSIDE CLASS

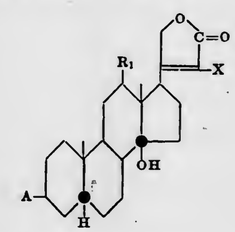
Wolfgang Eberlein and Josef Nickl, Biberach (Riss), Joachim Helder, Warthausen-Oberhofen, and Gerhard Dahms, Biberach (Riss), Germany, and Walter Kobinger, Vienna, Austria, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Filed June 3, 1970, Ser. No. 43,198

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **6 Claims**

Cardenolide glycosides of the formula

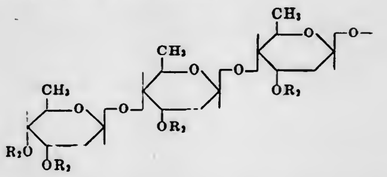


wherein

R_1 is hydrogen, hydroxyl or acyloxy,

X is chlorine, fluorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and

A is digitoxosyl of the formula



where R_2 is hydrogen or acyl; the compounds are useful as cardiac-active principles having a positive inotropic activity in warm-blooded animals.

3,696,092

PROCESS FOR THE CHEMICAL MODIFICATION OF POLYMERS CONTAINING ACTIVE HYDROGEN ATOMS BY REACTING SUCH WITH A SULFONAMIDE COMPOUND

Giuliana C. Tesoro, 278 Clinton Ave., Dobbs Ferry, N.Y. 10522

No Drawing. Original application July 23, 1964, Ser. No. 384,780, now Patent No. 3,528,964, dated Sept. 15, 1970. Divided and this application July 23, 1970, Ser. No. 63,987

Int. Cl. C08b *11/00*

U.S. Cl. 260—231 A **7 Claims**

Polymers containing active hydrogen atoms, as determined by the Zerewitinoff method, are reacted with various sulfonamide compounds in the presence of suitable catalysts to improve the properties of said polymers.

3,696,093
2,4-BENZODIAZEPINES

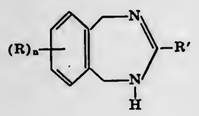
Herman Robert Rodriguez, New York, N.Y., and George de Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 29,257, Apr. 16, 1970, which is a continuation-in-part of application Ser. No. 840,833, July 10, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 694,421, Dec. 29, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 630,497, Apr. 13, 1967, now abandoned. This application Sept. 30, 1970, Ser. No. 77,004

Int. Cl. C07d *53/04, 57/00, 99/10*

U.S. Cl. 260—239 BD **8 Claims**

4,5-dihydro-1H-2,4-benzodiazepines, e.g. those of the formula



R=H, alkyl, free, etherified or esterified OH or SH, CF_3, NO_2 or amino; n=1 or 2

R'=H, OH, SH, amino or an aliphatic, araliphatic or aromatic radical

acyl derivatives, N-oxides, quaternaries or salts thereof, are antihypertensives and increase the contractile force of the heart.

3,696,094
BENZODIAZEPINIUM SALTS AND PROCESS FOR PREPARING THE SAME

Ryuji Tachikawa, Hiromu Takagi, Toshiharu Kamioka, Mitsunobu Fukunaga, Yoichi Kawano, and Tetsuo Miyadera, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

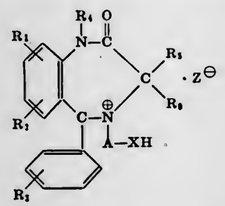
No Drawing. Filed Oct. 16, 1969, Ser. No. 9,241

Claims priority, application Japan, Oct. 24, 1968, 43/77,502; Oct. 25, 1968, 43/77,831; Oct. 28, 1969, 44/68,134

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **5 Claims**

New benzodiazepinium salts of the formula



(I)

wherein

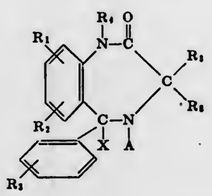
R_1, R_2 and R_3 may be the same or different and each represents hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, hydroxy group, nitro group, cyano group, an acyl group, trifluoromethyl group, amino group, an acylamino group, a N-mono (lower alkyl)amino group, a N-di-(lower alkyl)amino group, an acyloxy group, carboxyl group, an alkoxycarbonyl group, carbamoyl group, a N-mono(lower alkyl)carbamoyl group, a N-di(lower alkyl)carbamoyl group, a lower alkylthio group, a lower alkylsulfinyl group or a lower alkylsulfonyl group;

R_4 represents hydrogen atom, a lower alkyl group, a cycloalkyl group, an aralkyl group, an aryl group or phenacyl group;

R_5 and R_6 may be the same or different and each represents hydrogen atom or a lower alkyl group;

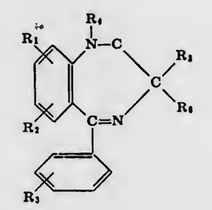
A represents a polymethylene group which may be substituted with a lower alkyl group;

X represents oxygen atom or sulfur atom and Z is an acid radical. These salts exhibits highly excellent psychosedative activity with favourable water-solubility and thus are useful as a tranquilizer. They are prepared by treating a benzodiazepine derivative of the formula



(II)

wherein R_1, R_2, R_3, R_4, R_5, R_6, A and X are as defined above with an inorganic or organic acid or by reacting a benzodiazepine derivative of the formula



(III)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above with a compound of the formula

Y—A—XH

wherein A and X are as defined above and Y represents a halogen atom in the presence of an inorganic or organic acid. The benzodiazepinium salts of the above Formula I can also be converted to the benzodiazepine derivatives of the above Formula II by treatment with water or a base.

3,696,095
(1,3) OXAZINO (3,2-d) (1,4) BENZODIAZEPINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Joseph Hellerbach, 140 Gundeldingerrain, and Andre Szente, 157 Riehenstrasse, both of Basel, Switzerland

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,228

Claims priority, application Switzerland, Sept. 25, 1970, 14,263/70

Int. Cl. C07d *53/06, 87/20, 87/54*

U.S. Cl. 260—239.3 T **16 Claims**

Novel [1,3]oxazino[3,2-d][1,4]benzodiazepine derivatives and processes for their preparation are disclosed. These benzodiazepine derivatives are useful as sedative, anti-convulsant and muscle relaxant agents.

3,696,096
SUBSTITUTED 2-BENZOYL-AND 2-CINNAMOYL-ISOXAZOLIDINES

Giorgio Pifferi, Via G.B. Morini 22, Moroni, Italy, assignor to Gruppo Lepetit S.P.A., Milan, Italy

Filed March 26, 1970, Ser. No. 23,009

Int. Cl. C07d *85/08*

U.S. Cl. 260—240 J **7 Claims**

A new class of 2-aroyl- and 2-cinnamoyl-isoxazolidines exhibiting selective activity on the anxious response in laboratory animals.

3,696,097
HETEROCYCLIC SUBSTITUTED VINYL-V-TRIAZOLES OF THE COUMARIN SERIES, AND THEIR USE FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS

Hans Schlapfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 4, 1970, Ser. No. 43,564

Claims priority, application Switzerland, June 13, 1969, 9055/69

Int. Cl. C07d *55/02*

U.S. Cl. 260—240 E **4 Claims**

New 2-[3-arylcoumarinyl-(7)]-4-aryl-vinyl-v-triazoles are brighteners of high-molecular organic materials. The compounds are obtained by splitting off water from isnitrosoarylidene-acetone[-3-aryl-coumarinyl-(7)]-hydrazone.

3,696,098
PHOTOCHROMIC POLYCONDENSATES OF THE INDOLINOSPIROPYRAN TYPE

Jan Antonius Hoefnagels, Berchem, Belgium; Norman A. Hiatt, Hamden, Conn., and Georges Joseph Smets, Heverlee, Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

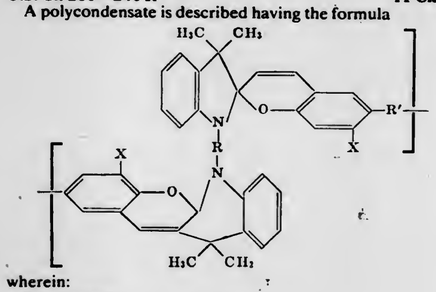
Filed June 10, 1970, Ser. No. 45,268

Claims priority, application Great Britain, July 11, 1969, 35,134/69

Int. Cl. C07d *27/38*

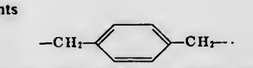
U.S. Cl. 260—240 R **11 Claims**

A polycondensate is described having the formula



wherein:

R represents



$-CH_2-CH_2-O-CH_2-CH_2-$, $-CH_2-CH=CH-CH_2-$, or $-(CH_2)_n-$ wherein n is 2 or an integer from 4 to 10,

X represents a hydrogen atom or a nitro group, and

R' represents a single bond or a methylene group.

The polycondensates are photochromic and are reversibly colored upon exposure to ultraviolet radiation.

3,696,099
1,2,4-OXADIAZINE-3,6-DIONES

Daniel Makula; Monique Druet, both of Lyon, and Beatrice Gonthier, Caluire, all of France, assignors to Progie, Paris, France

Filed April 1, 1970, Ser. No. 24,859

Claims priority, application France, April 3, 1969, 6909530

Int. Cl. C07d *87/52*

U.S. Cl. 260—244 R **12 Claims**

1, 2, 4-oxadiazine-ones, useful as algicides, bactericides and fungicides, are obtained by reacting an N-hydroxy-urea and a dihalogenated organic derivative having halogen atoms on two adjacent carbon atoms.

3,696,100
N-(6-METHYL-6-OL-2-HEPTYL)-N'-SUBSTITUTED PIPERAZINES

Guy M. Raynaud; Claude P. Fauran; Michel J. Turin, all of Paris; Bernard M. Pourrias, Meudon La Foret, and Gerard J. Huguet, Malesherbes, all of France, assignors to Delalande S.A., Regnault, France

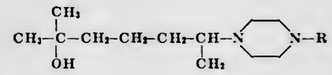
Filed April 13, 1970, Ser. No. 28,057

Claims priority, application France, April 22, 1969, 6912510

Int. Cl. C07d *51/70*

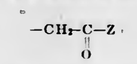
U.S. Cl. 260—247.5 R **6 Claims**

Piperazines of the formula



in which

R is a straight or branched chain alkyl radical, which may be substituted by a hydroxyl, of one to seven carbon atoms, a cinnamyl radical, or a radical of the formula



in which Z is hydroxy, alkoxy or a heterocyclic radical.

The compounds are prepared by alkylating an N substituted piperazine with 2-bromo-6-methyl 5-heptene and then hydrating the reaction product in a sulfuric acid medium.

The compounds may be incorporated with therapeutically acceptable carriers to make compositions exhibiting analeptic cardio-vascular effects.

3,696,101
TETRAHYDROBENZOTHIAZOLYL DERIVATIVES AND THEIR USE AS HERBICIDES

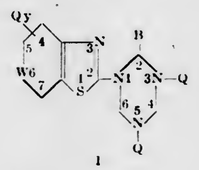
Arnold D. Litt, North Plainfield, and John E. Engelhart, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Filed May 25, 1970, Ser. No. 40,368

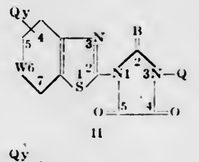
Int. Cl. C07d *55/12, 91/42, 91/46*

U.S. Cl. 260—248 NS **14 Claims**

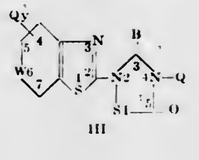
Compounds being selected from the group represented by the following structural formulas:



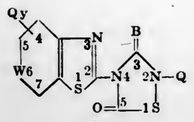
I



II



III



IV

where W can be CHR_3, O, or $S(O)_n$ and where n can be 0, 1 or 2, or N–R_4. R_3 can be hydrogen or C_1-C_8 alkyl and R_4 can be R_3, nitro, amino, or O. Q at different positions can be different and is selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_4 to C_{10} alkynyl, C_3 to C_8 cycloalkyl, C_1 to C_7 alkoxy, C_3 to C_{10} cycloalkoxy, C_1 to C_{10} alkylthio, C_1 to C_{10} alkylamino, C_2 to C_{20} dialkylamino, C_3 to C_{10} cycloalkylamino, C_6 to C_{20} dicycloalkylamino. Each of the above mentioned hydrocarbon groups may be optionally substituted by halogen, hydroxy, C_1 to C_4 alkoxy, sulphonamido, C_1 to C_4 alkylthio, nitro, cyano, thiocyano or perhaloalkyl; C_6 or C_{10} aryl, C_6 or C_{10} aryloxy, C_6 or C_{10} arylthio where the aforementioned groups may be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, hydroxy, nitro, cyano, or carboalkoxy. Q may also be cyano, sulphonamido, C_1 to C_8 carboalkoxy, perfluoroalkyl, nitro, mercapto, C_4 to C_8 heteroaryl or C_1 to C_{10} acyloxy optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, nitro, cyano, carboalkoxy, thiocyano or perhaloalkyl. When Q is C_1 to C_{10} alkyl, y may take values from 0 to 6. y may take values from 0 to 4 for all other definitions of Q. B may be O or S.

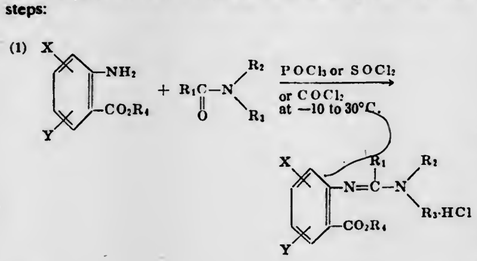
3,696,102
PROCESS FOR THE SYNTHESIS OF SUBSTITUTED QUINAZOLIN-4-ONES

Timothy H. Cronin, Niantic, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

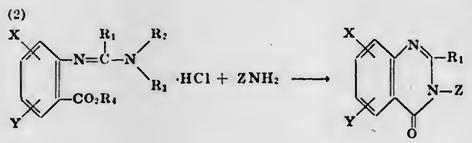
Filed March 9, 1970, Ser. No. 17,948
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QA **3 Claims**

A process for the preparation of a substituted quinazolin-4-one compound which comprises the following two reaction steps:

(1)



(2)

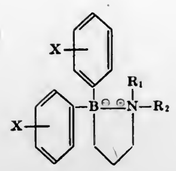


3,696,103
AZABOROLIDINE COMPOUNDS

Andrew Cometti, Maisons-Alfort; Jean Fouche, Bourg-la-Reine, and Yves Le Goff, Bretigny-sur-Orge, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Feb. 2, 1970, Ser. No. 8,034
Claims priority, application France, Feb. 3, 1969, 6902292
Int. Cl. C07d *107/02*
U.S. Cl. 260—268 R **16 Claims**

The new azaborolidine compounds of the formula:



wherein R_1 and R_2 represent alkyl of one through four carbon atoms, or R_1 and R_2 together with the nitrogen atom collectively represent a mononuclear 5- or 6-membered heterocyclic group, X represents hydrogen, halogen, alkyl, alkoxy or alkylthio of one through four carbon atoms, or trifluoromethyl or dimethylsulphamoyl, and at least one of the carbon atoms of the trimethylene chain linking the nitrogen and boron atoms can be substituted by alkyl of one through four carbon atoms, possess fungicidal, insecticidal acaricidal and herbicidal properties.

3,696,104
1-HYDROCARBON-4-ARYL-2,3-DIOXO-5-(2-HALOETHYL) PIPERAZINES

Carl Dalton Lunsford, Richmond, and Albert Duncan Cale, Jr., Mechanicsville, both of Va., assignors to A.H. Robins Company, Incorporated, Richmond, Va.

Filed April 27, 1970, Ser. No. 32,364
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 DK **9 Claims**

1-Hydrocarbon-4-aryl-2,3-dioxo-5-(2-haloethyl)piperazines are described. They are prepared by reacting 1-substituted-3-arylaminopyrrolidines with oxalyl halides to form an N-(1-hydrocarbon-3-pyrrolidinyl)-N-aryloxamoyl halide intermediate which is not isolated and which rearranges under thermal and/or basic conditions to the novel compounds of the invention.

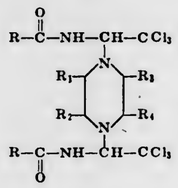
3,696,105
Patent Not Issued For This Number

3,696,106
N,N'-BIS-[(1-AMIDO 2,2,2 TRICHLORO)-ETHYL]-PIPERAZINE

Walter Ost; Klaus Thomas; Dietrich Jerchel, all of Ingelheim/Rhine, and Karl-Richard Appel, Biberach/Rissegg, all of Germany, assignors to C. H. Boehringer Soh, Ingelheim/Rhine, Germany

Continuation-in-part of Ser. No. 793,187, Jan. 22, 1969, Pat. No. 3,595,916. This application Nov. 4, 1970, Ser. No. 87,015
Claims priority, application Austria, Jan. 23, 1968, 67468123
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 R **4 Claims**

Biocidal compounds of the formula



wherein R is hydrogen or lower alkyl which may have one or more halogen atoms attached thereto,
R_1 is hydrogen, lower alkyl or phenyl, and
R_2, R_3 and R_4 are each hydrogen or lower alkyl.

3,696,107
IMPROVED HYDROCARBON SEPARATION PROCESS

Richard W. Neuzil, 30 Algonquin Road, Des Plaines, Ill.

Continuation-in-part of Ser. No. 73,466, Sept. 18, 1970. This application May 27, 1971, Ser. No. 147,564
Int. Cl. C07c *7/12*; C10g *25/04*
U.S. Cl. 260—674 SA **11 Claims**

A process for the separation of xylene isomers which process employs a type X or type Y structured crystalline aluminosilicate adsorbent to selectively adsorb one of the isomers. Adsorbents included are the type X structured and type Y structured zeolites which contain any number of selected cations including Group IA and Group IIA metals. The operations involved are fluid-solid contacting operations in which the particular improvement resides in the use of a two-stage desorption step in which a first diethylbenzene desorbent stream contacts the adsorbent to displace paraxylene from the adsorptive sites upon the adsorbent, and a second desorption stream containing primarily a saturated component contacts the adsorbent to flush the para-diethylbenzene and desorbed xylene from the interstitial void spaces located between the adsorbent particles.

3,696,108
PRODUCTION OF ISOPRENE DIMERS

Hiroyuki Morikawa, Ibaraki, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Nov. 23, 1970, Ser. No. 92,221
Claims priority, application Japan, Dec. 24, 1969, 44/104018
Int. Cl. C07c *3/10*, *11/02*
U.S. Cl. 260—677 R **5 Claims**

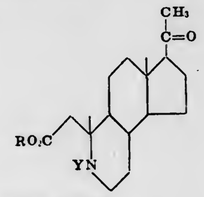
Isoprene is dimerized by being caused to contact a catalyst which is a combination of: (I) a titanium compound (e.g., titanium tetrachloride); (II) a phosphorus or antimony compound constituting an electron-donor compound (e.g., triphenyl phosphite); and (III) an aluminum compound (e.g., diethylaluminum chloride). Titanium compound (I) is representable by the general formula $TiXnY_{4-n}$ or $TiOX_2$, where each of X and Y is a halogen, an OR'' group, an acetylacetonato group, or a chlorosulfonyl group, and *n* is an integer of 1 to 4, both inclusive. Phosphorous or antimony compound (II) is representable by the general formuls $P(OR)_3$, $PO(OR)_3$, or $Sb(OR)_3$. Aluminum compound (III) is representable by the general formulas AlR'_2Cl or $Al_2R'_3Cl_3$. Each of R, R', and R'' is an alkyl, cycloalkyl, alkenyl, or aryl group.

3,696,109
ACID AND ESTER INTERMEDIATES FOR PREPARING 3,4-BISNOR-5-AZA-B-HOMOPREGNANE-2,20-DIONES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Division of Ser. No. 686,744, Nov. 29, 1967, Pat. No. 3,557,087. This application May 14, 1970, Ser. No. 48,727
Int. Cl. C07d *33/02*
U.S. Cl. 260—287 R **3 Claims**

This invention relates to the preparation of steroids having the formula



wherein R is H or CH_3 and Y is

or

3,696,110
CERTAIN HYOSCYAMINIUM COMPOUNDS

Satoru Tanaka, and Kazunori Hasimoto, both of Tokyo, Japan, assignors to Gisai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,110, Sept. 15, 1969, abandoned. This application Oct. 21, 1970, Ser. No. 82,813
Claims priority, application Japan, Feb. 18, 1969, 44/11531
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 **5 Claims**

A class of new quaternary ammonium salts derived from atropine or its optical isomer called hyoscyamine base with p-alkoxy or alkenoxy-substituted benzyl halide. The new quaternary ammonium salts according to the present invention exhibit a strong parasympathetic blocking activity with low toxicity. They therefore are advantageously utilizable for chemotherapeutical treatment of patients suffering from diseases such as, for example, gastric cramp, gastric ulcer, duodenal ulcer and the like. Aqueous solutions of these salts are stable and are administrated to patients through venous and subcutaneous injections as well as oral administration.

3,696,111
BENZOCYCLOBUTENE-1-CARBOXYLIC ACIDS

Peter Frederick Juby; Thomas William Hudyma, both of Dewitt, and Richard Anthony Partyka, Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed July 23, 1970, Ser. No. 57,755
Int. Cl. C07c *63/44*
U.S. Cl. 260—293.51 **11 Claims**

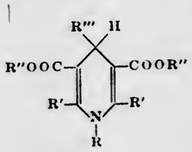
4-Cyclohexyl-or 4-phenylbenzocyclobutene-1-carboxylic acids or derivatives thereof are useful in the treatment of inflammatory diseases in animals, including man. An example of the disclosure is 4-cyclohexylbenzocyclobutene-1-carboxylic acid.

3,696,112
SULPHUR-CONTAINING 1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 20, 1970, Ser. No. 91,607
Claims priority, application Germany, Dec. 17, 1969, P 19 63 186.8
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **23 Claims**

Sulphur-containing 1,4-dihydropyridine derivatives of the formula:



wherein
R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of one to six carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of one to three carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by one, two or three members selected from the group consisting of one to three alkoxy moieties of one to three carbon atoms, one or two alkyl moieties of one to three carbon atoms and one to two halogen atoms,
R' is straight or branched chain alkyl of one to four carbon atoms,
R'' is straight, branched, cyclic, saturated or unsaturated alkyl of one to six carbon atoms, said alkyl interrupted by

one or two oxygen atoms or said alkyl substituted by hydroxyl,

R''' is aryl substituted by SO_nR_1, unsubstituted or substituted by one to eight members selected from the group consisting of nitro, amino, acylamino of one to two carbon atoms, hydroxyl, acyloxy of one to two carbon atoms, one or two alkyl moieties of one to four carbon atoms, one or two alkoxy moieties of one to four carbon atoms, and one or two halogen atoms,

n is 0, 1, 2 or 3, and

R_1 is lower alkyl of one to four carbon atoms or phenyl when *n* is 0, 1 or 2 and R_1 is hydrogen when *n* is 3,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,696,113

MANUFACTURE OF BIPYRIDYLIUM SALTS AND RELATED COMPOUNDS

John Edward Colchester; John Francis Cairns, and John Gerard Carey, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

Continuation-in-part of Ser. No. 811,617, March 28, 1969, abandoned. This application July 28, 1970, Ser. No. 59,030

Int. Cl. C07d *31/42, 31/44*

U.S. Cl. 260—295 AM **18 Claims**

There is provided a method of converting disubstituted tetrahydrobipyridyls to the corresponding bipyridinium salt by treating the tetrahydrobipyridyl with a dehydrogenating agent such as platinum metals and oxides to convert the tetrahydrobipyridyl to the corresponding dihydrobipyridyl and subsequently oxidizing the dihydrobipyridyl to the corresponding salt.

3,696,114

ANTIFUNGAL THIOCYANATOBENZOTHIAZOLES

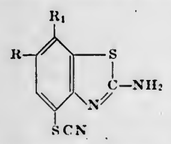
Robert J. Alaimo, and Stanford S. Pelosi, Jr., both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

Filed Oct. 22, 1970, Ser. No. 83,220

Int. Cl. C07d *91/46*

U.S. Cl. 260—305 **4 Claims**

Certain thiocyanatobenzothiazoles of the formula:



wherein R is chloro, fluoro or methylthio; and R_1 is hydrogen or chloro are antifungal agents.

3,696,115

SUBSTITUTED 1,2,4-OXADIAZOLIDINE-3,5-DIONE

Albrecht Zschocke, 5 Berliner Strasse, 6702 Bad Duerkheim; Bernd Zeeh, 3 Thorwaldsenstrasse, 6700 Ludwigshafen, and Adolf Fischer, 43 Speyerer Strasse, 6704 Mutterstadt, all of Germany

Filed Oct. 7, 1970, Ser. No. 78,974

Claims priority, application Germany, Oct. 15, 1969, P 19 51 880.0

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 B **1 Claim**

2-(3-tert-butylcarbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione which has a good herbicidal action and a process for controlling the growth of unwanted plants with this compound.

3,696,116

1-(2-AMINOCARBONYLOXYETHYL)-5-NITRO-IMIDAZOLE DERIVATIVES HAVING ANTIPROTOZOAL ACTIVITY

Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, both of France, assignors to Rhone-Poulenc S.A., Paris, France

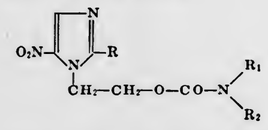
Filed July 15, 1970, Ser. No. 55,283

Claims priority, application France, July 18, 1969, 6924575

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **7 Claims**

Imidazole derivatives of the formula:



wherein R represents hydrogen or alkyl of one through four carbon atoms, R_1 represents hydrogen, alkyl of one through five carbon atoms, or hydroxy, and R_2 represents hydrogen or alkyl of one through five carbon atoms, possess anti-protozoal activity, especially against the pathogenic protozoa of amoebiasis and trichomoniasis.

3,696,117

AZABICYCLOALKYL UREA COMPOUNDS

Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Rueil-Malmaison, and Pierre Desnoyers, Fontenay-aux-Roses, all of France, assignors to Societe en nom collectif "Science Union et Rie, Societe Francaise de Recherche Medicale", Suresnes, France

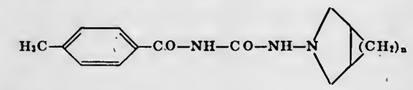
Filed Sept. 28, 1970, Ser. No. 76,204

Claims priority, application Great Britain, March 10, 1969, 48,645/69

Int. Cl. C07d *27/30*

U.S. Cl. 260—326.3 **2 Claims**

N-aroyl-N'-(3-azabicycloalkyl) ureas of the formula:



I

wherein *n* is 1, 2 or 3.

These compounds possess fibrinolytic and platelet stickiness decreasing properties, decrease the capillary permeability, increase their resistance and improve the microcirculation.

3,696,118

SPIRO NORBORNANE 6,9-METHANOCYCLOHEPT(B)INDOLES

Marcel K. Eberle, 57 Maple Ave., Madison, N.J.

Filed April 22, 1970, Ser. No. 33,097

Int. Cl. C07d *27/54*

U.S. Cl. 260—326.9 **4 Claims**

Spiro-norbornane pyrimido[1,2-a]indoles and aminopropyl-methanocycloheptb]indoles, e.g., 1',2',3',4-tetrahydro-spiro[norbornane-2,10'(10'aH)-pyrimido[1,2-a]indole]and 5-(3-aminopropyl)-6,9-dihydro-10H-6,9-methanocycloheptb]eindole, are prepared from phenyl pyrazolodines and 2-norbornene-5-carboxaldehyde, and are useful as central nervous system depressants, antidepressants and hypotensive/anti-hypertensive agents.

3,696,119

Patent Not Issued For This Number

3,696,120

4-(2-HYDROXY-3-AMINO PROPOXY)-INDOLE DERIVATIVES

Franz Troxler, 39 Drosselstrasse, 4103 Bottmingen, Basel-Land, Switzerland

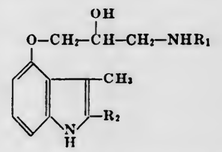
Filed July 28, 1970, Ser. No. 58,985

Claims priority, application Switzerland, Aug. 5, 1969, 11918/69; Oct. 24, 1968, 15866/69; June 24, 1970, 9536/70; Oct. 24, 1969, 15865/69; March 24, 1970, 4383/70

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.14 R **8 Claims**

The present invention concerns new indole derivatives of the formula:



wherein

R' is lower alkyl of one to six carbon atoms, preferably of three to five carbon atoms, cycloalkyl of three or four carbon atoms or 3-phenylpropyl,

R_2 is methyl, hydroxymethyl, methoxymethyl, alkoxycarbonyl wherein the alkoxy group is of one to four carbon atoms or carboxyl.

The compounds are useful in the treatment of angina pectoris and heart rhythm disorders.

3,696,121

4-(2-HYDROXY-3-AMINO PROPOXY)-INDOLE DERIVATIVES

Franz Troxler, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

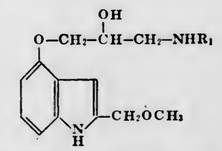
Filed July 17, 1970, Ser. No. 55,945

Claims priority, application Switzerland, July 25, 1969, 11365/69; May 26, 1970, 7795/70

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 **5 Claims**

The invention concerns new indol derivatives of the formula:



wherein R_1 is lower alkyl, cycloalkyl of three or four carbon atoms, or 3-phenylpropyl, as well as processes for the production thereof.

The compounds have a blcoking effect on the vascular adrenergic β-receptors.

3,696,122

THIOPHENE DERIVATIVES

Joseph Kenneth Harrington, Edina; George G. I. Moore, Birchwood, and John F. Gerster, Woodbury, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed April 13, 1970, Ser. No. 28,150

Int. Cl. A61k *27/00*; C07d *63/12*

U.S. Cl. 260—332.3 C **13 Claims**

Thiophene derivatives wherein the thiophene ring is linked by oxygen, sulfur, a carbonyl group or a carbon-carbon bond to a phenyl ring which is substituted by a haloalkylsulfonamido group, and the sulfonamido nitrogen atom is optionally substituted. These compounds are active anti-inflammatory agents.

3,696,123

DIHYDROCARBONOXYOXETHANES

Siegfried H. Schroeter, 54 Division St., Schenectady, N.Y., and Charles M. Orlando, 749 Central Parkway, Schenectady, N.Y.

Division of Ser. No. 732,901, May 29, 1968, Pat. No. 3,616,358. This application March 19, 1970, Ser. No. 24,981

Int. Cl. C07d *3/00*

U.S. Cl. 260—333 **8 Claims**

Dihydrocarbonoxyoxetanes, such as 2,2-dialkoxyoxetane or 3,3-dialkoxyoxetane can be made by the reaction of an aldehyde or ketone with ketene acetals utilizing ultraviolet light. The dihydrocarbonoxetanes can be employed as starting materials in the preparation of polymers containing polytrimethylene oxide units. The dihydrocarbonoxetanes also can be polymerized with hydroxyl containing materials employing a catalyst such as boron trifluoride to yield hydroxy terminated polymers.

3,696,124

Patent Not Issued For This Number

3,696,125

PROCESS FOR THE PRODUCTION OF SALTS OF 5-FORMYL-FURAN-2-SULPHONIC ACID

Gert Jansen, Farum, and Niels Clauson-Kaas, Horsholm, both of Denmark, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 56,651, July 20, 1970, abandoned. This application Oct. 16, 1970, Ser. No. 81,586

Int. Cl. C07d *5/14*

U.S. Cl. 260—347.2 **8 Claims**

Salts of 5-formyl-furan-2-sulphonic acid are produced by a new process by reacting cis-oxoglutaconaldehyde or an acetal thereof with an alkali metal hydrogen sulphite.

3,696,126

AZIDOFORMATES FROM REDUCED POLYMERIZED FATTY ACIDS

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 23, 1970, Ser. No. 92,275

Int. Cl. C07d *109/00*

U.S. Cl. 260—349 **3 Claims**

Polyols, obtained by hydrogenolysis of polymerized ethylenically unsaturated fatty acids, e.g., the diol from dimer acid, are converted to poly(azidoformate)s. These new poly(azidoformate)s, useful for cross-linking a wide variety of polymers, are relatively insensitive to shock and hence are not hazardous to handle or transport.

3,696,127

HIGH FILLER CONTENT SILICONE ELASTOMER WITH INCREASED EXTRUSION RATE

James E. Matherly, Elizabethtown, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 9, 1970, Ser. No. 53,694

Int. Cl. C08k *1/06*

U.S. Cl. 260—375 B **5 Claims**

A mixture of 100 parts by weight of a homogeneous mixture of 50 to 85 weight percent of an organodialkoxysiloxy endblocked polydiorganosiloxane, 10 to 35 weight percent hexamethyldisilazane, 4 to 30 weight percent water and 0 to 15 weight percent organotrialkoxysilane and from 125 to 250 parts by weight of a metal oxide filler, such as aluminum oxide is a silicone elastomer composition with increased extrusion rate after the volatile materials have been removed. Adding organotrialkoxysilane and organotitanate catalyst to the devolatized composition provides a one package silicone elastomer which is stable in the absence of moisture but cura-

ble upon exposure to moisture. The mixtures are prepared by mixing the polymer, hexamethyldisilazane, water and organotrialkoxysilane into a homogeneous mixture and thereafter adding the metal oxide filler and removing the volatiles under reduced pressure and adding organotrialkoxysilane and organotitanate catalyst to provide the silicone elastomer composition which is stable in the absence of moisture but curable upon exposure to moisture.

3,696,128

PERFLUOROPOLYETHER ESTERS OF QUINONES

Bruce Hollis Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 8, 1970, Ser. No. 44,649
Int. Cl. C07c *69/66*
U.S. Cl. 260—376 **10 Claims**

Perfluoropolyether esters of quinones having the formula $[R_fO(C_mF_{2m}O)_nCF(V)COO]_pQ$, $Q[OC(O)CF(V)(OC_mF_{2m})OR'_fO(C_mF_{2m}O)_nCF(V)COO]Q$, or $Q[OC(O)CF(V)O(C_mF_{2m}O)_nCF(V)COO]Q$ wherein R_f is a perfluoroalkyl group having from one to six carbon atoms, m is an integer of from 1 to 3, n is from 0 to about 20, R'_f is a perfluoroalkylene group having from two to 10 carbon atoms, V is F or CF_3, Q is a quinone radical and p is the number of hydroxyl groups on Q which are esterified; and fluorinated oils containing these esters.

3,696,129

18-LOWER ALKYL 20-KETO-PREGNANES

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 538,581, March 30, 1966, Pat. No. 3,624,111, which is a continuation-in-part of Ser. Nos. 528,398, Feb. 18, 1966, Pat. No. 3,402,173, and Ser. No. 441,297, March 19, 1965, abandoned. This application Oct. 9, 1970, Ser. No. 79,706
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.3 **11 Claims**

18-Lower alkyl androstenes are prepared by a sequence of steps from 3β, 20β-dihydroxypregn-5-en-18-oic acid 18,20-lactone 3-acetate. The method proceeds through novel 18-lower alkyl pregnane intermediate compounds. These compounds are useful as intermediates and also possess antiestrogen activity. The 18-lower androstene products possess various useful steroidal activities.

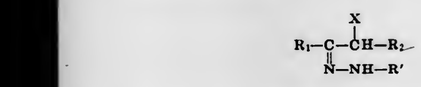
3,696,130

PROCESS FOR THE MANUFACTURE OF ACETYLENE COMPOUNDS

Peter Wieland, Oberwil/Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,904
Claims priority, application Switzerland, Sept. 11, 1969, 13733/69
Int. Cl. C07c *167/18*
U.S. Cl. 260—397.5 **10 Claims**

The present invention relates to a new process for the manufacture of acetylene compounds by decomposing a compound of the formula



in which X is a reactively esterified hydroxyl group, e.g. a hydroxy group esterified with an organic sulfuric acid or with a halic acid, R' is a nucleofuge group and one of the residues R_1 and R_2 represents an organic radical and the other hydrogen or an organic radical.

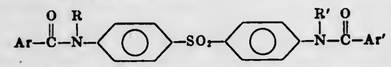
3,696,131

AROMATIC ACID DIAMIDES OF DIAMINO DIPHENYL SULFONES

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 6, 1970, Ser. No. 26,053
Int. Cl. C07c *103/22*
U.S. Cl. 260—397.6 **3 Claims**

Compounds of the structure



wherein Ar and Ar' are mono- or polynuclear aromatic radicals, and
R and R' are C_1 to C_{20} hydrocarbon radicals
These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

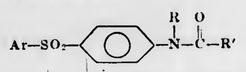
3,696,132

MONOAMIDES OF MONOAMINO DIARYL SULFONES

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 6, 1970, Ser. No. 26,057
Int. Cl. C07c *103/12*
U.S. Cl. 260—397.6 **4 Claims**

Compounds of the structure



wherein Ar is a mono- or polynuclear aromatic radical, and
R and R' are C_1 to C_{20} hydrocarbon radicals. These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

3,696,133

EXTRACTION OF OIL FROM OIL-BEARING MATERIALS

Anthony Michael Lloyd, Walkington, and David George Alexander, Kirkella, both of England, assignors to Rose Downs & Thompson Limited, Kingston-upon-Hull, Yorkshire, England

Filed April 13, 1970, Ser. No. 28,149
Int. Cl. C11b *1/10*
U.S. Cl. 260—412.8 **16 Claims**

The invention relates to the extraction of oil from seeds and other oil-bearing materials. The oil-bearing material is first treated with a polar solvent such as isopropyl alcohol in aqueous solution and then a second solvent which has a lower polarity and which may be hexane is passed through the once-treated material. The treatment with the first solvent facilitates the passage of the second solvent through the material and hence the extraction of the oil from the material. Water may be added to the extract recovered from the treatment with the second solvent, to aid separation of the oil from other constituents of the material.

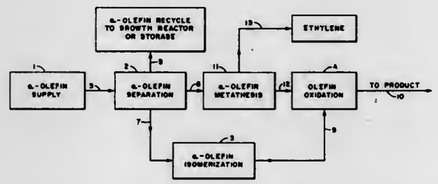
3,696,134

PROCESS FOR PEAKING THE OXIDATION PRODUCTS OF 1-OLEFINS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 9, 1970, Ser. No. 1,655
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 **6 Claims**

A peaking process is disclosed for preparing aldehydes or carboxylic acids from a mixture of alpha olefins. The alpha olefins are separated into at least two fractions consisting of a low molecular weight fraction and a high molecular weight fraction. The high molecular weight fraction is isomerized and the two fractions oxidized. The low molecular weight fraction will oxidize to C_{n-1} product and C_1 product. The high molecular weight fraction will cleave at the double bond giving



products containing the number of carbon atoms of the groups on either side of the double bond. The procedure has great versatility by varying the number of fractions and isomerizations. With alpha olefins prepared from metal alkyl growth product, M-values also have an influence on the final product.

3,696,135

PROCESS FOR THE PRODUCTION OF NICKEL SALTS OF MONOESTERS OF 3,5-DI-TERT. BUTYL-4-HYDROXYBENZYLPHOSPHONIC ACID

Peter Kartschmaroff, Arlesheim/Basel-Land, and Paul Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 16, 1970, Ser. No. 55,616
Claims priority, application Switzerland, July 31, 1964, 11649/69
Int. Cl. C07f *15/02*
U.S. Cl. 260—439 R **6 Claims**

Nickel salts of monoesters of 3,5-di-tert.butyl-4-hydroxybenzylphosphonic acid are produced by saponifying the corresponding diesters and adding a nickel salt to the reaction mixture. The obtained nickel salts are stabilizers of synthetic polymers.

3,696,136

METHOD OF STABILIZING SODIUM ALUMINUM DIETHYL HYDRIDE

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,682
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **7 Claims**

Sodium aluminum diethyl dihydride, a chemical reducing agent, is more soluble and more stable in liquid alkyl benzenes than it is in benzene.

3,696,137

POLYPHENYLENE-OXIDE-ORGANOPOLYSILOXANE BLOCK CO-POLYMERS

Robert F. Clark, Glendale Heights, Ill., and Karl W. Krantz, Schenectady, N.Y., assignors to General Electric Company

Filed March 5, 1971, Ser. No. 121,535
Int. Cl. C07f *7/18*
U.S. Cl. 260—448.8 R **3 Claims**

Block copolymers having polyphenylene oxide segments and polydimethylsiloxane segments, with the units present in critical length ratios, are useful as surface tension depressants for dielectric fluids, particularly dielectric fluids of the askarel type.

3,696,138

METHOD OF PRODUCING 2-(CHLOROMETHYL) ALLYL-SUBSTITUTED SILANES

Keith W. Michael, and William E. Dennis, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 28, 1971, Ser. No. 148,200
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E **5 Claims**

When reacting chlorine with methallylsilanes, the yield of 2-(chloromethyl)allylsilanes is increased substantially by carrying out the reaction in the absence of light or other sources of free radicals.

3,696,139

Patent Not Issued For This Number

3,696,140

Patent Not Issued For This Number

3,696,141

PROCESS FOR THE PRODUCTION OF METHYL BENZOATE

Hans Leo Hulsmann, Wengern; Gustav Renckhoff, and Albino Pastura, both of Witten Ruhr, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 27, 1970, Ser. No. 41,054
Claims priority, application Germany, May 30, 1969, P 19 27 554.8
Int. Cl. C07c *69/78, 69/80*
U.S. Cl. 260—476 R **8 Claims**

Methyl benzoate having a purity of at least 99 percent is produced from the by-products obtained in the manufacture of dimethyl terephthalate by the oxidation of p-xylene by subjecting said by-products to an oxidative treatment, preferably with molecular oxygen, for example, air, and then fractionally distilling the oxidized product to obtain substantially pure methyl benzoate. In this way, compounds which can be separated only with difficulty from methyl benzoate by fractional distillation are oxidized, leaving only substances which are separable therefrom by distillation.

3,696,142

PRODUCTION OF CYCLOHEXENYL ACETATE

Gerhard Schulz, 5 Liebermannstrasse, 6700 Ludwigshafen; Erich Haarer, 36 Hammelstalstrasse, 6732 Bad Duerkheim, and Guenther Matthias, 23 An der Froschlache, 6700 Ludwigshafen, all of Germany

Filed Nov. 9, 1970, Ser. No. 88,155
Claims priority, application Germany, Nov. 14, 1969, P 19 57 299.7
Int. Cl. C07c *67/00*
U.S. Cl. 260—488 R **4 Claims**

Manufacture of cyclohexenyl acetate by reacting cyclohexanone with ketene in the presence of a phosphorus trihalide as catalyst. Cyclohexenyl acetate is an important intermediate in the manufacture of caprolactam.

3,696,143

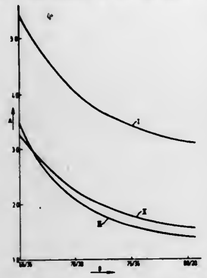
DETERGENT ACTIVE MATERIALS

Virender Nath Malhotra, Bebington, England, assignor to Lever Brothers Company, New York, N.Y.

Filed July 24, 1970, Ser. No. 58,023
Claims priority, application Great Britain, July 25, 1969, 37453/69
Int. Cl. C11d *1/12*
U.S. Cl. 260—513 R **8 Claims**

The inorganic salt content of alkane sulphonates, alcohol sulphates and olefin sulphonates can be reduced by treating

the detergent active with a mixture of water and isopropanol and/or isobutanol with the conversion of bisulphite ions into sulphite ions. The treatment is performed under reflux at a



temperature between boiling and 20°C below boiling. A proportion of the inorganic material precipitates and is separated from the liquor which contains the active.

3,696,144

11,15-DIHYDROXY-9-OXOPROSTA-8(12),13-DIENOIC ACIDS AND INTERMEDIATE

Masateru Miyano, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 799,965, Feb. 17, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,489
Int. Cl. C07c *61/36*
U.S. Cl. 260—514 R 5 Claims

The utilization of styrylglyoxal and a dialkyl ester of 3-oxoundecane-1,11-dioic acid as starting materials leads to cis- and trans-11,15-dihydroxy-9-oxoprosta-8(12),13-dienoic acids, which exhibit valuable pharmacological properties, e.g. hypotensive, antiulcerogenic and smooth muscle stimulating.

3,696,145

NEW PROCESS FOR THE PREPARATION OF 1-INDANCARBOXYLIC ACIDS

Yvon G. Perron, St. Lambert, Quebec, and James L. Douglas, Greenfield Park, Quebec, both of Canada, assignors to Britsol-Myers Company, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,307
Int. Cl. C07c *63/44*
U.S. Cl. 260—515 R 3 Claims

Levorotatory 5-cyclohexyl-1-indancarboxylic acid is a useful anti-inflammatory agent in the treatment of inflammatory diseases in animals, including man. As such, a new and more efficient process has been discovered for the preparation of large quantities of the racemic mixture of the compound, (±)-5-cyclohexyl-1-indancarboxylic acid.

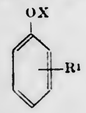
3,696,146

CARBOXYLATION OF ACETYLENIC COMPOUNDS

Edwin L. Patmore; William R. Siegart, and Harry Chafetz, all of c/o Texaco Inc. P.O. Box 509, Beacon, N.Y.

Division of Ser. No. 794,344, Jan. 27, 1969. This application Nov. 10, 1971, Ser. No. 197,530
Int. Cl. C07c *53/00, 63/00*
U.S. Cl. 260—515 R 5 Claims

Method of carboxylating an organic compound of the group of RC ≡ CH, RCH_2CN, indene or cyclopentadiene where R is hydrocarbyl comprising contacting under anhydrous conditions in an inert atmosphere and in the presence of an inert, aprotic, dipolar, liquid solvent, said compound with a carbonated metal phenoxide, the metal phenoxide of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl, and subsequently acidifying the resultant intermediate product to form the carboxylated product.

3,696,147

PROCESS FOR CONTINUOUSLY PRODUCING PURE SORBIC ACID

Gerhard Kunstle, and Heinz Liberda, both of Burghausen upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed June 17, 1970, Ser. No. 46,878
Claims priority, application Germany, June 20, 1969, P 19 31 461.5
Int. Cl. C07c *51/42*
U.S. Cl. 260—526 N 1 Claim

Process for continuously producing pure sorbic acid from raw sorbic acid obtained by hydrolysis or thermal cracking of polyesters by crystallization from water, which comprises forming a saturated aqueous solution of raw sorbic acid at a temperature slightly below the boiling point of the water and with a short dwell time of the order of 2 to 5 minutes, separating the impurities from the dissolved sorbic acid by centrifuging at the same temperature, and crystallizing out the pure sorbic acid.

3,696,148

Patent Not Issued For This Number

3,696,149

Patent Not Issued For This Number

3,696,150

HALOGEN-EXCHANGE FLUORINATION OF ORGANIC COMPOUNDS USING AMMONIUM FLUORIDE

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,908
Int. Cl. C07c *51/58, 17/20*
U.S. Cl. 260—544 F 9 Claims

Compounds having a nonfluorine halogen atom attached to a carbon atom which in turn is bonded to two phenyl groups, or doubly bonded to an oxygen atom, are fluorinated by reaction with ammonium fluoride or ammonium bifluoride, whereby the halogen atom is replaced by fluorine.

3,696,151

Patent Not Issued For This Number

3,696,152

HYDRATION OF NITRILES TO AMIDES USING HETEROGENEOUS CUPREOUS CATALYSTS

Clarence E. Habermann, and Mary R. Thomas, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 17, 1970, Ser. No. 47,166
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N 17 Claims

Cupreous catalysts prepared by reducing a mixture consisting essentially of copper oxide in combination with certain metal oxides have been discovered to be excellent heterogeneous catalysts for the hydration of nitriles to the corresponding amide.

3,696,153

HYDROGENATION OF ADIPONITRILE

Bernard John Kershaw; Maurice George Pounder, and Kenneth Ross Wilkins, all of Brockville, Ontario, Canada, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1970, Ser. No. 35,573
Claims priority, application Canada, July 11, 1969, 056,835
Int. Cl. C07c *85/12*
U.S. Cl. 260—583 K 7 Claims

Process for the catalytic hydrogenation of adiponitrile at elevated temperatures and pressures in the presence of a catalyst derived from an iron compound in granular form which has been activated with hydrogen at a temperature not exceeding 600° C.

3,696,154

PERFLUORINATED ETHER SULFIDES

Richard W. Anderson, and Hughie R. Frick, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 12, 1970, Ser. No. 45,940
Int. Cl. C07c *149/26*
U.S. Cl. 260—609 F 6 Claims

Disclosed are perfluorinated ether sulfides characterized by the formula:

$$R_fO-\overset{\frown}{R}-S-\overset{\frown}{R}-OR_f.$$

In the above formula,

$\overset{\frown}{R}$ is $-C{=}C-$ or $-\underset{(CF_2)_n}{\overset{F}{C}}-\underset{(CF_2)_n}{\overset{F}{C}}-$

with n being 2, 3 or 4 and R_f is a perfluoroaliphatic group or a perfluoroaliphatic ether containing from one to 20 carbon atoms. The unsaturated compounds are prepared by reacting a perfluoroalkoxy perfluorocycloalkene of the formula:

$$\underset{(CF_2)_n}{\overset{F}{C}{=}C-OR_f}$$

wherein R_f and n are as defined above with an alkali metal sulfide. Saturated perfluorinated either sulfides are prepared by adding fluorine across the double bond of the unsaturated compounds. These compounds are useful as hydraulic fluids for high temperature applications.

3,696,155

PRODUCTION OF 2-METHYL-3-BUTEN-2-OL

Herbert Mueller, 53 Carostrasse, 6710 Frankenthal, and Dietrich Mangold, 49 Hermann-Walker-Strasse, 6903 Neckargemuend, both of Germany

Filed May 13, 1970, Ser. No. 37,061
Claims priority, application Germany, May 17, 1969, P 19 25 197.9
Int. Cl. C07c *29/00, 1/24*
U.S. Cl. 260—642 6 Claims

Production of 2-methyl-3-buten-2-ol in which an aqueous acid is allowed to act on 3-methyl-3-buten-1-ol at temperatures of from 20° to 250°C while removing by distillation the 2-methyl-3-buten-2-ol formed. 2-methyl-3-buten-2-ol is an important intermediate for the production of terpenes.

3,696,156

PROCESS FOR PURIFICATION OF FLUOROPERHALOCARBONS

Robert Hugh Weeks, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 3, 1970, Ser. No. 25,576
Int. Cl. C07c *17/38, 19/08*
U.S. Cl. 260—648 F 4 Claims

Saturated fluoroperhalocarbons of two to six carbon atoms in which halogen is chlorine or fluorine can be purified to readily and economically remove olefinic inipurities by contacting, in the vapor phase, the impure saturated fluoroperhalocarbons with alumina containing from about 0.1 percent to about 5 percent of alkali metal hydroxide in the temperature range of from about 180° C. to about 250° C.

3,696,157

PREPARATION OF 5-ETHYLIDENEBICYCLO(2.2.1)HEPT-2-ENES

Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 14, 1971, Ser. No. 153,096
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 PY 6 Claims

5-Vinylbicyclo[2.2.1]hept-2-enes heated in the presence of a titanium catalyst system are isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-enes. The catalyst system of this invention comprises a titanium compound, an alkali metal, and a cyclopentadienyl magnesium halide. The catalyst system is highly efficient and capable of rapidly isomerizing 5-vinylbicyclo[2.2.1]hept-2-enes. 5-Ethylidenebicyclo[2.2.1]hept-2-enes are useful comonomers for polymerization with α-olefins such as ethylene and propylene.

3,696,158

CONVERSION OF ACETYLBENZENES TO UNSATURATED DERIVATIVES

Howard M. Relles, Rexford, N.Y., assignor to General Electric Company, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,213
Int. Cl. C07c *15/04*
U.S. Cl. 260—668 R 8 Claims

Although phosgene itself does not react with the carbonyl group of acetylbenzenes, the adduct of phosgene and pyridine will react converting the acetyl group to either the α-chlorovinyl or α, α-dichloroethyl group. The α,α-dichloroethyl group can be converted to the α-chlorovinyl group and the latter can be dehydrohalogenated to the ethynyl group. This reaction permits low cost phosgene to be substituted for the much more expensive phosphorus pentachloride thereby providing an economical process for converting acetylbenzenes to the corresponding ethynylbenzenes which are useful in making polyacetylenes.

3,696,159

Patent Not Issued For This Number

3,696,160

SELECTIVE HYDROGENATION OF DIOLEFINS

Karl D. Chomyn, Dover, N.J., assignor to Esso Research and Engineering Company

Filed March 26, 1970, Ser. No. 22,792
Int. Cl. C07c *5/06*
U.S. Cl. 260—677 H 4 Claims

Diolefins, present in minor amounts, in gaseous feed streams, particularly those to be used in alkylation reactions are selectively converted to mono-olefins by hydrogenation over sulfided nickel-tungsten catalyst.

3,696,161

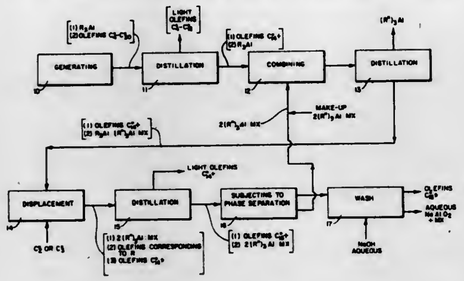
CHEMICAL PROCESS OF SEPARATING HYDROCARBYL ALUMINUM FROM OLEFINS BY THE USE OF 2:1 COMPLEXES OF ALUMINUM ALKYLS AND AN ALKALI METAL SALT

Paul Kobetz, Baton Rouge, La., and Kenneth L. Lindsay, Baton Rouge, La., assignors Ethyl Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,809
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A 9 Claims

Hydrocarbyl aluminum compounds are separated from olefins readily by the use of 2:1 complexes of aluminum alkyls

and various complexing agents such as sodium fluoride and sodium cyanide. An important aspect is that the process does not require pyrolysis cleavage of the complexes. An overall



olefins process is disclosed wherein the aluminum hydrocarbyl compounds removed from the olefins are recovered and recycled.

3,696,162

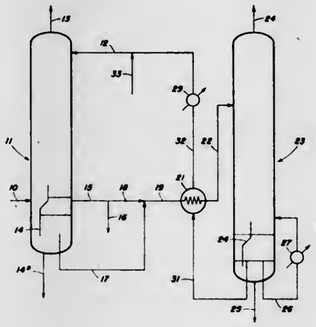
AQUEOUS AMINE ACID GAS ABSORPTION

Ludwig Kniel, Scarsdale, N.Y., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 768,303, Oct. 17, 1968, Pat. No. 3,598,881. This application May 26, 1971, Ser. No. 146,915

Int. Cl. C07c *11/02*

U.S. Cl. 260—677 A **8 Claims**



Acid gases are removed from a gaseous stream containing the acid gases and also dienes by contact with a mixture of a lean aqueous amine acid gas absorption solution and a hydrocarbon solvent free of olefinic unsaturation. The use of such a mixture prevents the problems encountered in the amine regeneration system as a result of dienes being carried into the system.

3,696,163

ISOBUTENE AND/OR ISOAMYLENES FROM CAT POLY GASOLINE

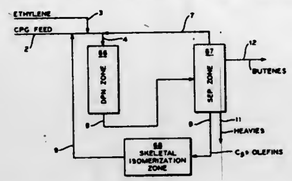
Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 1, 1970, Ser. No. 42,095

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **7 Claims**

The conversion of cat poly gasoline to isobutene using an olefin disproportionation reaction is increased by subjecting a heavy olefin fraction separated from the olefin disproportionation effluent to skeletal isomerization prior to recycle of said fraction to the olefin disproportionation reactor. In a preferred embodiment, isoamylenes are advantageously



prepared using a second olefin disproportionation step which employs the isobutene-containing stream as the feedstock.

3,696,164

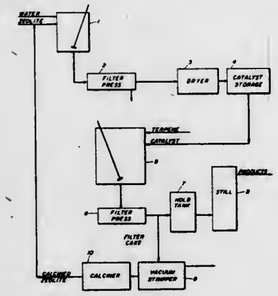
MOLECULAR SIEVE 13-X CATALYZED ISOMERIZATION OF ALPHA-PINENE-IMPROVEMENT OF CATALYST ACTIVITY

Curry Beach Davis, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 845,431, July 28, 1969, abandoned. This application June 1, 1971, Ser. No. 148,898

Int. Cl. C07c *13/00*; C09f *3/02*; C01b *33/28*

U.S. Cl. 260—675.5 **5 Claims**



A method for producing dipentene is given whereby a terpene containing feed is isomerized at a temperature of between 140° and 200° C. in the presence of an alkali metal containing aluminosilicate catalysts of the 13X-type which has been activated by water extraction.

3,696,165

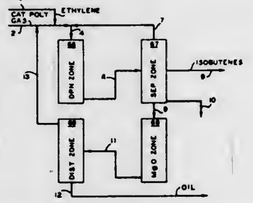
ISOBUTENE AND/OR ISOAMYLENES FROM CAT POLY GASOLINE

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 1, 1970, Ser. No. 42,092

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **8 Claims**



The conversion of cat poly gasoline to isobutene using an olefin disproportionation reaction is increased by subjecting a heavier olefin fraction separated from the olefin disproportionation effluent to a high temperature treatment with MgO prior to recycle of said fraction to the olefin disproportiona-

tion reactor. In a preferred embodiment, isoamylenes are advantageously prepared using a second olefin disproportionation step which employs the isobutene-containing stream as the feedstock.

3,696,166

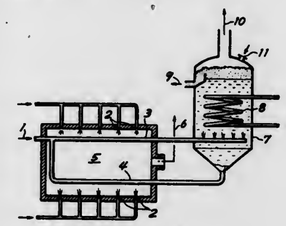
METHOD OF THERMAL CRACKING OF HYDROCARBONS

Tokuji Ozawa, Sakai; Mikio Uyeda, Amagasaki; Ryosuke Hashimoto, Saitama, and Shigenori Suzuki, Osaka, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed June 15, 1970, Ser. No. 45,959

Int. Cl. C07c *3/00*

U.S. Cl. 260—683 R **6 Claims**



Thermal cracking apparatus in which the reaction transfer, quenching and separation are carried out in circulating molten metals which are maintained molten by circulation through a preheater tube prior to circulation through the reaction tube. The preheater tube and the reaction tube are heated by burners. Feed stock or a diluent such as steam is sprayed into the quenching tower through the reaction tube to assist the circulation.

3,696,167

CATALYST AND PROCESS FOR DEHYDROGENATING SATURATED HYDROCARBONS

Bernard Juguin, 46, avenue du Stade; Jean Francois Le Page, 6, rue Henri Dunant, both of 92 Rueil Malmaison, and Jean Miquel, 5, rue Fragonard, Paris XVIIeme, all of France

Filed March 30, 1970, Ser. No. 23,991

Claims priority, application France, April 4, 1969, 6910608

Int. Cl. C07c *5/18*; B01j *11/12*

U.S. Cl. 260—683.3 **20 Claims**

For dehydrogenating saturated hydrocarbons, there is provided a substantially neutral catalyst containing (a) alumina, (b) from 0.05 to 2 percent by weight of platinum, (c) from 0.01 to 0.5 percent by weight of at least one additional noble metal from the group consisting of iridium and ruthenium, the latter percentages being given with respect to alumina, wherein the content by weight of the additional noble metal is from 0.05 to 0.3 times the content by weight of platinum and (d) an alkali or alkaline-earth metal with a content by weight of from 0.3 to 10 times the overall content of noble metals, the specific surface of the catalyst being 1 to 20 sq. m. per gram and the neutralization heat of the alumina being below 5 calories per gram in the ammonia adsorption test. Of the above catalysts, the best are produced by introducing the alkali or alkaline-earth metal compound after the noble metals are introduced.

3,696,168

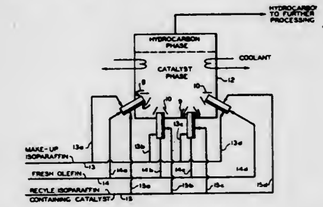
NOZZLE STRUCTURE AND ARRANGEMENT FOR PRODUCING HIGH OCTANE ALKYLATE

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 21, 1970, Ser. No. 73,790

Int. Cl. C07c *3/54*; B01j *1/00*

U.S. Cl. 260—683.58 **6 Claims**



A nozzle having several outlet orifices, including a centrally disposed orifice and at least one additional or subordinate orifice disposed adjacent to the first-mentioned orifice, is provided so that in an alkylation of an isoparaffin with an olefin the recycle isoparaffin which contains catalyst therein, usually hydrogen fluoride catalyst, can be brought into contact with hydrogen fluoride-free olefin feed at the moment when this feed encounters the main body of catalyst. Conduits are provided to supply recycle isoparaffin usually to the adjacent or subordinate nozzle, and make up isoparaffin and the olefin feed to the central or axial orifice.

3,696,169

MODIFIED POLYOLEFIN CONTAINING REACTION PRODUCT OF UNSATURATED OXIRANE IN THE PRESENCE OF THE POLYOLEFIN AND PEROXIDE

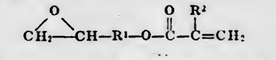
Albert Schrage, E. Orange, and Philip D. Readio, Rockaway, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Oct. 16, 1970, Ser. No. 81,526

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **10 Claims**

A process has been developed for directly producing a modified polyolefin composition in particulate form which has improved adhesiveness. Generally, the process comprises providing an olefin polymer in particulate form; admixing the olefin polymer, an organic peroxide and a specific polymerizable compound generally defined by the formula



; reacting the mixture in an inert atmosphere at a temperature below the tacky point of the polymer; and directly recovering the modified polyolefin composition.

3,696,170

STABILIZED POLYMER COMPOSITIONS

Shinichi Ishida, Tokyo; Nobumitsu Yano; Noboru Ohshima, both of Iruma-gun, Saitama-ken; Hiromichi Eukuda, and Takeshi Sato, both of Itabashi-ku, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 3, 1969, Ser. No. 830,114

Claims priority, application Japan, June 4, 1968, 43/37878

Int. Cl. C08f *45/60*; C08g *51/60*

U.S. Cl. 260—858 **14 Claims**

Various polymers, such as polyacetal, polyolefine, polydiolefine, polyamide, polyurethane polyester, polyether, polyvinyl and polyhaloolefine are stabilized against heat, light and oxygen by adding thereto at least one pyrimidine base such as cytosine, cytidine and uracil.

3,696,171
POLYBUTYLENE TEREPHTHALATE-OXYMETHYLENE POLYMER COMPOSITIONS

David M. Braunstein, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,765
Int. Cl. C08g 39/10
U.S. Cl. 260—860 10 Claims

Process and resultant product for controlling the spherulite size of crystalline oxymethylene polymers. Control over the spherulite size is achieved by incorporating into the oxymethylene polymer a polyalkylene terephthalate. Additionally, the incorporation of the polyalkylene terephthalate into oxymethylene polymers improves the color stability when exposed to heat and/or ultraviolet light of the oxymethylene polymers.

3,696,172
PROCESS FOR PREPARING STYRENE POLYMERS HAVING A HIGH IMPACT STRENGTH

Isao Kaiho, Yokohama, Hiroshi Shimizu, Kawasaki, and Hiroshi Osuka, all of Japan, assignors to Nibon Polystyrene Kogyo Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 657,065, July 31, 1967, abandoned. This application Oct. 19, 1970, Ser. No. 82,193
Int. Cl. C08f 19/08, 1/11
U.S. Cl. 260—880 R 8 Claims

Process for the production of high impact polystyrenic polymers comprising dissolving 3–10 parts by weight of a polybutadiene rubber and/or a styrene butadiene rubber in 100 parts of a styrenic monomer, polymerizing the solution under conditions of bulk polymerization in the absence of a catalyst or initiator until the solid content in the solution becomes from about 15 to 45 percent by weight, dispersing the polymerization product in water to provide an aqueous suspension, and polymerizing the aqueous suspension under the conditions of suspension polymerization in the presence of from 0.1 to 1 part by weight of t-butyl per-iso-butyrate and from 0.01 to 0.5 parts by weight of t-butyl peracetate.

3,696,173
GRAFT COPOLYMER OF VINYL CHLORIDE ONTO HIGH MOLECULAR WEIGHT POLYTETRAHYDROFURAN

Toshio Sakomura; Toshiro Yoshida; Yoshihiro Fujita, and Hideo Shinbara, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Filed March 13, 1970, Ser. No. 19,502
Claims priority, application Japan, March 18, 1969, 44/20098
Int. Cl. C08f 29/24, 37/18
U.S. Cl. 260—899 8 Claims

A method of preparing a clear, high impact strength vinyl chloride polymer is described.

Monomeric vinyl chloride is polymerized in a solution of high molecular weight polytetrahydrofuran therein to produce a graft-polymer which is transparent and has high impact strength.

A graft-polymer product having improved transparency and impact strength is also described.

3,696,174
Patent Not Issued For This Number

3,696,175
Patent Not Issued For This Number

3,696,176
PROCESS FOR ORGANOPHOSPHORUS VINYL ESTERS PRODUCTION

Thomas H. Colby, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

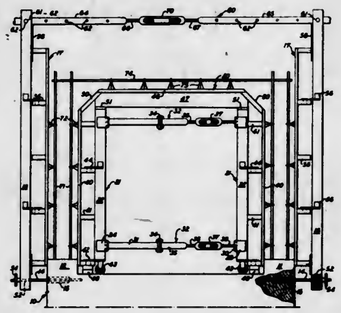
Filed Aug. 13, 1970, Ser. No. 63,660
Int. Cl. C07f 9/02
U.S. Cl. 260—986 5 Claims

Lower beta, beta-dihalovinyl phosphate diesters are reacted with thionyl chloride in the presence of a salt compound containing cationic nitrogen to yield beta-halovinyl phosphorodichloridates, useful intermediates in the production of higher and/or mixed esters of beta, beta-dihalovinyl phosphates.

3,696,177
METHOD FOR FORMING CONCRETE BOX CULVERTS AND THE LIKE

Harry L. Holland, 1215 Park Hill Drive, N.E., Gainesville, Ga.

Continuation of Ser. No. 683,924, Nov. 17, 1967, abandoned. This application May 4, 1970, Ser. No. 48,792
Int. Cl. E04b 1/32; E04g 11/34
U.S. Cl. 264—32 5 Claims



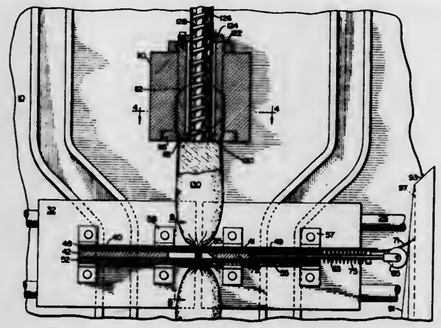
Construction of a box culvert on an already-poured concrete base which includes a concrete riser at each edge thereof and studs encased in the base under the risers which extend horizontally outwardly therefrom by securing vertical wall forms to such studs so that the wall forms extend upwardly from the outer edges of the risers, connecting the upper edges of the wall forms together at their top by a longitudinal member of adjustable length, rolling interior mold apparatus between the risers and the vertical wall forms, such apparatus having vertical beams carrying vertical interior forms, the vertical beams being connected by expansible rods which force the interior vertical wall forms against the inner edges of the risers into an opposed relationship with the outer vertical wall forms, providing expansible rods connected to the vertical beams so as to maintain them and also the interior vertical wall forms in rigid parallel relationship, securing the outer vertical wall forms and the interior vertical wall forms together at their edges, securing a ceiling form across the upper edges of the interior vertical forms, pouring concrete into the space defined by the outer vertical wall forms and the interior mold apparatus to form the walls and top of the culvert, and when the concrete is sufficiently hardened, removing the forms by increasing the length of the longitudinal member securing the outer wall forms together, contracting the rods connecting the interior wall forms and moving the forms to the next station along the base to repeat the process.

3,696,178
Patent Not Issued For This Number

3,696,179
EXTRUDING AND FILLING CONTAINERS MADE OF FOAMED THERMOPLASTIC POLYMER

William A. Jacobs, 514 Grassy Hill Road, Orange, Conn.

Continuation-in-part of Ser. No. 726,465, May 3, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 81,099
Int. Cl. B29d 27/00
U.S. Cl. 264—45 9 Claims

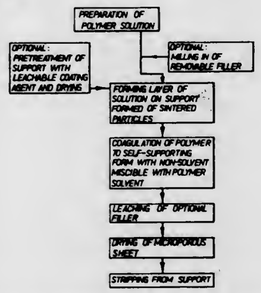


Method for the simultaneous extrusion and filling of expandable thermoplastic containers wherein the expandable thermoplastic material is extruded, clamping means gather and seal the foamed thermoplastic after it is extruded and while it is still in a state of plasticity so that the sealed area is formed by fusion of a foamed thermoplastic material, intermittently operated feed means fills the container after the seal is made and the substance being packaged causes inflation and shaping of the container, and clamp means is operative upon the deenergization of the feed means to effect a similar type seal for the other end of the container.

3,696,180
PROCESS FOR PREPARING MICRO-POROUS POLYURETHANE RESIN SHEETS BY CASTING THE RESIN ON A POROUS SINTERED THERMOPLASTIC POLYMERIC RESIN SUPPORT SURFACE

Victor Ralph Cunningham, and Thomas Stanley Dodson, both of Dagenham Dock, England, assignors to Porous Plastics Limited, Essex, England

Continuation of Ser. No. 620,659, March 6, 1967. This application May 11, 1970, Ser. No. 37,399
Claims priority, application Great Britain, Mar. 7, 1966, 9974/66; Jan. 11, 1967, 1610/67
Int. Cl. B29d 27/04
U.S. Cl. 264—48 2 Claims

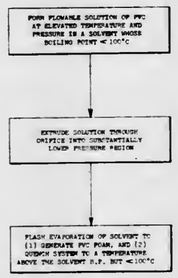


In a method of making artificial leathers and other water vapor permeable flexible sheet materials, a layer of polymer-containing mixture adhering to a temporary support is coagulated by suitable liquid treatment, dried, and then stripped from the support.

3,696,181
FLASH EXTURSION OF POLYVINYL CHLORIDE

Willard Hallam Bonner, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 699,875, Sept. 22, 1967, Pat. No. 3,503,907. This application March 20, 1970, Ser. No. 21,454
Int. Cl. B29d 27/00
U.S. Cl. 264—53 2 Claims

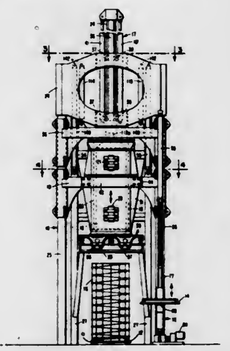


A flexible, low density foam of polyvinyl chloride having closed polyhedral-shaped cells and very thin cell walls of uniform thickness is produced by flash extruding a solution of the polymer in a methylene chloride solvent under conditions such that the temperature of the product immediately after extrusion is above the boiling point of the solvent, but below the stability temperature of the foam. The resultant foam material is useful as a cushioning material.

3,696,182
METHOD FOR PRODUCING CONCRETE PIPE

Carl R. Joelson, 312 Harbor Drive, Venice, Fla.

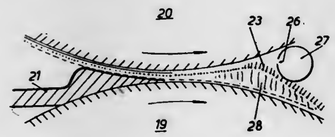
Division of Ser. No. 797,606, Feb. 7, 1969, Pat. No. 3,584,356. This application June 29, 1970, Ser. No. 60,172
Int. Cl. B28b 1/08, 21/00
U.S. Cl. 264—72 11 Claims



An improved method for forming hollow cylindrical bodies having any geometric cross-section of reinforced concrete comprising sequentially forming a mold with bottom, inner and outer wall forms and reinforcement positioned between the wall forms, which forms are assembled to provide a controlled pressure seal between the bottom form and the outer form and the bottom form and the inner form, filling the thus-formed mold with concrete while applying vibration to the thus-formed mold, positioning a top form on the filled form and applying vibration to same, stopping the applications of vibration and sequentially upwardly stripping the inner and outer wall forms from the molded body while leaving the bot-

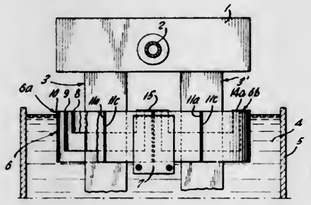
tom and top forms on the molded body, the controlled pressure seals being liquid-tight and resisting the transmission of the vibrations between the mold forms.

3,696,183
FORMING A PILE ON AN ARTICLE
Margaret Lilian Steel, and William Telford Cross, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Oct. 30, 1970, Ser. No. 85,485
Claims priority, application Great Britain, Oct. 30, 1969, 52,365/69
Int. Cl. B29c *17/02*
U.S. Cl. 264—164 **19 Claims**



A process for producing a pile-surfaced article by pressing softened filament-forming thermoplastic polymeric material through a perforated web into contact with a heated surface to which the polymeric material sticks, parting the web and polymeric material from the heated surface so that filaments are produced and cooling the filaments to harden and disjoin them from the surface.

3,696,184
MELT SPINNING
Joseph W. Arnett, Jr., Severna Park, and David W. Norwood, Baltimore, both of Md., assignors to Concorde Fibers, Inc., Columbia, Md.
Filed June 8, 1970, Ser. No. 44,371
Int. Cl. D01d *5/08*
U.S. Cl. 264—178 F **8 Claims**

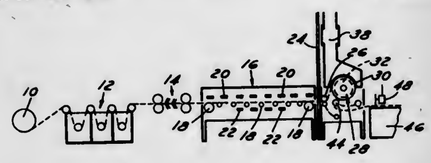


In combination with melt spinning means comprising a melt spinning head arranged for extruding vertically downwardly a plurality of molten streams of a thermoplastic and a bath arranged to receive the streams from the head and to contain a liquid to quench and thereby solidify the streams to form filaments, the improvement comprising annular baffle means suspended in the bath in a position to surround the plurality of molten streams or filaments as they move substantially vertically downwardly, the baffle means comprising a plurality of radially spaced concentric annular foraminous members each having its upper edge no lower than the surface of the liquid and the lower edge of each respective member extending to a distance from the surface of the liquid greater than the corresponding distance for any other of the members of smaller diameter and lesser than the corresponding distance for any other of the members of greater diameter.

3,696,185
PROCESS FOR THE MANUFACTURE OF A STUFFING MATERIAL
Robert Bolliand, and Claude Saligny, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France
Filed April 28, 1970, Ser. No. 32,778
Claims priority, application France, April 28, 1969, 6913378
Int. Cl. B29c *15/00, 17/02;* **D04h** *3/00*
U.S. Cl. 264—280 **6 Claims**

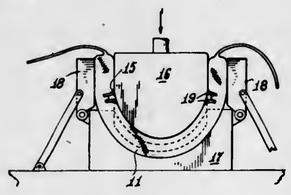
Stuffing material is manufactured from a web of heavily crimped synthetic filaments by passing the web twice through smooth surfaced rollers, the two rollers being driven at different peripheral speeds such that in the two passes opposite sides of the web make contact with the roller having the higher peripheral speed.

3,696,186
METHOD OF EXPANDING A PLIABLE MATERIAL
John E. Stark, London, England, and Adrian G. Vanoostveen, Niagara Falls, Ontario, Canada, assignors to Fod Motor Company, Dearborn, Mich.
Filed Feb. 3, 1970, Ser. No. 8,213
Claims priority, application Canada, Nov. 28, 1969, 68584
Int. Cl. B28b *11/08;* **B29c** *17/02*
U.S. Cl. 264—292 **10 Claims**



A method has the following general steps for expanding a continuous length of a pliable material so that originally parallel and straight lateral edges thereof are stretched to curved configurations of different arc lengths. A continuous length of the material is unwound and heated to a temperature at which the material is pliable. The material is expanded between a first line which is both located on a surface of a first object and perpendicular to the lateral edges of the material, and a second line which is located on a surface of a second object, which second line is coplanar with the first line but in skew relationship thereto. The expanded material is continuously moved along a substantial length of the second object's surface. The expanded material is cooled while in engagement with the second object's surface to a temperature at which the material is sufficiently rigid that it may be removed and cut to finite lengths to form the desired article.

3,696,187
METHOD OF FORMING CATAMENIAL NAPKINS
Jacob A. Glassman, 1680 Meridian Ave., Miami Beach, Fla.
Filed Nov. 23, 1970, Ser. No. 92,108
Int. Cl. B29c *3/00*
U.S. Cl. 264—294 **3 Claims**



A method of forming a catamenial napkin into a longitudinal arch-shape with spaced parallel longitudinal channels on its concave surface defining between them a compacted tampon-like central ridge. The method also includes the step of forming a central longitudinal channel on the convex surface to facilitate folding when in place on a wearer and the formation of a lateral crease inwardly of each end adapting the napkin to compact package and storing.

ERRATA

For Classes 423—206 thru 423—479 and 423—651 see: Patents Nos. 3,695,830 thru 3,695,839 and 3,695,841

3,696,188
LAMINATED TABLETS
Raul O. Fernandez, Upper Montclair, N.J.; Vincent F. Cannito, Pine Brook, N.J., and Oscar Olsen, Colonia, N.J., assignors to Schering Corporation, Bloomfield, N.J.
Continuation-in-part of Ser. No. 01,023, Jan. 6, 1970, abandoned. This application June 16, 1971, Ser. No. 153,856
Int. Cl. A61j *3/06*
U.S. Cl. 424—16 **6 Claims**

Laminated, pan-coated tablets are described wherein the various medicament layers are separated by a layer containing 10–50 percent of a silica gel having a specified pore size. This silica gel layer not only substantially reduces the processing time but also aids in preventing migration of the ingredients and in accelerating dissolution.

3,696,189
STABILIZED ANTIBIOTIC AND METHOD
Frank M. Snyder, 2043 N. 53rd St., Omaha, Nebr.
Filed May 18, 1970, Ser. No. 38,562
Int. Cl. A61k *21/00, 27/12*
U.S. Cl. 424—38 **5 Claims**

A stabilized antibiotic premix composition comprising antibiotic particles admixed with edible carrier particles wherein at least the antibiotic particles are coated with a thin layer of at least one glyceride.

3,696,190
Patent Not Issued For This Number

3,696,191
DENTAL CREAMS CONTAINING ENZYMES
Lloyd E. Weeks, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 797,227, Feb. 6, 1969, abandoned. This application Nov. 10, 1970, Ser. No. 88,437
Int. Cl. A61r *7/16*
U.S. Cl. 424—50 **5 Claims**

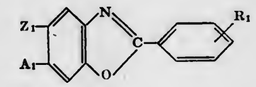
This invention relates to dental creams of improved stability containing enzymes and certain surfactants and polishing agents. A dental cream of improved stability comprises, for example, a surfactant, a potassium salt of β-(sulfo acetamido) ethyl laurate; a polishing agent, dicalcium phosphate dihydrate and a neutral protease along with other conventional dental cream ingredients.

3,696,192
PEPTIZABLE BARIUM SULFATE DENTIFRICE
Paul G. Embring, Vaksalagatan 35,, Uppsala, Sweden
Filed Feb. 17, 1970, Ser. No. 12,160
Claims priority, application Sweden, Feb. 27, 1969, 2666/1969
Int. Cl. A61r *7/16*
U.S. Cl. 424—52 **7 Claims**

The specification describes dentifrices containing sodium fluoride and particles of barium sulfate coated with tribasic sodium citrate.

3,696,193
COSMETIC PREPARATION CONTAINING 2-PHENYL-BENZOXAZOLES
Leonardo Guglielmetti, Birsfelden, and Max Duennenberger, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Continuation-in-part of Ser. No. 630,183, April 12, 1967, abandoned. This application June 2, 1971, Ser. No. 149,359
Claims priority, application Switzerland, April 21, 1966, 5811/66
Int. Cl. A61l *23/00*
U.S. Cl. 424—59 **7 Claims**

The invention relates to ultraviolet absorbers with a specific absorption range which makes them suitable for cosmetic uses. These ultraviolet absorbers correspond to the formula



where R_1 represents a hydrogen atom or an alkyl radical, one of the symbols A_1 or Z_1 is a sulphonic acid function and Z_1, when A_1 stands for one of the above-mentioned sulphonic acid functions, represents a hydrogen atom or an alkyl group, or conversely A_1 represents a hydrogen atom when Z_1 stands for one of these sulphonic acid functions.

3,696,194
ANTIBIOTIC SUBSTANCE LIBANOMYCIN
Giuseppe Cassinelli, Rivanazzo; Ernesto Cotta, Milan; Paolo Pennella, Milan, and Remo Faustini, Milan, all of Italy, assignors to Societa Farmaceutical Italian, Milan, Italy.
Continuation-in-part of Ser. No. 723,565, Apr. 23, 1968
Filed Jan. 9, 1970, Ser. No. 1,619
Claims priority, application Italy, April 28, 1967, 15470 A/67
Int. Cl. A61k *21/00*
U.S. Cl. 424—115 **6 Claims**

Described are the new antibiotic substance libanomycin, consisting of libanomycin A, libanomycin B and libanomycin C, and a process for the preparation thereof. The process is characterized in that a new microorganism of the species *Streptomyces libani* n.sp. is grown under aerobic conditions in a liquid cultural medium containing a source of carbon, of nitrogen and mineral salts, at a temperature of from 22° to 37° C, for a period of from 72 to 160 hours, at a pH of from 5 to 8.8. The antibiotic complex libanomycin thus obtained is isolated from the fermentation broth by extraction with suitable solvents and precipitation therefrom. The antibiotic complex may be separated in the three forms libanomycin A, libanomycin B and libanomycin C by column chromatography. The microorganisms used in the process have been designated as *Streptomyces libani* n. sp. F.I. 2343, *Streptomyces libani* n.sp. F.I. 2399, *Streptomyces libani* n.sp. F.I. 2501, *Streptomyces libani* n.sp. F.I. 2521 and have been deposited at the Institute of Microbiology of the Rutger University receiving the index numbers I.M.R.U. 3915, I.M.R.U. 3916, I.M.R.U. 3917, I.M.R.U. 3918.

3,696,195
STABLE AQUEOUS STEROID PHOSPHATE SOLUTIONS
Giovanbattista Crivellaro, and Bruno Crestani, both of Milan, Italy, assignors to Gruppo Lepetit S.P.A., Milan, Italy
Filed May 6, 1970, Ser. No. 35,236
Claims priority, application Italy, May 7, 1969, 16446-A/69
Int. Cl. A61k *9/00*
U.S. Cl. 424—175 **9 Claims**

Pharmaceutical compositions suitable for parenteral administration, consisting of aqueous solutions of steroid 21-

phosphate esters stabilized with a compound selected from thioglycerol and thioglycolic acid.

3,696,196

Patent Not Issued For This Number

3,696,197

PHARMACEUTICAL COMPOSITIONS CONTAINING HOMOPYRIMIDAZOLE DERIVATIVES

Zoltan Meszaros; Jozsef Knoll, and Peter Szentmiklosi, all of Budapest, Hungary, assignors to Chinoin Gyogyszen es Vegyeszeti Termekek Gyara, Budapest, Hungary

Division of Ser. No. 679,640, Nov. 1, 1967, Pat. No. 3,585,198. This application May 28, 1971, Ser. No. 148,199
Claims priority, application Hungary, Nov. 2, 1966, 670
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **1 Claim**

Analgesic and antipyretic 3-carbalkoxy or 3-carbethoxy-6,7,8,9-tetrahydro-4H-pyrido [1,2a] pyrimidin-4-ones which also have a narcosis potentiating effect.

3,696,198

TREATMENT OF ANOXIA WITH 3,5-DIALKYL HYDANTOINS

Frederick J. McCarty, 3208 W. Bruce Drive, Dresher, Pa., and Frank P. Palopoli, 811 Hilldale Road, Glenside, Pa.

Filed April 2, 1970, Ser. No. 25,274
Int. Cl. A61k *15/22*
U.S. Cl. 424—273 **3 Claims**

3,5-Diloweralkyl hydantoins have the property of prolonging the life of animals subjected to a hypoxic environment or suffering from anoxia.

3,696,199

USE OF 2-ARYL-3-ALKYLAMINOACRYLONITRILES AS FUNGICIDES

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

Filed Sept. 25, 1970, Ser. No. 75,757
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 **20 Claims**

Certain 2-aryl-3-alkylaminoacrylonitriles form a new class of fungicides. They are highly effective as soil fungicides against Fusarium oxysporium, Pythium debaryanum, Rhizoctonia solani and Sclerotium rolfsii.

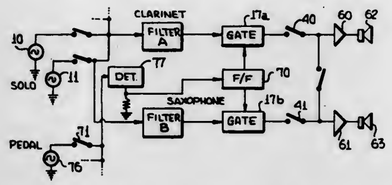
ELECTRICAL

3,696,200

AUTOMATIC SEQUENTIAL VOICING

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Division of Ser. No. 664,745, Aug. 31, 1967, Pat. No. 3,549,777. This application Oct. 27, 1970, Ser. No. 84,301. The portion of the term of this patent subsequent to Dec. 22, 1987, has been disclaimed.
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.03 **8 Claims**



System for sounding two organ voices and/or footages reiteratively in alternation. Several embodiments are provided as follows:

1. Tone is applied via a key switch to two tone color filters in parallel and outputs of the filters are applied in alternation to a loudspeaker or to separate loudspeakers.

2. Two footages are applied to distinct tone color filters and the outputs of these applied reiteratively in alternation to a loudspeaker or to separate loudspeakers.

3. Two footages of the same tone color are applied reiteratively in alternation to a loudspeaker or to separate loudspeakers.

4. Three or more tones are applied in sequence via different tone color filters to a loudspeaker.

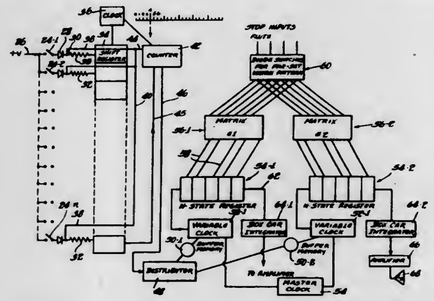
5. Solo tones proceed via one tone filter so long as pedal notes are not called for. When pedal note is played solo tone proceeds via a different tone filter.

3,696,201

DIGITAL ORGAN SYSTEM

Alvan Donald Arsem, and Harold O. Schwartz, both of North Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,650
Int. Cl. G10h *5/00*
U.S. Cl. 84—1.01 **33 Claims**



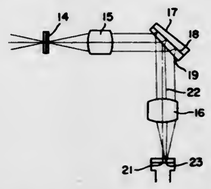
An electronic keyboard musical instrument, specifically an organ, in which the position of one or more keys depressed is indicated by a corresponding one or more binary numbers, which in turn respectively control variable clocks. The outputs of the variable clocks are applied to shift registers the outputs of which are applied to boxcar integrators to provide audio frequency outputs.

3,696,202

OPTICAL SYSTEM FOR A COLOR TELEVISION CAMERA

Minoru Mori, and Toshiro Kishikawa, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Filed Oct. 8, 1970, Ser. No. 79,110
Claims priority, application Japan, Oct. 16, 1969, 44/83039
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **7 Claims**



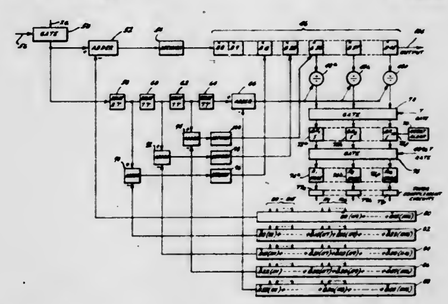
A color television camera, comprising a taking lens, an image tube having a photoelectric surface, a monochrome stripe filter positioned at the focal point of said taking lens, a relay lens to form the light passing through said filter into a parallel light, dichroic means having three dichroic surfaces for separating the light from said relay lens into three color lights and directing said respective color lights at angles slightly from each other, and a second relay lens for focussing the ray pencil from said dichroic means on the photoelectric surface of said image tube.

3,696,203

ADAPTIVE MODEM RECEIVER

Jay F. Leonard, Ambler, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 3, 1970, Ser. No. 43,125
Int. Cl. H04l *15/24*
U.S. Cl. 178—88 **3 Claims**

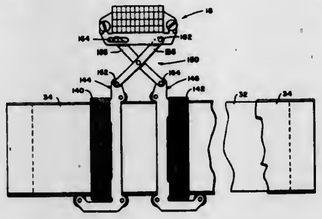


A modem receiver which provides a measure of transmission channel signal distortion characteristic without the need of transmitted reference pulses by generating in succession progressively more refined estimates of the proper form of received signal, correlating the best estimate of the received signal with a signal representative of signal channel distortion generated over many symbol periods, and utilizing the results of said correlation to form said progressively more refined estimates.

3,696,204
TYPE CARRIER ASSEMBLY

Alan G. Wallskog, Prospect Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 28, 1970, Ser. No. 41,335
Int. Cl. H04l 15/24, 15/34, 17/16
U.S. Cl. 178—27 14 Claims



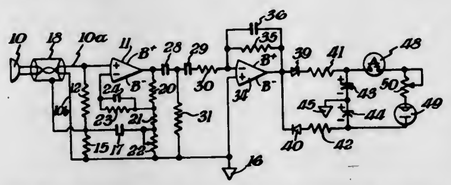
Drivable type dies of a teleprinter are supported in intersecting rows and columns from a type carrier which is arranged for adjustment in intersecting paths at successive stations to which the carrier is moved for presenting any selected die in a position for character reproduction. Adjustment and movement of the carrier and translocation of an impeller to successive printing stations for driving successively selected dies between print and non-print modes results from magnetomotive phenomena generated by a linear electric motor.

3,696,205
Patent Not Issued For This Number

3,696,206
AUDIO DOSIMETER

Edward S. Ida; Alfred Lechner, both of Newark, and James L. Parsons, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 27, 1970, Ser. No. 93,167
Int. Cl. G10l 1/00; G01h 3/12
U.S. Cl. 179—1 N 2 Claims



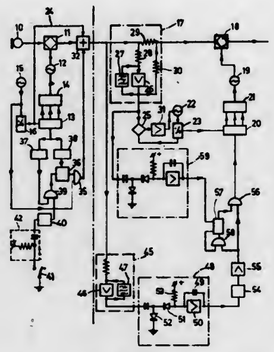
An audio dosimeter for individual use determining exposure to sound energy as a function of both frequency and pressure level, with integration over the time of exposure and incorporating storage means preserving a quantitative measure of the exposure.

3,696,207
SYSTEM FOR THE TRANSMISSION OF INTELLIGENCE BY MEANS OF SCRAMBLED AUDIOSIGNALS

Seth Johan Ronald Lundin, Vallingby, and Bengt Harry Bjorkman, Sollentuna, both of Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1970, Ser. No. 34,728
Claims priority, application Sweden, May 14, 1969, 6920/69; May 14, 1969, 6921/69
Int. Cl. H04m 1/70
U.S. Cl. 179—1.5 S 6 Claims

A system for the transmission of intelligence signals by means of scrambled audio signals comprising a transmitter, that employs the frequency shift generator to also produce a control signal that is added to the scrambled audio signals to be transmitted to the receiver. The receiver separates the control signal from the scrambled audio signals and employs this



control signal to synchronize the receiver with the transmitter thereby effecting the demodulation of the scrambled audio signals by the receiver.

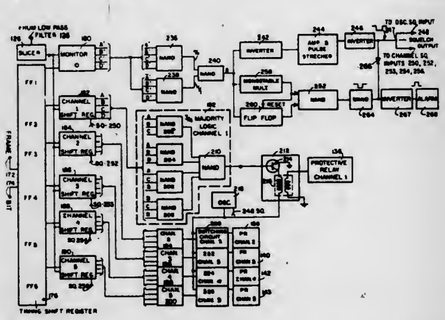
3,696,208
Patent Not Issued For This Number

3,696,209
Patent Not Issued For This Number

3,696,210
DATA TRANSFERRING SYSTEM UTILIZING A MONITOR CHANNEL AND LOGIC CIRCUITRY TO ASSURE SECURE DATA COMMUNICATION

James W. Peterson, Elmhurst, and John A. Tempka, Glenview, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 6, 1970, Ser. No. 61,729
Int. Cl. H04j 3/00
U.S. Cl. 179—15 BF 22 Claims



The transmitter-encoder of the data transferring system utilizes polybinary, correlative encoding to develop an information carrying signal, which includes a monitor signal having a known data code, and data from a plurality of sources. The encoding techniques facilitates redundant bit transmission in a constrained bandwidth. The receiver-decoder includes monitor channel logic circuitry which determines whether the decoded signal is free from error. Moreover, each of the data

decoding channels utilizes majority logic to verify that a particular control initiating signal is being received before the control signal is applied to data utilization devices associated therewith. If one error is detected in the monitor signal, the data channels are squelched for a first predetermined period of time thus preventing erroneous control signals from being applied to the utilization devices. If more than one error is detected in the monitor signal within a second predetermined period of time the data channels are squelched for a third predetermined period of time and an alarm is activated by the monitor channel-logic circuitry. As a result, the system provides security against abnormal transmission characteristics.

3,696,211
Patent Not Issued For This Number

3,696,212
Patent Not Issued For This Number

3,696,213
Patent Not Issued For This Number

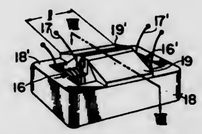
3,696,214
Patent Not Issued For This Number

3,696,215
Patent Not Issued For This Number

3,696,216
SCANNING MAGNETIC HEAD

Hiroshi Sugaya, Suita, and Kenji Kanai, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 25, 1970, Ser. No. 49,740
Claims priority, application Japan, July 2, 1969, 44/53631
Int. Cl. G11b 5/20, 5/30, 5/02
U.S. Cl. 179—100.2 C (11 Claims

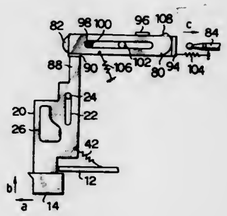


A scanning magnetic head with a closed magnetic circuit including a head gap impressed with a recording signal magnetic field. A pair of closed magnetic circuits respectively including a part of the closed magnetic circuit are provided on the opposite sides of the head gap. The magnetic head is impressed with a pair of symmetrical form of the scanning magnetic fields on the opposite sides thereof so that the influence of the scanning magnetic field on the recording medium may be reduced.

3,696,217
DEVICE USING A RECORDING JACK FOR PREVENTING ERASURE OF RECORDED INFORMATION FROM MAGNETIC TAPE IN A TAPE RECORDER

Kazuyasu Motoyama; Ryoichi Sawaki, and Takeaki Nakamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1970, Ser. No. 63,072
Claims priority, application Japan, Aug. 14, 1969, 44/63882
Int. Cl. G11b 5/54, 15/04
U.S. Cl. 179—100.2 D 8 Claims

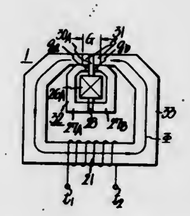


A device for preventing information recorded on the magnetic tape of a tape recorder from being inadvertently erased. The device comprises a first slidable lever having an erasing head, a second slidable lever having a recording and reproducing head for selective movement together with said first lever for recording, or, independently of the first lever, a slidable stop lever for releasing and returning the first and second levers to their initial inoperative positions and locking mechanism for locking the first lever and being controlled and released by a recording jack or recording and reproducing connector.

3,696,218
MAGNETIC FLUX-RESPONSIVE HEADS

Saburo Uemura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 31, 1970, Ser. No. 68,327
Claims priority, application Japan, Sept. 4, 1969, 44/70116
Int. Cl. G11b 5/34; G01r 33/02
U.S. Cl. 179—100.2 CF 6 Claims

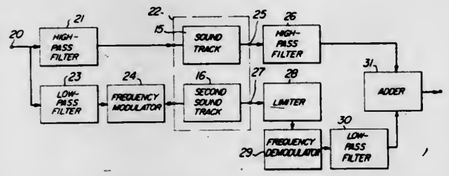


An improved dual-gap magnetic flux-responsive head which can be used not only for detecting reference magnetizations previously formed but also for making the reference magnetizations on a magnetic medium. The improved head has respective coil members on its magnetic core and yoke assembly for producing magnetic flux to detect the magnetizations and to make the magnetizations.

3,696,219
CONTACT-COPYING METHOD FOR REPRODUCING A MAGNETIC TAPE

Ichiro Arimura, Kyoto, and Kouzo Kurashina, Moriguchi, both of Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 8, 1970, Ser. No. 79,078
Claims priority, application Japan, Oct. 14, 1969, 44/82448; Oct. 29, 1969, 44/87041; Oct. 29, 1969, 44/87051; Dec. 11, 1969, 44/99947
Int. Cl. G11b 5/86, 5/44, 5/04
U.S. Cl. 179—100.2 E 6 Claims

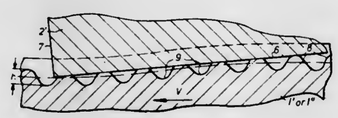


Contact-copying method for producing a tape copied from an original tape comprising the steps of modulating with a high-frequency carrier those low-frequency components of the information signals to be recorded which cannot be efficiently copied on the tape by the contact-copying method, recording the modulated signal on the original tape, laminating the original tape with the tape to be copied so that the magnetic surfaces of both tapes are in close contact with each other, and impressing a magnetic field on the lamination of both tapes thereby transfering the recorded signal on the original tape to the tape to be copied.

3,696,220
RECORD DISC HAVING ELASTIC DEFORMATION BY THE PICKUP

Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 5, 1970, Ser. No. 87,064
Int. Cl. G11b 3/10, 3/70
U.S. Cl. 179—100.4 R 8 Claims



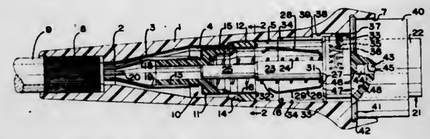
A record disc containing grooves whose walls undulate to constitute a spatial representation of the time variation of a signal to be reproduced by means of a pressure responsive playback head carrying a stylus which engages in the groove and elastically deforms the groove walls to a substantial degree, the resulting elastic restoring force being sensed by the head, the disc having a modulus of elasticity of no more than 10,000 Kgf/cm².

3,696,221
Patent Not Issued For This Number

3,696,222
LATCHABLE RECIPROCATING SWITCH CONSTRUCTION

John P. Langan, Detroit, and Charles R. Cobbeldick, Garden City, both of Mich., assignors to Essex International Inc.

Filed Sept. 9, 1970, Ser. No. 70,821
Int. Cl. H01h 3/20, 9/20
U.S. Cl. 200—16 R 13 Claims

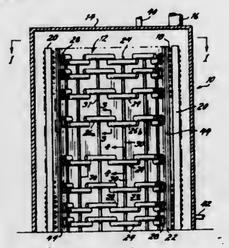


A switch having an axially reciprocable actuator movable from a projected position to a number of retracted positions and return, and which carries conductive elements engageable and disengageable with fixed contacts in response to movements of the actuator. The actuator normally is latched in its projected position in which none of the conductive elements engage the contacts, but operating means is provided for releasing the latch and simultaneously shifting the actuator to an intermediate or partially retracted position in which engagement between at least one of the conductive elements and the fixed contacts is effected, and from which the actuator is movable to its fully retracted position. As the actuator is moved to its fully retracted position at least one of the conductive elements is deflected so as to disengage it and the fixed contacts.

3,696,223
SUSCEPTOR

James F. Metcalf, Willingboro, and Robert H. Klingerman, Medford Lakes, both of N.J., assignors to Cragmet Corporation, Rancocas, N.J.

Filed Oct. 5, 1970, Ser. No. 77,789
Int. Cl. H05b 5/00
U.S. Cl. 219—10.49 12 Claims



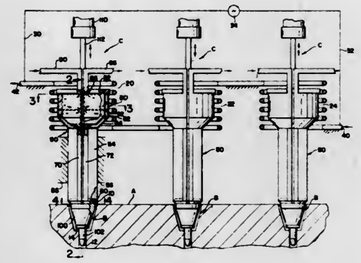
A susceptor for inclusion in an inductive heating system is built up from a plurality of modules consisting of rings of conductive material such as graphite. The modules are assembled so as to define a susceptor made of rings or similar structure spaced one from the other so that the susceptor structure has a substantially reduced mass.

3,696,224
TRANSFORMER & INDUCTOR UNIT FOR HEATING VALVE SEATS

John C. Lewis, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries Inc., Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,496
Int. Cl. H05b 5/00, 9/02; H01f 21/06
U.S. Cl. 219—10.57 3 Claims

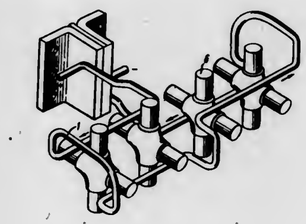
An induction heating device for inductively heating the conical surface of a valve seat in an engine block for subsequent quench hardening including a fixed multi-turn transformer primary winding having a central opening and a carrier having both the secondary of the transformer and the inductor mounted thereon wherein the carrier is selectively shiftable between a first position with the inductor spaced away from the valve seat and a second position with the inductor magnetically coupled to the valve seat and with the secondary then within the primary.



3,696,225
APPARATUS FOR THERMAL TREATMENT OF METAL PARTS BY ELECTRIC INDUCTION HEATING

Veniamin Davidovich Kalner; Anatoly Georgievich Orlovsky, Grigory Arkadievich Ostrovsky, Alexandr Moiseevich Ryskind, Victor Nikolaevich Semenov, Anatoly Loginovich Stepin, Mikhail Andreevich Surov, Konstantin Zakharovich Shepelyakovsky, and Isaak Nakhimovich Shklyarov, all of Moscow, U.S.S.R., assignors to Moskovisky dvazhdy ardena Lenina i ordena Trudovogo Krasnogo Znameni Avtomobilng Zavod imeni I.A. Likhacheva, Moscow, U.S.S.R.

Filed June 10, 1970, Ser. No. 45,005
Claims priority, application U.S.S.R., June 17, 1969, 1336662
Int. Cl. H05b 69/06
U.S. Cl. 219—10.79 4 Claims



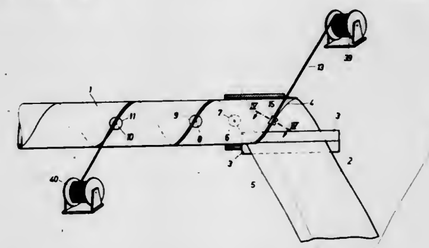
The present invention relates to an apparatus for heat treating metallic work pieces and local electric tempering of in particular cross members of universal joints, the apparatus comprising an inductor effect electric induction heating of the work-pieces.

According to the present invention, the inductor of such an apparatus includes a pair of serially connected sections, each section including at least two electric conductors lying in a plane and connected for electric current to flow therealong in opposite directions, the plane of the conductors of one section intersecting the plane of the other section at substantially right angles.

3,696,226
HELICAL SEAM FOLLOWER AND WELDER

Adalbert Sablotny, Hagen-Vorhalle, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Division of Ser. No. 769,579, Oct. 22, 1968, Pat. No. 3,557,335. This application Sept. 16, 1970, Ser. No. 72,882
Claims priority, application Germany, Oct. 27, 1967, P 16 52 938.1
Int. Cl. B23k 11/02
U.S. Cl. 219—62 1 Claim

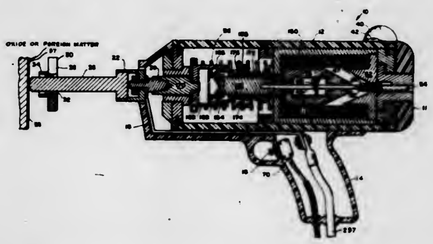


Apparatus of producing or testing with a welding or testing instrument welded spiral-seamed tubes formed of a steel band, which comprises rolling a steel band in a continuous spiral so as to form a rotating tube-shaped body; placing on the steel band at a constant spacing from an edge of the steel band extending toward a given welding location thereon, a premagnetized tape containing a ferromagnetic material adhering to the steel band and carrying a marking line disposed parallel to the edge of the steel band; sensing the marking line and regulating in accordance therewith the orientation of at least one of the welding and testing instruments with respect to the edge of the steel band so that the instrument and the given welding location are momentarily in registry as the tube-shaped body rotates; and withdrawing the premagnetized tape from the steel band after the steel band edge of the tube-shaped body has rotated past a second one of the instruments in the travel direction of the steel band edge; and apparatus for carrying out the method

3,696,227
STUD WELDING GUN METHOD

Carl M. Wenrich, Reading, and Bernard W. Downs, Elverson, both of Pa., assignors to Weld-Record Corporation, Reading, Pa.

Continuation of Ser. No. 820,797, May 1, 1969, which is a division of Ser. No. 424,743, Jan. 11, 1965, Pat. No. 3,456,090. This application Sept. 21, 1970, Ser. No. 74,101
Int. Cl. B23k 9/20
U.S. Cl. 219—99 3 Claims



A method for operating a stud welding gun having a reciprocable stud supporting chuck mounted on an actuating shaft, which method involves forcibly accelerating the shaft forwardly by electro-magnetic means to strike the work and penetrate any surface coating thereon to make metallic con-

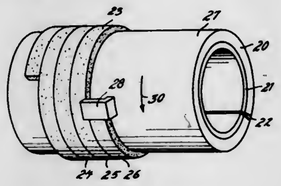
tact before applying welding current through the chuck and stud, and after a short time period, applying full welding current while retracting the stud from the work to draw an arc, and thereafter interrupting the welding current and moving the stud into the molten metal to form a "soft plunge" and weld.

3,696,228

PRESSURE VESSEL AND METHOD OF MAKING

Royal David Thomas, Jr., Narberth, and James E. Norcross, Media, both of Pa., assignors to Arcos Corporation, Philadelphia, Pa.

Filed Sept. 24, 1970, Ser. No. 74,974
Int. Cl. B23k 9/04
U.S. Cl. 219—76 **2 Claims**



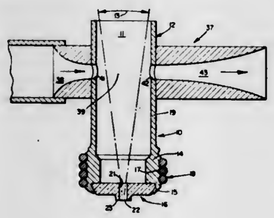
A pressure vessel with corrosion resistant lining and inexpensive overall is constructed in two steps. First a thin-walled vessel is prepared from integrally clad plate by conventional means, the cladding thus being of controlled quality, thickness and well bonded to the backing metal. Then the thickness of the backing metal is built up to the desired dimension preferably by electroslag deposition in the continuous casting process. The electroslag layer bonds to the backing layer without penetrating to the inner layer, and thus preserves the corrosion resistance of the lining. Heavy tube sheets are prepared in similar manner by depositing additional backing metal behind a clad metal plate.

3,696,229

BONDING TOOL FOR THROUGH THE TOOL OBSERVATION BONDING AND METHOD OF BONDING

Thomas L. Angelucci, 89 Charlaan Circle, Cherry Hill, N.J., and Frederick W. Kulicke, Jr., 3840 Oak Road, Philadelphia, Pa.

Filed April 14, 1970, Ser. No. 28,338
Int. Cl. B23k 1/04
U.S. Cl. 219—85 **13 Claims**



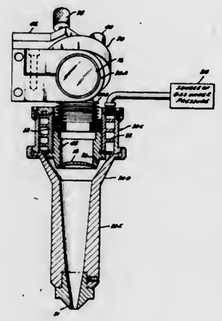
A tool for selecting, picking up and/or bonding semiconductor devices to a substrate or carrier, said tool having a bonding wedge which has a central observation window permitting the operator or scanner to simultaneously observe the bonding tool, the connection points on the semiconductor device and the conductors on the substrate or carrier to which the connection points are attached.

3,696,230

LASER LENS COOLING AND CLEANING SYSTEM

Howard R. Friedrich, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 19, 1970, Ser. No. 3,627
Int. Cl. B23k 27/00
U.S. Cl. 219—121 L **4 Claims**



The beam from a laser is focused, by means of a lens, onto a material which is to be burned thereby. The lens is supported in a housing which, among other functions, operates as a heat sink for the lens. Further, the housing is shaped so that a gas which is applied, from a source under pressure, to the housing, cools the housing, flows over the lens surfaces, and thereafter is directed at the location where the burning occurs to insure that none of the products resulting therefrom can reach the surface of the lens, and also to either assist the burning operation of the laser beam, or to confine it. Since the gas which is introduced into the housing is at a pressure greater than atmosphere it prevents its entrance into the housing of any particles that may dirty the laser lens or a mirror which is disposed in the housing to reflect the lens beam towards the material.

3,696,231

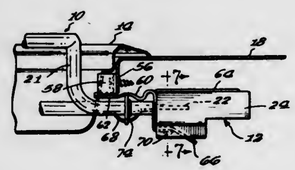
Patent Not Issued For This Number

3,696,232

RANGE APPARATUS

Fred G. Salinger, Baltimore, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 11, 1971, Ser. No. 152,301
Int. Cl. H05b 3/08, 3/68
U.S. Cl. 219—451 **13 Claims**



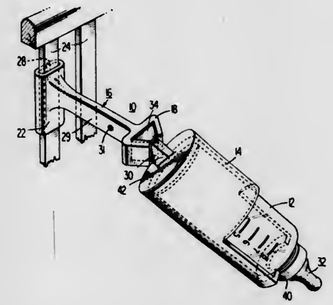
An electric surface unit which is removable from the electric range yet also capable of movement between a horizontal position of operation and an inclined non-operative position. The movement between positions being permitted by implementation of a terminal receptacle carried by the range and providing a bracket socket for intercooperation with an element on the sheath of said surface unit.

3,696,233

HOLDER DEVICE FOR INFANT'S NURSING BOTTLE

Gary Raymond Pulsifer, 11 Keven Lane, East Greenbush, N.Y.

Filed April 6, 1970, Ser. No. 25,861
Int. Cl. H05b 1/00; A47d 15/00
U.S. Cl. 219—535 **22 Claims**



A novel infant-feeding device comprising a receptacle member and means for holding the receptacle member in proximity to the infant. The receptacle member includes an opening whereby the bottle can be introduced therein and a slotted end wall portion, in which slot the neck portion of the bottle nests, the slot width being less than the diameter of the main body portion of the bottle. The feeding device can further comprise a cover member that is adapted to be removably disposed on the receptacle member such that the opening at the receptacle member is substantially completely closed. The cover member includes a slotted wall portion, the slot being located such that it is in substantial register with the slot of the receptacle member when the cover member is disposed thereon.

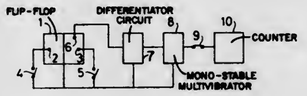
The receptacle member may be provided with electrical resistance heating means, the above-mentioned cover member, and/or a sheet of heat insulating material (including heat reflecting material) on a surface thereof to maintain the nursing bottle and its contents at an elevated temperature. Also, the cover member may be provided with such a sheet of heat insulating material.

3,696,234

WORD NUMBER COUNTING DEVICE

Emiko Yamashita, 6-50-315, 1-chome, Akabanedai, Kita-ku, Tokyo, and Kyohei Fujimoto, Yokohama, both of Japan, assignors to said Yamashita, by Fujimoto

Filed Oct. 20, 1970, Ser. No. 82,441
Claims priority, application Japan, Oct. 25, 1969, 44/85009
Int. Cl. H03k 21/04
U.S. Cl. 235—92 AC **2 Claims**



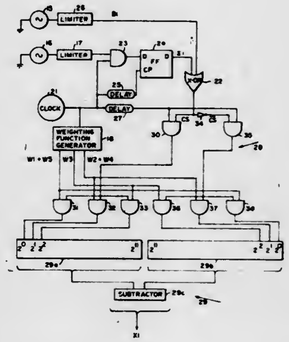
A word number counting device to be used in conjunction with a typewriter comprising an electronic circuit activated to advance a counter upon the depression of at least one of the type keys after the depression of either the space bar or carriage return or line space lever.

3,696,235

DIGITAL FILTER USING WEIGHTING

Donald W. Tufts, East Greenwich, R.I.; Ralph E. Burt, Reeds Ferry; Victor I. Davis, Jr., Milford, both of N.H.; James F. Queenan, Lowell; Richard A. Maloon, Chelmsford, both of Mass., and David W. Waterman, Amherst, N.H., assignors to Sanders Associates, Inc., South Nashua, N.H.

Filed June 22, 1970, Ser. No. 48,398
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **3 Claims**



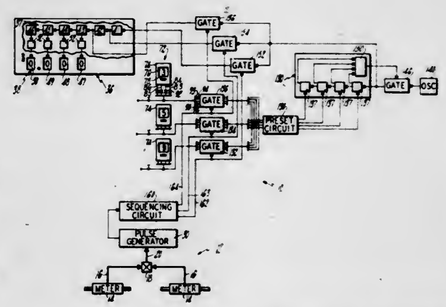
Digital filter apparatus in which a set of weighting signal samples to be multiplied in the filter has values which are exactly powers of two such that the filter multiplier network may be comprised of simple signal routing circuits.

3,696,236

COMPUTING DEVICE

Crawford M. Kus, Vernon, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

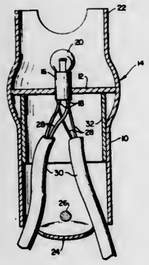
Filed Aug. 17, 1970, Ser. No. 64,278
Int. Cl. G06f 15/56, 7/52
U.S. Cl. 235—151.34 **16 Claims**



A computing device for a multiple product gasoline dispensing system having a cost counter for accumulating the cost of gasoline dispensed, a bank of three price decade switches for each gasoline product settable for establishing the amounts of the three places respectively of a three place unit volume price, and a pulse generator for generating a pulse for each one-hundredth of a unit volume of gasoline dispensed. A sequencing circuit is operated by each pulse to sequentially set a binary predetermining counter at the straight binary complement of the amount established by each decade switch for the gasoline product being delivered and an oscillator is gated to index the predetermining counter from such setting to a maximum count and simultaneously index the cost counter to

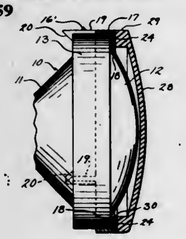
enter such amount into the cost counter at a level corresponding to its order of significance in the unit volume price.

3,696,237
ROAD MARKINGS
Bernard Whitehead, 25 N. Park Road, Bradford 9, England
Filed Jan. 7, 1970, Ser. No. 1,206
Claims priority, application Great Britain, Jan. 11, 1969, 1,758/69
Int. Cl. F21
U.S. Cl. 240—1 **8 Claims**



A lamp for road marking comprising a deformable preferably resilient translucent tubular holder, a lamp bulb within the holder being carried by a rigid transverse mounting disc preferably force fitted within the holder so as to provide an externally dilated wall portion wherein the disc is longitudinally retained. The lamps may be mounted in spaced hazard cones with the bulbs connected in parallel.

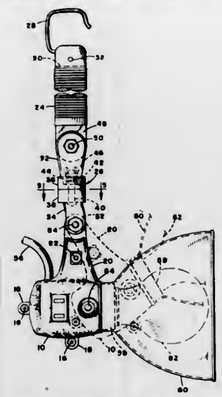
3,696,238
DUAL PURPOSE LUMINOUS HEADLIGHT SAFETY RING AND FOG LENS ATTACHMENT MEANS
Ronald Szymanski, 19019 W. Coffee Road, New Berlin, Wis.
Filed Oct. 21, 1970, Ser. No. 82,689
Int. Cl. F21v *9/08*
U.S. Cl. 240—46.59 **1 Claim**



A flexible ring is provided which can be readily removably clipped onto and surrounding a vehicle headlight to detachably magnetically secure a tinted translucent lens over the headlight to aid in driving in fog or inclement weather, and which novel ring attachment is provided with a luminous reflective surface adapted to warn an approaching motorist in the event one of the headlights on the vehicle is burned out or inoperative, as well as alerting oncoming motorists of the location of a parked car at night, thus permitting the advantageous use of said ring device even without said removable fog lens.

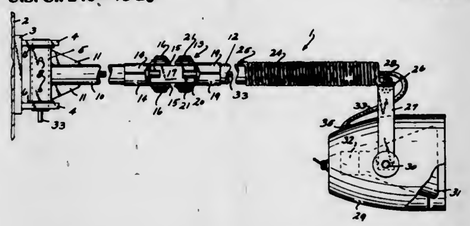
3,696,239
MECHANIC'S LIGHT
James J. Duddy, 154 Medcalf St., Lima, Ohio
Filed June 3, 1971, Ser. No. 149,730
Int. Cl. F21l *15/20*
U.S. Cl. 240—52.3 **4 Claims**

A mechanic's light comprising an electric light socket connected by a swivel connection to one end of a handle-like member to permit pivotal movement between the socket and member about axes extending transversely to each other. The opposite end of the handle-like member has a hook connected



thereto for attaching the light to a convenient object for support thereby and permit precise adjustment of the socket to project light accurately onto a desired area or object.

3,696,240
LIGHT FIXTURE FOR A LOADING DOCK
Roderick B. Potter, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.
Filed July 23, 1970, Ser. No. 57,511
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 BJ **8 Claims**

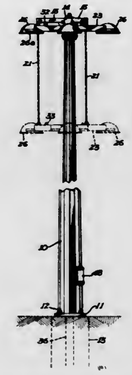


A light fixture for a loading dock. The light fixture includes an inner arm which is mounted for pivotal movement with respect to a fixed support, and an outer arm is pivotally connected to the outer end of the inner arm by a tubular coupling. A shell in which a light bulb is mounted is connected to the outer arm by a tension spring which provides shock absorbing characteristics for the shell. The arms are arranged to pivot in a common plane from an extended position in which the outer arm is located in axial alignment with the inner arm to a retracted or folded position in which the outer arm is located parallel to the inner arm. An electrical cord extends through the hollow inner arm, through a passage in the coupling, through the hollow outer arm and spring and is connected to the bulb in the shell.

3,696,241
LIGHT FIXTURE TOWER
Roy E. Meyer, and Daniel L. Stember, both of Red Wing, Minn., assignors to Meyer Manufacturing, Inc., Red Wing, Minn.
Filed July 16, 1970, Ser. No. 55,416
Int. Cl. F21s *3/10*
U.S. Cl. 240—84 **7 Claims**

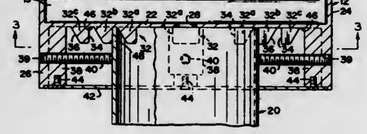
A tower and support for mounting electric light fixtures at elevations up to and exceeding 100 feet above ground level;

the fixtures being supported on a separate fixture frame supported on cables confined within the tower and to be lowered for maintenance and service work on the fixtures; the power



supplying cable being anchored to the counterweight and traveling upwardly with the counterweight and support cables and being detachably connected to the power source at the base of the tower.

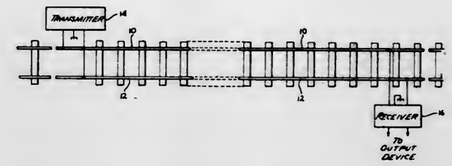
3,696,242
CONNECTOR FOR A POST-MOUNTED LIGHTING FIXTURE
Leon R. Patry, 3977 Medina Road, Medina, Ohio
Filed June 15, 1971, Ser. No. 153,253
Int. Cl. F21s *1/12*; F21v *3/02*
U.S. Cl. 240—84 **10 Claims**



A mounting base for attaching a lighting fixture to the end of a round or square tubular post. The mounting base has a flat wall on which the lamp socket is mounted and a downwardly extending apron. The lower surface of the wall is provided with a plurality of series of lugs with the lugs of each series being radially aligned with one another and located a successively greater distance from the center of the plate. The radially inner faces of the lugs are substantially perpendicular to the flat wall and are spaced radially from the center of the wall by distances equal to the successively greater external diameters of the tubular posts. Set screws carried by the apron portion of the mounting base engage the outer surface of the post to clamp the mounting base to the post.

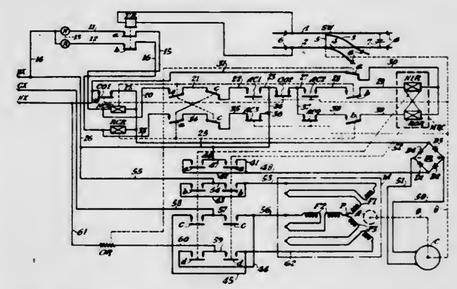
3,696,243
BROKEN RAIL DETECTOR
Richard E. Risely, Riverside, Calif., assignor to Marquardt Industrial Products Co., Cucamonga, Calif.
Filed Aug. 26, 1970, Ser. No. 67,076
Int. Cl. B61l *23/04*
U.S. Cl. 246—121 **12 Claims**

Herein described is apparatus for detecting a broken rail in a pair of railroad rails. The apparatus includes a transmitter which provides pulses of a predetermined code to a relay which intermittently, according to the code, applies electrical energy to each track at different polarities. A receiver receives



the coded energy at a position remote from the transmitter and change in the received code indicates to the transmitter that a change in the track characteristics has occurred.

3,696,244
POWER OPERATED RAILWAY SWITCH MACHINE CONTROL CIRCUIT
David H. Hamley, Edgewood, and Lyle L. Hylen, Wilkinsburg, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Sept. 30, 1970, Ser. No. 76,719
Int. Cl. B61l *5/00*
U.S. Cl. 246—242 **9 Claims**

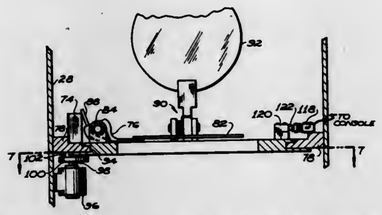


This disclosure relates to an electric motor control circuit for electrically power operated trailable railway switches for use in classification yards. The motor control circuit includes normal and reverse control relays which receive and store the command signals. The normal and reverse relays are adapted to energize a motor reversing contactor having a pair of interlocked relays. The interlocked relays include a plurality of bar type contacts which are adapted to energize an electromagnetic clutch and an electric motor for driving the switch points to their extreme positions. An overload device and manual cutout switch are arranged to deactivate the motor control circuit during a motor overload condition and during manual manipulation of the railway switch.

3,696,245
VIEWING SCREEN MECHANISM FOR ELECTRON MICROSCOPE
George William Browning, Gt. Chesterford, England, assignor to Associated Electrical Industries Limited, London, England
Filed April 28, 1970, Ser. No. 32,749
Claims priority, application Great Britain, June 17, 1969, 30,656/69
Int. Cl. H01j *37/26*; G01n *23/00*
U.S. Cl. 250—49.5 E **12 Claims**

An electron microscope comprising a microscope chamber having a viewing screen positioned within the chamber and

mounted for movement to at least a first position away from a beam of electrons or a second position in which electrons passing through an object or specimen are intercepted by the



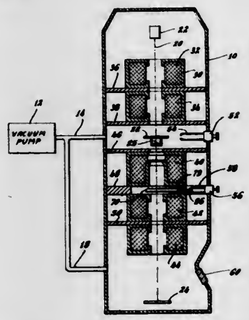
viewing screen to thereby produce an image. A drive motor is coupled to the viewing screen for moving the screen to either the first or the second position.

3,696,246

SPECIMEN ANALYSIS IN AN ELECTRON MICROSCOPE

Robert Buchanan, Los Altos, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 25, 1970, Ser. No. 66,787
Int. Cl. H01j *37/26*; G01n *23/00*
U.S. Cl. 250—49.5 A **1 Claim**



A specimen which is to be analyzed is initially introduced to an electron microscope housing at a location along the electron beam path between the objective lens and subsequent projection lenses in order to provide a smaller magnification relative to the magnification provided with the specimen in the normal object plane of the objective lens, but which provides greater mechanical facility in effecting the entry and removal of the specimen from the housing. While entry at this location results in less magnification of the specimen and image resolution, it is nonetheless suitable for a survey of the specimen in order to determine the adequacy of the specimen for analysis at the object plane.

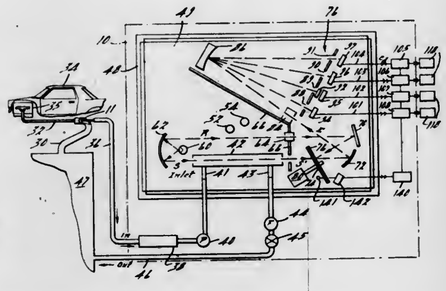
3,696,247

VEHICLE EXHAUST EMISSIONS ANALYZER

Lionel D. McIntosh, 2101 Lufkin Drive, N.W., Huntsville, Ala., and Daniel E. Weber, 6421 Marsh Ave., both of Huntsville, Ala.

Filed Nov. 12, 1970, Ser. No. 88,784
Int. Cl. G01j *3/42*; G01n *21/12, 21/26*
U.S. Cl. 250—83.3 H **11 Claims**

An infrared absorption analyzer for measuring the concentration of CO, CO_2, H-C and NO in a stream of vehicle exhaust emissions passing through the same sampling cell. The analyzer employs a single source of infrared radiation and a double beam optical comparator system, which is common to and shared by all of the measuring channels, and a dispersive type spectrophotometer, which has a plurality of exit slits and a single entrance slit through which it is alternately excited by



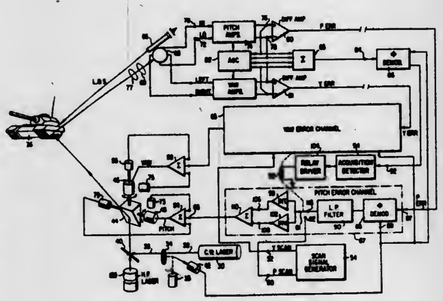
respective ones of the beams, one of which passes through the sampling analytical cell.

3,696,248

LASER TRACKING METHOD AND APPARATUS

Robert A. Cunningham, Lake Park, and John T. Winkler, Orlando, both of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 66,955
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 R **19 Claims**



A device and method for remotely positioning a device utilized to illuminate a remote target. The illuminating device is scanned until illumination is detected in the field of view of a detector sighted on the remote target. On acquisition of the illumination, the scan signals are replaced by error signals related to the departure of the detected illumination from the target sight axis and the illuminating device positioned responsively thereto.

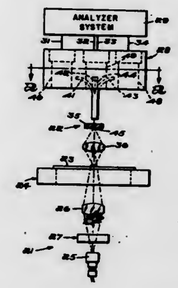
3,696,249

DETAIL BOUNDARY DETECTION SYSTEMS

John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 14, 1970, Ser. No. 71,816
Int. Cl. H04j *39/12*
U.S. Cl. 250—220 M **26 Claims**

Disclosed are detection systems that systematically scan given areas of an object to locate detail boundaries therein. The systems compare radiant energy levels emanating from two-dimensionally spaced apart sub-divisions of each scanned area so as to produce an output signal that represents energy



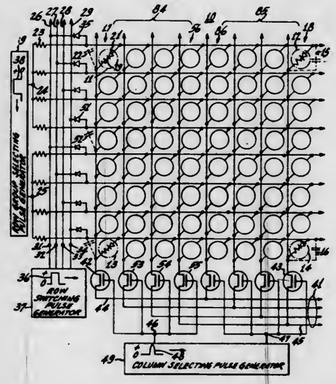
level gradients but is independent of gradient orientation with respect to the direction of scan.

3,696,250

SIGNAL TRANSFER SYSTEM FOR PANEL TYPE IMAGE SENSOR

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 17, 1970, Ser. No. 72,944
Int. Cl. H01j *39/12*
U.S. Cl. 250—220 MX **14 Claims**



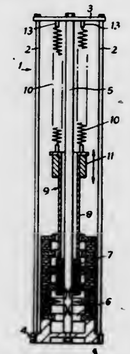
The image information producing photosensitive elements of the sensor, which are arranged in rows and columns, are addressed row-by-row and column group-by-column group to decode the information. The signal information from a group of elements in a row is impressed simultaneously upon a like group of signal processing circuits, with each of which is associated a pair of signal storage devices, each having an input gate and an output gate. The input gates for one set of corresponding storage devices are concurrently operated to impress a group of signals simultaneously upon these storage devices during a given time period while the output gates for the other set of corresponding storage devices are operated sequentially to transfer the signals stored in the other set of storage devices to the output circuit. The operation of the input and output gates is reversed in the succeeding time period and this alternating operation continues until the information from all of the sensor elements is transferred to the output circuit.

3,696,251

METHOD OF GENERATING ELECTRICITY AND ELECTRICAL GENERATOR

James David Last, Llanfairfechan, and David N. E. Rowe, Great Baddow, both of England, assignors to University College of North Wales, Bangor, North Wales

Filed June 30, 1970, Ser. No. 51,281
Claims priority, application Great Britain, June 30, 1969, 33019/69
Int. Cl. F03b *13/12*
U.S. Cl. 290—53 **7 Claims**



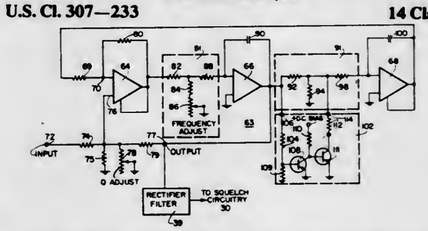
An electric generator for deriving electrical energy from oscillatory motion such as that of buoys, vehicles and animals. The generator has a stator and an armature coupled together by spring means and effective to generate current when bodily movement of the generator causes, by inertia effects, relative movement of the armature and stator. Particular application is in powering oceanographic buoys.

3,696,252

ACTIVE FILTER FOR SELECTING AND CONTROLLING SIGNALS

Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 20, 1970, Ser. No. 91,306
Int. Cl. H03k *1/16*
U.S. Cl. 307—233 **14 Claims**

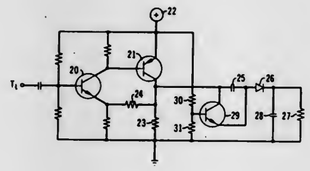


The signal control circuit utilizes an active, bandpass filter having a first resonant frequency virtually equal to the frequency of a first input signal selected thereby. An amplitude responsive circuit changes the resonant frequency of the filter to a second predetermined value during the times that the instantaneous magnitude of the output signal, provided in response to the first input signal, exceeds a threshold level. This action maintains the amplitude of the output signal at a substantially constant level even though the amplitude of the first input signal is varying. Moreover, the threshold level and second resonant frequency are chosen so that the phase difference between the first input signal and the output signal remains relatively constant even though the frequency of the first input signal is varying so that the output signal can be damped out by a second input signal having a selected phase relationship to the first input signal.

3,696,253
PEAK-TO-PEAK ALTERNATING CURRENT SIGNAL DETECTOR

Cecil Winston Deisch, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 7, 1971, Ser. No. 150,346
Int. Cl. H03k 5/20
U.S. Cl. 307—235 2 Claims

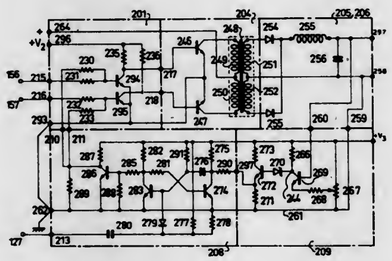


A peak-to-peak alternating current signal detector for reducing the current drain of the input supply and improving the accuracy of the output voltage regulation. The parallel diode rectifier of a conventional half-wave voltage doubler circuit is replaced by a transistor having its emitter-collector circuit connected across the series capacitor of the doubler. Instead of depending upon the quiescent bias of the supply to provide the extensive current demanded to discharge the series capacitor during one of the alternations of the applied signal, the latter capacitor is discharged through the emitter-collector circuit of the transistor.

3,696,254
MONOSTABLE MULTIVIBRATOR

Gianni Bertolini, and Mario Vinsani, both of Milan, Italy, assignors to Olivetti-General Electric S.p.A., Caluso (Torino), Italy

Division of Ser. No. 876,207, Dec. 1, 1969, Pat. No. 3,588,666, which is a continuation of Ser. No. 639,495, May 18, 1967, abandoned. This application June 26, 1970, Ser. No. 59,857
Int. Cl. H03k 3/284
U.S. Cl. 307—273 8 Claims

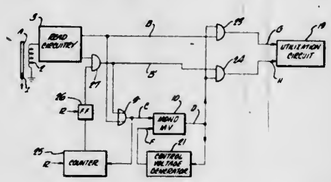


A monostable multivibrator circuit is disclosed which provides variable duration voltage pulses linearly proportional to a variable control source. A capacitor, precharged to the voltage of the variable control source, determines the time duration of the unstable state for the monostable multivibrator circuit.

3,696,255
BINARY DATA HANDLING SYSTEM

Chia-Cheng King, Thousand Oaks; Arnold J. Jorgensen, San Jose, and Michael I. Behr, South Pasadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 888,144, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 668,319, Sept. 18, 1967, abandoned. This application Nov. 2, 1970, Ser. No. 86,324
Int. Cl. H03k 17/16
U.S. Cl. 307—241 12 Claims



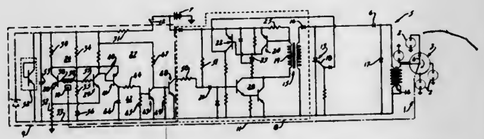
Phase encoded binary data is recorded on a storage medium such as magnetic tape. In reading the data from the medium, a read signal is produced that includes data pulses at regular intervals and phase pulses between at least some of the data pulses. Upon the occurrence of each data pulse, a blanking pulse of shorter duration than the interval between data pulses is generated. The read signal is transmitted to a utilization circuit only in the absence of blanking pulses. As the interval between data pulses changes due to variations in transport speed of the medium, the width of the blanking pulses changes proportionately so the ratio of the duration of the blanking pulses to the interval between data pulses remains constant. Specifically, the blanking pulses are generated by a monostable multivibrator that is triggered by the data pulses produced in reading. The duration of the quasi-stable state of the multivibrator is controlled by a direct-current voltage derived from the multivibrator output.

3,696,256
Patent Not Issued For This Number

3,696,257
ELECTRICAL PULSE SOURCE INCLUDING A MOVABLE CONTROL ELEMENT VARYING THE RELUCTANCE OF A MAGNETIC FIELD THROUGH A WINDING CONNECTED TO A DIFFERENCE AMPLIFIER OF A SIGNAL PROCESSING CIRCUIT

Charles L. Shano, 321 E. Wagon Wheel Drive, Phoenix, Ariz.

Filed May 28, 1970, Ser. No. 41,370
Int. Cl. H01v 5/00; H03k 3/26
U.S. Cl. 307—309 12 Claims

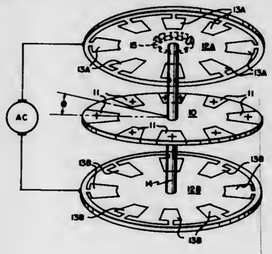


A pair of parallel connected transistors have a common input bias network with one of the transistors having its input connected to such bias network through a coil wound on a soft magnetic pole of a permanent magnet to provide a trigger source for actuating an ignition circuit for an internal combustion engine. A small rectangular magnetic disc of a ferrous metal is mounted on the distributor shaft and rotates past the end of the coil magnet. The flux changes generate a sharp voltage change at the time that the peak of the disc moves past the magnetic pole and an output voltage appears across the collectors of the transistors. A third transistor has its input elements connected to the collectors. A timing network connects the third transistor to a control transistor, the output of which is connected to turn off a normally "on" switching transistor. The switching transistor establishes a square-wave output triggering signal to actuate the ignition system. The timing network prevents false conduction of the control transistor and establishes an unambiguous control of the precise timing and firing point.

3,696,258
ELECTRET MOTORS CAPABLE OF CONTINUOUS ROTATION

Wilmer C. Anderson, Greenwich, and Robert W. Windebank, Fairfield, both of Conn., assignors to General Time Corporation, Phoenix, Ariz.

Filed July 30, 1970, Ser. No. 59,513
Int. Cl. H02n 1/00
U.S. Cl. 310—5 12 Claims

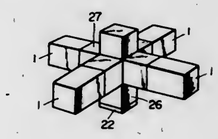


An electric motor comprises a rotor including a plurality of electret portions and a stator including an array of fixed electrode pairs for driving the electret rotor in response to an applied AC voltage. A significant advantage of this motor is the fact that it does not require either wound conductive coils or a laminated metal core; consequently, it can be more easily fabricated than typical prior art motors. In a preferred embodiment, the rotor comprises a rotatably mounted circular disc including a plurality of electret portions disposed at equal angular intervals around the rotor disc. The stator can comprise a pair of fixed discs, having a plurality of opposing electrode portions.

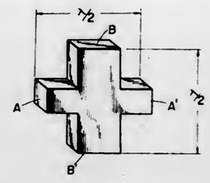
3,696,259
DEVICE FOR DISTRIBUTING VIBRATORY ENERGY

Eiji Mori, 10-35, 2 chome, Chokayama, Meguro-ku, and Katsuhiko Ito, c/o Matsushita, 317, Futako, Kawasaki-shi, Kanagawa-ken, both of Japan

Continuation-in-part of Ser. No. 777,573, Nov. 21, 1968. This application Nov. 4, 1970, Ser. No. 86,928
Claims priority, application Japan, Dec. 25, 1967, 42/082855; March 25, 1968, 43/018954
Int. Cl. H04r 17/00; H01v 9/00
U.S. Cl. 310—8 13 Claims



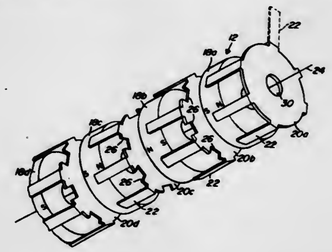
A device for distributing vibratory energy comprising a pair of transmission elements joined together in a perpendicular relationship and a transducer positioned such that when the transducer is operable at a vibrational frequency, a displacement node of a standing wave is formed at the junction of the elements and a displacement antinode is formed at an extremity of the second element remote from said junction.



3,696,260
PERMANENT MAGNET ROTOR STRUCTURE

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 2, 1971, Ser. No. 168,243
Int. Cl. H02k 21/12
U.S. Cl. 310—156 5 Claims

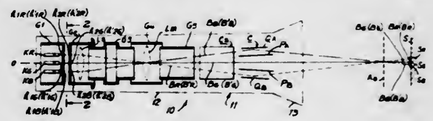


A rotor structure for a permanent magnet alternator includes a plurality of alternate laminations of circular ceramic magnets polarized through the thickness thereof and thin circular sheets of iron. The polarity of the magnets is reversed in alternate layers. The iron sheets each include a plurality of tabs extending radially outwardly therefrom and which are bent over an adjacent magnet. Alternate sheet metal layers are shifted about the axis of rotation of the structure so that the tabs of alternate sheets are out of alignment with respect to each other. The tabs effectively join the magnetic poles of adjacent magnets to provide a series of strip-like magnetic poles extending in a direction parallel to the axis of rotation of the rotor structure and spaced circumferentially thereabout.

3,696,261
CATHODE RAY TUBE WITH PLURAL BEAMS FOR EACH COLOR ELEMENT

Senri Miyaoka, 22-405 Fujisawa-jutaku, 13 Fujigaoka 1, Kanagawa-ken, Fujisawa-shi, Japan

Filed Aug. 24, 1970, Ser. No. 66,283
Claims priority, application Japan, Aug. 23, 1969, 44/66582
Int. Cl. H01j 31/20, 29/80, 29/56
U.S. Cl. 313—69 C 8 Claims



A color picture or cathode ray tube is provided with a single-gun generating a plurality of groups of electron beams

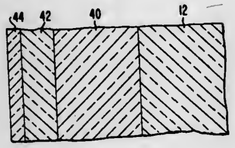
which are all focused on the color phosphor screen by a common electron lens with all of the beams preferably passing through the optical center of such lens, and the beams of each group are made to have a common landing spot on the screen so as to simultaneously excite respective color phosphors of the screen and thereby provide a color picture of enhanced brightness.

3,696,262

MULTILAYERED III-V PHOTOCATHODE HAVING A TRANSITION LAYER AND A HIGH QUALITY ACTIVE LAYER

George A. Antypas, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 19, 1970, Ser. No. 3,661
Int. Cl. H01j 39/16, 39/06
U.S. Cl. 313—94 7 Claims



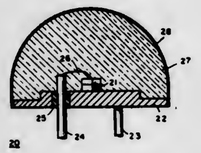
A thin III-V photoemitter crystal having a thickness ranging from 1 micron to 5 microns as grown on a III-V substrate. The bandgap was determined in advance by proportioning the constituents of the crystal causing the peak of the response curve to occur at a predetermined energy and absorb incident photons of the desired wavelength. Due to the high quality of the crystal, the electron diffusion length thereof was comparable to the thickness allowing transmission optics to be employed. Lattice mismatch between the active crystal and the base was minimized by a transition layer, or a progression of transition layers, of intermediate composition. The presence of this strain relieving structure permitted the growth of the thin, high quality single crystals having a relatively long electron diffusion length. As a specific example, a 20 micron transition layer of $GaAs_{.90}Sb_{.10}$ was epitaxially grown on a GaAs substrate. A three micron active layer of $GaAs_{.85}Sb_{.15}$ was grown over the transition layers. This composition of the active layer exhibited a bandgap energy of 1.17 ev corresponding to an absorption wavelength of 1.06 microns.

3,696,263

SOLID STATE LIGHT SOURCE WITH OPTICAL FILTER CONTAINING METAL DERIVATIVES OF TETRAPHENYLPORPHIN

Paul Wacher, Bayside, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated

Filed May 25, 1970, Ser. No. 40,940The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.
Int. Cl. H01j 5/08
U.S. Cl. 313—108 D 12 Claims



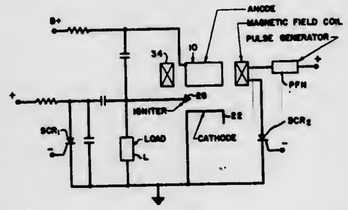
A solid state light source adapted for viewing in an environment of ambient light. A solid state light-emitting device is provided for emitting a narrow band of visible light. An optical filter is disposed in the path between the light emitting device and the viewer. The filter is a polymeric matrix which contains at least one metal derivative of tetraphenylporphin. In a preferred embodiment of the invention the polymeric matrix is an acrylic ester polymer which overlays the transparent encapsulating surface of a red-emitting GaAsP diode.

3,696,264

MAGNETICALLY MODULATED VACUUM ARC DIODE

Richard J. Clark, Jr., San Jose, Calif.; Harry Veron, Acton, Mass.; Alexander S. Gilmour, Jr., and David L. Lockwood, both of Williamsville, N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed June 24, 1970, Ser. No. 49,473
Int. Cl. H01j 1/50
U.S. Cl. 313—160 6 Claims



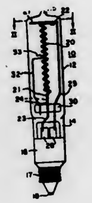
A vacuum arc switching device having a stationary cathode, a stationary spaced concentric anode, an ignitor electrode spaced from the cathode and an annular magnetic field coil concentric with and spaced from the anode.

3,696,265

COMPACT SINGLE-ENDED INCANDESCENT LAMP HAVING IMPROVED FILAMENT MOUNT ASSEMBLY

Jack Martin, Paramus, and Joseph S. Gorecki, West Caldwell, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1970, Ser. No. 86,844
Int. Cl. H01k 1/18, 1/50
U.S. Cl. 313—222 9 Claims



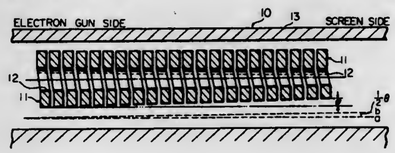
The coiled-coil filament of a single-ended halogen type lamp is suspended in generally coaxial position within a tubular envelope by a pair of rigid lead wires of unequal length that have smooth substantially straight ends which are slip-fitted into and hot clamped to singly-coiled legs provided at each end of the coiled-coil. An end segment of the longer lead wire is bent into a transversely-extending loop which is disposed in loose nesting relationship with the top of the bulb and thus also serves as an integral mount-positioning-and-bracing means. An optional bridge and anchored auxiliary support wire for the filament provide additional shock-proof protection. The simplicity of the resulting mount structure reduces the manufacturing cost of the lamp without affecting lamp quality or performance.

3,696,266

ELECTRON BEAM DEFLECTING DEVICE

Tsutomu Nishino, and Yuuji Mogi, both of 1006, Oaza Kadoma, Kadoma, Osaka, Japan

Filed Sept. 16, 1970, Ser. No. 72,696
Claims priority, application Japan, Sept. 19, 1969, 44/76060
Int. Cl. H01j 29/70, 25/36; H03h 7/30
U.S. Cl. 315—3 1 Claim



A device for deflecting an electron beam emitted from an electron gun in a cathode-ray tube, the device being of the type having a helical strip slow-wave structure, wherein the improvement resides in enlarging the passage of the electron beam toward the display screen of the cathode-ray tube with the characteristic impedance of the slow-wave structure maintained constant throughout the length of the slow-wave structure.

3,696,267

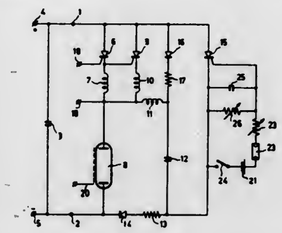
Patent Not Issued For This Number

3,696,268

ARRANGEMENT INCLUDING AN ELECTRONIC FLASH TUBE

Emil August Exner, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,522
Claims priority, application Netherlands, Nov. 8, 1969, 6916884
Int. Cl. H05b 37/00
U.S. Cl. 315—151 10 Claims



The invention relates to an arrangement including an electronic flash tube and a controlled semiconductor rectifier for extinguishing this tube.

In order to extinguish the flash tube in a known arrangement, it is shunted by a semiconductor rectifier producing a short circuit across the tube. A drawback thereof is that the supply source of the arrangement a needlessly and heavily loaded thereby.

In an arrangement according to the invention an auxiliary capacitor is used which receives a voltage larger than the supply voltage of the arrangement. When the instant of extinguishing has come the voltage of this auxiliary capacitor used to extinguish a further controlled rectifier arranged in series with the tube.

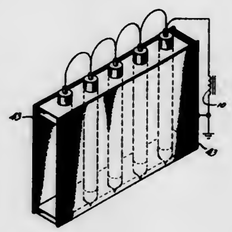
Consequently, the supply source of an arrangement according to the invention is much less heavily loaded and in addition the arrangement is sooner ready for the next flash.

3,696,269

AIR PROCESSOR

Jerome S. Hochheiser, and Louis Zermeno, both of Los Angeles, Calif., assignors to Hochheiser Electronics Corporation, Burband, Calif.

Filed Nov. 12, 1970, Ser. No. 88,728
Int. Cl. H01j 17/00
U.S. Cl. 317—262 AE 6 Claims



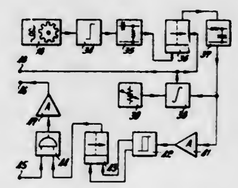
There is described an electrical ion generator for producing large concentrations of ionized molecules in air and utilizing an electrode structure in which one or more electrodes are each positioned inside a sealed dielectric tube filled with an ionizable gas, such as neon. The electrode is connected to one side of a high-frequency, high-voltage source, the other side of the source being connected preferably to another such electrode within a sealed dielectric tube spaced from but parallel to the first tube. Alternatively, one of the electrodes connected to the voltage source may be a conductor in the form of a plate or rod which is at ground potential.

3,696,270

ARRANGEMENT FOR PREVENTING THE SKIDDING OF WHEELS OF A MOTOR VEHICLE

Eberhard Schnalbel; Helmut Fleischer; Richard Zechnall, all of Stuttgart; Helmut Domann, Leonberg; Wolfgang Maisch, Schwieberdingen, and Klaus Christ, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 6, 1970, Ser. No. 52,171
Claims priority, application Germany, July 31, 1969, P 19 38 977.6
Int. Cl. B60t 8/08
U.S. Cl. 317—5 19 Claims

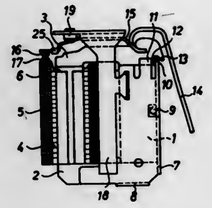


Each wheel has a pulse generator which furnishes a pulse sequence having a repetition rate depending upon wheel speed. The pulses set a monostable multivibrator, whose output, after low pass filtering and differentiating causes the furnishing of an output signal indicative of skidding when the rate of change of the repetition rate exceeds a predetermined rate of change.

3,696,271
MAGNETIC IGNITER

Richard Halm, Silcherstrasse 54, D 7061 Baltmannsweiler, Germany

Filed Sept. 9, 1970, Ser. No. 70,760
Claims priority, application Germany, Sept. 11, 1969, P 19 45 973.5
Int. Cl. F23g 13/04
U.S. Cl. 317—81 5 Claims

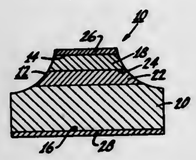


A magnetic igniter for a lighter, comprising a magnetic circuit including an induction coil, a permanent magnet, a body of magnetizable material and a movable armature, means for operating the armature, a pair of contacts movable relative to each other on operation of the armature to open and close the magnetic circuit, and spring means for reducing the contact pressure between said pair of contacts.

3,696,272
AVALANCHE DIODE

Jacques Mayer Assour, Princeton, N.J., assignor to RCA Corporation

Filed Aug. 21, 1970, Ser. No. 65,948
Int. Cl. H01l 5/00
U.S. Cl. 317—234 5 Claims



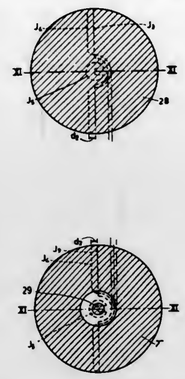
An avalanche diode which will oscillate to generate microwave powers in the frequency range of 2 to 16 gigahertz with efficiencies of up to at least 30 percent. The diode will also function as a microwave amplifier in the same frequency range. The diode includes a body of semiconductor material having two spaced apart regions and a third region between and contiguous to both of the other regions. The outer two regions are of low resistivity and of opposite conductivity type. The third intermediate region is of a conductivity type the same as one of the outer regions and forms an abrupt or hyperabrupt PN junction with the other of the outer regions. The third region is of a thickness of between 0.5 and 3 microns and a resistivity of between 0.5 and 10 ohm-cm.

3,696,273
BILATERAL, GATE-CONTROLLED SEMICONDUCTOR DEVICES

Alan Foster, Stockport, England, assignor to U. S. Philips Corporation, New York, N.Y.

Filed March 31, 1970, Ser. No. 24,233
Claims priority, application Great Britain, Feb. 27, 1970, 9,723/70
Int. Cl. H01l 11/10
U.S. Cl. 317—235 R 7 Claims

A bilateral, gate-controlled thyristor having five layers has end zones, with respect to the main current flow direction, have adjacent peripheries proximate to the gate electrode in an overlapping relationship while having adjacent peripheries

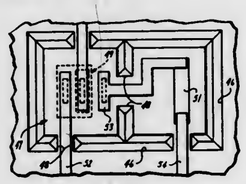


distal to the gate electrode in a spaced relationship. Improved commutation is obtained without any loss of operational modes with this structure.

3,696,274
AIR ISOLATED INTEGRATED CIRCUIT AND METHOD

Stanley Paul Davis, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed June 26, 1970, Ser. No. 50,168
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 4 Claims



Air isolated integrated circuit having a support structure formed of an insulating material with a semiconductor body carried by the support structure, the body having a generally planar surface. The semiconductor body has moats formed therein in a pattern which extends into the semiconductor body so that there are provided a plurality of semiconductor islands. The moats are interrupted between at least certain of the islands so that bridges are formed between said certain islands. At least one semiconductor device is formed in each of the islands and metallization is provided which interconnects the semiconductor devices to form an integrated circuit. At least a portion of the metallization passes over the bridge between said certain islands.

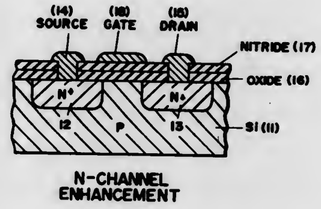
In the method, moats are formed in a pattern in a semiconductor body to provide a plurality of semiconductor islands with the moats being interrupted between at least certain of the islands so that there is a bridge formed between said certain islands. Semiconductor devices can be formed in the semiconductor body either prior to or after the formation of the moats in the semiconductor body. Metallization is formed on the semiconductor body to interconnect the semiconductor devices with at least a portion of the metallization passing over the bridge between said certain islands.

3,696,275
Patent Not Issued For This Number

3,696,276
INSULATED GATE FIELD-EFFECT DEVICE AND METHOD OF FABRICATION

Bernard W. Boland, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 740,967, June 28, 1968, abandoned. This application June 5, 1970, Ser. No. 41,777
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 6 Claims



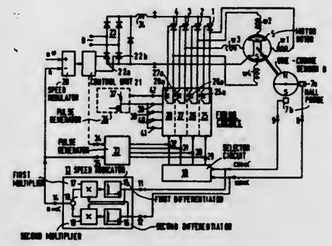
N-CHANNEL ENHANCEMENT

An insulated gate field-effect transistor is fabricated to include an improved insulation layer comprising a film of silicon dioxide covered with a film of silicon nitride. The method of fabrication includes the thermal oxidation of a semiconductor silicon surface in a "reducing" atomsphere. The use of hydrogen as a carrier gas for oxygen provides a thermally grown, pinhole-free oxide film having improved stability under conditions of heat cycling and electrical bias. The process permits a control of oxidation rate by adjusting the oxygen content of the gaseous mixture, rather than by the control of temperature. Best device characteristics are obtained by proceeding immediately with the vapor deposition of silicon nitride on the oxide, as a substantially continuous operation in the same reactor.

3,696,277
START CIRCUIT FOR DC MOTOR HAVING A THYRISTOR COMMUTATOR

Manfred Liska, and Klaus Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 29, 1970, Ser. No. 85,119
Claims priority, application Germany, Oct. 31, 1969, P 19 54 846.0
Int. Cl. F02n 11/00
U.S. Cl. 318—138 10 Claims

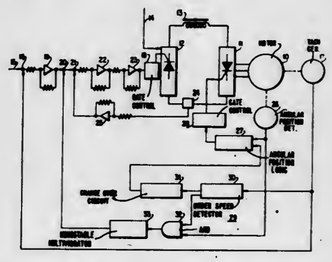


When firing or ignition transformers are utilized in the firing or ignition circuit of an electronic commutator such as, for example, that utilized in the Siemotron drive, there is no ignition or firing pulse at the thyristors during the start of the motor due to the signal provided by the rotor position sensor. In order to insure a reliable start of the motor, additional firing pulses are periodically applied to the firing circuit. Upon the attainment of a specific speed, the additional pulses are automatically discontinued.

3,696,278
CONTROLLING APPARATUS FOR A D.C. BRUSHLESS MOTOR

Masateru Kuniyoshi, Yokohama; Hayatoshi Yamada, Tokyo; Katsumi Fukasawa, and Yoshiaki Tamura, both of Kawasaki, all of Japan, assignors to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 25, 1970, Ser. No. 92,796
Claims priority, application Japan, Nov. 25, 1969, 44/94134
Int. Cl. H02k 29/00
U.S. Cl. 318—138 3 Claims

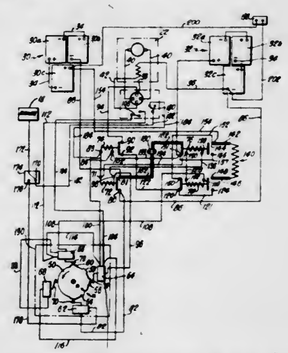


A brushless D.C. motor is supplied an A.C. voltage from a polyphase thyristor bridge inverter which functions as a static commutator. A controllable rectifier is provided for supplying a D.C. voltage to the inverter. There is also provided a starting control circuit which causes the rectifier to act as an inverter during every commutation of the thyristor bridge inverter, rapidly turning off the thyristors in the inverter. The starting control device also functions to cause the commutator lead angle of the thyristor bridge inverter to remain substantially zero while the rotational speed of the motor is less than a predetermined value. Thus, it is possible to excite the armature winding of the motor with the maximum rated voltage to derive the maximum torque therefrom.

3,696,279
ELECTRICAL CONTROL APPARATUS

Louis Gyori, Chomedey, Quebec, Canada, assignor to Marathon Golf Cars Ltd., Montreal, Quebec, Canada

Filed July 16, 1970, Ser. No. 55,410
Int. Cl. H02p 7/20
U.S. Cl. 318—139 22 Claims



A control apparatus for vehicles and devices powered by stored electrical power such as golf cars, snow-blowers and small tractors. The control apparatus includes a cam operated device operating in conjunction with the stored electrical power, said cam device including cam operated means movable between initial and terminal power regulating positions. In a first or initial regulating position, the cam device is adapted

to connect first and second sources of electrical power in parallel, in a second power regulating position the cam is adapted to connect the same sources in parallel with a resistor cut into the circuit, in a third power regulating position, the cam is adapted to connect the sources in series and in a fourth position, it is adapted to connect the sources in series with a resistor cut into the circuit. A further feature includes the provision of a reverse mechanism providing first and second reverse speeds for a vehicle or device by connecting the sources in parallel with a resistor cut into the circuit to provide a first reverse speed, a second reverse speed being provided by connecting the sources in parallel without the resistor in the circuit. A still further feature is the provision of a braking feature which cuts the power being supplied to a motor for the system once the braking mechanism is actuated.

3,696,280

Patent Not Issued For This Number

3,696,281

STARTING MEANS FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

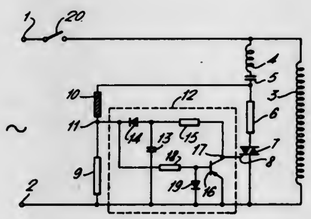
Asger Gramkow, Augustenborg, and Jorgen Hyldal, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed June 2, 1971, Ser. No. 149,186

Claims priority, application Germany, June 10, 1970, P 20 28 455.3

Int. Cl. H02p 1/44

U.S. Cl. 318—221 E **3 Claims**



The invention relates to a starting circuit for a single phase asynchronous electric motor having a main winding and a starting winding. The circuit comprises a pair of terminals across which the main winding of the motor is connected and across which in operation an AC current is supplied. Means including a PTC resistor are utilized which provide an AC voltage which decreases in amplitude after the motor start-up. An SCR is connected in series with the starting winding and is controlled by a network to which the decreasing AC voltage is supplied. This network has capacitor means for storing current which is then available to control the SCR during zero cross-overs of the single phase AC current.

3,696,282

MARINE AUTOPILOT SYSTEM INCLUDING MODE ENGAGEMENT FEATURES

Yoichi Hirokawa, Kamakura, and Isao Masuzawa, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

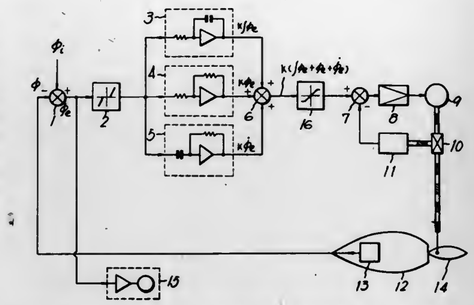
Filed Aug. 26, 1970, Ser. No. 66,939

Claims priority, application Japan, Aug. 30, 1969, 44/68794

Int. Cl. G05d 1/00; B63h 25/02

U.S. Cl. 318—588 **4 Claims**

A marine autopilot system for ships in which the set course signal and the heading signal are supplied to a comparator which feeds a servomotor through an operational device to control the ship. In the present invention when the marine autopilot is automatically changing course, switching means change various constants and functions of the marine autopilot system and disconnect other elements which are unnecessary during course change.



3,696,283

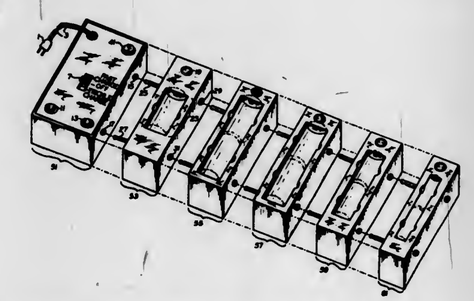
MODULAR BATTERY CHARGER

John W. Ackley, III, 310 E. 71st St., New York, N.Y.

Filed April 15, 1970, Ser. No. 28,702

Int. Cl. H01m 45/04

U.S. Cl. 320—2 **10 Claims**



Battery charger assembly comprising a power supply module and, detachably mated thereto and to each other, a series of charging modules capable of accommodating a varying number of cells to be charged wherein each charging module individually can accommodate cells of differing physical and electrical size, the power supply module and the charging modules together forming a parallel circuit of which each charge module forms one parallel leg.

3,696,284

Patent Not Issued For This Number

3,696,285

INVERTER CIRCUITS UTILIZING MINORITY CARRIER INJECTION IN A SEMICONDUCTOR DEIVCE

Jerry Saia, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

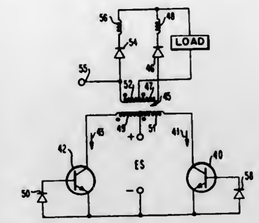
Division of Ser. No. 586,775, Oct. 14, 1960. This application April 14, 1970, Ser. No. 32,503

Int. Cl. H02m 7/48

U.S. Cl. 321—45 R **11 Claims**

A family of circuits characterized by storage mode operation in a switching circuit employs minority carrier injection from the base into the collector region of a semi-conductor device. The minority carrier charge stored in the collector

thereafter causes amplified forward collector emitter current when forward collector potential is applied. Particular exam-



ples of the circuit family include inverters, single shot circuits, transistor oscillators and electronic switching in general.

3,696,286

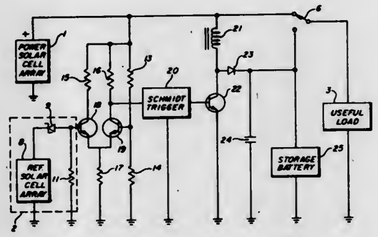
SYSTEM FOR DETECTING AND UTILIZING THE MAXIMUM AVAILABLE POWER FROM SOLAR CELLS

Louis A. Ule, Rolling Hills, Calif., assignor to North American Rockwell Corporation

Filed Aug. 6, 1970, Ser. No. 61,570

Int. Cl. G05f 1/62; H02j 7/34

U.S. Cl. 323—15 **4 Claims**



In a power solar cell array consisting of many solar cells connected to deliver useful electrical power, there is imbedded a smaller reference solar array consisting of solar cells connected in series with a Zener diode and load resistor so devised that the voltage that appears across the load resistor is equal to or a constant fraction of the voltage at which the power array, operating at the same temperature and solar exposure as the reference array, delivers maximum electrical power. The voltage difference between the large solar array or the given fraction thereof and the reference solar array is used directly as means to constrain the large array to operate at the voltage of maximum power, typically any excess power being used to charge a storage battery.

3,696,287

SUPERCONDUCTING CONSTANT VOLTAGE GENERATOR

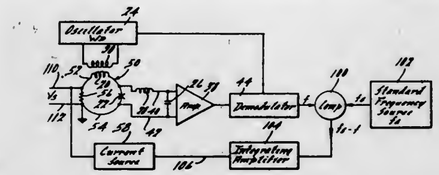
Arnold H. Silver, Farmington, Mich., and James E. Zimmerman, Santa Ana, Calif., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 809,320, March 21, 1969. This application June 1, 1970, Ser. No. 54,076

Int. Cl. G05f 1/12

U.S. Cl. 323—7 **6 Claims**

A superconducting circuit that may be utilized as an ultra-high sensitivity voltmeter or a generator generating a voltage having a substantially constant amplitude. A superconductive material having a weak link positioned therein with a voltage of unknown magnitude applied across the weak link. An oscillator has its output coupled to the weak link so that the output signal of the oscillator generates an oscillating current through it. The voltage of unknown magnitude causes an oscillating current to be generated through the weak link with a frequency proportional to the unknown magnitude of the voltage. The weak link mixes the frequency of the two currents and a demodulator detects the frequency of the oscillating current produced by the voltage of unknown magnitude. When the circuit is to be employed as a voltmeter, a frequency meter may be connected to the demodulating means which has a



scale readable in voltage units. If the circuit is to be employed as a generator of a voltage having a substantially constant amplitude, a standard frequency may be fed to a comparator that also receives the output from the demodulator. The output from the comparator may be fed back to the weak link and the amplitude of the voltage having a substantially constant magnitude may be read out across a circuit component connected to the superconducting material.

3,696,288

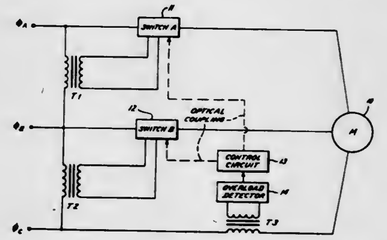
OPTICALLY COUPLED CONTROL CIRCUIT

Richard Jan Carman, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed May 8, 1970, Ser. No. 35,670

Int. Cl. G05f 1/44; H02p 13/16

U.S. Cl. 323—21 **18 Claims**



In a multi-phase power supply, a separate light-actuated semi-conductor switch is located in every line but one. An overload sensor is coupled to the remaining line, and upon the occurrence of an overload, emits a light signal that opens the light-sensitive switches in the other lines.

3,696,289

Patent Not Issued For This Number

3,696,290

MAGNETIC NON-CONTACT THICKNESS GAUGE WITH MEANS TO COMPENSATE THE EFFECTS OF STRAY FIELDS ON THE GAUGE

Hubert Dreckmann; Charles B. Wilson, and Richard K. Wagenblast, all of St. Petersburgh, Fla., assignors to The Hays Corporation, Michigan City, Ind.

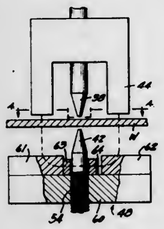
Filed July 22, 1970, Ser. No. 57,087

Int. Cl. G01r 33/12

U.S. Cl. 324—34 TK **10 Claims**

A thickness measuring device wherein means are positioned at opposite sides of and in selected spacing relative to a work piece being measured and respectively include magnet

responsive means supported by one positioning means and a magnet supported by the other positioning means, said magnet and magnet responsive means defining a flux circuit intercepted by said work piece. The magnet responsive means include spaced parts and a third relatively small part between said spaced parts at which flux in said circuit is concentrated. A flux sensitive resistor is positioned to respond to flux variations at said third part and is connected in a Wheatstone



bridge meaSuring circuit which indicates variations in the thickness of the work piece.

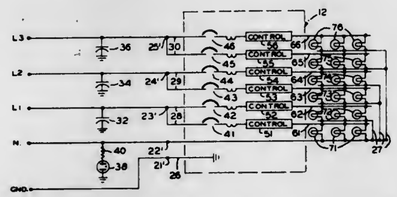
Temperature control means including a heater and sensor means compensate for temperature variations acting on the magnetic parts, said sensor means being connected in another Wheatstone bridge measuring circuit. The sensor means may include cooperating sensors located respectively adjacent to the work piece and adjacent to the heater.

3,696,291

EQUIPMENT FOR DETECTING IMPROPER WIRING IN PORTABLE INSTALLATION

Arthur P. Horne, Portland, Oreg., assignor to Electronics Diversified, Inc., Portland, Oreg.

Filed Jan. 30, 1970, Ser. No. 7,009
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **7 Claims**



A power wiring error indicator for electrical equipment includes an indicator means coupled between equipment ground and the neutral terminal of a three-phase, four-wire system, or a single phase, three-wire system. Capacitors are connected between each line terminal and equipment ground to provide a return circuit for the indicator means.

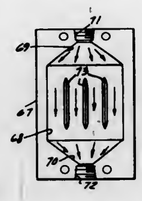
3,696,292

MICROWAVE MOISTURE SENSING SYSTEM INCLUDING MEANS TO CONTINUOUSLY CHANGE THE TRANSMISSION PATH OF THE MICROWAVE ENERGY

Leroy H. Busker, Rockton, Ill., and Robert J. Mosher, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 679,325, Oct. 31, 1967. This application Aug. 3, 1970, Ser. No. 67,642
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 A **2 Claims**

An apparatus for measuring the amount of moisture in a sample which is generally formed of a microwave energy source, a microwave radiating element connected to the source, a microwave energy receiving element, and a microwave energy indication connected to the receiving element. The sample is positioned between the radiating and receiving elements and a structure is provided for changing the energy transmission path through the sample by at least one-half wavelength of the microwave energy. Such means



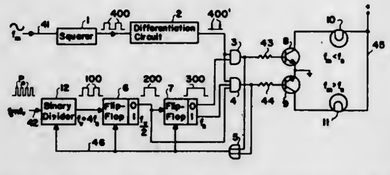
may take the form of a frequency modulator connected to the source, a dielectric disc in the transmission path, or a structure for continuously changing the distance between the radiating element and the sample or combination of these means.

3,696,293

PULSE-FREQUENCY TESTER

Gunther Hoffmann, and Bernd Zabel, both of Eningen, Germany, assignors to Wandel u. Goltermann, Reutlingen, Germany

Filed Sept. 21, 1970, Ser. No. 73,766
Claims priority, application Germany, Oct. 8, 1969, P 19 50 684.4
Int. Cl. G01r *23/02, 23/14*
U.S. Cl. 324—78 Q **9 Claims**



A train of pulses of unknown repetition frequency, ranging between 2/3 and two times a predetermined cadence, is fed together with the output of the last two stages of a multistage binary counter to a coincidence circuit, the output frequency of the counter equaling the mean cadence of the unknown pulse train. Deviations of the pulse frequency from that cadence beyond predetermined upper and lower tolerance limits, as determined by the coincidence circuit, reset the counter to zero while operating one of two signal lamps to indicate the sign of such deviation. An associated timer may maintain the error-indicating signal lamp operated for a predetermined period and may also cause an automatic resetting of the counter to zero at the end of such period, subject to a restarting of the count by the next pulse of the unknown train.

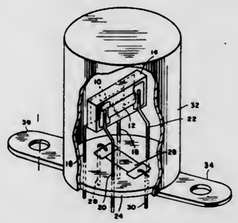
3,696,294

RMS VOLTAGE OR CURRENT SENSOR

Ronnie W. Krupka, Richardson, Tex., assignor to ECC Corporation, Euless, Tex.

Filed Jan. 26, 1970, Ser. No. 5,671
Int. Cl. G01r *5/26, 5/22*
U.S. Cl. 324—105 **18 Claims**

A voltage or current sensor containing a heater resistor, a first heat responsive resistor in intimate thermal contact with the heater resistor, a second heat responsive resistor in intimate thermal contact with the ambient temperature, and insulator means separating the heater resistor and first heat responsive resistor from the second heat responsive resistor. A voltage or current to be measured is applied to the heater resistor, which produces a heat output that is proportional to the true RMS value of current flow through the heater resistor. This heat output is transmitted to the first heat responsive resistor, whose resistance value varies as a substantially linear function of temperature within a temperature range corresponding to the range of voltages or currents to be measured. The thermal resistance between the heat resistor and the first heat responsive resistor is much less than the thermal assistance between the heater resistor and a temperature reference comprising the case and a heat sink. A second heat responsive resistor has the same or opposite temperature coef-



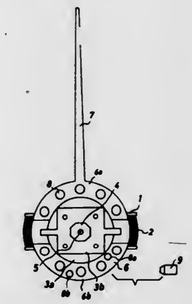
ficient of resistance of the first heat responsive resistor, and its resistance also varies as a substantially linear function of temperature, but since it is insulated from the heator resistor and is in intimate thermal contact with the temperature reference, its resistance will be determined by the ambient temperature rather than by the temperature of the heater resistor. Therefore, the resistance ratio of the first and second heat responsive resistors is proportional to the heat output of the heater resistor, which in turn is proportional to the true RMS value of voltage or current applied thereto and compensated for ambient temperature variations.

3,696,295

BALANCING MEANS FOR MOVING COILS OF ELECTRICAL MEASURING INSTRUMENTS

Willy Kisselmann, Munich, Neugrunwald; Fritz Rumpelein, Munich, and Paul Kopf, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 11, 1970, Ser. No. 71,510
Claims priority, application Germany, Sept. 16, 1969, P 19 46 818.9
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 PB **12 Claims**



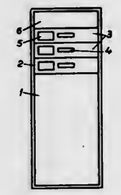
A fully assembled moving coil assembly for use in D'Arsonval and like electrical measuring instruments includes a disk-shaped plastic balancing element which is integral with the pointer and with a portion of one of the bearing members and is formed with one or more annuli of equidistant bores for reception of pin-shaped counterweights. The center of each annulus is located on the pivot axis of the moving coil assembly. One or more counterweights are inserted into and snugly received in selected bores after the assembly is tested in a suitable apparatus which determines the location of the unbalance.

3,696,296

MECHANISM FOR TESTING ELECTRICAL EQUIPMENT

Roland Nylen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 21, 1970, Ser. No. 73,801
Claims priority, application Sweden, Oct. 1, 1969, 13541/69
Int. Cl. G01r *31/22, 15/12*
U.S. Cl. 324—158 P **13 Claims**



For testing electrical equipment, a test rig is provided with a number of contact boxes mounted in a frame. Each box contains a normally closed pair of contacts which are connected to apparatus to be tested. A test handle is provided with a number of pins adapted to be connected to testing equipment. The test pins can be inserted through openings in the front of the boxes to enter between the contacts, thus separating them and making a connection to the testing mechanism. An arrangement may also be provided by which the contacts of adjacent boxes can be connected to each other by the opening of the contacts.

ERRATUM

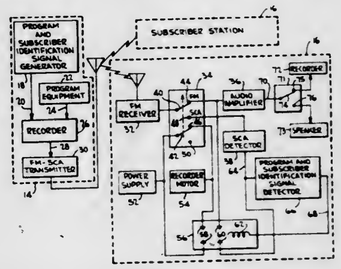
For Class 324—61 see:
Patent No. 3,696,299

3,696,297

BROADCAST COMMUNICATION SYSTEM INCLUDING A PLURALITY OF SUBSCRIBER STATIONS FOR SELECTIVELY RECEIVING AND REPRODUCING ONE OR MORE OF A PLURALITY OF TRANSMITTED PROGRAMS EACH HAVING A UNIQUE IDENTIFYING CONE ASSOCIATED THEREWITH

Richard J. Otero, 12209 Westmont Lane, Bowie, Md.

Filed Sept. 1, 1970, Ser. No. 68,714
Int. Cl. H04b *1/00*
U.S. Cl. 325—55 **13 Claims**



A selective broadcast communication system including a transmitting station for broadcasting programs, each program being preceded by program and subscriber identifying codes and followed by a stop code, and a plurality of subscriber sta-

tions receiving the transmitted programs and codes, each of the subscriber stations being selectively operable to reproduce only those programs which were preselected by detecting the program and subscriber identifying codes and determining the coincidence thereof with the preselected program and with a subscriber module such that preselected programs may be recorded by authorized subscribers automatically.

3,696,298

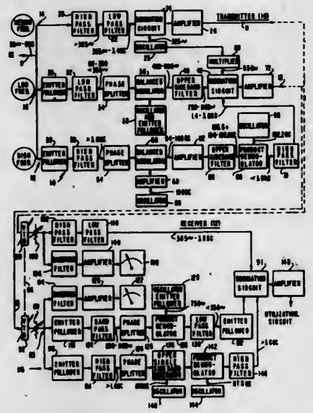
AUDIO SIGNAL TRANSMISSION SYSTEM AND METHOD

Leonard R. Kahn, Freeport, and Robert R. Gordon, Westbury, both of N.Y., assignors to Kahn Research Laboratories, Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 652,529, July 11, 1967, abandoned. This application July 27, 1970, Ser. No. 58,227

Int. Cl. H04b *1/66*

U.S. Cl. 325—59 **17 Claims**



A system and method for processing relatively high fidelity audio signals (having components in the high, intermediate and low frequency ranges, such as speech and music signals having frequencies between about 50 c.p.s. and 6,000 c.p.s., for example) for transmission across relatively low fidelity transmission channels e.g., telephone lines or radio frequency carrier waves which are restricted to low fidelity signal modulation) adapted to effectively transmit only electrical signal components in an intermediate frequency range e.g., from about 300 c.p.s. to about 4,000 c.p.s., for example). Typical practice of the invention involves isolation of the signal components in the intermediate frequency range for transmission on one one such low fidelity channel, and isolation of the signal components in high and low frequency to derive non-overlapping, frequency-displaced signals in the intermediate frequency range. These frequency-displaced signals are thereafter transmitted on a second such low fidelity transmission channel. At the receiving location, the frequency-displaced signals are converted to their original high and low frequency components and combined with the intermediate frequency components to substantially re-establish the original audio signal.

Where transmission channels having no low frequency limitations (e.g., some radiated carrier waves or line transmitted radio frequency carrier waves) are employed, it is not necessary to isolate and up-shift the frequencies of the signal components in the low frequency range. Such components are transmitted with the signal components in the intermediate frequency range across a single channel; and the signal components in the high frequency range are isolated, down-shifted in frequency into the intermediate frequency range and transmitted across a second channel.

3,696,299

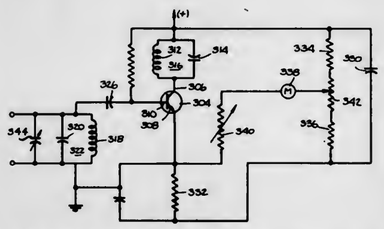
RELATIVE CARBON CONTENT METER FOR SMOKE FILTERS

James O. Pullman, Chapel Hill, N.C., and William R. Weidlich, St. Joseph, Mich., assignors to Liggett & Myers Incorporated, New York, N.Y.

Filed Feb. 4, 1970, Ser. No. 8,603

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **27 Claims**



An apparatus to measure the relative quantity of carbon present in a smoke filter comprising a parallel plate capacitor between whose parallel plates are disposed rods of filter material. The parallel plate capacitor is attached to a capacitance measuring device which is calibrated to measure a capacitive change of the system comprising said parallel plates and said rods and to indicate when the carbon content of said rods deviates from a predetermined standard. An embodiment of the invention is disclosed which comprises an improved device for measuring the capacitance of said capacitive system by utilizing a linear approximation in the dependency of collector current with small variations in capacitance added to the base circuit in a tuned collector, tuned base transistor oscillator wherein said dependency is measured in a "Wheatstone" bridge circuit.

3,696,300

Patent Not Issued For This Number

3,696,301

TUNING INDICATING APPARATUS FOR FM RECEIVER

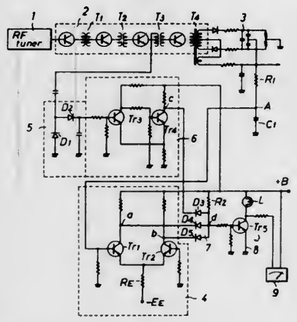
Juro Hoshi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Oct. 5, 1970, Ser. No. 77,890

Claims priority, application Japan, Oct. 8, 1969, 44/95493

Int. Cl. H04b *1/16*

U.S. Cl. 325—398 **3 Claims**



In an FM receiver, a tuning indicating apparatus comprises a differential amplifier for receiving an FM detector output and delivering an output under a frequency-to-output response curve of a W-shape which is obtained by inverting one half of an S-shaped response curve of the FM detector; an AM detector connected to an IF amplifier; an AND circuit responsive to the outputs from the differential amplifier and the AM detector; and a tuning indicator energized by an output from the AND circuit.

3,696,302

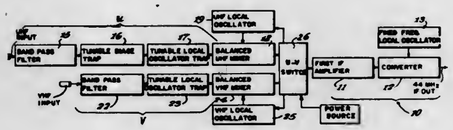
UHF-VHF VARACTOR TUNER AMPLIFYING BAND CONVERSION

Thomas F. Gossard, Studio City, Calif., assignor to Standard Kollsman Industries, Inc., Melrose Park, Ill.

Filed Oct. 30, 1970, Ser. No. 85,583

Int. Cl. H04b *1/26*

U.S. Cl. 325—432 **8 Claims**



An all channel television tuner comprises separate UHF and VHF sections each utilizing voltage controlled diode capacitance tuning and being operable to select a corresponding input signal and band converting the same in inverted relation to an intermediate frequency of about 230 MHz and a second mixer section for converting from 230 MHz to the standard IF television signal.

3,696,303

PROCESS AND APPARATUS FOR PRODUCING TRIGGER PULSES

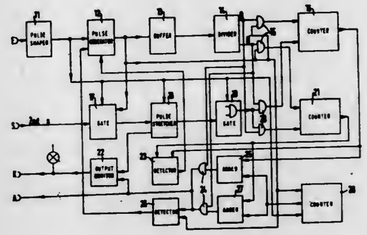
Gunter Hartig, Elbinger Strasse 7, 7500 Karlsruhe, Germany

Filed April 2, 1970, Ser. No. 25,002

Claims priority, application Germany, April 3, 1969, P 19 17 389.8

Int. Cl. H03k *3/00*

U.S. Cl. 328—55 **14 Claims**



Apparatus for producing a trigger pulse at a preselected point which is off-set from a reference point in the movement of a cyclically moving mechanical device which includes a pulse generator adapted to be connected to the device which produces a series of pulses during each cycle of the device. A counter counts the pulses. A gate connects the pulse generator with the counter and control means enables the gate for a time period corresponding to the interval of time between movement of the mechanical device between the preselected and reference points. Trigger means is provided which increments the count in the counter to produce a trigger pulse after a desired count has been reached.

A novel method of producing the trigger is also disclosed.

3,696,304

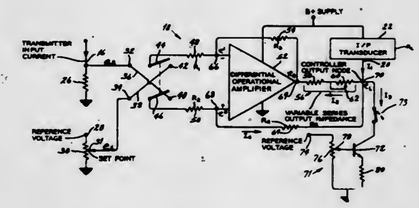
PROPORTIONAL ONLY PROCESS CONTROLLER

Louis H. Fricke, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 29, 1970, Ser. No. 50,489

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **4 Claims**



Automatic process controller circuitry for producing an output current which is proportional to a process variable input signal. A differential operational amplifier is connected to receive set point and process variable input signals and provides an output voltage which is proportional to the difference between these two signals. An adjustable proportional band series output impedance is connected between the output of the operational amplifier and a controller circuit output node, and this series impedance converts the output voltage of said amplifier to a current. The voltage developed across this variable series output impedance is differentially fed back via positive and negative feedback loops to the inverting and noninverting inputs of the operational amplifier, and such feedback connection enables the proportional current flowing through the variable series output impedance to be made constant and independent of the output voltage of the operational amplifier. Also, since the load current flowing in the transducer driven by the above controller circuitry can be made equal or proportional to this proportional current, said load current can be adjusted to a value wholly independent of the internal resistance of the driven transducer.

3,696,305

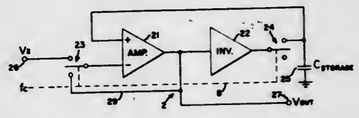
HIGH SPEED HIGH ACCURACY SAMPLE AND HOLD CIRCUIT

Roy O. Mitchell, Starrucca, Pa., and Hermann Schmid, Binghamton, N.Y., assignors to General Electric Company

Filed July 1, 1970, Ser. No. 51,552

Int. Cl. H03f *1/14*

U.S. Cl. 330—51 **2 Claims**

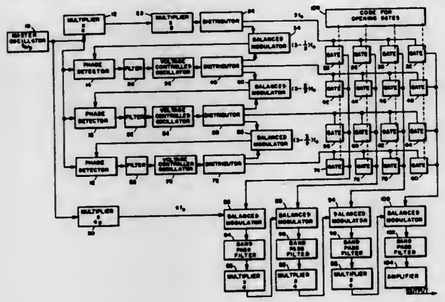


This improved analog sample and hold circuit corrects for amplifier offset voltage and is readily adaptable to monolithic mechanization using complementary MOS techniques. Offset correction is accomplished by using a high gain differential input amplifier twice but through opposite input terminals. The amplifier offset voltage thus also occurs twice, but with opposite polarity hence eliminating itself.

3,696,306
COHERENT JUMP FREQUENCY SYNTHESIZER

Arthur J. Kline, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 5, 1970, Ser. No. 43,752
Int. Cl. H03b 3/06
U.S. Cl. 331—2 4 Claims

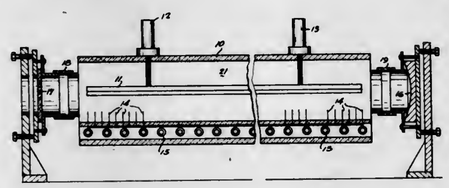


Means are provided to produce an output wave whose frequency may jump from one value to a very different frequency at a high jump rate, the phase of the produced jump frequency wave being unambiguous and predictable.

3,696,307
CAPACITOR LASER

Alexander J. Beaulieu, Ste. Foy, Quebec, and Derwyn C. Johnson, Ottawa, Ontario, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Aug. 20, 1970, Ser. No. 65,477
Claims priority, application Canada, Aug. 29, 1969, 060,719
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 1 Claim



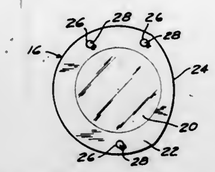
A transverse excitation system for molecular gas laser is disclosed which includes a capacitor in series with a plurality of electrodes forming one side of the transverse excitation system which electrodes discharge to opposing electrodes.

3,696,308
SEGMENTED LASER APPARATUS AND METHOD OF MAKING THE SAME

Joseph J. Duffy, Northport, and Alexander S. Dunbar, Plainview, both of N.Y., assignors to Hadron Inc., Westbury, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,794
Int. Cl. H01s 3/06
U.S. Cl. 331—94.5 16 Claims

The apparatus comprises an outer jacket having a through bore which receives a plurality of laser discs therein. Spacing pins are provided between adjacent discs for spacing adjacent discs apart. Opposite edges of alternate discs are spaced from the wall of the bore to define fluid passages therebetween. Retaining means are sealingly received in each end of the jacket for retaining the laser discs within the jacket and for providing for the flow of energy and a fluid in and out of said jacket.

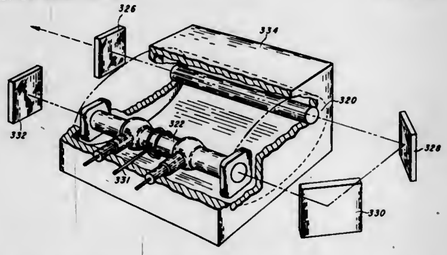


The method includes forming a laser rod to a preselected diameter, removing a portion of the rod to provide a relieved surface and cutting the rod into a plurality of laser discs. The discs are placed into a jacket to provide the laser apparatus.

3,696,309
FLASH LAMP Q-SWITCHED LASER SYSTEM

Robert W. Ward, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1970, Ser. No. 85,577
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 6 Claims



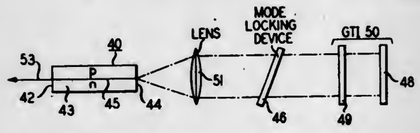
A Q-switch for a solid-state laser system is provided by a gas-filled flash lamp within the optical feedback path of the laser system. One embodiment utilizes the opaque region of an ionized flash lamp to interrupt the optical feedback path during the early portion of the laser rod pumping cycle. Feedback is restored by deionizing the flash lamp.

A second embodiment utilizes an auxiliary feedback loop to control the rate at which the intensity of the laser radiation within the feedback system increases. An ionized flash lamp having a light saturable characteristic is included in the primary feedback loop. The auxiliary feedback loop is adjusted such that the ionized flash lamp optically saturates at a predetermined time. Saturation of the flash lamp increases feedback, thereby causing the flash lamp to function as a Q-switch element.

3,696,310
MODE-LOCKING IN SEMICONDUCTOR LASERS

Thomas Lee Paoli, Chatham, and Jose' Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1970, Ser. No. 77,136
Int. Cl. H01s 3/00; G01b 9/00
U.S. Cl. 331—94.5 22 Claims

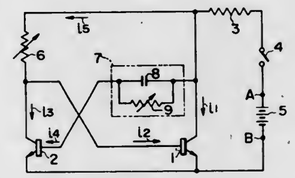


In order to achieve longitudinal mode-locking in a semiconductor laser, the normal dispersion of a semiconductor medium is compensated for by means of an intracavity dispersive structure, thereby causing the longitudinal mode separation frequency to be uniform. The dispersive structure may take several forms including a Gires-Tournois interferometer, a pair of spaced, parallel diffraction gratings or an acoustic diffraction grating.

3,696,311
LONG-CYCLE TRANSISTOR ASTABLE MULTIVIBRATOR

Takayoshi Oushige, and Kikuo Iizuka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1970, Ser. No. 18,169
Claims priority, application Japan, March 10, 1969, 44/17517
Int. Cl. H03k 3/282
U.S. Cl. 331—113 R 7 Claims

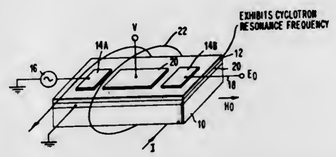


A long cycle oscillator comprising a first and a second transistor, and a charge-discharge circuit including a capacitor and a resistor which are connected in parallel to each other, in which the said components are so constructed that a base current of the first transistor is controlled by a collector voltage of the second transistor, an applied voltage to the second transistor is controlled by the collector voltage of the first transistor, the base current of the second transistor being controlled by the collector voltage of the first transistor and the charge-discharge circuit.

3,696,312
CYCLOTRON RESONANCE DEVICES CONTROLLABLE BY ELECTRIC FIELDS

Lawrence Kuhn; Varadachari Sadagopan, both of Ossining, and Robert T. Tsui, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,111
Int. Cl. H03h 9/22, 9/30
U.S. Cl. 333—24 R 43 Claims

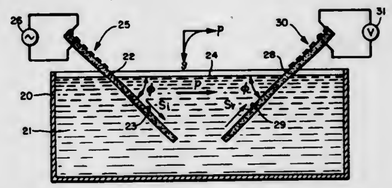


Electric field controllable devices which operate on the principle of velocity change of a wave passing therethrough. These waves can be magneto-elastic or spin waves, including surface waves. The materials used in these devices include $Ga_{2-x}Fe_xO_3$, Cr_2O_3, and YIG. When the electric field across the device is changed, the cyclotron resonance frequency of the device is greatly shifted, resulting in wave velocity changes up to about 50 percent. A bias magnetic field is generally applied across the devices to establish a resonance frequency. Devices include variable delays, modulators, frequency translators, wave guides, tunable filters, etc.

3,696,313
ARRANGEMENT FOR CONVERTING BETWEEN ACOUSTIC COMPRESSIONAL WAVES AND SURFACE WAVES

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 29, 1970, Ser. No. 59,216
Int. Cl. H03h 9/00; H04r 17/00; H03h 7/36
U.S. Cl. 333—30 R 5 Claims

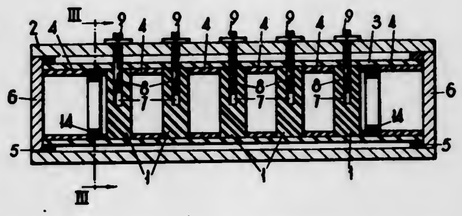


One or more conversion devices effect conversion between compressional waves and surface waves. In one form, surface waves created by an applied input signal are converted to compressional waves having an exponential amplitude taper across their path and those compressional waves, in turn, develop surface waves from which an output signal is derived. In another form wherein compressional waves create surface waves at a common boundary, the compressional waves exhibit an at least approximate exponential amplitude taper across their path. In yet another form, compressional waves create surface waves at a common boundary the length of which is such that, in traveling along the boundary in the reverse direction, the surface waves would be attenuated by a value of $1/e$. These conversion devices are reversible and typically the surface-wave medium is a solid while the compressional-wave medium is a liquid, semi-liquid or plastic.

3,696,314
MICROWAVE DEVICES

Robert Christopher Kell, South Harrow, England; David Forbes Rendle, Waterloo, Ontario, Canada, and Eric Edward Riches, St. Albans, England, assignors to The General Electric Company Limited, (formerly The General Electric and English Electric Companies Limited), London, England

Filed Aug. 17, 1970, Ser. No. 64,301
Int. Cl. H03h 7/10, 13/00; C04b 35/48
U.S. Cl. 333—73 W 3 Claims



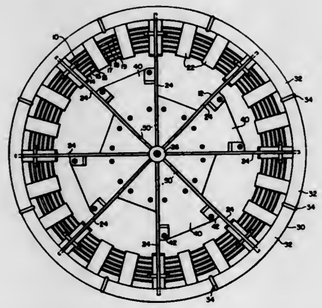
In a microwave device incorporating a component formed of dielectric material, and so designed that the response of the device is dependent on the permittivity of the said material, the component is formed of a ceramic material consisting essentially of one or more alkaline earth metal zirconates, or zirconates and titanates, the composition of the material being such that the atomic ratio of zirconium to titanium is not less than 80 : 20, that it does not contain more than 10 mole percent of barium titanate, and that the material will have, at frequencies in the range of 400 MHz to 30 GHz, permittivities in the range of 25 to 75, a substantially constant temperature coefficient of permittivity, which is preferably within the

range from +50 to −100 p.p.m. per degree Centigrade, and a loss tangent not exceeding 0.005 at 20° C. The dielectric materials are suitable for use, for example, as resonators for microwave bandpass filters, and as substrates for microwave integrated circuits, and are advantageous for these applications in having substantially constant temperature coefficients of permittivity, of controllable values, as well as low dielectric losses, at microwave frequencies.

3,696,315
LINE TRAPS FOR POWER LINE CARRIER CURRENT SYSTEMS

Oral L. Riggins, Odon, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 74,993
Int. Cl. H01f *27/08, 15/10*
U.S. Cl. 336—192 **5 Claims**

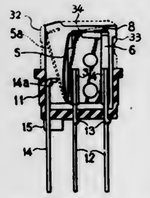


A line trap is provided in an arrangement facilitating current balance between a plurality of layers as well as providing mechanical stability. The line trap includes a coil of an electrical conductor with an end frame at each end that comprises a plurality of bars extending radially outward from a central hub. The radial bars are mechanically attached to the coil structure and also provide a path for electrical conduction from the layers of the coil to centrally located connector taps. The radial bars also permit terminating coil layers at desired fractions of a turn to achieve current balance. Preferably the layers of the coil have turns uniformly spaced from the axis with uniform spacing between adjacent turns of all the layers.

3,696,316
FUSES AND FUSEHOLDERS

Tadashi Kitagawa; Shoichiro Yaguchi; Katsuyuki Yamanobe, and Masao Kawamata, all of Tokyo, Japan, assignors to Daito Tsushinki Kabushiki Kaisha, Tokyo-to, Japan

Filed June 4, 1971, Ser. No. 150,101
Claims priority, application Japan, Dec. 31, 1970, 45/138478; Dec. 31, 1970, 45/138479
Int. Cl. H01h *85/56, 85/08, 85/30*
U.S. Cl. 337—206 **7 Claims**

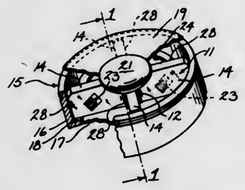


A fuse device comprising a fuse and a fuseholder, in which a fuse element of the fuse comprises a fuse wire and good-conductive layer coated on the fuse wire except a melting center portion thereof. The fuse is provided with a spring indicator and a spring strip which are seated in parallel with each other. The fuse element is connected to respective tops of the spring indicator and the spring strip while the spring indicator is pulled to the spring strip. The fuseholder is provided with a hollow which receives the lower part of the fuse, and two fork terminals seated in the hollow to be coupled with the spring indicator and the spring strip. The fuseholder may be provided at least one alarm terminal in addition to the two fork terminals.

3,696,317
LOW CAPACITY, LOW PROFILE LOAD CELL

Emory W. Farr, Santa Fe Springs, Calif., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Aug. 19, 1970, Ser. No. 65,155
Int. Cl. G01l *1/22*
U.S. Cl. 338—5 **5 Claims**

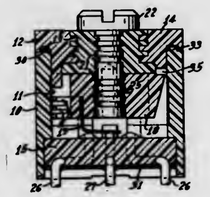


A sensing element, which includes a central core having four radially projecting webs with a bonded foil strain gauge on each web, is enclosed in a cylindrical case having an integral bottom with an annular ledge supporting the outer portions of the webs of the sensing element. The case is closed by a top diaphragm which centers a load-receiving button over the core of the sensing element.

3,696,318
TRIMMER POTENTIOMETERS

Walter Mack, Elmhurst, N.Y., assignor to Litton Precision Products, Inc., Mt. Vernon, N.Y.

Division of Ser. No. 774,682, Nov. 12, 1968, Pat. No. 3,597,837. This application July 28, 1970, Ser. No. 64,874
Int. Cl. H01c *9/02*
U.S. Cl. 338—162 **4 Claims**

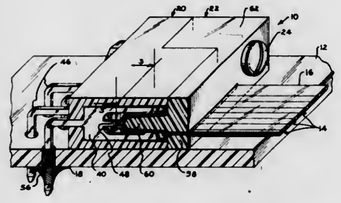


A potentiometer or variable resistor adapted to be fabbricated in subminiature size. The potentiometer or resistor comprises a top assembly and bottom header, and an insulating shell or casing. The top plate assembly is co-molded with a plastic bearing member for the adjustable shaft carrying the contact brush or wiper. The top plate is also co-molded with the insulating brush block on the adjustable shaft. A plastic sleeve is positioned between the brush block and the adjusting shaft to secure the block in place, provide a friction-clutch drive for turning the brush block and contact wiper which will slip if the shaft is turned after the block strikes the stop at the end of its travel, and act as a cushion between the metallic shaft and the molded block when the potentiometer is subjected to relatively large temperature changes. Terminals are provided, in the bottom header, for the contact wiper and resistance element. The resistance element may be of any suitable type, such as wire-wound, carbon film, thick metal or metal oxide film or thin metal or metal oxide film.

3,696,319
FLAT CONDUCTOR CABLE CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Aug. 20, 1970, Ser. No. 65,407
Int. Cl. H05k *1/04;* **H01r** *7/28*
U.S. Cl. 339—17 F **13 Claims**



A flat conductor cable connector of the type having a first body with a recess formed in the body and terminals positioned along the recess and a second body having a nose about which the conductors of a flat cable are wrapped so that when the nose is inserted into the recess an electrical connection is formed between each conductor and a terminal in the first body. Each terminal includes a stop extending into the path of insertion of the nose to limit insertion of the nose into the recess.

3,696,320
TELEPHONE PATCH SYSTEM

Donald J. Smith, Woodland Hills, Calif., and Seth Foster, Bellview, Wash., assignors to Smith-Schreyer & Assoc., Inc.

Filed Sept. 24, 1970, Ser. No. 75,445
Int. Cl. H01r *13/64, 23/02*
U.S. Cl. 339—18 B **19 Claims**

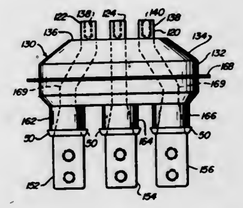


A telephone patch system includes an insulating terminal block having a plurality of passageways and guideways arranged together in a series of columns. Each passageway includes a contact pin which is connected at one end to a telephone line. Each column is adapted to receive a patching plug and a monitoring plug. The patching plug includes a plurality of contact members and a guide member. Each contact member is adapted to extend into a passageway and make electrical contact with the unconnected end of a contact pin. The guide member is adapted to cooperate with a guideway to orient the patching plug.

3,696,321
ELECTRICAL CONNECTOR

James Joseph Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,976
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 A **3 Claims**

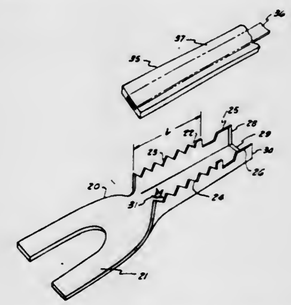


A connector for making one or more electrical connections to a threaded male or female connection for power distribution applications such as power transformer connections especially in locations in which considerable moisture or water is likely to be present. A conductive connector is designed to mate at one end with the transformer connection within the transformer tank. A body, preferably tubular in shape, is suitably molded or cast about the connector and should be composed of a suitable water impervious resin such as epoxy or the like. The molded body terminates at one end in a bushing section for each transformer connection. The molded body at the other end terminates in a tubular cylindrical wall for each connector. Each cylindrical wall terminates in a peripheral raised rim from which a connector tang centrally protrudes. The raised rim mates with a shoulder on the inside of a waterproof, elastic, tubular sleeve to fully insulate the terminal connection against exposure.

3,696,322
INSULATED FLAT WIRE TERMINAL

Paul J. Spangler, Novelty, and Thomas E. Morgan, Cleveland Heights, both of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,789
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 C **8 Claims**



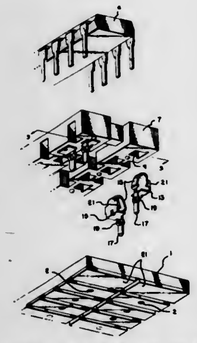
Before crimping, a flat wire connector has a cross-section which is somewhat U-shaped with upstanding side plates having serrations on the top and a rosette of upstanding tines in the floor. When the connector is crimped, the flat wire is pressed down over the rosette, the tines of which pierce the insulation. The two upstanding side walls are rolled in toward the middle of the U, and the serrations are driven downwardly to pierce the insulation and stake the flat wire. The length of the side walls is such that the flat wire may be badly out of

alignment with respect to the connector and yet insure a good electrical connection.

3,696,323
DIP HEADER

Robert John Kinkaid, New Cumberland, and John Carl Asick, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,176
Int. Cl. H01r 23/02, 5/04
U.S. Cl. 339—192 R 7 Claims

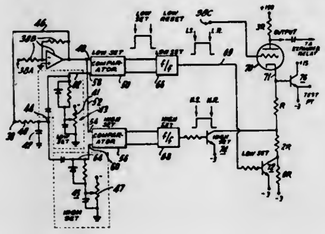


The disclosure relates to a header for receiving electrical contact members and retaining same therein, the header being utilized to receive electrical components through apertures at the top surface thereof which make contact with the electrical contact members therein, the electrical contact members depending below the header for contact and passage through apertures in an associated printed circuit board or the like for subsequent dip soldering thereto. The electrical contact member includes an apertured region thereon between the point of soldering to the printed circuit board and the contact portion thereof for mating with an external component which passes through the top surface of the dip header to prevent the creeping of solder into the resilient contact portion thereof during dip soldering to retain the desired resiliency of the contact for providing for the proper electrical connection to the external components.

3,696,324
ELECTRICAL DISPLAY SYSTEMS

Gilbert Baum, 152 Brite Ave., Scarsdale, N.Y.

Continuation-in-part of Ser. No. 827,349, May 23, 1969, abandoned. This application Oct. 19, 1970, Ser. No. 82,227
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 15 Claims

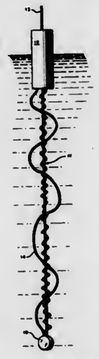


Ultrasonographic display systems provide synchronization of the transducer scanning motion with the horizontal sweep of a cathode ray tube, so that horizontal displacement of the beam on the tube face is proportional to the corresponding displacement of transducer in its scanning motion. Deflection and intensity modulation of the tube beam are combined and preferably a novel expander circuit is provided for highlighting the echo signal of interest, making the system particularly suitable for medical diagnosis of tissue abnormalities.

3,696,325
COMPLIANT SUSPENSION CABLE

Charles V. Tallman, Rye Beach, N.H., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 14, 1970, Ser. No. 37,074
Int. Cl. H04b 11/00; B63b 21/52
U.S. Cl. 340—2 1 Claim

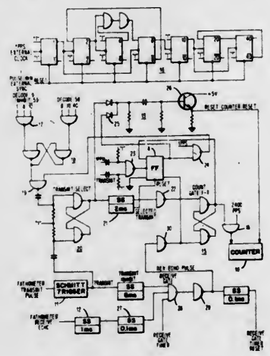


Compliant, nonstrumming, high strength composite cable for sonobuoy suspension system. Nonabsorbent relatively inelastic strands of textile yarn are bound onto an elastomeric warp strand by two counterwound helixes of textile stretch yarn. The inelastic yarn forms random transverse loops along the cable by protruding outwardly through the openings between the helical windings.

3,696,326
DEPTH SOUNDER DIGITIZER

Silvan E. McAlpin, Dallas, Tex., assignor to Mobil Oil Corporation

Filed May 21, 1970, Ser. No. 39,494
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R 5 Claims



A water depth digitizer produces a digital readout from a depth sounder of the type which produces an acoustic ranging pulse and which includes a transducer producing a receive

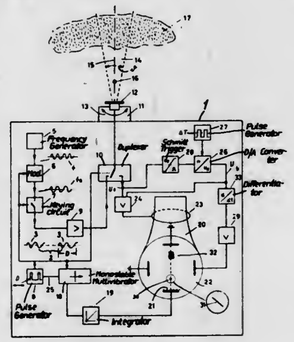
signal representing the return of a reflected acoustic ranging pulse. A digital counter is started in response to an acoustic ranging pulse and is stopped in response to the receive signal occurring after the selected ranging pulse. In order to prevent erroneous readings which occur because the reflected acoustic ranging pulse is not of sufficient amplitude to be detected, a circuit is provided to detect valid information. The digital counter is reset when a receive signal is not received before the next occurring acoustic ranging pulse.

3,696,327
Patent Not Issued For This Number

3,696,328
SONAR APPARATUS, PARTICULARLY FOR DEEP-SEA FISHING

Werner Schwartz, Bremen-Oberneuland, Germany, assignor to Fried Krupp Gesellschaft mit beschraenkter, Haftung, Essen, Germany

Filed May 21, 1970, Ser. No. 39,315
Claims priority, application Germany, May 28, 1969, P 19 27 172.8
Int. Cl. G01s 9/70
U.S. Cl. 340—3 R 14 Claims



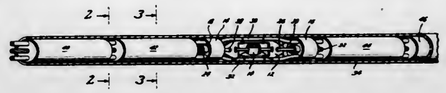
A sonar system, particularly for use for deep-sea fishing, which produces an indication, either optical or acoustical, representative of the received signals which shows not only the range of the reflecting object but additionally whether the reflecting object is a single object or a plurality of closely bunched objects. The transmitted signals are relatively long keyed pulses each of which contains a plurality of nonmonochromatic oscillations which have a distinct predetermined arrangement in time, and has a broad bandwidth as compared to the center frequency of the oscillations. A voltage proportional to the instantaneous or momentary frequency of the received signals is then utilized to modulate the ranging or distance proportional voltage in the indicating device, e.g. a cathode ray tube of an echograph, in order to produce the additional indication representative of the type of reflecting object.

3,696,329
MARINE STREAMER CABLE

Gerald D. Hazelhurst, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Nov. 12, 1970, Ser. No. 88,616
Int. Cl. H01b 7/12
U.S. Cl. 340—7 R 4 Claims

A streamer cable is disclosed that has a plurality of float members inside its outer sheath to add buoyancy and allow the diameter of the cable to be kept to a minimum. The sensors or hydrophones carried by the cable are connected accoustically to the water by a filler having good accoustic properties. The filler is either an elastomeric material cured in place or a high



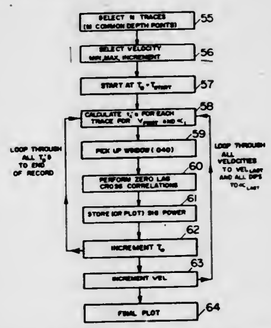
temperature-low viscosity, low temperature-high viscosity, grease-like material. A method of locating the float members for uniform buoyance is also disclosed.

3,696,330
Patent Not Issued For This Number

3,696,331
AUTOMATED PROCESS FOR DETERMINING SUBSURFACE VELOCITIES FROM SEISMOGRAMS

Norman J. Guinzy, Austin; Clyde W. Kerns, Irving; William H. Ruehle, Duncanville, and Henry E. Teague, Arlington, all of Tex., assignors to Mobil Oil Corporation

Continuation of Ser. No. 769,590, Oct. 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 752,600, Aug. 14, 1968, abandoned. This application July 22, 1970, Ser. No. 57,254
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 DP 9 Claims



In the determination of acoustic velocity from a suite of seismograms, the signal power of windows from the seismograms is detected for different assumed values of velocity, vertical travel time, and dip. A function indicative of signal presence is plotted as a function of velocity for different vertical travel times to provide an indication of the acoustic velocity characteristic. A plot of signal power for different dip searches provides good results for seismograms from an area including dipping formations.

3,696,332
TELEMETERING DRILL STRING WITH SELF-CLEANING CONNECTORS

Leon L. Dickson, Jr., and Emmett G. Ward, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed May 25, 1970, Ser. No. 40,073
Int. Cl. G01v 1/16
U.S. Cl. 340—18 LD 4 Claims



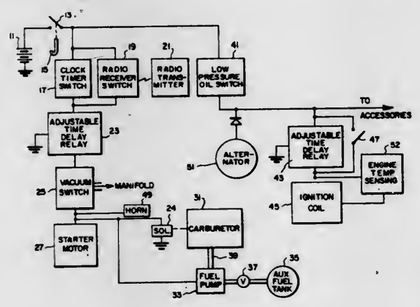
A telemetering drill string in which segments of an insulated electrical conductor are joined by connectors in the pipe

joints is improved by electrical connectors having generally ring-shaped contact-making surfaces which are wiped together as the pipe joints are interconnected. A process of telemetering while drilling in a deep borehole is improved by installing a wire line telemetering system between the drill bit and a section of the above type of segmented electrical conductor-containing telemetering drill string.

3,696,333
AUTOMATIC ENGINE STARTER

Willard Mott, RFD 2, Marion, Ky.

Filed June 10, 1970, Ser. No. 45,055
Int. Cl. B60k *33/00*
U.S. Cl. 340—52 R **8 Claims**



An automatic automobile engine starter using either clock-switching mechanism or a radio remote control switching system to supply current to a starter motor. Current is supplied to the ignition coil through an oil pressure switch to insure that the engine will not start unless there is sufficient oil pressure.

3,696,334
VEHICLE WARNING LAMP DEVICE

John C. Demeter, 14214 Moffett Drive, Fenton, Mich.

Filed Oct. 8, 1970, Ser. No. 79,210
Int. Cl. B62j *8/04*
U.S. Cl. 340—134 **10 Claims**

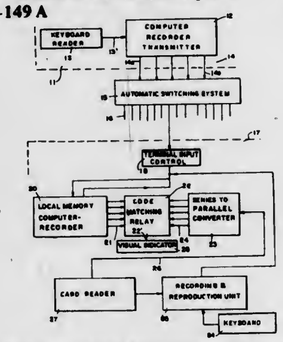


A device for supporting a lamp adapted for use as a warning light on motorcycles and the like. The device has an L-shaped configuration with a horizontal leg adapted to be mounted adjacent the motorcycle seat and a vertical leg disposed rearwardly of the seat and extending upwardly to support the lamp and a backrest. The upwardly extending leg includes a pair of telescopically engaging tubular members which permit retraction and extension of the leg for adjusting the height of the lamp with respect to the motorcycle. The device includes means for mounting a taillight and directional signals.

3,696,335
CREDIT VERIFICATION SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 311,252, Sept. 24, 1963, Pat. No. 3,511,940, which is a continuation-in-part of Ser. No. 685,692, Sept. 23, 1957, Pat. No. 3,106,612, and a continuation-in-part of Ser. No. 417,386, Dec. 10, 1964, Pat. No. 3,434,130, which is a continuation-in-part of Ser. No. 142,748, Aug. 28, 1961. This application April 21, 1970, Ser. No. 30,450
Int. Cl. G06f *7/04*; H04q *5/02*
U.S. Cl. 340—149 A **11 Claims**



A credit verification system employing cards such as credit cards, and means for automatically determining if an account represented by a card is of acceptable credit. In one form, information recorded on the card which identifies the account, is read after inserting the card into a reader and is compared with locally recorded information to determine if the account is acceptable for effecting the transaction. Upon generation of an indication that the credit standing of the account is acceptable or verified, the card may be used to complete the transaction in a printer which prints information recorded on the card onto one or more transaction slips.

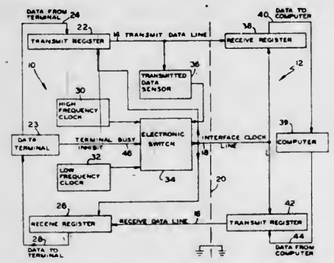
3,696,336
Patent Not Issued For This Number

3,696,337
Patent Not Issued For This Number

3,696,338
DATA TERMINAL-COMPUTER SERIAL INTERFACE SYSTEM HAVING AUTOMATIC BAUD RATE SWITCHING

Richard B. Preiss, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 20, 1970, Ser. No. 65,401
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **6 Claims**



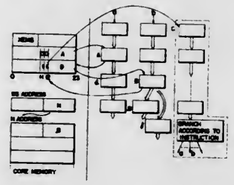
Interface circuits for transmitting digital information serially from a computer data terminal through a transmit data line to a computer and also in the reverse direction through a receive data line from the computer to the data terminal provide automatic electronic switching responsive to transmission of information through the transmit data line for disconnecting the pulse output of a high frequency clock from a single interface clock line, and at the same time connecting a lower frequency clock to this clock line. The clocks control transmit and receive registers in the interface to produce one rate of data transmission when no data is being transmitted in the direction from the data terminal to the computer and a lower rate of data transmission when data is being transmitted in such direction. A terminal busy inhibit signal from the data terminal may also be employed to prevent transmission of clock pulses by the clock line when the data terminal is not ready to receive data.

3,696,339
Patent Not Issued For This Number

3,696,340
MICROPROGRAM EXECUTION CONTROL FOR FAULT DIAGNOSIS

Shigenori Matsushita; Fumitaka Sato, and Haruhisa Miura, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 9, 1970, Ser. No. 87,832
Claims priority, application Japan, Nov. 10, 1970, 45/89281
Int. Cl. G06f *9/16*
U.S. Cl. 340—172.5 **12 Claims**



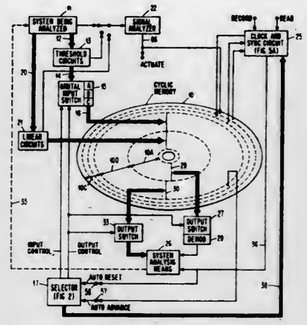
A microprogram execution control for fault diagnosis includes a first and a second address register. The first address register designates the microaddress of one microstep stored in a fixed memory which is designated by a diagnostic microprogram information succeeding a diagnostic program instruction from a main memory. After one microstep is executed, the first address register designates a specified microaddress in the fixed memory, and the second address register stores the microaddress of a next microstep to be executed. At a step during the succeeding diagnostic routine, the content of the second address register is stored into the main memory.

3,696,341
SIGNAL ANALYSIS

Robert Z. Watts, and Robert L. Weiss, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,661
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **7 Claims**

A programmable cyclic recorder selectively records signals on a plurality of analog and digital record tracks. A signal analyzer responds to an event occurring in a system being analyzed (which supplies the signals to be recorded) for stopping further recording and holding all recorded signals in the cyclic recorder. The recorded signals are then selectively read back track by track and analyzed for determining system performance. Synchronizing pulses are recorded contemporaneously with all of the tracks for accommodating a wide variety of signals. Various recording and readback circuits are provided having different signal delays. The sync signal from the sync track is delayed differing amounts in accordance with the signal delays of the various tracks to provide a constant real time signal reference to system analysis means. Synchronization of signal analysis is based upon the events which stop the recording.

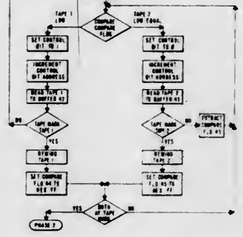


3,696,342
Patent Not Issued For This Number

3,696,343
METHOD OF MERGING DATA ON A TWO TAPE DRIVE SYSTEM

Phillip Christian Schloss, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

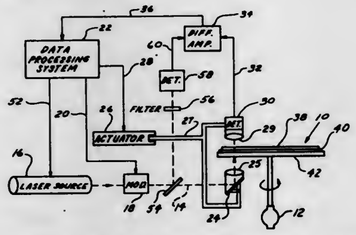
Filed July 29, 1971, Ser. No. 167,116
Int. Cl. G06f *7/32*
U.S. Cl. 340—172.5 **4 Claims**



Records from tapes one and two are merged in a logical sequence on tape three in a two-tape drive system. Prior to the merge operation sequence, control bits, ones and zeros, developed in response to high, low, equal comparisons of the records on tapes one and two, are stored. Then in two successive operations, records, first from tape one and then from tape two, are written on tape three, in sequence as determined by the control bits. While records from tape one are being written, control bits indicating that records from tape two are next in sequence cause zeros to be written on tape three to reserve space for records from tape two. After all records have been written from tape one and zeros have been written to reserve space for records from tape two, a tape mark is written on tape three and tapes one and three are rewound. Tape two is mounted in place of tape one and whenever zeros are read from tape three, records from tape two are inserted. When the

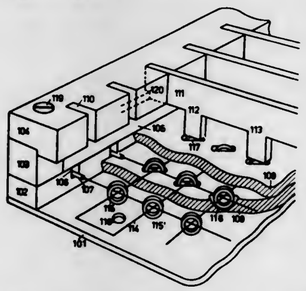
tape mark on either tape two or three is detected, the operation is complete.

3,696,344
OPTICAL MASS MEMORY EMPLOYING AMORPHOUS THIN FILMS
Julius Feinleib, Birmingham, and Robert F. Shaw, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Filed Feb. 19, 1970, Ser. No. 12,622
Int. Cl. G11c 13/04; G02f 1/30, 1/36
U.S. Cl. 340—173 LM **2 Claims**



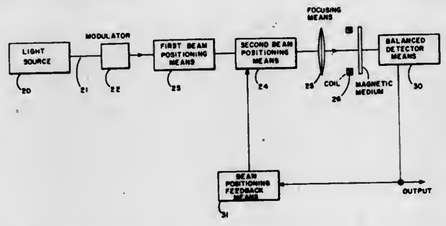
This optical mass memory utilizes an amorphous semiconductor thin film which can be switched between a generally amorphous or disordered state and a crystalline or more ordered state by applying a laser beam. The laser beam is modulated and scanned across the amorphous film to record and erase information by switching the state of certain regions of the film. The same laser beam modulator and scanner can be used to read the information stored on the film by detecting whether the film is in the amorphous or crystalline state at any given location. The laser beam is composed of at least two frequencies, one of which is absorbed by the amorphous film and is used to write and also erase information on the film. The amorphous film is transparent to the other frequency and the transmission of this frequency is used to determine whether the film is in the crystalline or amorphous state at any given location thereby reading out the information recorded therein.

3,696,345
MAGNETIC CORE STORAGE MATRICES
Gerhardus Bernardus Visschedijk, 123 Achterholkse Malenweg, Hengelo, Overijsel, Netherlands
Continuation of Ser. No. 404,294, Oct. 16, 1964, abandoned. This application Feb. 2, 1970, Ser. No. 7,336
Claims priority, application Netherlands, Oct. 18, 1963, 299,494
Int. Cl. G11c 5/04, 17/00
U.S. Cl. 340—174 MA **7 Claims**



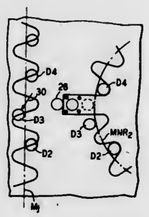
A magnetic core storage matrix comprises a rigid support plate of magnetic material that supports a layer of flexible plastic material impregnated with fine iron powder and containing recesses in the form of a matrix. A plurality of magnetic storage cores are mounted in the recesses. Information is recorded in the storage matrix by applying saturating magnetic fields to selected ones of the cores.

3,696,346
BEAM ADDRESSED OPTICAL MEMORY
James David Zook, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 30, 1971, Ser. No. 175,884
Int. Cl. G11c 11/42, 11/14
U.S. Cl. 340—174 YC **8 Claims**



A beam addressed optical memory utilizing a magnetic medium for information storage is provided with improved tracking. Alternate tracks of first and second magnetic direction are provided on the magnetic medium. The interface between adjacent tracks defines a domain wall boundary. A plurality of alterable information bits having either the first or the second magnetic direction are centered essentially on the boundary.

3,696,347
SINGLE WALL DOMAIN INFORMATION TRANSFER ARRANGEMENT
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 8, 1971, Ser. No. 178,740
Int. Cl. G11c 11/14, 19/00
U.S. Cl. 340—174 TF **8 Claims**

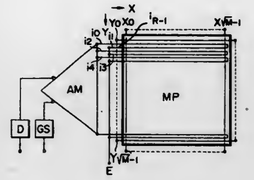


The transfer of information between single wall domain propagation channels in each of which information is represented by the side of a rail along which a domain moves is affected by a relay domain, the position of which is modified in accordance with information in one channel to change the side of the rail along which domains in the other move.

3,696,348
INFORMATION WRITING CIRCUIT FOR MEMORY DEVICE
Tatsuo Kobayashi, Yokohama, Japan, assignor to E.R.D. Corporated, Tokyo, Japan
Filed April 20, 1970, Ser. No. 29,996
Int. Cl. G11c 5/08, 7/02
U.S. Cl. 340—174 AC **2 Claims**

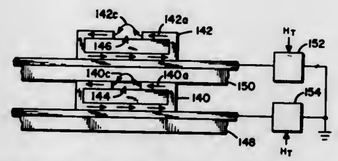
In a three-dimensional current coincident mode memory

plane, inhibit lines, common-inhibit-sense lines and/or sense lines are divided into a plurality of pairs of wirings so as to be



selectively driven through an address decode matrix by drivers and gate switches.

3,696,349
BLOCK ORGANIZED RANDOM ACCESS MEMORY
Alan D. Kaske, and Gerald F. Sauter, both of Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed June 4, 1971, Ser. No. 149,970
Int. Cl. G11c 11/14
U.S. Cl. 340—174 NC **5 Claims**

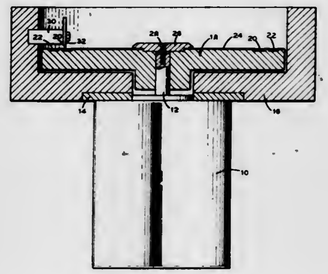


A three-dimensional magnetizable memory stack of Mated-Film memory elements each of which provides a substantially closed flux path, except for a gap transverse to the element's easy axis, is disclosed. The stack is comprised of a plurality of superposed, i.e., laid one upon the other so as to make all like-oriented-parts vertically coincide, similar transfer arrays sandwiched between a write array and a read array, all arrays having similarly arranged Mated-Film write/read, transfer memory elements with a gap in the top layer for providing an external longitudinal steering field $\pm H_L$ across the gap that is inductively coupled to each next superposed memory element. Information is written into the memory elements of the write array using word-organized coincident currents. Information from each memory element is then transferred vertically through the stack in successive transfer operations between each next super-posed memory element by using the steering field $\pm H_L$ of the next bottom memory element in coincidence with an applied transverse DC drive field H_T at the next top memory element. The information written in the bottom write array is successively transferred or shifted from transfer array to transfer array and into the top read array from which it is read out in a word-organized random-access manner.

3,696,350
CONNECTED ROTATABLE PLIABLE DISK AND RIGID DISK WITH ANNULAR GROOVE FOR RECORDING USING AN AIR BEARING
William D. Cohen, 4 Fall Oak Drive, Huntington, N.Y., and David E. Worster, 265 W. 5th St., West Islip, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,349
Int. Cl. G11b 5/60
U.S. Cl. 340—174.1 E **5 Claims**

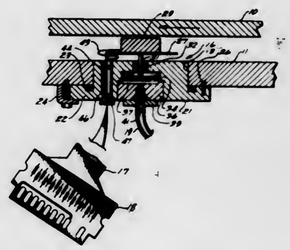
A rotating rigid disk has concentrically connected thereto a pliable disk record medium. An annular groove is provided in the surface of the rigid disk opposite the pliable disk record medium. A transducer is fixed in close proximity to the surface of the pliable disk record medium opposite the annular groove.

The connected disks are rotated at sufficiently high speed to generate a centrifugal force on the pliable disk and a subatmospheric pressure within the annular groove so that the centrifugal force on the pliable disk and the force generated by



the sub-atmospheric pressure within the annular groove dynamically balance with the aerodynamic forces established between the surface of the pliable disk and the end of the transducer extending within the region defined by the annular groove whereby an air bearing is established between the transducer and the surface of the pliable disk.

3,696,351
RECORDING HEAD MOUNTING AND ACTUATOR COMBINATION
Robert G. Groom, Thousand Oaks, and Collen K. Brimm, Canoga Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 23, 1970, Ser. No. 91,729
Int. Cl. G11b 5/50, 21/26, 5/60
U.S. Cl. 340—174.1 C **2 Claims**

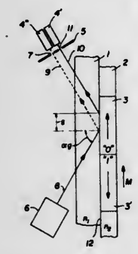


A recording head mounting arrangement is provided for precisely positioning a plurality of recording heads in a housing adjacent a face of a magnetic memory disk. Each recording head is mounted on an individual assembly for individual removal if desired. Holes for mounting the head assemblies are provided in the housing in precise positions and means are provided for keying the assemblies to the housing for maintaining head orientation. Each individual assembly comprises a circular body extending through the housing with the head mounted on a conventional gimbal spring inside the housing. A pneumatic actuator is concentric with the circular body for advancing and retracting the head. Means are provided for passing electrical leads from the recording head to the outside of the housing.

3,696,352
MAGNETO-OPTICAL READOUT BEAM SHIFTED AS A FUNCTION OF INFORMATION

Heinz Schilling, Magdeburg, Germany, assignor to VEB Kombinat Robatron, Radeberg, Wilhelm-Pieckstrasse, Germany

Filed Nov. 25, 1970, Ser. No. 92,625
Int. Cl. G11b 7/12
U.S. Cl. 340—174.1 M 14 Claims

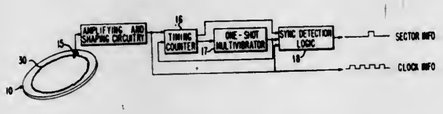


Magnetically stored information is retrieved or picked-up in a magneto-optical manner by successively scanning magnetic storage elements in a magnetic storage member with a beam of polarized electro-magnetic radiation at such critical angle of incidence that the reflected beam is shifted and reflected or reflected without shift depending upon the direction of magnetization present in said storage elements which direction may assume but two possible values representing a digital "1" or a digital "0." The shift or its absence is ascertained as representing said information by means of at least one receiver and an orifice means or shutter positioned relative to said magnetic storage member and relative to a scanner so as to assure said critical angle. The storage member comprises a total reflection layer on top of a layer including said magnetic storage elements.

3,696,353
TIMING TRACK WITH DISCONTINUITY

Virgilio J. Quiogue, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1971, Ser. No. 168,962
Int. Cl. G11b 27/22
U.S. Cl. 340—174.1 A 11 Claims

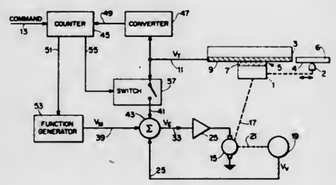


A method and circuit for deriving timing signal information required by present day rotating magnetic storage media from a single control track of N clock pulses, where the N Clock pulses are spaced in at least (N ÷ 1) clock pulse periods or cycles, and where the trailing edge of each clock pulse coincides with the trailing edge of a pulse period or cycle. Conceptually, a comparison is continuously made between the time durations between the trailing edges of pairs of successive clock pulses and when the time durations differ by a predetermined amount, a sync pulse is generated corresponding to a pulse normally derived from a conventional sector track. A pulse train generator and a one-shot multivibrator employing an R-C timing network coordinated by a sync detection logic system are used to effect the comparison and generate the sync pulse.

3,696,354
POSITION CONTROL SYSTEM

Gaston Albert Palombo, 28 Rose Ave., Watertown, Mass., and Thomas A. Boissevain, 24 Paul Revere Road, Bedford, Mass.

Continuation of Ser. No. 863,226, Oct. 2, 1969, abandoned.
This application Nov. 19, 1971, Ser. No. 200,574
Int. Cl. G11b 5/52, 21/10
U.S. Cl. 340—174.1 C 8 Claims



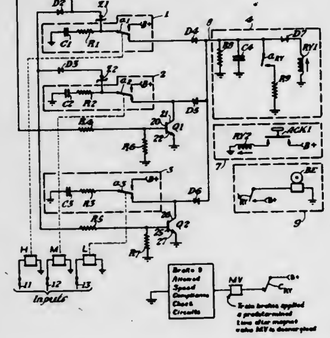
Positioning apparatus for controlling the relative placement of two members in which coarse control is performed in a first mode and fine control in a second mode. Switching between modes occurs automatically. A profile utilizing discrete signals is used for minimizing transit time.

3,696,355
Patent Not Issued For This Number

3,696,356
ACKNOWLEDGING CIRCUIT ARRANGEMENT

Raymond C. Franke, Glenshaw, and William B. Dufer, Penn Hills Twp., Allegheny County, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed June 17, 1971, Ser. No. 153,966
Int. Cl. G08b 21/00
U.S. Cl. 340—213.1 20 Claims



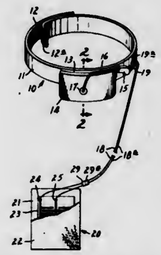
An acknowledging arrangement comprising a charging circuit associated with each input signal, a warning actuating and acknowledging circuit means, and a secondary discharge circuit associated with each input signal except the least restrictive. Each charging circuit is controlled in response to the reception of the associated input signal to store a predetermined amount of operating energy. When a more restrictive signal is received, this stored energy is discharged to actuate a warning indicator. A time delay arrangement included in the actuating circuit delays the warning for a preset time to eliminate momentary false restrictive signals. A single relay is actuated to control the warning indicator for all input signals. This same relay responds to acknowledgement action by the

train operator to halt the warning and restore the brake magnet valve, if other safety checks are proper. The secondary discharge circuits drain the stored energy from the activated charging circuit, when a less restrictive input signal is received, to inhibit the warning indication and the need for acknowledgement.

3,696,357
ENURESIS PREVENTION TRAINING DEVICE

Bernard W. Kilgore, 394 Fair Oaks Drive, Mora, Minn.

Filed April 15, 1970, Ser. No. 28,722
Int. Cl. G08b 21/00
U.S. Cl. 340—235 9 Claims

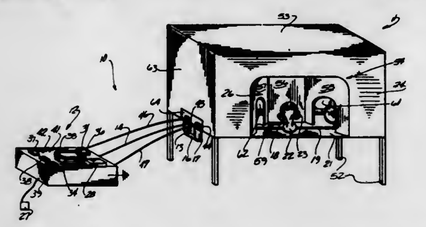


Enuresis prevention training devices, of the type wherein urine bridges an open electrical circuit and thereby actuates an audible signal generator, are made more effective and less distracting to others if the signal generated is of low volume and directed into the ear of the trainee. The signal generator is desirably carried on a headband.

3,696,358
CONTROL CIRCUITRY FOR AN ADVERTISING DISPLAY

Louis J. Vasku, 711 N. Bellevue Blvd., Bellevue, Nebr.

Filed April 21, 1971, Ser. No. 136,798
Int. Cl. G08b 3/10
U.S. Cl. 340—221 14 Claims



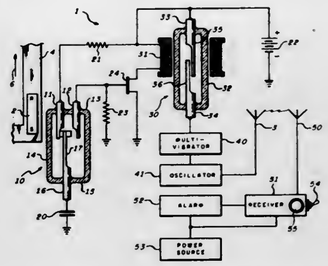
An electrical circuitry for coordinating the movement of a continuous and repetitive series of advertising display items with an audible program having therein a prerecorded commentary relative to the display items wherein a movable display apparatus is operably connected to an audible system through the electrical circuitry, and the audible system includes a magnetic tape having sensor tapes affixed thereto which coact with relays in the electrical circuit to coordinate the movement of the apparatus to the movement of the magnetic tape.

3,696,359
INTRUSION ALARM SYSTEM

Gerald F. Ross, Lexington, and Hugh C. Maguire, Westford, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 26, 1971, Ser. No. 109,866
Int. Cl. G08b 13/08
U.S. Cl. 340—224 8 Claims

A wireless point of entry intrusion alarm system having a central monitor and alarm cooperates with magnetically actuable entry detectors placed at potential entry locations. Each

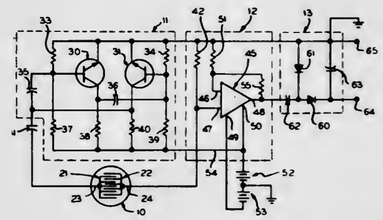


sensor is automatically reset by the same magnetic means upon reclosure of the guarded entry.

3,696,360
IMPENDING CONDENSATION ALARM

Wieslaw Gajewski, Chicago, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed June 16, 1971, Ser. No. 153,614
Int. Cl. G01n 25/00
U.S. Cl. 340—235 5 Claims



Device for warning of impending condensation including a sensor in contact with the element being monitored to measure conductivity at the sensor, an alarm, and electrical circuitry responding to the sensor to trigger the alarm at a given temperature above dew point.

3,696,361
Patent Not Issued For This Number

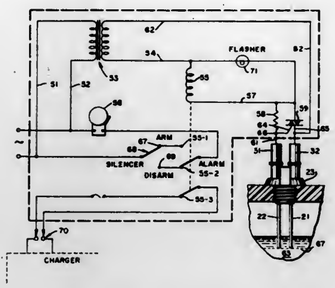
3,696,362
LOW ELECTROLYTE LEVEL ALARM DEVICES

Richard L. Sieron, Old Saybrook, Conn., assignor to Dual-Lite Company, Newton, Conn.

Filed Sept. 14, 1970, Ser. No. 71,807
Int. Cl. G08b 21/00
U.S. Cl. 340—244 C 14 Claims

Two electrodes immersed in an electrolyte solution shunt the gate of a "Triac" solid state switching device connected in parallel with a current-limiting resistor which is connected via an alarm device across a power source. When the electrodes are immersed below the surface of the electrolyte, they serve as a closed switch drawing minimum current through the current limiting resistor, thus biasing the "Triac" in its non-conductive mode and trickling through the alarm device at amperage levels so low that the alarm device does not respond. When the electrolyte level falls, leaving the electrodes above the electrolyte solution, they become an open circuit. This reduces the trickle current to zero and applies full power source voltage to the gate of the "Triac," triggering the "-

Triac" from a current blocking mode to a conductive mode. This permits an alarm current to pass through the "Triac,"



thereby drawing this higher amperage current through the alarm device, producing an alarm signal indicating the level of the electrolyte.

3,696,363

FAILURE INDICATING ARRANGEMENTS FOR GYROSCOPES

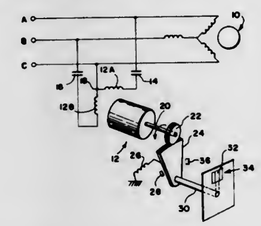
Bo Hans Gunnar Ljung, Canoga Park, Calif., assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Nov. 10, 1969, Ser. No. 875,406

Claims priority, application Sweden, Nov. 22, 1968, 15888/68

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 B **4 Claims**



An arrangement for indicating failures in the three-phase voltage supply for a gyro motor of the induction type includes a servo motor connected in parallel with the gyro motor for controlling movement of an indicator vane. The servo motor includes a pair of windings which are respectively connected between a common phase and each of the remaining phases of the three-phase supply. These windings produce a torque which acts in opposition to the torque produced by a spring which normally biases the vane into a failure-indicating position.

3,696,364

SAFETY DEVICE MONITORING SYSTEM

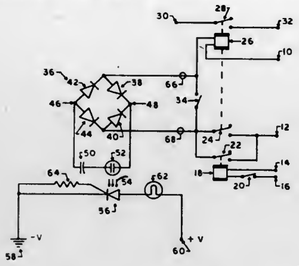
Michael R. Lavelle, 9331 North Delaware St., Indianapolis, Ind.

Filed June 21, 1971, Ser. No. 154,734

Int. Cl. G08b *21/00*

U.S. Cl. 340—252 R **9 Claims**

For use in monitoring a safety device switch through which alternating current flows, monitoring means comprising a rectifier connected across such a switch to provide a direct current output when the switch is opened, a light and a capacitor connected in series across the output of the rectifier, a signal light, and a light-actuated silicon controlled rectifier. The silicon controlled rectifier is positioned and arranged to be actuated or rendered conductive by light from the light which is in series with the capacitor. When the safety device switch is opened, direct current provided by the rectifier charges the capacitor to a predetermined level. During this charging process, the light in series with the capacitor



produces light for actuating the silicon controlled rectifier. The power source for the signal light and the silicon controlled rectifier may be a separate, low voltage direct current power source completely separate from the power source producing the current flowing through the safety device switch.

3,696,365

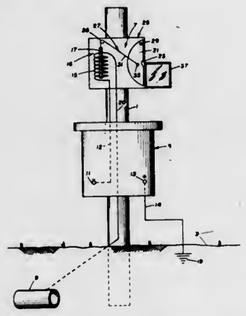
CATHODIC PROTECTION SYSTEM

Charles F. Ward, Midland, Tex., assignor to Mobil Oil Corporation

Filed July 30, 1971, Ser. No. 167,757

Int. Cl. G08b *5/14*

U.S. Cl. 340—253 E **10 Claims**



This specification discloses a system for cathodically protecting a metallic body which is in contact with an electrolyte. This system employs in combination a rectifier, a coil and plunger forming a solenoid, a mechanical signaling device, a means mechanically connecting the plunger of the solenoid with the mechanical signaling device, a metallic body in contact with an electrolyte, a ground bed, and a means forming an electrical circuit including the rectifier, coil, metallic body, ground bed, and electrolyte. Loss of current due to rectifier failure permits the mechanical flag to appear as a warning.

3,696,366

GROUND DETECTOR SYSTEM HAVING FAST RESPONSE AND DECOUPLING OF DETECTOR CIRCUIT

Charles H. Parsons, Monroe, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

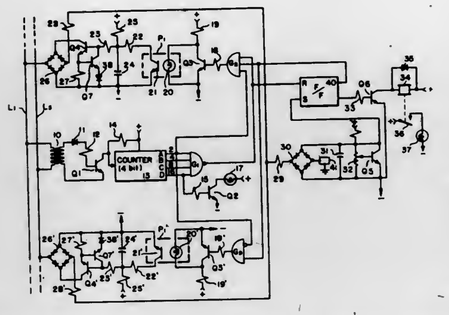
Filed March 22, 1971, Ser. No. 126,813

Int. Cl. G08b *21/00*

U.S. Cl. 340—255 **20 Claims**

A detector is disclosed which senses ground currents exceeding a predetermined magnitude in either one of a pair of

line wires. A counter causes each line to be periodically and alternately connected to the detector for individual sensing of each line. An alarm system is provided which is responsive to a signal from the detector to generate a warning signal when a current exceeding said predetermined magnitude is sensed.



The structure includes means for connecting each line to the detector and for responding to the alarm signal by decoupling the detector from the lines to thereby eliminate any contribution to the ground current which might be contributed by the presence of the detector coupled to the lines.

3,696,367

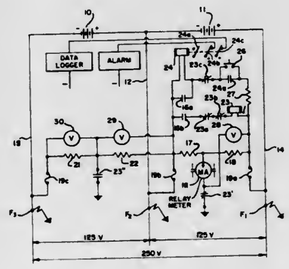
GROUND FAULT DETECTION CIRCUIT

Sayed-Ibrahim S. Inamdar, Newark, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed April 21, 1971, Ser. No. 135,915

Int. Cl. G01r *31/02*

U.S. Cl. 340—255 **10 Claims**



A ground fault detection circuit for use with dual voltage battery systems, comprising first and second ground connected circuits which are alternatively energized depending on the location of a ground fault in any one of three lines connected to the system, and including means for visually observing the extent of such ground faults.

3,696,368

RADIO FREQUENCY BURGLAR ALARM SYSTEM

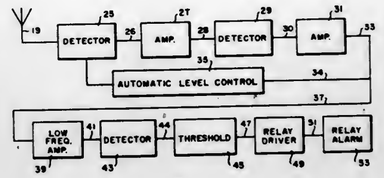
Ray B. Kauffman, 9500 Underwood St., Seabrook, Md.

Filed April 15, 1969, Ser. No. 816,320

Int. Cl. G08b *13/00*

U.S. Cl. 340—258 A **12 Claims**

The burglar alarm system utilizes a transmitter that transmits an RF signal which is both amplitude modulated and frequency modulated. The signal is received by a receiver which is capable of sensing increases or decreases in the received energy due to movement through or into the energy



field which is generated and radiated by the transmitter. This change in energy level causes the receiver to trigger an alarm.

3,696,369

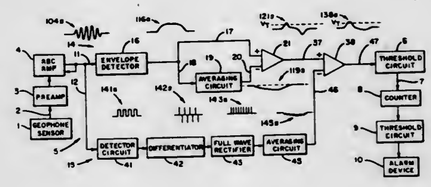
SIGNAL PROCESSOR

Marvin D. Laymon, Milpitas, Calif.; Jerome D. McCoy, Tulsa, Okla., and Millard F. Schewe, Sunnyvale, Calif., assignors to Sylvania Electric Products Inc.

Filed Dec. 2, 1970, Ser. No. 94,405

Int. Cl. G08b *13/00*

U.S. Cl. 340—258 D **26 Claims**



Seismic vibrations sensed by a geophone in a protected area are converted to an electrical seismic signal that is applied to an envelope detector. The detected signal is coupled directly and through an integrator which inverts the polarity thereof to a summing network. The zero crossings of the seismic signal are detected to generate a train of pulses that are integrated to produce a signal having an amplitude that is related to the fundamental frequency of the seismic signal and of the opposite polarity with respect to the detected signal and which is applied to the summing network. The output of the summing network is applied to a threshold circuit which produces an alarm indicating intrusion of the protected area when the magnitude of the sum signal exceeds a prescribed threshold level.

3,696,370

Patent Not Issued For This Number

3,696,371

OUTBOARD MOTOR THEFT ALARM HAVING SWITCH ACTUATED BY MOTOR CLAMP

George G. Wise, 1207 Lakeshore Blvd., P.O. Box 798, Tavares, Fla.

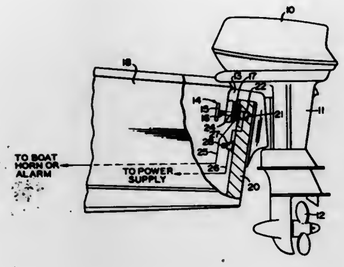
Filed June 28, 1971, Ser. No. 155,849

Int. Cl. H04q *1/44*; **G08b** *7/00, 19/00*

U.S. Cl. 340—275 R **9 Claims**

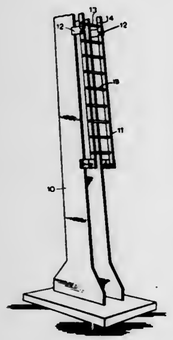
An outboard motor theft alarm system having a switch placed in a transom of a boat which switch is activated by pressing and releasing an extended member. The switch is located directly in front of the outboard motor clamps which

depress the switch which switch is connected to an alarm system or to a transmitter transmitting to a receiver with an



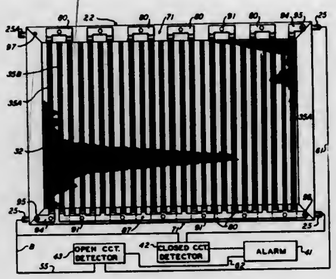
alarm system so that when enabled, any attempt to loosen the outboard motor clamps will set off the alarm.

3,696,372
LADDER WARNING DEVICE
Leo Lawrence Garrett, deceased, Orlando, Fla.; The Florida National Bank at Orlando, administrator, P.O. Box 3593, Orlando, Fla., and Walter L. Birdyshaw, Box 301 Bay St., Ocoee, Fla.
Continuation of Ser. No. 679,297, Oct. 27, 1967, abandoned. This application Sept. 21, 1970, Ser. No. 74,113
Int. Cl. E06c 5/34; G08b 13/02
U.S. Cl. 340—272 **13 Claims**



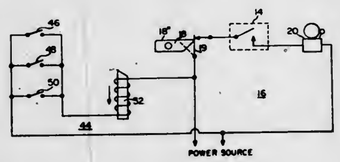
A warning device involving a rigid section of ladder is pivotally suspended from a tank, tower, building or the like and adapted to move slightly upon an intruder placing weight upon the section of ladder. Means are provided for biasing the ladder section in one direction, with the arrangement being such that upon an intruder placing weight upon the ladder, it overcomes this bias and actuates a warning device. The warning device may take the form of a switch which, when actuated, operates an alarm at a remote location, thus alerting a guard or the police of the trespass by the intruder. Significantly, all aspects of this device are inconspicuous, the motion of the ladder is slight, and the intruder in almost all instances will be unaware of the fact that his presence has been detected. Also, the arrangement resets itself automatically, and cannot be actuated by an accumulation of snow and ice.

3,696,373
ELECTRIC ALARM SCREEN
John Malcolm Dunn, 305 Via Montego, San Clemente, Calif., and George Kenneth Hornbrook, 633 Norumbega, Monrovia, Calif.
Filed Aug. 12, 1970, Ser. No. 63,127
Int. Cl. G08b 13/00
U.S. Cl. 340—273 **11 Claims**



A screen with mesh wires of one extension of conductive material electrically separates from screen wires of the opposite extension which may be conductive or nonconductive, is held in a frame having side members each having troughs to receive and hold the wires or strands. Two sets of wire connectors in one trough and one set of wire connectors in an opposite trough establish runs spaced transversely to the conductive strands across the screen mesh. A connector from each set in a trough is next adjacent a connector from the other set. One continuous electrical path back and forth across the screen mesh is established, as are parallel discontinuous paths intermediate the spaced runs of the continuous path. Leads from the screen frame conventional join the connector sets into an alarm circuit including conventional open circuit and closed circuit detectors. The detectors are adapted to actuate an alarm—which may be audible, visual, or recording—when the screen is cut or shorted.

3,696,374
CABINET WITH JAM SWITCH AND ALARM SYSTEM
Joseph Vosbikian, Cheltenham, and James T. Vosbikian, Philadelphia, both of Pa., assignors to Hardware & Industrial Tool Co., Inc., Philadelphia, Pa.
Filed Sept. 25, 1970, Ser. No. 75,572
Int. Cl. G08b 13/06
U.S. Cl. 340—274 **3 Claims**



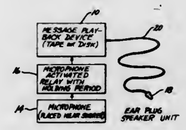
An alarm system for use in protecting structures such as houses, apartments and the like, having movable access means such as doors and windows. A signal actuating means is movable between a preset position and a signal actuating position through a set position. The movement of the actuating means from the preset position to the set position and from the set position to the signal actuating position is timed through the action of a mechanical timer. A trigger means is provided for engaging and stopping the movement of the actuating means in the set position. A tripping means is connected to the trigger means and is associated with a detecting circuit. The opening of the access means controls the detecting circuit to

actuate the tripping means whereby the trigger means is moved out of engagement with the actuating means to permit the actuating means to continue its cycle from the set position to the signal actuating position. A signaling means, such as a bell, is energized when the actuating means reaches the signal actuating position to energize a signal control circuit. In a preferred embodiment of the invention, a self-contained, portable, low voltage power supply is utilized to drive both the detecting circuit and signal control circuit. In a second preferred embodiment of the invention, a high voltage alternating current source is utilized in conjunction with a step-down transformer to energize the detecting circuit and signal control circuit.

3,696,375
Patent Not Issued For This Number

3,696,376
Patent Not Issued For This Number

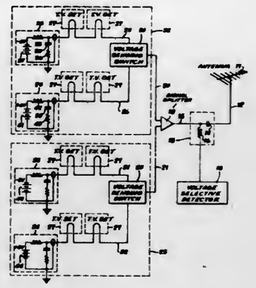
3,696,377
ANTISNORING DEVICE
Thomas P. Wall, 1551-30th West, Seattle, Wash.
Filed July 15, 1970, Ser. No. 55,011
Int. Cl. G08b 23/00
U.S. Cl. 340—279 **4 Claims**



Vocal sounds of a sleeper above predetermined level sensed by a transducer initiate operation of a record player device for delivery of audible antisnoring or equivalent instructions to the sleeper at a level below that sufficient to reactuate the record player device through the transducer means, and a holding means maintains the record player device operative for a predetermined period following initial actuation and thereupon terminates such operation preparatory to succeeding reactuation by the same means.

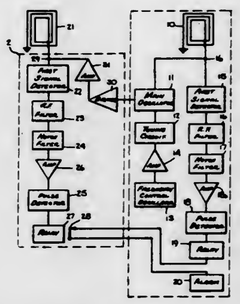
3,696,378
APPLIANCE THEFT ALARM USING VOLTAGE MAGNITUDE SWITCH
Kenneth D. Daniel, Palo Alto, Calif., assignor to Video Engineering, Inc., Sunnyvale, Calif.
Filed Aug. 11, 1970, Ser. No. 62,979
Int. Cl. G08b 13/00
U.S. Cl. 340—280 **7 Claims**

A theft alarm system which operates in conjunction with a signal distribution system for protecting a plurality of devices. The devices receive a signal which is distributed from a central signal location by a plurality of coaxial cable distribution lines extending between the central signal location and termination points. A continuous loop of coaxial cable is threaded through each of the devices and spliced to the respective coaxial cable distribution line. A voltage is applied to each coaxial cable distribution line at its termination point. Voltage sensing switches adjacent the central signal location sense open-circuiting or



short-circuiting of any of the continuous coaxial cable loops and actuate a theft alarm.

3,696,379
APPARATUS FOR ARTICLE THEFT DETECTION
Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,441
Int. Cl. G08b 21/00
U.S. Cl. 340—280 **8 Claims**

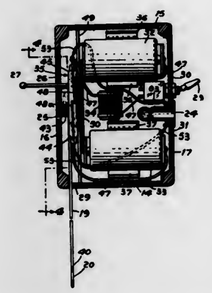


In combination with article theft detection apparatus which employs a signal generator coupled to an antenna at a checkpoint and means for detecting and indicating the change in signal energy caused by the presence of a resonant circuit tuned to the signal frequency adjacent the antenna, a second antenna adjacent the checkpoint, a second detecting system connected thereto and means controlled by the second detecting system for disabling the indicating means when the energy change is due to spurious radiation, line voltage changes, etc., or due to the presence of such a resonant circuit at a different checkpoint to prevent false or ambiguous indications.

3,696,380
PORTABLE ALARM DEVICE
John D. Murphy, 22 East 22nd St., Bayonne, N.J.
Filed June 25, 1971, Ser. No. 156,695
Int. Cl. G08b 21/00
U.S. Cl. 340—283 **16 Claims**

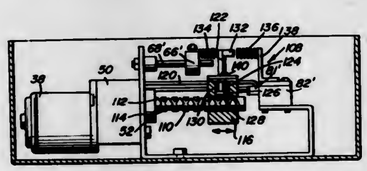
A portable alarm device with a battery or low voltage operated sound signal triggered by a magnetic reed switch which is closed to complete the circuit by a magnet attached to a movably mounted arm, the poles of the magnet being positioned perpendicular to the longitudinal dimension of the contact strips of the reed switch to cause the reed switch to close when the magnet is in either of two positions relative to

the switch thereby permitting the device to be used with doors which open inwardly or outwardly, with sliding doors, in drawers or with windows on two sides of a room. The device may also be constructed to activate a light signal simultaneously with the sound signal. In a modified form of the device,



for use in the purse or in a pocket, the magnet is positioned with its poles parallel to the longitudinal dimension of the contact strips of the reed switch to cause the reed switch to close when the magnet is in one position over the center portion of the reed switch.

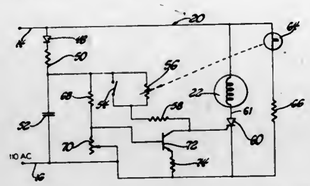
3,696,381
TIME CONTROLLED ALARM SYSTEM HAVING ACTUATOR MOVING ALONG ROTATING SHAFT
Archie C. Wallace, Route 1, Box 10, Elmer, La.
Filed Nov. 6, 1970, Ser. No. 87,430
Int. Cl. H02j 9/02; G08b 1/00
U.S. Cl. 340—309.4 **9 Claims**



An indicator system having an electrical timer which becomes actuated after a preselected interval for connecting a source of voltage to a motor. An extension of the motor shaft mounts an actuator that travels between the ends of the extension. After sensing actuator travel at one end, switching means cause the actuator member to reverse its direction to the second end of the extension. At one end of the extension an electrical switch closes a circuit between the voltage source and an electrically driven indicator. In operation, the indicator is caused to periodically issue an alert signal, the period between signals determined by the distance the actuator travels between extension ends.

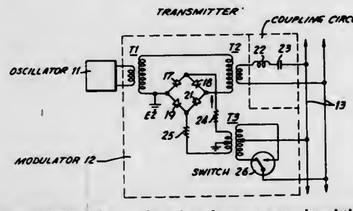
3,696,382
ALARM SYSTEM
Albert D. Rittmann, Kokomo, Ind., assignor to Functional Devices, Inc., Russiaville, Ind.
Filed Nov. 6, 1970, Ser. No. 87,453
Int. Cl. H04m 1/04
U.S. Cl. 340—310 **2 Claims**

A smoke and heat alarm system employing a pulse-forming transmitter to produce a ringing perturbation in the household line voltage when actuated. This perturbation is sensed by a remote alarm device on the same line to produce a remote alarm. An optical smoke detector which is relatively insensi-



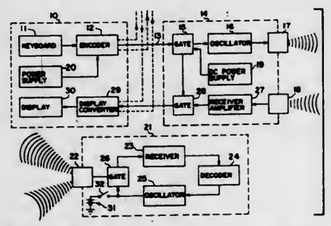
tive to line voltage variations is employed in the transmitter of the alarm system.

3,696,383
INFORMATION TRANSMISSION SYSTEM FOR METERED MAGNITUDES
Hiroshi Oishi; Fumio Aoki, both of Yokohama; Shigeru Kawano, Ibaraki; Hitoshi Muramatsu, Kawasaki, and Masahiro Saeki, Sagamihara, all of Japan, assignors to Tokyo Electric Power Company and Fujitsu Limited, Tokyo, Kawasaki, Japan
Filed Dec. 31, 1970, Ser. No. 103,221
Claims priority, application Japan, Jan. 17, 1970, 45/4517
Int. Cl. H04m 11/04
U.S. Cl. 340—310 **2 Claims**



ON and OFF information signals are transmitted through an AC voltage distribution line via a single frequency carrier signal during a period of time in each cycle of the AC voltage when the information signal is in the ON condition and during another period of time in each such cycle when the information signal is in the OFF condition. A receiver receives the carrier signal from the distribution line synchronously with the AC voltage and determines the ON and OFF condition of the derived and received signal.

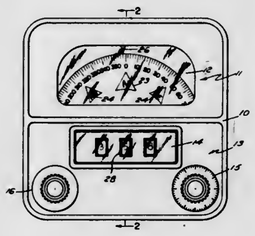
3,696,384
ULTRASONIC TRACKING AND LOCATING SYSTEM
Robert W. Lester, Manhasset, N.Y., assignor to Recognition Devices, Inc., New York, N.Y.
Filed July 8, 1971, Ser. No. 160,851
Int. Cl. G01s 3/80; G08b 5/00
U.S. Cl. 340—312 **21 Claims**



An ultrasonic tracking and locating system in which an identification code number is programmed on a console

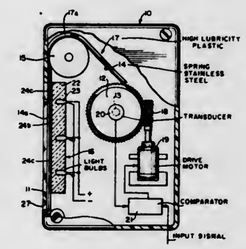
keyboard to activate an encoder which transmits a plurality of coded pulses to a plurality of transceiver units located in the rooms of a building where surveillance is desired. A transducer in the transceiver transmits a coded, ultrasonic digital signal which is dispersed throughout the room. Portable pocket unit transceivers carried by persons to be located receive the transmitted ultrasonic signals and decode the signals to determine if they correspond to the pocket unit's identification code. If the signal corresponds to the pre-programmed code, the pocket unit transmits a single ultrasonic pulse which is received by the room transceiver and is transmitted back to the console, where a display converter activates a digital readout display to provide a visual, numerical indication of the location of the person.

3,696,385
INDICATOR
Harold S. Burns, 38 Greengate Road, Falmouth, Mass.
Filed Nov. 3, 1970, Ser. No. 86,419
Int. Cl. G09f 9/00
U.S. Cl. 340—316 **2 Claims**



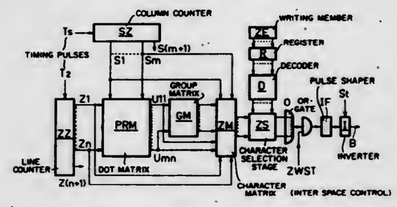
A composite indicator for obtaining a digital or alpha numeric readout as well as a dial type readout with provision for adjusting the output by dialing in certain corrections.

3,696,386
THERMOMETER-TYPE INDICATOR
John Gear, Huntington, N.Y., assignor to Atlantic Scientific Corporation, Plainview, N.Y.
Filed June 25, 1970, Ser. No. 49,812
Int. Cl. G08b 5/00
U.S. Cl. 340—317 **7 Claims**



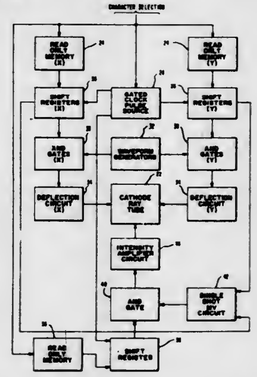
A thermometer-type indicator is described wherein a flexible, thin, self-supporting tape is caused to move in a housing such that its leading edge forms a thermometer-like representation of an electrical input signal in a viewing window in the housing.

3,696,387
CIRCUIT ARRANGEMENT FOR CONTROLLING CATHODE-RAY TUBES FOR THE DISPLAY OF ALPHA-NUMERICAL CHARACTERS
Hans-Georg Nussbaum, Bismarckstrasse 44, 28 Bremen, Germany
Filed June 10, 1970, Ser. No. 45,180
Claims priority, application Germany, June 25, 1969, P 19 32 113.2
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **1 Claim**



The specification discloses a device for generating characters on a raster type display wherein line and column signals from the display are converted into a plurality of sequential pulses on separate lines corresponding to the points of a matrix to be displayed. These generated signals are then converted into group signals corresponding to portions of different characters having a common shape. The group signals corresponding to portions of characters are combined to form entire characters and under the control of stored character information selected for display.

3,696,388
APPARATUS FOR GENERATING CHARACTERS
William E. Eichelberger, 4700 Glen Forest Drive, Raleigh, N.C.
Filed Dec. 18, 1970, Ser. No. 99,342
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **7 Claims**



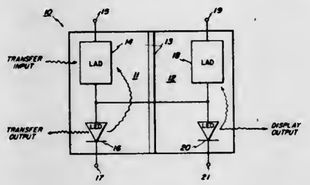
Characters are displayed on the screen of a cathode ray tube. The cathode ray tube electron beam is deflected in a trace representing the character to be displayed by sequentially applying various waveforms to the cathode ray tube deflection circuit. Digital control circuitry including a read only memory having segment deflection commands for each character to be displayed, shift registers set by the deflection commands, and AND gates enabled by the shift registers control the sequential application of the various waveforms to the deflection circuit. An additional shift register set by the deflection commands of the read only memory, a single shot

multivibrator, and an associated AND gate control the intensity of the electron beam during the trace.

3,696,389
DISPLAY SYSTEM UTILIZING LIGHT EMITTING DEVICES

Gunther E. Fenner, Schenectady, N.Y., assignor to General Electric Company

Filed July 20, 1970, Ser. No. 56,297
Int. Cl. H03k 19/14; G02f 3/00
U.S. Cl. 340—324 R **14 Claims**

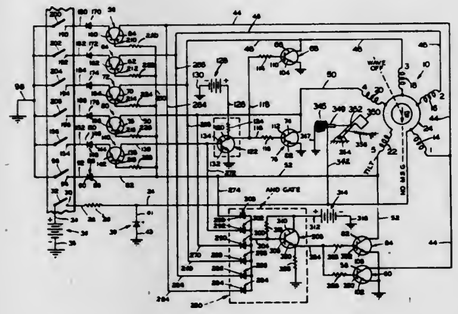


Methods and apparatus for receiving, transferring, retaining and displaying information within a display system having inherent internal memory capabilities. Transfer and display elements including light-emitting and light-activated devices are employed in numerous configurations to provide display systems of high density with a minimum number of connections to external control circuitry with self-sustaining memory capabilities. Row-by-row, column-by-column and time sequential addressing of both rows and columns of display elements are disclosed.

3,696,390
DIGITAL MAGNETIC WHEEL LOGIC CONTROL NETWORK

Richard L. Cohen, Old Bridge, N.J., assignor to The Bendix Corporation

Filed Oct. 19, 1970, Ser. No. 81,986
Int. Cl. G08b 5/24
U.S. Cl. 340—324 R **10 Claims**

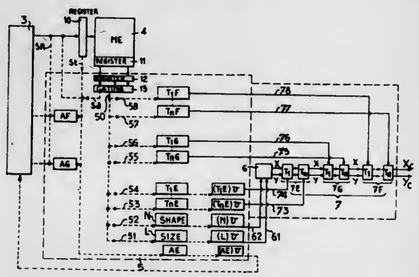


A digital magnetic wheel logic control network for providing selective visual displays wherein the control network has a plurality of inputs, each of which is associated with a particular indicator display. Selective control of any of the inputs will energize one or more of a plurality of control coils of an electromagnetic indicator display cooperatively arranged in relation to a rotary magnet to angularly position the same and thereby provide for a selected indication and including an intermediary network controlled by one of the selective input controls and so arranged in the control network as to dominate the other of the selective input controls so that upon operation of the one input control the rotary magnet is angularly actuated in the electromagnetic indicator display to a position indicative of a failure in a command condition irrespective of any selective control of the other inputs. Further intermediary networks are located between the plurality of inputs and the control coils, each of these other intermediary networks including a plurality of solid-state control elements for selectively controlling energization of different pairs of the control coils to provide selective indications.

3,696,391
SYSTEM FOR THE DISPLAY OF SYNTHESIZED GRAPHIC SYMBOLS

Georges Peronneau, La Celle Saint Cloud, France, assignor to Thomson-CSF Visualisation Et Traitement Des Informations (T-V.T.), Paris, France

Filed Sept. 16, 1970, Ser. No. 72,770
Claims priority, application France, Sept. 19, 1969, 6931945; Sept. 19, 1969, 6931946
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **15 Claims**



A variety of graphic symbols, to be displayed on the screen of a cathode-ray tube under the control of a computer, are synthesized from a store of basic elements which can be selectively combined into groups, the latter in turn being assembled into figures. Digital instructions regarding the nature, size, orientation and location of any selected configuration in each of these three denominations (element, group, figure) are transmitted by the computer, via a memory containing the necessary data, to an analog processor which includes a function generator and several function modifiers in the sweep circuit of the cathode-ray tube to project successively the several elements defining a group, the several groups forming a figure, and the several figures constituting the display, with individual treatment of each higher-order configuration as to overall positioning and size. A function generator capable of producing different conic sections includes two cross-connected integrating amplifiers in the signal paths for the control of the horizontal and the vertical scan. A coincidence circuit may be activated to detect the traverse of the boundaries of a selected rectangular screen area by any elemental trace for instructing the computer to suppress all parts of the display outside that area for the purpose of distinctive visualization of the framed portion.

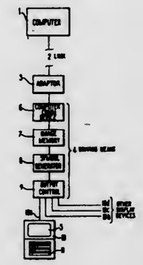
3,696,392
CONVERSION DEVICE FOR DATA PRESENTATION ON TELEVISION SCREENS

Lars Fossum, Bromma, and Lennart Wangberg, Jakobsberg, both of Sweden, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 779,930, Nov. 29, 1968, abandoned. This application April 29, 1971, Ser. No. 138,841
Claims priority, application Sweden, Dec. 6, 1967, 16737/67
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **6 Claims**

An arrangement is provided for presentation of data received from a computer on a plurality of television screens.

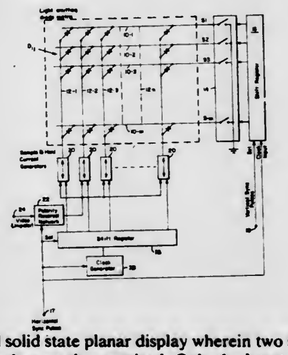
The arrangement includes a memory mans for storing in a delay line the coupled data which is circulated for representation on all of said television screens; and a number of row memories, one for each of the television screens, is coupled to the memory means and has a shift register in which the row data contents are circulated in an individual closed data loop a given number of times depending on the row resolution factor of the television image for line representation on a corresponding television screen. Another shift register is controlled from a central control unit and coupled to the row memories to extract each individual data row from the memory means, and each individual data row in a row memory is circulated synchronously with the repetition frequency of the line sweep of the television screen. The output generating means which is coupled to the screens presents each row of data in a consecutive sequence with a predetermined amount of presentation overlapping.



3,696,393
ANALOG DISPLAY USING LIGHT EMITTING DIODES

Thomas W. McDonald, Dana Point, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 10, 1971, Ser. No. 141,890
Int. Cl. G08b 5/36
U.S. Cl. 340—324 R **5 Claims**

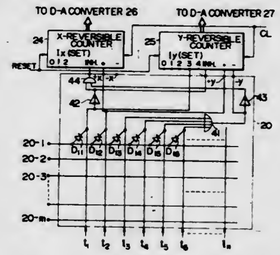


A scanned solid state planar display wherein two successive rows are simultaneously energized. Only the latest row energized is written as the columns are driven because the light emitting elements are polarized the same in alternate rows and are oppositely polarized for each suceeding row, and the column generators reverse their driving current polarity for each suceeding row. Interlaced scanning is provided in one embodiment of the invention. Light emitting diodes are used as the display elements. Other light sources with series rectifiers are optionally used.

3,696,394
METHOD AND ARRANGEMENT FOR GENERATING TRACING SIGNALS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1969, Ser. No. 882,057
Claims priority, application Japan, Dec. 11, 1968, 43/90203
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **4 Claims**

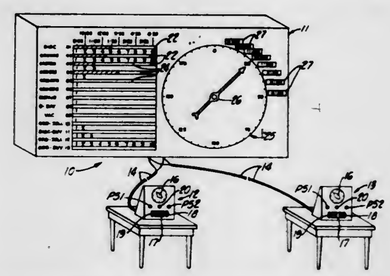


Tracing signals are applied to control the vertical and horizontal deflecting electrodes for a display or recording device to reproduce two-dimentional characters or indicia. In order to generate such tracing signals, the arrangement is provided with a memory which stores the programs which comprise two kinds of information, one being for setting the counters and the other being for counting input pulses up or down by the counters connected to the memory. The stepwise output of each of the counters is converted by the digital-to-analog converters into analog quantities to generate tracing or control voltages to be applied to the deflecting electrodes of the display or recording device.

3,696,395
MANUALLY CONTROLLED AUTOMATIC INFORMATION DISPLAY DEVICE

Norman Barron, La Puente, Calif., assignor to Wm. Douglas Sellers and George A. Brace, part interest to each

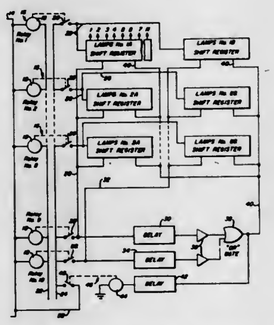
Filed Aug. 5, 1970, Ser. No. 61,290
Int. Cl. G09f 11/16
U.S. Cl. 340—325 **40 Claims**



An information display device having a wide variety of uses in recording and displaying graphically separate multiple channels of related types of information for visual analysis and comparison by one or more persons. One of the many typical uses is to record and keep abreast of the progress of assignments to each of a group of technicians charged with making emergency repair runs to various parts of a complex system, such as a utility system. The control operator is advised of the essential information required to monitor each job assignment and receives periodic progress reports. The apparatus control console is then operated to update a particular display board indicator for that workman to show the status of his particular

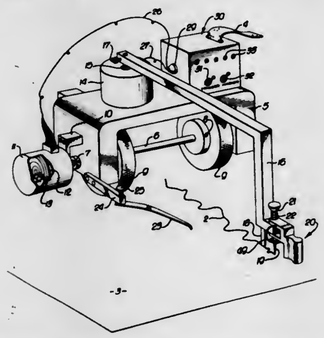
assignments as well as to update totalizer mechanism. More than one control console can be connected in tandem to operate the same display board from different parts of a large room.

3,696,396
SHIFTING DATA DISPLAY
Eugene S. Ceschini, Tarentum, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Feb. 24, 1971, Ser. No. 118,230
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **7 Claims**



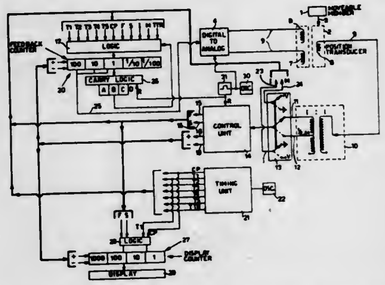
A moving data display, especially suited to be an output device for a computer, utilizing an array of segmented display lamps. The circuit includes a plurality of shift registers equal in number to the number of segments in each lamp, with each shift register having a number of stages equal to the number of lamps.

3,696,397
GRAPH-READING DIGITAL CONVERTER
William H. Raser, 6451 W. 83rd St., Los Angeles, Calif.
Filed March 16, 1970, Ser. No. 19,712
Int. Cl. G01c *7/04*; **G08c** *9/00*; **H03k** *13/02*
U.S. Cl. 340—347 AD **13 Claims**



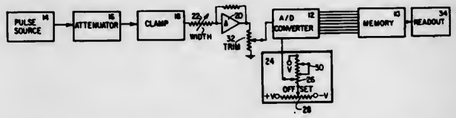
An analog-to-digital data conversion system for digitizing points and lines appearing on graphs and charts. A portable instrument rolls freely over any marked surface, is directed to a succession of points, and records coordinates on tape for computer usage. Any such usage generally requires a tape reading program involving several steps or subprograms. If a relatively simple trigonometric coordinate transformation subprogram is added to this program, the tracing instrument can be kept simple and inexpensive by operating in semi-polar rather than in the final rectangular coordinates.

3,696,398
ANALOG TO DIGITAL CONVERTERS HAVING MULTIPLE UNITS OF MEASUREMENT
Piero Pomella, Ivrea; Elia Baratto, Banchette, and Luciano Lauro, Ivrea, all of Italy, assignors to Ing. C. Olivetti & S.p.A., Ivrea (Torino), Italy
Filed June 18, 1970, Ser. No. 47,320
Claims priority, application Italy, June 23, 1969, 52343 A/69
Int. Cl. G06f *7/38*; **H03k** *13/02*; **H04l** *3/00*
U.S. Cl. 340—347 AD **8 Claims**



An analog to digital converter capable of providing a digital indication of the analog signal in any of a number of digital units (e.g., inches or meters) and having coarse-fine measuring ability is disclosed. A feedback counter, which operates either in a fast or slow mode depending on the magnitude of the error signal, operates in a single unit system while a display counter operates in alternative unit systems.

3,696,399
RANGE EXPANSION METHOD AND APPARATUS FOR MULTICHANNEL PULSE ANALYSIS
Robert T. Klein, Hialeah, and Robert L. Kreiselman, Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Sept. 11, 1970, Ser. No. 71,441
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **35 Claims**

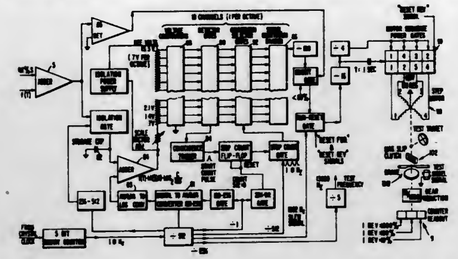


By expanding the input to an A to D converter, and also establishing an offset or low end threshold for pulse data as it is being processed by the A to D converter to a multichannel pulse amplitude memory, the fixed number of memory channels are effectively expanded and a selectively small portion of the channel range can be examined in increased detail. This method and apparatus differs from the prior art range expanding in that it operates upon pulse data during its collection and not after receipt in the memory; thus, a plurality of memory channels can act as a single and wider channel.

3,696,400
ANALOG-TO-DIGITAL CONVERTER
Walter T. Lang, Jackson Heights, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Division of Ser. No. 791,897, Jan. 17, 1969, Pat. No. 3,593,012. This application Oct. 6, 1970, Ser. No. 78,482
Int. Cl. H03k *13/17*
U.S. Cl. 340—347 AD **6 Claims**

An analog-to-digital converter adapted for use in a recording system for measuring and indicating engine life usage and

providing analog data representative of engine temperature and engine rpm, the summing analog data and converting the



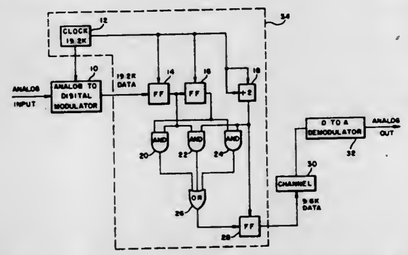
information into serial digital form to antilog to the base 2, integrating by counting and displaying the total count as an indication of percent engine life used.

3,696,401
DIGITAL DATA DECODER WITH DATA RATE RECOVERY
James T. Vance, Hawthorne, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.
Filed Oct. 9, 1970, Ser. No. 79,558
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **6 Claims**



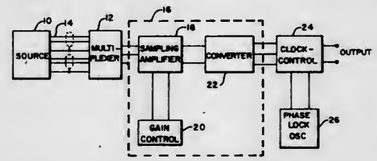
A decoder circuit is disclosed for decoding digital signals having frame end transitions, for example, on bits of value "1" and mid-frame transitions for the second one of two sequential "0's" and for each "0" thereafter. Sequential transitions alternatingly trigger two oscillators of similar frequency which is at least twice the bit rate frequency. The oscillations overlap to ensure phase coherency. The oscillator outputs are combined and counted down to the bit rate frequency for bit rate recovery. The frame ends are strobed to detect absence or presence of a transition for bit value recovery.

3,696,402
DIGITAL FREQUENCY DIVIDER
Thomas R. Armstrong, Clearwater, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Nov. 23, 1970, Ser. No. 91,627
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **7 Claims**



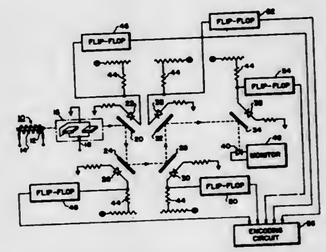
Digital pulse rates are divided by storing sequential bit groups, each of which has a number of bits equal to the factor by which the rate is to be divided, and generating an output pulse for each group. Each output pulse is equal to the majority binary value in that group. Where each group has an even number of bits, a toggle is used to establish the output value for groups where no majority value exists.

3,696,403
LOW LEVEL CONVERSION SYSTEM
James V. DiRocco, Winchester, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.
Filed Nov. 25, 1970, Ser. No. 92,653
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 NT **11 Claims**



Multiplexed analog signals are applied to the input of a sampling amplifier having a digitally controlled gain. The signals at the output of the sampling amplifier are applied to an analog to digital integrating converter. A phase lock oscillator is connected to a clock which controls the operation of the converter in such a manner that the integration time of the converter is equal to one or more cycles of the power line frequency, whereby maximum common mode rejection occurs at the power line frequency.

3,696,404
ANALOG-TO-DIGITAL CONVERTER
Gideon R. Brainerd, 416 Ben Oaks Drive, Severna Park, Md.
Filed March 27, 1969, Ser. No. 811,008
Int. Cl. G08c *9/00*
U.S. Cl. 340—347 AD **7 Claims**

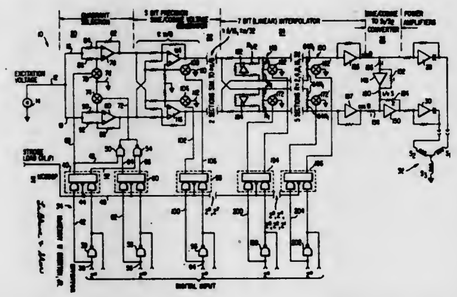


Described is an analog-to-digital converter of the type in which a laser beam is modulated with an analog signal and the resulting modulated beam partially transmitted and partially reflected by a series of plates. Separate photodiode detectors are positioned behind each plate to sense the transmitted light and furnish digital inputs to suitable encoding circuitry. As the intensity of the beam increases due to an increase in the analog value of the input signal, greater numbers of the diode detectors are triggered to reflect an increase in the digital value also.

3,696,405
Patent Not Issued For This Number

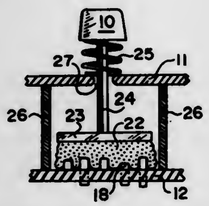
3,696,406
Patent Not Issued For This Number

3,696,407
DIGITAL TO SYNCHRO CONVERTER
McKenny W. Egerton, Jr., Owings Mills, Md., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 21, 1969, Ser. No. 851,794
Int. Cl. H03k 13/02
U.S. Cl. 340—347 SY 16 Claims



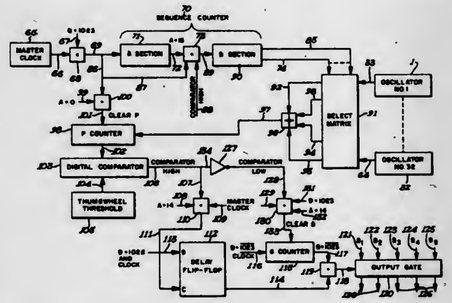
Disclosed is a D to S converter for converting a binary input digital code to an analog output suitable for driving a synchro or resolver. The encoder comprises a plurality of electronic angle vector rotators including cross coupled sine and cosine channels for modifying the input to each stage by an amount equal to plus or minus a known angle. Each stage produces rotation by half the angle of the previous stage. The converter includes a first stage forming a quadrant selector and angle rotation for bits of lesser significance are approximated by a resistance ladder linear interpolator. The output drives a resolver directly or passes through a Scott transformation stage for application to the windings of a synchro.

3,696,408
KEYBOARD ENCODER
Richard J. Bouchard, Amherst, and Richard C. Belden, Litchfield, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 23, 1970, Ser. No. 91,692
Int. Cl. G08c 1/00
U.S. Cl. 340—365 7 Claims



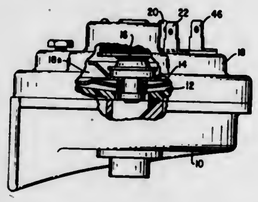
Keyboard encoding apparatus having a plurality of keys with different codes of an N digit binary code assigned to each key. A plurality of groups of contact pads are secured to a sheet of electrically non-conductive material at different key locations which are in registration with the keys. Each group of pads includes at least one power pad and a number of digit pads equal to the number of binary 1's in the associated code. A power lead is secured to the sheet and has connections to all of the power pads. N digit leads are also secured to the sheet with different digit leads being indicative of different orders of the code. Each of the digit leads has connections to those digit pads which are indicative of a like order of the code. A keying means includes a layer of spongy conductive material at each key location disposed in a normal position a distance away from the contact pads and responsive to the actuation of any one of the keys to provide a common connection of the digit pads and the power pad at the associated key location.

3,696,409
FINGER-TOUCH FACEPLATE
Norman J. Braaten, Rosemount, Minn., assignor to Linquist & Vennum, Minneapolis, Minn.
Filed Dec. 28, 1970, Ser. No. 101,752
Int. Cl. G08c 9/02
U.S. Cl. 340—365 6 Claims



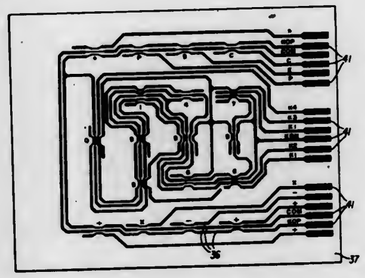
A system for identifying a particular position on the face of a display device by simply touching the area with the finger. The area is a conductive pad connected to a relaxation oscillator whose frequency is lowered by the touch. The oscillator is therefore identifiable and a digital computer is enabled to perform a prescribed act such as new information transferred to the display device, dependent upon the location of the area touched.

3,696,410
HORN WITH BUZZER
William C. Wetzel, 260 State Park Drive, and Raymond W. Long, 1017 Taylor St., both of Bay City, Mich.
Filed Feb. 17, 1971, Ser. No. 116,189
Int. Cl. G10k 9/00
U.S. Cl. 340—393 4 Claims



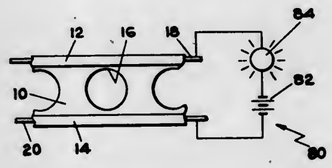
A signaling device which produces a loud signal for distant warning of persons distant from the automotive vehicle and a soft signal for persons near or within the automotive vehicle under controlled conditions. The loud signal is under the control of the driver with the soft signal being under control of selected safety functions.

3,696,411
KEYBOARD ENCODER
Jack S. Kilby, and James H. Van Tassel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 671,805, Sept. 29, 1967, abandoned.
This application Nov. 12, 1970, Ser. No. 89,016
U.S. Cl. 340—365 7 Claims



Disclosed is a keyboard encoder capable of directly encoding decimal input information into electrical binary code. The electrical encoding of the information appears at the output terminals of the encoder when the key representing the information to be encoded is depressed. The depressed key causes the selective shorting together of certain ones of a group of encoding conductors which are connected to the output terminals.

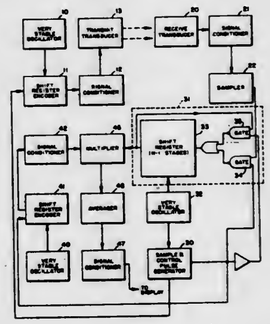
3,696,412
METHOD AND MEANS FOR INDICATING TENSION
Roger I. Swanson, Butler, Pa., assignor to Dake Corporation, Grand Haven, Mich.
Filed Oct. 19, 1970, Ser. No. 81,819
Int. Cl. G08b 21/00
U.S. Cl. 340—421 44 Claims



In a method and means for indicating tension on bolts, screws and the like, a plastic member of flowable material having a plurality of relatively thin copper wires embedded along each edge is utilized. The member has an annular cutout portion permitting it to be inserted between any two bearing surfaces of a threaded fastening joint with the bolt passing through the cutout portion. When the point is tightened to pre-load below yield, the plastic material flows or is extruded until the joint contacts the wire. Subsequent tightening to the desired minimum proof load will shear the wires and material to indicate that minimum proof load has been reached. The plastic strip material also serves as a lubricant to reduce the amount of torque required to reach minimum proof load and a portion is extruded into the core of the joint to act as a lock and seal. In one embodiment, the wires form a pair of leads which may be connected in an electric circuit so that when the joint is tightened to pre-load below the plastic range, there is sufficient extrusion of the plastic material to establish electrical contact between the joint and edge wires to close the electrical circuit, activating an electrical signal to indicate that pre-load has been reached.

3,696,413
Patent Not Issued For This Number

3,696,414
CORRELATORS HAVING A TIME COMPRESSED ANALOGUE REFERENCE
Willard B. Allen; Charles E. Persons, and Marshall K. Brandon, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 6, 1971, Ser. No. 131,623
Int. Cl. G06f 7/04
U.S. Cl. 343—5 R 6 Claims

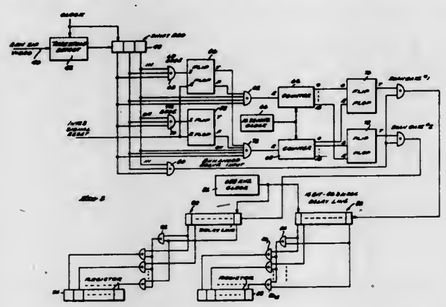


A separate reference generator, operated from an independent clock oscillator, is selectively controllable to generate different time-compressed reference signals for comparison to received signals during each recirculation of a time compressor circuit. Since the selectively variable reference signal is an analogue signal, the output of a correlation processor is linearly related to a correlation coefficient existing between the reference signal and the received signal, for signals with Gaussian characteristics. Having the reference signal derived from a clock oscillator in the correlation processor, that is distinct from the oscillator generating the transmitted signal, allows variation of the reference signal's waveform, particularly with respect to phase, to provide correlation with doppler-shifted received signals. A real-time correlation signal processor, utilizing a single time compressor in the receive channel, and a separate signal generator in the reference channel cooperate to correlate time-compressed replicas of the transmitted signal with a reference signal having substantially the same frequency. The complexity of the real-time active correlation signal processor circuitry is reduced and its flexibility and usefulness for a wider number of applications is increased.

3,696,415
ADAPTIVE PULSE QUANTIZER SYSTEM
Jack R. Ballantyne, Santa Ana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed May 21, 1970, Ser. No. 39,189
Int. Cl. G01s 9/56, 7/28
U.S. Cl. 343—6.5 LC 6 Claims

A pulse quantizer system particularly suitable for use in secondary surveillance radar applications for discriminating between reply pulses which occur in near time coincidence. In such applications, an interrogation signal is periodically transmitted at a selected sweep rate from a fixed antenna station and detected by transponders carried by aircraft, for example, within the antenna range. The transponders in turn transmit a coded reply back to the antenna station. The coded replies are normally comprised of 13 data bits serially provided between

first and second framing bits spaced by a precise interval, usually 20.3 microseconds. Each data bit is represented by the occurrence or non-occurrence of a pulse within a corresponding bit time slot of the 20.3 microsecond interval. The disclosed pulse quantizer system facilitates discrimination between replies from two or more transponders where the pul-



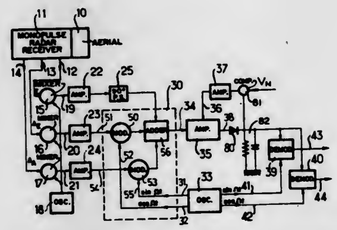
ses thereof occur in near time coincidence. After each interrogation, the system measures the time duration of the first reply pulse (presumed to be the first framing bit) and for the remainder of that sweep interval, accepts or rejects pulses based on whether or not they fall within corresponding portions of subsequent bit time slots within that sweep interval.

3,696,416

RADAR INSTALLATION

Jacques Badiano, Chatenay-Malabry, and Henri Commissaire, Ermont, both of France, assignors to Electronique Marcel Dassault, Paris, France

Filed April 27, 1970, Ser. No. 32,003
Int. Cl. G01s 9/22
U.S. Cl. 343—7.4 **9 Claims**



A radar installation is provided in which the receiving aerial for the echoes is of the type used in monopulse radar, but in which the processing circuitry for delivering the required final information is of the character utilized in an electromechanical scanning system. The echoes picked up by the aerial are thus subjected to some of the conventional processing in monopulse systems and the three signals resulting from this partial processing are transformed into a single signal of the type delivered by an aerial of an electromechanical scanning radar.

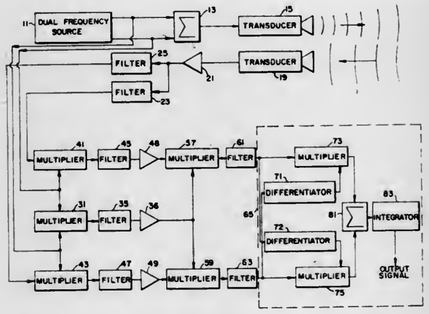
3,696,417

SIGNAL PROCESSOR

Norman E. Pedersen, Wilmington, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed July 2, 1970, Ser. No. 51,845
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **6 Claims**

In the signal processor disclosed herein, the respective sets of echo signals reflected back from an environment in response to a radiated signal comprising a pair of adjacent frequency components are modified according to a preselected time-amplitude function and are cross-combined so as to generate an output signal whose amplitude varies as a



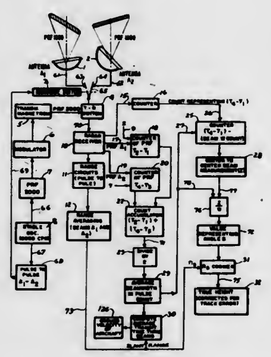
function of the net displacement of a target within the environment. Further, the output signal is relatively insensitive to moving clutter which does not undergo a substantial net displacement.

3,696,418

ALTITUDE MEASURING SYSTEM

George B. Litchford, Northport, N.Y., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 14, 1970, Ser. No. 72,024
Int. Cl. G01s 9/04
U.S. Cl. 343—11 R **4 Claims**



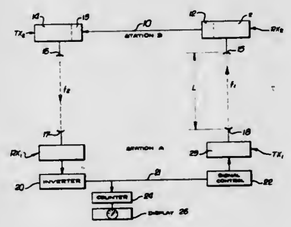
A surface based altitude measuring system for accurately measuring the altitude of an airborne vehicle consisting in part of two antennas for producing narrow fan beams which intersect in space, so that the altitude of an aircraft which flies through the two beams can be accurately determined. The radar echo which returns from the aircraft determines the slant range of the aircraft from the antennas, and the time interval between the interceptions of the two beams by the aircraft is related to the elevation angle. The true height of the aircraft above the antennas is determined from the above measurements, with compensation for flight paths not directly above the facility.

3,696,419

ELECTRONIC RANGING APPARATUS WITH TRANSMITTER-RECEIVER CYCLING

Joseph W. Crownover, 6651 Avenida Mirola; John I. Wilhelm, 5962 Avenida Chamnez, both of La Jolla, Calif., and Ray E. Thompson, 5351 Westknoll Lane, San Diego, Calif.

Filed May 4, 1970, Ser. No. 34,358
Int. Cl. G01s 9/06
U.S. Cl. 343—13 R **7 Claims**



The invention concerns ranging apparatus employing a closed radio circuit established between spaced stations and characterized by generating a frequency that is a function of the distance between the stations, to determine that distance.

3,696,420

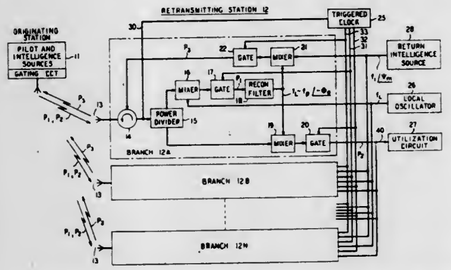
Patent Not Issued For This Number

3,696,421

SPACE DIVERSITY PHASED ARRAY RETRANSMISSION SYSTEM USING TIME DIVISION

Jesse S. Bitler, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 6, 1969, Ser. No. 831,132
Int. Cl. G01s 9/56
U.S. Cl. 343—100 TD **10 Claims**



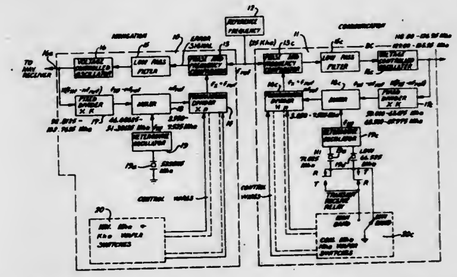
An adaptive retransmission station operates at a single reception and transmission frequency by use of time division while full duplex operation is provided by appropriate sampling. This scheme is especially well suited to mobile radio systems operating at microwave frequencies in populated areas. A timing sequence is established with three individual time slots for transmission of samples of a phase reference signal from base to remote, an intelligence bearing signal from base to remote, and a generated return intelligence bearing signal from remote to base. Time dedicated to transit delay is provided after transmission of the intelligence signals from both the base and remote stations.

3,696,422

NAVIGATION RECEIVER/COMMUNICATIONS TRANSCEIVER AND FREQUENCY SYNTHESIZER ASSOCIATED THEREWITH

Gary L. Burrell, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Feb. 27, 1970, Ser. No. 15,061
Int. Cl. H04b 7/00
U.S. Cl. 343—100 **8 Claims**



The subject NAV/COM unit incorporates a multi-channel navigation receiver with a multi-channel communications transceiver and associated audio system. The NAV/COM unit utilizes analog, digital and heterodyne techniques in a unique combination to accomplish frequency synthesis in simplex transceivers. A stabilized master oscillator (SMO) provides frequency generation. A feedback loop is used to slave a voltage controlled oscillator (VCO) frequency to an exact multiple of a crystal controlled reference oscillator frequency. The VCO output frequency is divided by two, mixed with a signal from a high frequency crystal oscillator, divided by n, and compared in frequency and phase with a low frequency crystal oscillator signal. The filtered error signal provides bias to the VCO in such a manner that when the VCO frequency is low, the error signal is a high voltage, and when the VCO frequency is above the desired frequency, the error signal is a low voltage. This error signal drives the VCO towards the selected frequency. When the VCO gets within a certain range of the desired frequency, the loop captures the VCO and pulls it into phase lock. In this condition, the loop establishes an error signal that is essentially a square wave with a frequency equal to that of the reference oscillator. A low pass filter recovers the DC component of the square wave and biases the VCO to maintain the selected frequency output. The square wave duty factor and thus the filtered DC/VCO bias voltage, varies accordingly with selected VCO frequency.

The communications section utilizes a two crystal heterodyne oscillator in its associated SMO for two band frequency synthesis.

3,696,423

Patent Not Issued For This Number

3,696,424

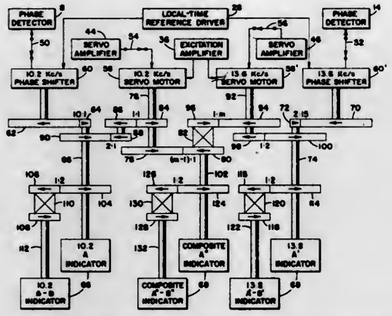
METHOD AND APPARATUS FOR VERY-LOW-FREQUENCY RADIO NAGIGATION

John A. Pierce, Arlington, Mass., assignor to LTV Electrosystems, Inc., Dallas, Tex.

Filed Dec. 23, 1968, Ser. No. 785,925
Int. Cl. G01s 1/36
U.S. Cl. 343—105 R **13 Claims**

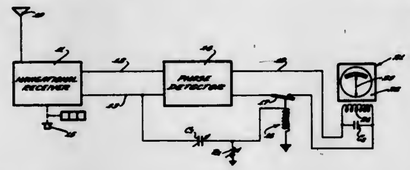
Disclosed is a method and apparatus for improving the accuracy of navigation by the Omega Navigation System. The improvement in the method of navigating by the Omega system relates to the detection of the phase of each of at least two very-low frequency signals and the generation therefrom of a composite signal which bears a predetermined relation-

ship to the detected signals and the predetermined relationship is selected to reduce the positioning error attributable to



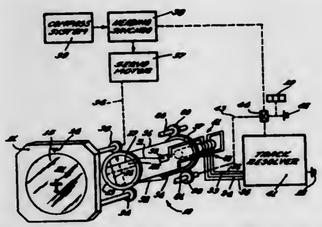
diurnal variations and geophysical anomalies in the transmission times of the respective signals, and included is apparatus for practicing the method.

3,696,425
NAVIGATION SYSTEM FOR IMPROVING NOISY SIGNALS
Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.
Filed April 30, 1970, Ser. No. 33,232
Int. Cl. G01s 1/08
U.S. Cl. 343—107 **5 Claims**



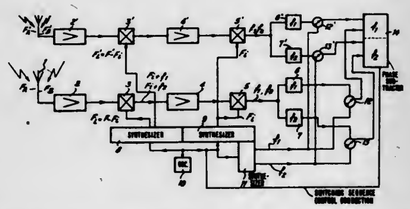
A navigation system which includes monitoring means for continuously monitoring the navigation signal such that if an intelligent signal varies at an inordinately high rate the rapidly fluctuating signals are not fed to the output of the system but the output continues to indicate the prior output until such time that the inordinately rapid rate signals disappear.

3,696,426
RECTILINEAR NAVIGATION SYSTEM
Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.
Filed April 30, 1970, Ser. No. 33,233
Int. Cl. G01s 1/08
U.S. Cl. 343—107 **10 Claims**



An aircraft navigation system which has a rectilinear navigation director with a fixed aircraft indicia and which continuously indicates the heading of the aircraft. The system also allows the setting of a waypoint or the use of a navigation station and the track may be set to fly to the waypoint or station, or at an offset distance, if desired.

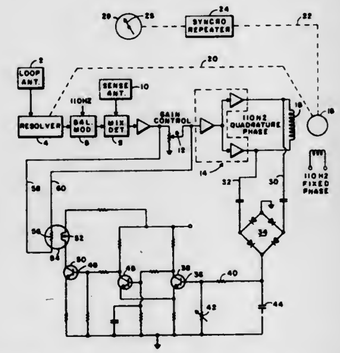
3,696,427
RADIO-NAVIGATION SYSTEM
Georges Pierre Nard, Nantes, France, assignor to Compagnie Generale de Geophysique, Paris, France
Filed June 2, 1970, Ser. No. 42,810
Claims priority, application France, June 4, 1969, 6918336
Int. Cl. G01s 5/14
U.S. Cl. 343—112 D **5 Claims**



The invention concerns an improved radio-navigation system for determining the position of a moving body relative to at least two remote transmitters.

In this radio-navigation system there are produced in the body carried receiver two local LF signals of frequency f_1 and f_2, and the phase differences are determined in phasemeters between each of the local signals and radio-navigation LF signals of the same frequencies, the phases of which are a function of the distances between the transmitters and the moving body. The radio-navigation LF signals are obtained from two radio-navigation HF signals received by the body from the transmitters, the frequencies of which are equal to $F + f_1$ and $F + f_2$, the signals of frequencies f_1 and f_2 being extracted by successive mixings with signals of frequencies $F - F_1$ and F_1.

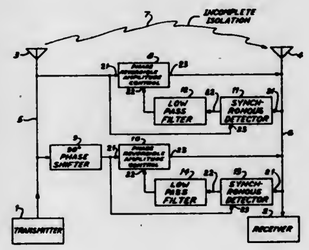
3,696,428
ADF NEEDLE STABILIZING CIRCUIT
Arthur L. Kemper, and Raymond R. Blaiklock, both of Marion, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed July 30, 1970, Ser. No. 59,610
Int. Cl. G01s 3/42
U.S. Cl. 343—117 R **4 Claims**



This invention relates to means for preventing random wandering of an ADF indicator needle by sensing the magnitude

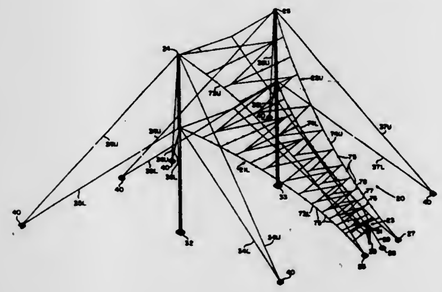
of the "error" signal and shunting out the gain control of the servo amplifier when the magnitude of the "error" signal exceeds a preselected threshold value.

3,696,429
SIGNAL CANCELLATION SYSTEM
Frank J. Tressa, Deer Park, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed May 24, 1971, Ser. No. 146,277
Int. Cl. H04l 5/00
U.S. Cl. 343—180 **5 Claims**



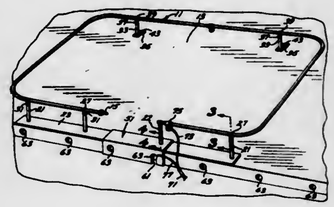
An unwanted r-f signal produced on a receiver line by a nearby transmitter is reduced by adding to it a sample of the transmitted signal, automatically adjusted in phase and amplitude to cancel the unwanted signal.

3,696,430
HIGH GAIN TWO BAY UNIDIRECTIONAL BROADBAND ANTENNA
Terry S. Cory, and Roger A. Markley, both of Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed May 25, 1971, Ser. No. 146,764
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 **14 Claims**



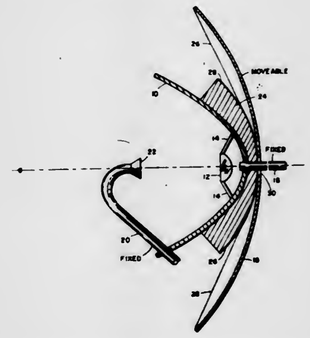
A unidirectional broadband horizontally polarized HF two bay antenna with an upper bay and a lower bay using a larger α angle than the upper bay. Both bays also employ substantially the same τ ratio even though the bay α angles are different. These result in an optimized antenna structure of minimum size for the frequency range of operation, and with resultant points of equal radiated phase from the two bays lying substantially in a vertical line for any one particular operational frequency.

3,696,431
LOW SILHOUETTE ANTENNA
James F. Holland, 21814 Kinard Ave., Torrance, Calif.
Filed Nov. 5, 1970, Ser. No. 87,157
Int. Cl. H01q 1/32
U.S. Cl. 343—713 **2 Claims**



A low silhouette antenna for mounting on an electrically conductive plate, such as a camper top, and including a radiator spaced from such plate. The radiator is formed to define a ring which is open on one side and terminates in ends that form extremities spaced apart a distance sufficient to minimize production of electrical capacitance therebetween. A distance adjusting means is provided for adjusting the frequency of the radiator whereby such antenna may be mounted on a camper and the distance adjusting means adjusted to adjust such radiator to its resonant frequency without the necessity of installing a capacitor.

3,696,432
COMBINED SCAN AND TRACK ANTENNAS
Harold Anderson, Phoenix; Jerry Blanchard Cain, and John G. Doggett, Jr., both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 15, 1971, Ser. No. 106,792
Int. Cl. H01q 3/12
U.S. Cl. 343—761 **11 Claims**

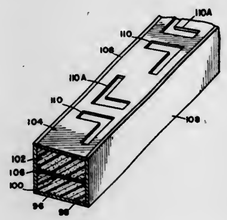


Combined scan and track antennas are disclosed, each comprising a reflector and a feed thereto in which the track reflector and its feed and the feed to the scan reflector are all fixed with respect to each other and the scan reflector rolls in such a manner that a line through the center of the spherical feed antenna and the fixed feed point therefor always is perpendicular to a point on the surface of the spherical reflector through which it extends.

3,696,433
RESONANT SLOT ANTENNA STRUCTURE

Derling G. Killion, San Diego, and Kent B. Roberts, El Cajon, both of Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.

Filed July 17, 1970, Ser. No. 55,848
Int. Cl. H01g 13/10
U.S. Cl. 343—770 8 Claims

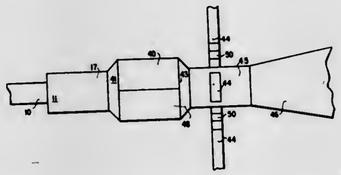


A resonant slot antenna composed of one or more elongated coaxial type radiating elements, each having an inner conductor supported within an outer conductor, the outer conductor having longitudinally spaced slots which are shaped to provide phase reversal between slots and spaced to avoid mutual coupling. This permits a coaxial or strip line antenna to be made with the desirable characteristics of a waveguide type. The antenna is particularly adaptable to construction by printed circuit techniques, with the slots and conductor elements etched in conductive plating on dielectric supporting material, making it possible to construct unitary arrays of multiple elements.

3,696,434
INDEPENDENT MODE ANTENNA FEED SYSTEM

Anttilio F. Sciambi, Jr., Melbourne, Fla., assignor to Radiation Incorporated, Melbourne, Fla.

Filed Jan. 15, 1971, Ser. No. 106,827
Int. Cl. H01q 13/00
U.S. Cl. 343—776 16 Claims

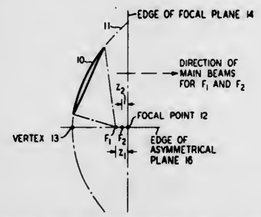


A feed system for autotracking antennas, in which the transmit channel and the receive sum and difference channels are independently controllable in that each is isolated from the other and the impedance match of any one is adjustable without disturbing the other two. The receive wave modes, both sum and difference, are propagated along a first section of waveguide from the antenna, wherein the receive channel energy is extracted near an abrupt junction with a second waveguide section designed to support only sum wave mode propagation. The sum mode is extracted without need for hybrids. The transmit feed and the receive feed lines cooperate to provide built-in diplexer action through appropriate selection of waveguide dimensions for rejection of transmit frequencies from the receive channel and inclusion of band pass filters for rejection of receive frequencies from the transmit channel.

3,696,435
OFFSET PARABOLIC REFLECTOR ANTENNA

Henry Zucker, Parsippany-Troy Hills Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1970, Ser. No. 92,400
Int. Cl. H01q 19/14
U.S. Cl. 343—779 3 Claims

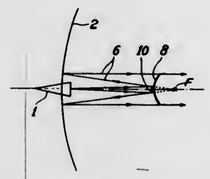


In accordance with the disclosure, two or more main beams of an offset parabolic reflector antenna are directed without producing second order aberrations by placing their respective feeds so that their phase centers reside at mathematically defined locations.

3,696,436
CASSEGRAIN ANTENNA WITH ABSORBER TO REDUCE BACK RADIATION

Hiroshi Yokoi, and Hiroshi Fukumuro, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 15, 1970, Ser. No. 72,336
Claims priority, application Japan, Sept. 16, 1969, 44/72710
Int. Cl. H01q 19/14
U.S. Cl. 343—782 1 Claim



An antenna using a primary horn radiator and at least one reflector, in which a wave absorber is positioned at a limited area of the center portion of the reflector, for absorbing electric waves which would otherwise reflect from that limited area and be reapplied to the horn radiator, so that reaction between the feed radiator and the reflector is substantially eliminated.

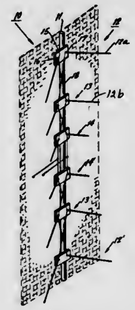
3,696,437
BROADSIDE LOG PERIODIC ANTENNA

Ronald D. Grant, Urbana, Ill., assignor to JFD Electronics Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 685,093, Nov. 22, 1967, abandoned.
This application Aug. 27, 1970, Ser. No. 69,063
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 25 Claims

This invention teaches an antenna array of the broadside type in which dipoles of differing electrical lengths are stacked vertically above and below an imaginary plane with electrical lengths increasing with increasing distance in moving above and below the imaginary plane. The antenna has symmetry in that for each dipole of the array below the imaginary plane, for example, there is a dipole of substantially equal electrical length and spacing approximately the same distance above the imaginary plane.

Transposed feeder harness means are employed for joining adjacent dipoles and common output (input) terminals are provided in a position substantially at the location of the imaginary plane. Directional characteristics are obtained by means of Veeing the dipole arms and/or providing a vertically aligned ground screen positioned behind the antenna stack array.



In another embodiment a similar array may be positioned immediately behind the first array in place of the ground screen. Directional characteristics may be obtained through coupling an output (input) utilization means to one and then the other of the arrays which are coupled at their feed terminals by means of a transposed feeder section. The array may also be joined with a conventional endfire array, for example, to form a broadside VHF endfire array and an endfire UHF array or conversely, a broadside UHF array and an endfire VHF array.

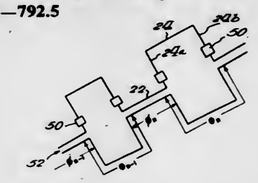
Omnidirectional characteristics may be introduced if such an application is either desired or required by bending or otherwise forming the dipole arms so as to provide a substantially U-shaped configuration for each dipole.

As another embodiment the ground screen may be replaced by parasitic elements arranged in a vertically stacked array with the parasitic element being provided for each dipole in the broadside array and being positioned in substantially behind its associated dipole.

3,696,438
LOG-PERIODIC SCALED DIRECTIONAL COUPLER FEED LINE FOR ANTENNAS

Paul G. Ingerson, Redondo Beach, Calif., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Jan. 21, 1969, Ser. No. 792,398
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 7 Claims

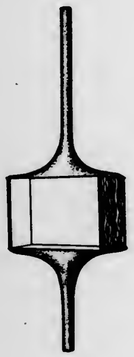


Log-periodic dipole, folded dipole, monopole, folded monopole, and slot arrays fed by a pair of coupled transmission lines which form a log-periodically scaled directional coupler feeder. Alternating scaled sections of coupled and uncoupled lines are employed as a feed unit for antenna arrays, with radiating elements provided in the uncoupled sections.

DESIGNS

OCTOBER 3, 1972

224,854
TELEVISION STAND OR SIMILAR ARTICLE
Melvin K. H. Choy, 45-219 Nakuluai St., Kaneohe, Hawaii
Filed Nov. 17, 1970, Ser. No. 26,036
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20



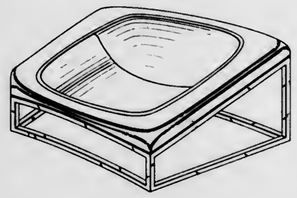
224,855
CHAIR
Patricia Dunbar, 804 Judson, Evanston, Ill. 60202
Filed Nov. 2, 1970, Ser. No. 25,780
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—47



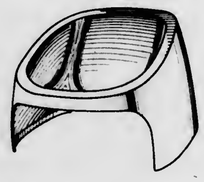
224,856
CHAIR WITH SWINGABLE SEAT
Lawrence E. Charity, New York, N.Y., assignor to Sewell & Charity Ltd., New York, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,630
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—49



224,857
EASY CHAIR
Miguel R. Mazure, Av. Central 671–Ofc. 504, San Isidro, Lima, Peru
Filed Feb. 26, 1970, Ser. No. 21,635
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—58



224,858
CHAIR
Kenneth W. Leino, East Detroit, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 23, 1970, Ser. No. 26,118
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65



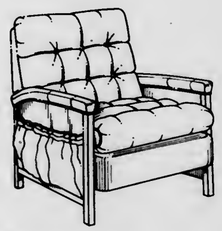
224,859
DECK CHAIR
Alexander Lawrence Leitch, 38 Gwelanmor Road, Carbis Bay, St. Ives, England, and Anthony Gable, 10 Harriotts Lane, Ashtead, England
Filed July 27, 1970, Ser. No. 24,159
Claims priority, application Great Britain June 10, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



224,860
DECK CHAIR
Alexander Lawrence Leitch, 38 Gwelanmor Road, Carbis Bay, St. Ives, England, and Anthony Gable, 10 Harriotts Lane, Ashtead, England
Filed July 27, 1970, Ser. No. 24,160
Claims priority, application Great Britain May 13, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



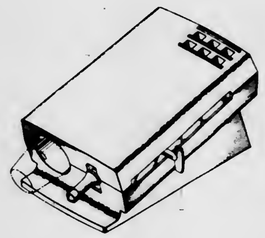
224,861
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,540
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71



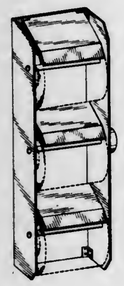
224,862
CHAIR
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Dec. 7, 1970, Ser. No. 26,322
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73



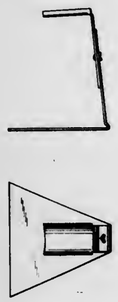
224,863
COMBINED TOOTHBRUSH HOLDER AND DISPENSER FOR TOOTHPASTE AND PAPER CUPS
Bill E. Stevenson, 9092 Adelia Circle, Huntington Beach, Calif. 92646
Filed Oct. 19, 1970, Ser. No. 25,559
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—92



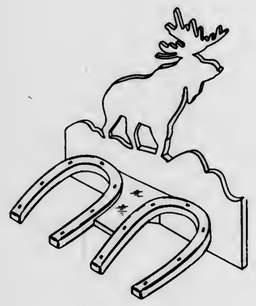
224,864
HOLDER FOR PAPER ROLLS
August Belz, 13 Seestrasse, 9403 Goldach, Switzerland
Filed June 8, 1970, Ser. No. 23,351
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



224,865
HOSE SUPPORT
Allen M. Fellows, 15 Island Trail, Sparta, N.J. 07871
Filed Sept. 9, 1970, Ser. No. 24,898
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—112



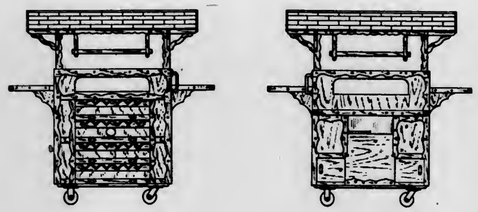
224,866
BOOT HOLDER OR SIMILAR ARTICLE
Leon W. Hammer, Ogden, Utah
(Rte. 2, Weiser, Idaho 83672)
Filed Mar. 10, 1970, Ser. No. 21,841
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—116



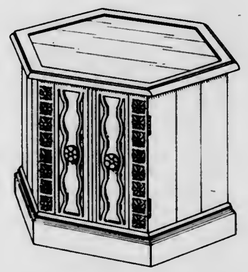
224,867
PEDESTAL CHAIR
Maurice P. Burke, Gstaad, Switzerland, assignor to Bjorgensen, S.A., Fribourg, Switzerland
Filed Dec. 5, 1968, Ser. No. 14,802
Claims priority, application Great Britain June 10, 1968
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—120



224,868
MOBILE COCKTAIL BAR
Vincent J. Intorcio, 7123 Mentor Ave., Mentor, Ohio 44094
Filed Sept. 14, 1970, Ser. No. 24,991
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



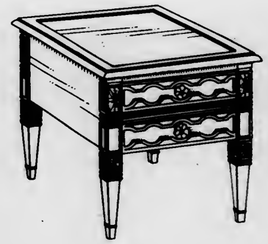
224,869
COMMODE
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Nov. 30, 1970, Ser. No. 26,211
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—149



224,870
WARDROBE CABINET
Arnold H. Klein, Clarksville, N.Y., assignor to Klein Industries, Inc., Cobleskill, N.Y.
Filed Feb. 10, 1971, Ser. No. 114,403
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



224,871
COMMODE
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Dec. 7, 1970, Ser. No. 26,320
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165



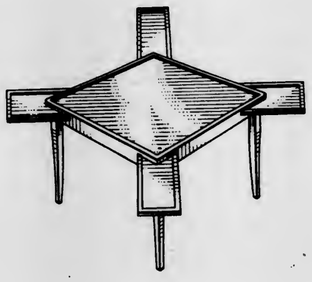
224,872
INFANT'S DRESSING TABLE
Charles L. Voytko, Johnstown, Pa., assignor to Hedstrom Company, Bedford, Pa.
Filed Jan. 4, 1971, Ser. No. 103,956
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—168



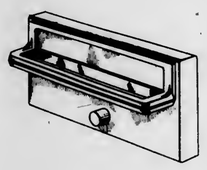
224,873
TABLE
Alfredo Martini, Via Della Giardina, Monza, Italy, and Giorgio Zerbi, Via Donatella 5, Milan, Italy
Filed Oct. 12, 1970, Ser. No. 25,468
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



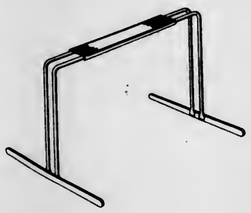
224,874
CARD TABLE
Merwyn O. Cook, 25 E. 9th Ave., Denver, Colo. 80203
Filed May 12, 1970, Ser. No. 22,942
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—157



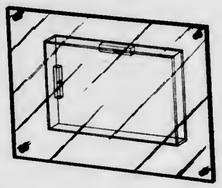
224,875
FACE PANEL FOR A CARD CATALOG DRAWER
Stephen F. McKeon, Utica, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 26,521
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—192



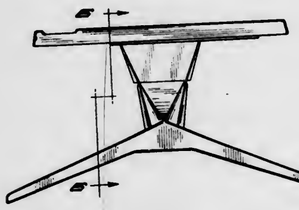
224,876
SEAT BASE
Hugh C. Acton, Ross Township, Kalamazoo County, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Filed May 18, 1970, Ser. No. 23,048
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—196



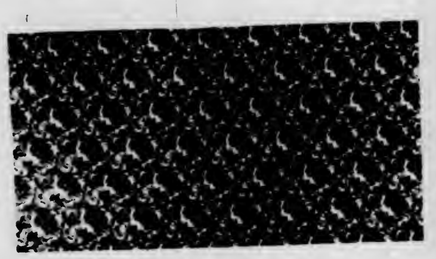
224,877
PICTURE FRAME
Daniel Fendrick, 4105 Leland St., Chevy Chase, Md. 20015
Filed June 29, 1970, Ser. No. 23,700
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—242



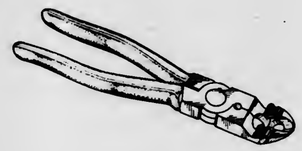
224,878
VALET RACK
Robert O. Memmel, P.O. Box 6, Okauchee, Wis. 53069
Filed Nov. 4, 1970, Ser. No. 25,825
Term of patent 7 years
Int. Cl. D6—*08*
U.S. Cl. D6—247



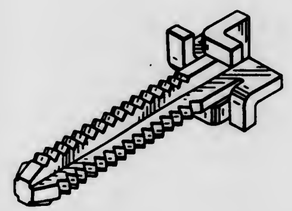
224,879
SHEET OR SIMILAR ARTICLE OF BED LINEN
Leonard C. Clementi, Huntington, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 19, 1971, Ser. No. 117,212
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264



224,880
INSULATION-STRIPPING PLIERS
Isamu Uchida, Urawa, Japan, assignor to Kosoku Electric Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1970, Ser. No. 25,963
Claims priority, application Japan June 17, 1970
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—58



224,881
SCREW
Terence Robert Raynor, London, and Philip Sydney Smith, Bideford, England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1971, Ser. No. 108,683
Claims priority, application Great Britain Aug. 8, 1970
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



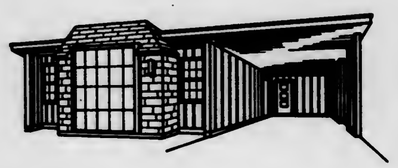
224,882
COMBINED BOTTLE AND DISPENSING PUMP THEREFOR
Marvin Alpern, Glen Ridge, N.J., assignor to Sterling Drug Inc., New York, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,806
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67



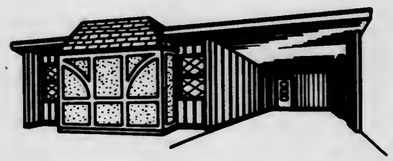
224,883
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,423
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



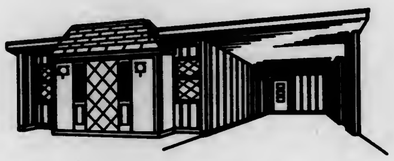
224,884
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,424
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,885
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,426
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



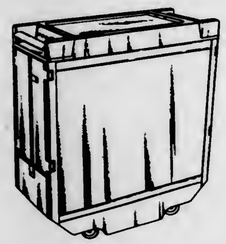
224,886
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,433
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



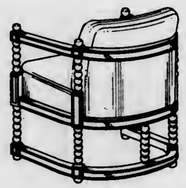
224,887
LOUNGE CHAIR
Stanley P. Nash, Wheaton, Ill., assignor to Mohasco Industries Inc., Amsterdam, N.Y.
Filed Jan. 12, 1970, Ser. No. 20,883
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D6—1



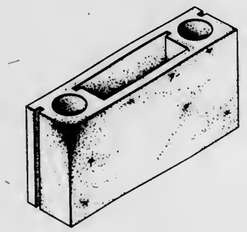
224,888
FOOD CART
Stuart I. Freedman, Los Angeles, Calif., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed July 9, 1970, Ser. No. 23,890
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



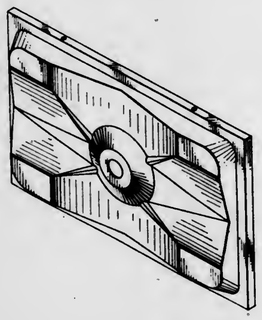
224,889
ARMCHAIR
Thomas Winrow, Naperville, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 14, 1970, Ser. No. 20,925
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1



224,890
CONSTRUCTION BLOCK
George B. Muse, Hillcrest Drive, Calhoun, Ga. 30701
Filed Oct. 6, 1970, Ser. No. 25,356
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



224,891
HEATER BACK PAN
Jay N. Smith, Wichita, Kans., assignor to Impala Industries, Inc., Wichita, Kans.
Filed Sept. 28, 1970, Ser. No. 25,226
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



224,892
CHRISTMAS ORNAMENT
Dario Moranduzzo, Strada Tosco Romagnola, 463 Florence, Italy
Filed May 28, 1971, Ser. No. 148,290
Claims priority, application Italy Dec. 1, 1970
Term of patent 7 years
Int. Cl. D11—*05*
U.S. Cl. D29—1

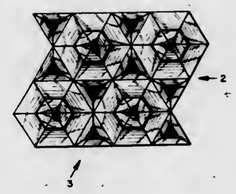


224,893
LANDSCAPING DEVICE
Roy L. Rogers, 9880 W. 10th St., Indianapolis, Ind. 46234
Filed June 15, 1970, Ser. No. 23,475
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D35—1

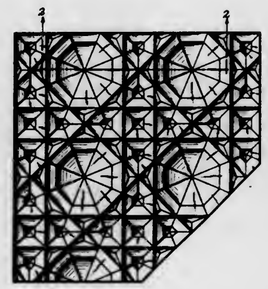




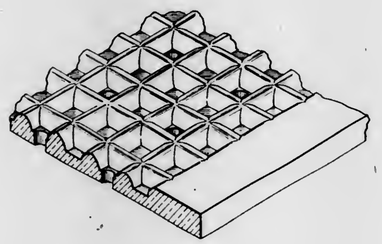
224,894
TRANSPARENT COVERING PANEL FOR LIGHT FITTINGS
Friedrich Clostermann, Hagen, Germany, assignor to Trilux-Lenz KG, Neheim-Husten, Germany
Original design application July 11, 1969, Ser. No. 18,174, now Patent No. 221,176, dated July 13, 1971. Divided and this application June 18, 1970, Ser. No. 24,102
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



224,895
TRANSPARENT COVERING PANEL FOR LIGHT FITTINGS
Friedrich Clostermann, Hagen, Germany, assignor to Trilux-Lenz KG, Neheim-Husten, Germany
Original design application July 11, 1969, Ser. No. 18,174, now Patent No. 221,176, dated July 13, 1971. Divided and this application Nov. 13, 1970, Ser. No. 24,103
Claims priority, application Germany Jan. 15, 1969
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



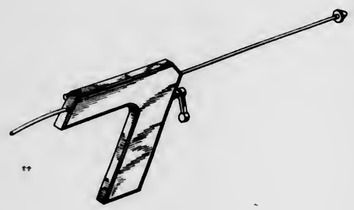
224,896
CEILING PANEL
Michael H. Pelosi, Jr., Broomall, Pa., assignor to CRS Industries, Inc., Conshohocken, Pa.
Filed Sept. 22, 1970, Ser. No. 25,128
Term of patent 14 years
Int. Cl. D26—*05*
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224,897
TOASTER
Donald A. Riel, 400 W. Orangethorpe, Apt. 307A, Fullerton, Calif. 92632
Filed Dec. 3, 1970, Ser. No. 26,273
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



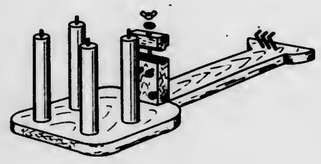
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Ronald M. Wallach, Norwalk, and Eugene Franzino, Fairfield, Conn., assignors to Cryomedics, Inc., Bridgeport, Conn.
Filed Oct. 6, 1971, Ser. No. 187,236
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



224,899
MIRROR
Lois Gahm, 185 Elmwynd Drive, Orange, N.J. 07050
Filed June 4, 1970, Ser. No. 23,321
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10



224,900
HAND LOOM FOR MAKING WOVEN STRIPS
Opal Eisenbeis, 221 N. Union, Madison, S. Dak. 29660
Filed July 10, 1970, Ser. No. 23,895
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



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Barrett, James R., to Fiberglass Structures. Tank venting system. 3,695,010, Cl. 55-385.000.
Barrios, David Joseph. Golf game with club stroker. 3,695,612, Cl. 273-87.200.
Barron, Norman, 5% to Sellers, Wm. Douglas, Brace, George A.; d/b/a and Sellers and Brace. Manually controlled automatic information display device. 3,696,395, Cl. 340-325.000.
Barry, Vincent T., to Carrier Corporation. Control circuit for an air conditioning system. 3,695,054, Cl. 62-115.000.
Barta, Franz; and Grupp, Alfred F., to Mayercord Co., The. Web processing apparatus. 3,694,928, Cl. 34-159.000.
Bartlett, George A.: *See—*
Watts, Woodrow H.; and Bartlett, George A., 3,695,314.
Barton, Frederic D. Demonstrator system for vehicle cooling system. 3,694,934, Cl. 35-13.000.
Bartz, Edward S.: *See—*
Siesennop, W. Wayne; Gibbs, Norman E.; and Bartz, Edward S., 3,695,147.
Basher, Hedley James; and Edwards, Leonard Robert. Upholstery supports and the manufacture thereof and structures incorporating such upholstery supports. 3,695,706, Cl. 297-452.000.
Bateman, Willis: *See—*
Metcalf, Arnold; and Bateman, Willis, 3,695,863.
Battelle Development Corporation, The, mesne: *See—*
Randolph, Alan D.; and Crawford, Rufus W., 3,695,932.
Battelle Memorial Institute: *See—*
Zuppiger, Paul, 3,695,183.
Baum, Gilbert. Electrical display systems. 3,696,324, Cl. 340-1.00r.
Baun Aktiengesellschaft: *See—*
Harms, Luhr; and Voigt, Gunter, 3,694,916.
Baur, Robert, to Bunker-Ramo Corporation, The. Non-explosive electrically initiated heat-ignitable actuator. 3,695,116, Cl. 74-2.000.
Bausenbach, Arthur E.; and Palopoli, Frank, to Sanitary Controls, Inc. Dual compactor assembly. 3,695,175, Cl. 100-193.000.
Baxter Laboratories, Inc.: *See—*
Grimes, Raymond E.; and Bruen, Robert W., 3,696,002.
Salinger, Fred G., 3,696,232.
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, to Mattel, Inc. Curve track system for toy vehicles. 3,695,513, Cl. 238-10.00e.
Bays, Robert D. Car theft prevention device. 3,695,067, Cl. 70-63.000.
Beau, Raymond: *See—*
Le Page, Madeleine A.; Beau, Raymond; and Jacques, Maison-Alfort, 3,696,053.
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques; deceased (by Larocque, Patricia Powers; executrix). Package tape with sticks retained thereon. 3,695,423, Cl. 206-56.00a.
Beaulieu, Alexander J.; and Johnson, Derwyn C., to Canada, Her Majesty the Queen of, as represented by the Minister of National Defence. Capacitor laser. 3,696,307, Cl. 331-94.500.
Bebinger, Jack E., to Westinghouse Electric Corporation. Hopper assembly for batch disposer. 3,695,519, Cl. 241-46.00b.
Bechtel International Corporation, mesne: *See—*
Inamdar, Sayed-Ibrahim S., 3,696,367.
Beck, Charles, Machine Corporation: *See—*
Switliski, Vincent S.; and Harmon, Arthur R., 3,694,999.
Beckenbach, Karl. Method and means for sintering materials, particularly dolomite and magnesite, in a shaft furnace. 3,695,595, Cl. 263-29.000.
Beckman Instruments, Inc.: *See—*
Griffith, Paul A.; and Rohrer, David A., 3,695,813.
Spyropopoulos, Constantine G., 3,695,772.
Becton Dickinson and Company: *See—*
Esmond, William G., 3,695,445.
Bednarski, Valery N. Gas chromatography method and apparatus. 3,695,003, Cl. 55-67.000.
Beer, Ekkehard: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.
Behr, Michael I.: *See—*
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., 3,696,255.
Behrens, William H.: *See—*
Buttke, Richard A.; Sabattino, Anthony; Orlando, Daniel; and Behrens, William H., 3,695,939.
Belden, Richard C.: *See—*
Bouchard, Richard J.; and Belden, Richard C., 3,696,408.
Bell Telephone Laboratories, Incorporated: *See—*
Apgar, Waldo Ditmar; D'Asaro, Lucian Arthur; Dixon, Richard Wayne; Dufft, William Henry; Elder, Harry Eugene; and Fraley, Phillip Edward, 3,694,902.
Bitler, Jesse S., 3,696,421.
Copeland, John Alexander, III, 3,696,347.
Deisch, Cecil Winston, 3,696,253.
Maldonado, Juan Ramon, 3,695,747.
Ortel, William Charles Gormley, 3,695,875.
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,696,310.
Zucker, Henry, 3,696,435.
Belle, Pierre. Apparatus for and method of continuously measuring a temperature gradient in relation to altitude. 3,695,111, Cl. 73-345.000.
Beloit Corporation: *See—*
Busker, Leroy H.; and Mosher, Robert J., 3,696,292.
Bendix Corporation, The: *See—*
Bancroft, George H., 3,695,050.
Cohen, Richard L., 3,696,390.
Egerton, McKenny W., Jr., 3,696,407.
Quatrano, John, 3,695,592.
Beneze, Heinz Wilhelm, to Firestone Tire & Rubber Company, The. Apparatus for making tires. 3,695,808, Cl. 425-426.000.
Bennett, Charles H. Power boat with trim tabs. 3,695,204, Cl. 114-66.50p.
Bennett, Frank; and Conibear, Ivor John. Electrolytic hygrometer cells and method of using same. 3,696,007, Cl. 204-1.00t.
Benson, Harvey R.; and Ashley, Milton V., Jr., to United States of America, Army. Range safety device. 3,695,142, Cl. 89-1.812.
Benz, Mark G., to General Electric Company. Method of producing a sintered cobalt-rare earth intermetallic product. 3,695,945, Cl. 148-103.000.
Beregi, Laszlo; Hugon, Pierre; and Desnoyers, Pierre, to Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale. Azabicycloalkyl urea compounds. 3,696,117, Cl. 260-326.300.
Berg Electronics, Inc.: *See—*
Olsson, Billy E., 3,696,319.
Berthold, H., Messinglinienfabrik und Schriftiesserei AG: *See—*
Guldenpfennig, Hans, 3,695,155.
Bertolini, Gianni; and Vinsani, Mario, to Olivetti-General Electric S.p.A. Monostable multivibrator. 3,696,254, Cl. 307-273.000.
Besser, John E.: *See—*
Werts, Arthur P.; and Besser, John E., 3,696,050.
Betts, Max William; and Robinson, Frank, to Courtaueds Limited. Knitting method and knitted garment. 3,695,063, Cl. 66-176.000.
Betts, Robert E. Delta squib circuit. 3,695,178, Cl. 102-28.00r.
Beusink, Bernard Joseph. Tiltable shear plate. 3,694,915, Cl. 30-32.000.
Bialek, Joseph J. Training device for teaching digital logic operations. 3,694,931, Cl. 35-19.00a.
Bichel, Darwin Carl; Malcolm, Robert La Verne; and Slaverns, Wayne Eldon. Adjustable steering column for an agricultural machine. 3,695,627, Cl. 280-87.00a.
Biggs, Robert W.: *See—*
Graham, Glenn R.; and Biggs, Robert W., 3,695,406.
Billeter, Henry R.; and Allen, Charles S., to Sloan Valve Company. Remotely actuated flush valves. 3,695,288, Cl. 137-360.000.
Binns, Robert Eric, to Amchem Products, Inc. Zirconium rinse for phosphate coated metal surfaces. 3,695,942, Cl. 148-6.15r
Biolik, Alexander. Baby thermometer spoon. 3,695,110, Cl. 73-343.00r.
Birdyshaw, Walter L.: *See—*
Garrett, Leo Lawrence; and Birdyshaw, Walter L., 3,696,372.
Birrer, Josef, to Atlas Copco Aktiebolag. Tunneling machine. 3,695,717, Cl. 299-31.000.
Bitler, Jesse S., to Bell Telephone Laboratories, Incorporated. Space diversity phased array retransmission system using time division 3,696,421, Cl. 343-100.0td.
Bixel, Harold C.: *See—*
Argabright, Perry A.; Presley, C. Travis; and Bixel, Harold C., 3,695,356.

Bjorkman, Bengt Harry: *See—*
Lundin, Seth Johan Roland; and Bjorkman, Bengt Harry, 3,696,207.

Bkold, Mats Folke. Spacer clip for joining and supporting crosswisely extending reinforcement. 3,694,988, Cl. 52-678.000.

Black and Decker Manufacturing Co., The: *See—*
Stielper, Henry J., 3,694,967.

Black, Thomas J.; and Sawyer, Carl B., to Westermann, Werner F. High speed coin counting and sorting. 3,695,279, Cl. 133-3.000.

Blakeley, James, to Victaulic Company of America, mesne. Coupling for plastic pipe. 3,695,638, Cl. 285-112.000.

Blakely, Richard P., to Case, J. I., Company. Hydraulic control linkage for implement. 3,695,474, Cl. 214-771.000.

Blount, Elmo M.; and Prueger, Nicolas J., to Mobil Oil Corporation. Well completion systems. 3,695,358, Cl. 166-302.000.

Blum, Alvin S., to Ohio Nuclear, Inc. Method and apparatus for determining volume of a lung. 3,695,254, Cl. 128-2.080.

Bodkins, Arthur I., to Zelman, M. James. Optical reflector. 3,695,743, Cl. 350-1.000.

Boehringer, C. H., Sohn: *See—*
Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, 3,696,106.

Boehringer Ingelheim G.m.b.H.: *See—*
Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.

Boerma, Michael J., to Outboard Marine Corporation. Internal combustion engine exhaust gas discharge system. 3,695,238, Cl. 123-65.00e.

Boggian, Umberto: *See—*
De Barbieri, Ettore; and Boggian, Umberto, 3,694,814.

Bohm, Horst Otto: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Boise Cascade Corporation: *See—*
Cook, Charles F., 3,695,506.

Boissevain, Thomas A.: *See—*
Palombo, Gaston Albert; and Boissevain, Thomas A., 3,696,354.

Bol, Jan Paul; Gebhart, Joseph; and Seger, Gunther, to Laporte Industries Limited. Method for measuring and/or monitoring the size of particles in suspension. 3,695,765, Cl. 356-102.000.

Boland, Bernard W., to Motorola, Inc. Insulated gate field-effect device and method of fabrication. 3,696,276, Cl. 317-235.00r.

Boliden Aktiebolag: *See—*
Bostrom, Karl-Johan, 3,695,373.

Bolliand, Robert, to Societe Rhodiaceta. Process for the manufacture of a stuffing material. 3,696,185, Cl. 264-280.000.

Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstatinovich; Khodosh, Vladimir lexandrovich; and Pisarev, Nikolai Dmitrievich. Tunnelling shield with jack for vertical adjustment of cutter drum. 3,695,719, Cl. 299-33.000.

Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstantinovich; Khodosh, VladimirAlexandrovich; and Pisarev, Nikolai Dmitrievich. Tunnelling shield. 3,695,720, Cl. 299-33.000.

Bonner, Willard Hallam, Jr., to Du Pont de Nemours, E. I., and Company. Flash extrusion of polyvinyl chloride. 3,696,181, Cl. 264-53.000.

Borbe-Wanner AG: *See—*
Kuoni, Xaver, 3,695,307.

Borden, Douglas G.: *See—*
Reynolds, George A.; Laakso, Thomas M.; Borden, Douglas G.; and Williams, Jack L. R., 3,696,072.

Borden, Inc.: *See—*
Re, Jerry Peter, 3,696,064.

Borgstedt, Hans Ulrich: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Borriello, Aleardo. Electromechanical apparatus for slinging and turning over roll material. 3,695,460, Cl. 214-1.0qd.

Bosch, Robert, G.m.b.H.: *See—*
Schadlich, Fritz, 3,695,365.
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, 3,696,270.

Bosse, Robert W., to Groov-Pin Corporation. Insert driver device. 3,694,888, Cl. 29-240.000.

Bossert, Friedrich; and Vater Wulf, to Farbenfabriken Bayer Aktiengesellschaft. Sulphur-containing 1,4-dihydropyridine derivatives. 3,696,112, Cl. 260-294.80f.

Bossler, Franklin B.: *See—*
Pazhia, Vincent B.; and Bossler, Franklin B., 3,695,388.

Bostrom, Karl-Johan, to Boliden Aktiebolag. Wheel-supported transport vehicle having maximum permitted axel pressure and being adapted to transport simultaneously loads of theoretically unlimited total weight. 3,695,373, Cl. 180-14.00a.

Bouchard, Richard J.; and Belden, Richard C., to Sanders Associates, Inc. Keyboard encoder. 3,696,408, Cl. 340-365.000.

Boucris, Hubert, to Compagnie Generale d'Automatisme. Dispenser for self-adhering label. 3,695,981, Cl. 156-584.000.

Bowker, John Kent, to Itek Corporation. Detail boundary detection systems. 3,696,249, Cl. 250-220.00m.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald, 3,695,607.

Bowling, Joseph L., Jr., to Carborundum Company, The. Abrasive blast cleaning system. 3,694,964, Cl. 51-9.000.

Boyer, Lynn Forrest; and Johnson, Anderson Forbes, Jr., to Western Electric Company, Incorporated. Selective coating. 3,695,928, Cl. 117-212.000.

Braaten, Norman J., to Linquist & Vennum, mesne. Finger-touch faceplate. 3,696,409, Cl. 340-365.000.

Brace, George A.; d/b/a: *See—*
Barron, Norman, 3,696,395.

Bradel, Norman F., to Kinney, S. P., Engineers, Inc. Goggle valve with limit switch. 3,695,300, Cl. 138-94.300.

Brainerd, Gideon R. Analog-to-digital converter. 3,696,404, Cl. 340-347.0ad.

Brandon, Marshall K.: *See—*
Allen, Willard B.; Persons, Charles E.; and Brandon, Marshall K., 3,696,414.

Brandt, Theodore C.; and Schulze, James L., Sr., to General Electric Company. Pilot and main fuel gas supply means for pressurized gas-fired space heater. 3,695,811, Cl. 431-43.000.

Braunstein, David M., to Celanese Corporation. Polybutylene terephthalate-oxymethylene polymer compositions. 3,696,171, Cl. 260-860.000.

Breslow, David S., to Hercules Incorporated. Azidoformates from reduced polymerized fatty acids. 3,696,126, Cl. 260-349.000.

Brevik, Elmer Lawrence. Face mask. 3,695,265, Cl. 128-146.200.

Bridge, Alan G., to Chevron Research Company. Multi-stage desulfurization. 3,696,027, Cl. 208-210.000.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Yamamoto, Katsuro; Obata, Kuniyoshi; and Sato, Toru, 3,694,986.

Briggs, Albert Theodore, to United Engineering and Foundry Company. Strip coil feeding device. 3,695,542, Cl. 242-70.600.

Brimer, Joe W. Von. Combustion product processing device and method. 3,695,192, Cl. 110-8.00a.

Brimm, Collen K.: *See—*
Groom, Robert G.; and Brimm, Collen K., 3,696,351.

Brinkley, Max D.; and Kerr, Glenn D., to Goodyear Tire & Rubber Company, The. Apparatus for wrapping a flexible endless band into a coil. 3,694,998, Cl. 53-116.000.

Brisson, David W. Board game apparatus. 3,695,614, Cl. 273-130.0ac.

Bristol-Myers Company: *See—*
Judy, Peter Frederick; Hudyma, Thomas William; and Partyka, Richard Anthony, 3,696,111.
Perron, Yvon G.; and Douglas, James L., 3,696,145.

British Ropes Limited: *See—*
Paddington, Arthur L., 3,695,635.

British Vis-ueen Limited: *See—*
Highfield, Peter Edward; and Hill, Gordon John, 3,695,969.

Broadbent, Graham; and Mansfield, John Rickard, to Imperial Chemical Industries Limited. Sampling method and apparatus. 3,695,113, Cl. 73-421.000.

Brobston, Scott. Golf course with target greens and separate putting greens. 3,695,619, Cl. 273-176.00a.

Brock, Robert J.; and Thomas, Gordon D., to Kimberly-Clark Corporation. High bulk laminates. 3,695,985, Cl. 161-129.000.

Brodie, Ricard A. Magnetic battery mounting. 3,695,938, Cl. 136-173.000.

Brody, Norman M., to Norman Industries, Inc. Three-dimensional plastic colored article. 3,695,982, Cl. 161-5.000.

Brondyke, Kenneth J., to Aluminum Company of America. Metal coating process. 3,695,919, Cl. 117-52.000.

Brotman, Harry D.: *See—*
Eads, Charles L.; and Brotman, Harry D., 3,695,068.

Brower, James P., to Richards Manufacturing Company. Over-a-door support for cervical traction apparatus. 3,695,256, Cl. 128-75.000.

Brown & Williamson Tobacco Corporation: *See—*
Summers, Thomas W., 3,695,274.

Brown, Arnold E., to Kusan, Inc. Endless-track-supported vehicle. 3,695,736, Cl. 305-18.000.

Brown, David, Tractors Limited: *See—*
Eastwood, Thomas, 3,695,403.

Brown, John S., to FMC Corporation. Molding machine with spray defrost. 3,695,895, Cl. 99-136.000.

Brown, Philip, to Mintray Limited. Methods of manufacturing garments. 3,694,817, Cl. 2-243.00r.

Browning, George William, to Associated Electrical Industries Limited. Viewing screen mechanism for electron microscope. 3,696,245, Cl. 250-49.50e.

Bruce, Ralph E. Temperature compensating refrigerant charging device. 3,695,055, Cl. 62-157.000.

Bruen, Robert W.: *See—*
Grimes, Raymond E.; and Bruen, Robert W., 3,696,002.

Bruinsma, Norman G., to Gleason Works, The. Method and apparatus for roll-forming or roll-finishing gear pieces. 3,695,078, Cl. 72-101.000.

Brumlik, George C. Construction element for the assembly of models and the like. 3,694,954, Cl. 46-29.000.

Brundage, Robert Wesley, to Emerson Electric Co. Variable sealed hydraulic pump or motor. 3,695,791, Cl. 418-131.000.

Bruner, Mates A. Removable watch band. 3,695,494, Cl. 224-4.00e.

Bruno, Loeb. Wrist watch with changeable case. 3,695,031, Cl. 58-88.00r.

Bryan, Roland J., Jr.: *See—*
Smith, Andrew I.; and Bryan, Roland J., Jr., 3,696,078.

Bryant, Michael I.; and Jones, Charles E., to Burlington Industries, Inc. Tire fabric. 3,695,326, Cl. 152-358.000.

Bublitz, Robert F.: *See—*
Siemonsen, Frederik A.; and Bublitz, Robert F., 3,695,084.

Buchanan, Robert, to Perkin-Elmer Corporation, The. Specimen analysis in an electron microscope. 3,696,246, Cl. 250-49.50a.

Bucher-Guyer AG Maschinenfabrik: *See—*
Hauser, Rudolf Martin, 3,695,575.

Bucholz, Allan A., to Monitor Cabinets, a division of Comerco, Inc. Knockdown sectional shelving. 3,695,190, Cl. 108-91.000.

Budd Company, The: *See—*
Herring, James M., Jr., 3,695,186.

Bull, Gerald V.; and Palacio, Luis M., to Space Research Corporation. Sub-caliber projectile. 3,695,181, Cl. 102-93.000.

Bunger, David A., to Baldwin, D. H., Company. Automatic sequential voicing. 3,696,200, Cl. 84-1.030.

Bunker-Ramo Corporation: *See—*
Lawson, Robert R.; and Metzinger, Leonard L., 3,695,032.

Bunker-Ramo Corporation, The: *See—*
Baur, Robert, 3,695,116.

Burger, William H., to Kimberly-Clark Corporation. Method for applying elastic ribbon to fabrics. 3,694,815, Cl. 2-224.00a.

Burlington Industries, Inc.: *See—*
Bryant, Michael I.; and Jones, Charles E., 3,695,326.

Burns, Harold S. Indicator. 3,696,385, Cl. 340-316.000.

Burrell, Gary L., to King Radio Corporation. Navigation receiver/communications transceiver and frequency synthesizer associated therewith. 3,696,422, Cl. 343-100.000.

Burroughs Corporation: *See—*
George, David J.; and Iwan, Wilfred D., 3,695,767.
Groom, Robert G.; and Brimm, Collen K., 3,696,351.
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., 3,696,255.
Qutogue, Virgilio J., 3,696,353.

Burt, Patrick V., to Monsanto Chemicals Limited. Production of foamable resins. 3,696,060, Cl. 260-2.50b.

Burt, Ralph E.: *See—*
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., 3,696,235.

Busch, William Larry, to Avery Coonley School, Inc. Student learning spaces. 3,694,933, Cl. 35-60.000.

Buschbom, Floyd E.; and Johnson, Roger L., to Veda, Inc. Material handling apparatus with diverter means. 3,695,234, Cl. 119-52.00b.

Busker, Leroy H.; and Mosher, Robert J., to Beloit Corporation. Microwave moisture sensing system including means to continuously change the transmission path of the microwave energy. 3,696,292, Cl. 324-58.50a.

Butler, Jack M.: *See—*
Armstrong, Bruce M.; and Butler, Jack M., 3,695,126.

Butler Manufacturing Company: *See—*
Bakker, Donavon L.; and Miller, Walter L., 3,695,415.

Butler National Corporation: *See—*
Perkins, Earl Stuart, 3,696,425.
Perkins, Earl Stuart, 3,696,426.

Buttke, Richard A.; Sabattino, Anthony; Orlando, Daniel; and Behrens, William H., to Globe-Union Inc. Process and machine for manufacturing electric storage batteries. 3,695,939, Cl. 136-176.000.

Byrd, Geoffrey Charles Morton, to Imperial Chemical Industries Limited. Treatment of packages. 3,695,827, Cl. 8-155.200.

Byrnls, Mark K.: *See—*
Twidall, William H.; and Byrnls, Mark K., 3,695,015.

C & M Manufacturing Company, mesne: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,695,463.

Cadillac Products, Inc.: *See—*
Williams, Robert J., 3,695,692.

Cain, Jerry Blanchard: *See—*
Anderson, Harold; Cain, Jerry Blanchard; and Doggett, John G., Jr., 3,696,432.

Cairns, John Francis: *See—*
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,696,113.

Caisley, Charles Frederick, to Zenith Carburettor Company Limited, The. Automatic cold starting devices for internal combustion engines. 3,695,591, Cl. 261-390.000.

Cale, Albert Duncan, Jr.: *See—*
Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., 3,696,104.

Califoam Corporation of America: *See—*
Gentile, Carlos A., 3,695,128.

Callerame, Joseph, to Chemical Generators Inc. Process of producing chlorine dioxide. 3,695,839, Cl. 423-479.000.

Calsilox S.A.: *See—*
Vrijma, Berend, 3,695,129.

Cam Gears Limited: *See—*
Alderton, Howard Kenneth, 3,695,733.

Cameron Iron Works, Inc.: *See—*
Carman, Richard Jan, 3,696,288.

Canada, Her Majesty the Queen of, as represented by the Minister of National Defence: *See—*
Beaulieu, Alexander J.; and Johnson, Derwyn C., 3,696,307.

Canadian Patents and Development Limited: *See—*
Sugisawa, Hiroshi, 3,695,896.

Cannell, John Carjeag; Leaper, Rodney Seymour; and Paratt, Noel James. Process for making composite materials from refractory fibres and metal. 3,695,335, Cl. 164-97.000.

Cannito, Vincent F.: *See—*
Fernandez, Raul O.; Cannito, Vincent F.; and Olsen, Oscar, 3,696,188.

Capdevielle, Pierre; and Weissmann, Jean, to Institut Francais des Petrole, des Carburants et Lubrifiants. Safety device for the storage and distribution of liquids, particularly hydrocarbons, making use of a pressurized auxiliary fluid. 3,695,289, Cl. 137375.000.

Carborundum Company, The: *See—*
Bowling, Joseph L., Jr., 3,694,964.

Carco, Inc.: *See—*
Abrams, Paul S.; and Peterson, Rudolph G., 3,695,216.

Carey, John Gerard: *See—*
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,696,113.

Carlsen, Earl W., to Food Industries Research & Engineering, Inc. Installation for the filling of pallets with fruit or other easily damaged products. 3,694,996, Cl. 53-35.000.

Carlson, Gilbert Fritz, to International Telephone & Telegraph Corporation. Hydraulic valve with fluid meter connections. 3,695,105, Cl. 73-211.000.

Carlson, Lee Allen; and Miekka, Richard George, to Dennison Manufacturing Company. Microelectrophotographic sheet. 3,695,874, Cl. 96-1.800.

Carman, Richard Jan, to Cameron Iron Works, Inc. Optically coupled control circuit. 3,696,288, Cl. 323-21.000.

Carmichael Paul D.: *See—*
Pogonowski, Ivo C.; and Carmichael Paul D., 3,695,047.

Caron, Jean, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Machine for opening cartons. 3,695,151, Cl. 93-53.0bf.

Carpenter, Walter C. Locking wheel chocks for tandem wheel vehicles. 3,695,394, Cl. 188-32.000.

Carreira, Leonard M., to Xerox Corporation. Electrophoretic imaging apparatus including means to coat and electrify the imaging electrode. 3,696,020, Cl. 204-300.000.

Carrier Corporation: *See—*
Barry, Vincent T., 3,695,054.
Damratowski, Leonard P.; and Huesgen, Eugene L., 3,695,621.
Griffin, Charles K., 3,695,052.
Griffin, Charles K., 3,695,053.

Carson, Marge, Inc.: *See—*
Carson, Robert M., 3,695,690.

Carson, Robert M., to Carson, Marge, Inc. Furniture covering arrangement. 3,695,690, Cl 297-218.000.

Casanova, John: *See—*
Sorensen, Robert L.; and Casanova, John, 3,695,807.

Case, J. I., Company: *See—*
Blakely, Richard P., 3,695,474.
Jansson, Birger F., 3,695,789.

Casey, Tommie; Farrar, Ed; and Cockrum, Grover. Sportsman's boat 3,694,835, Cl. 9-2.001.

Casio Computer Kabushiki Kaisha: *See—*
Kashio, Toshio, 3,696,394.

Cassinelli, Giuseppe; Cotta, Ernesto, Pennella, Paolo; and Faustini, Remo, to Societa Farmaceutical Italia. Antibiotic substance libanomycin. 3,696,194, Cl. 424-115.000.

Castiglia, Anthony J. Streamlining motorcycle gas tank closure device 3,695,480, Cl. 220-24.0gt.

Castle, Maurice E. Disposable splint. 3,695,258, Cl. 128-87.00r

Caterpillar Mitsubishi Ltd.: *See—*
Ito, Yoshiyuki; and Aihara, Toru, 3,695,377.

Caterpillar Tractor Co.: *See—*
Loyd, Calvin D., 3,694,896.

Caterpillar Tractor Company: *See—*
Alexander, George F.; Kessinger, Orville E., Jr., Rediger, John R., and Reinsma, Harold L., 3,695,737.
Engelking, Frederick S.; and Loyd, Calvin D., 3,695,641

Catterfeld, Fritz C.; Macaluso, Sebastian B., and Weber, Lawrence D., to North American Rockwell Corporation. Hydraulic power tool 3,695,367, Cl. 173-163.000.

Celanese Corporation: *See—*
Braunstein, David M., 3,696,171.
Vogelfanger, Elliot A., 3,696,076.

Celmac Plasclip Limited: *See—*
Oliver, Keith H.; and Taylor, Donald, 3,694,989.

Ceschini, Eugene S., to Gulf Research & Development Company Shifting data display. 3,696,396, Cl. 340-336.000.

Cesco Mfg. Corporation: *See—*
Glass, Robert I.; Phillips, William; and House, William R., 3,695,125.

Chabrier, Martial, to C.N.M.P. Berthiez. Tool support for a machine tool. 3,695,127, Cl. 82-36.00r.

Chadwick, William R., to United States of America, Navy. Gun-launched glide vehicle with a mid-course and terminal guidance control system. 3,695,555, Cl. 244-3.140.

Chafetz, Harry: *See—*
Patmore, Edwin L., Siegart, William R; and Chafetz, Harry, 3,696,146.

Chakoian, George; and Crowell, Russell T., to United States of America, Navy. Air brake for airborne missiles. 3,695,177, Cl. 102-4.000

Champion Chemicals, Inc.: *See—*

Mayo, Frank H., 3,696,040.
Chapman, Ronald H., to Motorola, Inc. Active filter for selecting and controlling signals. 3,696,252, Cl. 307-233.000.
Chapman, Thomas Henry, to Gunson's Sortex Limited. Apparatus for controlling a flow of a pressure fluid. 3,695,517, Cl. 316/080/3/8/025.
Chargeishvili, Tengiz Sergeevich: *See—*
Kandelaki, David Georgievich; Chargeishvili, Tengiz Sergeevich; and Skvortsov, Georgy Alexandrovich, 3,695,977.
Charlier, J. Edson; and Schell, Elmer H. Concrete pan forms. 3,695,574, Cl. 249-175.000.
Charnock, Harold: *See—*
Dickinson, George Alfred; and Charnock, Harold, 3,695,859.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for brazing parts of aluminium and aluminium alloys. 3,696,899, Cl. 29-495.000.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Corrugated dissipator for tube and dissipator radiator core and process for manufacturing the same. 3,695,347, Cl. 165-172.000.
Chastan-Bagnis, Lucien. Self-propelled floating dock and separator filter assembly for treating polluted water surfaces and nautical works. 3,695,441, Cl. 210-292.000.
Chemcell Limited: *See—*
Chopra, Sohinder Nath; and Turmel, Hilaire Marcel, 3,695,990.
Chemical Generators Inc.: *See—*
Callerame, Joseph, 3,695,839.
Chemical Projects Limited: *See—*
Pogorski, Louis A., 3,695,483.
Chemische Werke Huls Aktiengesellschaft: *See—*
Knepper, Wilhelm; and Austin, Severin, 3,695,838.
Nordsiel, Karl-Heinz, 3,696,087.
Chen, Allen, to Lorton Laboratories, Ltd. Method of covering shoes. 3,694,939, Cl. 36-7.300.
Cheroff, George: *See—*
Ainslie, Norman G.; Cheroff, George; Graff, William S.; Howard, James Kent; and Ross, Rupert F., 3,695,855.
Cheron, Henri: *See—*
Paul, Claude; and Cheron, Henri, 3,695,856.
Chessmore, Donald O.; and Jaffe, Joseph, to Chevron Research Company. Catalytic cracking by addition of titanium to catalyst. 3,696,025, Cl. 208-113.000.
Chevet, Robert; and Coualard, Jacques, to Compagnie General d'Electricite. Manufacture of gas electrodes for fuel cells. 3,695,936, Cl. 136-122.000.
Chevron Research Company: *See—*
Bridge, Alan G., 3,696,027.
Chessmore, Donald O.; and Jaffe, Joseph, 3,696,025.
Graf, Peter E., 3,695,152.
Chicago Bridge & Iron Company: *See—*
Walker, James Donald, 3,696,029.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara: *See—*
Meszaros, Zoltan; Knoll, Jozsef; and Szentmiklosi, Peter, 3,696,197.
Chodorow, Ingram S., to Technalytics Incorporated. Retention suture bridge. 3,695,271, Cl. 128-335.000.
Chomyn, Karl D., to Esso Research and Engineering Company. Selective hydrogenation of diolefins. 3,696,160, Cl. 260-677.00h.
Chopra, Sohinder Nath; and Turmel, Hilaire Marcel, to Chemcell Limited. Crinkled and fibrillated ribbon. 3,695,990, Cl. 161-168.000.
Chow, Sui-Wu: *See—*
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,131.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,132.
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Christine, William C.; and Pierce, Joseph E., to A.E.I. Corporation. Food packaging machine with synchronized drive mechanism. 3,694,997, Cl. 53-112.00r.
Chrysler Corporation: *See—*
Werner, Lawrence E., 3,694,895.
Chujo, Kiyoshi; Ishihara, Tetsuo; and Osawa, Hiroshi, to Diacel Ltd. Coated polyolefin films and process for preparing same. 3,695,922, Cl. 117-76.00f.
Chung, Jerome; and Shiuh, Hsuing, to Johns-Manville Corporation. Method of determining one or more properties of asbestos fibers by turbidity measurement. 3,695,763, Cl. 356-36.000.
Churley, George: *See—*
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Ciba-Geigy AG: *See—*
Guglielmetti, Leonardo; and Duennenberger, Max, 3,696,193.
Ciba-Geigy Corporation: *See—*
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Jansen, Gert; and Clauson-Kaas, Niels, 3,696,125.
Kartschmaroff, Peter; and Moser, Paul, 3,696,135.
Rodriguez, Herman Robert; and De Stevens, George, 3,696,093.
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Cincinnati Mine Machinery Co., The: *See—*
Krekeler, Claude B., 3,695,726.
Ciska, Manfred; and Hubner, Klaus, to Siemens Aktiengesellschaft. Start circuit for DC motor having a thyristor commutator. 3,696,277, Cl. 318-138.000.
Claas, August, to Raussendorf & Co. G.m.b.H. Maschinenfabrik. Rotary plow. 3,695,361, Cl. 172-67.000.
Clague, John Henry, to Mannin Engineering Limited. Pipe couplings. 3,695,640, Cl. 285-116.000.
Clark, Arthur C.; and Timmons, Ted, to Holiday Vehicle Specialties, Inc. Automobile camper mounting. 3,695,676, Cl. 296-23.0mc.
Clark, Charles J.: *See—*
Sesky, Julius; and Clark, Charles J., 3,695,727.
Clark Equipment Company: *See—*
Reinhardt, Robert L., 3,695,709.
Clark, J. L., Manufacturing Co.: *See—*
Foster, John A.; and Filipowicz, Carl A., 3,695,481.
Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr.; and Lockwood, David L., to Cornell Aeronautical Laboratory, Inc. Magnetically modulated vacuum arc diode. 3,696,264, Cl. 313-160.000.
Clark, Robert F.; and Krantz, Karl W., to General Electric Company. Polyphenylene-oxide-organopolysiloxane block co-polymers. 3,696,137, Cl. 260-448.80r.
Clark, Willard F., to Dow Chemical Company, The. Cast explosive composition containing thiourea. 3,695,948, Cl. 149-2.000.
Clark, Willard F., to Dow Chemical Company, The. Amino-aldehyde resin blasting composition containing gaseous voids. 3,695,950, Cl. 149-19.000.
Clarkson, Frederick C., Jr., to General Motors Corporation. Automatic setting motion-sensing control device. 3,695,362, Cl. 173-2.000.
Clauson-Kaas, Niels: *See—*
Jansen, Gert; and Clauson-Kaas, Niels, 3,696,125.
Clay, Burton Ross, to RCA Corporation. Holographic multicolor technique. 3,695,744, Cl. 350-3.500.
Clay, Robert A., 5% to Wheeler, Max R. Pneumatic jack for motor vehicles. 3,695,582, Cl. 254-93.0hp.
Cleary, John P.; and Abraham, Schulkin, to International Pollution Controls Corporation. Automatic refuse compaction system. 3,695,172, Cl. 100-45.000.
Clecak, Nicholas J.; Cox, Robert J.; and Moreau, Wayne M., to International Business Machines Corporation. High speed azide resists. 3,695,886, Cl. 96-91.00n.
Clement, Robert L.: *See—*
De Lisio, Michael P.; and Clement, Robert L., 3,695,004.
Clemson University: *See—*
Alphin, John G.; and Fitner, John B., 3,695,014.
Cleusix, Willy, to OMEGS Louis Brandt & Frere S. A. Timepiece movement. 3,695,035, Cl. 58-42.500.
Clipsham, Ian Sweet: *See—*
Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, 3,694,855.
Cluett, Peabody & Co., Inc.: *See—*
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Clyde Corporation: *See—*
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C.N.M.P. Berthiez: *See—*
Chabrier, Martial, 3,695,127.
Coachmen Industries, Inc.: *See—*
Corson, Claude E., 3,695,666.
Coale, Harold D. Poly(arylene sulfide) smoking element. 3,695,276, Cl. 131-191.000.
Cobbeldick, Charles R.: *See—*
Langan, John P.; and Cobbeldick, Charles R., 3,696,222.
Cober Fabbrica Articoli Sportivi: *See—*
Covini, Lorenzo, 3,695,623.
Cockburn, Stanley D. Closure latch. 3,695,663, Cl. 292-216.000.
Cockrum, Grover: *See—*
Casey, Tommie; Farrar, Ed; and Cockrum, Grover, 3,694,835.
Codos, William V., to Pathe Equipment Company, Inc. Multi-needle sewing machines simulating piped seams. 3,695,196, Cl. 112-164.000.
Cohen, Maurice. Display rack with annular mounting ring. 3,695,457, Cl. 211-177.000.
Cohen, Richard L., to Bendix Corporation, The. Digital magnetic wheel logic control network. 3,696,390, Cl. 340-324.00r.
Cohen, William D.; and Worster, David E. Connected rotatable pliable disk and rigid disk with annular groove for recording using an air bearing. 3,696,350, Cl. 340-174.10e.
Colby, Thomas H., to Shell Oil Company. Process for organophosphorus vinyl esters production. 3,696,176, Cl. 260-986.000.
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, to Imperial Chemical Industries Limited. Manufacture of bipyridylium salts and related compounds. 3,696,113, Cl. 260-295.0am.
Cole, Edward L.; and Hess, Howard V., to Texaco Inc. Continuous process for separating oily sludges. 3,696,021, Cl. 208-13.000.
Coleman, Harold R., to Tee-Pak, Inc. Method of improving coloring agent crocking fastness of polymeric alcohol films. 3,695,904, Cl. 99-176.000.
Colgate-Palmolive Company: *See—*
Gray, Frederick William, 3,696,041.
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,696,034.
Inamorato, Jack Thomas, 3,696,056.
Collins Radio Company: *See—*
Cory, Terry S.; and Markley, Roger A., 3,696,430.

Kemper, Arthur L.; and Baliklock, Raymond R., 3,696,428.
Colucci, Ivo, to Alfa Romeo S.p.A. Seat for motor vehicles. 3,695,695, Cl. 297-341.000.
Columbia Broadcasting System, Inc.: *See—*
Sharp, Paul H., 3,695,385.
Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
De Laurentis, Peter; and Newman, Douglas A., 3,695,912.
Cometti, Andre; Fouche, Jean; and Le Goff, Yves, to Rhone-Poulenc S.A. Azaborolidine compounds. 3,696,103, Cl. 260-268.00r.
Commercial Solvents Corporation: *See—*
Miescher, Guido M., 3,696,000.
Commichau, Axel Klaus, to Mobil Oil Corporation. Organic compositions containing tetraoctyl-(dimethyl-amino) methylene diphosphonate as anti-wear agent. 3,696,036, Cl. 252-49.900.
Commissaire, Henri: *See—*
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Commons, Ward T. Dirigible wheel device. 3,695,374, Cl. 180-27.000.
Compagnie des Ateliers et Forges de la Loire: *See—*
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Compagnie des Ateliers et Forges de la Loire (St. Chamond, Fuirminy, St-Etienne, Jacob Holtzer): *See—*
Demeaux, Jean, 3,695,946.
Compagnie General d'Electricite: *See—*
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Compagnie Generale d'Automatisme: *See—*
Boucris, Hubert, 3,695,981.
Compagnie Generale de Geophysique: *See—*
Nard, Georges Pierre, 3,696,427.
Compagnie Generale d'Electricite: *See—*
Moisson-Franckhauser, Francois, 3,695,057.
Compagnie Generale d'Electricite l'Air Liquide Liquide: *See—*
Aupoix, Marcel; and Culand, Andre, 3,694,914.
Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
Fahlenberg, Paul, 3,695,158.
Conapa, Leonard L.: *See—*
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Concorde Fibers, Inc.: *See—*
Arnett, Joseph W., Jr.; and Norwood, David W., 3,696,184.
Conibear, Ivor John: *See—*
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Conlon, William J.: *See—*
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Jossick, James L., 3,695,795.
Conner, Algie J.; and Adams, Frank H., to Universal Oil Products Company. Method for activating a hydrocracking catalyst. 3,696,026, Cl. 208-111.000.
Consiglia Nazionale Delle Ricerche: *See—*
Credali, Lino; and Parrini, Paolo, 3,696,031.
Continental Can Company: *See—*
Ruekberg, Herbert S., 3,695,475.
Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., 3,695,201.
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Continental Oil Company: *See—*
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Washecheck, Paul H., 3,696,134.
Control Concepts, Inc.: *See—*
Zeuner, Kenneth W., 3,695,293.
Cook, Charles F., to Boise Cascade Corporation. Palletized container bottom construction. 3,695,506, Cl. 229-37.000.
Cook, Ray G.: *See—*
Wise, Harold L.; Walters, Arley; and Cook, Ray G., 3,695,844.
Cooksey, William Harold, to Lucas, Joseph, (Industries) Limited. Ignition distributors. 3,694,905, Cl. 29-598.000.
Cookson, Cecil T. Reversible engine mount. 3,695,240, Cl. 123-73.00a.
Cooper, Hal B. H. Alkali metal production. 3,695,864, Cl. 75-66.000.
Cooper, James Joseph, Jr., to International Telephone and Telegraph Corporation. Electrical connector. 3,696,321, Cl. 339-94.00a.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Single wall domain information transfer arrangement. 3,696,347, Cl. 340-174.0tf.
Copeland Refrigeration Corporation: *See—*
Gannaway, Edwin L., 3,695,786.
Copp, Albert R. Method for making twisted cable. 3,695,027, Cl. 57-162.000.
Corderoy, Henry Morgan, to A.C.I. Operations Pty. Limited. Method and apparatus for packaging jars and like articles in cartons. 3,694,994, Cl. 53-26.000.
Cornell Aeronautical Laboratory, Inc.: *See—*
Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr., and Lockwood, David L., 3,696,264.
Corning, Robert C., Jr., to Sonoco Products Company. Method for forming tubular container body and tubular container body produced thereby. 3,695,971, Cl. 156-275.000.
Corrigan, Gordon D.; Lee, Donald H.; Olsen, Howard E.; and Petry, Robert J., to General Motors Corporation. Drive mode selection system for transmissions. 3,695,121, Cl. 74-753.000.
Corson, Claude E., to Coachmen Industries, Inc. Tailgate bumper mount. 3,695,666, Cl. 293-73.000.
Cory, Terry S.; and Markley, Roger A., to Collins Radio Company. High gain two bay unidirectional broadband antenna. 3,696,430, Cl. 343-792.500.
Costa, Eugen; Ene, Lucian; Dumitrescu, Stelica; and Covaci, Ioan, to Policlinica de Stomatologie Protetica. Method of fabricating dental crowns and bridges from gold. 3,695,333, Cl. 164-35.000.
Cotta, Ernesto: *See—*
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Coualard, Jacques: *See—*
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Coulter Electronics, Inc.: *See—*
Klein, Robert T.; and Kreiselman, Robert L., 3,696,399.
Couquet, Pierre Jean. Pile or plastic tiles for flooring and like applications. 3,694,983, Cl. 52-384.000.
Courtaueds Limited: *See—*
Betts, Max William; and Robinson, Frank, 3,695,063.
Covaci, Ioan: *See—*
Costa, Eugen; Ene, Lucian; Dumitrescu, Stelica; and Covaci, Ioan, 3,695,333.
Covini, Lorenzo, to Cober Fabbrica Articoli Sportivi. Safety ski binding. 3,695,623, Cl. 280-11.350.
Cox, Clyde Harold. Dludge dewatering. 3,695,173, Cl. 100-74.000.
Cox, Robert J.: *See—*
Clecak, Nicholas J.; Cox, Robert J.; and Moreau, Wayne M., 3,695,886.
Coyle, Edward L.; Josephson, Edgar F.; and Schipper, Dennis J., to ACF Industries, Incorporated. Humidity control in a temperature controlled railway car. 3,694,925, Cl. 34-46.000.
CPC International Inc.: *See—*
Deaton, Irving F., 3,695,933.
Crabtree, Kenneth L., to Keyes Fibre Company. Tray with reinforced article pockets. 3,695,479, Cl. 217-26.500.
Cragmet Corporation: *See—*
Metcalf, James F.; and Klingerman, Robert H., 3,696,223.
Craig, Herbert W.: *See—*
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Crawford, Peter F., to Automotive Products Company, Limited. Broke shoe housing and retainer means. 3,695,398, Cl. 188-736.000.
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Creamer, Charles Edward, to Union Carbide Corporation. Organosiloxane elastomers. 3,696,068, Cl. 260-29.10b.
Credali, Lino; and Parrini, Paolo, to Consiglia Nazionale Delle Ricerche and Montecatini Edison S.p.A. Osmosis process. 3,696,031, Cl. 210-23.000.
Cremer, Gottfried; and Kraus, Joachim, to Fetok GmbH. Means for attaching slabs and tiles on building structures. 3,694,981, Cl. 52-235.000.
Cresci, Paul A.; and Paris, Thomas H. Hydraulic lift controls. 3,695,710, Cl. 298-22.00r.
Crestani, Bruno: *See—*
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Cristy, Albert B.; and Kachioff, Yuval, to Eastman Kodak Company. Package for fragile articles. 3,695,424, Cl. 206-62.00r.
Crivellaro, Giovanbattista; and Crestani, Bruno, to Gruppo Tepetit S.p.A. Stable aqueous steroid phosphate solutions. 3,696,195, Cl. 424-175.000.
Cromer, George Philip, to General Electric Company. Battery coil construction having a ruffled edge electrode. 3,695,935, Cl. 136-13.000.
Cronin, Timothy H., to Pfizer Inc. Process for the synthesis of substituted quinazolin-4-ones. 3,696,102, Cl. 260-251.0qa.
Cross, William Telford: *See—*
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Crosswy, Frank L.; and Kalb, Henry T., to United States of America, Air Force. Photomultiplier for a laser velocimeter. 3,695,761, Cl. 356-28.000.
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Crowley, Richard P. Method of preparing a tufted rug with cellular fibers. 3,694,873, Cl. 28-72.000.
Crownover, Joseph W.; Wilhelm, John I.; and Thompson, Ray E. Electronic ranging apparatus with transmitter-receiver cycling 3,696,419, Cl. 343-13.00r.
Croy, Charles T.: *See—*
Kyle, Thomas A.; and Croy, Charles T., 3,695,768.
Cruchant, Serge Alfred Joseph, to Societe de l'Aerotrain. Arrangement for securing walls together. 3,695,383, Cl. 180-127.000.
Cruger, Robert W.; and Silver, Floyd G., to Gulf & Western Industrial Products Company. Aircraft arresting apparatus. 3,695,559, Cl. 244-110.00c.
Cuir, Gerard: *See—*
Cuir, Jean Pierre; and Cuir, Gerard, 3,695,132.
Cuir, Jean Pierre, and Cuir, Gerard. Apparatus for cutting sheet material. 3,695,132, Cl. 83-98.000.
Culand, Andre: *See—*
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Culligan International Company: *See—*
Lyall, Charles E.; and Rak, Stanley F., 3,695,446.

Cunningham, Robert A.; and Winkler, John T., to Martin-Marietta Corporation. Laser tracking method and apparatus. 3,696,248, Cl. 250-203.00r.

Cunningham, Victor Ralph; and Dodson, Thomas Stanley, to Porous Plastics Limited. Process for preparing microporous polyurethane resin sheets by casting the resin on a porous sintered thermoplastic polymeric resin support surface. 3,696,180, Cl. 264-48.000

Current, John Marvin; and Smalley, Rodney Roger, to Johns-Manville Corporation. Method for feeding and wrapping sheet material. 3,695,965, Cl. 156-187.000.

Currier, Robert Lee.: *See—*
Genson, Samuel Richard; Petersen, Svend Aage; and Currier, Robert Lee., 3,695,523.

Curtis & Marble Machine Company: *See—*
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Cyclo Manufacturing Company: *See—*
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Czulak, Joseph; Freeman, Norman H.; and O'Connell, James R. Method and apparatus for processing curd in the manufacture of cheese. 3,695,893, Cl. 99-116.000.

Dafler, Gene L.: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Daiwa Bosiki Kabushiki Kaisho: *See—*
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Dake Corporation: *See—*
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Damratowski, Leonard P.; and Huesgen, Eugene L., to Carrier Corporation. Shaft seal for fluid handling machine. 3,695,621, Cl. 277-75.000.

Danfoss A/S: *See—*
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Jespersen, Hans Jorgen, 3,695,577.

Daniel, Cecil A. Adjustable support. 3,695,562, Cl. 248-23.000.

Daniel Industries, Inc.: *See—*
Geisow, Bernard H., 3,695,106.

Daniel, Kenneth D., to Video Engineering, Inc. Appliance theft alarm using voltage magnitude switch. 3,696,378, Cl. 340-280.000.

Daniels, Charles M., Jr., to Milbar Corporation. Plier jaws. 3,694,834, Cl. 7-5.500.

Danly Machine Corporation: *See—*
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Dart Industries, Inc.: *See—*
Dunham, Milo A.; and Hardy, Donald F., 3,695,223.
Schrage, Albert; and Finestone, Arnold B., 3,696,069.
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Davey, F. W., and Company Proprietary Limited: *See—*
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Davies, Philip Hywel; Hobden, Maurice Vernon; Hulme, Kenneth Fraser; and Jones, Oliver. Process for preparing single crystalline Ag_3AsS_3 and Ag_3SbS_3 and solid solutions thereof. 3,696,038, Cl. 252-62.900.

Davis, Curry Beach, to Arizona Chemical Company, mesne. Molecular sieve 13-X catalyzed isomerization of alpha-pinene-improvement of catalyst activity. 3,696,164, Cl. 260-675.500.

Davis, Lewis M.; and Hesling, Donald M., to Sealed Power Corporation. Piston ring construction. 3,695,622, Cl. 277-139.000.

Davis, Stanley Paul, to Signetics Corporation. Air isolated integrated circuit and method. 3,696,274, Cl. 317-235.000.

Davis, Victor I., Jr.: *See—*
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Dazor Manufacturing Corporation: *See—*
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De Barbieri, Ettore; and Boggian, Umberto. Diver's mask. 3,694,814, Cl. 2-14.00d.

De Filippo, Domenico. Plurimillenary automatic universal calendar having time division reproducing scales of a slidable type. 3,694,943, Cl. 40-13.000.

De Laurentis, Peter; and Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermal copying method and products. 3,695,912, Cl. 117-36.200.

De Lisio, Michael P.; and Clement, Robert L., to Arco Industries Corporation. Gas cleaning system. 3,695,004, Cl. 55-225.000.

De Marco, Robert Frank, to Intercole Automation, Inc. Material mixer. 3,695,587, Cl. 259-41.000.

De Palma, Ted V.: *See—*
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De Vac, Inc.: *See—*
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De Vault, Albert N., to Phillips Petroleum Company. Hydrogenation process. 3,696,088, Cl. 260-85.100.

De Werdt, Reinier: *See—*
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De Woody, Charles M., to Ace Glass Incorporated. Flexible pressure-type joint for rigid tubing. 3,695,642, Cl. 285-133.00r.

Dear, Terrence A., to PPG Industries, Inc. Method of severing glass. 3,695,497, Cl. 225-2.000.

Dear, Terrence A., to PPG Industries, Inc. Non-contact thermal cutting. 3,695,498, Cl. 225-1.000.

Deaton, Irving F., to CPC International Inc. Process for the production of a defatted starch conversion product. 3,695,933, Cl. 127-32.000.

Deere & Company: *See—*
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DeFano, Dominic J.; and Kallman, Robert I., to DeFano, Kallman Design, Inc. Lint filter. 3,696,033, Cl. 210-460.000.

DeFano, Kallman Design, Inc.: *See—*
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Deisch, Cecil Winston, to Bell Telephone Laboratories, Incorporated. Peak-to-peak alternating current signal detector. 3,696,253, Cl. 307-235.000.

Delalande S.A.: *See—*
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Delbay-Liftfilter Gesellschaft mit beschränkter Haftung: *See—*
Neumann, Gerhard, 3,695,008.

Delmas, Pierre; and Imberi, Pierre. Automatic spectrophotometric absorption analyser. 3,695,764, Cl. 356-97.000.

Demeaux, Jean, to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Fuirminy, St-Etienne, Jacob Holtzer). Method of manufacturing oriented grain magnetic steel sheets. 3,695,946, Cl. 148-111.000.

Dementi, Brian A., to Allied Chemical Corporation. Manufacture of polyethylene terephthalate. 3,696,071, Cl. 260-45.75c.

Demeter, John C., to Gorkovsky Filial Tsentralnogo nauchno-issledovatelskago instituta metallurgii i Svarki. Vehicle warning lamp device. 3,696,334, Cl. 340-134.000.

Deming, Andrew F., to Alliance Manufacturing Company, Inc. Method of making a stator. 3,694,903, Cl. 29-596.000.

Dempsey, Gordon, to Ullrich, Frederick George and Ullrich, Zeala Edna. Lifting devices. 3,695,667, Cl. 294-67.0da.

Deneb Products Engineering: *See—*
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Denison, Cleo S. Surface oil containment device. 3,695,042, Cl. 61-1.00f.

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Diacel Ltd.: *See—*
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Dickinson, George Alfred; and Charnock, Harold. Manufacture of float glass. 3,695,859, Cl. 65-99.00a.

Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Record disc having elastic deformation by the pickup. 3,696,220, Cl. 179-100.40r.

Dickson, Leon L., Jr.; and Ward, Emmett G. Telemetering drill string with self-cleaning connectors. 3,696,332, Cl. 340-18.0ld.

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Diesel Kiki Kabushiki Kaisha: *See—*

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Dillon, Brian D.: *See—*
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Dimick, Royal H. Buoyance regulating apparatus for underwater swimming. 3,695,048, Cl. 61-69.000.

Dinges, Karl: *See—*
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Dolen, Cecil W.: *See—*
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Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring integral disc storage. 3,695,741, Cl. 312-10.000.

Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring integral disc storage. 4,695,741, Cl. 312-10.000.

Domann, Helmut: *See—*
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Domba, Elemer; and Krolikiewicz, Thaddeus A., to Nalco Chemical Company. Hexafluoroisopropanol acrylamide. 3,696,081, Cl. 260-78.5bb.

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Donnell, Derrick: *See—*
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Dorris, John P. Drainage catch basins. 3,695,153, Cl. 94-31.300.

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Douglas, James L.: *See—*
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Dreckmann, Hubert; Wilson, Charles B.; and Wagenblast, Richard K., to Hays Corporation, The. Magnetic non-contact thickness gauge with means to compensate the effects of stray fields on the gauge. 3,696,290, Cl. 324-34.0tk.

Dresser Industries, Inc.: *See—*
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Drinkard, Gary: *See—*
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Drouet, James M., to Dresser Industries, Inc. Earth boring machine with a pivotal head. 3,695,369, Cl. 175-45.000.

Druet, Monique: *See—*
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Dunn, Donald P.; and Dunn, Helen T. Hand loom and combination display device. 3,695,303, Cl. 139-34.000.

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Dunn, John Malcolm; and Hornbrook, George Kenneth. Electric alarm screen. 3,696,373, Cl. 340-273.000.

Dupre, Herman K. Waste treatment systems. 3,695,439, Cl. 210-173.000.

Dyanamics Research and Manufacturing, Inc.: *See—*
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Eads, Charles L.; and Brotman, Harry D., to Adams Rite Manufacturing Company. Narrow stile latch-lock structure. 3,695,068, Cl. 70-107.000.

East, Jerry L., to Simplimatic Engineering Co. Automatic bottle packing method and apparatus. 3,694,993, Cl. 53-26.000.

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Eastwood, Thomas, to Brown, David, Tractors Limited. Synchronizing mechanisms for power transmissions. 3,695,403, Cl. 192-53.00e.

Eberhart, Walter W. Seal for ram. 3,695,149, Cl. 92-168.000.

Eberle, Marcel K. Spiro norbornane 6,9-methanocyclohept(b)indoles. 3,696,118, Cl. 260-326.900.

Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard, and Kobinger, Walter, to Boehringer Ingelheim G.m.b.H. Novel cardiac-active principles of the cardenolide glycoside class. 3,696,091, Cl. 260-210.500.

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Eccles, Anthony John; Mant, Alistair Donald; and Shorthouse, Barry Owen, to Eccles, Anthony John and said Shorthouse and said Eccles assors. to said Mant, Alistair Donald. Monitoring device for vehicle behaviour. 3,695,115, Cl. 73-510.000.
Eckel, Alan. Audiometric survey booth. 3,694,974, Cl. 52-36.000.
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Edwards, John A., to Syntex Corporation. 18-Lower alkyl 20-ketspregnanes. 3,696,129, Cl. 260-397.300.
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Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, to Siemens Aktiengesellschaft. Method of producing a magnetic layer and resultant product. 3,695,854, Cl. 29-183.500.
Eggers, Robert F.; and Emmons, Donald L., to Rocket Research Corporation. Two-stage hydrazine rocket motor. 3,695,041, Cl. 60-264.000.
Eggert, Heinz; and Schillmann, Ekkehard, to Siemens Aktiengesellschaft. Method of producing a selenium rectifier. 3,694,908, Cl. 29-590.000.
Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic camera. 3,695,755, Cl. 355-3.000.
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Emeis, Reimer, to Siemens Aktiengesellschaft. Method and apparatus for subdividing a crystal wafer. 3,694,972, Cl. 51-319.000.
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Engelsberger, Herbert, to Feldmuhle Aktiengesellschaft. Shrink-on package for stacked goods. 3,695,426, Cl. 206-65.00s.
Engelsher, Harvey J., to Horizon Industries Ltd. Cleansing device for surgical scrubs. 3,694,845, Cl. 15-244.00c.
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Enochian, Samuel H., to Unarco Industries, Inc. Latch operating mechanism for bulkheads. 3,695,656, Cl. 292-36.000.
Erb, George H., to Velcro S.A. Apparatus for manufacturing of separable fastener elements. 3,695,976, Cl. 156-435.000.
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Ernst, Max. Turntable for toy and model railroads. 3,695,182, Cl. 104-38.000.
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Evans, Kenneth R. Noise suppressing device for fluid flow lines. 3,695,290, Cl. 137-563.000.
Evans, Theodore D. Hydraulic line fitting support apparatus. 3,695,563, Cl. 248-68.000.
Everett, Thomas David, to Ampex Corporation. Cassette tape assembly. 3,695,553, Cl. 242-199.000.
Ewing, Roy D.; and Rizzone, Michael L., to United States Steel Corporation. Long stroke pumping unit. 3,695,117, Cl. 74-89.220.
Exner, Emil August, to U.S. Philips Corporation. Arrangement including an electronic flash tube. 3,696,268, Cl. 315-151.000.
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Fairweather, Ernest Sidney; and Furby, Jim, to Errut Products Limited. Apparatus for treating or diggin;r into surfaces and cutting members for this apparatus. 3,695,722, Cl. 299-39.000.
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Farr, Emory W., to Waukesha Bearings Corporation. Low capacity, low profile load cell. 3,696,317, Cl. 338-5.000.
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Feinleib, Julius; and Shaw, Robert F., to Energy Conversion Devices, Inc. Optical mass memory employing amorphous thin films. 3,696,344, Cl. 340-173.0lm.
Felder, Johann, Jr. Removable extension plate. 3,695,189, Cl. 108-65.000.
Feldhaus, James F., to Minnesota Mining & Manufacturing Company. Magnetic cleaning. 3,695,934, Cl. 134-1.000.
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Fenton, Donald M. Nitro or nitroso aromatic composition. 3,696,046, Cl. 252-186.000.
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Fishel, Kenneth R., to United States of America, Navy. Hydraulic claw control switching arrangement. 3,695,671, Cl. 294-88.000.
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Kane, Robert R.; and Glaser, Charles J., Jr., 3,695,576.
Fisher, James C. Farm wagon steering stabilizer. 3,695,628, Cl. 280-103.000.
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Fitch, Stanley Frederick; and St. John, Dara Derrick Phiroz, to Fisons Limited. Distillation apparatus. 3,696,003, Cl. 202-160.000.
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Flad, Karl. Apparatus for controlling the jacks of knitting machines. 3,695,060, Cl. 66-75.000.
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Forgione, Peter Salvatore; and Smyth, Nelda Marjorie. Isolation of enzymes from aqueous media by means of polyanions. 3,695,999, Cl. 195-63.000.
Fossum, Lars; and Wangberg, Lennart, to International Standard Electric Corporation. Conversion device for data presentation on television screens. 3,696,392, Cl. 340-324.00a.
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Franke, Raymond C.; and Dufer, William B., to Westinghouse Air Brake Company. Acknowledging circuit arrangement. 3,696,356, Cl. 340-213.100.
Frankenberg, Henry E., to Continental Can Company, Inc. Method and apparatus for making corrugated crown caps. 3,695,201, Cl. 113-121.00a.
Freeman, Donald J.; Fulkerson, Ambrose A.; Grall, Kenneth J.; and Pearson, Samuel J., to United States of America, Army. Black smoke marker. 3,695,949, Cl. 149-15.000.
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Friesz, Rheinhardt. Classifying separator for unpoured, flowable rock-gravel, sand and cement slurry mixture from concrete mixer. 3,695,427, Cl. .
Frix, Lee R., to Volunteer Enterprises, Inc. Firing mechanism for semiautomatic firearms. 3,695,143, Cl. 89-145.000.
Frost, Wade W., to Oxford Industries, Inc. Top stitch collar stacker method and apparatus. 3,695,195, Cl. 112-121.290.
Fuchs, Werner; and Merger, Franz. Purification of 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester by distillation with sulphuric of sulphonic acid. 3,696,005, Cl. 203-35.000
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Gaiser, Floyd E. Bonding tool. 3,695,502, Cl. 228-4.000.
Gajewski, Wieslaw, to Vapor Corporation. Impending condensation alarm. 3,696,360, Cl. 340-235.000.
Gale, David M., to Du Pont de Nemours, E. I., and Company. Cyclobutene homopolymers and copolymers. 3,696,080, Cl. 260-78.500.
Gannaway, Edwin L., to Copeland Refrigeration Corporation. Compressor and method of lubrication. 3,695,786, Cl. 417-437.000.
Gantt, Kenneth T. Burglar alarm fixed to door or the like. 3,695,212, Cl. 116-8.000.
Garehime, Jacob W., Jr. Cavity head screw and driving tool therefor. 3,695,321, Cl. 145-50.000.
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Gauzza, Harry J.; and Horanoff, Eugene V., to United States of America, Navy. Hinged stability and control fin assembly. 3,695,556, Cl. 244-3.290.
Gear, John, to Atlantic Scientific Corporation. Thermometer-type indicator. 3,696,386, Cl. 340-317.000.
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George, David J.; and Iwan, Wilfred D., to Burroughs Corporation. Apparatus for measuring magnetic head angle of magnetic disc file. 3,695,767, Cl. 356-154.000.
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Glassman, Aaron, to Pennsylvania Sewing Research Corporation. Fabric article everting device having latching means with remotely-actuated release. 3,695,490, Cl. 223-40.000.
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Gordon, George Andrew Douglas. Ultrasonic diagnostic apparatus. 3,695,252, Cl. 128-2.00v.
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Kahn, Leonard R.; and Gordon, Robert R., 3,696,298.
Gordon, Ronnie D., to Continental Oil Company. Process for replacing chloride groups in polyvinyl chloride. 3,696,084, Cl. 260-79.30r.
Gorecki, Joseph S.: *See—*
Martin, Jack; and Gorecki, Joseph S., 3,696,265.
Gorkovsky Filial Tsentralnogo nauchno-issledovatelskago instituta metallurgii i Svarki: *See—*
Demeter, John C., 3,696,334.
Gortz, Herbert: *See—*
Hummel, Heinz; and Gortz, Herbert, 3,695,093.
Gossard, Thomas F., to Standard Kollsman Industries, Inc. UHF-VHF varactor tuner amplifying band conversion. 3,696,302, Cl. 325-432.000.
Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,695,921.
Grace, W. R., & Co.: *See—*
Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., 3,695,477.
McKinney, James C., 3,694,995.
Perdue, Richard R.; Hoagland, Le Roy F.; and Kuehne, Richard O., 3,694,991.
Graf, Peter E., to Chevron Research Company. Aqueous set initiators for slurry seals. 3,695,152, Cl. 94-23.000.
Graff, William S.: *See—*
Ainslie, Norman G.; Cheroff, George; Graff, William S.; Howard, James Kent; and Ross, Rupert F., 3,695,855.
Graham, Glenn R.; and Biggs, Robert W., to Abex Corporation. Coupling with carbon and beryllium friction surfaces. 3,695,406, Cl. 192-107.00m.
Grall , Kenneth J.: *See—*
Freeman, Donald J.; Fulkerson, Ambrose A.; Grall , Kenneth J.; and Pearson, Samuel J., 3,695,949.
Gramkow, Asger; and Hyldal, Jorgen, to Danfoss A/S. Starting means for a single-phase asynchronous motor. 3,696,281, Cl. 318-221.00e.
Granatstein, David Lloyd, to Dasovic, Steve Z., mesne. Pallet of moldable of thermo-formable material. 3,695,188, Cl. 108-58.000.
Grand, Rene, to Compagnie des Ateliers et Forges de la Loire. Process for manufacturing plated products. 3,695,337, Cl. 164-100.000.
Granger, Charles R. Method and apparatus for demonstrating photometric procedures. 3,695,770, Cl. 356-180.000.
Grant, Ronald D., to JFD Electronics Corporation. Broadside log periodic antenna. 3,696,437, Cl. 343-792.500.
Grantham, Paulette. Laundry towel rolling means. 3,695,540, Cl. 242-65.000.
Graves, Robert W., to Aeroquip Corporation. Flexible tube joint using segmented coupling. 3,695,636, Cl. 285-47.000.
Gray, Donald: *See—*
Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, 3,694,855.
Gray, Frederick William, to Colgate-Palmolive Company. Dishwashing compositions. 3,696,041, Cl. 252-99.000.
Greatrix, Graham Roland: *See—*
Quayle, Joshua Creer; and Greatrix, Graham Roland, 3,695,230.
Green, Geoffrey William; and Hurle, Donald Thomas James. Preparation of eutetic material. 3,695,941, Cl. 148-1.600.
Greer Hydraulics, Inc.: *See—*
Zahid, Abdjz, 3,695,298.
Gref, Hans: *See—*
Herzhoff, Peter; Gref, Hans; and Platz, Stephan, 3,695,218.
Greguss, Pal; Nagy, Sandor B.; Erdei, Janos; and Toth, Lajos, to Maggar Viscosa Gyar. Acoustic method for the posttreatment of fibers. 3,695,825, Cl. 8-137.000.
Greider, Charles Austin, to Townsend Engineering Company. Apparatus for encasing a product. 3,694,853, Cl. 17-33.000.
Greiner, Gerard, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Installation or plant control device, in particular for gas-turbine power plants. 3,695,038, Cl. 60-39.280.
Gretag Aktiengesellschaft: *See—*
Ruesch, Ferdinand, 3,695,510.
Griffin, Charles K., to Carrier Corporation. Concentration control for multiple stage absorption refrigeration systems. 3,695,052, Cl. 62-101.000.
Griffin, Charles K., to Carrier Corporation. Dilution system for absorption refrigeration systems. 3,695,053, Cl. 62-103.000.
Griffin, Lindsay I., Jr.; and Welty, Albert B., Jr., to Esso Research and Engineering Company. Two stage ammonium sulfate decomposition in flue gas desulfurization process. 3,695,829, Cl 23-2.0sq.
Griffin, Warren R. Mixing apparatus. 3,695,586, Cl. 259-24.000.
Griffith, Paul A.; and Rohrer, David A., to Beckman Instruments, Inc. Burner and method for detection of halogens. 3,695,813, Cl. 431-126.000.
Grimes, Raymond E.; and Bruen, Robert W., to Baxter Laboratories, Inc. Microbiological isolator. 3,696,002, Cl. 195-139.000.
Groom, Robert G.; and Brimm, Collen K., to Burroughs Corporation Recording head mounting and actuator combination. 3,696,351, Cl. 340-174.10c.
Groov-Pin Corporation: *See—*
Bosse, Robert W., 3,694,888.
Gross, Jerome A., to Parsons, John F. Multi-part combustible casting pattern having bend-resistant glue-less joints. 3,695,340, Cl. 164-246.000.
Gross, William J. Self-propelled boat. 3,695,211, Cl. 115-26.000.
Grossi, Antonio. Radius rod for vehicle axle. 3,695,605, Cl. 267-66.000.
Grote, Wilfried Christoph: *See—*
Schmidt, Ernst G. F. H.; Walkowsky, Bernhard; Grote, Wilfried Christoph; and Janssen, Matthias, 3,695,167.
Grucella, Frank J.: *See—*
Pfeiffer, Paul O.; and Grucella, Frank J., 3,695,961.
Gruen Industries, Inc.: *See—*
Tripet, Jean, 3,695,029.
Grundon, John L. Boom assembly for a crane. 3,695,467, Cl. 214-147.00g.
Grupp, Alfred F.: *See—*

Barta, Franz; and Grupp, Alfred F., 3,694,928.

Gruppo Lepetit S.p.A.: *See—*
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Gruppo Tepetit S.p.A.: *See—*
Crivellaro, Giovanbattista; and Crestani, Bruno, 3,696,195.

Guettier, Michel, to Regie Nationale des Usines Renault. Braking pressure correcting valve control devices. 3,695,735, Cl. 303-22.00r.

Guglielmetti, Leonardo; and Duennenberger, Max, to Ciba-Geigy AG. Cosmetic preparation containing 2-phenyl-benzoxazoles. 3,696,193, Cl. 424-59.000.

Guinzy, Norman J.; Kerns, Clyde W.; Ruehle, William H.; and Teague, Henry E., to Mobil Oil Corporation. Automated process for determining subsurface velocities from seismograms. 3,696,331, Cl. 340-15.5dp.

Guldenpfennig, Hans, to Berthold, H., Messinglinienfabrik und Schriftiesserei AG. Photosetting method and machine. 3,695,155, Cl. 95-4.500.

Gulf & Western Industrial Products Company: *See—*
Cruger, Robert W.; and Silver, Floyd G., 3,695,559.

Gulf Oil Canada Limited, and: *See—*
Pogorski, Louis A., 3,695,483.

Gulf Research & Development Company: *See—*
Ceschini, Eugene S., 3,696,396.
Koch, Robert W., 3,696,023.
McGuire, Robert J.; Mitchell, Edward; and Pellegrini, John P., Jr., 3,696,051.

Gulistan, Bulent, to Deutsch Fastener Corporation. Floating nut assembly. 3,695,324, Cl. 151-41.740.

Gunson's Sortex Limited: *See—*
Chapman, Thomas Henry, 3,695,517.

Guyton, James H.; and Lammers, Arthur R., to General Motors Corporation. Tape transport assembly for cassette tape players having fast forward and fast reverse modes. 3,695,552, Cl. 242-198.000.

Gwozdz, Joseph W., to McKinney Manufacturing Company. Suspended display package. 3,695,418, Cl. 206-45.330.

Gyori, Louis, to Marathon Golf Cars Ltd. Electrical control apparatus. 3,696,279, Cl. 318-139.000.

Habermann, Clarence E.; and Thomas, Mary R., to Dow Chemical Company, The. Hydration of nitriles to amides using heterogeneous cupreous catalysts. 3,696,152, Cl. 260-561.00n.

Hadron Inc.: *See—*
Duffy, Joseph J.; and Dunbar, Alexander S., 3,696,308.

Haensel, Vladimir. Process for the separation of magnetic particles from a fluid stream. 3,696,032, Cl. 210-42.000.

Hahn, Henry: *See—*
Telkes, Maria; and Hahn, Henry, 3,695,903.

Hahn, Robert S.; and Lindsay, Richard P., to Heald Machine Company, The. Automatic grinding machine. 3,694,969, Cl. 51-165.910.

Hakushin Seisakusho Co., Ltd.: *See—*
Isumi, Ichizo, 3,694,858.

Hale, Edith A. Face lifting device. 3,695,257, Cl. 128-76.00b.

Hale, Reginald D., to Spir-L-OK Industries Limited. Apparatus for and the method of making spiral seamed laminated sheet metal pipe. 3,694,892, Cl. 29-429.000.

Hales, Eric Charles: *See—*
England, Michael John; Donnell, Derrick; and Hales, Eric Charles, 3,695,731.

Hall, Doyle J.: *See—*
Pape, Wayne; and Hall, Doyle J., 3,695,225.

Hallerback, Stig Lennart. Method for manufacturing rotary machines. 3,694,909, Cl. 29-596.000.

Halliburton Company: *See—*
Hulme, Jack R., 3,695,094.
Pittman, Forrest C., 3,695,301.

Halm, Richard. Magnetic igniter. 3,696,271, Cl. 317-81.000.

Hamer, Edward A. G.: *See—*
Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., 3,695,964.

Hamill, Thomas M. Wet milling extraction process and apparatus therefor. 3,695,931, Cl. 127-4.000.

Hamley, David H.; and Hylen, Lyle L., to Westinghouse Air Brake Company. Power operated railway switch machine control circuit. 3,696,244, Cl. 246-242.000.

Hammond, Walter Cecil, to Powell Manufacturing Company, Inc. Apparatus for topping stalk-type plants. 3,695,013, Cl. 56-63.000.

Hancock Brick & Tile Company, The: *See—*
Schmunk, John D., 3,695,643.

Hanes, James W. E., to Vetco Offshore Industries, Inc. Remotely controlled hydraulically operated connectible and disconnectible flexible joint. 3,695,633, Cl. 285-18.000.

Hanger, J. E., and Company Limited: *See—*
May, Denis Ronald William, 3,694,823.

Hanigan, Thomas J. Wire tieing tool. 3,695,311, Cl. 140-93.600.

Hanley, Jack W.: *See—*
Forestal, Robert J.; and Hanley, Jack W., 3,695,389.

Hanna, Daniel C.: *See—*
Welter, Jeff R., 3,694,844.

Hannauer, Milos: *See—*
Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, 3,695,412.

Hans List: *See—*
Thien, Gerhard; and Fachbach, Heinz, 3,695,386.

Hansen, Donald E.: *See—*
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Hanson, Alden W.: *See—*
Labarge, Robert G.; Evani, Syamalarao; and Hanson, Alden W., 3,696,043.

Hanson, Harold E., to Lourie Visual Etudes, Inc. Device for practicing breath control. 3,695,608, Cl. 272-57.00r.

Hanson, Perry W., to United States of America, National Aeronautics and Space Administration. Lift-balancing device. 3,695,101, Cl. 73-.

Happe & Co.: *See—*
Haussels, Berthold, 3,695,728.

Harder, John R.: *See—*
Young, William E.; and Mahaffy, Reid A., 3,695,900.

Hardware & Industrial Tool Co., Inc.: *See—*
Vosbikian, Joseph; and Vosbikian, James T., 3,696,374.

Hardwick, Albert R., to USM Corporation. Devices for cutting fabric. 3,695,134, Cl. 83-451.000.

Hardy, Donald F.: *See—*
Dunham, Milo A.; and Hardy, Donald F., 3,695,223.

Harmon, Arthur R.: *See—*
Switliski, Vincent S.; and Harmon, Arthur R., 3,694,999.

Harms, Luhr; and Voigt, Gunter, to Baun Aktiengesellschaft. Dry shaver. 3,694,916, Cl. 30-43.100.

Harrer, Erich: *See—*
Schulz, Gerhard; Harrer, Erich; and Matthias, Guenther, 3,696,142.

Harrington, Joseph Kenneth; Moore, George G. I.; and Gerster, John F., to Riker Laboratories, Inc. Thiophene derivatives. 3,696,122, Cl. 260-332.30c.

Harrod, John F.; Knight, Allan R.; and McIntyre, John S., to Dow Chemical Company, The. Catalyst for epoxidation process. 3,696,052, Cl. 252-428.000.

Hartig, Gunter. Process and apparatus for producing trigger pulses. 3,696,303, Cl. 328-55.000.

Hartley, Richard S.; Churley, George; and Houser, F. Douglass, to Hobart Manufacturing Company, The. Apparatus for manufacturing a deep fried food product. 3,695,171, Cl. 99-404.000.

Harvin, Septimus A.: *See—*
Hogg, William J.; Jackson, Charles A.; Harvin, Septimus A.; and Whitesel, Joseph C., 3,695,983.

Hasbrouck, Gene B., to Singer Company, The. Hinge connection for panel and panel combination. 3,695,330, Cl. 160-135.000.

Hashimoto, Ryosuke: *See—*
Ozawa, Tokuji; Uyeda, Mikio; Hashimoto, Ryosuke; and Suzuki, Shigenori, 3,696,166.

Hasimoto, Kazunori: *See—*
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Hastings Manufacturing Company: *See—*
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Hatano, Tadao: *See—*
Yamamoto, Nobuo; Hatano, Tadao; Shimamura, Isao; and Iwano, Haruhiko, 3,695,883.

Hauser, Rudolf Martin, to Bucher-Guyer AG Maschinenfabrik. Injection molding machine having a plasticizing plunger. 3,695,575, Cl. 259-185.000.

Hausler, Rudolf H.; and Goeller, Leonard A., to Universal Oil Products Company. Corrosion inhibiting composition and use thereof. 3,696,048, Cl. 252-392.000.

Hausler, Rudolf H.; and Goeller, Leonard A., to Universal Oil Products Company. Corrosion inhibiting composition and use thereof. 3,696,049, Cl. 252-392.000.

Haussels, Berthold, to Happe & Co. Double-disk vehicle wheel. 3,695,728, Cl. 301-63.0dd.

Haviland, John F. Lifesaving helmet. 3,695,262, Cl. 128-145.00r.

Hawker Siddeley Aviation Limited: *See—*
McRae, David Milwain; and Watt, Andrew Douglas, 3,695,558.

Hawkes, Ivor; and Swithenbank, Joshua. Gas burners. 3,695,820, Cl. 431-354.000.

Hayashi, Naonori: *See—*
Akeyoshi, Kazuyuki; and Hayashi, Naonori, 3,694,897.

Hayashi, Yasutaka; and Arakawa, Hideo, to Kobushiki Kaisha Toyoda Jido Shokki Seisakusho and Kabushiki Kaisha Toyota Chuo Kenyu Sho. Control apparatus for fluid actuator. 3,695,023, Cl. 57-99.000.

Hayes, Claude Cecil, Jr.: *See—*
Arian, Charles Mourad; Mahler, Hans Hermann; Hayes, Claude Cecil, Jr.; and Tanner, Hal W., Jr., 3,695,219.

Hays Corporation, The: *See—*
Dreckmann, Hubert; Wilson, Charles B.; and Wagenblast, Richard K., 3,696,290.

Hayward, Leonard. Cigaret smoking device. 3,695,275, Cl. 131-171.000.

Hazelhurst, Gerald D., to Mark Products, Inc. Marine streamer cable. 3,696,329, Cl. 340-7.00r.

Heagler, Richard B., to Pittsburgh Corning Corporation. Method and apparatus for burning combustible liquids within a confined burning area. 3,695,810, Cl. 431-2.000.

Heald Machine Company, The: *See—*
Hahn, Robert S.; and Lindsay, Richard P., 3,694,969.

Heanley, Charles Peter: *See—*
Tylko, Jozef Kazimierz; and Heanley, Charles Peter, 3,695,762.

Heaton, James W.: *See—*
Kennicott, Wilbur L.; and Heaton, James W., 3,694,879.
Kita, John F.; and Heaton, James W., 3,695,723.

Heesemann, Karl. Belt grinding machine. 3,694,966, Cl. 51-138.000.

Heiberger, Francis E., to Danly Machine Corporation. Rack inspection apparatus. 3,694,923, Cl. 33-179.50b.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
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Heider, Joachim: *See—*
Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.

Heimann, Alfred, to Kochs Adlernahmaschinenwerke AG. Template follower mechanism. 3,695,194, Cl. 112-121.150.

Heinge, Richard: *See—*
Wippermann, Josef, 3,695,655.

Helbig, Jim D., to Cyclo Manufacturing Company. Submerged vessel raising apparatus. 3,695,203, Cl. 114-50.000.

Held, Edward C., Jr., to Phillips Petroleum Company. Apparatus for vacuum forming hollow articles from two sheets of thermoplastic material. 3,695,799, Cl. 425-109.000.

Hellerbach, Joseph; and Szente, Andre. (1,3) Oxazino (3,2-D) (1,4) benzodiazepine derivatives and process for the preparation thereof. 3,696,095, Cl. 260-239.30t.

Hellermann, Paul, G.m.b.H.: *See—*
Kabel, Heinrich, 3,695,308.

Helms, Horace H., Jr.; and Rozner, Alexander G., to United States of America, Navy. Pyrotechnic composition. 3,695,951, Cl. 149-19.000.

Helmut, Klapp: *See—*
Possberg, Jobst; Rostock, Kai; Nickl, Eligius; Otmar, Zajicek; and Helmut, Klapp, 3,696,079.

Henderson, Larry D.: *See—*
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Henggeler, Aldo: *See—*
Henggeler, Aldo; Furter, Oskar; Crottaz, Roland; and Seghizzi, Hans, 3,694,987.

Henggeler, Aldo; Furter, Oskar; Crottaz, Roland; and Seghizzi, Hans, to Henggeler, Aldo and said Crottaz and said Seghizzi assors. to said Furter, Oskar. Surface supporting assembly with a supporting network. 3,694,987, Cl. 52-650.000.

Henkel & Cie G.m.b.H.: *See—*
Schussler, Hans-Joachim; and Scharf, Rolf, 3,696,057.

Henley, Virgil E., to General Tire & Rubber Company, The. Tire building drum. 3,695,974, Cl. 156-415.000.

Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, to Westinghouse Bremsen und Apparatebau G.m.b.H. Anti-wheel slide apparatus for vehicles. 3,695,734, Cl. 303-21.00f.

Hercules Incorporated: *See—*
Breslow, David S., 3,696,126.

Hercules Incorporated, mesne: *See—*
Staffin, Herbert Kenneth; and Staffin, Robert, 3,694,924.

Hermanns, Henry M.: *See—*
Mannherz, Elmer D.; and Hermanns, Henry M., 3,695,104.

Herring, James M., Jr., to Budd Company, The. Lateral car stabilizing system. 3,695,186, Cl. 105-171.000.

Herron, Rand E.; and Olich, Jack M., to Technicon Instruments Corporation. Burner construction for flame spectrophotometer and system therefor. 3,695,812, Cl. 431-90.000.

Hertz, Carl Hellmuth; and Lindstrom, Kjell O. T. Method of measuring the level of a material in a tank, and an apparatus for practicing this method. 3,695,107, Cl. 73-290.00r.

Herubel, Jean-Frederic, to Schlumberger, N., & Cie. Device with flexible elements for processing textile fibres. 3,694,860, Cl. 19-236.000.

Herzer, Kurt, Firma: *See—*
Mertens, Wolfgang, 3,695,699.

Herzhoff, Peter; Gref, Hans; and Platz, Stephan, to Agfa-Gevaert Aktiengesellschaft. Apparatus for coating tapes, sheets and the like with viscous solutions using the air-brush principle. 3,695,218, Cl. 118-50.000.

Hesling, Donald M.: *See—*
Davis, Lewis M.; and Hesling, Donald M., 3,695,622.

Heslop, Victor L.: *See—*
Alvi, Zia R.; Heslop, Victor L.; and Summerlin, Frederick A., 3,695,088.

Hess, Howard V.: *See—*
Cole, Edward L.; and Hess, Howard V., 3,696,021.

Hetman, Frank W.; and Johnson, Donald I., to De Vac, Inc. Device for automatically cleaning a window sash. 3,694,847, Cl. 15-302.000.

Hewitt, Gordon Trent; and Giordano, Annie Sue, to Colgate-Palmolive Company. Mixed alkanolamide fabric softening compositions. 3,696,034, Cl. 252-8.800.

Heyl & Patterson, Inc.: *See—*
Rose, Bennie A., 3,695,185.

Hiatt, Norman A.: *See—*
Hoefnagels, Jan Antonius; Hiatt, Norman A.; and Smets, Georges Joseph, 3,696,098.

Hibbs, Eugene B., Jr. Analog to digital converter. 3,696,405, Cl. 340-347.0ad.

Highfield, Peter Edward; and Hill, Gordon John, to British Vis-ueen Limited. Plastics web slitting and sealing. 3,695,969, Cl. 156-251.000.

Hilbig, Jack H., to Rohr Corporation. Sound suppression system for fan jet engines. 3,695,387, Cl. 181-33.0hc.

Hill, Donald E.: *See—*
Walker, Robert G.; and Hill, Donald E., 3,694,887.

Hill, Gordon John: *See—*
Highfield, Peter Edward; and Hill, Gordon John, 3,695,969.

Hill, John A.; and La Via, Anthony L., to Squibb, E. R., and Sons, Inc. Sweetening compositions containing sacchrin and dipeptides. 3,695,898, Cl. 99-141.00a.

Hill, Robert E., to Koppers Company, Inc., mesne. Esthetic wood product. 3,695,920, Cl. 117-69.000.

Hiller, Gary L.; Ulbing, Cynthia G.; and Starr, John E., to Eastman Kodak Company. Photographic supersensitized silver halide emulsions. 3,695,888, Cl. 96-123.000.

Hippel, Hans: *See—*
Rolauffs, Hans; Hoven, Hubert; Hippel, Hans; and Schafer, Max, 3,695,199.

Hirakawa, Kanehiro. Apparatus for production of castella or soft cake. 3,695,905, Cl. 99-356.000.

Hirokawa, Yoichi; and Masuzawa, Isao, to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.). Marine autopilot system including mode engagement features. 3,696,282, Cl. 318-588.000.

Hirs, Gene; and Wykoff, Richard H., to Hydromation Filter Company. Method of filtering a mixture of liquid and fibrous solid contamenants. 3,695,433, Cl. 210-67.000.

Hirschfeld, Tomas. Hydrocarbon detector. 3,695,847, Cl. 23-232.00r.

Hirtz , Hans; and Hirtz, Hanns Joachim. Inhalator for moist air. 3,695,267, Cl. 128-192.000.

Hirtz, Hanns Joachim: *See—*
Hirtz , Hans; and Hirtz, Hanns Joachim, 3,695,267.

Hitachi, Ltd.: *See—*
Oushige, Takayoshi; and Iizuka, Kikuo, 3,696,311.

Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Ashida, Hiroshi, 3,694,893.

Hivert, Andre; Lepetit, Pierre; and Walder, Andre, to Office National d'Etudes et de Recherches. Methods of preparing fibrous metal materials and to materials prepared thereby. 3,695,869, Cl. 75-211.000.

Hoagland, Le Roy F.: *See—*
Perdue, Richard R.; Hoagland, Le Roy F.; and Kuehne, Richard O., 3,694,991.

Hobart Manufacturing Company, The: *See—*
Hartley, Richard S.; Churley, George; and Houser, F. Douglass, 3,695,171.

Hobbs, Edwin L., to Tortuors grip rope broke. . 3,695,397, Cl. 188-65.400.

Hobden, Maurice Vernon: *See—*
Davies, Philip Hywel; Hobden, Maurice Vernon; Hulme, Kenneth Fraser; and Jones, Oliver, 3,696,038.

Hochheiser Electronics Corporation: *See—*
Hochheiser, Jerome S.; and Zermeno, Louis, 3,696,269.

Hochheiser, Jerome S.; and Zermeno, Louis, to Hochheiser Electronics Corporation. Air processor. 3,696,269, Cl. 317-262.0ae.

Hocking, Homer Douglas. Expansible carton. 3,695,508, Cl. 229-38.000.

Hodges, John. Plastic garbage bag holder and sealer. 3,695,565, Cl. 248-97.000.

Hoefnagels, Jan Antonius; Hiatt, Norman A.; and Smets, Georges Joseph, to Gevaert-Agfa N.V. Photochromic polycondensates of the indolinospiropyran type. 3,696,098, Cl. 260-240.00r.

Hoerner Waldorf Corporation: *See—*
Wolf, Donald G., 3,695,505.

Hoesch Aktiengesellschaft: *See—*
Sablotny, Adalbert, 3,696,226.

Hoffman, Arnold, to Polaroid Corporation. Photosensitive layer from the electrolysis of silver and halide ions. 3,695,876, Cl. 96-29.000.

Hoffman, Paul; and Craig, Herbert W., to Hudson Pulp & Paper Corporation. Remoistening adhesive compositions. 3,696,065, Cl. 260-17.4st.

Hoffmann, Gunther; and Zabel, Bernd, to Wandel u. Goltermann. Pulse-frequency tester. 3,696,293, Cl. 324-78.00q.

Hoffmann, Louis Adolph. Apparatus for injecting treatment fluids into meats and the like. 3,695,166, Cl. 99-257.000.

Hogg, William J.; Jackson, Charles A.; Harvin, Septimus A.; and Whitesel, Joseph C., to Thiokol Chemical Corporation. Woven article as a carpet scrim. 3,695,983, Cl. 161-71.000.

Hogrebe, Herbert C., to Dazor Manufacturing Corporation. Wall bracket base assembly. 3,695,568, Cl. 248-223.000.

Hogue, Hiral: *See—*
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques, 3,695,423.

Hoke Incorporated: *See—*
Pugliese, Joseph A., 3,695,647.

Holiday Vehicle Specialties, Inc.: *See—*
Clark, Arthur C.; and Timmons, Ted, 3,695,676.

Holland, Harry L. Method for forming concrete box culverts and the like. 3,696,177, Cl. 264-32.000.

Holland, James F. Low silhouette antenna. 3,696,431, Cl. 343-713.000.

Hollander, Frans, to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V. Method and apparatus for operating a pusher type furnace. 3,695,594, Cl. 263-6.00r.

Holley Carburetor Company: *See—*
Lamore, Herbert T., 3,695,589.

Hollinger, Harvey T. Tray dispenser. 3,695,484, Cl. 221-296.000.

Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, to Egysult Izzolampa es Villamossagi/Reszvenytarsasag. Device for rendering uniform the feed of incandescent filaments of light sources. 3,695,412, Cl. 198-34.000.

Holthusen, Erwin: *See—*

Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, 3,695,734.

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Honeywell Information Systems Inc.: *See—*
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Hook, Richard Wayne; and Zaun, Richard David, to Deere & Company. Root crop harvester. 3,695,360, Cl. 171-58.000.

Hooker Chemical Corporation: *See—*
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Horanoff, Eugene V.: *See—*
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Hori, Hiroshi: *See—*
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Hori, Kikuo; Yamada, Hiroshi; and Itoh, Hiroshi, to Teijin Limited. Traverse device in package winding apparatus. 3,695,529, Cl. 242-26.300.

Hori, Kiyokazu; Kose, Tatsuo; and Ochi, Kazuo, to Daiwa Bosiki Kabushiki Kaisho. Automatic yarn piecing apparatus for spindleles spinning machine. 3,695,017, Cl. 57-34.00r.

Horike, Akihiro: *See—*
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Horizon Industries Ltd.: *See—*
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Horn, John M., to Allis-Chalmers Manufacturing Company. Piston position monitor. 3,695,145, Cl. 91-390.000.

Hornbrook, George Kenneth: *See—*
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Horne, Arthur P., to Electronics Diversified, Inc. Equipment for detecting improper wiring in portable installation. 3,696,291, Cl. 324-51.000.

Horne, Richard J. Cutting stick spacer. 3,695,136, Cl. 83-658.000.

Hoshi, Juro, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning indicating apparatus for FM receiver. 3,696,301, Cl. 325-398.000.

Hoshino, Masahiro; and Sasaki, Kenkichi. Sealing method of sealed segments of a tunnel. 3,695,044, Cl. 61-42.000.

Hosoda, Kirokuro; Shiina, Naonori; Kadowaki, Yoshio; and Nakae, Hiroyuki, to Furukawa Electric Company Limited, The. Process for preparing olefin polymer foams. 3,696,059, Cl. 260-2.50h.

Hosokawa, Etsuo: *See—*
Suzuki, Munehiko; Hosokawa, Etsuo; Waki, Misao; and Fukushima, Masatada, 3,696,077.

Houghton, Lionel, to Mego International, Inc. Growing hair doll. 3,694,957, Cl. 46-135.000.

House, William R.: *See—*
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Howe, Clarence H. Animal identification tag and installation tool therefor. 3,694,949, Cl. 40-301.000.

Howe, Wilson S. Quick connect coupler. 3,695,139, Cl. 85-33.000.

Howland, Robert W.; Minnich, George E.; and Van Fleet, Richard L., to Singer Company, The, mesne. Instrument drive signals. 3,694,930, Cl. 35-12.00f.

Hozeski, Kenneth W.: *See—*
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Hughes Aircraft Company: *See—*
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Hulme, Jack R., to Halliburton Company. Leak detection method and system. 3,695,094, Cl. 73-40.500.

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Hulsmann, Hans Leo; Renckhoff, Gustav; and Pastura, Albino, to Dynamit Nobel Aktiengesellschaft. Process for the production of methyl benzoate. 3,696,141, Cl. 260-476.00r.

Hum, Allen S., to General Mills, Inc. Method of glazing hard candy coatings. 3,695,894, Cl. 99-134.00r.

Humlong, Robert F., to Wald Manufacturing Company, Incorporated. Bicycle basket. 3,695,496, Cl. 224-36.000.

Hummel, Heinz; and Gortz, Herbert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Device for measuring the solidification temperature of liquids. 3,695,093, Cl. 73-17.000.

Hunt, J. B., Company: *See—*
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Hunt, Johnnie B., to Hunt, J. B., Company. Packaging compressible material. 3,694,992, Cl. 52-24.000.

Hunt, William B. Automatic ice cream freezer. 3,695,051, Cl. 62-136.000.

Hurle, Donald Thomas James: *See—*
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Hutchings, Leroi E., to Universal Oil Products Company. Swing-bed guard chamber in hydrogenating and hydrorefining a coke-forming hydrocarbon charge stock. 3,696,022, Cl. 208-57.000.

Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., to Pennwalt Corporation. Time monitored injection molding process control apparatus. 3,695,800, Cl. 425-146.000.

Hwa, Jesse C. H., to Stauffer Chemical Company. Polymercaptan modified vinyl halide polymers. 3,696,083, Cl. 260-79.000.

Hycalog, Inc.: *See—*
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Hyde Park Farm Supply Limited: *See—*
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Hydril Company: *See—*
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Ida, Edward S.; Lechner, Alfred; and Parsons, James L., to Du Pont de Nemours, E. I., and Company. Audio dosimeter. 3,696,206, Cl. 179-1.00n.

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Iida, Yozo; and Nozawa, Hideyo, to Nippon Kogaku K.K. Film winding device for motion-picture cameras. 3,695,551, Cl. 242-194.000.

Iizuka, Kikuo: *See—*
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Ikeda Bussan Company, Limited: *See—*
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Steel, Margaret Lilian; and Cross, William Telford, 3,696,183.
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Inamdar, Sayed-Ibrahim S., to Bechtel International Corporation, mesne. Ground fault detection circuit. 3,696,367, Cl. 340-255.000.

Inamorato, Jack Thomas, to Colgate-Palmolive Company. Ternary foam control systems with amines or amides and detergent compositions containing same. 3,696,056, Cl. 252-525.000.

Industra Products, Inc.: *See—*
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Industrial Filter & Pump Mfg. Co.: *See—*
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Ingellis, Joseph Frank. Adjustable furniture. 3,695,702, Cl. 297-440.000.

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Ingerson, Paul G., to University of Illinois Foundation and Ciba-Geigy Corporation. Log-periodic scaled directional coupler feed line for antennas. 3,696,438, Cl. 343-792.500.

Ingerson, Philip F., to Avoset Food Corporation. Emulsifier system for substitute dairy products. 3,695,889, Cl. 99-63.000.

Inouye Kinzoku Kogyo Kabishiki Kaisha: *See—*
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Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
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International Standard Electric Corporation: *See—*
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International Technidyne Corporation: *See—*
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International Telephone & Telegraph Corporation: *See—*
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Irie, Namio; and Ichimura, Hirohisa, to Nissan Motor Company Limited. Control system for an automotive automatic power transmission. 3,695,122, Cl. 74-864.000.

Isaacson, Max; and Smilg, Benjamin, to Vibrodyne, Inc. Vibratory apparatus. 3,694,968, Cl. 51-163.000.

Isernhagen, Fritz: *See—*
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Ishida, Hideo, to Nissan Motor Company, Limited, Fuji Kiko Company, Limited and Ikeda Bussan Company, Limited. Adjustable reclining seat. 3,695,570, Cl. 248-397.000.

Ishida, Shinichi; Yano, Nobumitsu; Ohshima, Noboru; Fukuda, Hiromichi; and Sato, Takeshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Stabilized polymer compositions. 3,696,170, Cl. 260-858.000.

Ishida, Takashi, to Mikuni Kogyo Co., Ltd. Fuel supply system for internal combustion engines. 3,695,245, Cl. 123-140.0mc.

Ishihara, Tetsuo: *See—*
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Ishikawa, Haruyoshi: *See—*
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Itoh, Hiroshi: *See—*
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Iverson, Iver H. Fluid pressure engine. 3,695,792, Cl. 418-176.000.

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Iwano, Haruhiko: *See—*
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Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Vibration dampening core for an archery bow. 3,695,248, Cl. 124-30.00r.

J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik: *See—*
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Jackson, Byron, Inc.: *See—*
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Jackson, Charles A.: *See—*
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Jackson, Harold Ernest, to Petrol Injection Limited. Fuel injector devices. 3,695,518, Cl. 239-533.000.

Jacobowsky, Armin: *See—*
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Jacobs, Joh., & Co.: *See—*
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Jacobs, William A. Extruding and filling containers made of foamed thermoplastic polymer. 3,696,179, Cl. 264-45.000.

Jacobsson, Jan Roland, to Aga Aktiebolag. Vapor deposition apparatus. 3,695,217, Cl. 118-49.500.

Jacques, Maison-Alfort: *See—*
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Jager, Albert: *See—*
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Jagers, Leopold, to Trennjager Maschinenfabrik. Circular saw construction. 3,695,135, Cl. 83-455.000.

Jamison, Samuel J., to Johnson & Johnson. Fitted bed sheet. 3,694,832, Cl. 5-334.000.

Jansen, Gert; and Clauson-Kaas, Niels, to Ciba-Geigy Corporation. Process for the production of salts of 5-formyl furan-2-sulphonic acid. 3,696,125, Cl. 260-347.200.

Janssen, Elizabeth Charlotte: *See—*
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Janssen, Matthias: *See—*
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Jansson, Birger F., to Case, J. I., Company. Balancing mechanism for fluid translating device. 3,695,789, Cl. 418-75.000.

Japan Steel Works, Ltd.: *See—*
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Javet, Alain Ferdinand, to Termomeccanica Italiana S.p.A., mesne. Centrifugal separator for separating emulsions. 3,695,509, Cl. 233-30.000.

Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. 1-(2-Aminocarbonyloxyethyl)-5-nitro-imidazole derivatives having antiprotozol activity. 3,696,116, Cl. 260-309.000.

Jelinek, Jerry G.; and Reinsch, Edward, to Parker-Hannifin Corporation. Method of inserting a seal in a face-cut groove. 3,694,894, Cl. 29-451.000.

Jentsch, Dietrich, to Dorken & Mankel, KG. Mounting for built-in door-closing arrangement. 3,694,852, Cl. 16-129.000.

Jespersen, Hans Jorgen, to Danfoss A/S. Valve, particularly a thermostatic expansion valve for refrigerating equipment. 3,695,577, Cl. 251-61.400.

JFD Electronics Corporation: *See—*
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Jochems, Pieter Johannes Wilhelmus; and De Werdt, Reinier. Method of manufacturing an electric device e g. a semiconductor device. 3,695,955, Cl. 156-11.000.

Joelson, Carl R. Method for producing concrete pipe. 3,696,182, Cl. 264-72.000.
Johansson, Rolf Ingvar. Device for separating liquid from a slurry. 3,695,448, Cl. 210-394.000.
Johns-Manvill Corporation: *See—*
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Jones, Charles. Housing sealing means for rotary engines. 3,695,790, Cl. 418-83.000.
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Jones, Clifford V.: *See—*
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Jones, Kenneth W., to Hycalog, Inc. Drilling apparatus. 3,695,370, Cl. 175-106.000.
Jones, Oliver: *See—*
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Jones, Robert Louis, to Safety Lift Corporation. Safety brake unit for a mine cage. 3,695,396, Cl. 187-89.000.
Jones, Viron V., to Keuffel & Esser Company. Photoimaging material comprising polyamide. 3,695,887, Cl. 96-115.00r.
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Jud, Karl, to Ruti Machinery Works, Ltd. Method and apparatus for producing a terry fabric on a loom. 3,695,302, Cl. 139-27.000.
Judy, Peter Frederick; Hudyma, Thomas William; and Partyka, Richard Anthony, to Bristol-Myers Company. Benzocyclobutene-1-carboxylic acids. 3,696,111, Cl. 260-293.510.
Jullien-Davin, Jean, to Crouzet. Automatic mold for parts of plastic material. 3,695,572, Cl. 249-68.000.
Jungel, Heinrich, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Internally vibrated roller cutter apparatus for cutting and rock. 3,695,721, Cl. 299-37.000.
Jungkind, Roland, to Marker, Hannes. Toe iron for safety ski bindings. 3,695,624, Cl. 280-11.35t.
Kabbe, Hans-Joachim; and von Konig, Anita, to Agfa-Gevaert Aktiengesellschaft. Process for the production of photographic images. 3,695,880, Cl. 96-52.000.
Kabel, Heinrich, to Hellermann, Paul, G.m.b.H. Tool for tieing bundles of cables. 3,695,308, Cl. 140-93.400.
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Rinnai Seisakusho: *See—*
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Hosoda, Kirokuro; Shiina, Naonori; Kadowaki, Yoshio; and Nakae, Hiroyuki, 3,696,059.
Kagimoto, Syozo: *See—*
Okuda, Kazuo; and Kagimoto, Syozo, 3,695,601.
Kahn, Leonard R.; and Gordon, Robert R., to Kahn Research Laboratories, Inc. Audio signal transmission system and method. 3,696,298, Cl. 325-59.000.
Kahn Research Laboratories, Inc.: *See—*
Kahn, Leonard R.; and Gordon, Robert R., 3,696,298.
Kaiho, Isao; Shimizu, Hiroshi; and Osuka, Hiroshi, to Nihon Polystrene Kabushiki Kaisha. Process for preparing styrene polymers having a high impact strength. 3,696,172, Cl. 260-880.00r.
Kaji, Seiho, to Kabushiki Kaisha Meiki Seisakusho. Transfer mechanism for the sheet material of a multiplaten press. 3,695,464, Cl. 214-16.600.
Kalb, Henry T.: *See—*
Crosswy, Frank L.; and Kalb, Henry T., 3,695,761.
Kalish, Robert L.: *See—*
Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., 3,695,964.
Kalle Aktiengesellschaft: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.
Kallman, Robert I.: *See—*
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Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, to Moskovsky dvazhdy ordena Lienina i ordena Trudovogo Krasnogo Znameni Avtomabilny Zavod imeni I.A. Likhacheva. Apparatus for thermal treatment of metal parts by electric induction heating. 3,696,225, Cl. 219-10.790.
Kamioka, Toshiharu: *See—*
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, 3,696,094.
Kanai, Kenji: *See—*
Sugaya, Hiroshi; and Kanai, Kenji, 3,696,216.
Kandelaki, David Georgievich; Chargeishvili, Tengiz Sergeevich; and Skvortsov, Georgy Alexandrovich. Device to produce non-woven continuous ribbons from threads. 3,695,977, Cl. 156-441.000.
Kandler, Georg: *See—*
Westphal, Bernd; and Kandler, Georg, 3,695,777.
Kane, Robert R.; and Glaser, Charles J., Jr., to Fisher Controls Company, Inc. Reinforced boot for slurry type pinch valve. 3,695,576, Cl. 251-5.000.
Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., to Mosler Research Products, Inc. Security alarm system. 3,696,376, Cl. 340-276.000.
Kapp, Ludwig J., to Flo Devices Inc. Serial printing machine. 3,695,410, Cl. 197-55.000.
Kardas, Alan: *See—*
Rohrs, Marvin K.; Neary, Robert J.; Rosenberg, Robert B.; Kardas, Alan; and Staats, William R., 3,695,250.
Karr, Robert J. Method and apparatus for applying or removing gloves. 3,695,493, Cl. 223-111.000.
Kartschmaroff, Peter; and Moser, Paul, to Ciba-Geigy Corporation. Process for the production of nickel salts of monoesters of 3,5-ditert. butyl-4-hydroxybenzyl phosphonic acid. 3,696,135, Cl. 260-439.00r.
Kashio, Toshio, to Casio Computer Kabushiki Kaisha. Method and arrangement for generating tracing signals. 3,696,394, Cl. 340-324.00a.
Kaske, Alan D.; and Sauter, Gerald F., to Sperry Rand Corporation. Block organized random access memory. 3,696,349, Cl. 340-174.0nc.
Kastan, Howard; and Pena, Joe C., to Lockheed Aircraft Corporation. Rotor system including a blade retention member. 3,695,779, Cl. 416-135.000.
Katuta, Tadao, to Tokyo Shibaura Electric Co., Ltd. Apparatus for embedding metal pins in a glass panel. 3,695,860, Cl. 65-154.000.
Kauffman, Ray B. Radio frequency burglar alarm system. 3,696,368, Cl. 340-258.00a.
Kaufman, Vern F.; Klose, Alvin A.; and Pool, Morris F., to United States of America, Agriculture. Method of defeathering poultry. 3,694,856, Cl. 17-47.000.
Kawamata, Masao: *See—*
Kitagawa, Tadashi; Yaguchi, Shoichiro; Yamanobe, Katsuyuki; and Kawamata, Masao, 3,696,316.
Kawamata, Motoo: *See—*
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, 3,695,830.
Kawano, Shigeru: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Muramaisu, Hitoshi; and Saeki, Masahiro, 3,696,383.
Kawano, Takuo. Fasteners for attaching umbrella clothes to rib. 3,694,864, Cl. 24-73.0pf.
Kawano, Yoichi: *See—*
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, 3,696,094.
Kazarinov, Igor Borisovich: *See—*
Khripkov, Alexandr Vasilievich; Shenderov, Lev Borukhovich; and Kazarinov, Igor Borisovich, 3,695,334.
Kearns, Tommy Carter; and Kim, Yang Joo. Ammonium polyphosphate manufacture. 3,695,835, Cl. 423-310.000.
Keith, Donald George; Maack, Horst Egon Fred Ludwig; and Morris, Douglas Barrett, to Imperial Chemical Industries, Limited. Method of making spiral wound plastic foam tube. 3,695,959, Cl. 156-79.000.
Keith, Marvin W., Jr. Flexible link rotatable drive coupling. 3,695,058, Cl. 64-23.000.
Kell, Robert Christopher; Rendle, David Forbes; and Riches, Eric Edward, to General Electric Company Limited, (formerly the General Electric and English Companies Limited). Microwave devices. 3,696,314, Cl. 333-73.00w.
Keller, George C.: *See—*
Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., 3,695,477.
Kelley Company, Inc.: *See—*
Potter, Roderick B., 3,696,240.
Kelly, Joseph L, Jr., to Hughes Tool Company. Rotary shaft drilling apparatus. 3,695,363, Cl. 173-43.000.
Kelsey-Hayes Company: *See—*
Ayers, David T., Jr., 3,695,730.
Stelzer, William, 3,695,732.
Kemper, Arthur L.; and Baliklock, Raymond R., to Collins Radio Company. ADF needle stabilizing circuit. 3,696,428, Cl. 343-117.004.
Kennametal Inc.: *See—*
Kennicott, Wilbur L.; and Heaton, James W., 3,694,879.
Kita, John F.; and Heaton, James W., 3,695,723.
Kennecott Copper Corporation: *See—*
Walk, George A.; and Jones, Clifford V., 3,695,603.
Kennicott, Wilbur L.; and Heaton, James W., to Kennametal Inc. Tool holder and method of using. 3,694,879, Cl. 29-96.000.
Kerns, Clyde W.: *See—*
Guinzy, Norman J.; Kerns, Clyde W.; Ruehle, William H.; and Teague, Henry E., 3,696,331.
Kerr, Glenn D.: *See—*
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Keuffel & Esser Company: *See—*
Jones, Viron V., 3,695,887.
Keyes Fibre Company: *See—*
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Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstantinovich; Khodosh, VladimirAlexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,720.
Khaidurov, Leonid Konstatinovich: *See—*
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Khodosh, Vladimir Alexandrovich: *See—*
Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstatinovich; Khodosh, Vladimir Iexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,719.
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Khripkov, Alexandr Vasilievich; Shenderov, Lev Borukhovich; and Kazarinov, Igor Borisovich. Method and apparatus for casting with revolving magnetic field controlling pouring. 3,695,334, Cl. 164-49.000.
Kida, Yoko: *See—*
Akamatsu, Akira; Takagi, Yasuo; Iwatsuki, Makoto; Kida, Yoko; and Takeshita, Kazuhisa, 3,695,822.
Kiel, Othar M.: *See—*
Wood, Donald B.; and Kiel, Othar M., 3,695,355.
Kilby, Jack S.; and Van Tassel, James H., to Texas Instruments, Incorporated. Keyboard encoder. 3,696,411, Cl. 340-365.000.
Kilgore, Bernard W. Enuresis prevention training device. 3,696,357, Cl. 340-235.000.
Killion, Derling G.; and Roberts, Kent B., to Teledyne Ryan Aeronautical Company. Resonant slot antenna structure. 3,696,433, Cl. 343-770.000.
Kim, Yang Joo: *See—*
Kearns, Tommy Carter; and Kim, Yang Joo, 3,695,835.
Kimberly-Clark Corporation: *See—*
Brock, Robert J.; and Thomas, Gordon D., 3,695,985.
Burger, William H., 3,694,815.
Endres, Dan D., 3,695,260.
Sorenson, Wayne P., 3,694,927.
Stumpf, Robert J., 3,694,867.
Voss, Joseph A.; and Johnson, Carl W. (said Voss assor. to), 3,695,970.

Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, to Unitaka Ltd. Yarn carrier for a weaving machine. 3,695,306, Cl. 139-125.000.
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., to Burroughs Corporation. Binary data handling system. 3,696,255, Cl. 307-241.000.
King, Earl M.: *See—*
Bailey, Darrel E.; and King, Earl M., 3,694,918.
King, Herbert R., to Deering Milliken Research Corporation. Vulcanizing rubber covered wire. 3,695,228, Cl. 118-620.000.
King, Karl Lewis: *See—*
Arrington, James R.; and King, Karl Lewis, 3,696,019.
King Radio Corporation: *See—*
Burrell, Gary L., 3,696,422.
Kinkaid, Robert John; and Asick, John Car, to AMP Incorporated. Dip header. 3,696,323, Cl. 339-192.00r.
Kinney, S. P., Engineers, Inc.: *See—*
Bradel, Norman F., 3,695,300.
Kipling, Barry John, to Pye Limited. Closed circuit medical respirators. 3,695,263, Cl. 128-145.600.
Kirche, Robert M. Drapery support apparatus for rufflette and shirred draperies. 3,695,489, Cl. 223-34.000.
Kirkland, Kenneth C. Jr., to Garlock, Inc, mesne. Method and apparatus for isolating and measuring vehicle noise. 3,695,098, Cl. 73-117.100.
Kishikawa, Toshiro: *See—*
Mori, Minoru; and Kishikawa, Toshiro, 3,696,202.
Kisselmann, Willy; Rumpelein, Fritz; and Kopf, Paul, to Agfa-Gevaert Aktiengesellschaft. Balancing means for moving coils of electrical measuring instruments. 3,696,295, Cl. 324-154.0pb.
Kita, John F.; and Heaton, James W., to Kennametal Inc. Abrading tool. 3,695,723, Cl. 299-40.000.
Kita, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Mechanical double-action press of link mechanism type. 3,695,090, Cl. 72-450.000.
Kitagawa, Tadashi; Yaguchi, Shoichiro; Yamanobe, Katsuyuki; and Kawamata, Masao, to Daito Tsushinki Kabushiki Kaisha. Fuses and fuseholders. 3,696,316, Cl. 337-206.000.
Kitajima, Mitsuo: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,695,306.
Klanberg, Frank Karl, to Du Pont de Nemours, E. I., and Company. Transition metal complexes of phosphine. 3,695,853, Cl. 23-360.
Klatt, Alfred: *See—*
Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, 3,695,734.
Klauer, Friedrich W.; Kroger, Johannes Hugo; and Waldmann, Wilhelm. Gas mantle packages. 3,695,416, Cl. 206-45.140.
Klaus, Thomas: *See—*
Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, 3,696,106.
Klein, Harold T.: *See—*
Porter, Wilson B.; and Klein, Harold T., 3,695,364.
Klein, Robert T.; and Kreiselman, Robert L., to Coulter Electronics, Inc. Range expansion method and apparatus for multichannel pulse analysis. 3,696,399, Cl. 340-347.0ad.
Kleinschmidt, Johann: *See—*
Papajewski, Reinhold; and Kleinschmidt, Johann, 3,695,200.
Klemm, Edwin O., to Saginaw Products Corporation. Plunger stopped bi-directional no-back assembly. 3,695,402, Cl. 192-8.00r.
Klepa, Peter P.: *See—*
Lee, Robert L.; Schwartz, Jacob L.; and Klepa, Peter P., 3,694,919.
Klessig, Ernest F., to Worthington Corporation, mesne and Engine International Division. Hydraulic hammer with back pressure isolation. 3,695,366, Cl. 173-134.000.
Kline, Arthur J., Jr., to Motorola, Inc. Coherent jump frequency synthesizer. 3,696,306, Cl. 331-2.000.
Klingerman, Robert H.: *See—*
Metcalf, James F.; and Klingerman, Robert H., 3,696,223.
Klose, Alvin A.: *See—*
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Knape & Vogt Manufacturing Company: *See—*
Pullan, Ronald C., 3,695,569.
Knapsack Aktiengesellschaft: *See—*
Wirtz, Peter; Jacobowsky, Armin, and Mittler, Werner, 3,696,015
Knepper, Wilhelm; and Austin, Severin, to Chemische Werke Huls Aktiengesellschaft. Process for recovering mercury from waste water of industrial processes. 3,695,838, Cl. 425-106.000
Kniel, Ludwig, to Lummus Company, The. Aqueous amine acid gas absorption. 3,696,162, Cl. 260-677.00a.
Knight, Allan R.: *See—*
Harrod, John F.; Knight, Allan R.; and McIntyre, John S., 3,696,052.
Knogo Corporation: *See—*
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Knoll, Jozsef: *See—*
Meszaros, Zoltan; Knoll, Jozsef; and Szentmiklosi, Peter, 3,696,197.

Kobayashi, Sakae; Hori, Hiroshi; and Matsunaga, Toshio, to Japan Steel Works, Ltd. Reel switching device for a double-reel parallel-shaft type continous winding machine. 3,695,527, Cl. 242-25.00a.

Kobayashi, Tatsuo, to E.R.D. Corporation. Information writing circuit for memory device. 3,696,348, Cl. 340-174.0ac.

Kobe Steel, Ltd.: *See—*
Otani, Yasuhiko, 3,695,525.
Otani, Yasuhiko; and Ikegami, Yoshio, 3,695,526.

Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Chemical process of separating hydrocarbyl aluminum from olefins by the use of 2:1 complexes of aluminum alkyls and an alkali metal salt. 3,696,161, Cl. 260-677.00a.

Kobinger, Walter: *See—*
Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.

Kobushiki Kaisha Toyoda Jido Shokki Seisakusho: *See—*
Hayashi, Yasutaka; and Arakawa, Hideo, 3,695,023.

Koch, Robert W., to Gulf Research & Development Company. Cracking of a gas oil with zeolite and monzeolite catalyst. 3,696,023, Cl. 208-87.000.

Kochs Adlernahmaschinenwerke AG: *See—*
Heimann, Alfred, 3,695,194.

Kocks, Friedrich. Method for manufacture of seamless tube. 3,695,076, Cl. 72-97.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Yokoi, Hiroshi; and Fukumuro, Hiroshi, 3,696,436.

Koller, Johann, to MMM Munchener Medizin Mechanik GmbH. Hospital bed. 3,694,830, Cl. 5-63.000.

Komatsu, Kiroku: *See—*
Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, 3,695,824.

Kondo, Masaru, to Nippon Gakki Seizo Kabushiki Kaisha. Method for manufacturing a piston valve for valved wind musical instruments by the same. 3,694,884, Cl. 29-157.10r.

Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.: *See—*
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Kopf, Paul: *See—*
Kisselmann, Willy; Rumpelein, Fritz; and Kopf, Paul, 3,696,295.

Koppers Company, Inc., mesne: *See—*
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Kose, Tatsuo: *See—*
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Kovarik, Vincent J. Game bird transporting device. 3,695,233, Cl. 119-19.000.

Krantz, Karl W.: *See—*
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Kraus, Joachim: *See—*
Cremer, Gottfried; and Kraus, Joachim, 3,694,981.

Kraus, Johann. Through running and pressure pump. 3,695,787, Cl. 417-547.000.

Krauss, Heinz-Walter: *See—*
Mott, Ludwig; Muller, Richard; Dinges, Karl; and Krauss, Heinz-Walter, 3,696,063.

Kreiselman, Robert L.: *See—*
Klein, Robert T.; and Kreiselman, Robert L., 3,696,399.

Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Mounting means for cutter bits. 3,695,726, Cl. 299-86.000.

Kroger, Johannes Hugo: *See—*
Klauer, Friedrich W.; Kroger, Johannes Hugo; and Waldmann, Wilhelm, 3,695,416.

Krolikiewicz, Thaddeus A.: *See—*
Domba, Elemer; and Krolikiewicz, Thaddeus A., 3,696,081.

Kronman, Seymour; Spencer, Dana E.; and Henderson, Larry D., to United States of America, Navy. Explosive ordnance demolition weapon. 3,695,141, Cl. 89-1.000.

Krueger Metal Products, Inc.: *See—*
Weagle, James A., 3,695,567.

Krupka, Ronnie W., to ECC Corporation. RMS voltage or current sensor. 3,696,294, Cl. 324-105.000.

Kruse, Frederick V.; and Pichon, James D., to Ag-Rain, Inc. Hose coupler. 3,695,632, Cl. 285-5.000.

Kubota, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Correction system for continuous rolling mill. 3,695,075, Cl. 72-19.000.

Kuchler, Heinz: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Kuehne, Richard O.: *See—*
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Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., to Polar Ware Company. Disposal of human waste by incineration. 3,694,825, Cl. 4-131.000.

Kuhn, Lawrence; Sadagopan, Varadachari; and Tsui, Robert T., to International Business Machines Corporation. Cyclotion resonance devices controllable by electric fields. 3,696,312, Cl. 333-24.00r.

Kuhns, Frederick S., 33% each to Southern Laminating Co. and Tri-State Veneer & Plywood Co. Method of manufacturing furniture fabrication cores. 3,695,966, Cl. 156-190.000.

Kulicke and Soffa Industries, Inc.: *See—*
Angelucci, Thomas L.; and Kulicke, Frederick W., Jr., 3,696,229.

Kulicke, Frederick W., Jr.: *See—*
Angelucci, Thomas L.; and Kulicke, Frederick W., Jr., 3,696,229.

Kumai, Akira; and Terashita, Takaaki, to Fuji Photo Film Co., Ltd. High-speed fine grain light-sensitive material. 3,695,882, Cl. 96-68.000.

Kunstle, Gerhard; and Liberda, Heinz, to Wacker-Chemie G.m.b.H. Process for continuously producing pure sorbic acid. 3,696,147, Cl. 260-526.00n.

Kuoni, Xaver, to Borbe-Wanner AG. Apparatus for tightening and connecting the overlying portions of a flexible closure band placed about a package or the like. 3,695,307, Cl. 140-93.400.

Kuraray Co., Ltd.: *See—*
Matsushita, Hidekatsu; and Ouba, Kenichi, 3,695,801.

Kurasawa, Makoto, to Kabushiki Kaisha. Mechanism for moving movie projector. film intermittently in normal and reverse directions. 3,695,753, Cl. 352-173.000.

Kurashina, Kouzo: *See—*
Arimura, Ichiro; and Kurashina, Kouzo, 3,696,219.

Kureha Kogaku Kogyo Kabushiki Kaisha: *See—*
Okuda, Kensuke; Yoshida, Tadaaki; and Sugawara, Katsuyuki, 3,694,862.

Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, to Nippon Kayaku Kabushiki Kaisha. Process for fast dyeing of fibres and shaped articles. 3,695,821, Cl. 8-2.000.

Kus, Crawford M., to Veeder Industries, Inc. Computing device. 3,696,236, Cl. 235-151.340.

Kusan, Inc.: *See—*
Brown, Arnold E., 3,695,736.

Kutsay, Ali Umit. Strain detecting load cell. 3,695,096, Cl. 73-88.50r.

Kyle, Thomas A.; and Croy, Charles T. Method and apparatus for determining magnification ratio of microform reader. 3,695,768, Cl. 356-165.000.

La Barber, Joseph A., to Weiland, Henry. Gas medium circulating assembly. 3,695,781, Cl. 417-12.000.

La Branche, Harvey W.: *See—*
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, 3,695,513.

La Via, Anthony L.: *See—*
Hill, John A.; and La Via, Anthony L., 3,695,898.

La-Z-Boy Chair Company: *See—*
Knabusch, Edward M.; Shoemaker, Edwin J.; and White, David B., 3,695,701.

Laakso, Thomas M.: *See—*
Reynolds, George A.; Laakso, Thomas M.; Borden, Douglas G.; and Williams, Jack L. R., 3,696,072.

Labarge, Robert G.; Evani, Syamalarao; and Hanson, Alden W., to Dow Chemical Company, The. Cleaning composition for glass and reflective surfaces. 3,696,043, Cl. 252-153.000.

Lace, Melvin A., to Motorola, Inc. Permanent magnet rotor structure. 3,696,260, Cl. 310-156.000.

Lacroux, Gerard: *See—*
Margrain, Pierre; and Lacroux, Gerard, 3,694,907.

Laeral, Asmund S. Respiratory mask. 3,695,264, Cl. 128-145.500.

Lagercrantz, Bengt Ake; and Andersen, Kare, to Telefonaktiebolaget L M Ericsson. Anhydrous electrolyte for electrolytic capacitors. 3,696,037, Cl. 252-62.200.

Lagus, Peter: *See—*
Lower, John H.; and Lagus, Peter, 3,695,611.

Lai, San-Cheng, to Kerr-McGee Chemical Corporation. Process for electrodepositing manganese metal. 3,696,011, Cl. 204-105.00m.

Laing, Marvin R. Overspeed safety brake for elevators. 3,695,399, Cl. 188-187.000.

Lamb, Thomas L. Lounge chair. 3,695,685, Cl. 297-29.000.

Lambiris, Theodore, to General Motors Corporation. Transmission gearshift indicator. 3,695,215, Cl. 116-124.00r.

Laming, Frank P.; Levine, Solomon L.; and Sincerbox, Glenn T., to International Business Machines Corporation. Hologram life extension. 3,695,879, Cl. 96-48.000.

Lammers, Arthur R.: *See—*
Guyton, James H.; and Lammers, Arthur R., 3,695,552.

Lamore, Herbert T., to Holley Carburetor Company. Air valve carburetor. 3,695,589, Cl. 261-23.00a.

Lampe, Warren R., to General Electric Company. Room temperature vulcanizable silicone rubber composition. 3,696,090, Cl. 260-18.00s.

Land, Edwin, to Polaroid Corporation. Photographic fluid container manufactured by freezing and sealing liquid. 3,695,884, Cl. 96-76.00c.

Landwehrkamp, Hans, to Schubet & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for the interruption silver supply in open end spinning machine. 3,695,022, Cl. 57-81.000.

Lang, Walter T., to Simmonds Precision Products, Inc. Analog-to-digital converter. 3,696,400, Cl. 340-347.0ad.

Langan, John P.; and Cobbeldick, Charles R., to Essex International Inc. Latchable reciprocating switch construction. 3,696,222, Cl. 200-16.00r.

Lange, Howard G. Method of screening a color image reproducing device. 3,695,871, Cl. 96-1.200.

Langowski, Faustyn C., to Jackson, Byron, Inc. Fluid transfer apparatus for well pipe elevator. 3,695,669, Cl. 294-82.00r.

Lanmon, C. P., II, to Schlumberger Technology Corporation. Apparatus for perforating earth formations. 3,695,368, Cl. 175-4.520.

Laporte Industries Limited: *See—*
Bol, Jan Paul; Gebhart, Joseph; and Seger, Gunther, 3,695,765.
Sunderland, Stephen; and Whittam, Thomas V., 3,695,837.

Lappage, James. Method and apparatus for forming yarn. 3,695,019, Cl. 57a38.300.

Larocque, Jacques: *See—*
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques, 3,695,423.

Larocque, Patricia Powers: *See—*
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques, 3,695,423.

Larsen, Reid S.: *See—*
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., 3,695,583.

Larson, Charles O., to Larson, Chas. O., Co. Display stand. 3,695,455, Cl. 211-78.000.

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Larson, Charles O., 3,695,455.

Last, James David; and Rowe, David N. E., to University College of North Wales. Method of generating electricity and electrical generator. 3,696,251, Cl. 290-53.000.

Latour, Yves: *See—*
Ollinger, James C.; Wolf, Herbert R., Jr.; and Latour, Yves, 3,695,395.

Laubach, Wilburn B. Adjustable torque limiting coupling. 3,695,059, Cl. 64-29.000.

Lauber, Ernst Abraham; and Barendsen, Pieter. Raise boring machine. 3,695,718, Cl. 299-31.000.

Lauro, Luciano: *See—*
Pomella, Piero; Baratto, Elia; and Lauro, Luciano, 3,696,398.

Lavelle, Michael R. Safety device monitoring system. 3,696,364, Cl. 340-252.00r.

Lavergne, Rene Georges. Device for assembling tubular members. 3,695,649, Cl. 287-54.00a.

Lawson, Robert R.; and Metzinger, Leonard L., to Bunker-Ramo Corporation. Isochronal correction system. 3,695,032, Cl. 58-107.000.

Layman, Lee R., to Monsanto Company. Sheet molding apparatus including means for removing molded articles from the sheet material. 3,695,804, Cl. 425-292.000.

Laymon, Marvin D.; McCoy, Jerome D.; and Schewe, Millard F., to Sylvania Electric Products, Inc. Signal processor. 3,696,369, Cl. 340-258.00d.

Le Goff, Yves: *See—*
Cometti, Andre; Fouche, Jean; and Le Goff, Yves, 3,696,103.

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Uuguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,696,167.

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Leaper, Rodney Seymour: *See—*
Cannell, John Carjeag; Leaper, Rodney Seymour; and Paratt, Noel James, 3,695,335.

Lechner, Alfred: *See—*
Ida, Edward S.; Lechner, Alfred; and Parsons, James L., 3,696,206.

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Lee, Alfred, to Main Trucking & Rigging Co., Inc. Propeller stand. 3,695,566, Cl. 248-119.00r.

Lee Chi-Hang; and Feldman, Jacob Richard, to General Foods Corporation. Method of preserving food. 3,695,899, Cl. 99-150.000.

Lee, Donald H.: *See—*
Corrigan, Gordon D.; Lee, Donald H.; Olsen, Howard E.; and Petry, Robert J., 3,695,121.

Lee, Elsie Chang; and Societe Industrielle Bull-General Electric. Apparatus for the receiving, storing and restitution of recording tapes. 3,695,541, Cl. 242-71.800.

Lee, Robert L.; Schwartz, Jacob L.; and Klepa, Peter P., to Dentonamics Corporation. Dental articulator. 3,694,919, Cl. 32-32.000.

Leech, Okie R.; and Dewey, Ernest A., to Texaco Inc. Gas flow diffuser. 3,695,011, Cl. 55-386.000.

Leesona Corporation: *See—*
Ditzler, John W., 3,694,871.
Richter, Hans H., 3,695,020.

Lefforge, John W.: *See—*
Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., 3,695,477.

Lehmann, Hans Rudolf: *See—*
Goiffon, Thierry; Lehmann, Hans Rudolf; and Schaidl, Hubert, 3,695,144.

Leifeld, Klaus; Wochnik, Josef; and Stoy, Erich, to Schloemann Aktiengesellschaft. Multi-roll stands. 3,695,082, Cl. 72-243.000.

Leigh, Bertram Jonathan, to General Cable Corporation. Aerial lift with workman's basket with protective covering. 3,695,390, Cl. 182-12.900.

Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Centrifugal blasting wheel. 3,694,963, Cl. 51-9.000.

Lemelson, Jerome H. Credit verification system. 3,696,335, Cl. 340-149.00a.

Lengyel, Sandor: *See—*
Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, 3,695,412.

Lennox, Thomas M., to Scanfax Systems Corporation. Tape drive shut-off. 3,695,550, Cl. 242-191.000.

Leon, Luis P., to Technicon Instruments Corporation. Method and apparatus for fluid injection. 3,695,281, Cl. 137-1.000.

Leonard, Jay F., to Philco-Ford Corporation. Adaptive modem receiver. 3,696,203, Cl. 178-88.000.

Lepetit, Pierre: *See—*
Hivert, Andre; Lepetit, Pierre; and Walder, Andre, 3,695,869.

Les Fabriques d'Assortiments Reunies: *See—*
Simon-Vermot, Andre, 3,694,885.

Lesage, Jean; and Dawans, Francois, to Institut Francais du Petrole, des Carburants et Lubrifiants. Compositions containing amorphous 1,2-polybutadiene. 3,696,062, Cl. 260-5.000.

Lester, Robert W., to Recognition Devices, Inc. Ultrasonic tracking and locating system. 3,696,384, Cl. 340-312.000.

Lever Brothers Company: *See—*
Malhotra, Virender Nath, 3,696,143.

Levine, Seymour D., to Squibb, E. R., & Sons. Acid and ester intermediates for preparing 3,4-bisnor-5-aza-B-hamopregnane-2,20-diones. 3,696,109, Cl. 260-287.00r.

Levine, Solomon L.: *See—*
Laming, Frank P.; Levine, Solomon L.; and Sincerbox, Glenn T., 3,695,879.

Levitan, Jacob, to Institute of Gas Technology. Electrolytic production of aluminum. 3,696,008, Cl. 204-67.000.

Lewis, George E.: *See—*
Murman, Fernando; Lewis, George E.; and O'Brien, Charles E., 3,695,349.

Lewis, John C., to Park-Ohio Industries, Inc. Transformer and inductor unit for heating valve seats. 3,696,224, Cl. 219-10.570.

Lewis, William L., to Gloekler, Bernard. Pallet rack. 3,695,456, Cl. 211-148.000.

Li, Norman N.; and Long, Robert B. Liquid membrane separation process. 3,696,028, Cl. 208-308.000.

Libbey-Owens-Ford Company: *See—*
Zellers, James T., Jr., 3,695,861.

Liberda, Heinz: *See—*
Kunstle, Gerhard; and Liberda, Heinz, 3,696,147.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Dickopp, Gerhard, 3,696,220.

Lichstein, Bernard M.; and Woolf, Cyril, to Allied Chemical Corporation. Halogen-exchange fluorination of organic compounds using ammonium fluoride. 3,696,150, Cl. 260-544.00f.

Lieberman, Samuel. Water tap filter. 3,695,450, Cl. 210-449.000.

Liebl, Albert: *See—*
Von Hornstein, Wolf Freiherr; Richt, Hubert O.; and Liebl, Albert, 3,695,549.

Liggett & Myers Incorporated: *See—*
Pullman, James O.; and Weidlich, William R., 3,696,299.

Liggett & Myers Incorporated, mesne: *See—*
Tripodi, Peter R., 3,695,422.

Lill, Arnulf: *See—*
Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, 3,695,854.

Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, to Kalle Aktiengesellschaft. Process for the continuous production of a flexible porous multilayer web having a high-gloss outer surface. 3,695,972, Cl. 156-324.000.

Linde Aktiengesellschaft Zentrale Patentabteilung: *See—*
Rottmayr, Friedrich; and Reimann, Hans, 3,695,002.

Lindner, Herbert, G.m.b.H., Firma: *See—*
Stade, Gerhard, 3,695,119.

Lindsay, Kenneth L.: *See—*
Kobetz, Paul; and Lindsay, Kenneth L., 3,696,161.

Lindsay, Richard P.: *See—*
Hahn, Robert S.; and Lindsay, Richard P., 3,694,969.

Lindstaedt, Horst Karl, to Mason Scott Thrissell Engineering Limited. Apparatus for preparing reels of sheet material for unwinding. 3,695,532, Cl. 242-55.000.

Lindstaedt, Horst Karl, to Masson Scott Thrissell Engineering Limited. Means for unwinding reels of sheet material. 3,695,538, Cl. 242-58.600.

Lindstaedt, Horst Karl, to Masson Scott Thrissell Engineering Limited. Multiple reel unwind stands. 3,695,539, Cl. 242-58.600.

Lindstrom, Kjell O. T.: *See—*
Hertz, Carl Hellmuth; and Lindstrom, Kjell O. T., 3,695,107.

Lineberg, Birger David. Apparatus for measuring water impurities in oil. 3,695,095, Cl. 73-61.10r.

Ling, Bernt; Persson, Anders; and Svensson, Olof, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus for determining visibility including a pulsed light source, a plurality of spaced reflectors, and a detector. 3,694,936, Cl. 356-208.000.

Linquist & Vennum, mesne: *See—*
Braaten, Norman J., 3,696,409.

Liquid Carbonic Corporation: *See—*
Glynn, Emmett P.; and Hsu, Howard L., 3,695,056.

Litchford, George B., to United States of America, National Aeronautics and Space Administration. Altitude measuring system 3,696,418, Cl. 343-11.00r.

Litt, Arnold D.; and Engelhart, John E., to Esso Research and Engineering Company. Tetrahydrobenzothiazolyl derivatives and their use as herbicides. 3,696,101, Cl. 260-248.0ns.

Littlefield, John C. Trailer loading tester and hitch. 3,695,213, Cl. 116-28.000.

Littlejohn, Frederick G. Automatic safety feed system for liquids. 3,695,485, Cl. 222-68.000.

Litton Industries, Inc.: *See—*
Schoonover, Stanley C.; and Luckenbach, Lester R., 3,694,970

Litton Precision Products, Inc.: *See—*
Mack, Walter, 3,696,318.

Ljung, Bo Hans Gunnar, to Aga Aktiebolag. Failure indicating arrangements for gyroscopes. 3,696,363, Cl. 340-248.00b.

Lloyd, Anthony Michael; and Alexander, David George, to Rose, Downs & Thompson Limited. Extraction of oil from oil-bearing materials. 3,696,133, Cl. 260-412.800.

Loblick, Dermont F. Hydraulic arrangement for dockboards. 3,694,839, Cl. 14-71.000.

Loblick, Dermont F. Dockboard raising mechanism. 3,694,840, Cl. 14-71.000.

Lockheed Aircraft Corporation: *See—*
Goldberg, Leonard Z., 3,695,644.
Kastan, Howard; and Pena, Joe C., 3,695,779.

Lockwood, David L.: *See—*
Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr.; and Lockwood, David L., 3,696,264.

Lohr, Thomas E.; and Stephenson, Robert L., to Allied Chemical Corporation. Vehicle seat with integral seat and back portions. 3,695,696, Cl. 297-388.000.

Londo, Erwin N. Rotary internal combustion engine. 3,695,237, Cl. 123-43.00a.

Long, Raymond W.: *See—*
Wetzel, William C.; and Long, Raymond W., 3,696,410.

Long, Robert B.: *See—*
Li, Norman N.; and Long, Robert B., 3,696,028.

Loomans, Bernard A. Apparatus for pumping fluids. 3,695,788, Cl. 417-488.000.

Lorton Laboratories, Ltd.: *See—*
Chen, Allen, 3,694,939.

Louderback, Anthony W.; and Zook, Morris A., Jr. Method of applying a multilayer antireflection coating to a substrate. 3,695,910, Cl. 117-33.300.

Lourie Visual Etudes, Inc.: *See—*
Hanson, Harold E., 3,695,608.

Lower, John H.; and Lagus, Peter, to Deneb Products Engineering. Billiard cue and cue tip assembly. 3,695,611, Cl. 273-70.000.

Loyd, Calvin D.: *See—*
Engelking, Frederick S.; and Loyd, Calvin D., 3,695,641.

Loyd, Calvin D., to Caterpillar Tractor Co. Method of friction welding. 3,694,896, Cl. 29-420.300.

LTV Electrosystems, Inc., mesne: *See—*
Pierce, John A., 3,696,424.

Lubinski, Arthur, to Pan American Petroleum Corporation. Suspending casing through permafrost. 3,695,351, Cl. 166-96.000.

Lucas, Joseph, (Industries) Limited: *See—*
Cooksey, William Harold, 3,694,905.

Luckenbach, Lester R.: *See—*
Schoonover, Stanley C.; and Luckenbach, Lester R., 3,694,970.

Luckey, George W., to Eastman Kodak Company. Positive image production with unfogged internal image silver halide emulsion containing mercaptan retardner and a surface latent image silver halide emulsion. 3,695,881, Cl. 96-29.000.

Luk Lamellen ünd Kupplungsbau GmbH: *See—*
Maucher, Paul; and Steeg, Klaus, 3,695,405.

Luk Lamellen und Kupplungslau GmbH: *See—*
Maucher, Paul; and Steeg, Klaus, 3,695,404.

Lummus Company, The: *See—*
Kniel, Ludwig, 3,696,162.
Smith, Colin, 3,695,482.

Lundin, Seth Johan Roland; and Bjorkman, Bengt Harry, to U.S. Philips Corporation. System for the transmission of intelligence by means of scrambled audiosignals. 3,696,207, Cl. 179-1.50s.

Lundstrom, Hans, to Allmanna Svenska Elektriska Aktiebolaget. Furnace for heat treating objects under pressure. 3,695,597, Cl. 266-2.00r.

Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., to Robins, A. H., Company, Incorporated. 1-Hydrocarbon-4-aryl-2,3-dioxo-5-(2-haloethyl) piperazines. 3,696,104, Cl. 260-268.0dk.

Lussier, Maurice G. Needleless sequential dosing syringe. 3,695,266, Cl. 128-173.00h.

Luwa AG: *See—*
Widmer, Fritz, 3,695,327.

Lyall, Charles E.; and Rak, Stanley F., to Culligan International Company. Membrane module assembly. 3,695,446, Cl. 210-321.000.

Maack, Horst Egon Fred Ludwig: *See—*
Keith, Donald George; Maack, Horst Egon Fred Ludwig; and Morris, Douglas Barrett, 3,695,959.

Maassen, Wilhelm: *See—*
Pesch, Albert Tho; and Maassen, Wilhelm, 3,695,522.

Macaluso, Sebastian B.: *See—*
Catterfeld, Fritz C.; Macaluso, Sebastian B.; and Weber, Lawrence D., 3,695,367.

Macintyre, John S.: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,695,414.

Mack Trucks, Inc.: *See—*
Trump, Norman M., 3,695,698.

Mack, Walter, to Litton Precision Products, Inc. Trimmer potentiometers. 3,696,318, Cl. 338-162.000.

MacMillan Bloedel Limited: *See—*
Worster, Hans Edmund; and Pudek, Marian Franciszek, 3,695,994.

Macy, James B., Jr.: *See—*
Satterthwaite, James Glenn; and Macy, James B., Jr., 3,695,637.

Maestrelli, Gino. Self-cleaning filter, particularly for dry-cleaning plants. 3,695,447, Cl. 210-332.000.

Magerlein, Helmut: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,695,832.

Maggar Viscosa Gyar: *See—*
Gregusz, Pal; Nagy, Sandor B.; Erdei, Janos; and Toth, Lajos, 3,695,825.

Maguire, Hugh C.: *See—*
Ross, Gerald F.; and Maguire, Hugh C., 3,696,359.

Mahaffy, Reid A.: *See—*
Young, William E.; and Mahaffy, Reid A., 3,695,900.

Mahl, Hans: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.

Mahler, Hans Hermann: *See—*
Arian, Charles Mourad; Mahler, Hans Hermann; Hayes, Claude Cecil, Jr.; and Tanner, Hal W., Jr., 3,695,219.

Maier, Charles N. Sliding cover apparatus for ice fishing hole. 3,694,950, Cl. 43-4.000.

Maier, Gary H., to Ferti-Feeder, Inc. Fertilizer applying apparatus. 3,695,193, Cl. 111-93.000.

Maier, Roy R. Vehicle hook. 3,694,866, Cl. 24-115.00j.

Main Trucking & Rigging Co., Inc.: *See—*
Lee, Alfred, 3,695,566.

Maisch, Wolfgang: *See—*
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, 3,696,270.

Makula, Daniel; Druet, Monique; and Gonthier, Beatrice, to Progie. 1,2,4-Oxadiazine-3,6-diones. 3,696,099, Cl. 260-244.00r.

Malaney, Frank E., to Johnson & Johnson. Method of making absorbent products with highly absorbent cores and relatively dry facings. 3,695,269, Cl. 128-284.000.

Malcolm, Robert La Verne: *See—*
Bichel, Darwin Carl; Malcolm, Robert La Verne; and Slaverns, Wayne Eldon, 3,695,627.

Malcomson, Robert S.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,695,800.

Maldonado, Juan Ramon, to Bell Telephone Laboratories, Incorporated. Optical transmission system including strain-biased electrooptic ceramic devices. 3,695,747, Cl. 350-150.000.

Malhotra, Virender Nath, to Lever Brothers Company. Detergent active materials. 3,696,143, Cl. 260-513.00r.

Maloon, Richard A.: *See—*
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., 3,696,235.

Malpassi, Alberto. Gasoline pressure regulator device. 3,695,438, Cl. 210-137.000.

Mangold, Dietrich: *See—*
Mueller, Herbert; and Mangold, Dietrich, 3,696,155.

Mannherz, Elmer D.; and Hermanns, Henry M., to Fischer & Porter Co. Electromagnetic flowmeter having removable line. 3,695,104, Cl. 73-194.0em.

Mannin Engineering Limited: *See—*
Clague, John Henry, 3,695,640.

Mansfield, John Rickard: *See—*
Broadbent, Graham; and Mansfield, John Rickard, 3,695,113.

Mant, Alistair Donald: *See—*
Eccles, Anthony John; Mant, Alistair Donald; and Shorthouse, Barry Owen, 3,695,115.

Manyik, Robert M.: *See—*
Matzner, Markus; McGrath, James E.; Manyik, Robert M.; and Walker, Wellington E., 3,696,075.

Marande, Claude: *See—*
Schmitt, Henri Francois Marie; and Marande, Claude, 3,695,382.

Marathon Golf Cars Ltd.: *See—*
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Marathon Oil Company: *See—*
Argabright, Perry A.; Presley, C. Travis; and Bixel, Harold C., 3,695,356.
Wygant, Noel D., 3,695,108.

Margrain, Pierre; and Lacroux, Gerard, to Etablissements E. Ragonot. Method of making low inertia rotor for dynamo electric machines. 3,694,907, Cl. 29-598.000.

Mark Products, Inc.: *See—*
Hazelhurst, Gerald D., 3,696,329.

Marker, Hannes: *See—*
Jungkind, Roland, 3,695,624.

Markert, Franz: *See—*
Munnich, Hermann; and Markert, Franz, 3,695,391.

Markley, Roger A.: *See—*
Cory, Terry S.; and Markley, Roger A., 3,696,430.

Maropis, Nicholas: *See—*
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,695,500.

Marosy, Andre. Coupling. 3,695,648, Cl. 285-376.000.

Marquardt Industrial Products Co.: *See—*
Risely, Richard E., 3,696,243.

Marsan, Arthur E. Disposable drainage pouch for colostomy and the like and method of making. 3,695,268, Cl. 128-283.000.

Martelli, Nerio. Foamed plastic pocket tray for fruits or like articles. 3,695,453, Cl. 211-14.000.

Martin, Jack; and Gorecki, Joseph S., to Westinghouse Electric Corporation. Compact single-ended incandescent lamp having improved filament mount assembly. 3,696,265, Cl. 313-222.000.

Martin, James Ear, Sr. Internal expansion vapor engine. 3,695,036, Cl. 60-27.000.

Martin, Robert W. Tag line control mechanism. 3,695,473, Cl. 214-657.000.

Martin-Marietta Corporation: *See—*
Cunningham, Robert A.; and Winkler, John T., 3,696,248.

Martinonis, Virgil: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,695,414.

Martz, Lyle F.; and Nanz, John W. Blower system and control system therefor. 3,695,774, Cl. 415-17.000.

Maryama, Shoji; Saito, Tadashi; and Asami, Tomiaki. Heat developable diazotype copying material. 3,695,885, Cl. 96-91.00r.

Mas Hydraulic & Vulcanizing Machine Co. S.r.l.: *See—*
Vicini, Dino, 3,695,809.

Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Manifold case. 3,695,503, Cl. 229-2.500.

Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Single sheet plastic box. 3,695,514, Cl. 229-25.000.

Maschinen- und Werkzeugbau GmbH: *See—*
Sevenich, Theodor; Zahn, Friedrich; and Zens, Peter, 3,695,080.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Rolauffs, Hans; Hoven, Hubert; Hippel, Hans; and Schafer, Max, 3,695,199.

Mase, Jiro: *See—*
Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, 3,695,466.

Masi, Anthony S. Molding machine. 3,695,338, Cl. 164-181.000.

Mason, Lawrence J.; and Paradysz, Louis F. Alphanumeric projection disc assembly. 3,695,161, Cl. 95-85.000.

Mason, Michael D. L. Aircraft power plant. 3,695,040, Cl. 60-203.000.

Mason, Peter Alan, to Wickman Machine Tool Sales Limited. Optical comparators. 3,695,769, Cl. 356-168.000.

Mason Scott Thrissell Engineering Limited: *See—*
Lindstaedt, Horst Karl, 3,695,532.

Massey-Ferguson Industries, Limited: *See—*
Twidall, William H.; and Byrnls, Mark K., 3,695,015.

Masson Scott Thrissell Engineering Limited: *See—*
Lindstaedt, Horst Karl, 3,695,538.
Lindstaedt, Horst Karl, 3,695,539.

Masuzawa, Isao: *See—*
Hirokawa, Yoichi; and Masuzawa, Isao, 3,696,282.

Matherly, James E., to Dow Corning Corporation. High filler content silicone elastomer with increased extrusion rate. 3,696,127, Cl. 260-375.00b.

Matsjura, Norio. Tube fastener. 3,694,869, Cl. 24-278.000.

Matsumoto, Hiroyuki: *See—*
Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, 3,695,821.

Matsunaga, Toshio: *See—*
Kobayashi, Sakae; Hori, Hiroshi; and Matsunaga, Toshio, 3,695,527.
Taki, Toshio; and Matsunaga, Toshio, 3,695,528.

Matsushita Electric Industrial Co., Ltd.: *See—*
Arimura, Ichiro; and Kurashina, Kouzo, 3,696,219.
Sugaya, Hiroshi; and Kanai, Kenji, 3,696,216.
Wakabayashi, Takashi; Hozumi, Shiro; and Sugihara, Kanji, 3,695,870.

Matsushita, Hidekatsu; and Ouba, Kenichi, to Kuraray Co., Ltd. Apparatus for crumpling sheet-like materials. 3,695,801, Cl. 425-193.000.

Matsushita, Shigenori; Sato, Fumitaka; and Miura, Haruhisa, to Tokyo Shibaura Electric Co., Ltd. Microprogram execution control for fault diagnosis. 3,696,340, Cl. 340-172.500.

Matsuura, Hirotsugu. Shock absorbing buffer. 3,695,665, Cl. 293-70.000.

Mattel, Inc.: *See—*
Baginski, Albert R.; Okada, David T.; and Stastny, Edwin O., 3,695,148.
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, 3,695,513.
Parker, John C.; and Johnson, Keith M., 3,694,958.

Matthews, Edward E. Fish grappling device. 3,694,952, Cl. 43-5.000.

Matthias, Guenther: *See—*
Schulz, Gerhard; Harrer, Erich; and Matthias, Guenther, 3,696,142.

Matuska, James E. Quickly removable, retractable snubbed pivot pin mechanism. 3,694,851, Cl. 16-49.000.

Matzner, Markus; McGrath, James E.; Manyik, Robert M.; and Walker, Wellington E., to Union Carbide Corporation. Lactam polymerization with diacyl methane initiators. 3,696,075, Cl. 260-78.001.

Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Aromatic acid diamides of diamino diphenyl sulfones. 3,696,131, Cl. 260-397.600.

Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Monoamides of monoamino diryl sulfones. 3,696,132, Cl. 260-397.600.

Maucher, Paul; and Steeg, Klaus, to Luk Lamellen und Kupplungslau GmbH. Clutch plate supported by stressed leaf springs. 3,695,404, Cl. 192-70.180.

Maucher, Paul; and Steeg, Klaus, to Luk Lamellen und Kupplungsbau GmbH. Clutch disc. 3,695,405, Cl. 192-106.200.

Maurer, Mel E.: *See—*
Zahradnik, George J.; and Maurer, Mel E., 3,695,535.

Mauro, Thomas G. Permanent garbage disposal apparatus for disposal of large volumes of garbage. 3,695,520, Cl. 241-43.000.

Maury, Lawson D. Compound mitering device. 3,695,318, Cl. 144-35.000.

Maxon, Glenway, Jr.; and Wright, William H. B., III. Machine for flame cutting gear racks. 3,695,599, Cl. 266-23.00k.

May, Denis Ronald William, to Hanger, J. E., and Company Limited. Knee joints for artificial legs. 3,694,823, Cl. 3-27.000.

Mayercord Co., The: *See—*
Barta, Franz; and Grupp, Alfred F., 3,694,928.

Mayerle, Evan A.; and Minderhout, James R., to Nalco Chemical Company. Electrosynthesis of tetraorganolead compounds. 3,696,009, Cl. 204-72.000.

Mayo, Frank H., to Champion Chemicals, Inc. Composition for removal of calcium sulfate deposits. 3,696,040, Cl. 252-87.000.

Maytag Company, The: *See—*
Rottering, Quintin N., 3,695,409.

Mc Alpin, Silvan E., to Mobil Oil Corporation. Depth sounder digitizer. 3,696,326, Cl. 340-3.00r.

Mc Donald, Robert L.; and Anderson, Edgar L., to Sybron Corporation. Sliding door sterilizer with power actuated seal. 3,694,962, Cl. 49-477.000.

Mc Intosh, Lionel D.; and Weber, Daniel E. Vehicle exhaust emissions analyzer. 3,696,247, Cl. 250-83.30h.

Mc Leod, John P. Grinding or polishing or glazing machine. 3,694,965, Cl. 51-93.000.

McCarty, Frederick J.; and Palopoli, Frank P. Treatment of anoxia with 3,5, dialkyl hydantoins. 3,696,198, Cl. 424-273.000.

McClain, Charles R., to Rohr Corporation. Two part door mounting and operating mechanism. 3,695,331, Cl. 160-187.000.

McCoy, Jerome D.: *See—*
Laymon, Marvin D.; McCoy, Jerome D.; and Schewe, Millard F., 3,696,369.

McCrink, Edward J. Sewerage disposal process and apparatus. 3,695,432, Cl. 210-67.000.

McCullough, Charles D., to Allied Chemical Corporation. Oscillating scraping mechanisms for coke oven jambs. 3,696,004, Cl. 202-241.000.

McCune, Ray F.; and Porter, Richard C. Concrete hardening method and composition. 3,695,906, Cl. 106-12.000.

McDonald, Thomas W., to Hughes Aircraft Company. Analog display using light emitting diodes. 3,696,393, Cl. 340-324.00r.

McFarland, Norman T., to Glass, Marvin, & Associates. Fluid operated chimes. 3,695,993, Cl. 161-7.000.

McGill, Howard L., to Schlumberger Technology Corporation. Retrievable well packer apparatus. 3,695,352, Cl. 166-129.000.

McGrath, James E.: *See—*
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Wieland, Peter; and McGrath, James E., 3,696,130.

McGrath, Mildred G., to McGrath-Hoffman & Associates. Mathematics teaching machine for primary grades. 3,694,932, Cl. 35-31.00b.

McGrath-Hoffman & Associates: *See—*
McGrath, Mildred G., 3,694,932.

McGuire, Robert J.; Mitchell, Edward; and Pellegrini, John P., Jr., to Gulf Research & Development Company. Method of removing oil from the surface of water and composition therefor. 3,696,051, Cl. 252-425.500.

McIntyre, John S.: *See—*
Harrod, John F.; Knight, Allan R.; and McIntyre, John S., 3,696,052.

McKinney, James C., to Grace, W. R., & Co. Corrugate-film laminate package material and package. 3,694,995, Cl. 53-30.000.

McKinney Manufacturing Company: *See—*
Gwozdz, Joseph W., 3,695,418.

McNeil Corporation: *See—*
Pamer, Karl A., 3,694,990.

McRae, David Milwain; and Watt, Andrew Douglas, to Hawker Siddeley Aviation Limited. Aircraft. 3,695,558, Cl. 244-83.00d.

Meadows, James H. Air-flow diverter for tractor-trailer rig. 3,695,673, Cl. 296-15.000.

Mego International, Inc.: *See—*
Houghton, Lionel, 3,694,957.

Meier-Windhorst, Christian August, to Artos D., Ing., Meier-Windhorst Kommanditgesellschaft. Moisture-and high-temperature treatment of fabrics before finishing operations. 3,695,826, Cl. 8-149.300.

Meinzer, Lester N.: *See—*
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., 3,695,583.

Menegatto, Carlo. Dobby mechanism for looms. 3,695,304, Cl. 139-78.000.

M.E.P.P.S. Manufacture d'Engins de Precision pour Peches Sportives: *See—*
Modeme, Robert L., 3,694,951

Merger, Franz: *See—*

Fuchs, Werner; and Merger, Franz, 3,696,005.
Mershon, Randolph J. Covered backwashers. 3,694,865, Cl. 24-95.000.
Mertens, Wolfgang, to Herzer, Kurt, Firma. Tilting device for head rest, in particular for vehicle seats. 3,695,699, Cl. 297-408.000.
Merz, Herbert: *See—*
Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, 3,695,734.
Messer, Ernst; and Singewald, Arno, to Wintershall Aktiengesellschaft. Method of recovering underground deposits of soluble minerals, and apparatus for carrying out the method. 3,695,711, Cl. 299-2.000.
Messer. Griesheim G.m.b.H.: *See—*
Munch, Gerhard; and Jager, Albert, 3,695,600.
Messer, Mayer Naoum: *See—*
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Meszaros, Zoltan; Knoll, Jozsef; and Szentmiklosi, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara. Pharmaceutical compositions containing homopyrimidazole derivatives. 3,696,197, Cl. 424-251.000.
Metabowerke Kg Closs, Rauch & Schnizler: *See—*
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Metal Improvement Company, Inc.: *See—*
Smith, Glenn D., 3,695,091.
Metal sliding window: *See—*
Gartner, Karl; and Gartner, Joseph, & Co., 3,694,959.
Metal-Matic, Inc.: *See—*
Mommsen, Adolph C., 3,695,645.
Momsen, Adolph C., 3,695,646.
Metcalf, Arnold; and Bateman, Willis. Steelmaking. 3,695,863, Cl. 75-60.000.
Metcalf, James F.; and Klingerman, Robert H., to Cragmet Corporation. Susceptor. 3,696,223, Cl. 219-10.490.
Metzdorf, Werner: *See—*
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Metzinger, Leonard L.: *See—*
Lawson, Robert R.; and Metzinger, Leonard L., 3,695,032.
Mevissen, Ernst A., to Dravo Corporation. Metal converting furnace apparatus. 3,695,602, Cl. 266-36.00p.
Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, to Victa Limited. Adjustable handle for lawnmowers. 3,694,855, Cl. 16-111.00a.
Meyer, Engelbert A., to USM Corporation. Solid cylindrical male fastener and structural assembly. 3,695,654, Cl. 287-189.36r.
Meyer, Gene P. Hair piece securing device. 3,694,819, Cl. 3-1.000.
Meyer, Gerhard: *See—*
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Meyer, Roy E.; and Stember, Daniel L., 3,696,241.
Meyer, Phillip A. Tractor attachment with variable speed drive unit. 3,695,716, Cl. 299-25.000.
Meyer, Roy E.; and Stember, Daniel L., to Meyer Manufacturing Inc. Light fixture tower. 3,696,241, Cl. 240-84.000.
Michael, Jacob F.: *See—*
Rainone, Nicholas J.; and Michael, Jacob F., 3,695,179.
Michael, Keith W.; and Dennis, William E., to Dow Corning Corporation. Method of producing 2-(chloromethyl)allyl substituted silanes. 3,696,138, Cl. 260-448.00e.
Michalowicz, Joseph C. Deductor for flow metering system and apparatus. 3,695,097, Cl. 73-113.000.
Micro-Miniature Parts Corporation: *See—*
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Micro-Poise Engineering & Sales Company: *See—*
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Miekka, Richard George: *See—*
Carlson, Lee Allen; and Miekka, Richard George, 3,695,874.
Miescher, Guido M., to Commercial Solvents Corporation. Process for the production of alkaline proteinase. 3,696,000, Cl. 195-65.000.
Mikos, Aloysius J.; and Dlugosinski, Theodore, to Seng Company, The. Sofa sleeper with seat height adjustment. 3,694,828, Cl. 5-13.000.
Mikuni Kogyo Co., Ltd.: *See—*
Ishida, Takashi, 3,695,245.
Milbar Corporation: *See—*
Daniels, Charles M., Jr., 3,694,834.
Milette, Kenneth A., to Samsonite Corporation. Pushbutton combination locks. 3,695,072, Cl. 70-312.000.
Miller, Albert T., to Devro, Inc. Collagen pulp beverage texturizer. 3,695,890, Cl. 99-78.000.
Miller, Walter L.: *See—*
Bakker, Donavon L.; and Miller, Walter L., 3,695,415.
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Minasy, Arthur J., to Knogo Corporation. Apparatus for article theft detection. 3,696,379, Cl. 340-280.000.
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Brown, Philip, 3,694,817.
Mintz, Maxie R. Post anchor. 3,694,978, Cl. 52-166.000.
Mintz, Michael D., to International Technidyne Corporation. Method and system for analyzing a liquid. 3,695,842, Cl. 23-230.00r.
Miquel, Jean: *See—*
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Miraldi, Peter Thomas, to American Sterilizer Company. Door assembly and chamber combination. 3,694,960, Cl. 49-209.000.
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Mita Industrial Company Limited: *See—*
Washio, Takaji; Tohi, Yasusuke; and Aizawa, Tatsuo, 3,695,754.
Mita, Kunio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflex camera with automatic exposure control. 3,695,159, Cl. 95-10.00c.
Mitchell, Edward: *See—*
McGuire, Robert J.; Mitchell, Edward; and Pellegrini, John P., Jr., 3,696,051.
Mitchell, John H. Remote control grapple carriage operated by yarding machine. 3,695,672, Cl. 294-112.000.
Mitchell, Roy O.; and Schmid, Hermann, to General Electric Company. High speed high accuracy sample and hold circuit. 3,696,305, Cl. 330-51.000.
Mitchell, Wallace F. Force measuring and indicating apparatus. 3,695,100, Cl. 73-141.00r.
Mitsubishi Denki Kabushiki Kaisha: *See—*
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Miyakawa, Seinan, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera controls. 3,695,157, Cl. 95-10.0ct.
Miyamatsu, Tsugio: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,695,306.
Miyano, Masateru, to Searle, G. D., & Co. 11,15-Dihydroxy-9-oxoprosta-8(12),13-dienoic acids and intermediate. 3,696,144, Cl. 260-514.000.
Miyaoka, Senri, to Sony Corporation. Cathode ray tube with plural beams for each color element. 3,696,261, Cl. 313-69.00c.
Mizutani, Katsushi, to Kabushiki Kaisha Rinnai Seisakusho. Radiant burner. 3,695,818, Cl. 431-328.000.
MMM Munchener Medizin Mechanik GmbH: *See—*
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Mobil Oil Corporation: *See—*
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Moffa, Dominick. Cigarette extinguisher. 3,695,277, Cl. 131-235.00r.
Mogi, Koya: *See—*
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Mogilner, Geoffrey A.; and Johnson, Rodney D., said Johnson assor. to said Mogilner, Geoffrey A. Tensegrity structure puzzle. 3,695,617, Cl. 273-156.000.
Mohr, Robert G., to Tartra Corporation. Ganging and stacking chair. 3,695,694, Cl. 297-248.000.

Moisson-Franckhauser, Francois, to Compagnie Generale d'Electricite. Cryostat current supply. 3,695,057, Cl. 62-514.000.
Moller, George O.: *See—*
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Mommsen, Adolph C., to Metal-Matic, Inc. Ball and socket pipe joint utilizing two resilient fingers with clip spring reinforcement. 3,695,645, Cl. 285-261.000.
Momsen, Adolph C., to Metal-Matic, Inc. Ball and socket pipe joint with clip spring. 3,695,646, Cl. 285-261.000.
Monitor Cabinets, a division of Comerco, Inc.: *See—*
Bucholz, Allan A., 3,695,190.
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Morey Corporation, The: *See—*
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Morey, William J., Sr., to Morey Corporation, The. Retractable cord reel assembly. 3,695,544, Cl. 242-107.00r.
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Mori, Lioi; and Ito, Katsuhiko. Device for distributing vibratory energy. 3,696,259, Cl. 310-8.000.
Mori, Minoru; and Kishikawa, Toshiro, to Fuji Shashin Koki Kabushiki Kaisha. Optical system for a color television camera. 3,696,202, Cl. 178-5.4st.
Mori, Takao, to Inouye Kinzoku Kogyo Kabishiki Kaisha. Filter belt with means forming therewith plural pressure filter chambers. 3,695,440, Cl. 210-225.000.
Morikawa, Hiroyuki, to Mitsubishi Petrochemical Company, Limited. Production of isoprene dimers. 3,696,108, Cl. 260-677.00r.
Moritz, Walter D. Artificial skeletal joint. 3,694,821, Cl. 3-1.000.
Morris, Carolyn Ethel Mary, to Imperial Chemical Industries Limited. Process for improving the adhesion of polyolefin surfaces. 3,695,915, Cl. 117-47.00a.
Morris, Douglas Barrett: *See—*
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Morris, Ross E., to United States of America, Navy. Plasticized compositions. 3,696,066, Cl. 260-23.70h.
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Kline, Arthur J., Jr., 3,696,306.
Lace, Melvin A., 3,696,260.
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Motoyama, Kazuyasu; Sawaki, Ryoichi; and Nakamura, Takeaki, to Olympus Optical Co., Ltd. Device using a recording jack for preventing erasure of recorded information from magnetic tape in a tape recorder. 3,696,217, Cl. 179-100.20d.
Mott, Ludwig; Muller, Richard; Dinges, Karl; and Krauss, Heinz-Walter, to Farbenfabriken Bayer Aktiengesellschaft. Thermosetting reflow resins of copolymers of alkyl methacrylates. 3,696,063, Cl. 260-17.00r.
Mott, Willard, to Shell Oil Company. Automatic engine starter. 3,696,333, Cl. 340-52.00r.
Moulds, Gordon M., to Du Pont de Nemours, E. I., and Company. Porous aromatic polyamide fiber. 3,695,992, Cl. 161-178.000.
Moyroud, Louis M. Photocomposing machine. 3,695,156, Cl. 95-4.500.
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Mukai, Kazue; and Odahara, Hisao, said Odahara assor. to said Mukai, Kazue. Picture frame. 3,694,947, Cl. 40-152.000.
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Munch, Gerhard; and Jager, Albert, to Messer. Griesheim G.m.b.H. Apparatus for flame scarfing the surfaces of crude blocks, billets, ingots and similar workpieces. 3,695,600, Cl. 266-23.00h.
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Murphy, John D. Portable alarm device. 3,696,380, Cl. 340-283.000.
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Myers, Herman A. Wrench head. 3,695,124, Cl. 81-121.00r.
Nagasaki, Michisuke, to Yanmar Diesel Engine Co., Ltd. Reverse and reduction gear for ships. 3,695,401, Cl. 192-21.000.
Nagel, Hans. Modular candelabrum. 3,695,458, Cl. 211-177.000.
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National Research Development Corporation: *See—*
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Nayfa, James E. Cotton gin rib. 3,694,857, Cl. 19-62.000.
Nealon, Ivan W. Approach computer for aircraft. 3,695,034, Cl. 58-152.20r.
Neary, Robert J.: *See—*
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Nelson, Gunner E., to Ethyl Corporation. Chemical reducing agents of enhanced hydrocarbon solubility. 3,696,047, Cl. 252-188.000.
Nelson, Gunner E., to Ethyl Corporation. Method of stabilizing sodium aluminum diethyl hydride. 3,696,136, Cl. 260-448.00a.
Nemoto, Hidetaro: *See—*
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Neumann, Gerhard, to Delbay-Liftfilter Gesellschaft mit beschrankter Haftung. Roller strip filter for purifying air or gases. 3,695,008, Cl. 55-354.000.
Neuzil, Richard W. Hydrocarbon separation process. 3,696,107, Cl. 260-674.50a

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Nishihara, Yoshio. Carbureter of the overflow type. 3,695,590, Cl. 261-36.00a.
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Irie, Namio; and Ichimura, Hirohisa, 3,695,122.
Ishida, Hideo, 3,695,570.
Noble, Robert L., to Fowler, Knobbe & Martens. Cottering device. 3,695,140, Cl. 85-8.300.
Nolin, Roger J., to Tool Research & Engineering. Door knob retaining apparatus. 3,695,664, Cl. 292-352.000.
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Brody, Norman M., 3,695,982.
Norris, Leon F., to Sherritt Gordon Mines Limited. Preparation of powder metallurgy compositions containing dispersed refractory oxides and precipitation hardening elements. 3,695,868, Cl. 75-206.000.
North American Rockwell Corporation: *See—*
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Nylen, Roland, to Allmanna Svenska Elektriska Aktiebolaget. Mechanism for testing electrical equipment. 3,696,296, Cl. 324-158.00p.
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Office National d'Etudes et de Recherches: *See—*
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Olcott, Eugene L., to United States of America, Air Force. Method of mounting a nozzle insert. 3,694,883, Cl. 29-157.00c.
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Ollinger, James C.; Wolf, Herbert R., Jr.; and Latour, Yves, to Armstrong Cork Company. Metal-clad acoustical ceiling tile and its manufacture. 3,695,395, Cl. 181-33.00g.
Olsen, Benny; and Olsen, Zenny, to Allied Control Company, Incorporated. Rotary input/feedback mechanical servo valve. 3,695,295, Cl. 137-625.690.
Olsen, Howard E.: *See—*
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Olsson, Billy E., to Berg Electronics, Inc. Flat conductor cable connector. 3,696,319, Cl. 339-17.00f.
Olsson, Sven O. Container spout. 3,695,488, Cl. 222-570.000.
Olympus Optical Co., Ltd.: *See—*
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Ormerod, Reginald; and Motler, Richard, to T. M. M. (Research) Limited. Textile spinning machines. 3,695,021, Cl. 57-58.910.

Orr, Alexander L., to Renton Engineering Company. Photolithographical image processing apparatus. 3,695,760, Cl. 355-95.000.
Orshansky, Elias, Jr., to URS Corporation. Hydrostatic motor or pump and hydrostatic transmissions. 3,695,146, Cl. 91-478.000.
Ortel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Contrast in computer generated photoetching masks. 3,695,875, Cl. 96-27.000.
Osawa, Hiroshi: *See—*
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Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, to Boehringer, C. H., Sohn. N,N-bis[1-amido 2,2,2 trichloro-ethyl] piperazine. 3,696,106, Cl. 260-268.00r.
Osteen, Mitchell M. Air filter device. 3,695,009, Cl. 55-385.000.
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Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.
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Otani, Yasuhiko, to Kobe Steel, Ltd. Apparatus for continuously winding up a linear product such as wire. 3,695,525, Cl. 242-255.00a.
Otani, Yasuhiko; and Ikegami, Yoshio, to Kobe Steel, Ltd. Apparatus for continuously winding up linear products such as wire. 3,695,526, Cl. 242-25.00a.
Otero, Richard J. Broadcast communication system including a plurality of subscriber stations for selectively receiving and reproducing one or more of a plurality of transmitted programs each having a unique identifying code associated therewith. 3,696,29, Cl. 325-55.000.
Otmar, Zajicek: *See—*
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Oushige, Takayoshi; and Iizuka, Kikuo, to Hitachi, Ltd. Long cycle transistor astable multiveleator. 3,696,311, Cl. 331-113.00r.
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Packert, Anton; and Dietrich, Werner. Hinged container. 3,695,419, Cl. 206-45.340.
Paddington, Arthur L., to British Ropes Limited. Pipe coupling. 3,695,635, Cl. 285-38.000.
Palacio, Luis M.: *See—*
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Paoli, Thomas Lee; and Ripper, Jose Ellis, to Bell Telephone Laboratories, Incorporated. Mode-locking in semiconductor lasers. 3,696,310, Cl. 331-94.500.
Papajewski, Reinhold; and Kleinschmidt, Johann, to Singer Company, The, mesne. Thread-pull-off and wiping mechanism for sewing machines. 3,695,200, Cl. 112-242.000.
Pape, Wayne; and Hall, Doyle J., to U. S. Plywood Champion Papers, Inc. Glue spreader. 3,695,225, Cl. 118-239.000.
Paper Converting Machine Company, Inc.: *See—*
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Papst, Hermann E. R. Two-stroke internal combustion engine. 3,695,239, Cl. 125-65.0pd.
Paradysz, Louis F.: *See—*
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Parker, Eric George, to General Motors Corporation. Mechanism for opening and closing a cover for a concealed windshield wiper system. 3,694,846, Cl. 15-250.160.
Parker, John C.; and Johnson, Keith M., to Mattel, Inc. Wheel and axle assembly having an entrapped thrust bearing. 3,694,958, Cl. 46-201.000.
Parker, Robert W.: *See—*
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Parsons, Charles H., to Edwards Company, Inc. Ground detector system having fast response and decoupling of detector circuit. 3,696,366, Cl. 340-255.000.
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Parsons, Ronald W., to Allcock, Laight & Westwood Limited. Carriage for skis. 3,695,495, Cl. 224-29.00r.
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Pathe Equipment Company, Inc.: *See—*
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Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry. Carboxylation of acetylenic compounds. 3,696,146, Cl. 260-515.00r.
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Paul, Claude; and Cheron, Henri, to Azote et Produits Chimiques. Magnesia supports for catalysts in hydrocarbon reforming. 3,695,856, Cl. 48-214.000.
Pazhia, Vincent B.; and Bossler, Franklin B., to Textron, Inc. Quiet jet discharge nozzle. 3,695,388, Cl. 181-33.00f.
Pearson, Samuel J.: *See—*
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Peery, Walter E. Frictional torque transferring apparatus with a liquid mercury cooling system. 3,695,407, Cl. 192-113.00b.
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Perdue, Richard R.; Hoagland, Le Roy F.; and Kuehne, Richard O., to Grace, W. R., & Co. Vacuum skin package and process and apparatus for making same. 3,694,991, Cl. 53-22.00a.
Perga, Martin W.; and De Palma, Ted V. Self-cleaning catalytic converter. 3,695,850, Cl. 23-288.00f.
Perga, Martin W., to Universal Oil Products Company. Exhaust gas catalytic converter. 3,695,851, Cl. 23-288.00f.
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Perkins, Earl Stuart, to Butler National Corporation. Rectilinear navigation system. 3,696,426, Cl. 343-107.000.
Peronneau, Georges, to Thomson-CSF Visualisation et Traitement des Indormations (T.V.T.). System for the display of synthesized graphic smybols. 3,696,391, Cl. 340-324.00a.

Perron, Yvon G.; and Douglas, James L., to Bristol-Myers Company. Process for the preparation of 1-indancarboxylic acids. 3,696,145, Cl. 260o515.00r.

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Pesch, Albert Tho; and Maassen, Wilhelm, to Reiner, Walter. Driver drum in yarn winding machines. 3,695,522, Cl. 242-18.0dd.

Peters, Theodore F., to General Motors Corporation. Seat belt retractor. 3,695,545, Cl. 242-107.400.

Petersen, Richard E.: *See—*
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Petersen, William H., to Shell Oil Company. Method and apparatus for connecting flowlines to underwater wellheads. 3,695,350, Cl. 166-.500.

Peterson, James W.; and Tempka, John A., to Motorola Inc. Data transferring system utilizing a monitor channel and logic circuitry to assure secure data communication. 3,696,210, Cl. 179-15.0bf.

Peterson, Rex W. Valve shock dampener. 3,695,241, Cl. 123-90.450.

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Petit, Robert. Continuous casting machine with controlled extractor movement. 3,695,342, Cl. 164-268.000.

Petrol Injection Limited: *See—*
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Pfeiffer, Paul O.; and Grucella, Frank J., to General Tire & Rubber Company. Method of producing an improved inner tube. 3,695,961, Cl. 156-122.000.

Pfender, Emil, to PPG Industries, Inc. Method of preparing metal oxides with arc gas heaters. 3,695,840, Cl. 23-202.00v.

Pfizer Inc.: *See—*
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Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, 3,694,855.

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Pierce, John A., to LTV Electrosystems, Inc., mesne. Method and apparatus for very low frequency radio navigation. 3,696,424, Cl. 343-105.00r.

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Pifferi, Giorgio, to Gruppo Lepetit S.p.A. Substituted 2-benzoyl- and 2-cinnamoyl-isoxazolidines. 3,696,096, Cl. 260-240.00j.

Pike, Roscoe A., to United Aircraft Corporation. Process for regenerating surface activity in oxidatively treated graphite fibers. 3,695,916, Cl. 117-47.00r.

Pilch, Kurt: *See—*
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Pittman, Forrest C., to Halliburton Company. Apparatus and method for pipeline testing. 3,695,301, Cl. 138-97.000.

Pitts, Bobby L. Textile package adaptor. 3,695,561, Cl. 242-46.400.

Pitts, Curtis H. Biplane construction. 3,695,557, Cl. 244-45.00r.

Pittsburgh Corning Corporation: *See—*
Heagler, Richard B., 3,695,810.

Plastofilm Industries, Inc.: *See—*
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Mascetti, Joseph A., Jr., 3,695,514.

Platz, Stephan: *See—*
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Pleuco-Gesellschaft mbH: *See—*
Wolker, Karl, 3,695,865.

Ploughman, Leonard K., to Atwood Vacuum Machine Company. Latch for vehicle doors. 3,695,662, Cl. 292-216.000.

Pluckhahn, Patrick J. Sawing timber. 3,695,316, Cl. 143-32.000.

Pogonowski, Ivo C.; and Carmichael Paul D., to Texaco Inc. Underwater liquid storage facility. 3,695,047, Cl. 61-46.500.

Pogorski, Louis A., 55% to Gulf Oil Canada Limited, and and 45% to Chemical Projects Limited. Thermal insulation and thermally insulated device. 3,695,483, Cl. 220-9.00c.

Polar Ware Company: *See—*
Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., 3,694,825.

Polaroid Corporation: *See—*
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Hoffman, Arnold, 3,695,876.
Land, Edwin, 3,695,884.

Policlinica de Stomatologie Protetica: *See—*
Costa, Eugen; Ene, Lucian; Dumitrescu, Stelica; and Covaci, Ioan, 3,695,333.

Polin, Jerry, to Alco Standard Corporation. Method for applying a flowable substance to a workpiece. 3,695,911, Cl. 117-34.000.

Pollock, Gordon J., to Mills Company, The. Partition structure. 3,694,975, Cl. 52-36.000.

Pomella, Piero; Baratto, Elia; and Lauro, Luciano, to Olivetti, Ing. C., & C., S.p.A. Analog to digital converters having multiple units of measurement. 3,696,398, Cl. 340-347.0ad.

Pommier, Pierre, to Societe Anonyme dite: CEFILAC. Method of setting fire rings in cylinder head gaskets. 3,694,889, Cl. 29-412.000.

Pool, Morris F.: *See—*
Kaufman, Vern F.; Klose, Alvin A.; and Pool, Morris F., 3,694,856.

Porous Plastics Limited: *See—*
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Porter, Richard C.: *See—*
McCune, Ray F.; and Porter, Richard C., 3,695,906.

Porter, Wilson B.; and Klein, Harold T., said Porter assor. to Robbins, James S., and Associates, Inc. and said Klein assor. to Robbins Company, The. Earth drilling machine. 3,695,364, Cl. 173-57.000.

Possberg, Jobst; Rostock, Kai; Nickl, Eligius; Otmar, Zajicek; and Helmut, Klapp. Process for the preparation of polyvinyl chloride polymerizates suitable for vinyl pastes. 3,696,079, Cl. 260-78.5cl.

Post, Hendrik Alle: *See—*
Sie, Tjwan Khing; and Post, Hendrik Alle, 3,695,478.

Post Office, The: *See—*
Finn, Frederick George, 3,695,309.

Postlethwaite, Harvey Ernest, to Imperial Chemical Industries Limited. Carburettor containing porous material e.g. foamed plastic. 3,695,593, Cl. 261-96.000.

Potter, Roderick B., to Kelley Company, Inc. Light fixture for a loading dock. 3,696,240, Cl. 240-73.0bj.

Pourrias, Bernard M.: *See—*
Raynaud, Guy M.; Fauran, Claude P.; Turin, Michel J.; Pourrias, Bernard M.; and Huguet, Gerard J., 3,696,100.

Powell Manufacturing Company, Inc.: *See—*
Hammond, Walter Cecil, 3,695,013.

PPG Industries, Inc.: *See—*
Dear, Terrence A., 3,695,497.
Dear, Terrence A., 3,695,498.
Pfender, Emil, 3,695,840.

Preiskel, David. Bricklaying devices. 3,695,571, Cl. 249-53.000.

Preiss, Richard B., to Tektronix, Inc. Data terminal-computer serial interface system having automatic Baud rate switching. 3,696,338, Cl. 340-172.500.

Prescott, Burnerd Clark. Disc and sidebar cylinder lock. 3,695,073, Cl. 70-366.000.

Presley, C. Travis: *See—*
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Prikhna, Alexei Iosifovich Alexei: *See—*
Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich Alexei; Shulzhenko, Alexandr Alexandrovich; and Gerasimovich, Alexei Vladimirovich, 3,695,797.

Products Findus S.A.: *See—*
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Produits Chimiques Pechiney-Saint-Gobain: *See—*
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Pudek, Marian Franciszek: *See—*
Worster, Hans Edmund; and Pudek, Marian Franciszek, 3,695,994.

Pugh, Mary A. Portable shampooing unit. 3,694,826, Cl. 4-159.000.

Pugliese, Joseph A., to Hoke Incorporated. Pipe coupling. 3,695,647, Cl. 285-341.000.

Pullan, Ronald C., to Knape & Vogt Manufacturing Company. Bracket construction. 3,695,569, Cl. 248-235.000.

Pullman, James O.; and Weidlich, William R., to Liggett & Myers Incorporated. Relative carbon content meter for smoke filters. 3,696,299, Cl. 324-61.00r.

Pulsifer, Gary Raymond. Holder device for infant's nursing bottle. 3,696,233, Cl. 219-535.000.

Pussell, Clarence R. Electrically operated temperature sensing assembly. 3,695,112, Cl. 73-362.0ar.

Putnam, Monroe P. Reversible chair with a reversible cushion cover. 3,695,691, Cl. 297-223.000.

Pye Limited: *See—*
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Quartermus, George D.: *See—*
Thompson, Donald F.; and Quartermus, George D., 3,695,923.

Quatrano, John, to Bendix Corporation, The. Plate-type air valve carburetor. 3,695,592, Cl. 261-50.00a.

Quayle, Joshua Creer; and Greatrix, Graham Roland. Apparatus for the detection of mastitis in milk animals. 3,695,230, Cl. 119-14.140.

Queenan, James F.: *See—*
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., 3,696,235.

Quick Cable Corporation: *See—*
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Ractivand, Theodore Demetrius: *See—*
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Rader Pneumatics Incorporated: *See—*
Farnworth, Wilfred, 3,695,007.

Radiation Incorporated: *See—*
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Radobenko, William, to Automated Equipments Corporation. Die bonder apparatus. 3,695,501, Cl. 228-3.000.

Raes, Andre, to Glaverbel S.A. Handling device. 3,695,459, Cl. 214-1.00q.

Rainone, Nicholas J.; and Michael, Jacob F., to Westinghouse Electric Corporation. Electrically-actuable ignitor for passenger restraint system employing an inflatable cushion. 3,695,179, Cl. 102-70.20r.

Rak, Stanley F.: *See—*
Lyall, Charles E.; and Rak, Stanley F., 3,695,446.

Ralston Purina Company: *See—*
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Randolph, Alan D.; and Crawford, Rufus W., to Battelle Development Corporation, The, mesne. Sucrose nucleation composition and method of preparation. 3,695,932, Cl. 127-30.000.

Rank, William E.; and Dafler, Gene L., to General Motors Corporation. Method for manufacturing a high speed squirrel cage rotor. 3,694,906, Cl. 29-598.000.

Rapistan Incorporated: *See—*
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Rappold, Hermann, & Co. GmbH: *See—*
Uerlichs, Johannes; and Muller, Rudolf, 3,695,286.

Raser, William H. Graph-reading digital converter. 3,696,397, Cl. 340-347.0ad.

Rasmussen, Reed. Camper loading and unloading device. 3,695,472, Cl. 214-517.000.

Ratin, Valentin Isidorovich: *See—*
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Ratnikas, Jonas, to Ford Motor Company. Actuator rod connector. 3,695,652, Cl. 287-93.000.

Rau, Winfried, to J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik. Apparatus for felling linings on fur garments. 3,695,197, Cl. 112-177.000.

Raue, Roderich; and Wolf, Karlheinz, to Farbenfabriken Bayer Aktiengesellschaft. Solutions containing a basic dyestuff and an α-or β-hydroxy- or loweralkoxy loweralkylnitrile. 3,696,089, Cl. 260-156.000.

Raussendorf & Co. G.m.b.H. Maschinenfabrik: *See—*
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Raymond, Fernand: *See—*
Fabre, Pierre; Giroud-Garampon Robert; Gondrand, Michel; and Raymond, Fernand, 3,695,909.

Raynaud, Guy M.; Fauran, Claude P.; Turin, Michel J., Pourrias, Bernard M.; and Huguet, Gerard J., to Delalande S.A. N-(6-Methyl-6-ol-2-heptyl-N'-substituted piperazines. 3,696,100, Cl. 260-247.50r.

Razmerov, Vladimir Ivanovich: *See—*
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Clay, Burton Ross, 3,695,744.
Phillips, Kevin John, 3,695,554.
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Weimer, Paul Kessler, 3,696,250.

Re, Jerry Peter, to Borden, Inc. Stable phenolic adhesive mix. 3,696,064, Cl. 260-17.200.

Readio, Philip D.: *See—*
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Redifon Limited: *See—*
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Rediger, John R.: *See—*
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Reese, Richard T.; and Weatherman, Nile Ray. Thief proof fuel system. 3,695,287, Cl. 137-354.000.

Regie Nationale des Usines Renault: *See—*
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Rehberg, Rolf; and Wiskott, Erik, to Therachemie Chemisch Therapeutische Gesellschaft mbH. Dyeing human hair with N-aryl-sulfonamides and aromatic amines. 3,695,823, Cl. 8-10.200.

Rehberg, Rolf. Dyeing human hair with isoxazolone coupling component. 3,695,824, Cl. 8-10.200.

Reichle, Walter T.: *See—*
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Reinhardt, Robert L., to Clark Equipment Company. Dump vehicle. 3,695,709, Cl. 298-9.000.

Reinke, William C., to Ralston Purina Company. Method of producing an improved flavored poultry product. 3,695,892, Cl. 99-107.000.

Reinsch, Edward: *See—*
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Renckhoff, Gustav: *See—*
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Rendle, David Forbes: *See—*
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Renn, Charles E. Cell assembly. 3,695,229, Cl. 119-4.000.

Renner, Howard W.; and Moores, John A., to Cincinnati Milacron Inc Guard system for high speed grinder. 3,694,971, Cl. 51-267.000.

Renton Engineering Company: *See—*
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Research Association of British Paint, Colour & Varnish Manufacturers, The: *See—*
Saunders, John Allen, 3,696,054

Resneau, Jean-Claude, to Thomson-CSF. Process for manufacturing microwave capacitors. 3,695,954, Cl. 156-3.000.

Reusser, Robert E., to Phillips Petroleum Company. Isobutene and/or isoamylenes from cat poly gasoline. 3,696,165, Cl. 260-683.00d.

Rex Chainbelt Inc.: *See—*
Siesennop, W. Wayne; Gibbs, Norman E.; and Bartz, Edward S., 3,695,147.

Reynolds, George A.; Laakso, Thomas M.; Borden, Douglas G.; and Williams, Jack L. R., to Eastman Kodak Company. Light-sensitive polymers. 3,696,072, Cl. 260-47.0ep.
Reynolds Metals Company: *See—*
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Rhone-Poulenc S.A.: *See—*
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Richter, Fred Eric, to RCA Corporation. Fabricating relatively thick ceramic articles. 3,695,960, Cl. 156-89.000.
Richter, Hans H., to Leesona Corporation. Twister and method of twisting. 3,695,020, Cl. 57-77.400.
Rieger, Arnulf; and Rohm, Fritz. Device for covering a partial baldness. 3,695,278, Cl. 132-53.000.
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Rodgers, Wilfred Newrick, to International Combustion (Holdings) Limited. Valves. 3,695,299, Cl. 138-94.300.
Rodi, Fritz, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of ferromagnetic chromium dioxide. 3,696,039, Cl. 252-62.510.
Rodriguez, Herman Robert; and De Stevens, George, to Ciba-Geigy Corporation. 2,4-Benzodiazepines. 3,696,093, Cl. 260-239.0bd.
Rodriquez, Jorge. Leaching process. 3,695,849, Cl. 23-270.000.
Rodwin, Stephen Anthony; and Shuffler, Eustace Cosmo, to Dominion Engineering Works, Ltd. Sonic drying of webs. 3,694,926, Cl. 34-69.000.
Rogers, Dow A., Jr., to Westinghouse Electric Corporation. Novel micaceous insulation. 3,695,984, Cl. 161-93.000.
Rogers, Gerald L., to Stile-Craft Manufacturers, Inc. Heated nebulizer spray unit. 3,695,516, Cl. 239-135.000.
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Rolland, William C., to Donaldson Company, Inc. Filter assembly with pleated filter element. 3,695,012, Cl. 55-499.000.
Roller, Max F., to Art Drapery Studios, Inc. Tension drapery. 3,695,329, Cl. 160-84.000.
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Rottering, Quintin N., to Maytag Company, The. Token-actuated control circuit. 3,695,409, Cl. 194-4.00c.
Rottmayr, Friedrich; and Reimann, Hans, to Linde Aktiengesellschaft Zentrale Patentabteilung. Process for production of pure ethylene. 3,695,002, Cl. 55-62.00p.
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Ruekberg, Herbert S., to Continental Can Company, Inc. Tamper-indicating and child-proof closure. 3,695,476, Cl. 215-9.000.
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Runton, Leslie A., to Stevens, J. P., & Co., Inc. Apparatus for imparting stretch characteristics to woven fabrics. 3,695,064, Cl. 68-5.00e.
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut. Process for reducing the thiourea and sulfate content of alkali- and alkaline earth metal rhodanides. 3,695,832, Cl. 423-366.000.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method and apparatus for production of glass fibers. 3,695,858, Cl. 65-2.000.

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Sakashita, Hitoshi; and Mitsui, Tsutomu, to Aisin Seiki Kabushiki Kaisha. Sewing machine for automatic backtacking. 3,695,198, Cl. 112-203.000.
Sakomura, Toshio; Yoshida, Toshiro; Fujita, Yoshihiro; and Shinbara, Hideo, to Toyo Soda Manufacturing Co., Ltd. Graft copolymer of vinyl chloride onto high molecular weight polytetrahydrofuran. 3,696,173, Cl. 260-899.000.
Salinger, Fred G., to Baxter Laboratories, Inc. Range apparatus. 3,696,232, Cl. 219-451.000.
Salomon, Georges Pierre Joseph, to S.A. Francois Salomon et Fils. Ski boot. 3,694,937, Cl. 36-2.5al.
Salomon, Georges Pierre Joseph. Ski binding. 3,695,625, Cl. 280-11.35t.
Salyer, Walter; and Huffaker, James E. Method of producing autostereo pictures. 3,695,878, Cl. 96-40.000.
Salzmann, Willi. Crank assemblies for machines having reciprocating pistons. 3,695,150, Cl. 92-169.000.
Sams, Ronald G. Survival bag. 3,695,507, Cl. 229-53.000.
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Sato, Suguru, to Nippon Denso Kabushiki Kaisha. Method of forming carrier means for carrying and cooling semi-conductor rectifier elements for an alternating current lighting generator for motor vehicles. 3,694,898, Cl. 29-477.000.
Sato, Takeshi: *See—*
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Satterthwaite, James Glenn; and Macy, James B., Jr. Inflatable coupling. 3,695,637, Cl. 285-97.000.
Sattler, Frank A., to Westinghouse Electric Corporation. Conductors insulated with a polymeric amide-imide-ester and an aromatic polyimide or aromatic polyamide-imide overcoat. 3,695,929, Cl. 117-218.000.
Saunders, John Allen, to Research Association of British Paint, Colour & Varnish Manufacturers, The. Paint compositions. 3,696,054, Cl. 252-511.000.
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Schaack, Kurt. Magnet drive for take up spool spindle in circular knitting machines. 3,695,062, Cl. 66-151.000.
Schadlich, Fritz, to Bosch, Robert, G.m.b.H. Torque and impulse transmitting machine. 3,695,365, Cl. 173-109.000.
Schaefer, Hans-Joachim. Lighter. 3,695,815, Cl. 431-135.000.
Schaeuble, Edwin K., to Paper Converting Machine Company, Inc. Coating apparatus. 3,695,221, Cl. 118-203.000.
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Schmidt, Ernst G. F. H.; Walkowsky, Bernhard; Grote, Wilfried Christoph; and Janssen, Matthias; deceased (by Janssen, Elizabeth Charlotte; executrix), said Schmidt, said Walkowsky, and said Grote assors. to Jacobs, Joh., & Co. Filter for filtering coffee. ,695,167, Cl. 99-306.000.
Schmidt, Henry Jr., to Industrial Filter & Pump Mfg. Co. Filter apparatus. 3,695,443, Cl. 210-315.000.
Schmidt, Henry, Jr.; Crain, Richard W.; and Zievers, James F., to Industrial Filter & Pump Mfg., Co. Skimming device. 3,695,451, Cl. 210-526.000.
Schmitt, Henri Francois Marie; and Marande, Claude, to Societe de l'Aerotrain. Devices for supplying the pressurised fluid cushions of a ground-effect vehicle. 3,695,382, Cl. 180-116.000.
Schmunk, John D., to Hancock Brick & Tile Company, The. Corrugated tube coupling means. 3,695,643, Cl. 285-156.000.
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, to Bosch, Robert, G.m.b.H. Arrangement for preventing the skidding of wheels of a motor vehicle. 3,696,270, Cl. 317-5.000.
Schneider, Willy. Repair piece for automobile bodies. 3,695,796, Cl. 425-12.000.
Schneider, Wolfgang, to Goodrich, B. F., Company, The. Preparation of 5-ethylidenebicyclo(2.2.1) hept-2-enes. 3,696,157, Cl. 260-666.0py.
Schnizler, Albrecht, Jr., to Metabowerke Kg Closs, Rauch & Schnizler. Heat insulation means for power tools. 3,695,344, Cl. 165-147.000.
Schoonover, Stanley C.; and Luckenbach, Lester R., to Litton Industries, Inc. Offset size adjustment circuit for grinding machines. 3,694,970, Cl. 51-165.710.
Schrage, Albert; and Finestone, Arnold B., to Dart Industries Inc. Synergistic blends of modified polyolefins and unmodified polyolefins. 3,696,069, Cl. 260-41.00r.
Schrage, Albert; and Readio, Philip D., to Dart Industries Inc. Modified polyolefin containing reaction unsaturated oxirane in the presence of the polyolefin and peroxide. 3,696,169, Cl. 260-836.000.
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Schulz, Gerhard; Harrer, Erich; and Matthias, Guenther. Production of cyclohexenyl acetate. 3,696,142, Cl. 260-488.00r.
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Schumacher, Heinz Otto. Process and apparatus for de-sliming vegetable oils. 3,696,030, Cl. 210-21.000.
Schuman, Mark. Temporary tire for automotive vehicles. 3,695,325, Cl. 152-225.000.
Schussler, Hans-Joachim; and Scharf, Rolf, to Henkel & Cie G.m.b.H. Anti-foaming compositions and cleaning compositions containing them. 3,696,057, Cl. 252-544.000.
Schwaiger, John E. Anti-theft device for trailer. 3,695,631, Cl. 280-507.000.
Schwartz, Bernard Paul Manfred. Mounting of sealed double glazing units. 3,694,984, Cl. 52-398.000.
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Schwerdhofer, Hans Joachim, to Fichtel & Sachs AG. Plastic bicycle wheel assembly and mold for making the same. 3,695,729, Cl. 301-63.0pw.
Sciambi, Attilio F., Jr., to Radiation Incorporated. Independent mode antenna feed system. 3,696,434, Cl. 343-776.000.
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Serra, Juan Duarry. Collapsible inflatable boat. 3,694,836, Cl. 9-2.00a.
Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
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Sevenich, Theodor; Zahn, Friedrich; and Zens, Peter, to Maschinen- und Werkzeugbau GmbH. System for the replacement of rolling-mill rolls. 3,695,080, Cl. 72-239.000.
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Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., to Abcor Water Management Company, Inc., mesne. Support for semi-permeable membrane. 3,695,964, Cl. 156-161.000.
Shaltis, Robert J., to Hastings Manufacturing Company. Oil Filter with improved anti-drainback valve. 3,695,437, Cl. 210-136.000.
Shank, Joseph L. Edible films and casings of collagen and casein. 3,695,902, Cl. 99-176.000.
Shannon, John K., to Quick Cable Corporation. Method of making battery post terminal clamp. 3,695,336, Cl. 164-98.000.
Shano, Charles L. Electrical pulse source including a movable control element varying the reluctance of a magnetic field through a winding connected to a difference amplifier of a signal processing circuit. 3,696,257, Cl. 307-309.000.
Sharan, Harendra Nath, to Sulzer Brothers Limited. Muffle burner. 3,695,817, Cl. 431-178.000.
Sharp, Paul H., to Columbia Broadcasting System, Inc. Variable distance doppler generator. 3,695,385, Cl. 181-31.00b.
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Shedyak, Albert T., to Curtis & Marble Machine Company. Cradle. 3,695,533, Cl. 242-55.000.
Sheetz, Charles E., to FMC Corporation. Apparatus for delivering singulated fruit, weighing and bagging it. 3,695,371, Cl. 177-59.000.
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Sienkiewicz, Boleslaw; and Bagley, Ferdinand A., to General Foods Corporation. Process and apparatus for agglomeration. 3,695,165, Cl. 99-236.00c.
Sieron, Richard L., to Dual-Lite Company. Low electrolyte level alarm devices. 3,696,362, Cl. 340-244.00c.
Siesennop, W. Wayne; Gibbs, Norman E.; and Bartz, Edward S., to Rex Chainbelt Inc. Hydraulic pump or motor. 3,695,147, Cl. 91-498.000.
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Smith, Andrew I.; and Bryan, Roland J., Jr., to Monsanto Company. Antistatic nylon filaments. 3,696,078, Cl. 260-78.00s.
Smith, Colin, to Lummus Company, The. Pressure vessel seal. 3,695,482, Cl. 220-46.0ms.
Smith, David R., to Staley, A. E., Manufacturing Company. Vinylidene chloride long chain alkyl ester polymers. 3,696,082, Cl. 260-80.800.
Smith, Donald J.; and Foster, Seth, to Smith-Schreyer & Assoc., Inc. Telephone patch system. 3,696,320, Cl. 339-18.00b.
Smith, Glenn D., to Metal Improvement Company, Inc. Method of and apparatus for measuring intensity of peening in small diameter holes. 3,695,091, Cl. 73-11.000.
Smith, John D.: *See—*
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Smith, John R., to Alamance Industries, Inc. Maternity panty hose garment and method. 3,694,816, Cl. 2-224.00r.
Smith, Raymond L., Jr.: *See—*
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Smith, Richard E., to Xerox Corporation. Sheet stripping apparatus. 3,695,756, Cl. 355-3.000.
Smith, Robert Earl: *See—*
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Smith, Thomas C., to Micro-Poise Engineering & Sales Company. Universally tiltable static balance testing apparatus with adjustable work gripping mechanism. 3,695,114, Cl. 73-485.000.
Smith, Victor Frederick, to Davey, F. W., and Company Proprietary Limited. Liquid pressure accumulator systems. 3,695,296, Cl. 138-30.000.
Smith-Schreyer & Assoc., Inc.: *See—*
Smith, Donald J.; and Foster, Seth, 3,696,320.
Smyth, James A.; and Whitaker, William T., to Zippo Manufacturing Company. Key connector. 3,695,074, Cl. 70-456.00r.
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Snyder, Frank M. Stabilized antibiotic and method. 3,696,189, Cl. 424-38.000.
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Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Greiner, Gerard, 3,695,038.
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Soeda, Shigeki; and Nemoto, Hidetaro, to Nippon Kokan Kabushiki Kaisha. Reciprocating mold continuous casting apparatus. 3,695,341, Cl. 164-260.000.
Sogabe, Ichita: *See—*
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Solomka, Monroe M.; and Fernandez, Gabriel Puente, to Dow-Unquinesa S.A. Process of preparing titanium pigment of improved resistance to photo-reduction. 3,695,907, Cl. 106-300.000.
Sonoco Products Company: *See—*
Corning, Robert C., Jr., 3,695,971.
Sony Corporation: *See—*
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Uemura, Saburo, 3,696,218.
Sorensen, Robert L.; and Casanova, John, to Time Incorporated Molding a plastic printing plaque. 3,695,807, Cl. 425-407.000.
Sorenson, Wayne P., to Kimberly-Clark Corporation Adhesive curing device. 3,694,927, Cl. 34-121.000

Soulakis, George: *See—*
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Spangler, Paul J.; and Morgan, Thomas E., to International Telephone and Telegraph Corporation. Insulated flat wire terminal. 3,696,322, Cl. 339-97.00c.
Speers, Robert Ray, to RCA Corporation. Method for forming isolated semiconductor devices. 3,695,956, Cl. 156-11.000.
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Thomas, William G., 3,695,205.
Spindler, Siegfried W., to Nagele, Karl F., Feinmaschinenbau. Slide fastener stringer. 3,694,868, Cl. 24-205.10c.
Spir-L-OK Industries Limited: *See—*
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Splawinski, Thaddeus M. Multi-purpose vehicle. 3,695,375, Cl. 180-29.000.
Sprando, Anthony E.; and Sollars, Richard L., to Textronix, Inc. Manufacturing an electrical relay. 3,694,912, Cl. 29-602.000.
Spring Mills, Inc.: *See—*
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Spyropoulos, Constantine G., to Beckman Instruments, Inc. Sample cell holder for radiant energy analyzers. 3,695,772, Cl. 356-246.000.
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Staffin, Herbert Kenneth; and Staffin, Robert, to Hercules Incorporated, mesne. Apparatus for drying particulate solids. 3,694,924, Cl. 34-10.000.
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Staffin, Herbert Kenneth; and Staffin, Robert, 3,694,924.
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Stapleton, Thomas T., to General Motors Corporation. Apparatus for producing an interference pattern. 3,695,749, Cl. 350-163.000.
Stark, John E.; and Vanoostveen, Adrian G., to Ford Motor Company. Method of expanding a pliable material. 3,696,186, Cl. 264-292.000.
Stark, Marvin L., to Armco Steel Corporation. Means for regulating the escape of wire from a dead block onto an accumulator. 3,695,543, Cl. 242-82.000.
Starr, John E.: *See—*
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Steigerwald, Karl Heinz. Laminated imitation leather. 3,695,988, Cl. 161-109.000.
Stein, Hermann, to Didier-Werke AG. Refractory lining for the floor of metallurgical vessels. 3,695,604, Cl. 266-43.000.
Stein, William Harold. Tow handle for water skiing and the like. 3,695,210, Cl. 115-6.100.
Steiner American Corporation: *See—*
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Stetter, Gunter; and Reinemann, Ullrich, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Pyrotechnic radiator construction. 3,695,180, Cl. 102-87.000.
Steveninck, Johannes Van, to Shell Oil Company. Method and apparatus for burying a pipeline having fixed fluidization means. 3,695,049, Cl. 61-72.400.
Stevens, Harry G.; and Smith, Robert Earl. Work holder. 3,695,468, Cl. 214-340.000.
Stevens, J. P., & Co., Inc.: *See—*
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Runton, Leslie A., 3,695,064.
Stielper, Henry J., to Black and Decker Manufacturing Co., The. Double insulated drill bit sharpener. 3,694,967, Cl. 51-73.00r.
Stievenart, Emile Frans, to Gevaert-Agfa N.V. Processing apparatus for use in diffusion transfer copying. 3,695,163, Cl. 95-89.00l.
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Stockdale, Willis L., to Eastman Kodak Company. Film cartridge for preventing the end of a filmstrip from entering a cartridge chamber. 3,695,160, Cl. 95-31.0ca.
Stockel, Karl. Fluid cooled thrust nozzle for a rocket. 3,695,515, Cl. 239-127.100.
Stoffel, Robert W., to Allied Chemical Corporation. Controlled memory keeper. 3,695,697, Cl. 297-389.000.
Stohr, Rudolf, to Rieker, Justus, Dr., & Co. Inner shoe for footwear. 3,694,940, Cl. 36-10.000.
Stoker, Carl B., Jr., to Goodyear Tire & Rubber Company, The. Package with transparent window. 3,695,417, Cl. 206-45.310.
Stouffer, Ronald, to Bowles Fluidics Corporation. Fluid driven pneumatic displays. 3,695,607, Cl. 272-8.00d.
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Stroble, Carl P., to Allegheny Ludlum Industries, Inc. Iron cobalt vanadium alloy. 3,695,944, Cl. 148-31.550.
Strom, Sven Olof Erik, to Alfa-Laval AB. Milking system. 3,695,231, Cl. 119-14.110.
Strong, Jerry G., to Mobil Oil Corporation. Use of 2-aryl-3-alkylaminoacrylonitriles as fungidices. 3,696,199, Cl. 424-304.000.
Stuck, Klaus, to Ehrenreich, A., & Cie. Ball joint for omni-directional motion attachments. 3,695,650, Cl. 287-88.000.
Stuck, Klaus, to Ehrenreich, A., & Cie. Ball joint with cover plate. 3,695,651, Cl. 287-87.000.
Stumpf, Robert J., to Kimberly-Clark Corporation. Separable clasp containing high-loft, non woven fabric. 3,694,867, Cl. 24-204.000.
Sturgeon, Robert G., to Barnes-Hind Pharmaceuticals, Inc., mesne. Contact lens case. 3,695,280, Cl. 134-166.00r.
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Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, to Nippon Kokan Kabushiki Kaisha. Charging apparatus for the furnace. 3,695,466, Cl. 214-37.000.
Sugaya, Hiroshi; and Kanai, Kenji, to Matsushita Electric Industrial Co., Ltd. Scanning magnetic head. 3,696,216, Cl. 179-100.20c.
Sugihara, Kanji: *See—*
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Sugisawa, Hiroshi, to Canadian Patents and Development Limited. Preservation of volatile foodstuff flavours. 3,695,896, Cl. 99-140.00r.
Sullivan, Norman M., to Rapistan Incorporated. Baggage handling system. 3,695,462, Cl. 214-16.00b.
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Sundbeck, Edward H., to Monsanto Company. Apparatus for drawing thermos plastic filaments in a high temperature gas vortex. 3,694,872, Cl. 28-71.300.
Sunderland, Stephen; and Whittam, Thomas V., to Laporte Industries Limited. Preparation of crystalline synthetic zeolites. 3,695,837, Cl. 423-328.000.

Suozzo, Leonard S. Thermo-electromechanical multi-function support device. 3,695,564, Cl. 248-59.000.
Surman, Albert A. Theft-deterrent merchandising display apparatus. 3,695,452, Cl. 211-4.000.
Surov, Mikhail Andreevich: *See—*
Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.
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Suzuki, Shigenori: *See—*
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Switliski, Vincent S.; and Harmon, Arthur R., to Beck, Charles, Machine Corporation. Box lidding machine. 3,694,999, Cl. 53-313.000.
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Szymanski, Ronald. Dual purpose luminous headlight safety ring and fog lens attachment means. 3,696,238, Cl. 240-46.590.
T. M. M. (Research) Limited: *See—*
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Taccone, Russell W., to Bangor Punta Operations, Inc. Mold forming apparatus. 3,695,339, Cl. 164-213.000.
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, to Sankyo Company Limited. Benzodiazepinium salts and process for preparing the same. 3,696,094, Cl. 260-239.30d.
Taconelli, William B., to Ionics, Incorporated. Membrane support. 3,695,444, Cl. 210-321.000.
Tada, Yoshiharu; and Sawada, Minoru, to Diesel Kiki Kabushiki Kaisha. Electronic governer for fuel-injection type internal combustion engines. 3,695,242, Cl. 123-102.000.
Tafapolsky, Bernard, to Gillette Company, The. Processes for sharpening razor blades. 3,696,013, Cl. 204-129.550.
Taguchi, Naoyoshi. Gas detecting device. 3,695,848, Cl. 23-254.00e.
Takada, Takezo, to Takata Kojyo Co., Ltd. Safety belt retractor reel locking mechanism. 3,695,546, Cl. 242-107.400.
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Taki, Toshio; and Matsunaga, Toshio, to Japan Steel Works Ltd. Snagger for a continuous winding machine. 3,695,528, Cl. 242-25.000.
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Tanaka, Satoru; and Hasimoto, Kazunori, to Eisai Kabushiki Kaisha. Certain hyoscyaminium compounds. 3,696,110, Cl. 260-292.000.
Taneda, Yasuo; Naka, Kiyomi; and Horike, Akihiro, to Teijin Limited. Photo-polymerizable resin compositions. 3,695,877, Cl. 96-35.100.
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Taylor, Michael P., to Fiber Industries, Inc. Flange false twist textured nylon. 3,695,026, Cl. 57-140.00r.
Taylor, Philip W., to Taylor Industries, Inc. Fastener installation. 3,695,499, Cl. 227-52.000.
Taylor, Richard Francis, to Anglo-Transvaal Consolidated Investment Company Limited. Rotary impact rock breaking equipment. 3,695,724, Cl. 299-69.000.
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Tesoro, Giuliana C. Process for the chemical modification of polymers containing active hydrogen atoms by reacting such with a sulfonamide compound. 3,696,092, Cl. 260-231.00a.
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Tezuka, Kunitoshi. Apparatus for forming small lumps from scrap materials. 3,695,174, Cl. 100-95.000.
Therachemie Chemisch Therapeutische Gesellschaft mbH: *See—*
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Thien, Gerhard; and Fachbach, Heinz, to Hans List. Sound-proofing component. 3,695,386, Cl. 181-33.00k.
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Thompson, Arnold M. Croquet wicket assembly. 3,695,610, Cl. 273-56.000.
Thompson, Cullen R., to Shell Oil Company. Mining ventilation method. 3,695,714, Cl. 299-12.000.
Thompson, Donald F.; and Quartermus, George D., to Standard Oil Company. Composite sheet. 3,695,923, Cl. 117-76.00f.
Thompson, Ray E.: *See—*
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Sorensen, Robert L.; and Casanova, John, 3,695,807.
Timmers, Edwin F. Wedge cutting jig. 3,695,317, Cl. 143-51.00a.
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Titt, Georg. Infinitely variable friction mechanism. 3,695,120, Cl. 74-690.000.
Tobey, Hubert E.; Moller, George O.; and Twiford, Richard L., to International Telephone and Telegraph Corporation. Conveying system and apparatus for feeding soft cake products. 3,695,411, Cl. 198-29.000.
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Tomiyama, Eijiro. Toy farring garage. 3,694,953, Cl. 46-12.000.
Tomiyasu, Kiyo, to General Electric Company. Waveguide process. 3,694,911, Cl. 29-600.000.
Tomlinson Industries, Inc.: *See—*
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Torazza, Giovanni, to Fiat Societa per Azioni. Fuel tank ventilation in motor vehicles. 3,695,243, Cl. 123-136.000.
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Treise, John C. Film feed mechanism. 3,695,534, Cl. 242-55.11s.
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Trofimow, Alex. Vinylidene chloride copolymer latex coating composition. 3,696,067, Cl. 260-28.50d.
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Troxler, Franz, to Sandoz Ltd. 4-(2-Hydroxy-3-aminopropoxy)-indole proproxy)-indole derivatives. 3,696,121, Cl. 260-326.150.
Trudel, John L. Cribbage boards and like peg-board devices. 3,695,512, Cl. .
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Tuberman, Arthur H. Method and apparatus for pointing tubes. 3,695,087, Cl. 72-402.000.
Tucker, Henry G.; and Donoski, Paul J., to Remington Arms Company, Inc. Elastic band type projecting device. 3,695,247, Cl. 124-17.000.
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., to Sanders Associates Inc. Digital filter using weighting. 3,696,235, Cl. 235-156.000.
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Uemura, Saburo, to Sony Corporation. Magnetic flux-responsive heads. 3,696,218, Cl. 179-100.2cf.
Uerlichs, Johannes; and Muller, Rudolf, to Rappold, Hermann, & Co. GmbH. Shut off valve of large diameter particularly a hot-blast slide valve. 3,695,286, Cl. 137-340.000.
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Vacha, Fred. Glare shield. 3,695,658, Cl. 296-97.00c.
Vadnie, Marlynn D. Skirting for mobile homes. 3,694,979, Cl. 52-169.000.
Valbona, Bruno M.; Conlon, William J.; and Voglesonger, Harry M., to Dynamics Corporation of America. Vacuum cleaner. 3,695,006, Cl. 55-274.000.
Vallet, Guy, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Float container for an automatic constant downstream level gate. 3,695,043, Cl. 61-22.000.
Van Brunt, George H. Drip coffee maker. 3,695,168, Cl. 99-306.000.
Van Der Roer, Humphrey Alphons Victor. Machine for printing on cups and the like. 3,695,176, Cl. 101-39.000.
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Von Hornstein, Wolf Freiherr; Richt, Hubert O., and Liebl, Albert Tape tension control means with sensing levers, particularly for magnetic sound recorders. 3,695,549, Cl. 242-189.000.
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Voss, Joseph A.; and Johnson, Carl W., said Voss assor to Kimberly-Clark Corporation. Reinforced hygienic medium applicator tubes and methods for fabricating same. 3,695,970, Cl 156-272.000.
Vrijma, Berend, to Calsilox S.A. Apparatus for cutting a block of plastic material. 3,695,129, Cl 83-5 000
Vuaille, Andre, to Societe Industrielle Generals de Mecanique Appliquee S.I.G.M.A. Fuel regulating devices for internal combustion engines 3,695,244, Cl 123-140 0vs
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Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., to Dyanamics Research and Manufacturing, Inc. Shock absorbing structure. 3,695,583, Cl. 256-1.000.
Walker, James Donald, to Chicago Bridge & Iron Company. Deep tank aeration using eductor tubes of elongate cross-section. 3,696,029, Cl. 210-14.000.
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Wallen, Bengt, to Allmanna Svenska Elektriska Aktiebolaget. Means for electrolytically depositing metal on an object or for anodic oxidation of an object. 3,696,017, Cl. 204-195.00r.
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Wasemann, William A., to Westinghouse Electric Corporation. Laundry agent dispenser for agitator washers. 3,695,065, Cl. 68-17.00a.
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Washio, Takaji; Tohi, Yasusuke; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Electrophotographic apparatus for copying documents of various thicknesses. 3,695,754, Cl. 355-3.000.
Wasserlein, Henry George, Jr., to AMP Incorporated. Bundle tie device. 3,694,863, Cl. 24-16.0fb.
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, to Mitsui Toatsu Chemicals, Incorporated. Method of treating sodium bicarbonate recovered from adiponitrile producing reaction solutions to recover sodium carbonate and organic substancs deposited thereon. 3,695,830, Cl. 23-63.000.
Watanabe, Tamotsu, to Nippon Kogei Kogyo Company, Ltd. Method and system for removing particles of floating dusts produced upon an excavation of a tunnel. 3,695,001, Cl. 55-2.000.
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McNeil, William J. Residential building. 224,884, 10–3–72, Cl. D13—1.
McNeil, William J. Residential building. 224,885, 10–3–72, Cl. D13—1.
McNeil, William J. Residential building. 224,886, 10–3–72, Cl. D13—1.
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 3, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

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45.75C 3,696,071
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78.5CL 3,696,079
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11R 3,696,418
13R 3,696,419

17.1	3,696,420	150	3,695,747	97	3,695,764	53	3,695,782	367	3,695,833		3,695,794
100TD	3,696,421	161	3,695,748	102	3,695,765	216	3,695,783	395	3,695,834	7	3,695,795
100	3,696,422	163	3,695,749	141	3,695,766	296	3,695,784	479	3,695,839	12	3,695,796
101	3,696,423	221	3,695,750	154	3,695,767	400	3,695,785	613	3,695,840	77	3,695,797
105R	3,696,424		CLASS 352	165	3,695,768	437	3,695,786	651	3,695,841	109	3,695,798
107	3,696,425	70	3,695,751	168	3,695,769	488	3,695,788		CLASS 424		3,695,799
	3,696,426	141	3,695,752	180	3,695,770	547	3,695,787	16	3,696,188	146	3,695,800
112D	3,696,427	173	3,695,753	208	3,694,936		CLASS 418	38	3,696,189	193	3,695,801
117R	3,696,428		CLASS 353	210	3,695,771	75	3,695,789	44	3,696,190	287	3,695,802
180	3,696,429	19	3,695,580	246	3,695,772	83	3,695,790	50	3,696,191	291	3,695,803
713	3,696,431		CLASS 355		CLASS 408	131	3,695,791	52	3,696,192	292	3,695,804
761	3,696,432	3	3,695,754	56	3,695,773	176	3,695,792	59	3,696,193	393	3,695,805
770	3,696,433		3,695,755		CLASS 415		CLASS 423	115	3,696,194	398	3,695,806
776	3,696,434		3,695,756	17	3,695,774	106	3,695,838	175	3,696,195	407	3,695,807
779	3,696,435		3,695,757	53	3,695,775	189	3,695,831	220	3,696,196	426	3,695,808
782	3,696,436	71	3,695,758	206	3,695,776	206	3,695,830	251	3,696,197	450	3,695,809
792.5	3,696,430		3,695,759	216	3,695,777	239	3,695,828	273	3,696,198		CLASS 431
	3,696,437	95	3,695,760		CLASS 416	242	3,695,829	304	3,696,199	2	3,695,810
	3,696,438		CLASS 356	92	3,695,778	299	3,695,853		CLASS 425	43	3,695,811
	CLASS 350	28	3,695,761	135	3,695,779	310	3,695,835	4	3,695,793	90	3,695,812
1	3,695,743	36	3,695,762	189	3,695,780	328	3,695,837			126	3,695,813
3.5	3,695,744		3,695,763		CLASS 417	331	3,695,836			131	3,695,814
96WG	3,695,745			12	3,695,781	366	3,695,832			135	3,695,815
124	3,695,746									166	3,695,816
										178	3,695,817
										328	3,695,818
										344	3,695,819
										354	3,695,820

CLASSIFICATION OF DESIGNS

D 6—	20	224,854	92	224,863	164	224,870	D 8—	58	224,880		224,886
	47	224,855	97	224,864	168	224,872		267	224,881	D14—	3 224,888
	49	224,856	112	224,865	177	224,873	D 9—	67	224,882	D15—	1 224,887
	58	224,857	116	224,866	192	224,875	D06—	65	224,858		224,889
	66	224,859	120	224,867	196	224,876		165	224,871	D18—	2 224,890
		224,860	144	224,868	242	224,877	D13—	1	224,883	D23—	127 224,891
	71	224,861	149	224,869	247	224,878			224,884	D29—	1 224,892
	73	224,862	157	224,874	264	224,879			224,885	D35—	224,893

D48—	16	224,894	
		224,895	
		224,896	
D81—	10	224,897	
D83—	12	224,898	
D86—	10	224,899	
D92—	15	224,900	

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PATENTS

1 :	3,695,178		3,695,235		3,695,767		3,696,395	10 :	3,694,892	16 :	3,695,506
	3,695,255		3,695,240		3,695,772		3,696,397		3,695,270	17 :	Re.27,500
	3,695,681		3,695,241		3,695,779		3,696,401		3,695,497		3,694,821
	3,695,952		3,695,246		3,695,781		3,696,405		3,695,498		3,694,828
	3,696,247		3,695,265		3,695,794		3,696,414		3,695,857		3,694,876
2 :	3,695,358		3,695,280		3,695,813		3,696,415		3,695,989		3,694,896
	3,695,528		3,695,287		3,695,846		3,696,419		3,696,044		3,694,921
4 :	3,694,848		3,695,298		3,695,852		3,696,420		3,696,058		3,694,923
	3,695,380		3,695,322		3,695,864		3,696,431		3,696,080		3,694,928
	3,695,501		3,695,324		3,695,873		3,696,433		3,696,126		3,694,932
	3,695,541		3,695,328		3,695,886		3,696,438		3,696,128		3,694,933
	3,695,932		3,695,331		3,695,889	8 :	3,694,818		3,696,156		3,694,944
	3,696,257		3,695,349		3,695,895		3,695,108		3,696,163		3,694,955
	3,696,276		3,695,367		3,695,906		3,695,139		3,696,181		3,694,956
	3,696,306		3,695,378		3,695,910		3,695,203		3,696,206		3,694,973
	3,696,432		3,695,385		3,695,937		3,695,268	11 :	3,695,325		3,695,028
5 :	3,694,992		3,695,387		3,695,938		3,695,356	12 :	3,694,859		3,695,056
	3,695,042		3,695,390		3,695,982		3,695,396		3,694,863		3,695,058
	3,695,428		3,695,397		3,696,002		3,695,574		3,695,103		3,695,100
6 :	3,694,819		3,695,421		3,696,025		3,695,714		3,695,156		3,695,105
	3,694,854		3,695,431		3,696,027		3,695,970		3,695,251		3,695,131
	3,694,856		3,695,485		3,696,046		3,696,341		3,695,254		3,695,138
	3,694,866		3,695,489		3,696,066	9 :	3,694,877		3,695,261		3,695,149
	3,694,894		3,695,502		3,696,124		3,695,006		3,695,422		3,695,173
	3,694,917		3,695,504		3,696,129		3,695,064		3,695,457		3,695,201
	3,694,919		3,695,505		3,696,151		3,695,091		3,695,471		3,695,207
	3,694,958		3,695,508		3,696,176		3,695,154		3,695,491		3,695,238
	3,695,010		3,695,513		3,696,209		3,695,247		3,695,557		3,695,288
	3,695,034		3,695,534		3,696,230		3,695,295		3,695,935		3,695,329
	3,695,067		3,695,540		3,696,243		3,695,357		3,696,065		3,695,332
	3,695,068		3,695,560		3,696,246		3,695,463		3,696,078		3,695,432
	3,695,069		3,695,562		3,696,255		3,695,771		3,696,164		3,695,443
	3,695,072		3,695,582		3,696,256		3,695,795		3,696,182		3,695,446
	3,695,073		3,695,583		3,696,262		3,695,803		3,696,187		3,695,451
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	3,695,102		3,695,617		3,696,274		3,695,900		3,696,371		3,695,474
	3,695,112		3,695,618		3,696,286		3,695,916		3,696,372		3,695,475
	3,695,116		3,695,630		3,696,287		3,695,999		3,696,399		3,695,476
	3,695,118		3,695,633		3,696,302		3,696,068		3,696,402		3,695,480
	3,695,128		3,695,636		3,696,317		3,696,083		3,696,434		3,695,481
	3,695,136		3,695,639		3,696,320		3,696,102	13 :	3,695,013		3,695,503
	3,695,140		3,695,644		3,696,330		3,696,105		3,695,195		3,695,514
	3,695,146		3,695,657		3,696,351		3,696,179		3,695,273		3,695,535
	3,695,148		3,695,664		3,696,363		3,696,236		3,695,531		3,695,544
	3,695,152		3,695,671		3,696,367		3,696,258		3,695,926		3,695,553
	3,695,153		3,695,676		3,696,369		3,696,342		3,695,975		3,695,581
	3,695,168		3,695,687		3,696,373		3,696,362		3,695,983		3,695,610
	3,695,210		3,695,690		3,696,375		3,696,366		3,696,177		3,695,612
	3,695,211		3,695,715		3,696,378		3,696,376	15 :	3,694,934		3,695,627
	3,695,214		3,695,727		3,696,393		3,696,406		3,695,931		3,695,632

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Design Patents

6 : 224,863
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 10, 1972 Volume 903 Number 2

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PATENT OFFICE NOTICES

Notice of Daylight Saving Time

Attention is called to the notice published in 897 O.G. 1134, Apr. 25, 1972, as to the operation of the Patent Office on Daylight Saving Time. This operation will terminate on Oct. 29, 1972.

CHANGE IN COPY CERTIFICATION PROCEDURES

Pursuant to 28 USC 1744 the Patent Office provides "copies of letters patent or of any records, books, papers or drawings belonging to the Patent Office and relating to patents, authenticated under the seal of the Patent Office and certified by the Commissioner of Patents, or by another officer of the Patent Office authorized to do so by the Commissioner. . . ." In the interest of improved efficiency the Patent Office will, effective immediately, change its method of certifying copies of the recited materials. Thereafter, the certificate and the copy will be secured together by a staple in lieu of the ribbon currently employed. The new procedures will retain the use of the Patent Office seal and the certification by the Commissioner of Patents or other authorized officer in keeping with the requirements of the above statute.

RICHARD A. WAHL,
Sept. 20, 1972. *Acting Commissioner.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Nov. 10, 1972.

Barrack, Donald J., 4 Janet Court, East Brunswick, N.J. 08816
Carter, Richard, 8827 64th Ave., #101, Landover Hills, Md. 20784
Helvestine, William A., 1600 S. Eads St., #817N, Arlington, Va. 22202
Kusmer, Toby H., 18 Pickney St., Beacon Hill, Boston, Mass. 02114
Scheel, Walter A., 503 H St. SW., Washington, D.C. 20024
Slobasky, Michael R., 2912 Sycamore St., Alexandria, Va. 22305
Stout, Donald E., 6302 Wingate St., Alexandria, Va. 22312
Trudeau, Raymond, Fetherstonhaugh & Co., 1018 Canada Cement Bldg., Montreal, Quebec, Canada
Wright, William H., 1600 S. Eads St., #408N, Arlington, Va. 22202.

LUTRELLE F. PARKER,
Sept. 12, 1972. *Chairman, Committee on Enrollment.*

Patent Office Services

ADDENDUM TO OFFICIAL GAZETTE NOTICE OF AUG. 8, 1972 (901 O.G. 412)

We wish to call attention to a situation discovered during our study and analysis of the patent copy service. We found that there has been a lack of effective controls affecting orders for printed copies of patents placed by letter, including cash order, and deposit account order forms.

Effective controls for Patent Office coupon orders have been established.

We are now implementing a similar procedure for orders placed by letter, including cash order, and deposit account order forms. It is possible, however, that a few orders submitted in this way in the last few months have gone astray. Accordingly, if you placed such requests for patent copies prior to July 15, 1972, and have not yet received those copies, we suggest that you submit, to the address given below, a follow-up communication which should identify the original request by date and include the Patent Numbers originally ordered.

Address inquiries to:

Director
Office of Public Services
U.S. Patent Office
Washington, D.C. 20231

ROBERT GOTTSCHALK,
Sept. 7, 1972. *Commissioner of Patents.*

DISTRIBUTION OF NEW DECLARATION FORM PO–1147 (REVISED)

In a recent issue of the OFFICIAL GAZETTE (898 O.G. 738) we announced the availability of a new Sole-Joint Declaration Form, PO–1147. The distribution was limited to single copies of the form. We are pleased to report that use of the form has resulted in increased efficiency in processing newly filed applications.

In order to encourage greater use of the form, we now can furnish larger quantities without charge. Accordingly, distribution will be made in single copies or in multiples of 10 forms. Since our supply is limited, only orders for reasonable quantities can be filed.

The forms may be obtained from the receptionist in the lobby of Building 3 at our Arlington, Va. location or by mail request. The latter should be addressed to:

Commissioner of Patents
Washington, D.C. 20231,
Attn: Form Distribution

ROBERT GOTTSCHALK,
Sept. 11, 1972. *Commissioner of Patents.*

United States Adopted Names

List No. 82

March 1, 1972 to June 30, 1972

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Name" (USAN) has been coined to distinguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill. 60610.

amidapsone: prophylactic for Marek's disease
bambermycins: veterinary growth promoting antibiotic
bamoxine: analgesic
benzoyl peroxide: drying and peeling agent
cefadole: antibiotic
clocortolone pivalate: glucocorticoid
dichlorvos: anthelmintic
diflorasone diacetate: topical anti-inflammatory
dipyrithione: anti-bacterial, anti-fungal agent
isoflurane: inhalation anesthetic
ketoprofen: anti-inflammatory
lobendazole: veterinary anthelmintic
lometraline: tranquilizer, anti-parkinson agent
meglumine salicylate: anti-inflammatory, analgesic
naftalofos: veterinary anthelmintic

pepstatin: pepsin inhibitor
salsalate: analgeic, anti-inflammatory
stirofos: veterinary product
tibric acid: hypolipemic
triclosan: bacteriostat
vincofos: anthelmintic
xylazine: analgesic, sedative
zolazepam: CNS depressant

Printing of Firm Names on Patents—Request for Comments

The Patent Office discontinued the recognition of firms of attorneys and agents by rule change, effective July 2, 1971 (890 O.G. 298). Since that time there has been much interest concerning the propriety of printing firm names on the "front page" of patents.

It has been argued that when one is seeking information concerning a patent, it is logical to communicate with the attorney if the inventor cannot be located. The argument continues that it would be more likely for a firm to have continuity of existence and to have retained the file on the case as compared to an individual attorney. While there have been some suggestions that the listing of either a firm or individual attorney on a patent may be unethical and be considered advertising, the general consensus of the patent bar appears to be that such a listing is merely informative and is not objectionable.

The Board of Managers of the American Patent Law Association has urged the Patent Office to revise the transmittal form of the Notice of Allowance and to print on the front page of the patent the name of the firm and/or individual designated on the form returned with the base issue fee.

It is proposed that form POL–85(b) be redesigned to provide for the person submitting the base issue fee to indicate the names and registration numbers of not more than three registered attorneys or agents or the name of a firm which includes registered attorneys or agents. An indication would also be required as to whether the name supplied was that of an attorney, agent, or firm. This information would then be used to print the name on the front page of the patent. If no information is supplied, the patent would not include the name of a practitioner or firm, regardless of whether a registered attorney or agent is of record.

Views and comments of the patent community are solicited for consideration in the final determination of the decision and procedure, if appropriate, for printing names of practitioners and firms on the front page of patents. Interested parties should submit their comments in writing prior to Jan. 1, 1973, addressed to the Commissioner of Patents, Washington, D.C. 20231.

ROBERT GOTTSCHALK,
Sept. 8, 1972. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,669,955, A. Gellman, PLEAT FORMING DEVICE; **3,010,621**, P. J. Bonarrigo, PLEAT-FORMING DEVICES, filed Oct. 18, 1962, D.C., S.D.N.Y., Doc. 62–C–3468, *Abe Gellman & Co. Inc. et ano.* v. *Frank Friedman et al.* Stipulation and order, action discontinued, Mar. 27, 1972.

2,926,420, E. J. Boling, METHOD FOR GAUGING MATERIAL; **3,059,674**, same, APPARATUS FOR GAUGING MATERIAL, filed Oct. 7, 1969, D.C., N.D. Ohio (Toledo), Doc. C–69–308, *Edgar J. Boling* v. *Home Window Company, Inc.* Consent judgment; defendant enjoined from infringing plaintiff's patents, May 1, 1972.

2,938,493. (See 2,999,477.)

2,943,839, R. Birmann, ELASTIC FLUID MECHANISM; **3,032,315**, same, TURBINE BLADING, filed Dec. 22, 1966, D.C. Ariz. (Phoenix), Doc. C–6214–PHX, *De Laval Turbine, Inc.* v. *The Garrett Corporation.* Action dismissed with prejudice as to 3,032,215 and as to all claims except claims 6 and 16 of 2,943,839, Apr. 3, 1972. Stipulation and order dismissing action with prejudice, Apr. 21, 1972.

2,946,069. (See 3,116,556.)

2,999,477, Pratt and Pratt, FIRE ALARM; **2,938,493**, E. C. Pratt, FIRE ALARMS, filed Apr. 14, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–827–DWW, *A-T-O Inc.* v. *Edmund C. Pratt, Ruth C. Pratt, Arleen K. Booth et al.*

3,010,522, H. C. Oppel, BEET HARVESTER; **3,181,616**, same, DIGGING WHEEL FOR SUGAR BEET HARVESTERS; **3,461,967**, N. E. Wells, ROW FINDER FOR ROW CROP HARVESTERS, filed Apr. 7, 1972, D.C. Colo. (Denver), Doc. C–3913, *Opel Harvester, Inc.* v. *HFE, Inc.*

3,010,621. (See 2,669,955.)

3,032,315. (See 2,943,839.)

3,059,674. (See 2,926,420.)

3,116,556, Nyberg and Virta, LAYOUT MACHINE; **2,946,069**, J. D. Bozza, METHOD OF MANUFACTURING MOCCASINS, filed Apr. 21, 1969, D.C., S.D.N.Y., Doc. 69–1651, *Joseph F. Corcoran Shoe Co., Inc.* v. *Frank Noone Shoe Company Inc. and R. H. Macy & Co.* Plaintiff's notice of voluntary dismissal pursuant to Rule 41(a), Mar. 31, 1972.

3,146,290, D. M. Park, ELECTRONIC MUSIC CIRCUIT; **3,383,452**, Park and Campbell, MUSICAL INSTRUMENT; **Re. 26,521**, D. M. Park, AUTOMATIC REPETITIVE RHYTHM INSTRUMENT TIMING CIRCUITRY; **3,255,292**, same, filed Apr. 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c961, *The Seeburg Corporation* v. *Sakata International, Inc. et al.* Cause removed from active calendar of Court with leave to reinstate by Sept. 26, 1970, July 31, 1970. Order reinstating cause to active calendar, Oct. 8, 1970. Consent judgment, plaintiff owner of Patents 3,383,452 and Re. 26,521, claims thereof are valid. Plaintiff's complaint and defendants' counterclaims are dismissed without prejudice, Apr. 28, 1972.

3,147,767, J. B. Goss, HYDRAULIC CLEANING APPARATUS; **3,335,962**, R. H. E. Schmidt, BACK-PRESSURE-CONTROLLED-MOTOR-POWERED PUMP, filed Jan. 17, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–71, *American Aero Industries, Inc.* v. *Tritan Corporation.* Voluntary dismissal by plaintiff with order of dismissal thereon; case dismissed without prejudice under Rule 41(a)(1), FRCP, Mar. 21, 1972.

3,181,616. (See 3,010,522.)

3,295,224, K. L. Cappel, MOTION SIMULATOR, filed Oct. 9, 1970, D.C., S.D.N.Y., Doc. 70–C–4427, *Singer-General Precision, Inc.* v. *Research Corporation.* Stipulation and order of dismissal with prejudice, Apr. 17, 1972.

3,330,557, N. O. Young, MEANS FOR FORMING A RIGID LOOP FROM A LIMP LOOP, filed Mar. 29, 1972, D.C., S.D.N.Y., Doc. 72–C–1318, *Loopee International Inc. et al.* v. *Nadel & Sons Toy Corp.*

3,335,962. (See 3,147,767.)

3,350,733, D. C. Hanna, CAR WASHING DEVICES; **3,403,417**, Hanna and Ebeling, CAR ENDS AND SIDES CLEANING BRUSHES; **3,517,405**, same, CAR WASHING FRICTION SCRUBBER, filed Sept. 17, 1970, D.C. Ariz. (Phoenix), Doc. C–70–530–PHX, *Daniel C. Hanna* v. *Hurricane Car Wash Systems, Inc., Jack L. Modrich and Donald E. Follis.* Consent judgment, plaintiff's causes of action against defendants J. L. Modrich and D. E. Follis are dismissed with prejudice. Defendants have infringed certain claims and are permanently enjoined. Counterclaims for declaratory judgment filed by plaintiff dismissed with prejudice, Mar. 20, 1972.

3,353,770, W. Sondheim, UNIVERSAL PUMP BOX APPARATUS, filed May 2, 1972, D.C., N.D. Ga. (Atlanta), Doc. C.A. 16541, *Permco Corporation* v. *Watkins Service Co., Inc. and Watkins-Briant Co.*

3,361,652, Korpiun, Sedlacek, and Steeg, ELECTRODEPOSITION OF BRIGHT TIN, filed July 1, 1969, D.C. Conn. (New Haven), Doc. 13241, *Conversion Chemical Corporation* v. *Lea-Ronal, Inc.* Case dismissed on stipulation of parties, Feb. 9, 1972.

3,363,422, L. A. Turzillo, METHOD AND APPARATUS FOR ANCHORING A TIE-DOWN BAR IN AN EARTH SITUS, filed Apr. 24, 1972, D.C., District of Columbia (Washington), Doc. 792–72, *Lee A. Turzillo, Lee Turzillo Contracting Company* v. *P & Z Mergentime.*

3,365,969, F. Moogk, STEPLESS VARIABLE V-BELT DRIVING GEAR WITH ASYMMETRIC V-BELT, filed Apr. 27, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 8390, *Dayco Corp.* v. *E. & A. Becker KG.*

3,371,383, O. H. Hellsund, CONTINUOUS CASTING APPARATUS; **3,376,371,** Opel and Bottoms, CONTINUOUS CASTING PROCESS, filed Nov. 20, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–2343–F, *Swedlow, Inc.* v. *Rohm & Haas Company.* Order, granting motion to dismiss, Mar. 9, 1970.

3,376,371. (See 3,371,383.)

3,383,452. (See 3,146,290.)

3,388,690, E. Hostetler, POULTRY FEEDER SYSTEM AND PAN ASSEMBLY THEREFOR, filed Apr. 19, 1972, D.C. S.D. Ill. (Springfield), Doc. S–C–72–74, *Chore-Time Equipment, Inc.* v. *Brower Manufacturing Company, Inc.*

3,390,933, A. C. W. Johnson, LOW INTENSITY RADIANT HEATER SYSTEM AND BURNER THEREFOR, filed June 8, 1971, D.C., S.D. Mich. (Detroit), Doc. 36609, *Combustion Research Corp.* v. *Charles L. Green, doing business as G & G Radiant Pro.* Stipulation and order for injunction, Apr. 12, 1972.

3,402,417. (See 3,350,733.)

3,417,926, D. F. De Vorak, SPREADER CHAIN AND FAN DRIVE ASSEMBLY, filed Aug. 12, 1971, D.C., E.D. Ark. (Little Rock), Doc. LR–71–C–150, *Dwight F. De Vorak* v. *Industrial Iron Works, Inc., Elmer Adams and G. W. Purdy.*

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, filed Feb. 29, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c505, *William A. Muska et al.* v. *Northwest Electrical Supply Co. et al.*

3,458,893, P. Dieffenbach, ARTIFICIAL TREE LIMB TAPERING MACHINE; **3,594,260,** same, ARTIFICIAL SHRUBBERY AND METHOD OF MANUFACTURING THE SAME, filed Apr. 18, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–1978, *Masterpiece, Inc.* v. *Barrier Corp., Barrier Sales Co. and Abbott Van Backer.*

3,461,967. (See 3,010,522.)

3,480,984, J. V. Kidd, PIG APPARATUS, filed June 9, 1970, D.C., S.D. Tex. (Houston), Doc. 70–H–581, *Kidd Pipeline & Specialties, Inc.* v. *Rubber Applicators and M & J Valve Company.* Stipulation of dismissal, pursuant to Rule 41(a)(1)(ii) FRCP, cause by Kidd Pipeline & Specialties be dismissed with prejudice to any further suit on said patent and that counterclaims filed in such cause by M & J Valve Co. against Kidd Pipeline & Specialties, Inc. be dismissed with prejudice to any further suit based upon or including the claims asserted therein with respect to the acts of Kidd Pipeline & Specialties, Inc. complained of by M & J Valve Co. therein, Apr. 18, 1972.

3,485,312, Swenson and Skime, SNOWMOBILE TREAD DRIVE AND SUSPENSION SYSTEM, filed Dec. 31, 1969, D.C., E.D. Wis. (Milwaukee), Doc. 69–C–637, *Arctic Enterprises, Inc.* v. *Moore Ambulance Service, Inc.* Consent judgment, patent is valid, defendant has infringed. Plaintiff's complaint against defendant Moore Ambulance Service, Inc. dismissed without prejudice, May 4, 1972.

3,517,405. (See 3,350,733.)

3,594,260. (See 3,458,893.)

Re. 26,521. (See 3,146,290.)

Certificates of Correction for the Week of Oct. 10, 1972

D. 223,350	3,606,521	3,623,091	3,656,323
3,301,304	3,606,529	3,623,605	3,656,367
3,522,198	3,607,266	3,624,106	3,657,505
3,540,659	3,607,535	3,625,019	3,657,601
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3,556,753	3,607,939	3,626,168	3,658,134
3,557,996	3,608,148	3,632,342	3,658,723
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3,593,873	3,615,219	3,647,362	3,665,719
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3,595,996	3,615,706	3,649,162	3,666,455
3,596,157	3,615,998	3,649,262	3,666,655
3,596,260	3,616,003	3,649,401	3,666,661
3,596,840	3,616,245	3,650,451	3,667,878
3,598,846	3,616,846	3,650,638	3,668,137
3,599,319	3,617,482	3,651,033	3,668,680
3,599,923	3,617,526	3,651,806	3,669,582
3,601,552	3,617,650	3,652,069	3,669,838
3,601,867	3,617,824	3,652,112	3,669,841
3,602,036	3,617,883	3,653,205	3,669,875
3,602,889	3,618,991	3,653,786	3,669,908
3,604,339	3,620,882	3,653,915	3,670,000
3,604,516	3,621,460	3,654,166	3,670,085
3,604,598	3,621,564	3,654,348	3,670,254
3,604,664	3,621,700	3,654,588	3,671,104
3,604,991	3,622,362	3,654,590	3,671,398
3,605,593	3,622,782	3,655,347	3,671,928
3,606,171	3,622,897	3,655,498	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 19, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Fore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-15-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-26-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-11-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-24-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-18-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-30-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-29-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 10, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 80 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T930,027
BACTERIA-INHIBITING URETHANE FOAMS

Robert L. McBrayer, Lincoln Park, Mich. (% BASF Wyandotte Corporation, Wyandotte, Mich. 48192)

Continuation-in-part of application Ser. No. 653,672, July 17, 1967. This application Apr. 26, 1971, Ser. No. 137,579

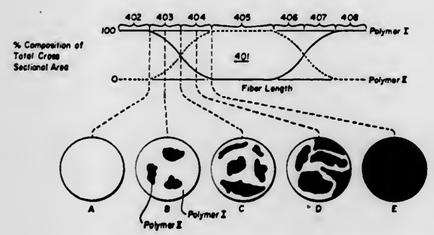
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AI
No Drawing. 11 Pages Specification

The inhibition of the growth of bacteria and fungi in polyurethane foam by the inclusion of the condensation product of 10,10'-oxybisphenoxarsine and epoxidized soy bean oil having a flash point of about 600° F., a specific gravity of about 1 at 20/20° C., and a molecular weight of about 1000 in the polyurethane foam formulation.

T903,028
PROCESS FOR PRODUCING TEXTURIZED YARN

Bobby M. Phillips, 124 Bloomingdale Pike, Kingsport, Tenn. 37662

Filed June 3, 1971, Ser. No. 149,488
Int. Cl. D02g *3/04*
U.S. Cl. 57—140 BY
6 Sheets Drawing. 38 Pages Specification

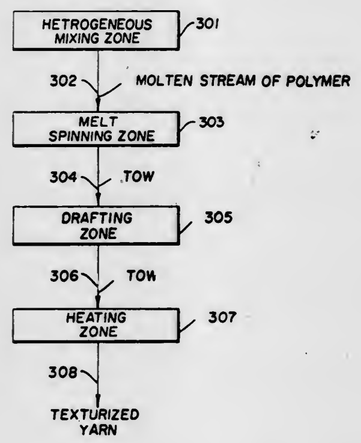


A texturized yarn is produced by forming a molten stream of polymer having a repeating unit of a first length of substantially a first polymer, a second length of a heterogeneous mixture of a major amount of the first polymer and a minor amount of a second polymer having a shrinkage characteristic different than the first polymer, a third length of a heterogeneous mixture of a minor amount of the first polymer and a major amount of the second polymer, a fourth length of substantially the second polymer, a fifth length of a heterogeneous mixture of a minor amount of the first polymer and a major amount of the second polymer, a sixth length of a heterogeneous mixture of a major amount of the first polymer and a minor amount of the second polymer, and a seventh length of substantially the first polymer. After the molten stream of polymer is produced, the process is continued by melt spinning a tow from the molten stream of polymer, drafting the melt spun tow, and heating the drafted tow at self crimping conditions to produce a texturized yarn. The texturized yarn of this invention is characterized by repeating lengths of a cross section of a plurality of helically crimped bicomponent melt spun textile fibers which have a suitable distribution of crimping characteristics at a cross section of the yarn to produce a texturized yarn and the yarn is further characterized by a unit which repeats along the longitudinal axis of the yarn, the unit being composed of a first non-texturized length characterized by a cross section of non-helically crimped substantially monocomponent textile fibers and a second textured length characterized by a cross section of helically crimped bicomponent textile fibers.

T903,029
PROCESS FOR PRODUCING TEXTURIZED YARN

Bobby M. Phillips, 124 Bloomingdale Pike, Kingsport, Tenn. 37662

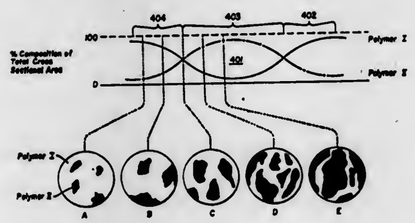
Filed June 3, 1971, Ser. No. 149,575
Int. Cl. D01d *5/22*
U.S. Cl. 264—168
6 Sheets Drawing. 28 Pages Specification



A texturized yarn is produced by the steps of forming a molten stream of polymer of a heterogeneous mixture of a first polymer and a second polymer having a shrinking characteristic different than the first polymer, melt spinning a tow from the molten stream of polymer, drafting the melt spun tow, and heating the drafted tow at self crimping conditions to produce a texturized yarn. The molten stream of polymer is formed by continuously withdrawing a portion of a first polymer from a vertically

confined source of the polymer, continuously withdrawing from a vertically confined source of the polymer a portion of a second polymer having a shrinkage characteristic different than the first polymer, and continuously introducing the withdrawn portions of the first and second polymer into a heterogeneous mixing zone adapted to heterogeneously mix the first and second polymers and discharge a molten stream of a heterogeneous mixture of the first polymer and the second polymer. The texturized yarn of this invention is characterized by a cross section of a plurality of helically crimped bicomponent melt spun textile fibers which have a suitable distribution of crimping characteristics at a cross section of the yarn to produce a texturized yarn and the yarn is further characterized as having a uniform texturized character along the longitudinal axis of the yarn.

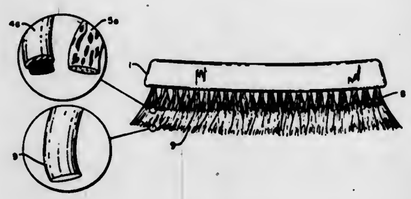
T903,030
PROCESS FOR PRODUCING TEXTURIZED YARN
Bobby M. Phillips, 124 Bloomingdale Pike, Kingsport, Tenn. 37662
Filed June 3, 1971, Ser. No. 149,685
Int. Cl. D02g *3/04*
U.S. Cl. 57—140 BY
6 Sheets Drawing. 40 Pages Specification



A texturized yarn is produced by the steps of forming a molten stream of polymer of a heterogeneous mixture of a first polymer and a second polymer having a shrinking characteristic different than the first polymer wherein the amounts of a first and second polymer oscillate between a major and a minor amount, melt spinning a tow from the molten stream of polymer, drafting the melt spun tow, and heating the drafted tow at self crimping conditions to produce a texturized yarn. The texturized yarn of this invention is characterized by a cross section of a plurality of helically crimped bicomponent melt spun textile fibers which have a suitable distribution of crimping characteristics at a cross section of the yarn to produce a texturized yarn and the yarn is further characterized as having an oscillating texturized character along the longitudinal axis of the yarn.

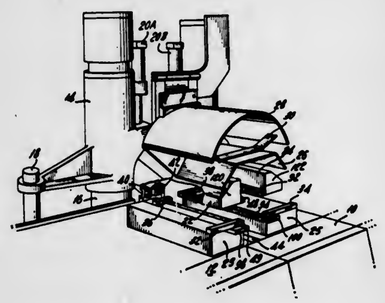
T903,031
WAXING AND POLISHING OF SURFACES BY MEANS OF ABLATIVE WAXING COMPOSITIONS
Lee H. Davis, 4416 Briarwood Road, and Don R. Leonard, 1425 Warpath Drive, both of Kingsport, Tenn. 37662
Filed June 23, 1971, Ser. No. 155,961
Int. Cl. A46b *11/00*; A47l *13/30*
U.S. Cl. 401—96
1 Sheet Drawing. 13 Pages Specification

A bristled waxing and polishing brush, disk, buffing wheel or similar wax applicator in which all or a substantial portion of the bristles of which contain or are constructed of a composition made up of wax intimately mixed, blended or otherwise associated with a polymer matrix such as polyethylene, polypropylene, polyvinyl chloride, polyamides, polyesters, acrylics and other bristle forming polymers or the like, said applicator being specifically designed for deposition of the waxing component or components of the bristles onto a surface such as one composed of wood, metal, leather, plastic or the like followed by polishing to produce on such surface a durable, waterproof or water-resistant coating having any desired degree of polish or sheen. Deposition of the waxing component or components results from ablation or wearing down of the individual bristle structures themselves. After the wax-containing bristles have been substantially worn



down in use by such ablative action, the waxing and polishing element can be discarded and readily replaced by a new unit of the same construction. The composition of which the bristles are composed may contain dyes, pigments, fillers or other desired additives.

T903,032
HOT-KNIFE CUTTER FOR INNER-TUBE SPLICER
Leroy P. Gunner, 764 Belvedere Ave., Westfield, N.J. 07090
Filed Aug. 23, 1971, Ser. No. 173,983
Int. Cl. B26d *7/10*
U.S. Cl. 83—171
3 Sheets Drawing. 17 Pages Specification



REISSUES

OCTOBER 10, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

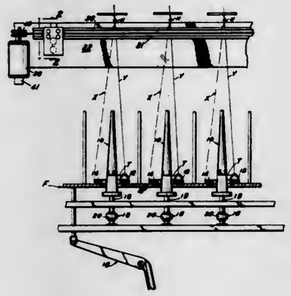
27,501
MONITORING DEVICE FOR A SPINNING FRAME

Morris M. Bryan, Jr., Jefferson, and Morris W. Roberts, Atlanta, Ga., assignors to Parks-Cramer Company

Original No. 3,430,426, dated Mar. 4, 1969, Ser. No. 631,790, Apr. 18, 1967. Application for reissue Nov. 30, 1970, Ser. No. 93,923

Int. Cl. D01h *13/16, 13/26, 13/32*

U.S. Cl. 57—34 14 Claims



What is disclosed herein is a spinning frame which includes a monitoring means for monitoring the operating condition of each spindle assembly so as to provide an electrical output corresponding to the operating condition of each spindle assembly. The spinning frame is conventional in that yarn defines a substantially conical zone of motion as it passes to the rotating traveler of each spindle assembly and in one embodiment of the invention light reflected from yarn in a conical zone of motion is used to provide the electrical output corresponding to the operating condition of a spindle assembly. In another embodiment of the invention, the operation of a switch means in response to tension of yarn as it passes into a conical zone of motion is used to provide the electrical output corresponding to the operating condition of a spindle assembly. With either embodiment, the electrical outputs may be used to indicate that a spindle assembly is inoperative and may be accumulated by an accumulating means such as a conventional computer to indicate a pattern of operating difficulties indicative of a spindle assembly requiring corrective maintenance.

27,502
SHAKE STRIP ASSEMBLY FOR ROOFING OR SIDING

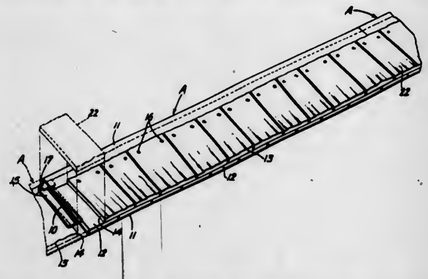
Otis M. Martin, San Jose, Calif., assignor to Ditz-Crane, San Francisco, Calif.

Original No. 3,440,777, dated Apr. 29, 1969, Ser. No. 689,144, Dec. 8, 1967. Application for reissue Dec. 21, 1970, Ser. No. 100,181

Int. Cl. B04d *1/36, 3/362, 13/00*

U.S. Cl. 52—94 14 Claims

A roof or side of a building is covered with self-gauging shake strip assemblies which provide their own sheathing. Each shake strip assembly comprises a base strip covered by a membrane with a first course of sawn shingles secured thereto and covered by a second, superposed course of shakes. The upper ends of the shakes are in downwardly spaced relation from the upper edge of the base strip, while their lower ends extend a selected distance below the lower edge of the base strip. The upper ends of the shakes serve as a gauge for positioning the base strip of a next higher shake strip assembly. While not essential, a metal clip or other means may be provided to interconnect and seal the abutting ends of shake strip assemblies of the same row, and to insure against water



leakage therebetween. A preferred means for this purpose is to provide a blank space at each end of the course of shakes on each shake strip assembly, and to close these blank spaces by means of shutter shakes applied after the shake strip assemblies have been attached to a roof or wall.

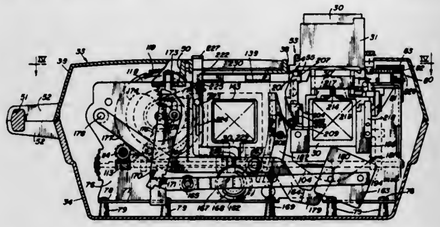
27,503
SLIDE PROJECTOR

Irwin M. Gould, Skokie, and Gerald A. Moe, Buffalo Grove, Ill., by Bell and Howell Company, assignee, Chicago, Ill.

Original No. 3,336,836, dated Aug. 22, 1967, Ser. No. 377,232, June 23, 1964. Application for reissue Dec. 27, 1968, Ser. No. 807,467

Int. Cl. G03b *21/00*

U.S. Cl. 353—21 21 Claims



A slide projector wherein each slide is successively and automatically previewed before such slide is projected by the projector.

27,504
CAN OPENER

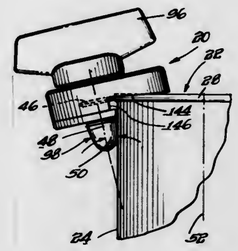
Clarence J. Smith, 901 Birch Road, Apt. B–3, Fort Lauderdale, Fla.

Original No. 3,094,776, dated June 25, 1963, Ser. No. 139,972, Sept. 22, 1961. Application for reissue Apr. 9, 1970, Ser. No. 31,433

Int. Cl. B67b *7/32, 7/38*

U.S. Cl. 30—15.5 28 Claims

The structure herein described comprises a can opener for opening the end seam of a metal can by cutting through the outer wall of the cover hook in a radially inward direction from the outer side of the end seam. The structure comprises a rotary cutter engageable with the outer wall of the end seam and a cooperative back-up roll engageable with the inner wall of the end seam to clamp the end seam therebetween. There is further provided an elongated handle to hold the opener and a rotatable turning knob for positively moving the cutter and



back-up roll relatively toward each other and for traversing the cutter peripherally of the end seam to effect the cutting operation. Guide means engageable with the axial outer edge of the end seam is provided for guiding the cutter at an appropriate dive angle in its traverse movement; and there is further provided a guide roller engageable with the side wall of the can, further to orient and position the cutter in its cutting action.

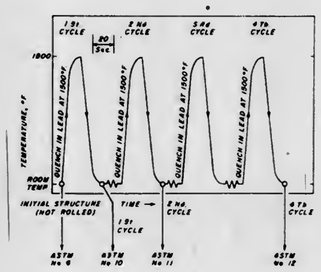
27,505
METHOD FOR PRODUCING ULTRAFINE GRAINED STEEL

Raymond A. Grange, Washington Township, Westmoreland County, Pa., and Edward R. Shackelford, Chicago, Ill., by United States Steel Corporation, assignee

Original No. 3,178,324, dated Apr. 13, 1965, Ser. No. 285,121, June 3, 1963. Application for reissue Jan. 14, 1971, Ser. No. 106,598

Int. Cl. C21d *1/18*

U.S. Cl. 148—143 2 Claims



A method of producing ultrafine grain size in steel comprising cyclically treating such steel by heating it at least twice to above its Ac_3 temperature but below the temperature at which austenite grains coarsen rapidly for just sufficient time to transform it to an austenitic structure and then before any appreciable grain growth occurs quickly cooling it to transform the austenite in all but the last cycle to a microstructure of the class consisting of martensite, bainite or mixtures and in the last cycle cooling at a rate which will produce the desired microstructure whereby an austenite grain size finer than ASTM #10 is produced therein.

27,506
CERTAIN THIOZOLYLUREA COMPOUNDS

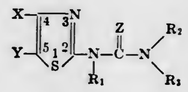
Jean Claude Guillot, Eaubonne, Pierre Poignant, Lyon, and Jacques de Bazelaire de Lesseux, Rueil-Malmaison, France, by Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France, assignee

No Drawing. Original No. 3,551,442, dated Dec. 29, 1970, Ser. No. 540,192, Apr. 5, 1966. Application for reissue May 18, 1971, Ser. No. 144,696

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R 5 Claims

A thiazole derivative having the general formula



and pesticidal compositions containing the same.

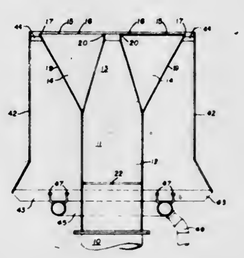
27,507
FLARE STACK COMBUSTION TIP

Alexander J. Turpin, Lebanon, Pa., assignor to Smoke-Ban Manufacturing Incorporated, Pasadena, Tex.

Original No. 3,547,567, dated Dec. 15, 1970, Ser. No. 754,135, July 22, 1968. Application for reissue May 13, 1971, Ser. No. 143,672

Int. Cl. F23b *5/00*

U.S. Cl. 431—202 13 Claims



A flare stack combustion tip having a centrally disposed gas conduit having an opening in the lower end thereof for communication with a flare stack and the upper end thereof being at least partially closed, a plurality of spaced apart gas conducting channels extending outward from said gas conduit and in open communication along one end thereof with said gas conduit, and a gas emission orifice in an upper segment of each of said gas conducting

channels and extending substantially the entire length of said upper segment, said gas emission orifices being disposed radially with respect to the axis of said gas conduit.

27,508

MACHINE FOR DISASSEMBLING COMPONENTS FROM COMPOSITE PRODUCTS

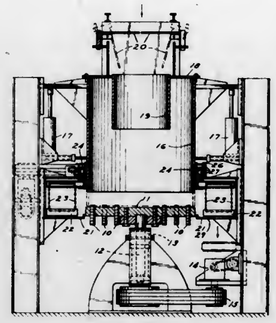
Earl A. Oster and Thomas H. Oster, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Original No. 3,561,072, dated Feb. 9, 1971, Ser. No. 787,646, Dec. 30, 1968. Application for reissue Feb. 17, 1971, Ser. No. 116,058

Int. Cl. B02c *13/00*

U.S. Cl. 241—186 R **5 Claims**

This invention is concerned wtih a fragmentizing machine for the disintegration of solids and more particularly metallic objects. This fragmentization or disintegration permits the ready disassembling of components from composite products. The disintegration of these metallic objects is accomplished by accelerations imparted to the metallic objects by repeated collisions with rapidly moving blunt impact means driven by and secured to a rotating plate. This invention is especially concerned with



apparatus for effecting the removal of the disintegrated or fragmentized material from the impact area.

PATENTS

GRANTED OCTOBER 10, 1972

GENERAL AND MECHANICAL

3,696,439

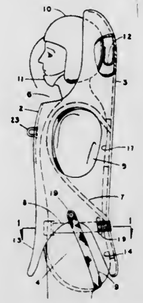
PERSONAL ARMOR

Roger Owen Durham, 3958 Marathon Street, Los Angeles, Calif.

Filed April 1, 1971, Ser. No. 130,075

Int. Cl. F41h *1/04*

U.S. Cl. 2—2.5 **12 Claims**



Personal armor for an individual wearing a safety helmet having a chin strap comprising:

1. A substantially rigid, molded, torso-enclosing body portion, with openings for the hips, arms and head, secured to the wearer by leg, pelvic, and shoulder straps, and with cushions secured to the body portion at the hips and back of the wearer, the body portion having a front and rear skirt to protect the lower portion of the wearer's torso.

2. A hood portion extending upward at the back and sides of the body portion and partially covering the wearer's head.

3. A head-restraint strap extending from the hood portion to the back of the wearer's safety helmet.

3,696,440

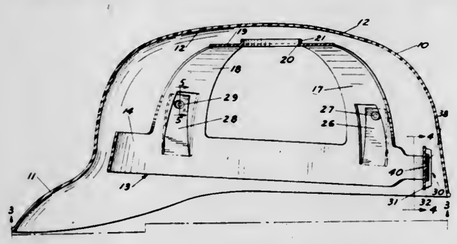
BASEBALL HELMET

Arnold B. Littleton, Orchard Lake, Mich., assignor to Gay Toys, Inc., Walled Lake, Mich.

Filed March 11, 1971, Ser. No. 123,217

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 A **3 Claims**



A liner for a child's baseball helmet, and the like, and which includes a crown portion. The liner includes a flexible annular head band having a head size adjustment means, and a plurality of head straps integrally attached at their lower ends to the annular head band at circumferentially spaced apart positions, and with the upper ends of the straps being integrally attached to a head engaging pad. The annular head band, plurality of head straps and head engaging pad being integrally formed from a pliable, flexible plastic material so that the head band and the head straps will conform to the head shape of a user.

3,696,441

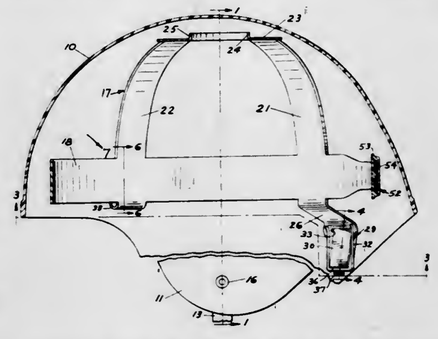
RACING HELMET

Arnold B. Littleton, Orchard Lake, Mich., assignor to Gay Toys, Inc., Walled Lake, Mich.

Filed March 11, 1971, Ser. No. 123,219

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 A **4 Claims**



A liner for a child's racing helmet, and the like, and wherein the helmet is a one-piece, molded plastic composition having a crown portion with integral ear protector side extensions. The liner includes an annular head band having a head size adjustment means, and a plurality of head straps integrally attached to the head band at circumferentially spaced apart positions, and with the head straps being integrally attached to a head engaging pad. The head band, head straps and the head engaging pad are integrally formed from a pliable, flexible material so that the head band and the head straps will conform to the head shape of a user. A pair of rear suspension straps are integrally attached to the head band. A rear attachment means secures the rear suspension straps to the ear protector extensions. A pair of U-shaped front suspension straps are integrally connected to the front end of the head band. A front attachment means is provided for attaching each of the front suspension straps to said crown portion.

3,696,442

PROTECTIVE FACESHIELD

Paul D. Amundsen, Wonder Lake, and John N. Liautaud, Glenview, both of Ill., assignors to Fendall Company, Chicago, Ill.

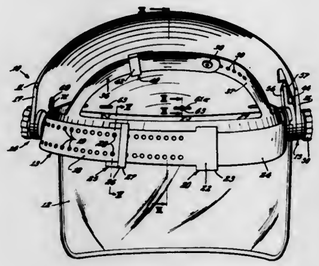
Filed Nov. 3, 1969, Ser. No. 873,242

Int. Cl. A42b *1/00, 1/22*

U.S. Cl. 2—8 **11 Claims**

A protective faceshield is provided with head gear in which the head band may be positively adjusted to the proper size by an operator grasping and squeezing the head band with the fingers of one hand. One head band member is provided with a plurality of cam members which cooperate with the holes to provide a unidirectional slip adjustment in one direction and a positive locking in the opposite direction. The head band includes at the ends thereof apertured bosses for receiving cor-

responding studs of the head gear in a tight press fit to permit the head band to be popped from the head gear to facilitate ready replacement in the field. The head gear is pivotally attached to the crown, which pivotal attachment includes apparatus for providing a plurality of stop locations of the crown relative the head gear and which includes an overriding bevel or cam pin to permit the adjusting elements to slide past the stop in one direction and be positively stopped in the other



direction to prevent excessive downward movement of the window.

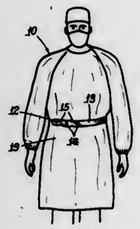
The window is releasably secured to the crown by a locking strap having a plurality of spaced-apart protrusions which cooperably engage corresponding spaced-apart apertures in both the window and the crown. The locking strap is semi-detachable from the crown to permit ease in replacement and proper tensioning of the window and to prevent loss of the strap.

3,696,443

SMOCK OR GOWN WITH ADJUSTABLE BELT

Glenn N. Taylor, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Nov. 16, 1970, Ser. No. 89,965
Int. Cl. A41b 9/00
U.S. Cl. 2—114 **12 Claims**



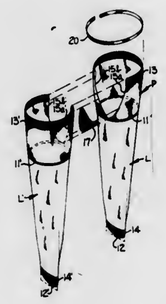
A gown or smock with an opening extending the length of the garment with an attached adjustable belt partially encircling the waist. The adjustable feature is a series of simple female elements in the belt which individually or severally may engage an outwardly projecting rigid male element to hold marginal portions of the opening in overlapping relationship, closing the opening. A particular embodiment is a rear-opening hospital gown with the male element attached to the gown front. When taken from its sterile packaging the belt is wound in a direction to hold the gown open when the fastening elements are engaged, but when worn the direction of winding is reversed with the belt holding the garment closed when the fastening elements are engaged.

3,696,444

PANTY HOSE

Clyde A. Berry, Valdese, N.C., assignor to Pilot Research Corporation, Valdese, N.C.

Continuation-in-part of Ser. No. 531,248, March 2, 1966, Pat. No. 3,310,966, and a continuation-in-part of Ser. No. 618,650, Feb. 27, 1967, Pat. No. 3,377,826. This application March 27, 1967, Ser. No. 626,289. The portion of the term of this patent subsequent to March 28, 1984, has been disclaimed.
Int. Cl. A41b 9/04
U.S. Cl. 2—224 R **5 Claims**



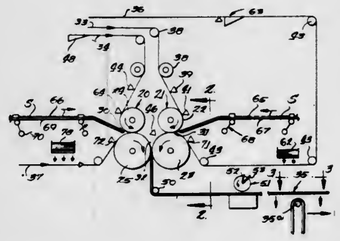
A combination two-legged garment of the type commonly known as "panty hose" including a pair of seamless, sheer, heeless stocking portions knit integrally with and depending from the panty portion. The stocking portions are boarded without the usual heel pocket and are knit of stretchable thermoplastic yarn not in excess of about 30 denier to provide sheerness and sufficient stretchability that the garment can be manufactured and sold in two or three sizes which will fit the full size range.

3,696,445

GARMENT-MAKING METHOD

Grantland A. Craig, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.

Continuation-in-part of Ser. No. 28,571, April 15, 1970. This application Dec. 11, 1970, Ser. No. 97,124
Int. Cl. A41d 00/00; A41b 9/00
U.S. Cl. 2—243 **8 Claims**



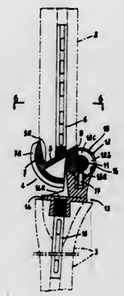
The making of garments from continuous webs wherein at least four webs are advanced simultaneously in two sets to provide left and right garment portions, each portion being approximately one half and including a portion of the front and a portion of the back.

3,696,446

TOTAL KNEE PROSTHESIS

Gilles Bousquet, Ecully, and Andre Rambert, Lyon, both of France, assignors to Association de L'Ecole Catholique d'Arts et Matiers de Lyon, Lyon, France

Filed Jan. 29, 1971, Ser. No. 110,950
Claims priority, application France, Jan. 30, 1970, 7003234
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **6 Claims**



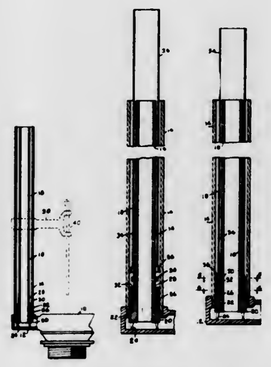
This prosthesis of the knee permits the tibial pivoting movements with due consideration for the two types of rotation, i.e. the systematic inward rotation accompanying the knee flexion and stretching, and the free rotation which can take place only after about 20° of flexion from the normal position of the tibia, the latter being inclined outwards in the stretched knee position, with respect to the thigh-bone extension.

3,696,447

LEAK SEALING DEVICE

Ernest M. McKown, 1313 Acredale Road, Virginia Beach, Va.

Filed April 2, 1970, Ser. No. 25,089
Int. Cl. F16l 15/06, 15/10; A47k 17/00
U.S. Cl. 4—1 **7 Claims**



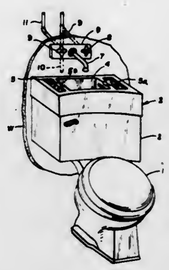
For use particularly in sealing a leak adjacent the lower end of a toilet tank overflow pipe, a tube is inserted into the top of the overflow pipe and carries a deformable packing adjacent its lower end, and a nut threaded on the tube is adapted to be turned downwardly by a tubular tool to deform the packing to seal the leak, whereupon the tubular tool is removed.

3,696,448

LAVATORY-WATER CLOSET COMBINATION

Joseph Carfora, Verona, Pa.

Continuation-in-part of Ser. No. 856,621, Sept. 10, 1969, Pat. No. 3,588,922. This application June 25, 1971, Ser. No. 156,698
Int. Cl. A47k 4/00
U.S. Cl. 4—3 **5 Claims**



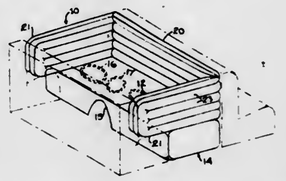
A lavatory for mounting on a flush tank of a toilet, such as used in a powder room or other room involving very limited space. The lavatory replaces the lid of the closet tank and is completely separate from a water faucet connection thereabove to hot and cold water pipes located behind a wall, so as to enable the lavatory to be lifted independently of the faucet when repairs in the closet tank are necessary.

3,696,449

INFLATABLE AUTOMOBILE INTERIOR CONSTRUCTION

William C. Smith, Howard Avenue RR #1, Old Castle, Ontario, Canada

Continuation-in-part of Ser. No. 783,803, Dec. 16, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,034
Int. Cl. A47d 7/04; A47c 19/16
U.S. Cl. 5—94 **5 Claims**



A portable inflatable automobile interior construction is disclosed which with conventional automobile seating forms in the automobile a safe rear play area for toddlers; said construction comprises top and bottom inflatable cushion means, said bottom cushion means constructed so that when inflated the same will fill the leg room between the front and rear automobile seats, said top cushion means constructed so that when inflated the same is in part supported upright on said bottom cushion means and will line the back of said front automobile seat and the opposite interior sides of the automobile between said front and rear automobile seats.

3,696,450

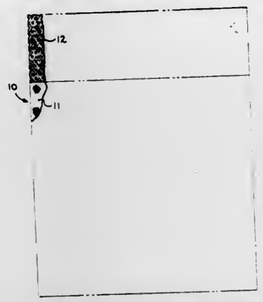
BODY AND HEAD COVERING

Raymond R. Dupler, 744 Euclid, Toledo, Ohio

Filed Sept. 28, 1970, Ser. No. 76,034
Int. Cl. A47g 9/00
U.S. Cl. 5—334 **1 Claim**

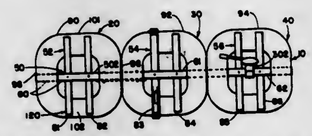
A covering, such as a blanket, to cover a person in which the major portion is of warmth-promoting material woven or

otherwise formed. The end portion of the covering adjacent the head of the person is dimensionally such as to cover the head and is so formed as to permit the passage of air and light. Thus, that end of the covering can be pulled over the head to



afford a limited amount of warmth, but provide adequate air for breathing as well as to enable light to pass through. The end portion may also afford a certain amount of acoustic insulation and this would be useful in a hospital or home where noise would interfere with rest.

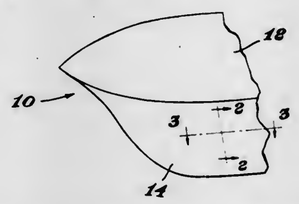
3,696,451
TUBE FLOAT OR BOAT
Howard D. Thompson, 1001 Sixth Street, Dodge City, Kans.
Filed July 2, 1971, Ser. No. 159,367
Int. Cl. B63b 7/08
U.S. Cl. 9—2 A **10 Claims**



A floatation unit which can form a part of a boat or raft comprising a frame having longitudinal and transverse frame members, and an inflatable flexible tube of annular shape in top plan view having forward and rearward portions disposed above the longitudinal frame member when it is in a horizontal position, and having right and left portions disposed below the horizontal transverse frame member.

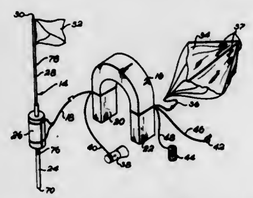
A boat or raft formed of multiple floatation units disposed side by side or forwardly and rearwardly of each other.

3,696,452
HULL CONSTRUCTION FOR VESSELS AND THE LIKE
Earl E. Ziegler, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed March 25, 1970, Ser. No. 22,567
Int. Cl. B63b 5/00
U.S. Cl. 9—6 **10 Claims**



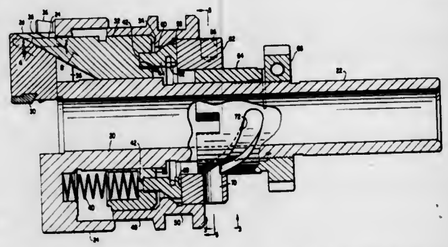
A composite sandwich construction for hulls of water-going vessels and the like wherein a strong but lightweight structure is required. The hull can take compound curvatures without deterioration of structural properties. The sandwich construction comprises a core of oppositely disposed nodular elements forming generally hyperbolic paraboloidal or interrupted hyperbolic paraboloidal structures between the nodular elements, the skins being adhered to the nodular elements.

3,696,453
LIFE SAVING EQUIPMENT
John L. Harris, and Robert W. Hellman, both of Marina Del Rey, Calif., assignors to Del Amo Enterprises, Inc.
Filed May 28, 1970, Ser. No. 41,506
Int. Cl. B63c 9/22
U.S. Cl. 9—14 **6 Claims**



Life saving equipment in which a life buoy and float pole are connected by a line and spring loaded in a container for rapid and substantially simultaneous release. The life buoy may be formed with ends curved in horseshoe manner and a drogue connected by a line to the life buoy may be foldably stored between the buoy ends.

3,696,454
THREAD CUTTING DIE HEAD
Donald E. Youtz, and Edwin M. Eigenbrode, both of Waynesboro, Pa., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed Sept. 10, 1970, Ser. No. 70,995
Int. Cl. B23g 1/00, 5/10
U.S. Cl. 10—95 **2 Claims**

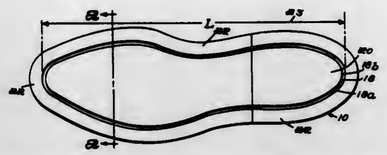


A thread cutting die head incorporating a mechanism permitting the cutting tools (chasers) to be replaced quickly without demounting the head or major disassembly of the head and without disturbing the basic setting of the head.

3,696,455
PROCESS FOR LOCKED SHOE CONSTRUCTION
Charles F. Batchelder, Milton, and Jerome A. Rubico, Boston, both of Mass., assignors to Batchelder-Rubico, Inc., Boston, Mass.
Division of Ser. No. 689,884, Dec. 12, 1967. This application Jan. 7, 1971, Ser. No. 104,756
Int. Cl. A43d 21/00
U.S. Cl. 12—145 **4 Claims**

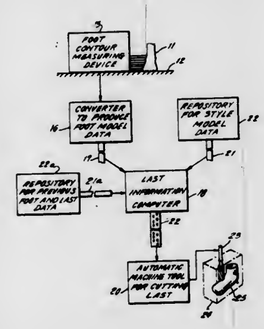
A shoe construction and process utilizing a prefinished outer sole assembly which is adhesively secured to and locked

in predetermined registration with a tightly lasted shoe upper. The finished shoe is characterized by the absence of any lasting means. In one embodiment of the process, the shoe upper



and associated upper components are lasted to a temporary lasting plug which is subsequently removed prior to outsole attaching.

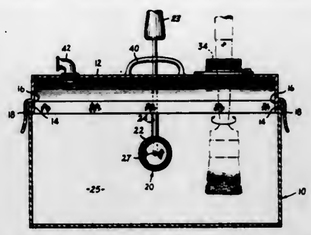
3,696,456
CUSTOM SHOE CONSTRUCTION SYSTEM
Tom David Dunham; Lester Marvin Yeakley, and Andrew Nagy, all of San Antonio, Tex., assignors to International Nominees Bahamas Limited, Nassau, Bahamas
Filed Feb. 22, 1971, Ser. No. 117,451
Int. Cl. A43d 00/00
U.S. Cl. 12—146 L **10 Claims**



A custom shoe-last is cut from a block of wood by a tape-controlled automatic milling machine. The tape is produced by a computer which combines empirically derived shoe style model data with foot model data. The latter is derived from foot contour measurements taken by a plurality of simultaneously operated probes connected to the movable elements of variable capacitors that are connected in circuits which produce electrical outputs in accordance with probe position. These electrical outputs are recorded and stored on magnetic tape which is transported to the computer site located at a point remote from the site where foot contour measurements were taken.

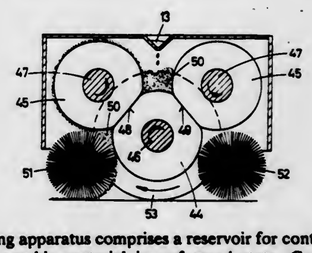
3,696,457
PORTABLE PAINT ROLLER CLEANING APPARATUS
Richard Dewey Hand, P.O. Box 571, East Hampton, N.Y.
Filed April 15, 1970, Ser. No. 28,774
Int. Cl. A46b 17/06
U.S. Cl. 15—4 **3 Claims**

An apparatus for cleaning paint rollers includes a closed housing in which a roller that has been saturated with a paint solvent can be rotatably mounted. The roller is releasably engaged within the housing by a device attached to the end of an axle. The axle can be rotated to spin the roller dry. Paint and solvent is confined to the interior of the housing throughout the cleaning operation. A hole is provided in the lid of the housing so that paintbrushes can also be inserted and spun dry. When the apparatus is not in use as a paint roller or brush



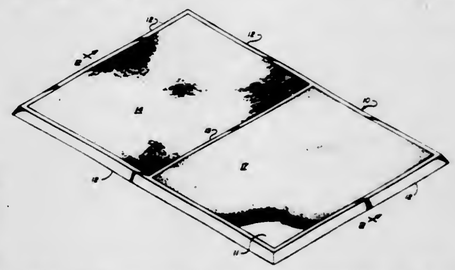
cleaner, it serves as a container for the storage of painting equipment.

3,696,458
CLEANING APPARATUS
Gunter Leifheit, and Johannes Liebecher, both of Nassau/Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau-Lahn, Germany
Filed Dec. 2, 1969, Ser. No. 881,440
Claims priority, application Germany, Dec. 2, 1968, P 18 12 081.5
Int. Cl. A47l 11/03
U.S. Cl. 15—50 C **12 Claims**



A cleaning apparatus comprises a reservoir for containing a body of foamable material in unfoamed state. Converting means is connected with the reservoir for receiving from the latter unfoamed material and for converting this into foamed state. Moving means mounts the reservoir and converting means for movement over a surface to which the material is to be applied in unfoamed state.

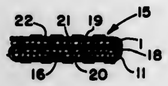
3,696,459
SHOE CLEANING MAT ASSEMBLY
Alfred J. Kucera, 3524 East Glenrosa, Phoenix, Ariz., and Monroe Pulley, Jr., 2327 East Weldon Street, Phoenix, Ariz.
Filed Feb. 12, 1971, Ser. No. 114,893
Int. Cl. A47l 23/22
U.S. Cl. 15—104.92 **8 Claims**



A floor mat assembly for cleansing and sanitizing ones shoes to prevent tracking dirt from one area to another. The as-

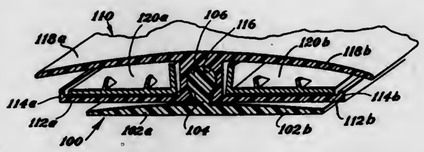
sembly is provided with a first area which moistens the soles of the wearer's shoes by utilizing the wearer's weight to dispense a controlled amount of cleaning solution to loosen the dirt. An adjacent second area removes the cleaning solution along with the suspended dirt and dries the shoes.

3,696,460
MOP SWAB AND METHOD OF MANUFACTURE
Theron V. Moss, 3175 Falmouth, Shaker Heights, Ohio
Filed Dec. 15, 1969, Ser. No. 885,022
Int. Cl. A47l *13/20*
U.S. Cl. 15—229 R **16 Claims**



In one form, a tape is secured to one or both sides of the mop cords intermediate their ends, after which the tape with cords attached thereto may be folded in a prescribed manner and restitched through the entire bundle of cords to provide a relatively stiff headband for the mop swab. In another form, the mop cords are first bunched together intermediate their ends and then the tape is wrapped completely around the bundle of cords and stitched thereto using plural rows of stitching extending transversely across the width of the tape and also longitudinally along the sides of the tape which longitudinal rows lock the threads in the transverse rows to keep them from coming out at the sides.

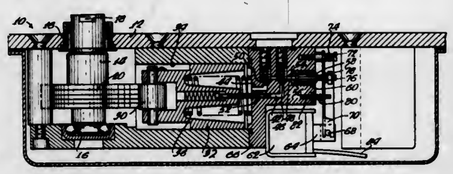
3,696,461
CARPET INSTALLATION SYSTEM FOR USE IN AN AIRCRAFT
Robert G. Kelly, 96 University Heights Drive, Stony Brook, N.Y.
Filed July 28, 1969, Ser. No. 845,289
Int. Cl. A47g *27/04*
U.S. Cl. 16—16 **2 Claims**



For use in an aircraft, a carpet installation system comprising a plurality of longitudinally extending extrusions, having laterally extending flange means, is provided for retaining the carpets so that the carpets may be readily removed for cleaning or replacement.

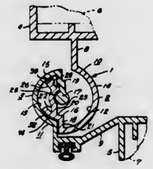
3,696,462
COMBINED DOOR CHECKING AND DOOR HOLD OPEN MECHANISM
Paul W. Martin, Des Plaines, Ill., assignor to Republic Industries, Inc., Chicago, Ill.
Filed Jan. 11, 1971, Ser. No. 105,331
Int. Cl. E05f *3/22*, *15/20*
U.S. Cl. 16—49 HO **11 Claims**

A hydraulic door checking mechanism which otherwise may be considered as of essentially conventional type is provided with a remotely actuated valve in the fluid return line from the checking cylinder to the reservoir. By closing this valve the hydraulic fluid cannot escape from the checking cylinder, thus preventing closing movement of the door from whatever position it has been opened to until the valve is unseated. Preferably, the valve is of the electromagnetic type which responds to the conditions in as associated control circuit. During opening movement of the door, the hydraulic



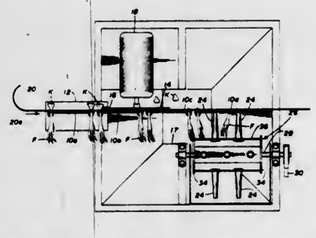
fluid fills the checking cylinder through passages or porting which bypasses the hold open valve. The system is shown as applied to checking door hinges and to door closers of the surface mounted type.

3,696,463
TWO-PART HINGE WITH INTEGRAL PIN
Searcy A. Watson, 2615 Perth Street, Dallas, Tex.
Filed May 11, 1971, Ser. No. 143,698
Int. Cl. E05d *1/04*
U.S. Cl. 16—178 **3 Claims**



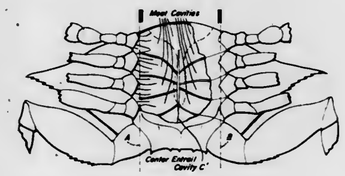
A hinge having two leaves with a pin integral with the inner leaf, the hinge leaves having coacting semicylindrical segments nested so as to permit 180° rotation of said inner leaf relative to the outer leaf with contiguous arcuate faces of the segments being in engagement only during initial opening and final closing movements of the hinge, and said outer segment having means for engagement with the hinge pin throughout relative movement of said segments and means for engagement with the external arcuate face of the inner segment initial closing and final opening movements of the hinge.

3,696,464
FOWL FOOT REMOVER SYSTEM
Janus J. Dillon, Irving, and Bryan T. Snowden, Grapevine, both of Tex., assignors to Food Equipment, Inc., Dallas, Tex.
Filed Jan. 18, 1971, Ser. No. 106,982
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **11 Claims**



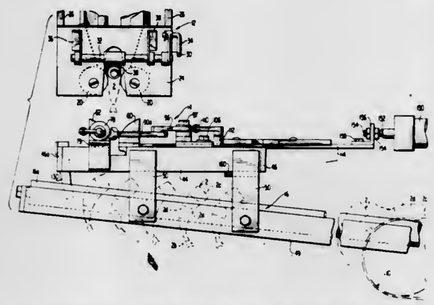
The specification discloses a system for removing fowl feet depending from shackles. The system includes a guide surface mounted in the path of the shackles for positioning the feet generally horizontally. A rotating blade is positioned rearwardly of the guide surface for shearing knuckle portions from the feet. Rotating flexible fingers then strike the remaining portions of the feet on the shackles to propel the feet from the shackles. A hopper is disposed below the rotating blade and the flexible fingers for receiving the severed knuckle portions and the feet.

3,696,465
METHOD OF PREPARING CRAB BODIES FOR THE REMOVAL OF THE MEAT THEREFROM
Michael Rossnan, 11724 Lovejoy Street, Silver Spring, Md.
Filed March 19, 1971, Ser. No. 124,740
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **6 Claims**



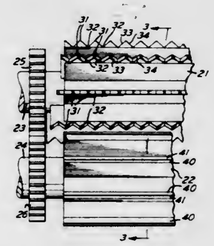
This invention relates to the method for preparing cooked crab bodies for the removal of the contents of the mid-section first, and secondly the meats of the body cavities, by opening these cavities to permit the center entrail cavity to be cleared entirely by fluid pressure, such as water alone or with air or suction, so that the meat in the remaining cavities may also be removed by suction, fluid pressure such as air, water and combined air and water pressure, with means for severing the crab body in two parallel lines to have clear openings for the withdrawal of the meat from all of such cavities by suction, or fluid pressure such as air pressure, water pressure and the combination of suction, air and water pressure, or by hand.

3,696,466
METHOD AND APPARATUS FOR POSITIONING SHRIMP
Herman R. Letchworth, Savannah, Ga., assignor to Seafoods Automation Corporation, Thunderbolt, Ga.
Filed Nov. 9, 1970, Ser. No. 87,836
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **43 Claims**



The method of positioning shrimp wherein the shrimp is held in a generally vertical plane with the forward portion of the shrimp located above the tail portion, and opposite portions of the shrimp at the forward end thereof are engaged to rotate the shrimp about its longitudinal axis into a predetermined position. The shrimp is then deposited on a roll conveyor in the predetermined position for conveyance to a shrimp processing apparatus in a predetermined desired position for acceptance by the latter. Apparatus for performing the method includes a pair of elongate holding bars, one of which is axially separable into two sections for receiving shrimp pushed therebetween by a plunger which has a recess in its forward portion for receiving the shrimp. A pair of fingers are movable between the bars from the opposite end thereof for engaging opposite portions of the shrimp to first center the shrimp between the bars and then to cause rotation of the shrimp about its longitudinal axis as it is pushed through the separable bar sections by the plunger. The fingers and separable bar sections are actuated in response to movement of the plunger by cams. Springs are provided to respectfully urge the bar sections together and the fingers towards each other. The shrimp are fed one-by-one between the bars by a first pair of rotating rolls which overly the bars to deposit the shrimp therebetween in timed sequence. After positioning, the shrimp are conveyed away from the bars by a second pair of rotating rolls which carry the shrimp to the shrimp processing apparatus in the desired position.

3,696,467
PROCESS AND APPARATUS FOR PRODUCING YARN
James L. Lohrke, Jr., Birmingham Township, Chester City, Pa., assignor to Turbo Machine Company
Continuation-in-part of Ser. No. 794,238, Jan. 27, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 98,209
Int. Cl. D01g *1/00*
U.S. Cl. 19—.37 **5 Claims**

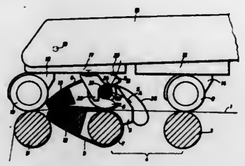


Process and apparatus for converting a tow composed of a multiplicity of substantially continuous synthetic textile filaments into a sliver or strands of staple length textile fibers by stretch breaking the tow. The tow is evened and portions of the filaments are differentially laterally deflected. The apparatus includes movable deflecting blades in rotating blade holders, said blades having a contour to provide peaks and valleys and a second set of movable blades in rotating blade holders, said blades having straight edges. The blade holders rotate so that the blades of each alternate in engagement with the tow.

3,696,468
DOUBLE APRON DRAFTING ARRANGEMENT FOR SPINNING MACHINES
Andre Lattion, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed July 28, 1969, Ser. No. 845,161
Claims priority, application Switzerland, July 26, 1968, 11572/68
Int. Cl. D01b *5/86*
U.S. Cl. 19—255 **8 Claims**

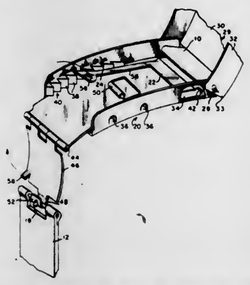
The cradle is mounted with respect to the apron rolls and delivery rolls such that a lap formation on the bottom delivery

rolls causes the cage to automatically pivot away from the delivery rolls so as to prevent further feeding of the roving.



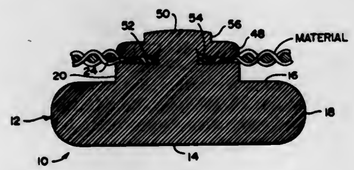
The cradle avoids any pressure being imposed on the bottom apron which might otherwise cause breakage of the apron.

3,696,469
WRIST BAND AND BUCKLE THEREFOR
Harry Kalinsky, 3530 Henry Hudson Parkway, East Bronx, N.Y.
Filed Nov. 12, 1971, Ser. No. 198,261
Int. Cl. A44c *5/24*
U.S. Cl. 24—71 J **20 Claims**



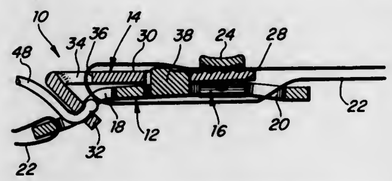
An adjustable buckle for a band in which a plate is telescopically held within an open end housing containing a ratchet and a second plate is hinged to and foldable over the first plate and releasably securable thereto in folded over position and is provided with a hook at its end for engagement of the other end of the band. A pawl is secured to the first plate by a resilient arm which normally maintains the pawl out of engagement with the ratchet. The second plates is provided with a projection which engages the pawl to press it into engagement with the ratchet when the second plate is folded against the first plate.

3,696,470
PLASTIC FASTENER AND METHOD OF SECURING SAME TO MATERIAL
Rolfe E. Reynolds, and Alfred E. Carlile, both of Meadville, Pa., assignors to Textron Inc.
Filed Dec. 8, 1969, Ser. No. 882,979
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 **2 Claims**



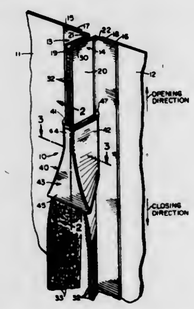
A plastic, single component, button-type fastener having a button portion with a smaller collar and a slender neck extending from the collar to a tapered stem, the tapered stem having a pointed end and a lower surface defining an undercut around the neck with an upper surface of the collar. A method of securing the above described fastener to a piece of material including forcing the stem through the piece of material to position the material in the undercut, cold-heading the stem and partially shearing the cold-headed stem.

3,696,471
RELEASABLE BUCKLE
Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Filed March 18, 1971, Ser. No. 125,530
Int. Cl. A44b *11/12*
U.S. Cl. 24—193 **15 Claims**



A buckle comprising a frame member formed with strap openings at its ends and a bridge intermediate its ends; and a clamping member pivotally mounted intermediate its ends to the frame member. The clamping member has a tongue at one end extending beneath the bridge for clamping a strap against the bridge and a strap slot near its other end bounded on one side by an edge overlying a strap opening in the frame. This slot edge is further from the pivot axis than the bridge so that a pivotal force applied to the clamping member at the edge by tension on the strap is multiplied to clamp the strap between the tongue and bridge. A spring is mounted on the frame for biasing the tongue toward the bridge and a lanyard is attached to the clamping member for pivoting it to release the strap.

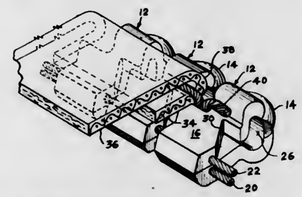
3,696,472
CLOSURE ASSEMBLY WITH SLIDABLE CLOSURE MEMBER
Joseph Perina, Huntington, and Albert E. Hlavaty, Bohemia, both of N.Y., assignors to American Velcro, Inc.
Filed April 15, 1971, Ser. No. 134,216
Int. Cl. A44b *19/00, 19/10*
U.S. Cl. 24—205 **6 Claims**



A closure assembly for releasably joining and separating sheet members which are provided with hook type hooking elements and loop type hooking elements is described. The assembly includes two flexible panels, each panel having a semi-rigid angle strip secured thereto and each angle strip having a tape member with projecting hooking elements secured to one

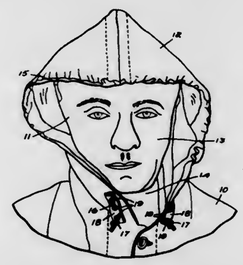
of its legs. A slidable closure member slides along the legs of the angle strips for joining and separating the tape members.

3,696,473
INVISIBLE-TYPE SLIDE FASTENER
Arthur Llewelyn Jones, Glenbrook, New South Wales, Australia, assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed May 20, 1971, Ser. No. 145,251
Int. Cl. A44b *19/34, 19/02*
U.S. Cl. 24—205.1 **6 Claims**



Invisible-type fastener is made from ladder-type strip. Projections on edge of each fastening element are engaged by attaching thread to hold each element against lateral slippage with respect to tape.

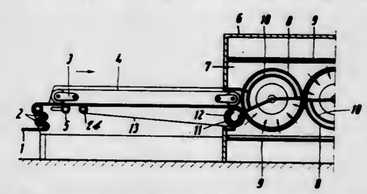
3,696,474
LACING LOCK FOR HOOD
John Slauta, Natick, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 17, 1970, Ser. No. 99,171
Int. Cl. A41f *1/00*; A41d *3/02*
U.S. Cl. 24—266 **7 Claims**



A lacing lock for the lacing of a garment hood to facilitate adjustment of the size of the hood opening and maintenance of the adjusted size regardless of head movements.

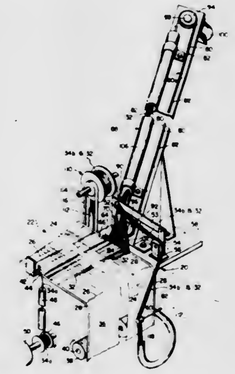
3,696,475
PROCESS AND APPARATUS FOR TENTERING AND HEATING TEXTILE MATERIALS
Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to VEPA AG
Division of Ser. No. 831,683, June 9, 1968, Pat. No. 3,521,378, which is a continuation-in-part of Ser. No. 654,728, July 20, 1967, Pat. No. 3,503,134. This application Nov. 21, 1969, Ser. No. 877,566
Claims priority, application Germany, June 8, 1968, P 17 60 604.1; June 22, 1968, P 17 60 717.9; June 27, 1968, P 17 60 751.1; April 8, 1969, P 19 17 757.2
Int. Cl. D06c *3/02*
U.S. Cl. 26—60 **13 Claims**

The present disclosure is directed to an apparatus for the treatment of materials which comprises a heat-insulated treatment chamber, a plurality of sieve drum means subjected to a suction draft rotatably disposed within said treatment chamber, fan means associated with the sieve drum means for producing a suction draft and for circulating the treatment medium in said treatment chamber, heating means provided in the circulation zone of the treatment medium, tentering means containing tehsioning chains at least partially disposed



outside of the treatment chamber as inlet means, said tentering means cooperating with the sieve drum means for the effective conveyance of the material being treated to said sieve drum means, a supporting means disposed below the tensioning chains for supporting the material disposed on said chains so that the material is conveyed on the underside of the chains, and outlet means for removing the material being treated from the treatment chamber.

3,696,476
PICK REMOVER
James R. Mildon, Taylors, S.C., assignor to Commercial Affiliates, Inc., New York, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,434
Int. Cl. D03j *1/04*
U.S. Cl. 28—17 **25 Claims**

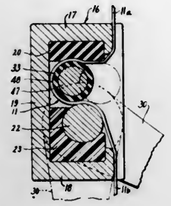


A part of, or an accessory for, a loom for weaving a looped pile fabric or the like which requires picks or the like for looping the fabric, including means to remove the picks comprising a belt with hooks to engage the picks for relative movement to a handling station while they are being removed from the woven material, and means to draw the picks from the handling station to a disposal station.

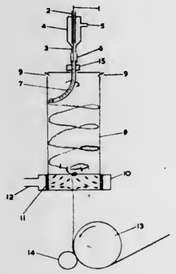
3,696,477
WARP CLAMP
Franklin L. Townsend, Rockford Twp., Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed May 10, 1971, Ser. No. 141,549
Int. Cl. D03j *1/16*
U.S. Cl. 28—44 **12 Claims**

A warp clamp draws the warp sheet between relatively fixed

jaws of the clamp by a rolling action and usually requires the services of only one man to perform the clamping operation.

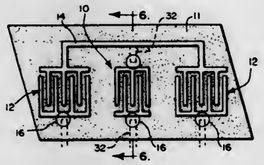


3,696,478
TREATMENT OF YARNS
David Robert Elliott, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Dec. 31, 1969, Ser. No. 889,517
Claims priority, application Great Britain, Sept. 23, 1969, 46,828/69
Int. Cl. D02g *1/00*
U.S. Cl. 28—72.1 14 Claims



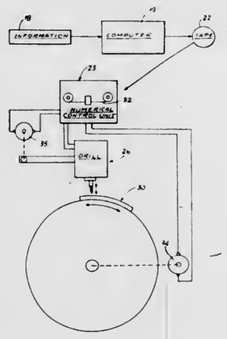
Yarn relax process wherein a yarn is tensioned and forwarded by means of an unheated fluid device to a hot zone wherein tension falls.

3,696,479
METHOD OF MAKING A PIEZOELECTRIC TRANSDUCER
Fleming Dias, Palo Alto, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Oct. 22, 1970, Ser. No. 82,920
Int. Cl. B01j *07/00*; H04r *07/00*
U.S. Cl. 29—25.35 9 Claims



For connecting external leads to miniature solid-state devices of the type wherein an electric circuit element is photoetched, printed or otherwise bonded upon a substrate surface, lands are embedded in the substrate and exposed to the circuit supporting surface of the substrate. The lands provide a surface large enough to enable the circuit elements and external leads to be individually connected to separated regions of the exposed portion or portions of the lands.

3,696,480
METHOD OF AND APPARATUS FOR ACCURATELY WORKING ROTARY DIE BOARDS TO RECEIVE CUTTING RULE
Louis E. Sauer, and Orville C. Miller, both of St. Louis, Mo., assignors to Centenary Central, Inc., St. Louis, Mo.
Filed July 9, 1969, Ser. No. 840,384
Int. Cl. B21k *5/20*
U.S. Cl. 29—26 A 10 Claims

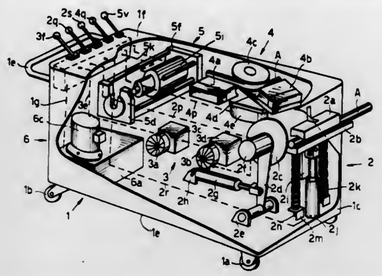


There is disclosed a method of and apparatus for developing on tape and applying a preselected rotary die design, etc., defined by spaced drilled holes, to a rotary die board automatically by a tape controlled apparatus. A computer is programmed to produce information which is transferred to a tape, or the like, fed to a numerical control machine to energize selected mechanisms to physically apply a preselected design formed by spaced drilled holes, routing, etc., to a rotary die board for reception of the spaced tangs or legs of cutting rule, or the like, or other workings. Included in the computer programming is a foreshortening of dimensions, as required, to compensate for the relative position of the cutting rule edge. Illustrated is an apparatus for drilling or drilling and routing rotary die board including an electrically actuatable structure for rotatably supporting rotary die board, an electrically actuatable traversable supporting structure for a drill head, and an electrically actuatable drill head adapted to execute desired reciprocable movements and to drill spaced holes and to rout, as signaled.

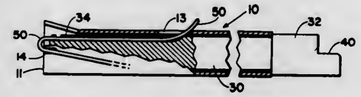
3,696,481
APPARATUS FOR PERFORMING OPERATIONS ON HYDRAULIC TUBING
Paul Schmidt, Hauptstrasse 150, Saalhausen, Germany
Filed Nov. 16, 1970, Ser. No. 89,584
Claims priority, application Germany, Nov. 15, 1969, P 19 57 566.7
Int. Cl. B23p *23/04*
U.S. Cl. 29—33 T 21 Claims

Apparatus for performing a number of operations on hydraulic tubing in the construction of hydraulic installations is mobile and includes a mechanical bending device, a mechanical cut-off device for cutting the tubing to length, a de-burring device for removing the burrs from the ends of the tubing after it has been cut and a device for securing coupling parts to the ends of the cut-off lengths of tubing. All of these

devices are driven by hydraulic drives, consisting of rams or motors and all of the drives are supplied with hydraulic fluid under pressure from a common pump through a number of separate control valves.

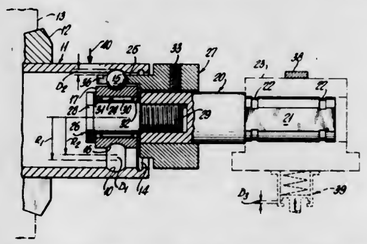


3,696,482
WIRE WRAPPING TOOL
Thomas George Tumilty, Bramalea, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed May 6, 1971, Ser. No. 140,840
Int. Cl. B21f *15/00*
U.S. Cl. 29—33 F 9 Claims



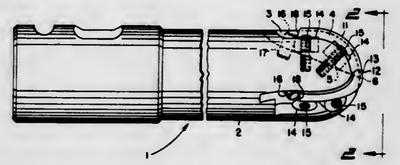
Wire wrapping tool for wrapping wires on terminal posts, and similar uses, the tool having a bit rotatable in a sleeve. The bit has a groove extending longitudinally from its front end and the sleeve has an aperture cooperating with the inner end of the groove. The wire to be wrapped is fed along the groove until the wire end comes out through the aperture. Two opposed cutting edges are formed in the groove near the outer end of the groove to cut through the insulation of the wire. As the bit is rotated to wrap the wire the wire end is sheared by interaction of the groove and aperture, and insulation is peeled off the wire as it is pulled along the groove between the cutting edges.

3,696,483
METHOD AND APPARATUS FOR FINISHING AN ANTIFRICTION-BEARING RACEWAY
Charles R. Burk, Collinsville, Conn., assignor to Textron Inc., Providence, R.I.
Filed Jan. 21, 1971, Ser. No. 108,463
Int. Cl. B24b *39/00*
U.S. Cl. 29—90 19 Claims



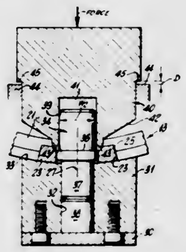
The invention contemplates a method of burnishing a raceway surface for balls or like elements in an antifriction bearing, wherein the burnishing proceeds on a machined raceway surface, in the course of radially compressing an antifriction element between a reference raceway and the unfinished raceway, all while maintaining continuous rolling contact of the element in the two raceways. A specific tool illustrates use of the method in application to ball-bearing races, one embodiment being shown for such finishing of the raceway of an inner-bearing ring, and another embodiment being shown for such finishing of the raceway of an outer-bearing ring. In either event, the method is illustratively performed on an automatic screw machine, after the raceway has been turned at the end of tubular stock, and prior to the cut-off operation which severs the machined and burnished bearing ring from remaining tubular stock.

3,696,484
BALL MILL CUTTER
Frank A. Spriggs, Willoughby, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Feb. 22, 1971, Ser. No. 117,419
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R 10 Claims



Ball mill cutter includes plural cutting blade inserts retained in circumferentially spaced slots in the forward end of the tool body, such slots having a flat bottom wall extending rearwardly at an angle from the tip of the tool body to the outer periphery thereof. The bottom edge of the blade inserts is also flat for mating engagement with the bottom wall of the angular slots, and the outer edge of each blade insert is contoured to provide a cutting edge projecting radially outwardly beyond the outer periphery of the tool body substantially to the same extent along the full length thereof except adjacent the axis of rotation of the tool body where the blade inserts have a flat portion extending perpendicular to the bottom edge which terminates the forwardmost portion of the cutting edge radially outwardly from the rotational axis of the tool body.

3,696,485
METHOD AND APPARATUS FOR MAKING AN ANTIFRICTION BEARING RETAINER
Karl F. Radune, New Britain, Conn., assignor to Textron Inc., Providence, R.I.
Filed March 5, 1971, Ser. No. 121,265
Int. Cl. B21d *53/12*
U.S. Cl. 29—148.4 C 14 Claims



The invention contemplates a retainer ring for maintaining the angular spacing of rolling elements in an antifriction bear-

ing, said ring being the product of a method and apparatus for precisely staked definition of element-retaining lugs prior to assembly of the rolling elements thereto. The ring material displaced by staking is limited by anvil formations which determine the precise spacing. Tolerances may be so closely set and held that rolling-element assembly to such a retainer ring involves only light radial pressure to transiently but not permanently deform the lug regions in a snap or detent action. The invention is described in application to roller-element retention and to ball-element retention, whether the retention is to be against radially inward loss (of rolling elements) or radially outward loss, or both.

3,696,486

STAINLESS STEELS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 709,700, March 1, 1968, Pat. No. 3,591,362. This application Aug. 25, 1969, Ser. No. 852,824

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.5 5 Claims

This invention relates to the powder metallurgy of dispersion strengthened stainless steel and also to dispersion strengthened precipitation hardenable stainless steels and wrought products thereof. The invention also relates to a powder metallurgy method for producing wrought metal shapes of such steels characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions.

3,696,487

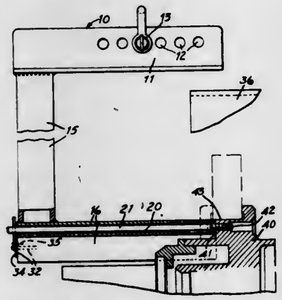
LOADER FOR MOUNTING GRINDING WHEELS

Theodore A. Mrugala, Auburn, and Henry Kruck, Leominster, both of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Sept. 10, 1970, Ser. No. 71,003

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D 4 Claims



A device for assisting in the mounting or removing of a grinding wheel, the device having particular utility for assisting in the handling of larger and heavier grinding wheels during the changing of wheels on the larger kinds of automated production machinery and particularly on machines having wheel hub mounted wheel balancing means.

3,696,488

SEPARATION SYSTEM

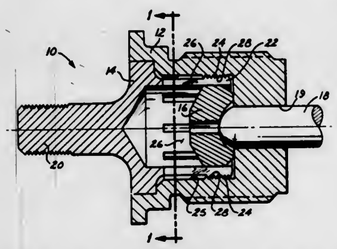
Michael F. Steele, Costa Mesca, and John S. Yates, Placentia, both of Calif., assignors to The Susquehanna Corporation, Fairfax County, Va.

Filed Dec. 21, 1970, Ser. No. 99,917

Int. Cl. B23p *19/04*

U.S. Cl. 29—200 D 13 Claims

A mechanical separation system is disclosed which includes a stud member and a stud housing maintained in mating engagement by a piston. The stud member has a plurality of externally-threaded segments fingers which can be formed in an overall conical shape so that the major diameter of the threaded portion of the conically-shaped fingers is less than the minor diameter of the corresponding internal threads in the stud housing. The piston is positioned within the segmented fingers of the stud member to force the fingers radially outwardly so that the threaded portions mate with the corresponding threads in the stud housing. Separation of the stud member from the stud housing is accomplished by displacing



the piston to allow the stud fingers to move inwardly to assume a conical shape. The externally threaded portion of the stud member is thus disengaged from the internal threads of the stud housing to permit separation of the stud member from the stud housing. In an alternative embodiment, the fingers of the stud member are not formed into a conical shape prior to use, but the energy imparted to the fingers as they are threaded into the stud housing is sufficient to cause the fingers to be deflected inwardly and to disengage from the housing when the piston member is forced out of contact with the end portions of the fingers.

3,696,489

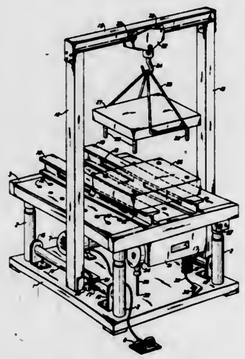
DIE ASSEMBLY AND DISASSEMBLY BENCH

John C. Vecchi, Natrona Heights, Pa., assignor to Oberg Manufacturing Co., Inc., Freeport, Pa.

Filed May 19, 1971, Ser. No. 144,887

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D 9 Claims



A bench top is mounted on telescoping legs supported by a base member and can be raised and lowered relative to the base. The bench top is straddled by a vertical frame formed from a pair of laterally spaced posts connected at their upper ends by a cross beam. There are means on the base member supporting the posts for movement along the opposite sides of the bench top. Supported by the cross beam above the bench is a trolley that is movable along the beam and from which the top section of a die can be suspended while the bottom section

of the die is supported by the bench top and raised or lowered by it.

3,696,490

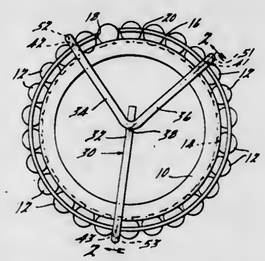
CLAMP FOR BEARING ASSEMBLY

Kenneth Secunda, Detroit, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Feb. 4, 1971, Ser. No. 112,745

Int. Cl. B23p *19/04*; B21d *53/12*

U.S. Cl. 29—201 2 Claims



A three legged wire clamp for a bearing assembly comprised of a double shouldered race member, a plurality of roller bearings positioned in the race member, an unwelded metal retainer strip which is circular in shape in the form of a split ring and hence contains a gap which is subsequently welded to secure the retainer strip in position, and a wire clamp means which inwardly biases the retainer to hold the retainer and bearings in a properly oriented position prior to welding.

3,696,491

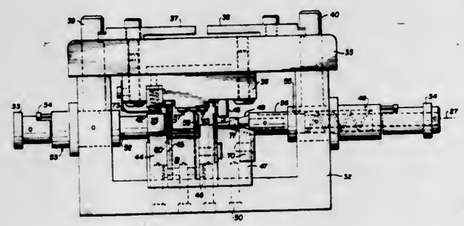
ASSEMBLY JIG FOR MINIATURE ELECTROSTATICALLY DEFLECTED CATHODE RAY TUBES

Horst H. Blumenberg, Owensboro, and Francis W. Francillon, Maceo, both of Ky., assignors to Kentucky Electronics Inc., Owensboro, Ky.

Filed Dec. 22, 1970, Ser. No. 100,624

Int. Cl. B23q *3/18*; B23p *17/04*; B25b *1/20*

U.S. Cl. 29—203 J 8 Claims



A jig holds the electrodes of a miniature electrostatically deflected cathode ray tube in place while receiving molten glass rods to affix the electrodes in position. The jig holds the electrode parts with the tube axis horizontal in a series of slots and contoured receptacle chambers which are manually loaded and held in place by gravity until the jig is fully loaded. Separate pressure pad clamping arrangements are then positioned to bear both vertically and axially on the electrode parts to hold them precisely in position for receiving molten glass rods.

3,696,492

TOOLS FOR PLUGGING IN AND UNPLUGGING SUBSYSTEMS CARRIED ON SLIDEWAYS

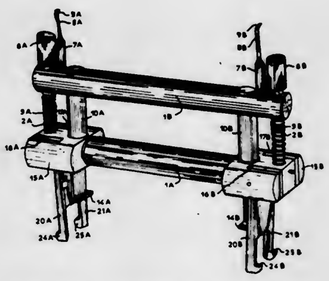
Marcel Baillard, Seine, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed March 9, 1971, Ser. No. 122,389

Claims priority, application France, March 18, 1970, 7009752

Int. Cl. B25b *27/02*

U.S. Cl. 29—203 H 5 Claims



A portable tool permitting, as desired, either selective plugging in of a printed-circuit module into one of a plurality of bottom grooves formed in a rack and above which groove the module is restrained by lateral slideways, or selective unplugging of one of the modules plugged into the bottom rack grooves. It comprises a grip formed by two elements movable relatively to each other. One of these elements is provided with a pair of claws adapted to engage lateral recesses in the rack when the operator moves the two grip elements toward each other. The other element is provided on the one hand, with pushing rods acting on the module to be plugged and, on the other hand, with hooks acting on the module to be unplugged, after having turned the grip the other way round.

3,696,493

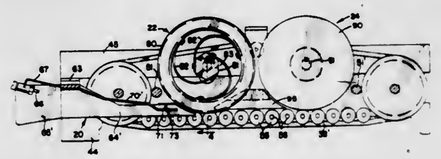
AEROSOL VALVE ASSEMBLY LOCATING AND SETTING APPARATUS

George E. Leonard, Davenport, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Dec. 28, 1970, Ser. No. 101,504

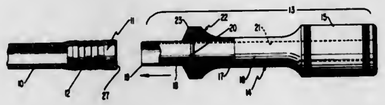
Int. Cl. B23p *19/04*

U.S. Cl. 29—208 B 19 Claims



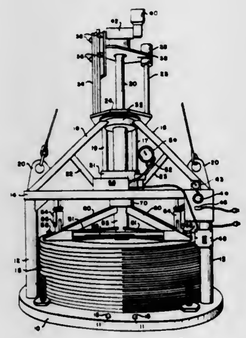
An apparatus for locating and setting valve closure cap assemblies on aerosol containers which apparatus is adapted to be combined with a horizontal bottom conveyor for advancing the containers in upright position to a locating and setting station where there is mounted an overhead locating wheel with a peripheral groove for engaging the valve carrying closures and locating the assemblies in the top openings in the containers and associated guide members for assisting in the proper locating of the assemblies and for guiding and steadying the containers while the assemblies are located in the openings and subsequently forced down in seating relation on the rims defining the openings by a setting wheel which is mounted immediately adjacent the locating wheel in the path of advance of the containers.

3,696,494
VALVE EXTRACTOR
Henry H. Mackal, Fort Lauderdale, Fla., and Kenneth P. Behnke, New Milford, N.J., assignors to Halkey-Roberts Corp., Parmans, N.J.
Filed March 8, 1971, Ser. No. 121,729
Int. Cl. B23p 19/04
U.S. Cl. 29—213 9 Claims



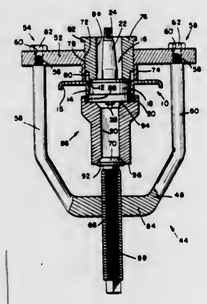
A device for extracting fittings such as valves from elastomeric tubes into which they are telescoped and in which they are securely held by the resilient contraction of the tube thereabout. The valve extracting device comprises a thin-walled circular cylindrical tube which is inserted in an axial direction between the outer end of the valve and the tube and is progressively thrust therebetween. During this operation the tube is progressively freed from the valve, so that the valve may finally drop downwardly through the axial passage in the tool and thus be recovered. The elastomeric tube is then pushed off the thin-walled tubular portion of the extractor by a collar or sleeve which is slidably mounted upon the thin wall of the extractor so as to engage the outer free end of the elastomeric tube and to thrust it axially along the thin wall of the extractor.

3,696,495
THREADED RING TURNING DEVICE
Alvin R. Synstad, Clifton, Va.; Luther M. Burges, Frederick, and Paul P. Day, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 5, 1971, Ser. No. 131,233
Int. Cl. B23p 19/04
U.S. Cl. 29—240 8 Claims



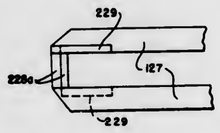
The invention is a device to support the weight of a threaded ring as it is rotated so that the threads on the threaded ring and corresponding threads on the tank receiving the threaded ring are not rubbing but are balanced in the tolerance of the threaded fit.

3,696,496
EXTRACTOR AND PUSHER
Joe B. Corder, 3802 Cossell Road, Indianapolis, Ind.
Continuation-in-part of Ser. No. 811,309, March 28, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 99,745
Int. Cl. B23p 19/04
U.S. Cl. 29—260 9 Claims



For use in inserting and removing devices, such as ball joints, which are conventionally pressed into openings in members, an apparatus comprising rigid frame means including a frame plate adapted to be disposed on one side of such a member and a frame portion adapted to be disposed on the opposite side of such a member. The frame plate provides an opening positioned to be registrable with the opening in such a member. Drive means, such as a jacking screw, is carried by the frame portion and adapter means is provided for operatively connecting the drive means to such a device.

3,696,497
METHOD OF MAKING A BACKING STRIP FOR A WIPER BLADE
William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.
Continuation-in-part of Ser. No. 883,928, Dec. 10, 1969, Pat. No. 3,616,485, which is a continuation-in-part of Ser. No. 725,325, April 30, 1968, Pat. No. 3,541,629. This application Nov. 19, 1970, Ser. No. 90,938
Int. Cl. B23q 17/00; B23p 11/02
U.S. Cl. 29—407 5 Claims

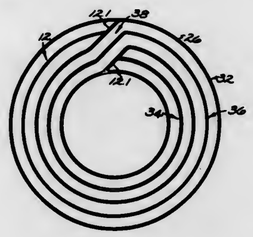


A flexible wiper element supported by a resiliently flexible backing strip. In some embodiments the wiper element and backing strip are bonded together. In other embodiments the backing strip includes a pair of transversely spaced strip members which retain the wiper element therebetween. Longitudinal edge portions of the backing strip are embraced by the usual claws of a wiper pressure unit, and longitudinally spaced detents are provided on the backing strip to releasably or snap-fittingly receive one of the claws between them, whereby to releasably hold the blade unit and pressure unit in assembled relation.

3,696,498
PRETREATMENT OF METAL SHEETS WHICH ARE COATED AFTER A FORMING OPERATION
Lambis Leontaritis, Cologne; Nikolaus Schon, Leverkusen; Hans Hoffmann, Leichlingen, and Aziz El Sayed, Schildgen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 3, 1970, Ser. No. 94,976
Claims priority, application Germany, Dec. 4, 1969, P 19 60 817.4
Int. Cl. B21b 45/02; B44d 1/34
U.S. Cl. 29—424 7 Claims

This invention relates to an improved process for the pretreatment of metallic materials wherein the material is subjected to a surface treatment, subsequently covered with a removable layer of a water soluble, film-forming organic polymer, formed and provided with a firmly adhering protective layer.

3,696,499
METHOD FOR MAKING A COMPOSITE TUBE
John A. Dromsky, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 21, 1970, Ser. No. 100,007
Int. Cl. B23k 31/02
U.S. Cl. 29—476.5 11 Claims



A strip of composite metal laminate material embodying a thin inner layer of stainless steel sandwiched between and metallurgically bonded to two relatively thicker outer layers of low carbon steel is subjected to a brief, high temperature heat treatment followed by a relatively much longer heat treatment at much lower temperature for substantially eliminating the yield point in the laminate and for maximizing formability of the laminate while permitting some reduction in the corrosion resistance properties of the stainless steel layer of the laminate. The composite strip material is then readily formed into two, concentrically disposed convolutions of the strip material while the laminate material is in this highly formable condition. The convolutions of the strip material are then brazed together to provide a double-walled tubing, the brazing procedure being regulated to effect selected heat treatment of the formed composite material for substantially restoring the corrosion resistance properties of the stainless steel layer of the laminate within the finished tubing.

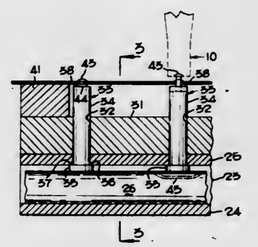
3,696,500
SUPERALLOY SEGREGATE BRAZE
Lemuel A. Tarshis, Latham; James L. Walker, Schenectady, both of N.Y., and Thomas F. Berry, Cincinnati, Ohio, assignors to General Electric Company
Filed Dec. 14, 1970, Ser. No. 97,915
Int. Cl. B23k 31/02
U.S. Cl. 29—487 11 Claims

A method of forming an integral joint bonding together superalloy pieces, and brazing alloy composition therefor. The process includes steps to locate and determine the chemical composition of the lowest melting segregate of a superalloy piece to be bonded, applying a prepared brazing material consisting essentially of said lowest melting segregate, and heating the pieces to be joined together with the brazing material. Subsequent progressive heat treatment of the pieces with the brazing material therebetween diffuses and solutionizes the



brazing material components into the adjoining alloy pieces to homogenize the bond and make the joint zone an integral part of the joined members in microstructure and mechanical properties.

3,696,501
RIVET BUCKING ASSEMBLY AND METHOD
James D. Burtin, Lebanon, Mo., assignor to Detroit Tool and Engineering Company, Lebanon, Mo.
Filed Oct. 24, 1969, Ser. No. 869,213
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—509 6 Claims

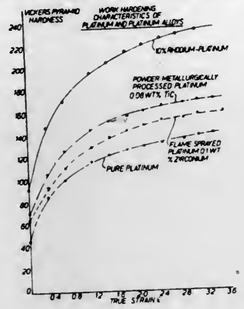


This rivet bucking assembly is used in a system employing a reciprocating rivet gun. The assembly includes a support housing containing a pneumatic bladder receiving air at a controlled, variable pressure. An anvil member, mounted in slidable relation within an aperture communicating with the interior of the housing receives thrust from the bladder. Air pressure delivered to the bladder is transferred to the anvil to provide the rivet with a support of varying rigidity capable of sustaining impact from the rivet gun for the formation of a well defined rivet head.

3,696,502
METHOD OF MAKING A DISPERSION STRENGTHENED METAL
Alan Sydney Darling, Northwood, Middlesex, England, assignor to Johnson Matthey & Company Limited, London, England
Continuation of Ser. No. 839,985, July 8, 1969, abandoned. This application July 14, 1969, Ser. No. 861,522
Claims priority, application Great Britain, July 12, 1968, 33,392/68
Int. Cl. B23k 19/00
U.S. Cl. 29—527.7 16 Claims

A method of making a dispersion strengthened metal or alloy in accordance with this invention consists in spraying a molten metal material and a reactive constituent on to a target. The reactive constituent is passed through an atmosphere which converts it into a material which forms a dispersion

phase within the host material when the latter is deposited on the target. A dispersion strengthened metal or alloy made in

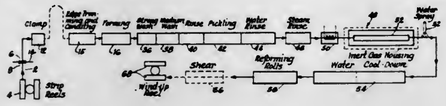


accordance with this method possesses improved mechanical properties and increased strength at high temperatures.

3,696,503
METHOD FOR CONTINUOUSLY GALVANIZING STEEL STRIP

Theodore H. Krengel, Flossmoor; Arthur E. Ostrowski, Alsip, and Anthony J. Raymond, Olympia Fields, all of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Oct. 28, 1969, Ser. No. 871,917
Int. Cl. B23p *17/00*
U.S. Cl. 29—527.4 **8 Claims**

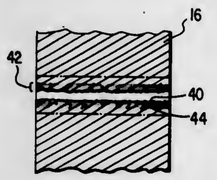


A method of galvanizing strip steel is disclosed in which a continuous strip moving in a horizontal plane, after passing through preparation steps, is caused to enter a bath of molten zinc below the level of the surface of that bath. The strip still moving in a horizontal plane passes through the bath and exits therefrom from a location below the surface. After cooling, the strip may be coiled or partially roll-formed and cut to desired lengths. The disclosure includes the steps of forming or partially forming the strip prior to its entry into the bath.

3,696,504
METHOD OF PERFORMING SEQUENTIAL NON-MECHANICAL AND MECHANICAL MACHINING OPERATIONS ALONG A COMMON CENTERLINE

John A. Cupler, II, 10 Cupler Drive, LaVale, Cumberland, Allegany County, Md.

Continuation of Ser. No. 800,237, Feb. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 715,711, March 25, 1968, Pat. No. 3,478,419. This application Aug. 11, 1971, Ser. No. 171,004
Int. Cl. B23p *13/04*
U.S. Cl. 29—558 **12 Claims**



The disclosure relates to a method of drilling holes in difficulty machinable material wherein non-mechanical means, such as a laser or an electron beam, is used to drill a first undersize hole which is characterized by a surrounding recast area followed by a mechanical reaming operation to remove the recast area and produce a finished bore in the material which then reveals no metallurgical alteration.

3,696,505
UNILATERALLY METALLIZED ELECTRET FOIL

Jan Van Turnhout, Delft, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzolk ten behoeve van Nijverheid, Handel en Verkeer the Hague, Netherlands

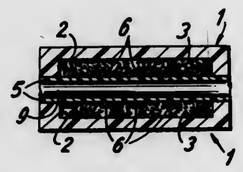
Filed July 1, 1969, Ser. No. 838,110
Claims priority, application Netherlands, July 10, 1968, 6809738
Int. Cl. H01s *4/00*
U.S. Cl. 29—592 **2 Claims**

The method for the manufacture of a unilaterally metallized electret foil wherein a double spiral, made up of a first unilaterally metallized foil, the metallized surface of which abuts with the non-metallized surface of a second unilaterally metallized foil, is first heated, then a direct voltage is connected to the two metal layers and next the double spiral is cooled down to room temperature. The tension between the layers is removed, the double spiral is unwound and the foils are taken apart.

3,696,506
METHOD OF MAKING A MEMORY PLANE WITH POWDERED KEEPERED MATERIAL

William Y. Sinclair, Frenchtown, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 16, 1970, Ser. No. 89,955
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **6 Claims**



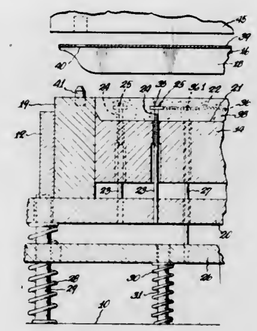
A memory plane includes a keepered word line structure formed by two cooperating molded assemblies, both having recesses for accommodating loose particles of magnetically conductive, but electrically non-conductive material. A contoured word strap assembly is partially disposed in each of said molded assemblies, after which the molded assemblies are joined together whereby the peaks of the contoured word strap assemblies define tunnels in which magnetically coated wires may be inserted, thereby completing the construction of the keepered memory plane.

3,696,507
METHOD AND APPARATUS FOR MAKING ELECTRIC HEATERS

Robert W. Unger, and Wallace H. Sunderman, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed March 22, 1971, Ser. No. 126,503
Int. Cl. H05b *3/00*
U.S. Cl. 29—611 **11 Claims**

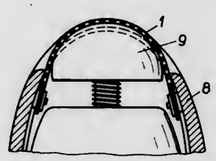
An improved method, and apparatus, for forming strip heaters wherein the heating resistor is disposed in centered relation within a cake of compressed refractory material in a single operation. The invention includes a cavity in a mold in which the resistor is supported on winding pegs and electrically connected to terminals. The base of the sheet metal channel of the heater to be formed is placed in juxtaposed relation with the cavity opening, and this base is pressed toward the cavity to compress refractory material and a binder within the cavity. The winding pegs are withdrawn from the mold cavity during the pressing operation to strip the resistor therefrom and leave the latter centered in the compressed cake of refractory material contained within the heater channel.



3,696,508
SHEARING SYSTEM FOR DRY SHAVERS

Werner Messinger, Kronberg, Taunus, Germany, assignor to Braun A.G., Frankfurt/Main, Germany

Filed Aug. 20, 1970, Ser. No. 65,391
Claims priority, application Luxembourg, Aug. 26, 1969, 59,350
Int. Cl. B26b *19/04*
U.S. Cl. 30—43 **15 Claims**



A shearing foil for use with a dry shaving apparatus as an upper cutter having a major hole field formed therein, for allowing entry of the hair thereinto, such hole field containing a plurality of hole-like apertures having a predetermined lateral extension, a plurality of slots having a predetermined length, the length of each of the slots being greater than the largest dimension of the lateral extension of each of the hole-like apertures, the hole-like apertures and the slots being formed in the body of the foil in a mixed fashion and being separated from each other by strips resulting from the formation of adjacent ones of hole-like apertures and the slots.

3,696,509
DIES FOR CUTTING ELECTRICAL CABLE

Robert W. Lancaster, Haven, Kans., assignor to Panhandle Eastern Pipe Line Company, Houston, Tex.

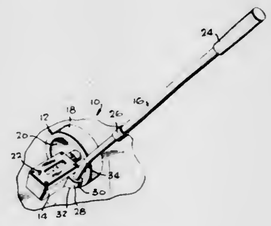
Filed Sept. 10, 1970, Ser. No. 71,008
Int. Cl. B26b *17/02*
U.S. Cl. 30—90.6 **1 Claim**

Two mating die bodies are each equipped with cutoff blades that mate when the die bodies are moved together. With an electric cable between the die bodies, these blades cut the cable. Also carried by each of the die bodies are indenting blades that form circumferential indentations and longitudinally extending indentations in the insulation around the conductor of the cable. This allows the insulation to be stripped from the conductor easily and rapidly after the cable has been cut.

3,696,510
MEASURING WHEEL CONSTRUCTION

Wallace D. Evans, Jr., Malibu, Calif., assignor to Rolatape Corporation, Santa Monica, Calif.

Filed , Ser. No. 111,377
Int. Cl. G01c *22/00*
U.S. Cl. 33—141 R **2 Claims**



A measuring wheel construction wherein the rotatable wheel is mounted upon a conical recessed hub, a counter mechanism is secured to the wheel and extends within the recessed hub, the counter mechanism being adapted to record the rotational movement of the wheel, a tubular handle is secured to the counter mechanism by an attaching bracket, the bracket is relieved to not interfere with the surface being measured, the handle being outwardly curved adjacent the bracket.

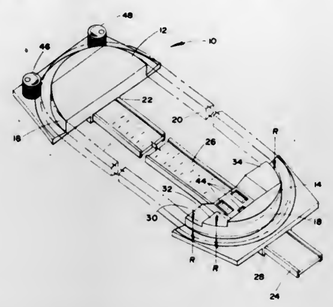
3,696,511
BELT MEASURING DEVICE

William L. Bixler, Littleton, and Harold C. Voss, Denver, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed April 23, 1971, Ser. No. 136,689
Int. Cl. G01b *5/00*
U.S. Cl. 33—125 R **4 Claims**

A device for establishing an outside circumference identification for V-belts. The device includes two semi-cylindrical members reciprocally separable from each other along a stick which has its length divided into a plurality of scales. An arcu-

ate stepped reference on one of the members provides means for gauging the top width of a plurality of V-belts. A pointing



means in cooperation with the stepped reference indicates a circumference or specified belt identification on the scales.

3,696,512
EXTENSOMETER

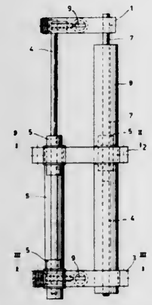
Silvio M. N. K. W. F. von Marinelli; Jules Herman Vree, and Joannes B. Verboom, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed March 3, 1970, Ser. No. 16,198

Claims priority, application Netherlands, March 6, 1969, 6903437

Int. Cl. G01b *5/00*

U.S. Cl. 33—147 D **4 Claims**



An extensometer having a pair of platforms movable relative to each other by a guide pin and guide sleeve arrangement. The platforms are substantially U-shaped with the guide pins arranged on points diametrically opposed to each other. An inductive displacement recorder comprising a ferromagnetic core secured to one of the platforms and a coil system secured to the other platform is arranged for telescoping movement with respect to each other. A clamp is mounted on each of the platforms and arranged for securement to a sample to be tensile tested so that the extensometer, which forms a cage construction, is concentrically secured to the sample to be tested.

3,696,513
THREE-PHASE GAUGING SYSTEM

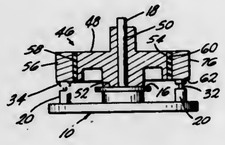
Francis G. Sullivan, Coldwater, Mich., assignor to Simpson Industries, Inc., Litchfield, Mich.

Filed March 19, 1970, Ser. No. 21,131

Int. Cl. G01b *7/24, 7/315, 19/295*

U.S. Cl. 33—174 L **2 Claims**

A gauging system for determining the relative relationship of given locations on an item being gauged with respect to each other or a reference location utilizing multiple-phase alternating current, in particular three-phase alternating current, wherein the item being gauged is engaged at predetermined locations by electrical linear differential measuring devices each being energized by a separate phase of the alternating current supply, the output of the measuring devices being electrically interconnected and associated with electrical indicating means to give an electrical indication of the lo-



cation of the sensing components of the electrical measuring devices and, hence, give an electrical indication of the physical characteristics of the item being gauged. With three-phase alternating current three electrical linear measuring devices are angularly spaced at 120° intervals about the reference support member supporting the item being gauged, and the electrical sensing circuit may include phase indication means to indicate the location of the maximum deviation of the item being gauged with respect to a reference surface or point.

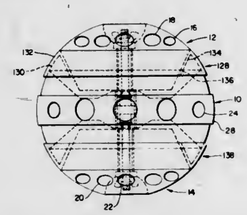
3,696,514
DEVICE FOR DETERMINING FINGER HOLE POSITIONS IN BOWLING BALLS

Hal Byers McIntyre, and Harvey Edward Hickey, both of Hopkinsville, Ky., assignors to SW Industries, Inc., Newton, Mass.

Filed Oct. 26, 1970, Ser. No. 83,932

Int. Cl. G11b *5/00*

U.S. Cl. 33—174 F **7 Claims**



A ball-like device having a medial section and a pair of opposed cap sections. The medial section is formed with a sequence of holes designed to selectively fit the thumb of both right and left handed bowlers. One of the cap sections is provided with a sequence of holes in the form of pairs of smaller and larger holes that are designed to selectively fit the ring and middle fingers of right handed bowlers. The other cap section is provided with a sequence of holes in the form of pairs of smaller and larger holes that are designed to selectively fit the ring and middle fingers of left handed bowlers. Each cap section is pivotably mounted to the medial section in order to adjust the span between a selected ring and middle finger hole pair and a selected thumb hole.

3,696,515
PLEATING DEVICE

Michael E. Tuskos, 2507 Saratoga Drive, Louisville, Ky.

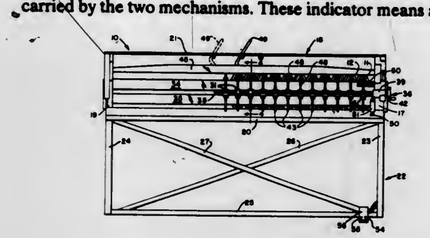
Filed July 12, 1971, Ser. No. 161,534

Int. Cl. B43l *9/08*

U.S. Cl. 33—192 **10 Claims**

This invention provides an improved device for alloting material for pleats and spacing between those pleats in making

draperies and the like. Basically, it comprises first and second lazy-tong mechanisms, each having opposite first and second ends. The first mechanism has one of its ends fixed to a base member. Adjustable means are provided for interconnecting the second mechanism to the base member and for variably spacing it apart from the first mechanism. Indicator means are carried by the two mechanisms. These indicator means are ad-



justably positionable with respect to a sheet of material placed adjacent to the two mechanisms by movement of the adjustable means and of the first mechanism. In the presently preferred form of the present invention, the indicated spacing between the pleats is adjusted by movement of the adjustable means, while the indicated amount of material alloted for gathering into the pleats is adjusted by movement of the first mechanism.

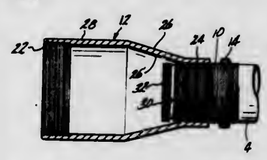
3,696,516
SCOPE TUBE WITH OCULAR RETAINER RING

John F. Thompson, El Paso, Tex., assignor to W. R. Weaver Company

Filed March 23, 1971, Ser. No. 127,315

Int. Cl. F41g *1/38, 1/42*

U.S. Cl. 33—245 **4 Claims**



A retaining ring is snap-fitted onto a telescopic gunsight tube behind an ocular housing to prevent the ocular housing from being accidentally removed from the tube, thus nitrogen gas in the interior of the scope cannot be accidentally released therefrom.

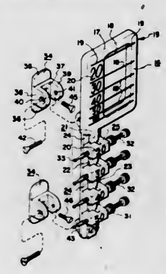
3,696,517
RANGE FINDER AND BOW SIGHT DEVICE

Marlow W. Larson, 595 41st St., Ogden, Utah

Filed June 10, 1970, Ser. No. 45,189

Int. Cl. F41g *1/00;* **F41b** *5/00*

U.S. Cl. 33—265 **2 Claims**



A range finder and bow sight device wherein plural sights are made adjustable and correlated with a fixed, stepped range finder. The individual bow sights used are adjustable both for height and azimuth, and in a preferred form of the invention, can be locked through such adjustment to a vertical slide member. Mounts on the device are self-aligning and can be screwed or taped to a conventional archery bow.

3,696,518
VEHICLE DIRECTION SENSING AND STEERING SYSTEMS USING MAGNETIC FLUX RESPONSIVE MEANS

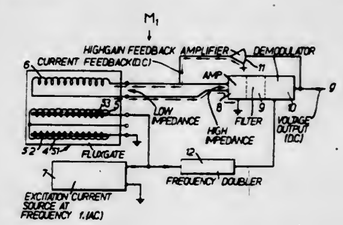
Andrew Francis Vincent Leat, Ann Arbor, Mich., assignor to Elliott Brothers (London) Limited, London, England

Division of Ser. No. 683,641, Nov. 16, 1967, abandoned. This application June 15, 1970, Ser. No. 46,385

Claims priority, application Great Britain, Nov. 19, 1966, 51,889/66

Int. Cl. G01c *17/38*

U.S. Cl. 33—357 **5 Claims**



A fluxgate magnetometer circuit is described using a null method of indicating the magnitude and phase of a predetermined component of magnetic field lying along its axis. A correction circuit corrects the output of the fluxgate magnetometer circuit for (i) errors resulting from extraneous magnetic fields which detract from or augment a component of magnetic flux being measured, and (ii) errors due to distortion of the predetermined component of flux by the proximity of magnetizable materials.

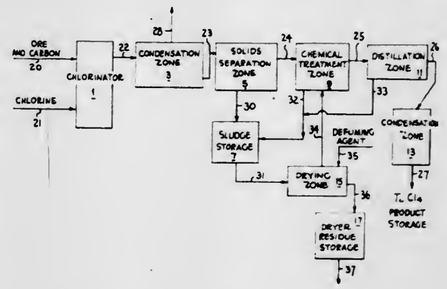
3,696,519
TREATMENT OF TITANIUM TETRACHLORIDE DRYER RESIDUE

William C. Pefferman, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed April 1, 1971, Ser. No. 130,331

Int. Cl. C01g *23/00*

U.S. Cl. 34—9 **5 Claims**

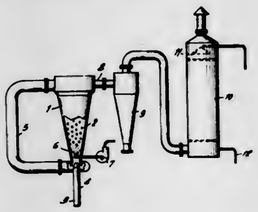


The production of titanium tetrachloride by chlorination of titaniferous ores is described. Fuming of titanium tetrachloride dryer residue is inhibited by adding alkali and/or alkaline earth metal carbonates to the dryer means before exposing the residue to air.

3,696,520
PROCESS AND DEVICE FOR THE TREATMENT OF MATERIAL

Peter Klaus Niedner, 8000 Munich 19, Sudliche Auffahrtsallee 70, and Gerhard H. Diez, 8000 Munich 81, Freischutzstrasse 110/1308, both of Germany, assignors to said Niedner, by said Diez

Continuation-in-part of Ser. No. 522,918, Jan. 25, 1966, abandoned. This application Jan. 6, 1970, Ser. No. 975
Int. Cl. F26b *3/08*; F27b *15/10*
U.S. Cl. 34—10 5 Claims

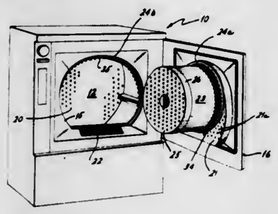


A method for the continuous treatment of material, namely separation of solids dissolved or suspended in a liquid or treatment of humid or dry solid, comprising atomizing the material and contacting it with hot gas to cause decomposition, calcinating or drying, said hot gas being in a zone and forming a turbulent layer between two oppositely flowing currents of gas, at least a major portion of the atomized material passing through the turbulent layer, and a portion of the gas containing the material being withdrawn.

3,696,521
LAUNDRY DRYER

James R. Hubbard, Moorestown, N.J., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Dec. 24, 1970, Ser. No. 101,308
Int. Cl. F26b *11/02*
U.S. Cl. 34—128 7 Claims



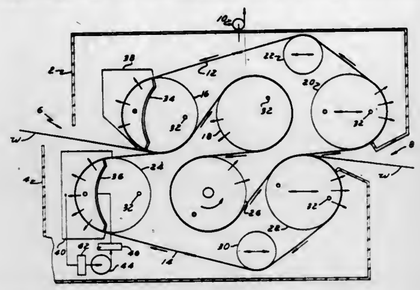
A dual-zone clothes dryer in which a smaller drum is disposable within the main rotatable drum, with the smaller drum in such driven engagement with the main drum that it is rotated at a speed higher than that of the main drum, and suitable to achieve tumbling of clothes within the smaller drum.

3,696,522
DRIER FOR PAPER WEBS

Garo H. Krikorian, Paxton, Mass., assignor to Hi-Flux Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,346
Int. Cl. F26g *11/02*
U.S. Cl. 34—115 7 Claims

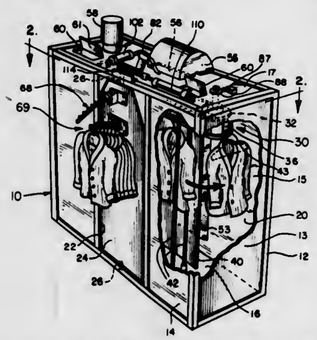
Apparatus for continuously drying a web of paper sheet material having a pair of foraminous, thermally conductive, endless conveyor belts supported to receive a web therebetween and carry the same under tension around at least two closely spaced heater rolls, each roll in turn reversing the direction of travel of the belts and in contact therewith for greater than 180° of its cylindrical surface, thus providing adjacent zones of concentrated heat exchange in a dimensionally compact high speed drying operation. Blow-through heating rolls guide the belts at the web inlet and outlet for preheating each belt in advance of web contact therewith.



3,696,523
STEAM AIR GARMENT FINISHER

Michael G. Beeley, North Salt Lake City, and Richard D. Thompson, Salt Lake City, both of Utah, assignors to McGraw-Edison Company, Elgin, Ill.

Filed May 3, 1971, Ser. No. 139,458
Int. Cl. F23b *19/00*
U.S. Cl. 34—216 16 Claims



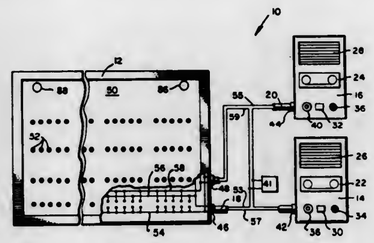
A batch box steam air finisher having the operating advantages of typical batch box finishers while yet further having the operating advantages of typically high cost tunnel-type finishers. This disclosed finisher has an enclosure with an internal completely confined conveyor for carrying garments in single file individually past specific conditioning discharge means and specific air whip drying means, and also has additional conveyor means for automatically loading and/or unloading a batch or group of garments into or from the enclosure and specifically into the control of or from the control of the confined conveyor automatically, whereby a common finishing cycle can finish more than one garment.

3,696,524
TEACHING MACHINE

Robert Donald Kranyik, Weston; Donald E. Vegliante, North Haven, and Donald F. Balmer, Madison, all of Conn., assignors to Learning Systems Corporation, Hamden, Conn.

Filed Sept. 8, 1970, Ser. No. 70,210
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 C 16 Claims

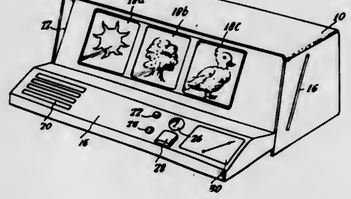
A teaching machine which utilizes both oral and graphic information to test a student's ability. Graphic representation on an activity sheet mounted to an activity board are identified by a student in response to questions posed to the student through a tape recorder. The student responds to the questions by inserting a probe through the activity sheet into the activity board which produces a response commensurate with the correctness of the answer given by the student. Both remedial response in the event of a wrong answer and reinforcing response in the case of a correct answer may be provided.



3,696,525
TOUCH DETECTING TEACHING MACHINE

Alan Cleary, 7 and 8 Sydenham Terrace, Newcastle upon Tyne, England

Filed Nov. 2, 1970, Ser. No. 86,173
Claims priority, application Great Britain, Nov. 13, 1969, 55,602/69
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 B 9 Claims



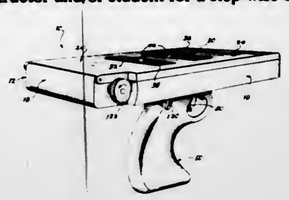
A touch detecting teaching machine for teaching young children or those with sub-normal intelligence. The machine is a desk model having three display panels on which symbolic visual information can be presented by means of a card which s fed into the machine. The machine asks the subject a question about the visual information displayed and invites him to select the correct alternative. The subject gives his answer by touching the appropriate panel and the machine responds if he has answered correctly.

3,696,526
EDUCATIONAL TESTING AND INSTRUCTIONAL DEVICE

Harold H. Roeder, and Marcia A. Roeder, both of R.D. W. Lake Road, Dunkirk, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,516
Int. Cl. G09b *3/00*
U.S. Cl. 35—9 E 9 Claims

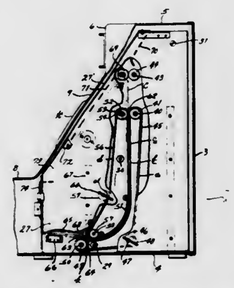
A device for use in the instructor-testing and self-instruction of students consisting of a pre-programmed tape carried within a permanently sealed cassette and means manipulatable by the instructor and/or student for a step-wise driving of the tape relative to a pair of alternatively closeable view openings through which a tape carried indicia is to be viewed.



3,696,527
CARD FEEDER FOR INSTRUCTIONAL DEVICES

John J. Dickman, Ferguson, Mo., assignor to Missouri Research Laboratories, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 21,804, March 23, 1970, Pat. No. 3,645,012. This application Aug. 30, 1971, Ser. No. 176,205
Int. Cl. G09b *3/00*
U.S. Cl. 35—9 R 6 Claims



A card feeder for instructional devices, such as teaching machines, wherein a card, the forward face of which, having inscribed question and multiple choice answers, is presented to the viewer and with the rearward face being suitably adapted for cooperating with a photoemissive source to effect requisite energization of indicators for signaling the correctness or incorrectness of the answer chosen; said feeder incorporating normally mutually contacting drive and driven belts adapted for effecting separation of inadvertently mutually adhering cards moving therebetween to assure feeding of a single card into viewing position for accuracy in energizing the appropriate indicators.

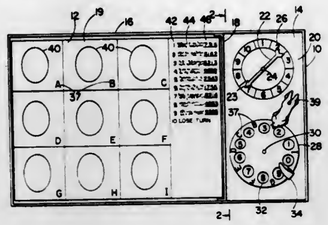
3,696,528
QUESTION GAME INCLUDING MECHANICALLY INDEXED ANSWER APPARATUS

Henry A. Mertz, Fort Wayne, Ind.

Filed Nov. 10, 1969, Ser. No. 875,125
Int. Cl. A63f *9/18*
U.S. Cl. 35—9 R 5 Claims

An educational game having a plurality of pictorial representations thereon arranged in a predetermined order on a gameboard, and a series of identifications or descriptions of the representations arranged on the gameboard in an order different from the order of the pictorial representations. Associated with each of the identifications or descriptions is a multi-digit number. A telephone-dial-like device is provided. The game is played by picking one of the identifications or descriptions, guessing which representation relates to it, dialing the multi-digit number associated with the identification or

representation picked, the completion of which will indicate which pictorial representation is associated with that identification or description. A point is scored if the correct pictorial representation was guessed.



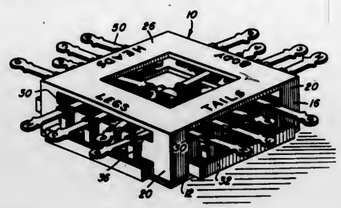
3,696,529
DRAWING AND TEACHING MACHINE
David Robert Mabbutt, London, England, assignor to Rotadraw Limited, London, England
Filed Feb. 11, 1971, Ser. No. 114,418
Claims priority, application Great Britain, April 30, 1970, 20,847/70
Int. Cl. B43l *13/20*
U.S. Cl. 35—26 4 Claims



A drawing or teaching apparatus for drawing an object including a circular disc having a reference mark and a plurality of apertures and/or slots hereafter referred to as apertures, each aperture having an alphabetical letter associated therewith, these alphabetical letters together forming the name of the object, and a frame having a recess or aperture adapted to receive the disc so that the disc can rotate therein, the frame having at least a plurality of stationary alphabetical letters corresponding to the first said alphabetical letters located at different positions around the periphery of the recess or aperture in the frame so that by rotating the disc in the frame successively into angular positions where the reference mark is adjacent each of the stationary alphabetical letters on the frame which correspond to an alphabetical letter associated with an aperture in the disc and tracing along the contour of the corresponding aperture, a representation of the object is drawn.

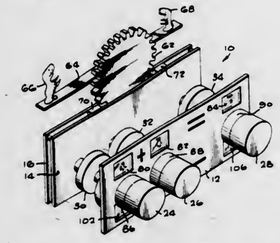
3,696,530
EDUCATIONAL TOY
Clifford F. Bryant, Struthers, Ohio, assignor to Albert White, Cadiz, Ohio, a part interest
Filed April 14, 1971, Ser. No. 133,904
Int. Cl. G09b *1/14*
U.S. Cl. 35—28 9 Claims

A toy and educational device as well as a testing apparatus including a multi-sided base having a central platform area upon which a selected figure representation to be duplicated may be placed and with sets of individual fragmentary figure components supported from the inner ends of wands shiftably supported from the base and having their inner ends adjacent the central platform and their outer ends projecting outwardly



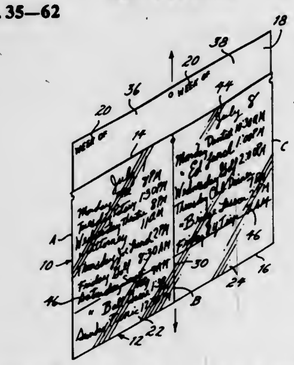
of the sides of the base for manual manipulation by persons using the toy or testing device.

3,696,531
EQUATION APPARATUS
Larry C. Stewart, 7104 Jordan Ave., Apt. 4, Canoga Park, Calif.
Filed May 17, 1971, Ser. No. 143,913
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 A 26 Claims



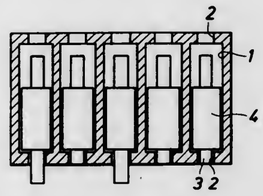
Equation apparatus has at least first, second, and third number dials which are manually movable to indicate particular digits. An output indicator is connected to all three of the dials, to signal when an equation is satisfied by the digits on the dials. Each of the dials has a manual knob. A one-way drive interconnects these parts to the output indicator so that each manually movable structure and number dial can be individually turned independent of the other number dials.

3,696,532
PERPETUAL APPOINTMENT REMINDER
Abraham S. Nahon, 1026 Arboretum Road, Wyncote, Pa.
Filed Feb. 16, 1971, Ser. No. 115,238
Int. Cl. B43l *1/00*
U.S. Cl. 35—62 6 Claims



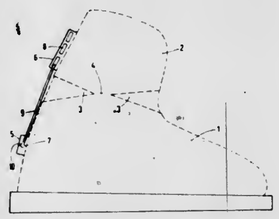
A perpetual memo pad including a transparent sleeve formed of hinged sections and adapted to receive erasible indicia, and a card bearing permanent indicia and insertable into said transparent sleeve in a manner to align selected indicia on said transparent sleeve with selected indicia on said card, said sleeve being rotatable relative to said card to bring other selected indicia on the sleeve into alignment with other selected indicia.

3,696,533
SET OF TOY BLOCKS
Hans Mortensen, Ringerbakken 39, 2830 Virum, Denmark
Filed April 6, 1971, Ser. No. 131,726
Claims priority, application Denmark, April 9, 1970, 1792/70
Int. Cl. A63h *33/08*
U.S. Cl. 35—70 5 Claims



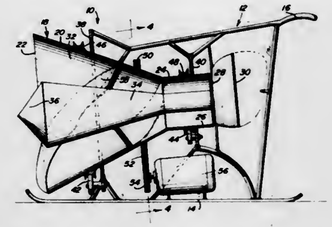
A set of toy blocks for performing various arithmetical processes, particularly for children, comprising calculating or problem blocks, which visibly represent arithmetical problems, e.g. problems of addition or multiplication, or the individual quantities constituting the said problems, and result blocks which visibly represent the corresponding results and which are arranged for being composed with the problem blocks. The problem blocks are designed with through channels which are located in exactly the same place in all problem blocks. In the channels piston bodies are accommodated which can be displaced longitudinally by interaction with pins on or holes in the result blocks in such a way that when problem and result are in conformity, an assemblage with an unbroken surface is formed.

3,696,534
SKI BOOT
Gerhard Hornung, Singen, Germany, assignor to Dr. Justus Rieker & Co., Tuttlingen, Wurtt, Germany
Filed Dec. 17, 1970, Ser. No. 99,102
Claims priority, application Germany, Dec. 23, 1969, P 19 64 370.0
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL 17 Claims



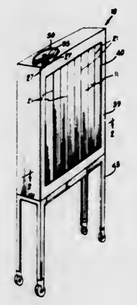
A skiboot with relatively bendable foot and neck portions, with a lug on each portion, a coupling element between the lugs, and two stops to limit the bending movement. Buffers are provided on the stops to damp the relative bending movement at its limits.

3,696,535
SNOW DISPLACING DEVICE WITH ROTATABLE BLADE CASING
Oliver C. Kallio, P.O. Box 401, Ironwood, Mich.
Filed June 12, 1970, Ser. No. 45,786
Int. Cl. F01h *5/09*
U.S. Cl. 37—43 C 4 Claims



A snow conveying vehicle mounting a conical member rotatable about a forwardly inclined horizontal axis. Helical vanes are internally secured to the conical member about a conical fairing to form an annular conveyor flow passage for the snow. Snow entering the larger inlet end is displaced rearwardly in response to rotation of the conical member and is discharged rearwardly from a smaller outlet end against a laterally directing deflector.

3,696,536
DISPLAY DEVICE
Frank P. Reese, 2785 E. 7000 South, Salt Lake City, Utah, and LeRoy D. Yancey, 1834 S. Oakmont Drive, Bountiful, Utah
Continuation-in-part of Ser. No. 603,658, Dec. 21, 1966, abandoned. This application March 12, 1969, Ser. No. 806,588
Int. Cl. G09f *11/06*
U.S. Cl. 40—35 16 Claims

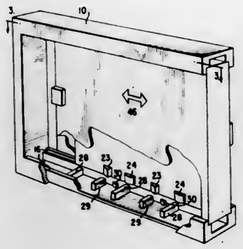


A display device is provided which includes a plurality of display panels arranged side-by-side in a series and means for capturing a panel at one end of the series and moving it in a positively controlled manner to a position at the opposite end of the series.

3,696,537
SKIP FRAME VISUAL DISPLAY DEVICE
Ronald D. Alleman, 526th Maint Co., APO, San Francisco, Calif.
Filed Nov. 4, 1969, Ser. No. 873,921
Int. Cl. G09f *11/30*
U.S. Cl. 40—78.07 11 Claims

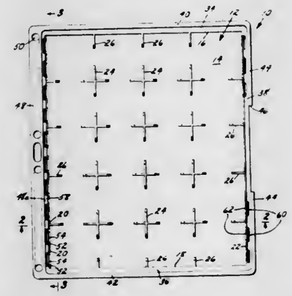
A viewing device in which successive cards of a series are removed from one end of a stack or supply and deposited at

the end of the same or another stack or supply and a transfer mechanism for indexing such cards one at a time such that on every other transfer or given number of transfers, the illustration shown, respectively, by any two or corresponding given



number of adjacent stacks is completely changed. The cards are peculiarly constructed to cooperate with the transfer mechanism and to maintain the correct sequence of such cards within the stacks.

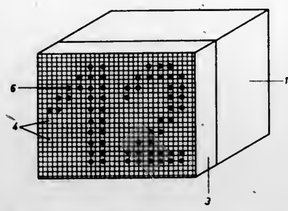
3,696,538
TRANSPARENCY HOLDER
Robert Nast, 942 Glenridge Ave., North Woodmere, Long Island, N.Y.
Filed June 22, 1970, Ser. No. 48,319
Int. Cl. G09f *13/10*
U.S. Cl. 40—104.18 **9 Claims**



A photographic slide tray holder including a plurality of compartments. The holder forms a page which with other such pages is mounted in a book. More than one slide may be held in each tray compartment, and the transparency of a fitted cover permits easy viewing of the contents held therein. The cover is separate from the tray and may be removed therefrom. A rib or edge male member attached to the cover portion is snap-fitted into a trough or female member of the tray portion to form a hinge means therewith.

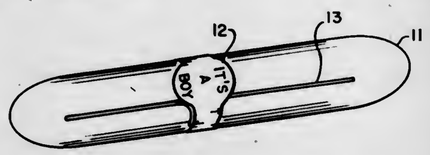
3,696,539
VISUAL INFORMATION APPARATUS
Lorenz Hanewinkel, Ferrariweg 17a, Paderborn, Germany
Filed Nov. 7, 1969, Ser. No. 870,537
Claims priority, application Germany, Aug. 17, 1971, P 18 06 573.1
Int. Cl. G09f *1/00*
U.S. Cl. 40—125 E **4 Claims**

A visual information apparatus comprising a housing and a panel on which appear the insignia formed in the housing. A



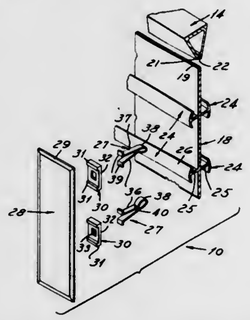
screen divided into squares is fitted over the panels and the insignia may be sighted on the screen.

3,696,540
BIRTH ANNOUNCEMENT
Charlotte C. Ortega, c/o General Delivery, Nestor, Calif.
Filed July 8, 1970, Ser. No. 53,135
Int. Cl. G09f *19/00*
U.S. Cl. 40—126 R **1 Claim**



A birth announcement rolled to fit within a hollow simulated cigar having, in one embodiment, a slot for pulling the birth announcement out, the birth announcement being attached to a simulated cigar band and, in another embodiment, the simulated cigar having two halves, one slidably receiving the other.

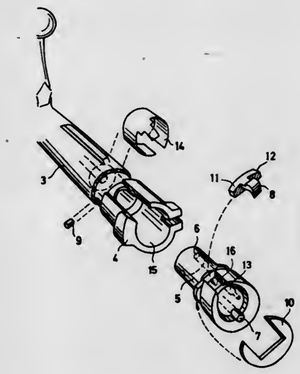
3,696,541
DISPLAY SIGN
Phillip D. Pittman, Sterling Height, and Michael L. Peters, Mt. Clemens, both of Mich., assignors to Endura Board International, Inc., Sterling Heights, Mich.
Filed Feb. 16, 1971, Ser. No. 115,186
Int. Cl. G09f *7/02*
U.S. Cl. 40—142 **18 Claims**



The sign has an upright planar supporting panel unit carrying like integrally extended, horizontally elongated supporting brackets on opposite side surfaces thereof, each of which presents upwardly and downwardly opening clip support recesses. These receive arcuate nose portions of double-

armed spring metal clips by which sign indicia are removably supported on the panel. The spring arms terminate outwardly in oppositely directed locking fingers, and after compressive flexure of the spring arms toward and flatwise against one another from an approximately 90° relaxed relationship, their fingers are inserted into a bayonet-type keeper slot of a clip holder part on the rear of a sign indicium member, whereupon the arms are released from compression and spread to interlock their fingers with the indicium's keeper slot.

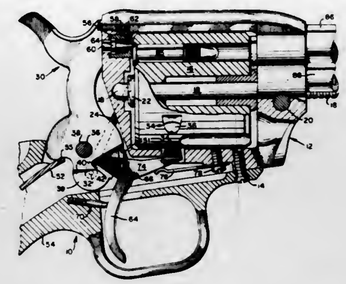
3,696,542
BREECH BLOCK WITH RIM FIRE STRIKER
Axel E. Ekfeldt, Tullgatan 2, 632 20 Eskilstuna, and Eric W. Wallberg, Enspannargatan, 8, 162 33 Vallingby, both of Sweden
Filed July 17, 1970, Ser. No. 55,861
Int. Cl. F41c *11/00, 15/00*
U.S. Cl. 42—16 **2 Claims**



A standard rifle mechanism of the Mauser type having means which converts it to rim fire operation, the breech block having locking means for guiding and locking it to a body which includes a barrel. The breech block has a plug-in head in its forward end and said head has an eccentrically-located firing pin and said head is provided with a hole for a spring-actuated ejector pin. A clip has ends abutting against parts of a yoke that is formed with an extractor tooth, the yoke and its tooth being counter-sunk in the plug-in head and the tooth is arranged to grip the rim of a cartridge that is introduced in a seat in the barrel, the extractor and a locking pin being effective to keep the head in its proper place, the extractor and pin being in turn kept in their positions by a counter-sunk spring clip that extends around the jacket wall of the breech block.

3,696,543
CYLINDER LOCKING MECHANISM
Ralph C. Kennedy, Wapping, and Ralph R. Torning, Manchester, both of Conn., assignors to Colt Industries Operating Corp., New York, N.Y.
Filed Aug. 20, 1970, Ser. No. 65,637
Int. Cl. F42c *1/00*
U.S. Cl. 42—67 **5 Claims**

A revolver has a frame in which a cylinder is rotatably mounted on a shaft removably attached to the frame. The cylinder has ratchet teeth provided at one end of the cylinder. A pawl mounted within the frame is adapted to engage the ratchet teeth to turn the cylinder from one firing position to another firing position. The pawl is connected to a hammer by means of a pin. A plurality of locking notches are disposed around the periphery of the cylinder such that a notch is provided for each cartridge position. Each notch has a sloping entrance cut for progressive entrance of a cylinder lock. The cylinder lock includes an elongated aperture which is mounted on a trigger pin such that rotation of the hammer



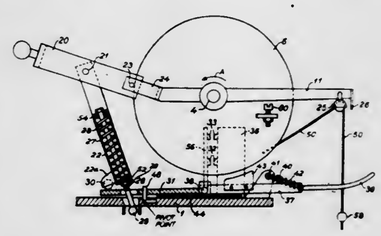
from the firing position to the cocked position unlocks and then locks the cylinder. A leaf spring secured to the frame contacts the lock for urging it into engagement with a locking notch.

3,696,544
RECOIL PAD
George Webb, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Aug. 17, 1970, Ser. No. 64,235
Int. Cl. F41c *23/00*
U.S. Cl. 42—74 **2 Claims**



A recoil pad for shoulder fired firearms comprises an open cellular material and fluid enclosed in a flexible container. The container is attachable to the butt end of the firearm stock.

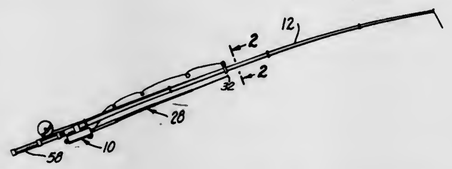
3,696,545
AUTOMATIC FISHING REEL
Elildi Norddahl Gudjonsson, Lindarflot 37, Gardahreppi, Iceland
Filed June 1, 1970, Ser. No. 41,957
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **12 Claims**



The automatic motor driven fishing reel having a lever pivotally mounted on a motor driven shaft, the lever also supporting a fishing line as it is reeled off the reel member. A steering arm is pivotally attached to the lever and a spring member is pivotally attached to the steering arm which is movable to first and second stable positions. A clutch is pro-

vided between the motor and reel member which is disengaged when the steering arm is in its first stable position and which is engaged when the steering arm is in its second stable position to interconnect the reel and motor. Upon a predetermined pull on the fishing line, when the steering arm is near, or in its second stable position, the motor is energized to reel in the fishing line.

3,696,546
FISH ALARM AND CIRCUIT CONTINUITY TESTER
Henry B. Ambrose, 3722 Forecastle Ave., West Covina, Calif.
Filed March 8, 1971, Ser. No. 121,745
Int. Cl. A01k 97/12
U.S. Cl. 43—17 **11 Claims**



An alarm device adapted for use as a circuit continuity tester and a fish strike alarm for attachment to a flexible fishing rod. The alarm device has a battery housing with means for attaching the housing to a fishing rod, a probe extending from the housing having an electrical contact at its outer end, a clamp to be attached to the fishing rod opposite the outer probe end and having an electrical contact engageable with the probe contact upon deflection of the rod by a fish strike, and an alarm circuit which is activated by engagement of the contacts. The probe is adjustable to vary the fishing rod deflection required to engage the contacts and actuate the alarm circuit. The alarm circuit has a terminal in parallel with the probe for electrical connection to an auxiliary contact element, such as a second clamp, to adapt the alarm device for use as a circuit continuity tester.

ERRATUM

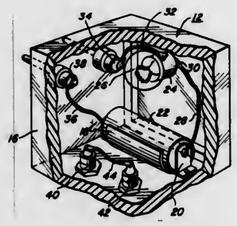
For Class 43—15; see:
Patent No. 3,696,545

3,696,547
FISHING LURE
Roger Daniel Cauquis, 25 rue de la Prairie, Aulnay Sous Bois, France
Filed Feb. 19, 1971, Ser. No. 116,830
Claims priority, application France, Feb. 19, 1970, 7005958
Int. Cl. A01k 85/00, 91/04
U.S. Cl. 43—42.39 **4 Claims**



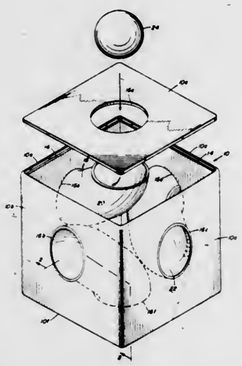
In a fishing lure there is provided a weight member which connects a fishhook to a wire link pivotally attached to the lure body. The weight member has a plurality of bores extending at right angles to one another. One bore contains the end portion of the wire link, at least one bore receives a flattened, laterally expanding portion of said wire link for anchoring the latter to the weight member and one bore serves for the introduction of a punch causing a localized flattening of said wire link.

3,696,548
EDUCATIONAL BUILDING TOY MODULES WITH INTERIOR LIGHTS AND MECHANICAL CONNECTIONS ACTING AS CIRCUIT CLOSERS
Alvin N. Teller, Chicago, Ill., assignor to Kinetic Technologies, Inc.
Filed Jan. 18, 1971, Ser. No. 107,191
Int. Cl. A63h 33/08
U.S. Cl. 46—25 **3 Claims**



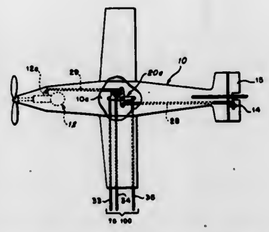
An educational toy comprising a plurality of interiorly illuminable modules, each of which is electrically interengageable with another module to form a stacked arrangement of modules. Each module contains a lamp therewithin which is energized when the module is connected to another module.

3,696,549
BALL AND CUBE WITH CONDUITS EXTENDING BETWEEN ADJACENT WALLS THEREOF
Tadas Zilius, Hopewell, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 24, 1971, Ser. No. 118,290
Int. Cl. A63h 33/00
U.S. Cl. 46—43 **7 Claims**



An amusement device employing a hollow cubical box having three curved conduit members assembled therein, each extending from and between a central opening in one wall of the box and a central opening in an adjacent wall, the conduit members forming passageways for a ball. No matter which side is up, a ball dropped in the top opening comes out a side one, but a ball inserted in one of the side holes disappears within the box.

3,696,550
FLIGHT CONTROL SYSTEM
Harold M. Troxell, 292 Gledwood Ave., Burlington, N.J.
Filed Feb. 5, 1971, Ser. No. 112,909
Int. Cl. A63h 27/04
U.S. Cl. 46—77 **10 Claims**



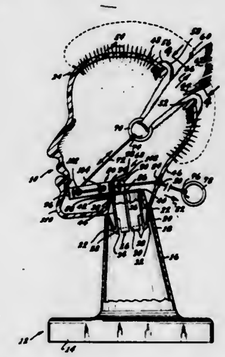
A flight control system to regulate an engine throttle and elevator of a model flight vehicle by an operator positioned external to and remote from the vehicle. A linkage mechanism positioned within the flight vehicle provides independent operation of the vehicles' elevator and throttle through a plurality of relatively rotational and linearly translatable levers. Elevator and throttle control cables connect the linkage mechanism to an outboard controller held by the operator. Independent movement of elevator and throttle control rods is achieved through rotation of the controller housing about a particular axis which activates one or both of the control members within the flight vehicle.

3,696,551
GROWING-HAIR DOLL
Bernard B. Sklarsky, and Robert K. Ostrander, both of Woodmere, N.Y., assignors to Uneeda Doll Co., Inc., Brooklyn, N.Y.
Filed Dec. 18, 1970, Ser. No. 99,449
Int. Cl. A63h 11/00
U.S. Cl. 46—135 **6 Claims**



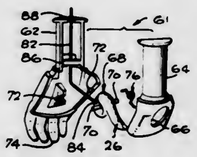
A miniature doll haVing a lock of hair which can be readily adjusted to vary the exposed length thereof to vary the appearance of the doll. The head of the doll is hollow and is provided at its top with a keyhole-shaped opening having a narrow slotted portion contiguous with a larger circularly shaped portion. The body of the doll has a hollow portion and at least one leg of the doll is hollow. The hollow portions of the leg, body and head are aligned and enclose a resilient member which is affixed at one end to the bottom of the leg. The adjustable lock of hair is attached to the other end of the resilient member adjacent to an annular key or wedge which is supported on the resilient member. A child may readily pull the lock of hair and position the key in the slotted portion of the keyhole-shaped opening to provide for a greater length of exposed lock of hair. In this position of the key, the resilient member is stretched and urges the key against the top of the head adjacent the slotted portion. To shorten the exposed length of the lock of hair, the lock is lifted away from the head and moved over the circular portion of the opening. When the lock is thereafter released, the key is drawn into the circular portion of the keyhole opening by the resilient member so that part of the lock of hair also is drawn into the hollow head of the doll to provide for a lesser exposure of the lock of hair.

3,696,552
RETRACTABLE HAIR FIGURE TOY
Gregory M. Gunther, Palos Verdes Estates; J. Stephen Lewis, Pacific Palisades; Masakatsu Nishiguchi, Gardena; George E. Robson, Torrance; Raymond P. Wagner, Rollings Hills Estates, and William R. Yarbrough, Cerritos, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 3, 1972, Ser. No. 214,939
Int. Cl. A63h 11/00
U.S. Cl. 46—135 **10 Claims**



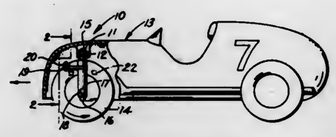
A lock of hair is arranged in protruding relation through an opening in a figure toy head with one end of the lock rooted about the opening and with a pull ring encompassing the lock inside the head intermediate the ends of the lock. A pull cord is connected to the ring and may be mechanically pulled to retract the lock after the lock has been manually pulled from the head. A friction clip engages the pull cord to impact drag to the cord.

3,696,553
OBJECT-HOLDING HANDS FOR DOLLS
J. Stephen Lewis, Pacific Palisades; Jurgis Sapkus, Manhattan Beach, and Armando P. Villasana, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed July 16, 1971, Ser. No. 163,202
Int. Cl. A63h 13/00
U.S. Cl. 46—116 **3 Claims**



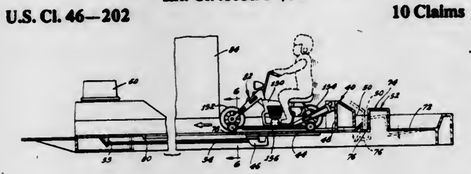
A doll which can be operated to hold and release objects when a child depresses levers in the doll body, one of the doll hands including a grasping thumb and the other having a magnet that can slide therein to magnetically attract and release objects. The doll is especially entertaining when used with accessories of the type found in a supermarket, one accessory being a price tag constructed of magnetically attractable material and attached to a toy package, to enable the doll to magnetically hold and release the package.

3,696,554
STEERING MECHANISM FOR TOY VEHICLES
Jerome Dorn, 1826 Borland Road, Pittsburgh, Pa.
Filed Aug. 20, 1970, Ser. No. 65,613
Int. Cl. A63h 11/10
U.S. Cl. 46—201 5 Claims



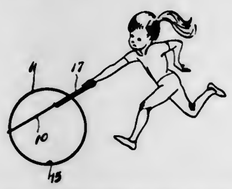
A steering device for toy hand vehicles which will eliminate the need for a steering wheel. This device includes a horizontal shaft which is secured within the side walls of the vehicle and a U-shaped frame is pivotable frontwards and rearwards, the U-shaped frame being carried within a pair of sleeves having projecting axle members for the wheels of the toy. A pair of steering arms extend from the sleeves carrying the U-shaped member, the arms being secured together by a horizontal tie rod, the device being steered by applying force upon the vehicle to the right or left which causes the mechanism to turn the wheels in that direction.

3,696,555
TOY HILL-CLIMBING SYSTEM
Joseph H. Bales, Huntington Beach; Brian S. Prodger, Torrance, and Kurt Ruppel, Redondo Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 17, 1970, Ser. No. 99,084
Int. Cl. A63h 17/16
U.S. Cl. 46—202 10 Claims



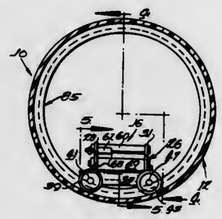
A toy hill-climbing system is disclosed including a simulated motorcycle, a motorcycle launcher, a roadway simulating rough terrain and parallel tracks connecting the roadway and the launcher. The roadway is placed at a greater vertical height than the launcher so that the tracks are upwardly sloped to simulate an actual motorcycle hill climb competition.

3,696,556
HOOP-ROLLING PUSHER
Chesteen S. Plasket, El Paso, Tex., assignor to Earl L. Chamber and Donald Maynard, El Paso, Tex., part interest to each
Filed April 9, 1969, Ser. No. 814,543
Int. Cl. A63h 33/02
U.S. Cl. 46—220 1 Claim



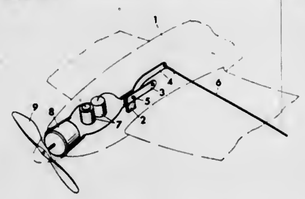
A pusher for use in rolling a hoop wherein a length of rod or wire is bent at one end to form a loop which receives the forward end of the hoop to push it and is bent at its other end to form a second loop which receives a circumferentially disposed portion of the hoop to guide the hoop while it is being propelled. The second loop normally is maintained closed by means of a hook which is biased into engagement with an adjacent portion of the wire.

3,696,557
SELF-PROPELLED TOY
Reinhold Ruppel, 17 Hillside Avenue, Hillside, Ill.
Filed Nov. 17, 1969, Ser. No. 877,387
Int. Cl. A63h 33/26
U.S. Cl. 46—243 M 5 Claims



A self-propelled toy includes a hollow shell and a motive means which includes a battery-operated motor, enclosed within the shell for causing the shell to roll along a supporting surface. A gravity-operated switch is mounted on the motive means for de-energizing the motive means when the toy is not in use. In operation, the motive means is disposed at a lowermost portion of the shell, and the switch is disposed in a position to energize the motive means for causing the shell to revolve about the motive means. When the shell becomes restrained from movement, the motive means moves relative to the shell along the inner surface thereof until the switch reaches a position where it opens the circuit to the motor.

3,696,558
STARTING SWITCH STRUCTURE IN A MODEL PLANE
Kenichi Mabuchi, Tokyo, and Yoshihisa Tsuchimochi, Ichikawa, both of Japan, assignors to Mabuchi Motor Co., Ltd., Tokyo, Japan
Filed Dec. 7, 1971, Ser. No. 205,501
Claims priority, application Japan, Dec. 7, 1970, 45/121028; Dec. 7, 1970, 45/121030; Dec. 7, 1970, 45/121029
Int. Cl. A63h 27/00, 33/26
U.S. Cl. 46—243 AV 4 Claims



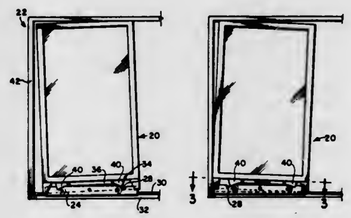
A starting switch structure comprising a pair of fixed and movable contact plates adapted to be brought into contact with each other by pulling a control wire, a miniature electric motor for rotating a propeller and a dry cell all of which are mounted on the plane electrically connected to form an electric circuit. Such starting switch structure enables the model plane to be started by a single operator without an aid of an assistant by simply pulling the control wire from the distance. It weighs light, ensures a long period of life, and is simply constructed and manufactured at a low cost.

ERRATUM
For Class 46—77; see:
Patent No. 3,696,822

3,696,559
AGRICULTURAL PRODUCT AND PROCESS
John H. Hatton, 5275 Craner Avenue, North Hollywood, Calif.
Filed Aug. 7, 1970, Ser. No. 62,136
Int. Cl. A01g 7/00
U.S. Cl. 47—9 1 Claim

An improved agricultural product and process are provided which serve to stabilize soil and help to prevent wind and water erosion, and which also aid in germination. The product of the invention has the property of causing the soil to retain moisture and to prevent excessive dehydration of the soil. When applied with mulch, the product of the invention has the property of expanding the mulch and of minimizing the amount of mulch required for a particular application. The product comprises a water soluble gum selected from a certain group, as will be described.

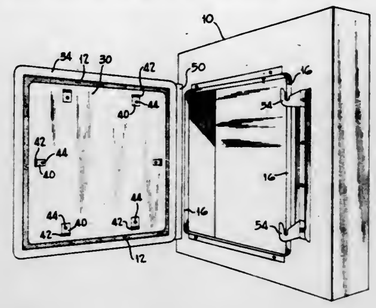
3,696,560
ADJUSTABLE ALIGNING APPARATUS FOR MOVABLE PANELS
Peter R. Hallin, McComb, Miss., assignor to Craft Metals, Inc., McComb, Miss.
Filed Nov. 19, 1970, Ser. No. 91,047
Int. Cl. E05d 13/02, 15/08, 17/00
U.S. Cl. 49—425 8 Claims



A movable panel supported in a frame for horizontal travel, said panel mounting a movable structure for limited horizontal movement therein and defining horizontally spaced and oppositely inclined planes, and an insert rigidly mounted in said panel and defining plane engaging surfaces adapted to engage said planes for relative movement equally up and down proportional to the relative horizontal movement of said movable structure and the fixed insert.

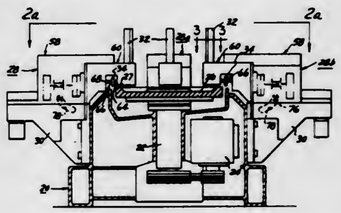
3,696,561
BIOLOGICAL DOOR SEAL
Richard D. Harp, Myersville, and Lyle G. Williams, Frederick, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed April 1, 1971, Ser. No. 130,116
Int. Cl. E06b 7/16
U.S. Cl. 49—483 4 Claims

A reliable leak-proof biological door seal for use with cabinets containing highly infectious materials therein. The door is provided with a beaded resilient membrane which is stretched over a continuous U-shaped frame section describing the near peripheral portions of each side of the inside of the door which is contacted by mating seating flange integral



the cabinet proper for maintaining the cabinet absolutely tight under positive or negative pressures.

3,696,562
AUTOMATIC PROFILE GRINDING MACHINE WITH AN INDEXING MECHANISM
Oscar Schnellman, Zurich, Switzerland, and Henry Willy Stier, Dearborn Heights, Mich., assignors to Carmet Company, Pittsburgh, Pa.
Division of Ser. No. 751,879, Aug. 12, 1968, Pat. No. 3,587,192. This application April 28, 1971, Ser. No. 138,165
Int. Cl. B24b 49/04
U.S. Cl. 51—165.88 5 Claims

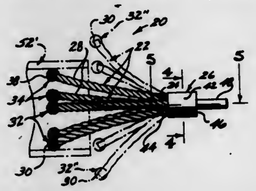


An automatic profile grinding machine with indexing mechanism especially for contour grinding of relatively small parts such as tool inserts, comprised of a grinding wheel, work stations arranged around said grinding wheel, universal work feeding mechanism associated with each work station, individual cam mechanisms for each work station to index the grinding steps, electric and fluid pressure control mechanisms to control operation of the machine, work measuring mechanism and adjusting mechanism associated with the measuring mechanism to compensate for wear or out of balance condition of the grinding wheel.

3,696,563
ABRASIVE BRUSH HAVING BRISTLES WITH FUSED ABRASIVE GLOBULES
Steve A. Rands, c/o P.O. Box 18948, Los Angeles, Calif.
Filed Oct. 13, 1969, Ser. No. 870,486
Int. Cl. B24b 9/02
U.S. Cl. 51—332 10 Claims

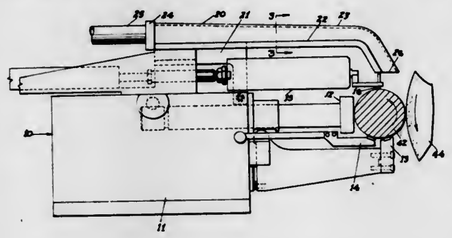
The specification discloses an article of manufacture comprising an abrasive brush and the abrasive bristles comprising same, and a method for producing or manufacturing same. Each abrasive bristle is of a resilient type and has a free outer bristle end carrying an enlarged abrasive globule of relatively fused bonding material and particulate abrasive material which may be mounted on a bristle end directly by a fused-in-

place junction between the bristle end and the globule or by auxiliary mounting or attachment means taking the form of an auxiliary bristle end member having said bonding material and particulate material fused thereto and with said auxiliary bristle end member being further provided with attachment means for attaching same to a corresponding free outer bristle member end. Said attachment means may comprise brazed junction means, mechanical engagement means, or any other suitable attachment means. The specification discloses several methods of manufacturing the abrasive bristles, and basically



said method comprises applying to the end of a heat-resistant bristle member a particulate abrasive material and a fusible type of bonding material (which is either liquefied before such application, during such application, or subsequent to such application) in one or more applicatory and subsequent hardening steps until a substantial deposit of same has been applied to and condensed upon each free outer bristle member end so treated, to an extent such as to comprise and define one or more corresponding fused-in-place, enlarged abrasive globules.

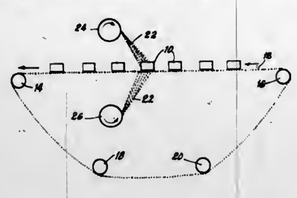
3,696,564
COOLANT NOZZLE
Glover C. Joyce, Worcester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 21, 1970, Ser. No. 74,055
Int. Cl. B24b *55/02*
U.S. Cl. 51—356 **4 Claims**



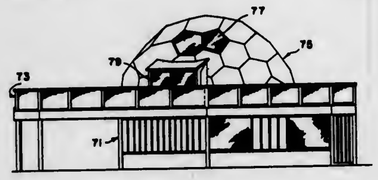
A coolant discharge nozzle for grinding machines fixedly secured to a steadyrest assembly movable into and out of operative engagement with a workpiece being ground, so that the nozzle outlet orifice is maintained in the proper spaced relation and in the proper attitude relative to the line of contact between a workpiece and a grinding wheel during the grinding operation performed on each of a series of similar workpieces.

3,696,565
METHOD FOR DEFLASHING CERAMIC MATERIALS
Ronald Claeys, Mishawaka, Ind., assignor to Wheelabrator-Frye Inc., New York, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,762
Int. Cl. B24c *1/00*
U.S. Cl. 51—320 **6 Claims**

This invention is addressed to a new and improved method for deflashing unfired ceramic materials by centrifugal blasting wherein the ceramic materials are subjected to an airless barrage of rubber particles.



3,696,566
SPHERE-DOME CONSTRUCTION
Horst Egon Phillip Langner, Calgary, Alberta, Canada, assignor to Langner Domes Ltd., Regina, Saskatchewan, Canada
Filed Sept. 28, 1970, Ser. No. 76,107
Int. Cl. E04b *1/342*
U.S. Cl. 52—80 **26 Claims**



A self-supporting dome-like or sphere-like structure made of interconnected linear or planar elements, comparable to a geodesic dome and comprising, in the full sphere approximation, 12 regular pentagons and, in the simplest case, 60 irregular but identical hexagons. For higher orders of the structure, the number of pentagons remains 12 but the number of hexagons increases according to the formula

$$N_k = 3N_{k-1} + 20,$$

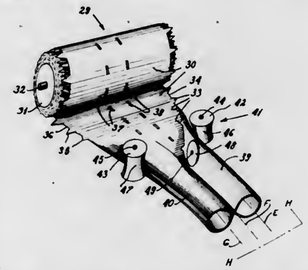
where N_k is the number of hexagons in a sphere approximation of order k, and N_{k-1} is the number of hexagons in a sphere approximation of order $(k-1)$.

3,696,567
PREFABRICATED BUILDING PANEL HAVING POSITIONER MEANS
Michel Villaneu, Paris, France, assignor to IBS Industrialized Building Systems Incorporated
Filed Dec. 21, 1970, Ser. No. 99,874
Int. Cl. E04c *1/10*
U.S. Cl. 52—98 **12 Claims**



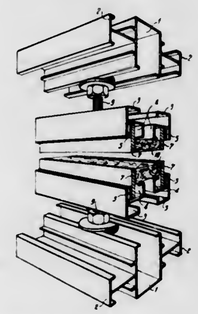
A prefabricated cast concrete building panel is provided with an embedded fitting comprising a tubular positioner and a rod axially aligned with it. The upper end of the positioner projects from the top edge of the panel, and the lower end of the rod projects from the bottom edge of the panel. The embedded ends of the positioner and rod have a screw thread relationship, so that by rotating the positioner the spacing between its top and the top edge of the panel may be varied. A sleeve may surround the positioner portion within the panel, and crushable means may be located within the panel directly beneath the lower end of the positioner. An opening in the positioner may be provided for engagement by connector means for lifting the panel.

3,696,568
COLLAPSIBLE, EXTENDIBLE DOUBLE TUBULAR STRUCTURE
Thomas G. Berry, Silver Spring, Md., assignor to Fairchild Hiller Corporation, Montgomery County, Md.
Filed Oct. 28, 1970, Ser. No. 84,724
Int. Cl. E04h *12/16*
U.S. Cl. 52—108 **7 Claims**



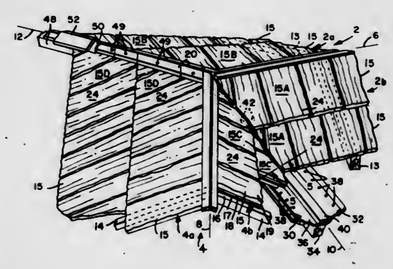
A collapsible, extendible element including an elongated thin metallic sheet pre-stressed to curl to form two hollow substantially cylindrical sections when unrestrained from a flattened condition. The elongated thin metallic sheet is adaptable to be rolled into a coil about an axis generally transverse to its longitudinal axis in a generally flattened condition. In several embodiments of the invention two lengthwise rows of slots are provided in the elongated thin metallic sheet that are located near the longitudinal central axis of the sheet and a series of tabs are located on the edges of the sheet that are adapted to be inserted in the slots when the elongated metallic sheet is unrestrained from a flattened condition.

3,696,569
DEMOUNTABLE PARTITION WALL
Yves M. Didry, 72, rue Pierre Semard, Evreux (Eure), France
Filed Dec. 23, 1969, Ser. No. 887,473
Claims priority, application France, Dec. 30, 1968, 68182211
Int. Cl. E04b *2/74*
U.S. Cl. 52—122 **5 Claims**



This invention relates to the production of a partition wall of a novel construction due to the use of two novel sections, one of which forms the top and bottom abutments and the frame, while the other forms the framework for the partition wall, the latter being connected to the top and bottom abutments in known manner by means of jacks, work on the site being limited solely to fitting the said jacks and fitting resilient fasteners of a known type which secure the facing panels to the sections.

3,696,570
BUILDING PANEL ENCLOSURES FOR VALLEY AND HIP STRUCTURES
John K. Kough, Morgan Hill; Otis M. Martin, San Jose, and Silas N. Miller, Saratoga, all of Calif., assignors to Ditz-Crane, San Francisco, Calif.
Filed Aug. 7, 1969, Ser. No. 856,235
Int. Cl. E04b *7/02*; E04d *1/20, 1/30*
U.S. Cl. 52—127 **5 Claims**

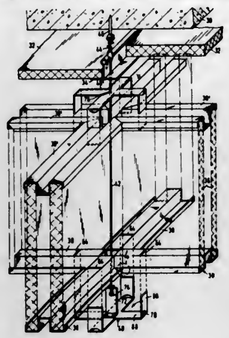


Prefabricated enclosure tip panels and a method of manufacturing the tip panels for enclosing valley and/or hip areas. The tip panel at one longitudinal end is beveled at an angle "*a*" which angle is dependent upon the relative angle between the two sections at the valley and/or hip joint. The other longitudinal end is adapted for interengagement with a standard panel. A method of manufacturing the tips includes segmenting a standard panel at the angle "*a*" to form a first valley tip panel and a first hip tip panel. A second standard panel is then segmented at an angle $(180°-a)$ to form a second valley tip panel complementary to the first valley tip panel and a second hip tip panel complementary to the first hip tip panel. The tip panel segments are adapted to be joined in combination along the valley line and/or hip line to form a complete valley and/or hip construction and to engage standard panels. A valley flashing may be positioned along the valley center line and extend laterally relative to the center line beneath the valley tip panels to provide a hidden run-off path for water on the roof.

3,696,571
SUB-CEILING FOR BUILDINGS
Wolfram Schluter, Dusseldorf-Mettmann, Germany, assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Dec. 29, 1969, Ser. No. 888,407
Int. Cl. E04b *1/82*; E04c *3/32*
U.S. Cl. 52—144 **9 Claims**

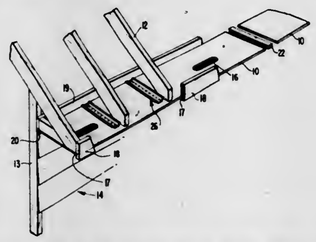
A sub-ceiling or false ceiling adjoining the underside of a supporting ceiling structure or being downwardly spaced therefrom, the sub-ceiling including a cellular-, eggcrate- or honeycomb-like system of panels arranged in upright planes and held by essentially horizontal rails, said rails being about horizontally suspended from said ceiling structure and com-

prise a central downwardly open channel-section portion and lateral upwardly open channel section portions, said panels



being fitted into and held by said lateral channel-section portions.

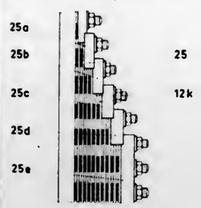
3,696,572
SUPPORT FOR PANELS AND THE LIKE
John Calvin Jurelt, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.
Filed Aug. 6, 1968, Ser. No. 750,660
Int. Cl. E04b 7/02; E04d 13/16
U.S. Cl. 52—173 **11 Claims**



The support has an elongated sheet metal plate bent about longitudinal axes to provide a pair of longitudinally extending edge portions upstanding from an intermediate portion. A pair of flanges are bent to extend outwardly from the edge portions. A plurality of teeth are struck from the intermediate body portion to extend normal thereto in a direction generally opposite to the direction in which the edge portions extend from the intermediate body portion. The teeth are embedded into the panel and the support reinforces the panel to preclude sagging, bowing and the like. The edge portions are flared outwardly such that the supports nest, one within the other, to form a packing assemblage. In one form of the packing assemblage, the teeth of each fastener extend through the slots left by the teeth struck in the intermediate portion of the support nested next below.

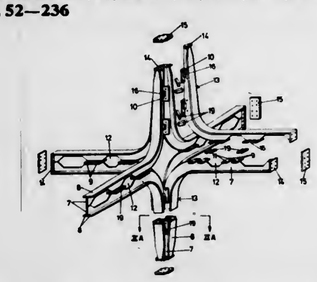
3,696,573
PRESSURE CONTAINER PRESTRESSED CONCRETE OR THE LIKE
Wolfgang Zerna, Hannover-Kirchrode, and Ludwig Muhe, Oberursel, Taunus both of Germany, assignors to Philipp Holzmann Aktiengesellschaft, Taunus-Anlage, Germany
Filed Nov. 25, 1969, Ser. No. 879,798
Claims priority, application Germany, Nov. 25, 1968, P 18 10 825.3
Int. Cl. E04c 3/20; F16l 9/04
U.S. Cl. 52—224 **3 Claims**

A pressure container is wound with special bands of wires in superposed groups and the wires are prestressed and clamped



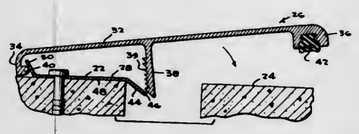
to the container by means of superposed axial strips on the container with radial bolts engaging the walls of the container.

3,696,574
BUILDING HAVING A SKELETON FRAME
Richard Dietrich, Adalbertstr. 55, 8 Munich 13, Germany
Filed Nov. 19, 1969, Ser. No. 877,976
Claims priority, application Germany, Nov. 22, 1968, P 18 10 434.2
Int. Cl. E04b 5/48; E04c 1/39, 3/32, 3/40; F16b 3/04
U.S. Cl. 52—236 **16 Claims**



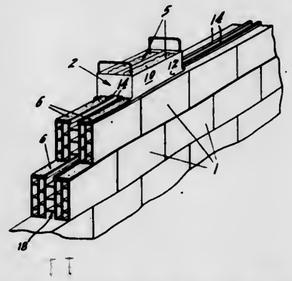
The skeleton frame of a building consists essentially of identical frame elements fastened to each other to form a system of parallelepiped-shaped cells, each cell being bounded by four frame elements which are at least in part common to two contiguously juxtaposed cells. The cells may be freely cantilevered from upright pillars or freely span distances between pillars which are multiples of the horizontal dimension of one cell.

3,696,575
EXPANSION JOINT COVER
Gary E. Armstrong, Oklahoma City, Okla., assignor to Metalines, Inc., Oklahoma City, Okla.
Filed June 7, 1971, Ser. No. 150,300
Int. Cl. E04b 1/68; E04c 1/34
U.S. Cl. 52—287 **16 Claims**



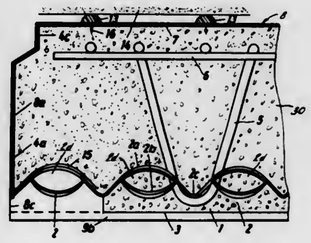
An expansion joint cover is disclosed in the form of an extruded elongated cover plate having an integral centrally oriented ratchet which extends into an expansion joint opening for engagement with a spring plate fastened to the structure so that one end of the plate is engaged with the ratchet and another end is engaged with the cover for urging the cover into holding relationship with the ratchet. In one embodiment, the cover is a planar member for spanning a joint formed between co-planar wall sections, while, in another embodiment, the cover is an L-shaped member for spanning a joint oriented between perpendicular wall sections; in each case, the connective theory is substantially identical.

3,696,576
METHOD FOR THE CONSTRUCTION OF BRICK WALLS
Manuel Joaquim Monteiro de Barros, Carnaxide, Portugal, assignor to Eurofins-Investimentos E. Estudos Techicos E. Financeiros, S.A.R.L.
Filed Aug. 22, 1969, Ser. No. 852,391
Claims priority, application Portugal, Sept. 20, 1968, 50,341
Int. Cl. E04b 2/46; E04q 21/18, 21/20
U.S. Cl. 52—747 **4 Claims**



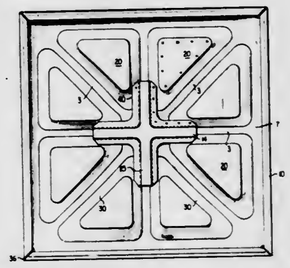
A wall of bricks is built with perfect alignment in a comparatively short time and with less mortar than is generally used in comparable walls. Each of the bricks in the wall has at its top a groove which has on each of its sides upwardly extending lips so that a caulking ruler can be positioned in the grooves of contiguous bricks to align them and a sled filled with mortar can be pushed over the top of a tier of bricks to deposit mortar on either side of the groove and thereby prepare the tier of bricks for a subsequent tier.

3,696,577
PREFABRICATED REINFORCED CONCRETE PLATE SHAPED CONSTRUCTION ELEMENT
Jean P. Bernold, and Hans Walter Pfeiffer, both of c/o Otto G. Bell, Kreuzstr. 32, Dusseldorf, Germany
Filed Dec. 23, 1969, Ser. No. 887,470
Claims priority, application Switzerland, Dec. 24, 1968, 19278/68
Int. Cl. F04b 1/18, 1/48
U.S. Cl. 52—583 **5 Claims**



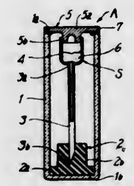
The plastic film seals the reinforced concrete from attack by water and seals joints established by adjacent reinforced concrete construction elements.

3,696,578
FLOOR PANEL FOR AN ELEVATED FLOOR ASSEMBLY
Eugene L. Swensen, Rockville, and Franklin E. Gibson, Baltimore, both of Md., assignors to Liskey Aluminum, Inc., Elkridge Landing Road, near Baltimore Friendship Airport, Md.
Filed March 6, 1970, Ser. No. 17,225
Int. Cl. E04c 2/32
U.S. Cl. 52—618 **8 Claims**



A floor panel to be used in an elevated floor assembly, includes a flat top sheet receptive to a tread surface and a drawn bottom plate secured to the top sheet. The bottom plate is formed to present a plurality of radial ribs that intersect one another centrally of the panel and extend to merge with peripheral ribs that edge the four sides of the panel. The sides of the ribs web the sheet and plate together to form hollow box sectioned beams as peripheral ribs and radial ribs of the panel. A cross-shaped stiffener with ridges is positioned between the sheet and the plate. The ridges are oriented to coextend with the radial ribs and the side edges of the stiffener are secured to the underside of the top sheet. A trim member is wedged between the edge of the sheet and the rim of the plate to abut the tread surface. The panel can be perforated to permit air circulation and the perforations do not cause any significant loss of structural strength.

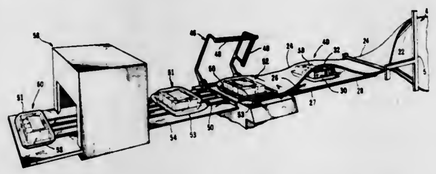
3,696,579
METHOD OF AND DEVICE FOR PRESERVING DRUGS FOR INJECTION
Shozo Narusawa, and Noritoshi Iizuka, both of Tokyo, Japan, assignors to Yurin Tokushi Kogyo Co., Ltd., Tokyo, Japan
Division of Ser. No. 191, Jan. 2, 1970, Pat. No. 3,637,072. This application June 14, 1971, Ser. No. 152,529
Claims priority, application Japan, Jan. 9, 1969, 44/1840
Int. Cl. B65b 55/00
U.S. Cl. 53—21 R **1 Claim**



A drug preservation container unit for use in connection with injection. It comprises a vertically elongated casing sealed with a cap and a needle assembly held in an upright position within said casing, said needle assembly containing a freeze-drying-processed drug for use in injection and arranged to be connected to a syringe. The unit contains such drug in such a small quantity as to be conveniently dispensed to a small number of persons. The invention also provides a

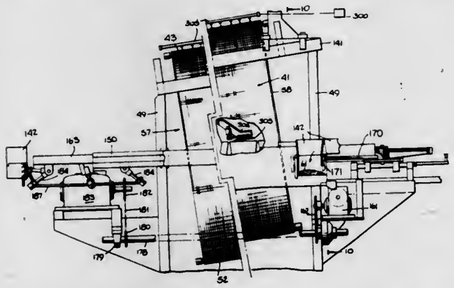
method of preserving drugs for use in injection in such a small quantity as mentioned above, comprising applying freeze-drying to the drug.

3,696,580
SHRINK FILM PACKAGING METHOD
Joseph M. Saltzer, Sr., 10775 69th Avenue North, Osseo, Minn.
Filed May 17, 1971, Ser. No. 143,757
Int. Cl. B65b *43/02*
U.S. Cl. 53—27 2 Claims



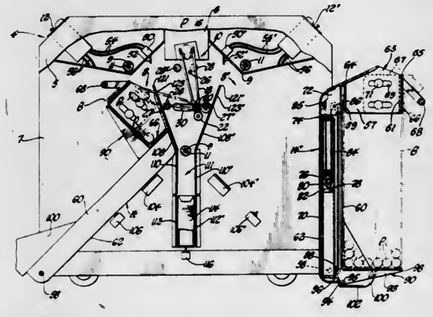
The invention relates to a shrink film packaging method by which articles intended for shipment by common carrier or to be sent through the mail may be wrapped so as to be protected from the usual and normal effects of handling. Articles to be wrapped are loaded onto a cardboard or plastic tray which is placed between the folds of two layers of material. The inner layer of material surrounding the tray and articles thereon is a special cushioning material which comprises closely spaced air bubbles formed by two sheets of polyethylene with air pockets formed therebetween. The outer layer of material is a shrink film and a sealer is utilized to form sealed edges around the tray and articles to form a package. The excess wrapping material is trimmed simultaneously as it is being sealed and the package is directed to a heat tunnel where the heat causes shrinkage of the outer shrink film which in turn causes the air in at least some of the bubbles of the inner material to be compressed to a pressure greater than atmospheric pressure.

3,696,581
MACHINE AND METHOD FOR TRANSFERRING PREDETERMINED AMOUNTS OF MATERIAL
Bernard C. Eisenberg, Rockaway, N.J., assignor to Salbern Corp., Fairfield, N.J.
Division of Ser. No. 794,083, Jan. 17, 1969, Pat. No. 3,621,891. This application March 25, 1971, Ser. No. 127,882
Int. Cl. B65b *1/06, 3/26*
U.S. Cl. 53—35 19 Claims



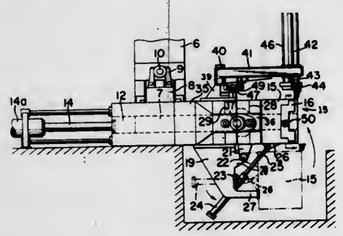
An inclined material delivery means is provided and has passing therethrough a plurality of intermediary receptacle means for receiving predetermined amounts of material to subsequently be transferred to a container. The intermediary delivery means is agitated to provide a uniform and precise amount of material and contains on the bottom thereof door members which synchronize movement of the container therewith in the discharge area. Cutting means are provided to aid in proper filling of the intermediary receptacles as well as air supplies to appropriately direct the material being packaged.

3,696,582
COIN PACKER
Lester B. Lodrick, 42687 Loni, Sterling Heights, Mich., and Vincent N. Teno, 5078 Babbit, Troy, Mich.
Filed Dec. 22, 1970, Ser. No. 100,640
Int. Cl. B65b *57/10*
U.S. Cl. 53—59 38 Claims



Wrapped coin packaging apparatus including a housing having an inlet for receiving wrapped coin packages, a pair of receptacle filling locations spaced from each other on opposite sides of the inlet, and transfer means operable to successively receive coin packages at the inlet and transfer the packages individually to one of the filling locations. The transfer means is selectively adjustable between a first operating position in which it transfers packages from the inlet to one of the filling locations, and a second operating position in which it transfers packages from the inlet to the other of the filling locations.

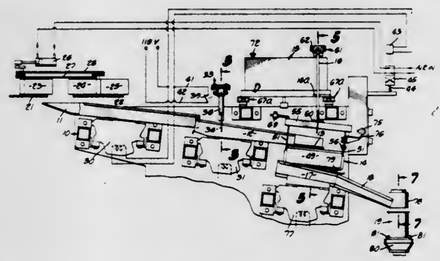
3,696,583
APPARATUS FOR FORMING PACKED REFUSE BLOCKS
Kunitoshi Tezuka, 14-3, 6-chome, Higashi Suna, Tokyo, Japan
Filed April 13, 1971, Ser. No. 133,531
Claims priority, application Japan, April 18, 1970, 45/32715
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 D 12 Claims



Apparatus for forming garbage or other types of refuse by compression into a mass or into blocks, and packing and/or wrapping the same with a wire net or the like, in which a bucket-like container is swingably mounted at the outlet opening of a compressing device, the container being arranged to make half a turn so as to allow the fitting of the wire net, the

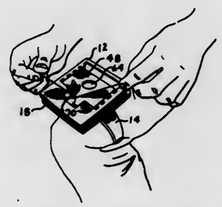
packing treatment and the release of the packed garbage or refuse block in a sequential operation.

3,696,584
APPARATUS FOR FILLING A CONTAINER WITH A WEIGHED LOAD OF FRAGILE ARTICLES
Donn J. Rickard, Glendora, Calif., assignor to Brown International Corporation, Covina, Calif.
Filed Oct. 23, 1970, Ser. No. 83,390
Int. Cl. B65b *5/10*
U.S. Cl. 53—239 5 Claims



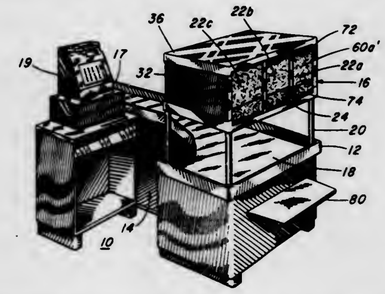
Apparatus for delivering a weighed load of fragile articles, such as grapefruit sections, to a container includes a series of vibratory chutes or pans. The first chute receives articles in response to demand from the second chute or pan into which it discharges, so that articles in said pan remain at a one-layer depth. This promotes maximum control of feeding of articles from the pan into a clamshell-type hopper pendantly supported on a weighing scale. When the required weight of fragile articles is accumulated within the hopper, the clamshell sections open automatically to discharge the weighed load into a filling chute leading to an open top container. Syrup is introduced into the filling chute when the hopper opens in order to lubricate the filling chute and to facilitate entry of the fragile articles one by one into the container along with the syrup.

3,696,585
FISH BAIT CONTAINER AND WRAPPING DEVICE
Charles P. Ritter, 704 East Prairie Road, Dowagiac, Mich.
Filed Oct. 23, 1970, Ser. No. 83,386
Int. Cl. B65b *67/08*
U.S. Cl. 53—390 8 Claims



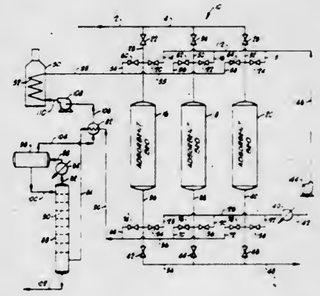
A fish bait container and wrapping device for forming a parcel of bait enclosed in fabric, in which a slidable part is disposed in a frame-like member, the member and part having two opposed slots, which together form a hole through which the fabric may be pushed to form a bag-like structure. In one position of the sliding part, the hole is substantially round, and in another position of the sliding part, the hole is restricted to clamp and hold the bag-like structure. The pieces of bait are inserted in the bag-like structure after it has been formed, and the bag is tied while it is held between the sliding part and the frame-like members. The wrapping mechanism may form a lid on a container for the bait, and the container has a means for securing the device to the leg of a fisherman.

3,696,586
BAGGING AND CHECKOUT COUNTER SYSTEM
Fred L. Sparks, 3601 Red Bluff, Apt. 32-C, Pasadena, Tex.
Filed March 31, 1971, Ser. No. 129,722
Int. Cl. B65b *67/00*
U.S. Cl. 53—390 1 Claim



This invention relates to bagging and checkout counter systems of the type used in supermarkets such as grocery stores and the like. The system includes a counter having a merchandise unloading end defined by the counter's flat deck, and a bag dispensing unit positioned directly above the flat deck at a sufficient elevation from the deck to allow for the free passage of the merchandise under the bag dispensing unit. The bag dispensing unit comprises a plurality of drawers each sized to accommodate a distinct size bag. Each drawer is divided into two bag storage compartments symmetrically disposed on either side of a vertically extending center partition wall. Means including spring means on either side of the partition wall urge the piles of bags stacked within each compartment outwardly toward a window from which individual bags can be easily withdrawn on opposite sides of the bag-dispensing unit.

3,696,587
ADSORPTION PROCESS FOR RECOVERING EASY-TO-REGENERATE CONDENSIBLE COMPONENTS FROM A MULTICOMPONENT GAS STREAM
Gary Clifford Young, Pawhuska, and Joseph A. Kleinpeter, Ponca City, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed April 2, 1971, Ser. No. 130,691
Int. Cl. B01d *53/04*
U.S. Cl. 55—62 8 Claims



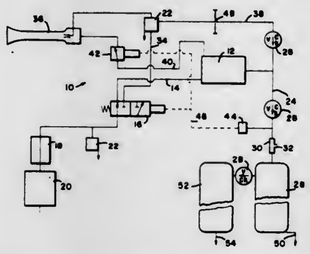
The present invention relates to an improved cyclic adsorption process for recovering easy-to-regenerate condensible

components from a multi-component gas stream. After contact with the inlet gas stream the adsorbent bed or beds containing easy and difficult-to-regenerate components are regenerated by contact with a lean regeneration gas stream. The resulting rich regeneration gas stream is contacted with a liquid stream consisting primarily of easy-to-regenerate components so that a major portion of the difficult-to-regenerate components contained therein are absorbed and removed by the liquid stream. The remaining rich regeneration gas stream is cooled so that easy-to-regenerate components and additional difficult-to-regenerate components contained therein are condensed thereby producing the liquid stream comprised primarily of easy-to-regenerate components used to contact the rich regeneration gas stream and a lean regeneration gas stream of a minimum difficult-to-regenerate component content. The lean regeneration gas stream is heated and recirculated in a closed circuit into contact with the bed or beds being regenerated thereby causing a maximum quantity of the difficult-to-regenerate components to be removed from the bed or beds and maximum bed easy-to-regenerate component adsorption capacity to be realized.

3,696,588
GAS DRYING APPARATUS AND METHOD

Jules L. Dussourd, and Ronald L. Haugen, both of Princeton, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,603
Int. Cl. B01d *53/04*
U.S. Cl. 55—163 **7 Claims**



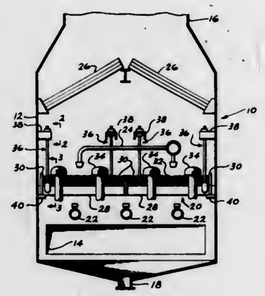
The apparatus comprises a desiccant chamber, operatively disposed between a gas compressor and a receiver, through which a gas to be dried therein is conducted, and valving for depressurizing the chamber and venting the same to atmosphere, when the receiver is fully charged. A pressure-sensing element automatically operates the valving. The apparatus has means insuring a valved return to a receiver-charging condition or operational mode automatically following apparatus shut down. The method sets forth the steps of chamber-drying the gas, monitoring the chamber-charged condition, shunting gas away from the receiver thereafter, and depressurizing and venting of the chamber.

3,696,589
ADJUSTABLE AIR POLLUTION CONTROL SCRUBBER BED

Preston D. Liebig, West Hartford, and William B. Hurlbut, Sr., Windsor, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 22, 1970, Ser. No. 83,103
Int. Cl. B01d *47/00*
U.S. Cl. 55—233 **4 Claims**

An improved arrangement for an air pollution control system incorporating a wet scrubber wherein the scrubber bed is made in sections which are adjustably located within the scrubbing housing. The scrubber bed is formed of standard size modules and each module is supported within the scrubber housing for adjustment therein. The number of modules is dependent upon the preliminary design characteristics for the pollution control desired to be achieved for the particular combustion system, while the adjustability

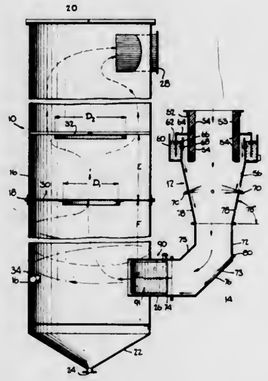


within the scrubber of the beds enables the beds to be repositioned for particular flow characteristics of the gas being scrubbed.

3,696,590
GAS SCRUBBING SYSTEM

Charles A. Richmond, Pompton Plains, N.J., assignor to Nichols Engineering & Research Corporation, New York, N.Y.

Continuation of Ser. No. 636,152, May 4, 1967, abandoned. This application Aug. 14, 1969, Ser. No. 850,265
Int. Cl. B01d *47/10*; B01f *3/04*
U.S. Cl. 55—238 **8 Claims**

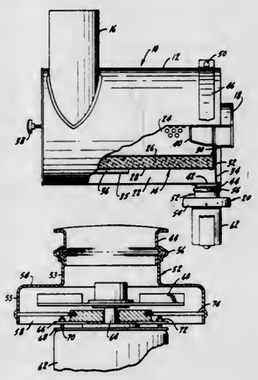


Gas scrubbing system comprising a flat surfaced tapered input quencher sealed to an entrance duct via a water seal arrangement which includes a weir arrangement to control a flow of flushing water, an elbowed connector having flat internal surfaces a spin damper having upper and lower finite clearances and a cyclonic scrubber with supplemental tangential air inlets at the spin damper level, doughnut and disc shaped baffle plates semi-tangentially oriented gas outlet and individually supplied water spray nozzles.

3,696,591
AIR CLEANER WITH IMPROVED UNLOADING APPARATUS

Raymond G. Bennett, Olympia Fields, Ill., and Mark Luedi, Valparaiso, Ind., assignors to Novo Industrial Corporation-United Air Cleaner Division, New York, N.Y.

Continuation of Ser. No. 790,259, Jan. 10, 1969, abandoned. This application June 7, 1971, Ser. No. 150,819
Int. Cl. B01d *59/50*
U.S. Cl. 55—337 **3 Claims**

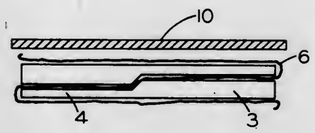


An air cleaner of the dry type having a generally cylindrical housing with an air inlet at one end and a clean air outlet at the other end, said housing constructed to set up a helical swirling motion of air therein to centrifuge dust particles to the outside, and a generally cylindrical annular filter element assembly centrally disposed within the housing. In addition the air cleaner includes a dust unloading apparatus having a port for dust removal, a means for moving air which produces suction at the port and a power source for driving said means.

3,696,592
TAPERED SEPARATOR FOR PLEATED FILTER

Donald E. Engleman, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 882,385, Dec. 5, 1969, abandoned, which is a division of Ser. No. 757,841, Sept. 6, 1968, Pat. No. 3,541,829. This application May 20, 1971, Ser. No. 145,332
Int. Cl. B01d *27/06*
U.S. Cl. 55—500 **2 Claims**

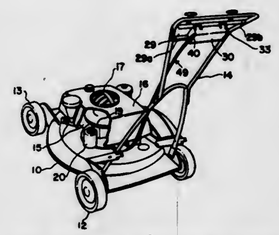


A tapered separator for a pleated filter formed from a blank of foldable sheet material having one portion folded in zigzag formation to present first fold increments of a first selected height and the remaining portion folded in zigzag fashion to present second fold increments in substantially end-to-end relation with said first fold increments and of a second selected height different from the height of said first fold increments to thereby provide a tapered configuration to the separator.

3,696,593
ELECTRIC START FOR MOWERS

Richard A. Thorud, Minneapolis; James J. Snegoski, Shakopee, and Kenneth N. Hasenbank, Minneapolis, all of Minn., assignors to Toro Manufacturing Coporation, Minneapolis, Minn.

Filed Sept. 4, 1968, Ser. No. 757,329
Int. Cl. A01d *35/26*
U.S. Cl. 56—17.5 **16 Claims**

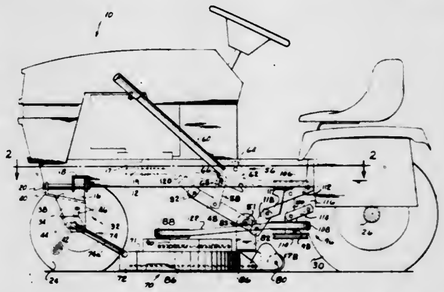


An electric start system for a lawn mower powered by an internal combustion engine. The engine is cranked by means of a Bendix type starter, the pinion of which engages the engine flywheel during the cranking operation, and then automatically disengages therefrom when the engine starts. The electric motor of the Bendix starter is powered by batteries carried on the handle of the mower and is energized by a key switch also on the handle within easy and convenient reach of the operator. A charger is also provided which enables the battery to be recharged on or off the mower. The battery also has a single receptacle connector for selective connection to the starter motor and charger, whereby the engine cannot be started when the battery is being recharged.

3,696,594
STROKING JACK SHAFT FOR A BELT DRIVE

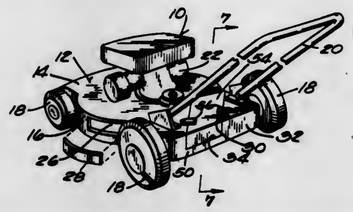
John H. Freimuth, New Holland, and Joseph C. Hurlburt, Leola, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed July 7, 1971, Ser. No. 160,289
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.2 **8 Claims**



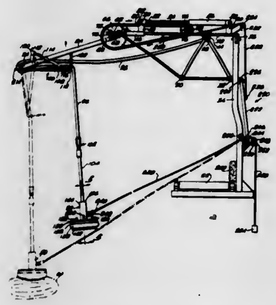
A rotatively driven stroking jack shaft having first and second axially spaced sheaves fixed thereto and drivingly interconnected by a pair of endless V-belts to a driving and driven sheave respectively, the driven sheave being disposed on a vertically floating mower unit and drivingly interconnected to the cutting elements thereof. The jack shaft is rotatively mounted within a housing that is supported by a linkage structure that is operatively connected and moveably responsive to the vertical floatation of the mower unit such that substantial misalignment between the drive belts and respective connected sheaves is avoided.

3,696,595
LOW-VELOCITY DISCHARGE MEANS FOR ROTARY MOWERS
Einar S. Dahl, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed July 15, 1970, Ser. No. 55,144
Int. Cl. A01d 35/26
U.S. Cl. 56—16.9 21 Claims



Disclosed herein is a rotary lawn mower including a paddle wheel or fan which is located in the blade housing and freely rotatably supported on the engine output shaft and rotated at a rate of rotation less than the cutting blade. Radially extending paddles move in the path of grass clipping discharge and reduce the velocity of impelled missiles caused by impact with the cutting blade to the low tip velocity of the paddles to minimize danger to bystanders and the mower operator. A horizontal partition located between the cutting blade and the paddle wheel and extending around the blade housing beneath one or more mower grass clipping discharge outlets prevents direct discharge of any missiles through the outlets.

3,696,596
WATERMELON HARVESTING DEVICE
Stanley C. Wegscheid, P.O. Box 336, La Belle, Fla.
Filed March 23, 1970, Ser. No. 21,867
Int. Cl. A01d 51/00
U.S. Cl. 56—327 18 Claims



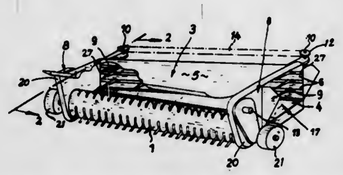
A watermelon harvesting device consisting of a plurality of individual watermelon harvesters supported along the length of a boom structure, one of said boom structures being adapted to be fixed to each side of a vehicle such as a truck or tractor in a laterally outwardly extending disposition whereby the vehicle may be driven along a path or road extending through a watermelon field with the harvester supporting booms extending outwardly to overlie certain of the beds of the watermelon field on each side of the vehicle. Each of the watermelon harvesters comprises a vacuum controlled watermelon engaging head and hydraulically electrically controlled mechanical means whereby a watermelon when engaged by said head may be automatically lifted and swung into position over a conveyor means, the watermelon when reaching this position is automatically deposited on said conveyor means with the head being returned to a position to engage another watermelon. One or more of said watermelon harvesters may be operated by one person.

3,696,597
RESILIENT LINKAGE FOR LIMB SHAKER
Evan L. Sitter, P.O. Box 95, McLean, Tex., assignor to Spencer B. Sitter
Filed April 16, 1971, Ser. No. 134,581
Int. Cl. A01g 19/00
U.S. Cl. 56—328 TS 10 Claims



Fruit bearing limbs are shaken with a boom at the natural frequency of the limb to shake the fruit therefrom. The boom is vibrated by a resilient linkage which includes two coaxial, helical springs in compression with excitation transmitted midway therebetween.

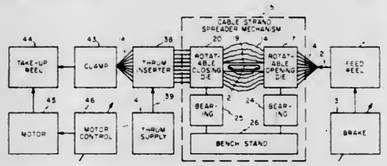
3,696,598
APPARATUS FOR COLLECTING CROPS
Ernst Welchel, Bahnhofstr. 1, 7326 Heiningen, Germany
Filed April 17, 1969, Ser. No. 817,626
Claims priority, application Germany, April 19, 1968, P 17 57 270.2
Int. Cl. A01d 89/00
U.S. Cl. 56—364 25 Claims



A device for collecting crops includes means collecting the crops from the ground and conveying them during the movement of the collecting device over the ground, in a direction substantially transverse to the traveling direction. The crop is compressed immediately after it is collected and conveyed during its compression in the transverse direction. A conveying duct is oriented behind a collecting drum which is adapted to be positioned adjacent the ground. The conveying duct widens in a conveying direction in the manner of a wedge and conveyor means are arranged to run in a direction transverse to the collecting drum to move the collected crop along the conveying duct and to transfer it, for example, into a receiving truck. The outlet port for the conveying duct is arranged laterally next to and behind the collecting drum. The collecting drum may be advantageously mounted on a pivotal arm

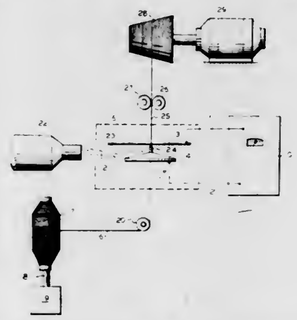
which may also telescopic so that it may be positioned directly adjacent the entrance to the collecting duct and operated, for example, in conjunction with a mower. The collecting duct itself advantageously includes baffle plates or wall elements which may be pivoted to accommodate the feeding to a selected orientation and size for facilitating the feeding to a collecting truck.

3,696,599
CABLE FAIRING SYSTEM
Donald M. Palmer; Charles C. Cotton, both of Lynn Haven, and Willmer F. Hodges, Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 16, 1971, Ser. No. 163,185
Int. Cl. D07b 3/00, 1/14, 7/18
U.S. Cl. 57—1 UN 10 Claims



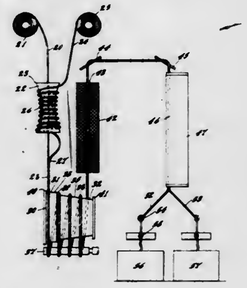
A cable fairing system is disclosed which contains a rotatable cable strand opening die connected to a rotatable cable strand closing die by means of a hollow, slotted tube. Bearings respectively connected to brackets attached to a bench support said dies for rotation therein. A feed reel supplies multistrand cable for threading through said dies and hollow tube, and a take-up reel receives the reconstructed cable after thrums have been inserted between the opened strands thereof by a human or other operator. A controlled motor drives said take-up reel at such speed as to pull the multistrand cable through the aforesaid dies and tube and still allow the aforementioned thrums to be installed therein immediately prior to the reconstruction thereof.

3,696,600
APPARATUS FOR PRODUCING CORE YARN
Mayer Mayer, Jr., New Orleans; James I. Kotter; Harold L. Salaun, Jr., both of Metairie, and Roger S. Brown, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed April 12, 1971, Ser. No. 132,953
Int. Cl. D01h 1/12
U.S. Cl. 57—5 4 Claims



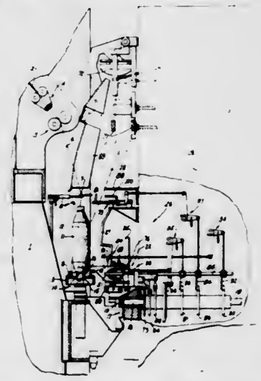
This invention relates to a process for the continuous formation of various types of core yarn by the use of electrostatic, physical and chemical means. More specifically, the invention relates to a process for electrostatically, peripherally surfacing or sheathing a coring yarn with individual fibers and means for treating the coring yarn with a crosslinking chemical formulation to permanently set the yarn configuration.

3,696,601
TEXTILE HEATING AND COOLING
Henry W. McCard, 208 Rodman Avenue, Jenkintown, Pa.
Continuation-in-part of Ser. No. 751,785, Aug. 12, 1968, Pat. No. 3,518,822. This application Nov. 7, 1969, Ser. No. 874,764. The portion of the term of this patent subsequent to July 7, 1987, has been disclaimed.
Int. Cl. D02g 1/02
U.S. Cl. 57—34 HS 9 Claims



In order to accomplish rapid cooling of synthetic thermoplastic continuous filament yarn which has been heated for bulking or the like, the yarn is led along a groove and subjected to jets of cooling gas spaced along the groove. For bulking in the preferred form the yarn is false twisted and heated suitably by a rotating drum heater having a smooth descending conical portion toward a take off end, and a downward step at one end of the smooth conical portion. In another form, the drum heater has two right cylindrical portions of different diameter, the smaller being at the outlet end, and a step separating them. In another form two ends of yarn are applied, and then the yarn is continuously brought into or against a heater, preferably a rotating drum heater.

3,696,602
MEANS FOR DOFFING A BOBBIN AND FORMING A TRANSFER TAIL
Raymond E. Olson, and Harold R. Yone, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.
Filed Aug. 27, 1970, Ser. No. 67,367
Int. Cl. D01h 9/10, 15/00
U.S. Cl. 57—53 14 Claims



In a spinning frame, or the like, a filled bobbin and its trailing bobbin thread are simultaneously removed from a spindle

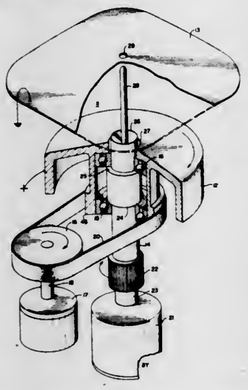
in a single doffing operation. At least one turn of the trailing thread is then wound as a transfer tail on the cleared spindle in a position to be pinched by the empty bobbin being donned in order to couple the thread to the donned bobbin. The thread is then severed near the spindle between the spindle and the bobbin.

3,696,603

ELECTROSTATIC FIBER COLLECTING AND YARN SPINNING APPARATUS

James I. Kotter; Harold L. Salaun, Jr., both of Metairie, and Roger S. Brown, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed April 12, 1971, Ser. No. 132,952
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 5 Claims



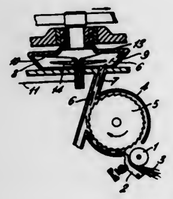
By combination and interaction of electrostatic and mechanical forces, airborne opened fibers are transported, parallelized, collected en masse and twisted to continuously form a high quality textile yarn. The invention also relates to a method and apparatus for continuous formation of a variety of yarns from the basic fiber spinning apparatus.

3,696,604

CENTRIFUGAL SPINNING DEVICE

Choji Nozaki; Kiichi Kono; Toshikiko Sakai, and Osami Kamigaito, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kentyusho, Nagoya-shi, Japan

Filed May 11, 1971, Ser. No. 142,142
Claims priority, application Japan, May 12, 1970, 45/46323
Int. Cl. D01h *1/12, 7/00*
U.S. Cl. 57—58.95 11 Claims



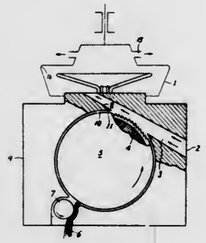
A centrifugal spinning device having a feed roller and a presser to feed sliver into a fiber liberating device including an opening roller therein, a spinning rotor for depositing liberated fibers supplied from the fiber liberating device within a cavity therein, and a guide tube installed on the axis of rotation of the rotor for guiding out twisted yarn from the rotor, provided with the improvement wherein the entrance opening of the guide tube is formed by ceramic or ceramic composite material, thereby to obtain good spinning stability.

3,696,605

RINGLESS SPINNING MACHINE

Takashi Morikawa, Amagasaki; Sotomatsu Higake, Osaka-fu; Mitsugu Sumi, Fukui; Tohoru Urifu, Fukui, and Manabu Yamamoto, Fukui, all of Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka, Japan, and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 14, 1969, Ser. No. 876,918
Claims priority, application Japan, Nov. 27, 1968, 43/03802
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.95 2 Claims



A ringless spinning machine which has an air intake channel communicating with a rotatable spinning chamber operating at subatmospheric pressure. A combing roller having a plurality of saw teeth thereon as a part of the periphery exposed in the air intake channel so that air flowing therethrough can strip fibers from the peripheral surface of the combing roller. The junction defined by the wall surface on the fiber transfer side of the air intake channel at the forward end of the opening through which the combing roller projects and the wall surface of the space within which the combing roller rotates is in the form of a gently curved surface or a flat surface. A filter member having a filtering area larger than the area of the inlet end of the air intake channel is provided at said inlet end.

3,696,606

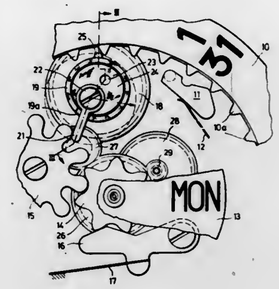
TIMEPIECE WITH INDICATION OF DATE AND DAY OF THE WEEK

Gunther Scholz, Schramberg, Wurttemberg, Germany, assignor to Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed March 10, 1971, Ser. No. 122,941
Claims priority, application Germany, March 18, 1970, G 70 10 018.4
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 4 Claims

A timepiece having means for recording, or indicating, data of the date of the month and day of the week wherein such data is provided by indicia respectively inscribed on a rotating ring and a concentrically arranged rotating disk. A first shift finger extending through a rotatable guide casing is pivotally mounted on a fixed member in the timepiece, and engages means for drivingly advancing the disk. A second shift finger is mounted on the guide casing and engages the ring. The shift fingers are disposed in different planes to avoid contact by the first shift finger with driven teeth on the ring. Rotation of the guide casing serves to rotate the shift fingers, and hence the

ring and disk. The first shift finger is mounted eccentrically with respect to the guide casing so as not to interfere with



movement of the ring, and to permit a wide variety in the selection of the position of a driving element.

3,696,607

CENTER SET FOR CLOCKS

Samuel Dinerstein, Lake Geneva, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Feb. 22, 1971, Ser. No. 117,532
Int. Cl. G04b *27/00*
U.S. Cl. 58—85.5 10 Claims

A clock hand setting mechanism mounted upon the crystal of a clock and having a manually manipulatable setting stem whose axis is substantially coincident with the axes of the hour, minute, and second hand shafts which extend from the clock movement, the setting stem being adapted for longitudinal movement toward and away from the clock dial, with the extremity of the stem closest to the dial carrying at least one finger displaced from and running generally parallel to the axis of the stem for selectively engaging and rotationally adjusting the second and minute hands of the clock, the second hand being driven by the second hand shaft through a frictional clutch device to prevent damage to the escapement mechanism of the clock movement while the position of the clock hands are being adjusted.

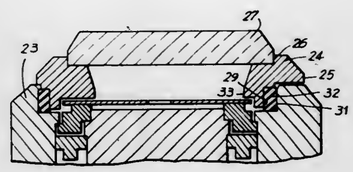
3,696,608

NON-CIRCULAR WATERPROOF WATCHCASE

Kanji Miyashita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 13, 1971, Ser. No. 207,412
Claims priority, application Japan, Dec. 14, 1970, 45/110797
Int. Cl. G04b *37/08, 39/00*
U.S. Cl. 58—90 R 4 Claims

In a non-circular watchcase, a bezel having a non-circular opening for reception of a non-circular watch glass has a cylindrical portion below the region for reception of the watch glass. The case-body has a circular opening so that it can



receive the cylindrical section of the bezel and be sealed thereto by means of a circular gasket.

3,696,609

TIMEPIECE HAVING OSCILLATING ROTATION INDICATOR

Gerald Dubois, Le Lieu, Switzerland, assignor to Marcel Mingard, Geneva, Switzerland

Filed March 25, 1971, Ser. No. 128,058
Claims priority, application Switzerland, March 26, 1970, 4600/70
Int. Cl. G04b *19/02*
U.S. Cl. 58—125 R 3 Claims



A timepiece with an oscillating rotating indicator, accomplishing slow displacements followed by instantaneous return to initial starting position, characterized by the fact that it comprises at least one snail-shaped cam driving an oscillating rotating lever controlling the indicator, the lever being pressed against the cam by an elastic return device, the slow travelling of the indicator resulting from the lever climbing the snail-cam and its instantaneous return resulting from the lever falling along the sharply cut edge of the cam, when the cam rotates.

3,696,610

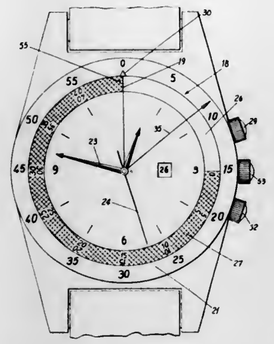
CONTROL AND MEASURE INSTRUMENT FOR UNDERWATER DIVING

Georges R. Charbonnier, 8, avenue Peschier, Geneva, Switzerland

Filed Aug. 27, 1969, Ser. No. 853,470
Claims priority, application Switzerland, Aug. 29, 1968, 13109/68
Int. Cl. G04b *47/06*
U.S. Cl. 58—145 R 4 Claims

A measure and control instrument for divers comprising a time counter, a bathometer, and means actuated by said time counter and bathometer for automatically and continuously indicating the duration of the decompression stage to be ob-

served by a diver. Such means comprises a mechanism driving at least one indicating member in an intermittent movement



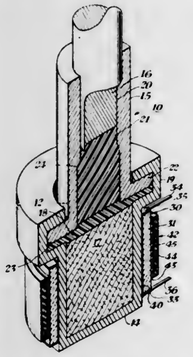
the frequency of which is constant and the amplitude of which varies with the depth of submersion.

3,696,611

THERMAL MOTORS

Thomas E. Noakes, Detroit, Mich.; Thomas P. Konen, Somerville; Albert Kokalari, South Plainfield, both of N.J., and Robert B. Duggan, East Aurora, N.Y., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sept. 17, 1969, Ser. No. 858,595
Int. Cl. F03g 7/00; H01h 71/16; H01c 7/04
U.S. Cl. 60—23 **11 Claims**



An electrical-to-thermal-to-mechanical power translating device comprising a mass of solid-to-liquid expansion material packed into a piston-cylinder chamber and heated electrically by a positive temperature coefficient thermistor for developing piston movement. The thermistor is a current limiting device which automatically controls the length of the piston stroke by self-regulating the upper operating temperature level.

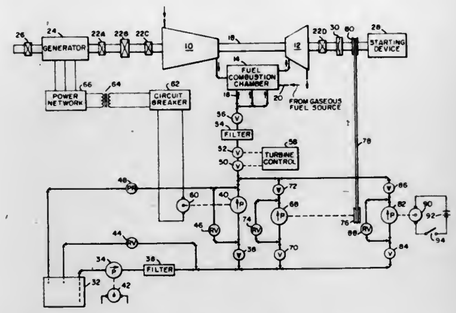
3,696,612

FUEL PUMP SYSTEM FOR GAS TURBINES

Paul A. Berman, Plymouth Meeting, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1970, Ser. No. 102,618
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 **7 Claims**

A fuel pump system for a gas turbine of the type in which a main fuel pump is normally driven by an electric motor powered from an external electrical network. An auxiliary fuel pump is connected in a parallel hydraulic circuit arrangement with the main fuel pump and is activated by a battery-driven



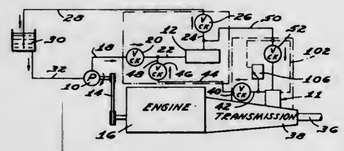
motor or driven by a mechanical starting device for the turbine when it becomes necessary to "black start" the turbine with no external source of electrical power available for the main fuel pump.

3,696,613

HYDRAULIC STEERING SYSTEM HAVING AUXILIARY POWER SOURCE

William B. Goodale, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 763,228, Sept. 27, 1968, abandoned.
This application July 31, 1970, Ser. No. 64,130
Int. Cl. F15b 15/18; B62d 5/06
U.S. Cl. 60—52 S **11 Claims**



A hydraulic steering system for a motor vehicle having a primary fluid pressure source and a secondary pressure source. The secondary source comprises a pump driven by the vehicle's transmission upon demand and which is inoperative when the primary pressure source is functioning properly.

3,696,614

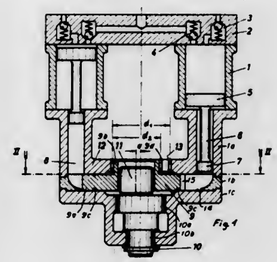
RECIPROCATING PISTON MACHINE WITH A ROTARY HYDRAULIC DISPLACER BETWEEN PISTONS AND MACHINE SHAFT

Rudolf Hartmann, Holderlinstr. 4, 6238 Hofheim, and Horst Zimmermann, Am Hasensprung 16, 6241 Mammolshain, both of Germany

Filed May 12, 1971, Ser. No. 142,684
Int. Cl. F15b 7/00; F04b 9/08, 17/00, 35/00; F03c 3/00
U.S. Cl. 60—54.5 R **11 Claims**

A reciprocating piston machine comprises a housing structure with hydraulic cylinders, piston means reciprocable in said respective cylinders, and a revolvable shaft. A hydraulic displacer mechanism has oil columns in the respective cylinders for linking the displacer mechanism with the pistons, the displacer mechanism comprises a stationary annular portion coaxial with the shaft and forming part of the housing structure. The annular portion has inwardly open chamber recesses distributed along its inner periphery and communicating with the oil columns. The hydraulic displacer mechanism has a rotor diametrically smaller than the interior of the annular

housing portion and connected with the shaft in eccentric relation thereto, the rotor is consecutively engageable with the recesses to thereby vary the oil volume in the chambers. A circle of fixed internal gear teeth on the housing structure, meshes with a gear-teeth circle on the eccentric rotor. The



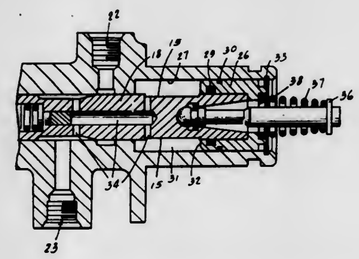
latter circle has a smaller diameter than the circle of the fixed gear teeth and is in rolling mesh engagement therewith, whereby during operation the rotor sequentially coacts the said respective recesses to form variable volume chambers together therewith.

3,696,615

HYDRAULIC HOLD-OFF FOR A MECHANICAL FEEDBACK SYSTEM

Paul J. Grabill, Jr., Sterling Heights, and David J. Suttkus, Warren, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 18, 1971, Ser. No. 107,108
Int. Cl. F15b 7/00, 13/10
U.S. Cl. 60—54.6 P **6 Claims**



A movable sleeve is pushed against a stop by hydraulic pressure supplied to a pressure chamber during the hydraulic power curve. A continuous biasing means such as a spring feeds back force proportionally while it is supported by such hydraulic pressure. During a time when there is insufficient force to act against the sleeve, the spring together with its associated actuating elements picks up the sleeve and carries it along. The cavity within which the sleeve moves permits enough travel to form a mechanical train link without picking up the force reaction spring, thereby solving the problem of accumulating the undesirable force when pushing through in a fail-safe operation.

3,696,616

NON-CARBON FORMING MONOPROPELLANT PROCESS USING A LOWER ALKYLHYDRAZINE AND AMMONIA

James M. Lucas, El Dorado Hills; Jack K. Suder, Fair Oaks, and Eugene M. Vander Wall, Citrus Heights, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Oct. 5, 1967, Ser. No. 673,016
Int. Cl. C06d 5/04, 5/08
U.S. Cl. 60—218 **9 Claims**

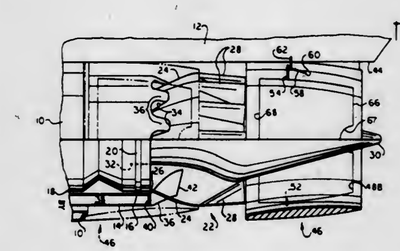
A monopropellant comprised of an alkyl hydrazine containing either ammonia or hydrazine, or both additives in an amount sufficient to prevent the formation of solid carbon as a combustion product from the decomposition of the basic material.

3,696,617

TURBO-FAN PROPULSION APPARATUS AND OPERATING METHOD

Peter H. Ellis, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Nov. 10, 1969, Ser. No. 875,201
Int. Cl. F02k 1/02, 1/20, 3/04
U.S. Cl. 60—229 **6 Claims**



Fan air of turbo-fan engine flows through ducts which pass through wall of lobed thrust nozzle mounted on aft end of the engine so as to receive exhaust gas discharged therefrom, the ducts terminating within the nozzle and being spaced apart circumferentially thereof. Assembly may include a tubular ejector movable from position around nozzle to position downstream therefrom and provided with thrust reversing doors, or a pair of thrust reversing doors movable from position adjacent aft end of housing which surrounds the engine to position downstream from the nozzle.

3,696,618

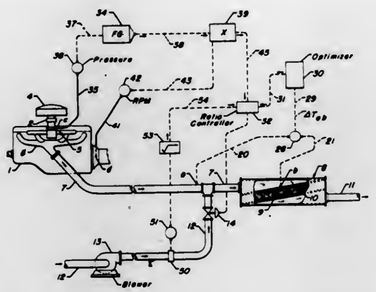
CONTROL SYSTEM FOR AN ENGINE SYSTEM

David M. Boyd, Clarendon Hills, and Clarence G. Gerhold, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed April 19, 1971, Ser. No. 135,199
Int. Cl. F02b 75/10
U.S. Cl. 60—276 **15 Claims**

A control system for an engine system which has means for optimizing the performance of the converter in the engine system by regulating a set point of a controller. In one embodiment, secondary air flow to the converter is the variable utilized to control the performance of the converter and is regu-

lated in response to the ratio of gas flow in respect to the engine of the system to secondary gas flow to the converter. In another embodiment the air to fuel ratio to the engine is utilized as a variable to control the performance of the converter.

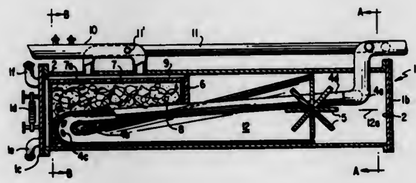


3,696,619

ANTISMOG DEVICE FOR CLEANING, BURNING AND MUFFLING THE EXHAUST GASES AND ENGINE COMPARTMENT FUMES OF INTERNAL COMBUSTION ENGINES

Juan Rosa, 1835 Pedro Mendoza, Buenos Aires, Argentina

Filed July 23, 1970, Ser. No. 57,432
Int. Cl. F01n 3/14
U.S. Cl. 60—297 **9 Claims**



An anti-smog device for cleaning and muffling exhaust gases and engine compartment vapors of internal combustion engines; comprising: a fume collecting funnel, a casing connected with the exhaust pipes of the engines; the casing being arrayed externally with a fluid level indicator, necessary inlet, outlet and conducting tubing, with an after burning ignition device suitably connected with the interior of the casing; where the internal structure mainly comprises a funnel shaped chamber, connected at the narrow end to a perforated tube with a return elbow, and faced by a multibladed impeller; further comprising a chamber filled with catalytic copper shavings, said chamber partially surrounding said perforated tube, the casing further being filled to about half of its narrowest width with a gas absorbing chemical solution.

3,696,620

MARINE ENGINE WATER COOLING

John G. Pace, Port Huron, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed March 24, 1971, Ser. No. 127,619
Int. Cl. F01n 3/04; F01p 3/12
U.S. Cl. 60—321 **10 Claims**

Improved water jacketed manifolds and water cooling systems for marine engines wherein water circulation through



the manifold water jacket is provided through an apertured pipe which extends through the jacket.

3,696,621

METHOD OF SOIL STABILIZATION

Bernard B. Simms, Franklin Square; Alvin A. Stein, Brooklyn, both of N.Y., and Charles N. Larosa, Arnold, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 10, 1970, Ser. No. 62,684
Int. Cl. E02d 3/14
U.S. Cl. 61—36 R **6 Claims**

In situ complexation of two water soluble polymer solutions is effected by alternately spraying the solutions on the soil to be stabilized. The first solution is a water solution of approximately 1–2 percent by weight of polyethylene oxide and is deposited to a loading of about 0.1 pound per square yard. The second solution is another water solution of approximately 10–20 percent of polyacrylic acid loaded to about 0.5 pound per square yard. Repetitive spraying will provide thicker stabilized surfaces.

3,696,622

A METHOD OF SOIL STABILIZATION AND LEAKAGE PREVENTION

Wataru Tohma, Yamato-Takada; Takao Murata, Yaizu; Nobutaka Nakamura, Fujieda, and Atsushi Kudo, Tokyo, all of Japan, assignors to Sumitomo Durez Company, Limited, Tokyo and Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 17, 1971, Ser. No. 116,207
Int. Cl. E02d 3/12; E21b 33/13
U.S. Cl. 61—36 R **6 Claims**

An improved method of soil stabilization and leakage prevention characterized by using a resin composition which comprises a water soluble strongly alkaline liquid phenol formaldehyde resin with a pH of 9.5 or more and having a molar ratio of phenol to formaldehyde between 1:1.5 and 1:3.0, and a lactone which is added in a proportion of 1 to 30 percent of the liquid resin, in which a compound such as urea, a urea derivative, a basic or neutral salt is used as a gelation control agent.

3,696,623

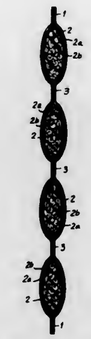
WOVEN MAT

Olaf Heine, Kelkheim/Taunus, and Gerhard Knisse, Wohltorf, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 843,518, July 22, 1969, abandoned. This application June 29, 1971, Ser. No. 158,036
Claims priority, application Germany, July 30, 1968, P 17 84 360.6
Int. Cl. E02b 3/12
U.S. Cl. 61—38 **11 Claims**

An assembly for preventing erosion of sand and pebbles from shores, beaches, waterways and the like. The assembly includes an outer mat made from a thermoplastic material.

The mat has an open net weave and includes several compartments which are adjacent one another. A plurality of open net weave bags, also made of thermoplastic material, and filled



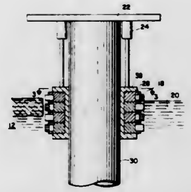
with entangled ribbons of thermoplastic material are inserted into the compartments of the mat. The assembled mat may be attached to the shore.

3,696,624

BUCKET WHEEL ICE CUTTER

John D. Bennett, Denton, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed Oct. 2, 1970, Ser. No. 77,508
Int. Cl. E02b 17/00; B63b 35/12
U.S. Cl. 61—46 **5 Claims**



Bucket wheels are mounted on offshore platforms or ship prows for cutting ice sheets found in frigid waters. The bucket wheels rotate in a generally horizontal plane and are paired in opposite directions so that a torque is not placed on the structure or ship. Multiple sets of bucket wheels can be used to cut a thick section of ice and/or the bucket wheels can be inclined or arranged to oscillate up and down to cut a larger vertical section.

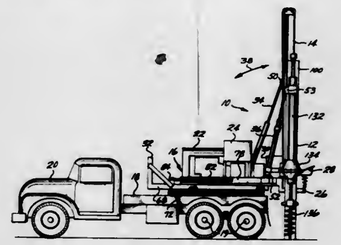
3,696,625

POST IMPLANTING METHOD AND VEHICULAR APPARATUS THEREFOR

James M. Alexander, Kent, Wash., assignor to Stillwell-Gerard Construction Co., Bellevue, Wash.

Filed March 12, 1971, Ser. No. 123,532
Int. Cl. E02d 7/02; E21c 11/02
U.S. Cl. 61—53.5 **20 Claims**

A port hole boring auger and a drop weight hammer are mounted on the periphery of a carriage a fixed distance apart. The carriage is rotatably and slidably mounted on a transport vehicle adapted to be driven along a surveyed post line by an operator seated at a control console including a plurality of control valves allowing the operator to also position and operate the auger and hammer. The carriage may be rotated to position the auger and hammer laterally of the transport vehicle such that the vertical center lines of the auger and hammer define a substantially vertical plane which extends generally in the direction of transport vehicle movement along the surveyed line. The hole boring auger is centered on a post position mark on said line such that the hammer is substantially centered over a previously bored hole at an adjacent post position mark. A hole is bored at the post position mark while at substantially the same time a post is hammered in place in the previously bored hole. The transport vehicle is moved ahead so that the auger is centered over the next adjacent post position mark and the hole boring and post implanting is repeated.



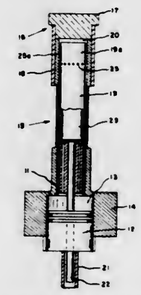
A method of implanting posts along a surveyed line including the steps of boring a post hole at one post position mark on said line and implanting a post in a previously bored hole at a rearwardly adjacent post position mark on said line with a single positioning of said transport vehicle.

3,696,626

CRYOGENIC REFRIGERATION DEVICE

Alexander Daniels, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,542
Int. Cl. F25b 9/00
U.S. Cl. 62—6 **10 Claims**



A thermodynamic, regenerative-cycle refrigerating device including a compression space, a cooler, a regenerator and a cold finger formed as a cylinder with a displacer movable therein for defining an expansion space, the cold produced being transferred from the expansion space primarily through a thin cap at the end of the cylinder.

3,696,627

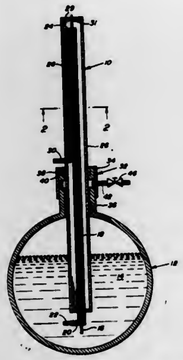
LIQUID CRYOGEN TRANSFER SYSTEM

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 18, 1971, Ser. No. 107,105
Int. Cl. F17c 7/02
U.S. Cl. 62—51 **8 Claims**

A system for transferring a cryogenic liquid from a storage vessel to a remote point of use at a constant temperature, pres-

sure and flow rate wherein the transfer tube is jacketed with a second tube along substantially its entire length and these tubes are enclosed in an evacuated jacket. Use of a nozzle in the second tube entry end causes the liquid entering the jacket to decrease in pressure and temperature thereby subcooling



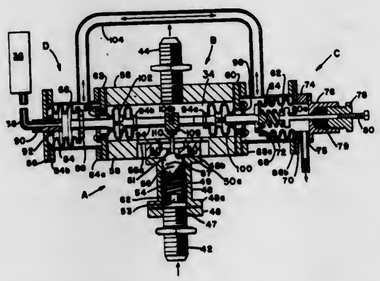
the liquid in the transfer tube to prevent said liquid from boiling. The jacketing fluid absorbs heat entering the transfer system from the atmosphere. Included in the system as accessories are an adaptor for attaching the system to the storage vessel in pressure tight relationship and flow control on the delivery end of the system.

3,696,628

THERMOSTATIC EXPANSION VALVE FOR REFRIGERATION SYSTEM

Roy M. Coyle, Sr., Glen Ellen, Calif., assignor to Norman J. Wray, Glen Ellen, Calif., a part interest

Filed Aug. 19, 1971, Ser. No. 173,211
Int. Cl. F25b *41/04*
U.S. Cl. 62—115 11 Claims



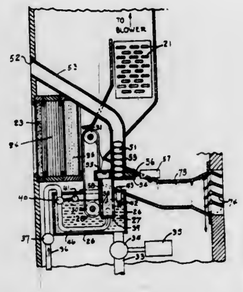
A thermostatic expansion valve for use in a refrigeration system of the vapor-compression type. Valve actuation is made responsive to the combined effect of evaporator coil temperature and pressure as independently monitored through separate control inputs. A slotted ball is pivotally rotated in its seat in a direction determined by the net pressure differential applied to the control inputs to present a gradually and uniformly varying flow orifice profile. One control input monitors internal coil pressure directly while the other control input senses the gas pressure produced within a thermostatic bulb in contact with the coil exterior. Calibration means are provided to balance the net pressure differential under desired steady-state cooling conditions and position the valve accordingly.

3,696,629

AIR CONDITIONING SYSTEM

Russell G. Heston, Jr., Little Silver, N.J., assignor to Donald Deskey, Palm Beach, Fla.

Filed April 12, 1971, Ser. No. 133,073
Int. Cl. G01k *13/00*
U.S. Cl. 62—129 10 Claims



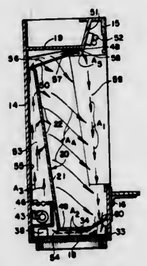
An air conditioning system including the usual air heating and air cooling means, blowers, electrical controls and the addition of a means for removing sulfur oxide compounds from the air. The sulfur oxide compounds are media removed by forcing the air through a fabric or belt wetted with an alkaline hydroxide water solution. Automatic means replenish the hydroxide solution when it is exhaused.

3,696,630

HUMIDIFIED AND REFRIGERATED SHOWCASE

Tony J. Bressickello, 13015 S. Normandie Boulvard, Gardena, Calif.

Filed Dec. 10, 1970, Ser. No. 96,943
Int. Cl. F25d *17/02*
U.S. Cl. 62—188 13 Claims



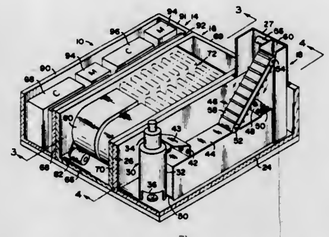
A showcase for displaying and preserving flowers has a housing formed with a front access opening and an enclosure installed within the housing. An air flow path through which air may be recirculated is in part constituted by a space defined between the housing and enclosure. A refrigerating unit includes a refrigerant conduit oriented in the air flow passage and above a water pan located on the bottom of the housing. A blower mounted adjacent the refrigerant conduit operates to pull recirculating air across the water to collect moisture ad become humidified to the desired degree. Thereafter the air is forced in heat exchange relationship around the refrigerant coil and upwardly through the air flow path for distribution through perforations formed in the enclosure and into contact with the flowers.

3,696,631

INTEGRATED MODULAR REFRIGERATION SYSTEM

Pelayo F. Valdes, 4504 W. Idelwild, Tampa, Fla.

Filed Dec. 9, 1970, Ser. No. 96,483
Int. Cl. F25d *21/10*
U.S. Cl. 62—282 12 Claims



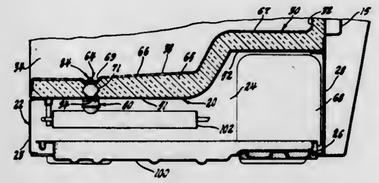
This device relates to a modular refrigeration apparatus which is adapted to be attached to the deck of a fishing vessel and to not only quick freeze the comestibles placed within but to keep the hold at a low temperature. The apparatus consists of three separate modules which may be used remotely from each other.

3,696,632

DEFROST WATER DRAIN TRAP

Ralph E. Carlin, and Ralph R. Rigg, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed March 8, 1971, Ser. No. 121,799
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 4 Claims



A refrigerator cabinet defrost water drain trap positioned in the bottom wall of the front opening cabinet which provides a liquid trap in the form of a cup-shaped container designed to receive the lower discharge end of a drain tube. The container encloses the lower end of the drain tube such that the container's free overflow edge determining liquid level is positioned a defined distance above the discharge end of the drain tube whereby the liquid in the container provides a hydraulic suction head which normally seals the drain tube against entry of outside air into the cabinet. The differential movement of the liquid levels provides a momentary vacuum release air passage through the drain tube to permit the entrance of a limited quantity of outside air into the compartment whereby substantial equalization of pressures between the interior and exterior of the cabinet is achieved to allow the cabinet door to be reopened immediately with greater ease after closing.

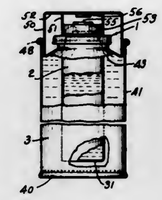
3,696,633

CONTAINER COOLING DEVICE

Evan D. Mills, 507 Sourth Catalina Street, Los Angeles, Calif.

Filed Dec. 21, 1970, Ser. No. 100,138
Int. Cl. F25d *3/10*
U.S. Cl. 62—294 5 Claims

A container for beverages and other comestibles is provided with refrigerating means comprising a refrigerant cartridge within the container and held in position therein by a dual cap which is detachably secured to the container and fixedly secured to the refrigerant cartridge. The refrigerant cartridge holds a vapor phase refrigerant of low boiling point. Means is provided for puncturing the dual cap to release the vapor



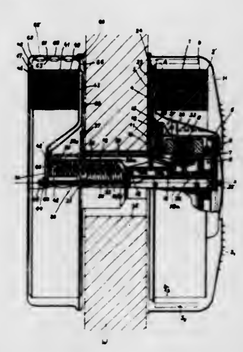
phase refrigerant from the cartridge to cool the beverage or other compestible within the container. After the beverage has been cooled within the container the dual cap may be released from the container whereby the dual cap and the refrigerant cartridge may be removed from the container.

3,696,634

DEMOUNTABLE HEAT PUMP WITH HERMETICALLY SEALED CIRCUIT

Ludwig Ludin, Aargau, Switzerland, and Nikolaus Laing, Hofener Weg 35-37, Germany, assignors to Physikalisch-Technisches Entwicklungsburo Laing, Aldingen b. Stuttgart, Germany

Filed June 1, 1970, Ser. No. 42,018
Claims priority, application Switzerland, May 30, 1969, 8321/69
Int. Cl. F25d *17/00*
U.S. Cl. 62—333 9 Claims



A heat pump having a rotary air-flow-inducting heat exchanger, e.g., mounted on an exterior wall of a space whose temperature is to be controlled, forming a heat-pump circulation path with a further heat exchanger and a compressor. The latter is motor driven and is coupled with at least one of the heat exchangers via a magnetic drive operating through a magnetically permeable wall.

3,696,635

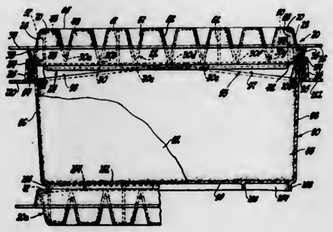
EJECTING RECEPTACLE FOR PLASTIC ICE TRAY

Thomas H. Fogt, West Carrollton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed April 12, 1971, Ser. No. 133,271
Int. Cl. F25c *5/18*
U.S. Cl. 62—344 4 Claims

A box-like ice block collecting receptacle and flexible multiple compartment freezing tray combination which allows the

tray with its frozen contents to be inverted and supported on the receptacle by means of cooperating raised support surfaces arranged intermediate each of the side and end walls adjacent its upper open end. The tray is supported in a horizontal manner whereby either pair of unsupported diagonally opposed tray corners can be flexed downwardly out of a horizontal plane for twisting the tray and distorting the compartments to harvest ice cubes into the container. The container additionally provides for the tray to be nested in an upright or inverted position on the storage container in lid-like fashion.

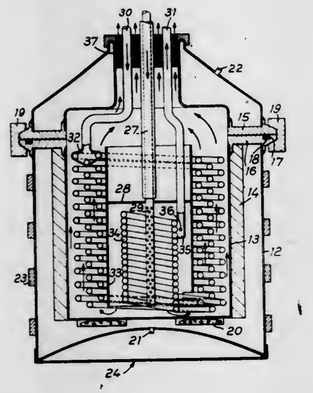


3,696,636

METHOD AND APPARATUS FOR COOLING LIQUIDS

Gaston M. Mille, 9,bd Lord-Duveen, 13 Marseille, 8e, France

Filed April 14, 1969, Ser. No. 815,991
Claims priority, application France, Feb. 21, 1969, 6922190
Int. Cl. B67d *5/62*
U.S. Cl. 62—399 **3 Claims**



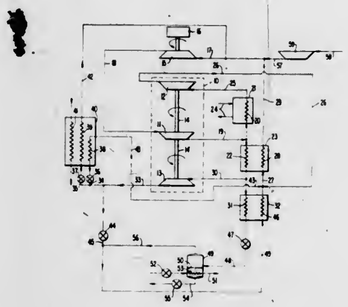
A process for cooling a fluid circulating in contact with one face of a heat exchange wall, by cooling the other face of the wall with a cryogenic liquid sprayed under pressure and by means of residual gases resulting from the evaporation of this liquid. An exchanger for carrying out this process includes a tube placed in a heat-insulated enclosure, in which circulates a fluid to be cooled and on the walls of which a cryogenic liquid is sprayed. The exchanger includes means for placing a cryogenic liquid under pressure and a flow-regulating valve in the pressure line controlled by a thermostat located at the exchanger outlet.

3,696,637

METHOD AND APPARATUS FOR PRODUCING REFRIGERATION

Leif A. Ness, Macungie, and Edmund P. Thomas, Bethlehem, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 752,998, Aug. 15, 1968, Pat. No. 3,657,898. This application Nov. 2, 1971, Ser. No. 194,856
Int. Cl. F25d *9/00*
U.S. Cl. 62—402 **10 Claims**



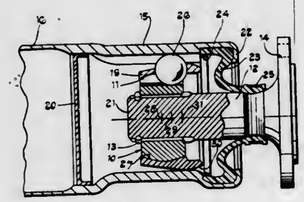
Refrigeration system including a multi-stage compressor and two work expansion engines of the turbine type with the impellers of the expansion engines and the impeller of the final stage of the compressor being mounted on a common shaft. The work developed in the expansion engines provides the total power required for the final stage of the compressor and the final stage of the compressor provides the pressurized gas expanded in both expansion engines.

3,696,638

CONSTANT VELOCITY UNIVERSAL JOINTS

Henry Thomas Smith, nr. Lichfield, and Thomas Hughes Millward, Sutton, Coldfield, both of England, assignors to G.K.N. Birfield Transmissions Limited, Birmingham, England

Filed Sept. 9, 1970, Ser. No. 70,868
Claims priority, application Great Britain, Sept. 9, 1969, 44,513/69
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 **4 Claims**



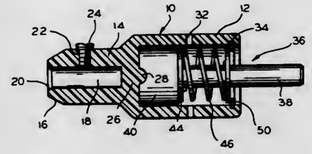
A constant velocity universal joint including an inner member and an outer member with torque-transmitting balls therebetween has the outer member thereof constituted by an increased wall-thickness end portion of a tube, the end portion being shaped to provide the ball tracks.

3,696,639

CLUTCH FOR USE IN THE PLUMBING FIELD

William C. Gore, Elgin, and Eugene B. Shapiro, Highland Park, both of Ill., assignors to Beatrice Foods Company, thru its division Chicago Specialty Manufacturing Co., Skokie, Ill.

Filed Feb. 8, 1971, Ser. No. 113,139
Int. Cl. F16d *7/00*
U.S. Cl. 64—29 **3 Claims**



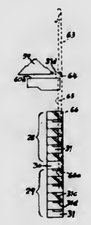
A power driven clutch for driving a wire auger, blade, screwdriver bit, socket wrench, and the like, which clutch may be molded of plastic and which comprises a carrier or driven member, a driver which may be connected to an electric power source such as an electric drill motor, and where the driver has means for engaging a member on the carrier or driven member to operate said carrier or driven member for rotation, and wherein the driver is rotatable with respect to the carrier and is axially movable with respect to the carrier. The driver when in positive engagement with the carrier member is adapted to rotate said carrier member, and the driver adapted when the object to be rotated and carried by the carrier member strikes an obstruction which impedes or prevents its rotation will operate to cause the driver to move axially with respect to the carrier so that the driver may continue to rotate without imparting a corresponding rotation to the carrier or driven member.

3,696,640

VARIABLE NEEDLE SELECTING MEANS FOR KNITTING MACHINES

Shinji Kawase, Nishinomiya, and Norishige Sumitomo, Osaka, both of Japan, assignors to Precision Fukuhara Works, Ltd., Kobe, Hyogo, Japan

Filed Jan. 12, 1971, Ser. No. 105,838
Claims priority, application Japan, Jan. 21, 1970, 45/5577
Int. Cl. D04b *15/32, 15/68*
U.S. Cl. 66—40 **3 Claims**



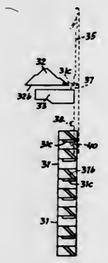
Needle selecting means for the raising of selected needles of multi-feed circular knitting machines which includes, at each feed of the machine, a first plurality of vertically aligned separate level raise cams comprising a first group thereof and a second plurality of vertically aligned separate level raise cams comprising a second group thereof. The cams of the first group thereof act upon butts disposed at a like first plurality of levels on a first or upper portion of jack extensions of the needles and the cams of the second group thereof act upon butts disposed at a like second plurality of levels on a second or lower portion of the jack extensions of the needles. The two groups of cams are interchangeably moved into and out of needle raising position under the control of pattern mechanism of the machine whereby each of two individual patterns may be accordingly interchangeably placed in the fabric being made on the machine.

3,696,641

NEEDLE SELECTING MEANS FOR KNITTING MACHINES

Norishige Sumitomo, Osaka, Japan, assignor to Precision Fukuhara Works, Ltd., Kobe, Kyogo, Japan

Filed Jan. 12, 1971, Ser. No. 105,837
Claims priority, application Japan, Jan. 21, 1970, 45/5576
Int. Cl. D04b *15/32, 15/68*
U.S. Cl. 66—40 **5 Claims**



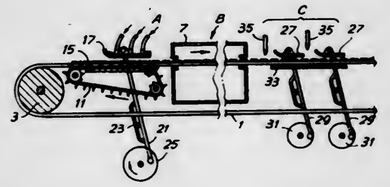
Needle selecting means for the raising of selected needles of multi-feed circular knitting machines from welt to latch clearing levels in two steps and for the retention of non-raised needles at welt level which includes, at each feed of the machine, a plurality of vertically aligned separate level raise and guard cams of which the raise cams act upon selected ones of individual butts disposed at a like plurality of levels on jack-like extensions of the needles to raise the so selected needles, in the first step, a relatively short distance to a level at which the partially raised needles are thereafter raised, in the second step, to latch clearing level by a needle raise cam acting upon common level butts on the needles, and of which the guard cams act upon the individual jack butts of the non-raised needles to retain the same at welt level. A raise and a guard cam are formed at the opposite end faces of a cam block and a like plurality of aligned cam blocks are releaseably secured in a housing to provide a unit cam package of raise and guard cams, the cam blocks are individually reversely positionable in the housing to place either their raise or their guard cams in operative position, and the package of cams is removeably attachable as a unit to individual cam sections of the machine.

3,696,642

PLANT FOR DYEING YARN CONTINUOUSLY

Fernando Rigucci, 10 Via Castelnuovo, Prato, Florence, Italy

Filed Dec. 22, 1970, Ser. No. 100,671
Claims priority, application Italy, Dec. 23, 1969, 4904 A/69
Int. Cl. B05c *3/138*
U.S. Cl. 68—5 D **3 Claims**



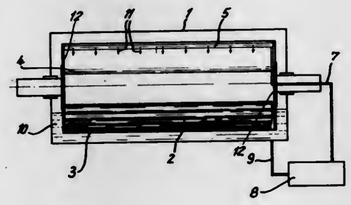
A plant for dyeing yarn discontinuously includes a perforate conveyor the upper run of which extends through a zone at

which yarn is deposited in skeins or in continuous zig-zag formation, a zone in which dye is applied, a zone in which the dye is fixed by heating, a washing zone and a drying zone in which the yarn is alternately squeezed and expanded.

3,696,643
DEVICE FOR TREATING LONG FLAT TEXTILE MATERIALS

Manfred Schulerer, Erbach/Odenweld, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbacham Odenwald, Germany

Filed Jan. 18, 1971, Ser. No. 107,318
Claims priority, application Germany, Jan. 20, 1970, P 20 02 357.8
Int. Cl. D06f *37/06, 37/08, 39/08*
U.S. Cl. 68—5 B **3 Claims**

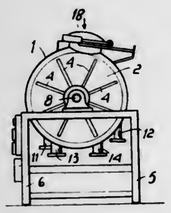


Device for treating long flat textile materials utilizing rotating drum with apertures distributed over length of drum for passage of fluid and with at least one radial rib whose height is 20–25 percent of the drum diameter.

3,696,644
TEXTILE ARTICLE DYEING APPARATUS

Manfred Blumenkamp, Via Bissolati 6, Cremona, Italy

Filed June 10, 1971, Ser. No. 151,700
Claims priority, application Italy, June 16, 1970, 26070 A/70
Int. Cl. D06f *17/02, 39/04, 39/14*
U.S. Cl. 68—15 **7 Claims**

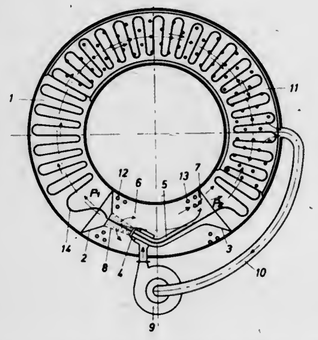


An apparatus for the dyeing of textile articles generally with a substantially rotating current circulation bath comprising a tank containing the dyeing bath provided with inlets to provoke circulation by means of fluids under pressure. Heating means are provided on the inside of the tank. The tank is autoclave shaped and supported about a horizontal bath provided on the inside of the tank by means of feeding means. A closing seal device is provided on an opening of the skirt of the tank for the loading and unloading of materials respectively to be treated and materials already treated.

3,696,645
APPARATUS FOR LIQUID TREATMENT OF TEXTILE MATERIALS OF STRING FORM

Erik Henningsen, Vaerlose, Denmark, and Hans Borge Nielsen, Reinach, Switzerland, assignors to Vald Henriksen A/S, Soborg, Denmark

Filed April 16, 1971, Ser. No. 134,695
Claims priority, application Denmark, April 17, 1970, 1953
Int. Cl. B05c *3/134*
U.S. Cl. 68—177 **6 Claims**

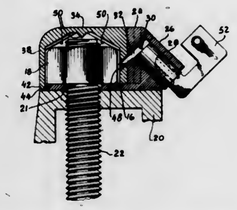


An apparatus for liquid treatment of textile materials in string form in which the textile material is transported by the flowing liquid through a wide channel and a narrow channel along a horizontal or slightly inclined annular path with constant radius of curvature.

3,696,646
NUT LOCK

Nicholas R. Loscalzo, 3 Woodmont Road, Melville, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,825
Int. Cl. F16b *41/00*; E05b *73/00*
U.S. Cl. 70—1.5 **3 Claims**



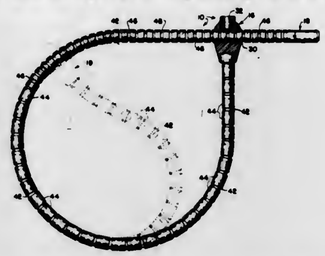
A locking device for locking a nut onto its bolt to resist unwanted removal of the nut, comprising a locking base and a securable cover for the locking base. The locking base is secured by the nut and the cover encloses the nut and is joined to the locking base by a tongue and groove joint. A locking bolt operated by a lock cylinder secures the cover to the base. V-shaped projections angled toward the nut on the inside of the cover cut and jam the nut onto the bolt under extraordinary force such as a hammer blow.

3,696,647
CABLE-TYPE LOCK ASSEMBLY

Stanley C. Balicki, 2834 Commerce Street, Franklin Park, Ill.

Filed Oct. 9, 1970, Ser. No. 79,435
Int. Cl. E05b *15/16, 67/06*
U.S. Cl. 70—49 **7 Claims**

A cable-type lock assembly in the form of an indestructible elongated armored cable having a loop-forming lock housing at one end through which the other end of the cable may be passed so that the lock housing functions as an overlap slip joint and provides a closed retaining loop. By progressively pulling the cable through the locking housing, the loop may be

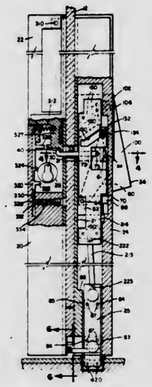


shrunk to a required size while a key operated cylinder lock which is associated with the lock housing functions to retain the latter at selected positions along the free end region of the cable and establish the position of the overlap.

3,696,648
PANIC LOCK FOR A DOOR

William J. Horgan, Jr., Allegheny County, Pa., assignor to Blumcraft, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 875,229, Nov. 10, 1969, and a continuation-in-part of Ser. No. 87,717, Nov. 9, 1970, Pat. No. 3,633,389. This application Dec. 11, 1970, Ser. No. 97,102
Int. Cl. E05b *65/10*
U.S. Cl. 70—92 **7 Claims**



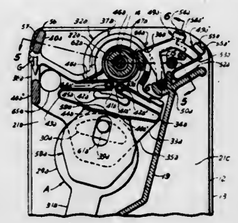
A pivotally mounted bar is mounted on the inside of a locked door. Upon movement of the bar a lever is pivoted to actuate a cam actuated slide and raise a lock bolt to unlock the door without the use of a key. A crossover link provides a means whereby the door can be unlocked from the other side by means of pulling on a handle. A lock is provided to render inoperable the handle portion of the device. A means is provided for retaining the lock bolt in the raised position while the door is swung open.

3,696,649
KEY CASE

Ho Chow, and Junlin Wong Chow, both of 31 Coles Court, River Edge, N.J.

Filed March 1, 1971, Ser. No. 119,544
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **14 Claims**

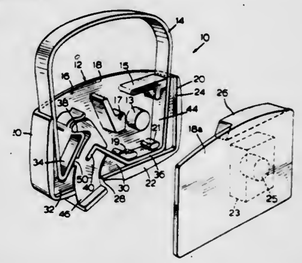
A convenient key case having one or more pockets structured to have a non-removable but rotatable holding means for each pocket to hold a key having a head and a body and to move a desired key to a load, store or use position. An adaptor is adhered to the head of the key to maintain a desired relationship with the holding means disregarding the shape of the head. At the load position the key is easily and quickly inserted in or removed from the holding means. At the store position the key is properly stored in the pocket of the case. At the use position the body of the key is exposed at a proper position with ability to swing and a part of the head always remains inside the pocket and non-detachable from the holding means.



3,696,650
KEY HOLDER

Donald A. Hillis, 27 Kingslake Road, Willowdale, Ontario, Canada

Filed Feb. 22, 1971, Ser. No. 117,279
Int. Cl. A47g *29/10*
U.S. Cl. 70—457 **8 Claims**



A key holder consisting of a housing, having a locking chamber formed therein, and a key strap in the form of the resilient flexible strip of spring steel mounted with both ends thereof adapted to be located in the housing in the locking engagement. The holder also includes a manually engageable actuator means connected to one end of the flexible strap, and adapted to lock in engagement with the other end of the flexible strap in the housing. The actuator means is manually engageable to release the locked end of the strap so that it may be removed from the housing to permit keys to be mounted on or removed from the outwardly projecting portion of the strap.

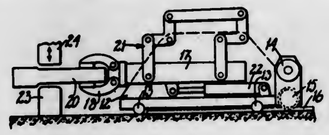
3,696,651
FORGING MANIPULATOR

Robert Henry Harrison, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, England

Filed April 9, 1971, Ser. No. 132,719
Claims priority, application Great Britain, April 30, 1970, 20,761/70
Int. Cl. B21j *7/26, 13/10*
U.S. Cl. 72—22 **7 Claims**

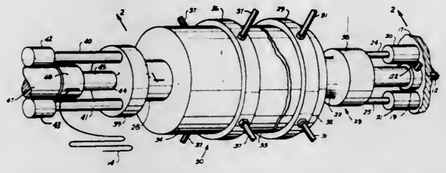
A manipulator for supporting and maneuvering a workpiece while operated on by a forging press has a carriage which

moves along a prescribed path, means for driving the carriage along the path, a peel which supports the workpiece and which is mounted on the carriage for movement relative to the carriage in a direction parallel to the path, and actuating means for driving the peel relative to the carriage. During at least part of the time when the workpiece is held by the forge, the carriage is caused to move along the path, the peel being caused to move relative to the carriage in the opposite direction and at substantially the same speed. On release of



the workpiece by the forging press, the peel is driven by the actuating means in order to be restored to a datum position relative to the carriage. During this re-positioning movement of the peel, there is applied to the carriage a force in the same direction as, and substantially the same magnitude as, the force applied by the peel by the actuating means, in order that the movement of the carriage shall be unaffected by the reaction force applied in the opposite direction by the actuating means to the carriage.

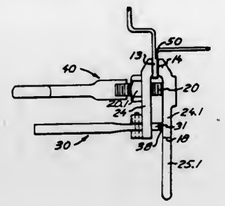
3,696,652
CONTINUOUS MATERIAL DEFORMATION PROCESS AND APPARATUS THEREFOR
Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,673
Int. Cl. B21d *23/08*
U.S. Cl. 72—60 **64 Claims**



A process and apparatus for practicing the process wherein a workpiece of indefinite length, e.g., a metal rod, is continuously deformed by a deforming agency to produce a product of indefinite length, e.g., wire. The continuity of the deformation is achieved by intermittently advancing the workpiece into the deforming agency, e.g., a controlled flow of pressurized fluid or a conventional extrusion die, intermittently advancing the deforming agency over the workpiece, and controlling the intermittent advances of the workpiece and the deforming agency to maintain a desired relative velocity between the workpiece and the deforming agency. Also disclosed is a novel workpiece clamping apparatus wherein a segmented cylinder is used as a clamping device for gripping a workpiece.

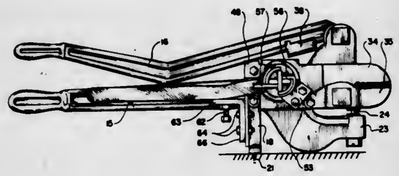
3,696,653
SILL CLAMP FOR AUTOMOBILES
William Mojelski, Grand Forks, British Columbia, Canada, assignor to Mo Clamp Co. Ltd., Delta, B.C., Canada
Filed June 4, 1970, Ser. No. 43,336
Int. Cl. B21d *11/04, 1/14*
U.S. Cl. 72—296 **4 Claims**

A sill clamp for attachment to a sill of an automobile body, the clamp having a pair of clamping parts connected for relative rocking and slideable movement, and having complementary jaws and lever portions. One of the parts having a cam movable into engagement with a lever portion of the other



part for spreading the lever portions apart and moving the jaws together. Means are provided on the parts for attachment of tensioning devices for straightening the automobile body.

3,696,654
BAND IRON STOCK WORKING TOOL WITH A TWIST DEVICE THEREON
Karl A. Bohn, 109-16 222nd Street, Queens Village, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,379
Int. Cl. B21d *11/14, 9/08*
U.S. Cl. 72—299 **6 Claims**

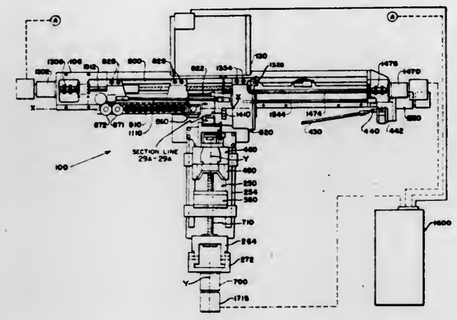


A band metal twist device has been provided for a composite cutting, punching, bending tool in which parts of the tool are utilized for clamping the stock and wherein the twist device is mounted upon the tool to receive the stock piece between clamp handle parts and while being clamped having opposingly arranged end edges of twist key portions engageable with top and bottom sides of the stock piece to effect upon rotation of the cylinder containing the key portions by its handle to twist stock part about its center portion and provide a twist therein so that its opposite ends lie at right angles to one another. The twist device is so constructed and the twist key portion so arranged that upon return rotation of the twist cylinder containing the key portions the twisted portion of the band stock piece can be laterally removed through the twist device from the work tool upon the handle clamp parts being released without disassembling the twist device. Adjustment means is provided upon the work tool engagement by the handle of the twist device to limit the turning movement of the handle depending upon the springiness of the band stock material.

3,696,655
APPARATUS FOR MAKING BLADES
William L. Hinks, and Harry L. Hosterman, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 744,120, July 11, 1968, Pat. No. 3,581,535. This application Feb. 16, 1971, Ser. No. 115,266
Int. Cl. B21d *11/04*; B21b *37/14*; B21d *9/05*
U.S. Cl. 72—321 **9 Claims**

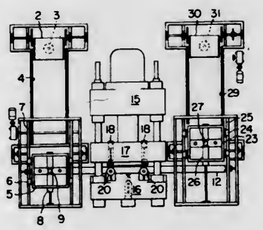
Method and apparatus for making blades for use in tire molds by piercing, notching, bending or otherwise altering

shape of a free end of strip material by successively positioning the free end and a plurality of shape altering tools in operative engagement and cutting off a so-formed blade from the free end. Apparatus includes an automated machine tool having five axes of control and means for storing and for commu-



nicating command signals to each axis. Successive different blade configurations are made without revision of shaping tools. The strip, held by jaws, may be bent up or down in successive bends by a rotating bending device. A rotatable punch and die set is included.

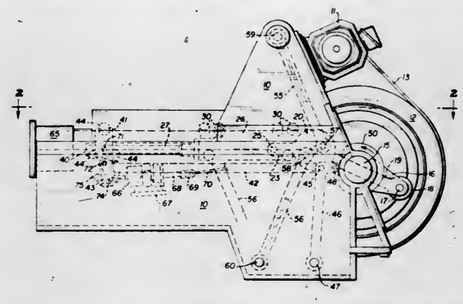
3,696,656
APPARATUS FOR CARRYING AND STRAIGHTENING ELECTROLYTIC ANODE PLATES TO BE INSTALLED IN AN ELECTROLYTIC CELL
Kizo Nara, Osaka; Izumi Sukekawa, Tokyo, and Yasuo Yamada, Osaka, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 1, 1970, Ser. No. 42,028
Int. Cl. B21j *13/10*; B21d *43/10*
U.S. Cl. 72—420 **6 Claims**



An apparatus for conveying, at regular intervals, electrolytic anode plates and installing them at regular intervals in an electrolytic cell, comprises a feed-in section, a device for straightening said anode plates by pressing or hammering each of said anode plates thereby to remove camber, torsion, and casting fins from the anode plates, and a feed-out section.

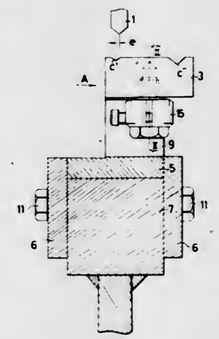
3,696,657
METAL WORKING CRANK AND SLIDE PRESS MECHANISM
John Hardy Maytag, Denver, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Nov. 19, 1970, Ser. No. 91,020
Int. Cl. B21j *9/18*
U.S. Cl. 72—450 **15 Claims**

A metal working crank and slide press mechanism for reciprocating parallel members, for example, a carriage-mounted ram and a sleeve slidable on the ram. The press mechanism is arranged to resist heavy side pressure exerted upon the connecting rod which assumes extremely angular positions relatively to the carriage. A cross head and side thrust resisting levers produce a straight line motion by translating the thrust of the connecting rod into a direction in line with the travel of the ram-carrying carriage connected to the cross head. The carriage is mounted on wheels running on the



top and bottom of hardened way strips, the wheels being adjustably mounted on eccentric axles to grip the ways with a predetermined amount of pre-load to prevent slack in the wheels. The working surfaces of the wheels and way strips extend radially with respect to the center of mass of the carriage assembly to minimize the effect of thermal expansion on the wheel pre-load.

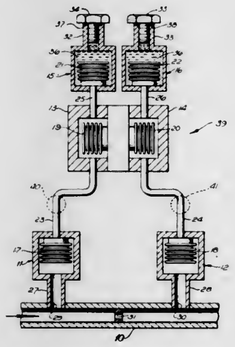
3,696,658
JIG APPARATUS FOR A BENDING PRESS
Teruma Hamada, Tokyo, Japan, assignor to Amada Company Limited, Isehara-shi, Kanagawa-ken, Japan
Filed Feb. 8, 1971, Ser. No. 113,346
Claims priority, application Japan, April 28, 1970, 45/35881
Int. Cl. B21d *37/04*; F16b *43/00*
U.S. Cl. 72—481 **1 Claim**



For use with a bending press, a jig apparatus of relatively simple design for setting a lower die in complete alignment with an upper head. The apparatus includes a die holding member having recessed grooves of the shape of the letter Ω (omega) turned up side down, and semi-cylindrical members suitably shaped to fit into the recessed grooves. The semi-cylindrical member is urged to the inner surface of the recessed groove by a bolt threaded into the bottom of the lower die, but with the pressure limited by the collar inserted between the bolt head and the lower die. With this limited pressure, the lower die is preliminarily set, yet it is still movable, for example, by a hammering action. After further fine ad-

justment, the lower die is solidly fixed to the holding member, for which purpose, a means is provided to forcibly deform the semi-cylindrical member within the confinement of the recessed groove, preventing further movement of the semi-cylindrical member and of the lower die relative to the die holding member.

3,696,659
INSTRUMENT PRESSURE CALIBRATION METHOD AND APPARATUS
Victor Nicholas Lawford, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 25, 1971, Ser. No. 174,710
Int. Cl. G01l 27/00
U.S. Cl. 73—4 R **6 Claims**



A method of and apparatus for calibrating a differential pressure unit for indicating the difference between the pressures at two points across an orifice or the like in a liquid sodium cooling line of a nuclear reactor employed in producing electric power. The line pressures are transmitted to the unit by a first set of conduits containing a mixture of liquid sodium and liquid potassium. An auxiliary inlet to each of the two pressure chambers of the unit are connected to a second set of conduits that communicate with bellows inside of two sealed, oil filled enclosures. When the enclosures are sealed, the bellows therein are locked in place. For calibration, the mixture in the first set of conduits is frozen, the enclosure seals are removed, and known pressures are applied to the enclosures. After resealing the enclosures and unfreezing the mixture, the unit is again ready for continuous operation.

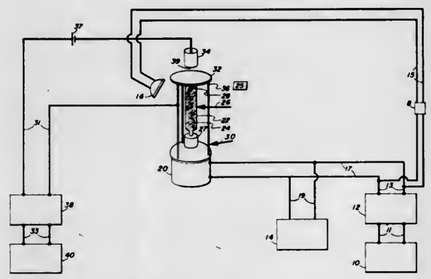
3,696,660
LOCATING HOLES IN TUBING
Glenn O. Hubbard, deceased, late of Andrews, Tex. (Claudia M. Hubbard, executrix)
Filed March 2, 1970, Ser. No. 15,572
Int. Cl. G01m 3/02
U.S. Cl. 73—40.5 R **6 Claims**

Leaks in underground conduit, such as vertical drill pipe in wells or underground pipelines, are located by closing one end of a segment of the conduit and then pumping a plug into the pipeline. As long as fluid is escaping from the conduit through the leak, the plug will move, but when the plug passes the leak, the plug will no longer move because of the fluid trapped between the plug and the closure. Then the plug can be located by a wire line attached to the plug. If the plug is to be retrieved by pulling the plug, a passageway through the plug is



opened to prevent swabbing the conduit when retrieving the plug.

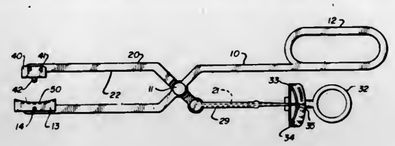
3,696,661
METHOD AND APPARATUS FOR MEASURING THE YIELD STRESS OF NON-NEWTONIAN FLUIDS
Arthur R. Garabrant; Alan Beerbower, both of Westfield, and James A. Wilson, Stanhope, all of N.J., assignors to Esso Research and Engineering Company
Filed Dec. 11, 1969, Ser. No. 884,138
Int. Cl. G01n 29/00, 11/10
U.S. Cl. 73—54 **22 Claims**



A method and apparatus for measuring the yield stress of a non-Newtonian fluid possessing a yield stress. A small sample of the fluid is disposed in a test cell with a solid particle of known specific gravity and geometry. The sample is vibrated by an electronic means so as to generate an alternating, asymmetric displacing force; and, at the first displacement of the particle, the amplitude and frequency of the vibrations is electronically measured. The yield stress is determined as a function of the amplitude and frequency of the vibration at the time of initial displacement.

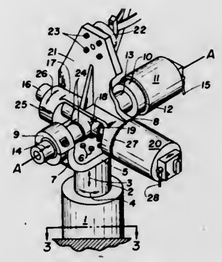
3,696,662
SAUSAGE MATURITY MEASURING DEVICE
Thomas R. Foltz, Clarendon Hills; Gerald R. Hegarty, Schiller Park; Ervin W. Hopkins, Hinsdale, and Joseph C. Wilcox, Wheaton, all of Ill., assignors to Armour and Company, Chicago, Ill.
Filed April 9, 1969, Ser. No. 814,785
Int. Cl. G01n 3/48, 3/08
U.S. Cl. 73—81 **6 Claims**

Moveable elements having jaws are connected in plier form, one of the jaws having a hemispherical projection, and one of the elements communicating with a force measuring gauge. A sausage can be gripped between the jaws and the force required to impress the hemispherical projection into the



sausage can be read on the gauge as a measurement of the maturity of the sausage.

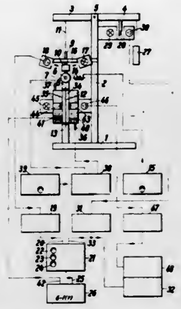
3,696,663
FORCE APPLYING APPARATUS
Friedrich Klinger, Darmstadt-Arheilgen, Germany, assignor to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany
Filed Feb. 18, 1971, Ser. No. 116,529
Claims priority, application Germany, Sept. 30, 1970, P 20 48 050.6
Int. Cl. G01n 3/00
U.S. Cl. 73—91 **10 Claims**



The present apparatus is used for applying forces substantially to a point of a structural member, for example, for testing an axle of a motor vehicle by simulated forces corresponding to those applied to the member when it is in actual use. This is accomplished by push rods and force delivering means, such as piston cylinder means. The rods and piston cylinder means are interconnected by yokes in such a way that forces may be applied independently or in various combinations in the three spatial directions, to said point of the structural member.

3,696,664
TORSIONAL OSCILLATOR
Kurt Moser, Fribourg, and Beat Hochli, Bern, both of Switzerland, assignors to Lonza, Ltd., Gampel (Valais) (Direction Basel), Switzerland
Filed Dec. 16, 1970, Ser. No. 98,819
Claims priority, application Switzerland, Dec. 17, 1969, 18703/69
Int. Cl. G01n 3/32
U.S. Cl. 73—99 **6 Claims**

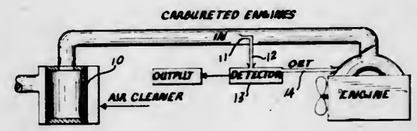
A torsional oscillation device for testing plastics material having a first clamp for holding one end of a plastics test specimen and a second clamp for the opposite end of the specimen. The second clamp is rigidly connected to an oscillator unit suspended from means for applying tension to hold the test specimen in tension, whereby the specimen, the oscillator unit and the second clamp form a torsion pendulum. A temperature chamber surrounds the specimen and a device measures the duration of oscillations of the torsional oscillation of the torsion pendulum. The means for applying tension is connected to a converter which converts the longitudinal movements of the tensioner into correspondingly valued electrical signals which render an indication of alterations in length of the test specimen.



3,696,665
CONTACT ANGLE MEASUREMENT OF PLASTIC SURFACES
Wassily Poppe, Lombard, Ill., and Habet M. Kheighatian, Springfield, Pa., assignors to Standard Oil Company, Chicago, Ill.
Filed March 1, 1971, Ser. No. 119,877
Int. Cl. G01b 19/08
U.S. Cl. 73—104 **14 Claims**

A non-destructive test is provided for determining the ability of a metal coating to adhere to the plastic substrate of a metallized plastic article comprising determining the difference between two separate contact angle values, the first being obtained by measuring the contact angle formed by a drop of liquid resting on a specimen plastic substrate prior to etching said substrate and the second being obtained by measuring the contact angle formed by a drop of liquid resting on an etched plastic substrate. Contact angle values are easily measurable parameters which indicate platability and therefore are valuable in the electroplating of plastics.

3,696,666
DUST LEAK DETECTOR FOR AIR CLEANER SYSTEMS
Lemoine L. Johnson, and William P. Timmons, both of Minneapolis, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Oct. 15, 1969, Ser. No. 870,458
Int. Cl. G01m 15/06
U.S. Cl. 73—118 **11 Claims**

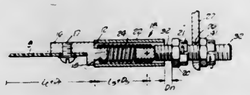


Apparatus and method is disclosed for continuously sampling, at a point downstream of the air cleaner, the normally clean air entering an engine to produce a signal indicating the cleanliness of the total air stream entering the engine. A sample of the air is continuously circulated through a small detector filter and the resistance of the filter to air flow is continuously monitored. In case of dust leakage, the resistance of the detector filter increases very rapidly because of increased dust loading, giving an immediate indication of the abnormal condition.

3,696,667
TENSIONING DEVICE FOR POSITION MEASURING TRANSFORMER

Vincent F. Foster, New Rochelle, and Robert A. Schreitz, Hartsdale, both of N.Y., assignors to Inductosyn Corporation, New York, N.Y.

Filed April 22, 1970, Ser. No. 30,838
Int. Cl. G01l 5/06
U.S. Cl. 73—143 8 Claims

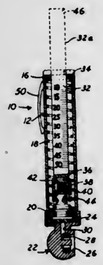


Tensioning device and a tensioning device in combination with an elastic transformer member of a position measuring transformer where the tensioning device stores a record of desired length and renders an indication of when the elastic member is at that desired length. The elastic member is typically a tape scale of steel which insulatingly supports a planar transformer winding. To permit accurate transformer operation, the elastic member, and therefore the supported winding, is at a desired length, such as a calibrated length, which is established by tensioning both the elastic member and the tensioning device until the tensioning device indicates that the desired length has been reached. The tensioning device includes elastic means, such as a spring, which substantially exhibits a predetermined force when constrained to a predetermined length. The tensioning device also includes calibrated means, such as a calibrating nut on a threaded shaft attached to the spring with the spring and shaft extending through a sleeve, for indicating when the elastic means is constrained substantially to the predetermined length as measured between a reference position and a calibration position.

3,696,668
COMBINED AIR PRESSURE AND THREAD DEPTH GAUGE FOR PNEUMATIC TIRES

John L. Patrick, 5825 Rogue Valley Highway, Central Point, Oreg.

Filed July 6, 1971, Ser. No. 159,951
Int. Cl. B60c 23/02
U.S. Cl. 73—146.8 5 Claims



The conventional pneumatic pressure gauge and the conventional tire depth gauge are combined into a single implement, the single indicator slide being

a. adapted to be pulled out manually and then thrust inward to a point determined by the depth of tread by engagement with the tire;

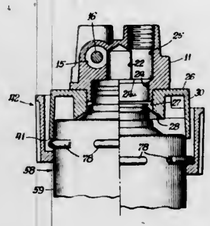
b. adapted to be thrust outward by pneumatic pressure when applied to a tire valve and afterward returned manually to normal position within the implement body; and

c. graduated in terms of pneumatic pressure on one face and in terms of tread depth on the opposite face.

3,696,669
TEST PLUG FOR FILTER ASSEMBLY

Robert J. Brejcha, Westchester, and William H. Corbett, Lincolnshire, both of Ill., assignors to Everpure, Inc., Oak Brook, Ill.

Filed March 18, 1971, Ser. No. 125,756
Int. Cl. G01m 19/00
U.S. Cl. 73—168 8 Claims

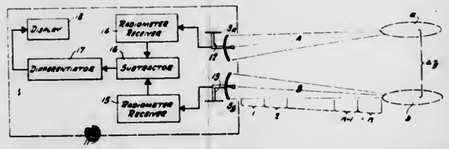


A fluid pressure line test plug for use in connection with a filter assembly mounting head which is fixedly mounted in a fluid line and wherein the head has inlet and outlet ports the test plug being formed with fluid passage means permitting direct communication between the inlet and outlet ports of the head member disposed in the fluid pressure line.

3,696,670
METHOD AND SYSTEM FOR DETECTING CLEAR AIR TURBULENCE

Ronald T. H. Collis, Menlo Park, Calif., assignor to Stanford Research Institute

Filed July 9, 1970, Ser. No. 53,613
Int. Cl. G01w 1/08
U.S. Cl. 73—170 R 12 Claims



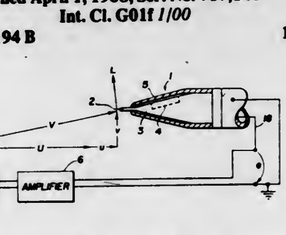
A method and system is disclosed which utilizes the radiation emitted by regions of clear air turbulence to remotely detect such regions. An airborne radiometer receives a plurality of signals from ahead of an aircraft at a plurality of angles with respect to the aircraft's path. These signals are compared to form a gradient signal. The rate of change of the gradient signal is monitored to give an indication of clear air turbulence.

3,696,671
AIRCRAFT HORIZONTAL SITUATION NAVIGATION DISPLAY SYSTEM

Charles J. Steigleder, Encino; Linual D. Smithey, Pacific Palisdaes, and Lloyd E. Lydon, Northridge, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 18, 1970, Ser. No. 73,399
Int. Cl. G01c 21/00
U.S. Cl. 73—178 R 15 Claims

A display system is disclosed for a navigation director system in which a portion of an azimuth stabilized navigation chart is displayed optically with the aircraft position on the chart at the center of the display, and a selected radial course for VOR airway navigation is displayed optically as a course bearing indicator (CBI) in the form of an arrow that points to a course bearing on an azimuth stabilized compass ring. The center of the arrow is replaced by a lateral deviation bar (LDB) that is displaced from the CBI in proportion to the angular deviation of aircraft position from the selected course. For area navigation between selected way points on the chart,



the CBI is positioned to indicate the course bearing of a computed great circle route and the LDB is displaced in proportion to the cross-track distance off course. For conventional VOR navigation, the chart display may be independently turned off.

3,696,672
WIND SOCK

John Lindsay, 16 Harbor Street, Manchester, Mass.

Filed Sept. 15, 1970, Ser. No. 72,409
Int. Cl. G01w 1/02
U.S. Cl. 73—189 14 Claims

An instrument for determining the direction and speed of the wind commonly referred to as a "wind sock" which is mounted to rotate through a horizontal plane to indicate the wind direction and is characterized by having provision for also rotating on its own axis to indicate the force or speed of the wind. The wind sock can also be mounted to pivot in a vertical plane in response to the force of the wind.

3,696,673
METHOD AND MEANS OF MEASURING VELOCITY FLUCTUATIONS IN UNSTEADY FLOW

Herbert S. Ribner, Willowdale, Ontario, and Thomas E. Siddon, Don Mills, Ontario, both of Canada, assignors to The Governors of the University of Toronto

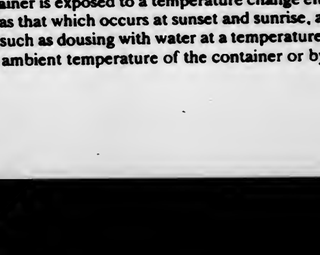
Filed April 1, 1968, Ser. No. 717,846
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 12 Claims

A gauge for measuring flow unsteadiness comprising a lift-sensor element having a lift-sensing surface to be presented to flow velocity disturbances perpendicular to a main stream flow to develop a time varying lift force with corresponding displacement responsive to time variations of the velocity disturbances, and means to translate the displacement variations into an alternating current to operate an indicator, and the method of measuring flow unsteadiness utilizing the principle of lift-sensing to detect flow velocity disturbances.

3,696,674
ELECTROMAGENTIC FLOWMETER APPARATUS

Merrill P. Spencer, 5151 Kenilworth Place, N.E., Seattle, Wash.

Filed June 19, 1968, Ser. No. 738,306
Int. Cl. G01p 5/08
U.S. Cl. 73—194 EM 19 Claims

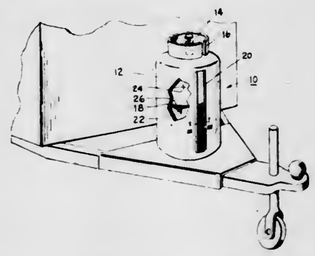


Electromagnetic flowmeters wherein voltages induced in a conductive fluid flowing through magnetic fields having boundaries defined by magnetic cores impress voltages on the cores which are in turn coupled to output circuitry by electrodes connected to the cores.

3,696,675
METHOD AND MEANS FOR DETERMINING LIQUID LEVEL IN A CONTAINER

A. Scott Gilmour, Williamsville, N.Y., assignor to Technomedic Corporation, Buffalo, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,977
Int. Cl. G01f 23/22
U.S. Cl. 73—295 12 Claims



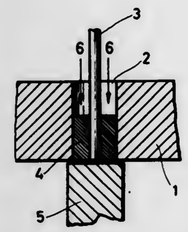
Apparatus and a method for externally determining the level of a mass of flowable material such as liquid or granular material contained in a closed or sealed container includes an elongated strip of material coated or imbedded with cholesteric liquid crystals which vary chromatically with variations in temperature. The elongated strip is applied to the outer surface of the wall of the container in heat conducting relationship thereto and extends along the height of the container. The container is exposed to a temperature change either natural, such as that which occurs at sunset and sunrise, artificially induced, such as dousing with water at a temperature different from the ambient temperature of the container or by energiz-

ing a heater element at the wall of the container adjacent the elongated strip. Because of the difference in the rate of heat conduction of the void volume and the filled space of the container, the container wall experiences a temperature gradient which is most pronounced at the interface of the contents. The temperature of the container wall changes abruptly at the surface of the contents. This change in temperature is readily discernible visually because of the abrupt change in color of the elongated strip at the material interface thus permitting an observer to readily detect the level of the contents in the container.

3,696,676
METHOD AND ARRANGEMENT FOR INSTALLING MEASURING FEELERS

Karl Butter, Munich, Germany, assignor to Messerschmidtt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrum near Munich, Germany

Filed May 26, 1970, Ser. No. 40,562
Claims priority, application Germany, May 28, 1969, P 19 27 147.7
Int. Cl. G01k *1/16*
U.S. Cl. 73—343 R **9 Claims**



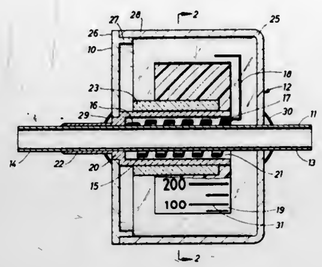
A measuring feeler is incorporated in a bore of a workpiece by surrounding it with a filling material which is softer than that of the feeler and the workpiece and by applying a compressive pressure to the softer material to cause its plastic deformation and tight engagement with the bore of the workpiece and with the temperature feeler. The feeler is installed in the bore of the workpiece by orienting a counter member or rod at the end of the bore at which the feeler end is to be exposed, positioning the feeler end to engage the rod, applying the softer material around the rod and thereafter applying pressure to the softer material from the opposite end of the bore in the direction of the rod to tightly seal the feeler and the soft material in respect to the bore of the workpiece. The softer material surrounds the measuring feeler in the form of a sleeve having an outer jacket or dimension such that it bears tightly against the workpiece in the recesses or grooves thereof.

3,696,677
FLOW-LINE THERMOMETER

Robert T. Luedeman, Metuchen, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Feb. 3, 1971, Ser. No. 112,363
Int. Cl. G01k *13/02*, *5/62*
U.S. Cl. 73—343 R **5 Claims**

This invention relates to a temperature measuring device for fluid streams. In the embodiment disclosed, a helical bimetallic element is wound along a tubular member. One end of the bimetal is attached to the tube and the other end is coupled to a pointer which rotates about a scale mounted on the

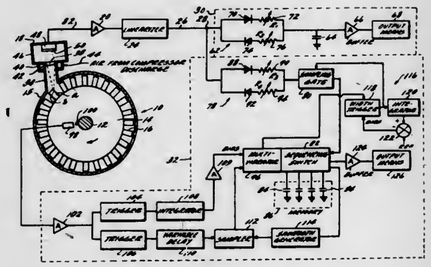


tubular member to indicate the temperature of the fluid inside the tube.

3,696,678
WEIGHTED OPTICAL TEMPERATURE MEASUREMENT OF ROTATING TURBOMACHINERY

Paul W. Mossey, Cincinnati, Ohio, assignor to General Electric Company

Filed April 21, 1969, Ser. No. 817,747
Int. Cl. G01j *5/06*
U.S. Cl. 73—346 **10 Claims**

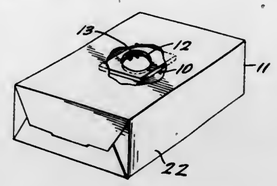


An optical pyrometry system for measuring temperature in hydrocarbon fueled gas turbine engines is disclosed wherein means are provided for weighting the instantaneous output of an infrared sensing device. Because of the random occurrence of interposition of carbon particles between the sensing device and a selected metal surface, the weighting means are able to compensate for carbon particle interference effects on infrared radiation and to provide a meaningful indication of both metal surface temperature and gas temperature. Temperature of the selected metal surface is determined by applying a high weighting to data read during the short time intervals when the gas becomes clear and a low weighting to data read at all other times, i.e., weighting the sensing device output toward minimum values obtained; and combustion gas temperature is determined by weighting the sensing device output toward peak values obtained, when represent primarily radiation emission from carbon particles.

3,696,679
THAW SENSOR

Victor S. Peterson, 2701 Lynn Drive, Sandusky, Ohio, and Arthur J. Gnecco, 91 Edison Drive, Milan, Ohio

Filed Dec. 30, 1970, Ser. No. 102,751
Int. Cl. G01k *11/06*
U.S. Cl. 73—358 **10 Claims**

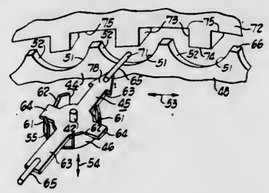


An improved method and device for determining if a frozen article has been thawed or has exceeded a predetermined temperature during storage or transit. A resilient electrical conductor shaped in the general form of a loop is frozen in a mass of material such that the loop is stressed. The frozen mass and conductor are stored with the frozen article. When the mass of material is thawed, the stressed loop relaxes to change electrical states either from an open circuit to a shorted circuit or from a shorted circuit to an open circuit. The changed state is maintained, even though the article may be refrozen. A shorted turn tester is used to determine the electrical state of the loop, thereby indicating if the frozen article has been thawed.

3,696,680
STEPPING MOTOR

Andrew Frank Deming, and Clyde M. Lucas, both of Alliance, Ohio, assignors to Alliance Manufacturing Company, Inc.

Filed Nov. 18, 1970, Ser. No. 90,704
Int. Cl. F16h *27/00*
U.S. Cl. 74—1.5 **27 Claims**

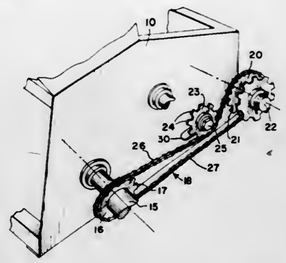


A stepping motor is disclosed which has a ratchet movement in a series of steps in a first path, which in the preferred embodiment is a circular path. The stepping motor is usable in a follow-up motor control system such as an antenna rotator with the rotator bi-directionally controlled in rotation and intermittently closing a pulsing switch. The stepping motor is usable as an indicator motor with this motor intermittently energized in accordance with energization of the rotator motor and closure of the pulsing switch. This supplies a torque to move a cam in a first path until it strikes an abutment. A cam follower is moved in a second path by the cam. The cam striking the abutment stalls the stepping motor rotor and upon opening of the pulsing switch, a spring urging means moves the cam follower in the opposite direction in the second path to reset the cam and follower ready for another energization of the stepping motor. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,696,681
TILT WHEEL CHAIN DRIVE

John T. Fetter, Carlisle, Ontario, and Nils O. Olsson, Ancaster, Ontario, both of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 25, 1970, Ser. No. 92,628
Int. Cl. F16h *7/12*; B60k *17/28*
U.S. Cl. 74—13 **7 Claims**

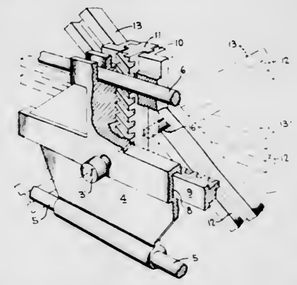


An endless chain drive is provided between a driven sprocket wheel rotatable in a generally vertical plane and a driver sprocket wheel rotatable in a plane tilted from the vertical, wherein drive transmission is achieved from the tilted driver to the upright driven wheel with the cooperation of an idler wheel without dislocation of the chain.

3,696,682
RECIPROCAL DRIVE MECHANISM

Carlos Matas, Valence, France, assignor to Etablissements Pain-Bourgeas, Valence, France

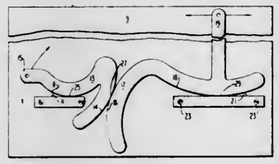
Filed Dec. 18, 1969, Ser. No. 886,214
Int. Cl. F16h *25/12*
U.S. Cl. 74—57 **9 Claims**



Disclosed herein is a reciprocating drive mechanism and means for either amplifying or suppressing the output of the mechanism. The mechanism includes a rotating cam adjacent to which is positioned a carriage member having a cam follower mounted thereon. The carriage member acts as a housing for a pair of racks which have interengaging teeth and are preferably mounted perpendicular to each other. The carriage is mounted for translatory movement in response to the action of the cam and cam follower and the racks are forced into relative movement with respect to the carriage by a stationary elongated member. The elongated member has a track on one face thereof, in which is engaged a roller, the roller being mounted on the surface opposite the teeth of one of the racks. When the carriage moves, the follower within the elongated member will force its associated rack to move within the carriage, which movement of the associated rack will cause the other rack to have corresponding movement. The angular orientation of the elongated member controls the amount of movement of the other rack and can be adjusted to cause the

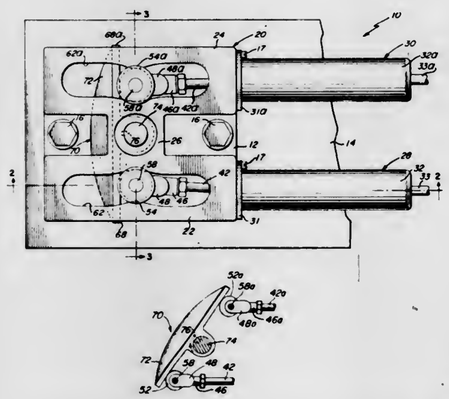
effective movement of the other rack to be amplified or suppressed.

3,696,683
ROLLING JOINT MECHANISMS
Preben W. Jensen, 21 Southside Avenue, Somerville, N.J.
Filed May 15, 1970, Ser. No. 37,620
Int. Cl. F16h *27/02, 29/02, 29/20*
U.S. Cl. 74—89 **12 Claims**



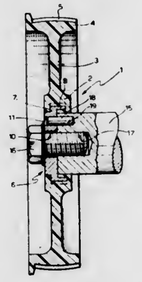
A rolling joint mechanism consisting of three parts which translates an angular input motion into an output motion of a different form. The parts, comprised of an input member, an output member and a frame, engage each other at specific points along contact surfaces and the points of contact of the three parts are all in a straight line. In addition, substantially pure rolling motion takes place at the engaging surfaces so that the mechanism is substantially free of sliding friction. Finally, the mechanism has the feature that the rolling surfaces may be reshaped so as to allow the mechanism to produce a variety of output motions for a given input motion.

3,696,684
MOTION CONVERTER ASSEMBLY
Raymond J. Estlick, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 21, 1970, Ser. No. 99,862
Int. Cl. F16h *21/44*
U.S. Cl. 74—104 **19 Claims**



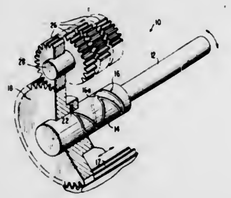
A mechanism for converting the motion of a reciprocally movable member into a variable torque which produces limited angular motion of a rotatable member, said mechanism comprising a reciprocally movable rod carrying a radially extending pin which projects slidingly through a cam-shaped slot in a rigid support member and slidingly engages a moment arm having a portion thereof fixedly attached to a rotatable shaft.

3,696,685
TOOTHED PULLEYS
Aurelio Lampredi, Turin, Italy, assignor to Fiat Societa per Azioni and Cigala & Bertinetti S.a.s., both of Turin, Italy
Filed April 16, 1971, Ser. No. 134,778
Claims priority, application Italy, April 21, 1970, 68350 A/70
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.3 **5 Claims**



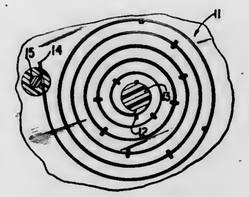
A toothed pulley of the kind which meshes with a toothed belt in a cam-shaft drive for an internal combustion engine has a body, including a hub, moulded in plastics, with a cup-shaped metal hub reinforcement which is incorporated in the plastics material of the hub. A cavity is formed in the hub to receive a cylindrical end of a shaft to which the pulley is to be secured, the cylindrical surface of the cavity being formed by the plastics material of the hub and not by the metal hub reinforcement.

3,696,686
CONTROL APPARATUS
Michael F. Steele, Costa Mesa, Calif., assignor to The Susquehanna Corporation, Fairfax County, Va.
Filed Feb. 19, 1971, Ser. No. 116,947
Int. Cl. F16h *5/08*
U.S. Cl. 74—337.5 **16 Claims**



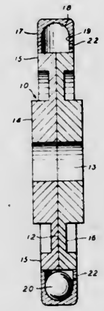
Control apparatus for effecting a plurality of output functions, comprising a drive member that is movable into driving engagement with each of a plurality of driven output members, a movable input member having a cam groove disposed on the outer surface thereof, and a pin mounted on the drive member and slidably engaged in the cam groove. Depending on the configuration of the cam groove, the movement of the input member may cause the pin to move along the cam groove and to effect movement of the drive member into driving engagement with one of the output members, or may cause the pin to move with the input member to thus effect movement of the drive member with the input member.

3,696,687
PLASTIC HAIRSPRING
Philip W. Harland, Perkasie, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed March 25, 1971, Ser. No. 127,974
Int. Cl. F16b *55/00*; G04b *17/06*
U.S. Cl. 74—431 **8 Claims**



A spiral hairspring is molded from a resilient plastic material so that the several turns thereof are interconnected by a plurality of bridges to facilitate flowing the plastic material throughout the narrow confines of the mold passages. The interconnecting bridges are then cut from between the several turns to form the hairspring. Also, the hairspring may be molded integral with a shaft having a pinion gear thereon.

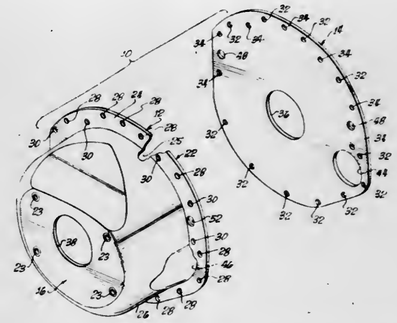
3,696,688
AUTOMATIC BALANCER FOR ROTATING MASSES
Eugene A. Goodrich, 4101 Wedgworth Road South, and Robert H. Johnson, 6601 South Hulen Street, both of Fort Worth, Tex.
Filed May 3, 1971, Ser. No. 139,758
Int. Cl. F16f *15/32*
U.S. Cl. 74—573 **3 Claims**



An automatic balancer for rotating masses comprised of a race having a semicircular periphery and parallel inner walls, a hub snugly received in the race and of a width to engage the walls' inner circumferences and steel balls in the race, the balls having radii slightly less that the radius of the semicircular portion of the race periphery.

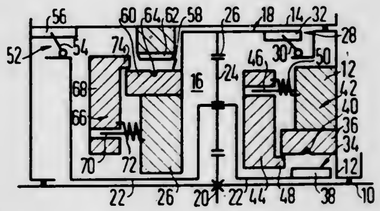
3,696,689
SAFETY HOUSING
Louis Senter, and Robert E. Johnson, both of Los Angeles, Calif., assignors to Whittaker Corporation
Filed Feb. 12, 1971, Ser. No. 114,826
Int. Cl. F16p *1/02*
U.S. Cl. 74—609 **10 Claims**

This invention includes a bell housing and a deflector plate which is connected to and which covers the open end of the bell housing to form, in combination, a safety housing for containing, inter alia, flywheel fragments. The safety housing substantially encloses both a clutch assembly and a flywheel which is carried on a crankshaft extending through the deflector plate and is connected at its forward end to an engine block and at its rearward end to a transmission housing. The bell housing is formed from a high ductile metal and the



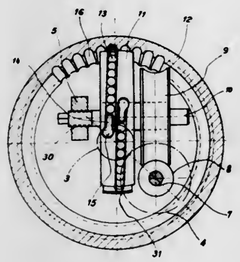
deflector plate is formed from a metal of medium ductility. The bolts used to interconnect them are formed from a high tensile and, preferably, low ductile metal so that deformation of the bell housing causes similar deformation of the deflector plate. Attachment of the safety housing to the engine block is preferably by soft metal bolts.

3,696,690
AUTOMATICALLY SHIFTING MULTIPLE SPEED HUB
Hans Joachim Schwerdhofer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Continuation of Ser. No. 830,779, June 5, 1969, Pat. No. 3,546,971. This application Dec. 14, 1970, Ser. No. 97,519
Claims priority, application Germany, June 15, 1968, P 17 50 897.3. The portion of the term of this patent subsequent to Dec. 15, 1987, has been disclaimed.
Int. Cl. F16h *5/42*
U.S. Cl. 74—752 E **4 Claims**



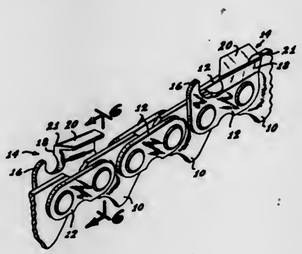
A bicycle hub having built in planetary gears arranged in tandem for providing three or more transmission ratios is equipped with an overrunning pawl-and-ratchet clutch between the driver and the ring gear of the first set of planet gears and with a centrifugal governor, which is connected either with the hub shell or the driver for rotation thereby, and operates a second clutch interposed between the driver and the planet carrier of the first set of planet gears. The arrangement permits a relatively great number of transmission ratios to be achieved with a minimum number of centrifugal governors.

3,696,691
TWO-STAGE WORM GEAR TRANSMISSION
Georg Titt, Obere Vorstadt 9, D-8358 Vilshofen, Germany
Filed Dec. 21, 1970, Ser. No. 100,316
Int. Cl. F16h *1/28, 3/44*
U.S. Cl. 74—797 10 Claims



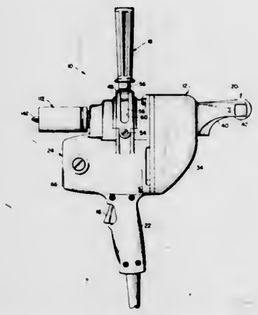
A two-stage worm gear transmission in which a first-stage worm gear drive has a worm wheel operatively connected with a worm of a second-stage worm gear drive to drive the latter worm. The second-stage worm gear drive includes a stationary worm wheel having an inner periphery provided with teeth which mesh with the worm of the second-stage drive. Both the first-stage worm gear drive and the worm of the second-stage worm gear drive are carried by a rotary frame which has an axis coinciding with the axis of the stationary worm wheel.

3,696,692
PROCESS FOR FORMING A SAW CHAIN CUTTER LINK
Karl F. Baranowski, and Alexander Barrio, Jr., both of Milwaukie, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.
Filed April 26, 1971, Ser. No. 137,377
Int. Cl. B23d *63/00*
U.S. Cl. 76—112 2 Claims



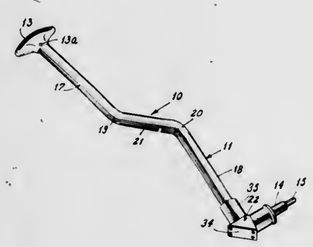
A saw chain comprised of center links interconnected by side links. Certain of the side links having extensions forming cutter portions for cutting trees and the like. Said cutter portion including a side plate and top plate with an intermediate, substantially sharp corner. The thickness at said corner is greater than the thickness of the side plate and top plate. Said thickened corner being formed by first coining a thickened rib-like section into the cutter blank prior to bending the top plate and then forming the top plate by bending in such a manner that the thickened section becomes located at the corner.

3,696,693
IMPACT WRENCH
Donald R. Bosten, and Michael Rusnak, both of Pittsburgh, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Nov. 18, 1969, Ser. No. 877,688
Int. Cl. B25b *17/00, 19/00*
U.S. Cl. 81—52.3 10 Claims



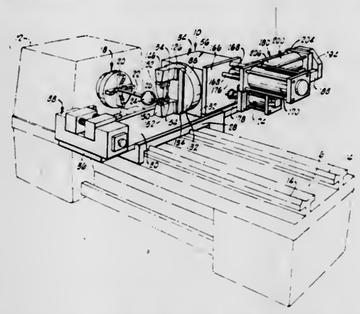
Impact wrenches comprising a casing housing an axially movable, non-rotatable, fastener-engaging component, a retainer engaging component, and a motor for rotating the retainer-engaging component.

3,696,694
HAND TOOL FOR REACHING REMOTE LOCATIONS
William B. Boro, St. Petersburgh, Fla., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Feb. 3, 1971, Ser. No. 112,248
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.27 8 Claims



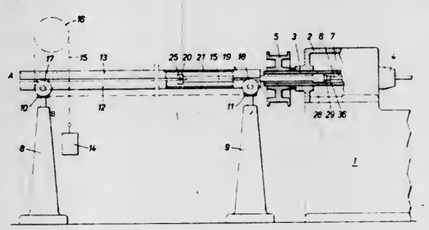
A hand tool for reaching remote locations that includes an elongated hollow tube having two substantially straight end sections whose inner terminal portions are offset from each other and a center section that connects these end sections. A flexible cable is rotatably mounted within the tube and one end of the cable is securely fastened to a handle that projects beyond the one end of the tube. The opposite end of the cable is securely connected to a bevel gear that meshes with another bevel gear which is in turn connected to a chuck that is adapted to hold a tool bit. In one embodiment of the invention, the teeth of the bevel gears are rounded so that the bevel gear that is connected to the chuck can be rotated in order to present the tool bit at various angles with respect to the adjacent end section of the tube.

3,696,695
METHOD AND APPARATUS FOR FINISHING SPHERICAL SURFACES
Ladd M. Adams, Norman, Okla., assignor to Balon Corporation, Oklahoma City, Okla.
Filed Jan. 18, 1971, Ser. No. 107,344
Int. Cl. B23b *3/00, 3/28*
U.S. Cl. 82—1 C 21 Claims



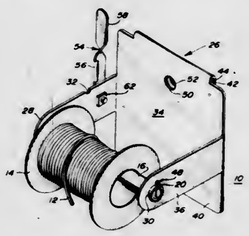
An apparatus which includes a base frame, a workpiece-supporting rotatable chuck mounted on the base frame, a cross-slide movably mounted on the base frame and a rotatable workhead mounted on one end of the cross-slide. One or more pairs of radially opposed cutting tools are adjustably mounted on the workhead, the axis of rotation of the workhead being normal to the axis of rotation of the workpiece-supporting chuck. Facing tools are also mounted on the opposite end of the cross-slide. A control system is provided to automatically and precisely control the operation of the various tools. The radially opposed cutting tools are adapted to be moved radially inward to engage the rotating workpiece and while so engaging the workpiece, are revolved about the axis of rotation of the workhead thus generating a spherical surface on the workpiece.

3,696,696
BAR FEED FOR AUTOMATIC LATHE
Andre Bechler, 4, rue Centrale, 2740 Moutier, Switzerland
Filed Jan. 27, 1971, Ser. No. 110,036
Claims priority, application Switzerland, March 20, 1970, 4262/70
Int. Cl. B23b *13/00*
U.S. Cl. 82—2.5 4 Claims



A bar feed for a rotary spindle lathe is provided with an arrangement for positively guiding the rear end of the bar being fed without interfering with its longitudinal motion. The bar feed arrangement includes a pair of V-shaped guide rails defining a guide diameter the same as the bore through the spindle. A feed rod is guided in the channel by a collar at each end, with the rear collar being non-rotatably secured to the feed rod and the front collar being rotatably journaled on the feed rod and also rotatably journaled with respect to the bar stock gripping collet so that it may be selectively rotatable or non-rotatable depending upon whether it is in the guide channel or the lathe spindle.

3,696,697
DISPENSER FOR REEL OF FILAMENT MATERIAL
John T. Hoffman, 1604 East Greenleaf Street, Allentown, Pa.
Filed June 29, 1971, Ser. No. 157,979
Int. Cl. B26d *7/00*; B65h *49/00*
U.S. Cl. 83—649 8 Claims

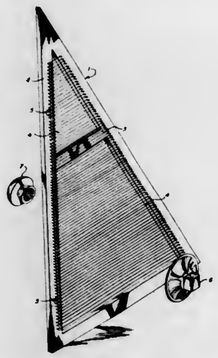


A dispenser for a reel of filament material, such as solder, includes an axle having a transverse through hole near each end thereof. An integral frame, formed from a sheet of metal, supports the axle. The frame has a first side portion having a threaded hole therewithin and having a filament receiving notch associated therewith, a second side portion, and a main body portion integrally formed with the two side portions. Both side portions are formed at right angles with respect to the main portion so that the axle can be received within holes formed in both side portions. An elongated cutter, having a blade portion and a finger engaging portion, has a bolt receiving hole therethrough. The cutter is pivotally affixed to the first side portion of the frame by suitable means such as a bolt and a lock nut. The bolt passes through the cutter hole and engages with the threaded hole of the side portion of the frame, and with the lock nut, so that the blade portion becomes selectively engageable with the filament receiving notch. The main body portion of the frame includes a front portion which is integrally formed with the side portions, and further includes a rear portion integrally formed with the front portion in an open loop so as to form an inverted J in cross section, thereby enabling the dispenser to be carried at waist level by the loop of the frame engaging with a wearer's belt. Suitable means, insertable within each of the transverse through holes, retain the axle on the frame. The front and rear portions of the frame have coaligned holes therethrough so that the frame can be mounted on a fixed support. The axle includes a filament receiving transverse hole therethrough so that a roll of material, not otherwise provided on a spool, can be wound directly upon the axle.

3,696,698
INSTRUMENT FOR PURIFYING SOUNDS THROUGH SYMPATHETIC VIBRATION
Abraham R. Kaminsky, 4527 North 74th Place, Scottsdale, Ariz.
Filed May 12, 1971, Ser. No. 142,678
Int. Cl. G10d *1/00, 3/02*; G10h *3/00*
U.S. Cl. 84—173 1 Claim

A very carefully tuned stringed instrument is provided with a range preferably approximating that of a piano. The strings are disposed in the path of ambient sound waves, such as music, and function to purify or eliminate those components of the sound which are not attuned to one or more of the instrument strings. A microphone may be utilized to pick up the purified sound and, in one embodiment, a portion of the apparatus constituting the purifier is disposed on one side of a soundproof wall such that the microphones which pick up the

purified sound are not subjected to the sound source. In a variant embodiment, a chromatic set of tuning forks may be utilized in conjunction with the strings to assist both in tuning the instrument and in carrying out the purification process. An in-

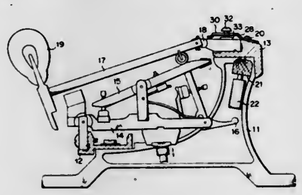


strument in which a complete set of tuning forks or other tuned elements are used in place of or in combination with strings is also contemplated, the inventive concept being the purifying nature of the closely tuned vibratory elements responding sympathetically to the ambient sound.

3,696,699
HAMMER FLANGE MOUNTING STRUCTURE FOR USE IN PIANO

Hiroki Tachida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed May 3, 1971, Ser. No. 139,676
Claims priority, application Japan, May 8, 1970, 45/44606
Int. Cl. G10c *3/18*
U.S. Cl. 84—251 **6 Claims**



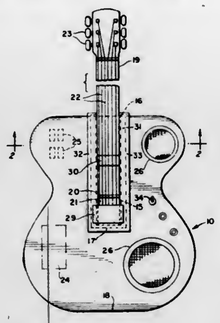
A hammer flange having a hammer shank rotatably attached to one end thereof is mounted on the cut-out portion of a flange rail. A plate spring fixed to the flange rail is extended over the hammer flange and is biased toward the hammer flange, the plate spring having a threaded hole at that part thereof facing the hammer flange. A screw means is screwed into the hole, exerting a pressure on the hammer flange under the biasing force of the spring, so that the hammer flange is securedly mounted on the flange rail.

3,696,700
ELECTRICAL MUSICAL STRINGED INSTRUMENTS

Michael P. Berardi, P.O. Box 852 Buena Vista Station, Miami, Fla.

Continuation-in-part of Ser. No. 63,849, Aug. 14, 1970, abandoned. This application Aug. 3, 1971, Ser. No. 168,545
Int. Cl. G10d *3/00*
U.S. Cl. 84—291 **4 Claims**

A stringed musical instrument having a hollow body and a solid finger board, the body having a channel with which the finger board cooperates and fills the channel, the spacing of the sides of the finger board and that of the body being



reduced intermediate the top and bottom of the finger board and body, and insulating material interposed between the sides.

3,696,701
NAIL HAVING A PAIR OF OUTWARDLY DIVERGING HEAD ELEMENTS SHAPED TO PROVIDE PACKAGING, DRIVING AND FASTENING EFFECTIVENESS AND PACKAGE THEREOF

Peter A. Readyhough, Barrington, R.I., assignor to Textron Inc., Providence, R.I.

Filed Dec. 29, 1969, Ser. No. 888,383
Int. Cl. F16b *15/02*
U.S. Cl. 85—28 **4 Claims**

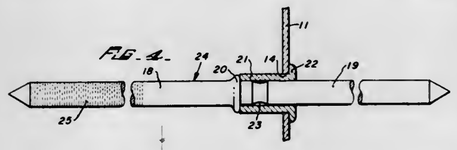


A nail constructed with a pair of head elements extending outwardly from one end of an elongated shank in diverging relation with respect to each other. The head elements are shaped to permit a multiplicity of such nails to be packaged in correspondingly head oriented parallel relation with the shanks of adjacent nails disposed in substantial abutting engagement and preferably with the head elements of adjacent nails in at least partial coextensive relation. The head elements are also shaped so that when the nail is driven into a workpiece at least a portion of the head elements will extend across the grain of a wood workpiece irrespective of the orientation of the head elements with respect to the workpiece. The head elements are also shaped so that the nail can be driven from a package of such nails within a fastener driving tool in such a way that guiding contact with the shank can be maintained at three annularly spaced locations thereabout so that movement in all four transverse component directions can be controlled substantially throughout the longitudinal driving movement of the nail and the driving movement can be accomplished by a fastener driving element having a size and shape at least equal to the shank and disposed in alignment therewith without head interference from the next adjacent nail of the package.

3,696,702
BLIND RIVET FOR TIEING HEAT INSULATION LINER IN AIR CONDUIT

John L. Krause, 15831 La Vida Drive, Palm Springs, Calif.

Filed Sept. 19, 1969, Ser. No. 859,271
Int. Cl. F16b *19/10*
U.S. Cl. 85—77 **4 Claims**

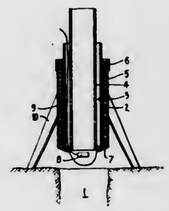


The device comprises a blind rivet and consists in a straight continuous piece of steel wire of uniform diameter upset near the middle thereof to provide an annular radial shoulder which divides the wire into integrally united primary and secondary stems. Slideably received on the primary stem with one end abutting against said shoulder is a tubular rivet sleeve, the opposite end of which has formed thereon an annular external flange. The invention is provided for tieing a relatively thick heat insulation liner against the inner face of the wall of an air conduit which is provided with holes at suitable intervals of a proper diameter to slideably receive said rivet sleeve. The preferred method of employing the invention is to apply a coat of cement to the inner face of said wall and then roll said liner against the tacky inner surface of said wall to line said conduit therewith. The primary stem is then inserted in a blind rivet setting tool and the secondary stem is inserted through one of the holes in said conduit wall and stabbed through the layer of insulation adhering thereto, after which the tool is operated to set said blind rivet in said hole and unite the same with said conduit wall, with said secondary stem protruding inwardly from the inner surface of say layer of insulation. A pinch washer is now pressed onto the protruding inner end of the secondary stem to confine the insulation liner and keep it from falling away from said wall. The unused portion of the primary stem outside the conduit may be removed by wire cutters or this stem may be weakened at a point near said sleeve so that the normal force applied in setting the rivet fractures the primary stem at this point of weakness leaving the rivet permanently united with the conduit wall.

3,696,703
BLASTING AGENT PACKAGE

Richard Fox, Hawthorn, Victoria, Australia, assignor to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed Aug. 4, 1970, Ser. No. 60,873
Claims priority, application Australia, Aug. 22, 1969, 59869/69
Int. Cl. F42d *1/00*
U.S. Cl. 86—20 C **18 Claims**

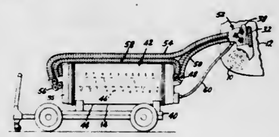


A water-proof package for water-sensitive bulk-loaded blasting agents such as ammonium nitrate slurries and ammonium nitrate fuel oil mixtures comprising an inner and outer plastic tube and mounted between them a liner folded up onto the inner tube in concertina fashion, said tubes optionally being fitted with a constriction to retain the liner within the tubes and with a cap to protect the bottom end of the assembly; the package is attachable to a loading hose for blasting agent and the liner is pushed out through the bottom end of the outer tube by the loading hose or the blasting agent, when charging commences.

3,696,704
AMMUNITION BULK LOADER

Lester Frank Backus, Charlotte; Robert Parker Laurent, Essex, and Robert George Titemore, South Burlington, all of Vt., assignors to General Electric Company

Filed May 13, 1971, Ser. No. 142,882
Int. Cl. F41f *9/02*
U.S. Cl. 89—34 **6 Claims**

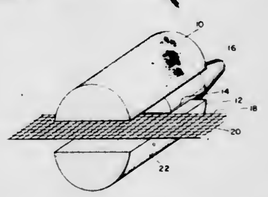


An ammunition handling system is disclosed including a double-ended serial storage device with a controlled conveyor adapted to rapidly transfer ammunition into a gun and storage system in an aircraft and to remove and store unfired rounds and fired cases in a radiation free environment.

3,696,705
COMBUSTIBLE STRIP AMMUNITION BELT

Joseph V. Hrabovsky, 154 Calvo Drive, Salt Lake City, Utah

Filed Aug. 23, 1968, Ser. No. 786,513
Int. Cl. F42b *39/08*
U.S. Cl. 89—35 A **10 Claims**



A combustible ammunition belt for caseless ammunition is provided. The belt is fed into the chamber of a firearm with the caseless ammunition and is consumed. The belt is made from a strip of combustible fabric. Caseless rounds are secured to the strip belt. The belt passes through the longitudinal axis of each caseless round.

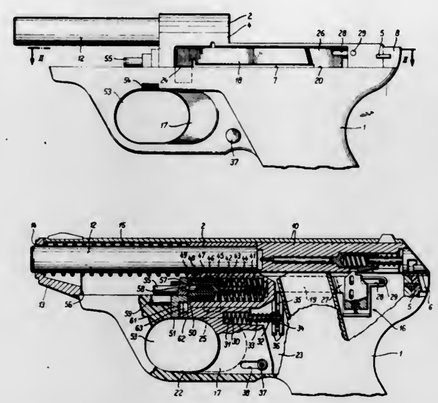
3,696,706
SELF-LOADING PISTOL HAVING FORWARDLY EXTENDING BREECH SLIDE

Alex Seidel; Tilo Moller, both of Oberndorf Neckar, and Helmut Weidle, Beffendorf, all of Germany, assignors to Firma Heckler & Koch GmbH, Oberndorf, Germany

Filed Sept. 17, 1969, Ser. No. 858,644
Claims priority, application Germany, Sept. 18, 1968, P 17 28 251.8
Int. Cl. F41c *23/00*; **F41d** *11/12*
U.S. Cl. 89—196 **14 Claims**

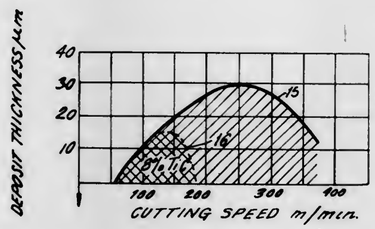
A self-loading pistol has a hand grip member which consists entirely of a synthetic resin material into which are embedded

metal parts for supporting the breech member and for guiding it during its recoil movement, a trigger assembly, and means for locking a magazine, the trigger assembly being located in a



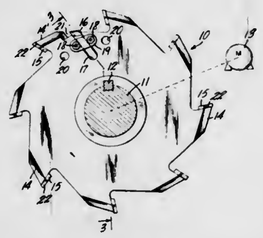
trigger casing formed partly by some of the metal parts. Means are provided which permit easy removal and replacement of the breech member and the barrel, and a buffer device may be provided for lessening the recoil shock of the breech member.

3,696,707
CUTTING OF DEPOSIT FORMING STEEL AND CUTTING TOOLS FOR SUCH STEELS
Wolfgang Schedler, and Johann Bodem, both of Reutte, Austria, assignors to Metallwerk Plansee, Reutte, Tirol, Austria
Continuation-in-part of Ser. No. 748,890, June 13, 1968, Pat. No. 3,564,683. This application Jan. 20, 1971, Ser. No. 108,007
Claims priority, application Austria, Sept. 9, 1970, A 8184/70
Int. Cl. B23c 1/00; B23b 3/00
U.S. Cl. 90—11 C **3 Claims**



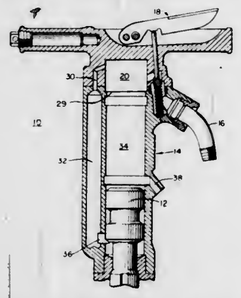
Efficient cutting of deposit forming steels, such as described in French Pat. No. 1,387,441, with tungsten carbide cutting insert having a high tungsten carbide content over an extended period of time is difficult. Efficient cutting of such deposit forming steels over a wide speed range from about 50 to about 350 m/min is made possible by embodying in the cutting edge surface stratum of the cutting tool at least 15 percent of one or more of the carbides or borides of Ti, Ta, Zr, Nb and V, or at least 50 percent aluminumoxide in the tool surface stratum may be embodied either by diffusion, or by affixing such surface layer to a known tungsten carbide insert, or by sintering stratified compacts of powder particle mixtures cohering a thick powder mixture layer containing a large proportion of tungsten carbide is covered along one or on its opposite layer surfaces with a thin powder mixture strata, each of which contains at least 15 percent of one or more of the carbides or borides of Ti, Ta, Zr, Nb and V.

3,696,708
METHOD AND APPARATUS FOR CUTTING THERMOPLASTIC COATED MEMBERS
Kasimir Lopas, Stamford, Conn., assignor to Time, Incorporated, New York, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,314
Int. Cl. B27b 5/04
U.S. Cl. 90—11 C **9 Claims**



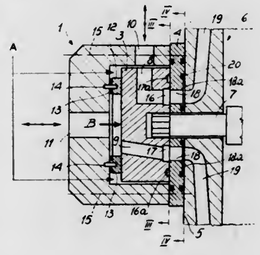
Burr-free fast cutting or machining of workpieces with thermoplastic layers bonded to harder backing members. Both the thermoplastic and its backing member are contacted by a high speed tool, and the thermoplastic layer is trimmed before the produced heat softens or melts the thermoplastic at the trim location. A high speed tool is used which is capable of operating upon the harder member. Offset from the workpiece contacting portion of the high speed tool, one or more trimming teeth trim the thermoplastic layer at intervals inwardly of the machined workpiece area where the thermoplastic is yet to be heated significantly and softened. The high speed tool may be a multitooth rotary cutter blade supporting a single offset tooth.

3,696,709
CONTROL DEVICE FOR A RECIPROCATING MACHINE
Albertus E. Schmidlin, Caldwell, N.J., assignor to TPI & Company, Montclair, N.J.
Filed Dec. 4, 1969, Ser. No. 881,994
Int. Cl. F01l 25/06
U.S. Cl. 91—3 **13 Claims**



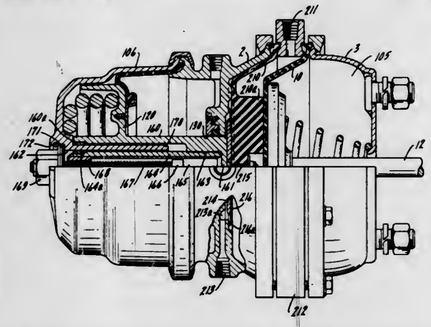
A control device for distributing a source of compressed fluid to a chamber housing a reciprocating member, the device including a valve means connecting the source of compressed fluid to the chamber and being switchable between two operating modes in which compressed fluid is introduced into said chamber to the respective ends of said reciprocating member to cause the latter to reciprocate in said chamber. The valve is normally in one of the modes and is switchable to, and maintained in, the other mode in response to a predetermined pressure existing in the chamber.

3,696,710
DISTRIBUTOR FOR HYDRAULIC MOTORS
Aurelio Ortelli, Bologna, Italy, assignor to Riva Calzoni S.p.A., Bologna, Italy
Filed Oct. 26, 1970, Ser. No. 90,219
Claims priority, application Italy, Nov. 7, 1969, 24092 A/69
Int. Cl. F16k 11/06
U.S. Cl. 91—487 **3 Claims**



A distributor for hydraulic motors with radially arranged pistons including a rotary member located in a housing in communication with fluid inlet and outlet conduits and having inner passages and sealing means for the fluid.

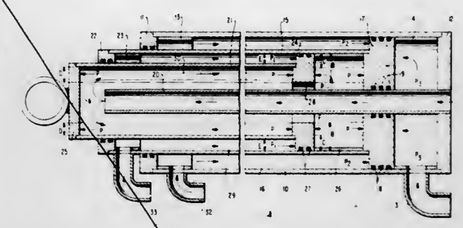
3,696,711
ROLL DIAPHRAGM BRAKE
Arthur A. Berg, Lincolnwood, and Boleslaw Klimek, Des Plaines, both of Ill., assignors to The Berg Manufacturing Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 26,001, April 6, 1970, abandoned. This application Dec. 28, 1970, Ser. No. 101,914
Int. Cl. F01b 19/00
U.S. Cl. 92—48 **3 Claims**



A light weight, compact service and emergency brake assembly employing a roll diaphragm in the emergency chamber, a rearwardly extending mechanical release, a cup-shaped movable wall carrying one end of the roll diaphragm and having an axial member riding on the inner and outer sides of an integral housing sleeve. A service chamber has two diaphragms with seal means carried by one diaphragm to preclude loss of service pressure.

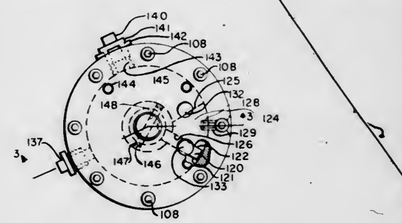
3,696,712
MULTI-SECTION HYDRAULIC RAM
Fu-Tien Sung, Waynesboro, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Sept. 28, 1970, Ser. No. 76,373
Int. Cl. F01b 7/20
U.S. Cl. 92—52 **9 Claims**

A three section telescopic hydraulic ram features the ability to have its mid-section and interior or rod section independently actuated. Thus, the mid-section and rod section of the ram may be extended or retracted as a unit relative to the exterior base section, or the mid-section and rod section may move relative to each other in either direction while moving



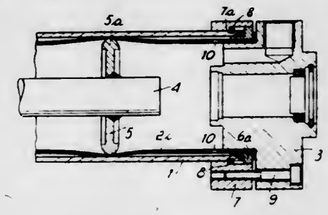
relative to the base section. This capability for individual control of the ram mid-section and rod section is achieved through a unique combination of fluid inlet porting and a divided piston construction for the interior or rod section of the ram.

3,696,713
ROTARY POSITIONER
Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,861
Int. Cl. F01c 9/00
U.S. Cl. 92—121 **7 Claims**



A pneumatically operated shaft positioner which has a C-shaped chamber with a rotary vane member responding to differential pressure conditions caused by opening an exhaust port around the periphery of the chamber.

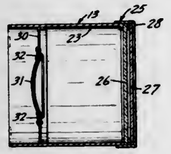
3,696,714
FLUID-OPERATED CYLINDER
Pier Luigi Panigati, Via Friuli 72, Milan, Italy
Filed Dec. 29, 1969, Ser. No. 4,181
Claims priority, application Italy, Nov. 11, 1969, 24269 A/69
Int. Cl. F01b 19/04
U.S. Cl. 92—170 **1 Claim**



A fluid-operated cylinder in which sealing between the piston and the cylindrical housing is provided by a tubular ele-

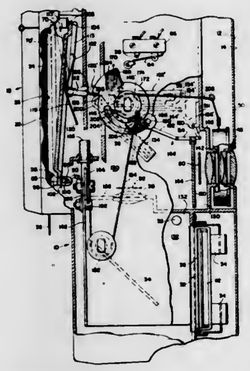
ment of resilient material, such as rubber, plastics material and the like which is placed in said cylindrical housing and extends to a length at least equal to the piston stroke.

3,696,715
BEAM DEFINING APPARATUS
Philip A. Jedlicka, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Dec. 29, 1969, Ser. No. 888,757
Int. Cl. G03
U.S. Cl. 95—1 R **6 Claims**



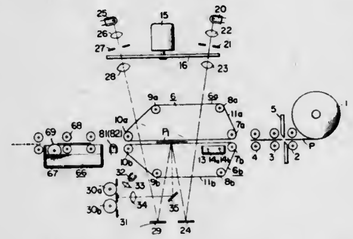
A display device as described in U.S. Pat. No. 3,457,400 is provided with photosensitive means for accurately identifying the outline of the light-transmitting area.

3,696,716
IDENTIFICATION CARD CAMERA SYSTEM CAPABLE OF PRODUCING CARDS HAVING DIFFERENT FORMATS
John F. Pasieka, Acton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 8, 1969, Ser. No. 864,632
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **30 Claims**



A camera system which employs an objective lens-shutter element to form an image of a subject positioned exteriorly of the camera on a sheet of photographic material and an arrangement including another lens and a plurality of mirrors, one of which mirrors is pivotably mounted in the optical path between the first mentioned lens and the sheet of photographic material, for forming an image of a data card mounted interiorly of the camera on the same sheet of photographic material. An arrangement, including a polarizing plate adapted to overlie the sheet of photographic material, restricts the light rays intersecting a first area of such material to those from the subject and the light rays intersection a second area of such material to those from the data card. The section of the polarizing plate overlying the first such area has its transmission axis orthogonally aligned with that of the section of the polarizing plate adapted to overlie the second such area. This plate is mounted in the system so as to be replaceable with other such plates on which the separate polarized sections thereof differ in location and/or size. The aforementioned pivotably mounted mirror is adapted to be displaced out of such optical path to facilitate photographing the subject. Other features are included so that when a button is depressed by the operator, a rotating cam first effects the displacement of the polarizing plate against the sheet of photographic material, energizes a data card flash unit, rotates the mirror and finally activates the shutter associated with the subject optics.

3,696,717
APPARATUS FOR PRINTING RAILWAY TICKETS AND THE LIKE
Tsutomu Honma; Tatsuya Yamada; Toshihide Kawashima, all of Kawasaki-shi; Hideo Amano, Tokyo-to; Mamoru Mizuguchi, Kawasaki-shi; Suekichi Inomata, Yokohama-shi; Toshihiko Oguchi, Kawasaki-shi; Hiroshi Nakano, Yokohama-shi; Jiro Nagata; Shuji Takao, both of Kawasaki-shi; Takao Nishihara, Tokyo-to; Takao Sudo, Kawasaki-shi, and Teiji Tomita, Kamakura-shi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan
Filed Oct. 14, 1969, Ser. No. 866,201
Claims priority, application Japan, Oct. 17, 1968, 43/75264; Oct. 17, 1968, 43/75265; Oct. 17, 1968, 43/75266; Oct. 17, 1968, 43/75267; Oct. 17, 1968, 43/75268; Oct. 17, 1968, 43/75269; Oct. 26, 1968, 43/78065; Oct. 31, 1968, 43/79426; Nov. 27, 1968, 43/86360; Nov. 27, 1968, 43/86361; Dec. 3, 1968, 43/88042; Dec. 3, 1968, 43/88043; Dec. 3, 1968, 43/88044
Int. Cl. B21b *13/00*
U.S. Cl. 95—4.5 R **8 Claims**



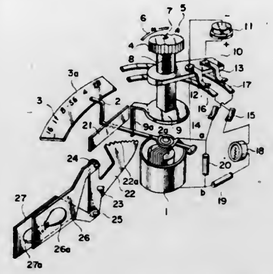
Originals containing ticket information are disposed on a continuously rotating carrier 16. Marks on the carrier designate different originals. A flash lamp 20 is used to illuminate a first set of originals which correspond to a type of ticket information, and flash lamp 25 illiminate a second set of originals which correspond to other ticket information.

A lamp 81 is used to remove latent charge from the edge of the ticket caused by residual charge left on the belt 6.

3,696,718
EXPOSURE ADJUSTING DEVICE IN A CAMERA
Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan
Filed Dec. 1, 1970, Ser. No. 93,959
Claims priority, application Japan, Dec. 1, 1969, 44/114527
Int. Cl. G03b 7/*12*
U.S. Cl. 95—10 C **4 Claims**

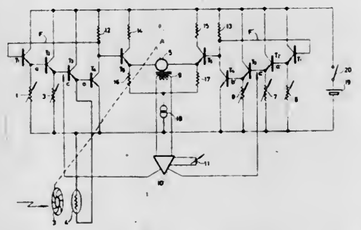
A exposure adjusting device in a camera making use of an ammeter, wherein in a camera which automatically controls the exposure on the basis of deflection angles of the pointer of said ammeter, in accordance with the brightness of an object, and wherein the manual exposure is controlled manually adjusting the pointer position against the returning tendency of said ammeter pointer, the engagement between the ammeter

pointer and exposure selection member, in the manual exposure condition, is ensured by impressing a voltage, of opposite



polarity to that of the automatic exposure control on said ammeter when adjusting the exposure selection member for manual exposure.

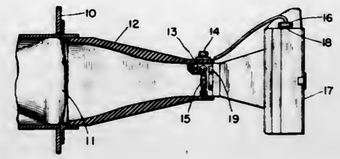
3,696,719
AUTOMATIC EXPOSURE CONTROL DEVICE
Kinji Tanikoshi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 17, 1971, Ser. No. 116,029
Claims priority, application Japan, Feb. 26, 1970, 45/16748
Int. Cl. G03b *9/06, 19/18*
U.S. Cl. 95—10 CD **7 Claims**



In the device disclosed, a first amplifier is composed of a plurality of cascaded emitter follower stages. A photoelectric transducer serves as an input by being connected as one emitter load. An inverting stage in the amplifier feeds the output at the last emitter follower to the first to compress input signals. A second amplifier is composed of a plurality of cascaded emitter follower stages. Each stage includes an emitter circuit in the form of a variable resistor that can be set on the basis of photographic information and provide a separate input. An inverting stage in the amplifier feeds the output of the last emitter follower to the first to compress the input signals. A comparator compares the outputs of the amplifiers. Driving means responsive to the comparator adjust the diaphragm in front of the transducer.

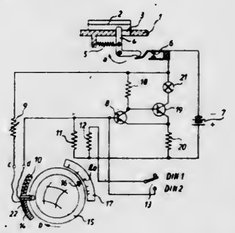
3,696,720
METHOD AND APPARATUS FOR PHOTOGRAPHING OSCILLOSCOPE TRACES WITH CONVENTIONAL CAMERA
Billy H. Vinson, San Diego, Calif., assignor to Integrated Controls, Inc.
Filed Aug. 11, 1971, Ser. No. 170,723
Int. Cl. H01j *29/06*; G02f *1/28*; G03b *27/76*
U.S. Cl. 95—10 C **6 Claims**

A hood structure incorporating a close-up lens and a specific light source whose intensity may be varied serves to support a conventional camera in front of an oscilloscope screen for photographing an oscilloscope trace. The hood blocks ambient light from the camera and the specific light source in the hood controls the exposure of the camera such as the shutter speed and/or the f-stop opening by causing this light source to shine on the photocell and by varying its intensity. Since the invention permits the use of a conventional



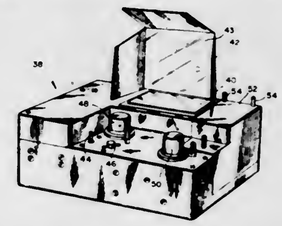
camera, the entire apparatus is extremely economical for photographing oscilloscope traces.

3,696,721
AUTOMATIC DISTANCE WARNING CIRCUITS FOR CAMERAS TO BE USED WITH PHOTOFLASH UNITS
Karl Wagner, Ottobrunn, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 19, 1971, Ser. No. 116,757
Claims priority, application Germany, Feb. 27, 1970, P 20 09 267.5
Int. Cl. G03b *17/18*
U.S. Cl. 95—11 R **16 Claims**



A voltage divider connected to the base of one transistor of a trigger stage has the ratio changed in dependence on the setting of the focusing ring. When the distance is too small or too great to adequately expose a photoflash picture, the trigger stage switches, causing a lamp to light up as a warning to the user.

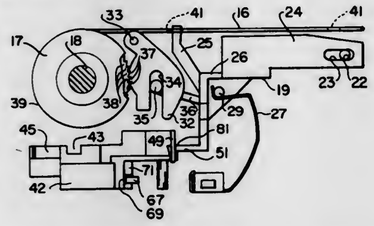
3,696,722
PHOTOGRAPHIC RECORDING AND REPRODUCTION APPARATUS
Gordon Lysle, Greenlawn, and Ronald Bonagura, East Meadow, both of N.Y., assignors to Photosystems Corporation, Plainview, N.Y.
Filed Oct. 6, 1969, Ser. No. 870,471
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 R **12 Claims**



An apparatus for the recording and reproduction of an image by zonal reduction. For recording an image, the image is segmented into a plurality of zones, each of which is photographically reduced and recorded, the recording being effected in a grid-like arrangement of reduced recording zones. This reduction is effected by the use of a plurality of lens elements constituted by a masked arrangement of two perpendicularly related lenticular screens. Recording is effected on a

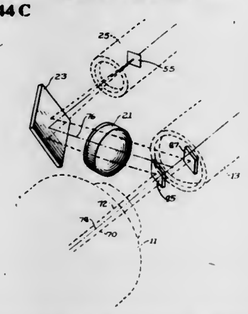
photographic film which is supported by an arrangement capable of displacing the same along multiple coordinates so that a plurality of images can be sequentially recorded as a plurality of interspersed grid-like arrangements of small areas. Reproduction is effected by projecting the resulting product through the same arrangement of lens elements as is employed in obtaining exposures which result in the product. The product is a light-permeable or transparent film on which the aforesaid grid-like arrangements are photographically produced.

3,696,723
CAMERA WITH METERED FILM ADVANCE AND DOUBLE EXPOSURE PREVENTION
Paul J. Ernisse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 27, 1969, Ser. No. 802,864
Int. Cl. G03b 1/62, 9/68, 17/42
U.S. Cl. 95—31 FM **6 Claims**



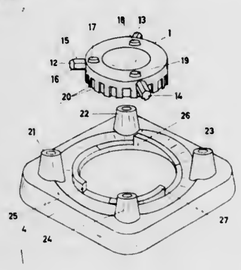
A camera adapted for use with film having metering perforations at predetermined intervals therealong, is provided with a film metering mechanism including a metering member having a metering tooth adapted to enter a perforation in the film and to be moved by the advancing film. Movement of the metering tooth moves the metering member to an operative position wherein the metering mechanism blocks further advance of the film. Manual depression of a trigger operating element effects withdrawal of the metering tooth from the film perforation and permits return of the metering member to an inoperative position under spring bias. Return movement of the metering member drives a control member which actuates the camera shutter drive mechanism and locks the trigger operating element in a depressed position. Movement of the metering member to its operative position drives the control member to cock the shutter drive mechanism and unlock the trigger operating element for movement from its depressed position.

3,696,724
DUAL BEAM RANGEFINDER
Rudolf Hartmann, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 30, 1969, Ser. No. 889,212
Int. Cl. G03b 3/06
U.S. Cl. 95—44 C **8 Claims**



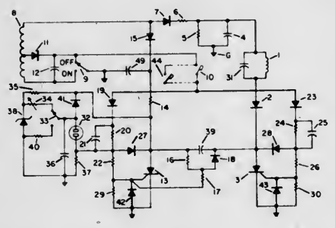
A rangefinder system is mounted in a camera with a viewfinder system and an objective lens having an afocal lens portion and a prime lens portion between which a pair of light reflecting members, such as mirrors, are mounted offset from the optical axis of the objective lens, so as to not intersect the film image light rays, thereby minimizing light loss to the film and maximizing finder image brightness, and to reflect light rays from the entire scene to a plane in the viewfinder system causing a superimposed image to be viewable when the objective lens is in focus and to cause separate images to be viewable when the lens is not in focus. The mirrors are supported on structures, adjustable during assembly, for enabling correction of divergent or convergent light rays to collimated rays.

3,696,725
ADJUSTABLE CAMERA-OBJECTIVE
Karl Heinz Lange, Ennigloh, Germany, assignor to Balda-Werke Photographische Gerate und Kunststoff R. Gruter Kommanditgesellschaft, Westphalia, Germany
Filed Dec. 31, 1969, Ser. No. 889,667
Claims priority, application Germany, March 6, 1969, P 19 11 372.5
Int. Cl. G03l 3/02
U.S. Cl. 95—45 **8 Claims**



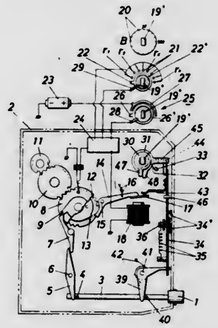
A camera-objective is provided with at least one adjustable lens supported by guiding and supporting means, which engages thread-like surfaces which are oblique to the axis of lens or the axis of camera objective so that the lens can be shifted along said axis by a rotary motion for adjustment. The thread-like surfaces are formed by fixed inclined planes provided with cam notches, which are engaged by at least one detent provided on said guiding means, so that stepped shift movement of the adjustable lens along the axis of the camera objective is possible, by the detent dropping into one notch after the other notch when a predetermined force of rotation, transferred to the adjustable lens is exceeded.

3,696,726
SHUTTER OPERATING SYSTEM
Donald E. Lewis, Canandaigua, N.Y., assignor to Ilex Optical Company, Inc., Rochester, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,561
Int. Cl. G03b 7/02, 9/62
U.S. Cl. 95—53 EA **17 Claims**



A solenoid-actuated camera shutter is timed by an SCR multivibrator. For relatively-short exposure times, the multivibrator is operated monostably, and exposure time is selected by adjusting the time constant of the monostable mode. Bistable multivibrator operation provides for exposure time selection independent of the multivibrator.

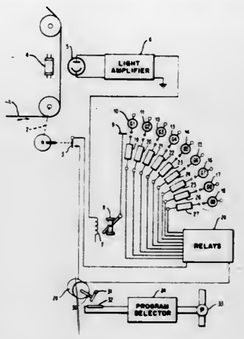
3,696,727
PHOTOGRAPHIC APPARATUS WITH ELECTRICALLY OPERATED FOCAL PLANE SHUTTER
Junichi Yokozato, Tokyo, Japan, assignor to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,568
Claims priority, application Japan, Dec. 24, 1968, 43/94431
Int. Cl. G03b 9/28
U.S. Cl. 95—57 **4 Claims**



A focal plane shutter for photographic apparatus has front and rear shutter curtain release mechanisms, a shutter release device which is movable from a starting to an operative position to thereby actuate the front shutter curtain release mechanisms, a selector knob which is turnable between a first position to thereby set the shutter for bulb exposure operation and several additional positions to thereby set the shutter for operation with different preselected exposure times, an electric circuit including an electromagnet which is deenergized with a preselected delay following depression of the release device to thereby cause or permit actuation of the rear shutter curtain release mechanism and which remains deenergized in the first position of the selector knob because the electric circuit is then deenergized by a contactor which rotates with the selector knob, and an actuating device which actuates the rear shutter curtain release mechanism in response to movement of the release device back to its starting position while the selector knob dwells in the first position. The consumption of energy is reduced to zero when the selector knob dwells in such first position because the circuit of the electromagnet is then deenergized.

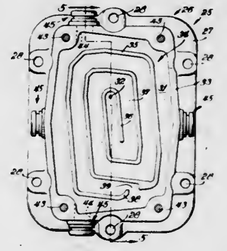
3,696,728
FILM PROCESSOR
Stephen F. Hope, 195 Welsh Road, Huntington Valley, Pa.
Filed Dec. 19, 1969, Ser. No. 886,488
Int. Cl. G03d 3/00
U.S. Cl. 95—89 **7 Claims**

In a film processor the replenishment pump is controlled by a single related to the accumulated measurement of light density of the developed film. Intermittently, in response to each one inch of travel of the film, a time delay circuit produces an electrical signal having a time duration related to the measured density of the film. Density measurements are accumulated in a servo motor rotated by the electric signal. For each revolution of the servo motor, a program selector energizes



the replenishment pump for a time duration selected in accordance with the type of film being processed.

3,696,729
BREATHER FOR OPERATING MECHANISM HOUSING FOR HIGH VOLTAGE SWITCHES AND THE LIKE
Leonard V. Chabala, Maywood, and David M. Evans, Wheeling, both of Ill., assignors to S & C Electric Company, Chicago, Ill.
Filed Sept. 7, 1971, Ser. No. 178,093
Int. Cl. F24f
U.S. Cl. 98—1 **13 Claims**

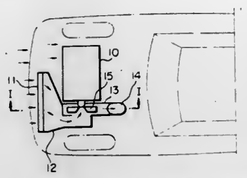


Mechanism housing for out of door high voltage switches which breathe as a result of a change in atmospheric conditions are provided with labyrinths through which the ambient air flows and in which water, airborne corrosive compounds, and dust are trapped, thus preventing them from entering the mechanism housing.

3,696,730
AIR COOLING SYSTEM OF AUTOMOTIVE ENGINE
Tetuzo Masuda, Tokyo; Kenjiro Kuroawa, Fukuoka-machi; Takeo Hashimoto, and Takahisa Izumi, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 18, 1969, Ser. No. 877,808
Int. Cl. B60h 1/24
U.S. Cl. 98—2.06 **1 Claim**

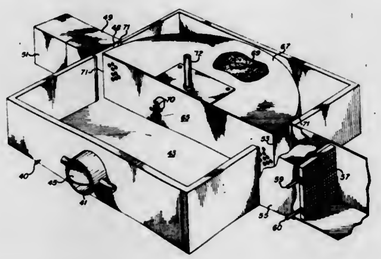
A cooling arrangement for an automotive internal combustion engine having a crankshaft oriented rectangular to the longitudinal direction of the motor vehicle, which system includes a radiator positioned in front of the engine compartment and vented from the open air, a duct communicating at one end with the radiator and opened at the other to the open air in a direction rectangular to the longitudinal direction of

the vehicle, and a fan provided in the duct and driven by the crankshaft of the engine. The radiator may cover an either



total or partial front area of the engine compartment and the duct may have a branch duct communicating with the occupants' room.

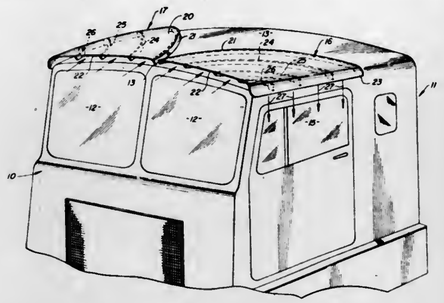
3,696,731
AIR DISTRIBUTING APPARATUS
Richard D. Tutt, Tucson, Ariz., assignor to Lear Siegler, Inc., Krueger Division
Filed March 29, 1971, Ser. No. 128,794
Int. Cl. F24f *11/04*
U.S. Cl. 98—41 **8 Claims**



Apparatus is disclosed for use in connection with an air distribution system, wherein air under pressure is supplied to an inlet to the apparatus and is distributed to either of two outlets. The first outlet is connected to a duct for delivery to a room, while the second outlet supplies air to the system return plenum. The air enters an air receiving chamber of the apparatus and is directed toward a wall positioned substantially transversely to the direction of air entering the chamber. The wall is rotatably mounted within the chamber and is positioned to rotate from a first position to a second position where the wall shrouds either the first inlet or the second inlet. Positioning of the wall between the first and second positions results in the proportioning of the air to the first and second outlets; the areas of the outlets are thus reduced in proportion to the reduction in the volume of air to be delivered through the inlet. The wall may comprise a perforated sheet having holes therein to admit audible pressure variations through the holes to a sound deadening chamber positioned immediately behind the wall. The volume thus delivered by the apparatus remains constant for any rotatable position of the wall.

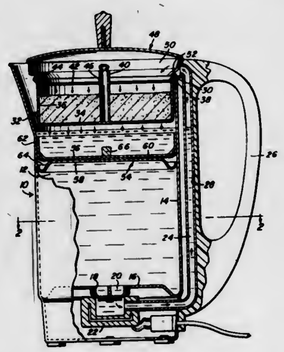
3,696,732
MOTOR VEHICLE WITH AIR FLOW DEFLECTOR
John J. Rodgers, South Euclid, Ohio, assignor to White Motor Corporation, Cleveland, Ohio
Filed Dec. 29, 1969, Ser. No. 888,621
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.14 **15 Claims**

A truck cab has a ram air scoop structure extending across its top to receive air moving upwardly along the front of the cab and direct it downwardly alongside the cab windows so as to minimize turbulence adjacent the windows and inhibit the rise of dirt-laden air from the road to the region adjacent the



windows and an attendant deposit of dirt and dirty water on the windowpanes as would otherwise occur.

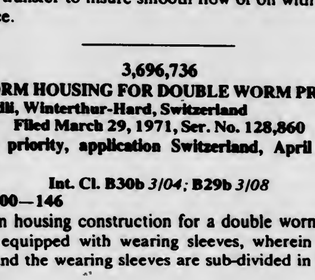
3,696,733
AUTOMATIC DRIPOLATOR, SINGLE COMPARTMENT
James H. Beverett, 410 Nottingham Road, Montgomery, Ala.
Filed May 6, 1971, Ser. No. 140,707
Int. Cl. A47j *31/10*
U.S. Cl. 99—307 **8 Claims**



A single cycle coffee maker incorporating a vertically sliding separator which divides a single compartment coffeepot into upper and lower chambers. The lower chamber receives the water which is pumped upwardly and discharged through the coffee grains into the upper chamber. The separator rides downwardly on the decreasing water level in the lower chamber, increasing the capacity of the upper chamber as the brewed coffee builds-up therein. The separator is solid and a side pump or delivery tube is utilized.
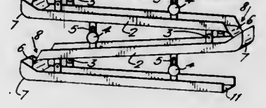
3,696,734
COMMERCIAL WAFFLE BAKER
Silas V. Beasley, Elgin, Ill., and Norman Beam, Macon, Mo., assignors to McGraw-Edison Company, Elgin, Ill.
Filed July 8, 1971, Ser. No. 160,781
Int. Cl. A21b *5/02*
U.S. Cl. 99—331 **10 Claims**

A waffle baker where rectangular base and cover case components support circular waffle grids within opposing smooth heated faces defining thereby a heated spill over area annularly adjacent the grids for collecting and solidifying spillage for easy cleaning; where bolts are extended completely through the case component and threaded into taps on the underside of the grid to leave exposed actuating tool heads for easy removal of the bolts and grids without otherwise disassembling the baker; and where a sheath type electric resistance heating element bent to shape is held removably



within a fixture and in good heat transfer relationship against the grid underside and a thermostat is spring biased against the grid underside to allow grid removal and replacement without recalibration of the baker.

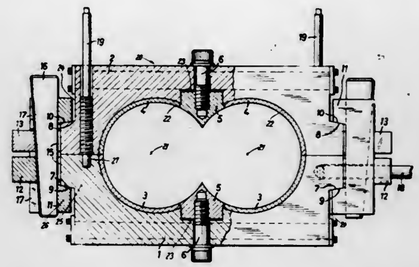
3,696,735
APPARATUS FOR FRYING FOOD PIECES
Arie Leendert Boertje, Hoogeveen, Netherlands, and Peter John Philpott, Felmersham, England, assignors to Lever Brothers Company, New York, N.Y.
Filed Nov. 13, 1968, Ser. No. 776,007
Claims priority, application Netherlands, Nov. 13, 1967, 6715386
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **1 Claim**



Food pieces are fried in an apparatus comprising a plurality of downwardly sloping straight channels, so arranged in zig-zag fashion that frying oil along with buoyant pieces of foodstuff transfer from the exit end of each channel in free fall to the inlet end of the succeeding channel, reversing direction at this point and turning over the pieces of foodstuff. The oil flows at shallow depth, and the apparatus has guides at the points of transfer to insure smooth flow of oil with minimum turbulence.

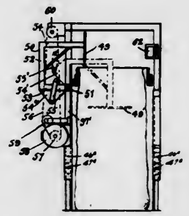
3,696,736
WORM HOUSING FOR DOUBLE WORM PRESS
Hans Studil, Winterthur-Hard, Switzerland
Filed March 29, 1971, Ser. No. 128,860
Claims priority, application Switzerland, April 1, 1970, 4806/70
Int. Cl. B30b *3/04*; B29b *3/08*
U.S. Cl. 100—146 **8 Claims**

A worm housing construction for a double worm press of the type equipped with wearing sleeves, wherein both the housing and the wearing sleeves are sub-divided in the plane of the worm axes into two halves, key connection means being provided at both longitudinal sides of the housing halves, such



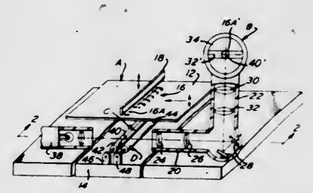
key connection means rigidly but detachably connecting with one another both housing halves.

3,696,737
APPARATUS FOR PACKAGING REFUSE AND OTHER MATERIALS
Karl Gustav Wikner, Hallgumsgatan 33C, Kramfors, Sweden
Filed Dec. 15, 1969, Ser. No. 884,951
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **3 Claims**



An apparatus for packaging refuse, trash or other waste products that are deposited into a receptacle such as a paper bag, from a chute. Provided at the outlet end of the chute is a compacting or pressure-exerting device which includes a pressure plate mounted to be moved into and out of the bag through its open mouth at required intervals to compact or compress the materials that are deposited in the bag.

3,696,738
SILK SCREEN STENCIL APPARATUS AND METHOD
Howard R. Walker, Aldan, Pa., assignor to Joseph E. Podgor, Inc., Pennsauken, N.J.
Filed Feb. 3, 1971, Ser. No. 112,245
Int. Cl. B41f *17/08*, *15/00*
U.S. Cl. 101—38 **4 Claims**



Apparatus and method for silk screening a microscopic pattern on a stencil into precise registration with reference in-

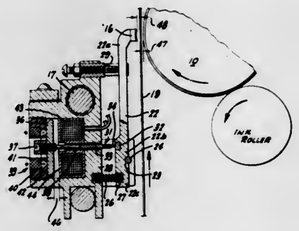
dicia previously incorporated upon a substrate. System includes an optical comparator with a reticle which magnifies the images and after superimposing a reference point in the test pattern with the reticle insures precise registration of a reference point on the substrate with respect to patterns imprinted thereafter.

3,696,739

STRIKING APPARATUS FOR ROTATING WHEEL PRINTER

Evan L. Bagland, III, Atherton, and Robert L. Wagner, Menlo Park, both of Calif., assignors to American Regital Corporation, San Carlos, Calif.

Filed May 4, 1970, Ser. No. 34,323
Int. Cl. B41j *9/00, 1/22*
U.S. Cl. 101—93 C **10 Claims**



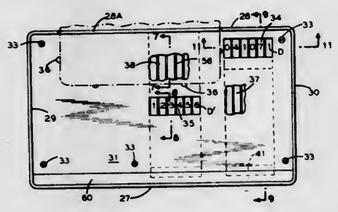
Striking apparatus for a rotating wheel printer where the striking apparatus includes a hammer mounted on one end of a lever having an intermediate semicircular bearing portion mated with a pin where the bearing is maintained in engagement with the pin by a biasing spring. An exciter includes a ram for impacting against the lever to move the hammer into contact with the printing wheel, the ram extending from a disc of magnetic material which is normally retained in the rest position by a permanent magnet but is attracted by a cup-core type electromagnet for causing the exciter to impact the lever to rotate the hammer into contact with the printing wheel.

3,696,740

TRAVELING CYLINDER PRINTER WITH SELECTIVE INDICIA ON ENDLESS BANDS

Otto G. Glatt, 29 B Addison Place, Clifton, N.J.

Filed Aug. 20, 1971, Ser. No. 173,561
Int. Cl. B41j *1/16*; B41f *3/20*
U.S. Cl. 101—111 **10 Claims**



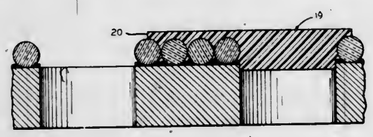
A portable credit card imprinter for imprinting selected combinations of indicia derived from a credit card and digital character transfer means; the design of the digital character transfer means being such as to thereby materially reduce the bulk, thickness and weight thereof and to thus enhance the portability thereof.

3,696,741

FORAMINOUS PRINTING SCREEN

George W. Reinke, P.O. Box 143, Cary, Ill.

Filed Dec. 3, 1969, Ser. No. 881,700
Int. Cl. B41n *1/24*; G03c *5/06*
U.S. Cl. 101—128.3 **4 Claims**



Printing screen and method of making same wherein the printing screen includes a sheet of foraminous metal having a plurality of openings arranged symmetrically in rows and columns between which are imperforate areas, and a layer of beads adhesively secured to the imperforate areas to define the printing side of the screen.

3,696,742

METHOD OF MAKING A STENCIL FOR SCREEN-PRINTING USING A LASER BEAM

Leo P. Parts, Dayton, and Edgar E. Hardy, Kettering, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Oct. 6, 1969, Ser. No. 864,161
Int. Cl. B41c *1/14*
U.S. Cl. 101—128.4 **7 Claims**

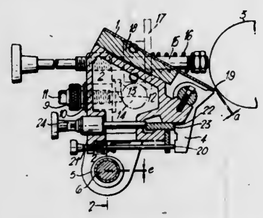
An improved metal screen-printing stencil in which the non-printing areas are closed with a solid polymer capable of undergoing residue-free depolymerization. The process of producing the stencil in which printing areas are opened by irradiation with a laser beam.

3,696,743

APPARATUS FOR REGULATING A COLOR DOSING DEVICE IN RELATION TO A COLOR DOCTOR ROLLER

Hans Johne; Gunter Schumann, and Kurt Reichenberger, all of Radebeul, Germany, assignors to Veb Druckmaschinenwerk Planeta, Badebeul, Germany

Filed March 6, 1970, Ser. No. 17,094
Claims priority, application Italy, June 11, 1969, 52198 A/69
Int. Cl. B41f *31/04*
U.S. Cl. 101—365 **7 Claims**



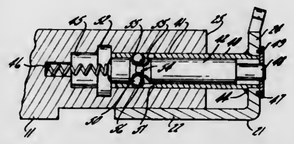
Apparatus for controlling a color dosing device in relation to a color doctor roller wherein the entire color dosing device, under retention of the support line between the color knife and the color profile lever is pivotable about a fulcrum point for the purpose of setting the color slot, characterized in that for the purpose of changing the blade angle or clearance the entire color dosing device is pivoted about the fulcrum point without changing the color slot and the fulcrum point is shifted a distance corresponding to the change in the color slot whereby the individual color profile levers which act on the edge of a color knife are separately pivoted for setting the color profile and all of the color profile levers are jointing pivoted for parallel setting of the color knife and color profile storage.

3,696,744

SADDLE LOCKUP FOR FLEXIBLE PRINTING PLATE

Gordon Etchell, Downers Grove, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1970, Ser. No. 80,426
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 **10 Claims**



A curved saddle for supporting and tensioning a flexible printing plate which has a series of closely spaced appertures along opposite edge portions. Each end of the saddle is provided with a circumferentially moveable spring biased bar having a series of spaced lugs over which opposite ends of the appertured plate may be positioned and secured. To facilitate positioning of the plate over the bar lugs, each bar has a locking mechanism which secures the bar in a retracted position upon manually moving the bar to that position. After a plate is secured to the bar, the locking mechanism may be readily released by depressing an actuating plunger, thereby permitting the bar to be urged under the spring biasing force to an outwardly extended plate tensioning position.

3,696,745

COMPOSITE OFFSET PRINTING PLATE

J. , Morton, 3301 N. E. 5th Avenue, Miami, Fla.

Filed Jan. 22, 1971, Ser. No. 108,916
Int. Cl. B41f *1/28*
U.S. Cl. 101—415.1 **1 Claim**



A composite printing plate for application to the plate cylinder of an offset printing press comprised of a base plate and frame strips secured to the top surface of the base plate providing a plurality of framed openings for the reception of respective single page or other page segment sized lithographic printing plates, each printing plate being sized and shaped to be received within the confines of its respective framed opening and to be removably attached to the top surface of the base plate by adhesive means in such a manner so as to be removable from the base plate, while said base plate is fixed to the plate cylinder, for replacement by a newly prepared lithographic printing plate.

3,696,746

DESENSITIZING NON-FERROUS LITHOGRAPHIC PRINTING PLATES WITH AQUEOUS PHOSPHATE GLASS COMPOSITIONS

James E. Harper, 6040 Haverhill Street, Oxon Hill, Md.

Filed April 24, 1969, Ser. No. 819,110
Int. Cl. B41m *5/00*; B41n *3/00*; B41m *1/00*
U.S. Cl. 101—465 **7 Claims**

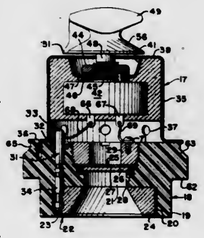
Non-ferrous lithographic printing plates, and especially those in which the hydrophobic image areas are constituted by photosensitive polymers, are desensitized by application to the metal surface of the developed plate of an aqueous desensitizing solution comprising a phosphate glass such as sodium hexametaphosphate, preferably in admixture with a fluoride salt, such as sodium fluoride. The aqueous composition is maintained at a pH in the range of pH 5–7 by a water-soluble phosphorus acid, such as phosphoric acid. The treatment can be performed at room temperature and permits the hydrophylic areas of the printing plate to be maintained upon storage without special protection. The treatment can also be used as a fountain solution in a press fountain.

3,696,747

FLOODER

Lewis E. Kissinger, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 3, 1952, Ser. No. 297,193
Int. Cl. B63f *3/00*
U.S. Cl. 102—10 **9 Claims**



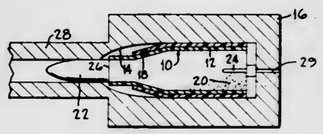
The invention relates to a marine mine and more particularly to a device for use in connection with a submersible body to cause the body to sink to the bed of a body of water at the expiration of a predetermined period of time after the body has been planted in a body of water.

3,696,748

MEANS FOR IMPROVING BURNOUT OF CONSUMABLE CARTRIDGE CASES

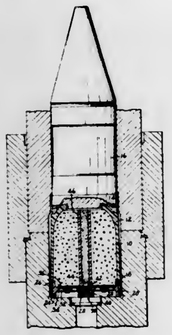
Jean P. Picard, Morristown; William O. Seals, Budd Lake, and Lawrence W. Pell, West Orange, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 659,562, Aug. 2, 1967, abandoned. This application Dec. 29, 1969, Ser. No. 888,664
Int. Cl. F42b *5/18, 5/30*
U.S. Cl. 102—38 **1 Claim**



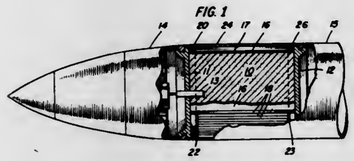
A weapons system for promoting the complete combustion of a consumable cartridge case used therewith. The system includes means for uniformly radially spacing the cartridge case from the breech or chamber wall of the gun chamber which permits the circulation of hot gases therebetween.

3,696,749
EXPENDABLE CASE WITH VENTED BASE CAP
John J. Scanlon, Monroe, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Nov. 18, 1969, Ser. No. 877,747
Int. Cl. F42b 13/28, 5/00
U.S. Cl. 102—49.7 10 Claims



An expendable cartridge wherein a deformable casing is expelled from the gun upon firing along with the projectile. The substantially non-combustible breech end cap is vented so that the full explosive pressure within the casing does not act against the breech end cap and thus expulsion of the casing is facilitated. Cover means are mounted on the breech end cap to provide environmental portection and/or protection against accidental ignition.

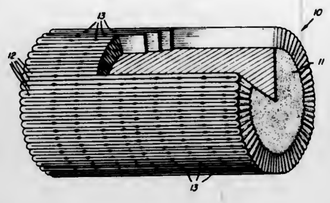
3,696,750
ROD WARHEAD
Stirling A. Colgate; Marvin L. Kempton; Merle E. Hanson; William O. Munson, and Dallas E. Nicholson, all of Socorro, N. Mex., assignors to The United States of America as represented by the Secretary of the Navy
Filed June 21, 1967, Ser. No. 649,415
Int. Cl. F42b 13/48
U.S. Cl. 102—67 10 Claims



A continuous rod warhead wherein each rod is of a comparatively small cross-section and is capable of achieving extremely high ribbon velocities. The rods are V-shaped in cross-section and are filled with a secondary propellant which, when activated by the primary warhead explosive, produces an additional thrust to the expanded continuous rod projectile.

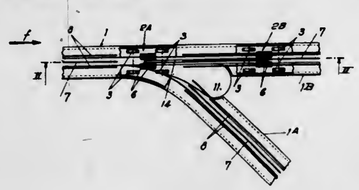
3,696,751
ROD WARHEAD
Marvin L. Kempton, Socorro, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 21, 1967, Ser. No. 656,627
Int. Cl. F42b 13/48
U.S. Cl. 102—67 3 Claims

A continuous rod warhead whose rods are rectangular in cross-section and are disposed in a bundle edge-on towards the target. Edge-on attitude is maintained throughout the



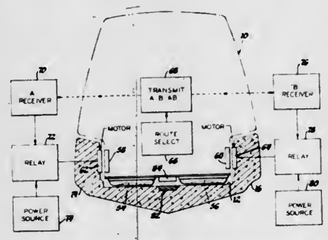
rods' flight path by means of stitch welds between the rods near the hinges.

3,696,752
CONVEYOR SYSTEM
Michel Bourg, Neuilly S/Seine, France, assignor to Frankel-Industries, Seine and Marne, France
Filed Sept. 12, 1969, Ser. No. 857,378
Int. Cl. B60l 9/00; B60m 1/30
U.S. Cl. 104—148 LM 3 Claims



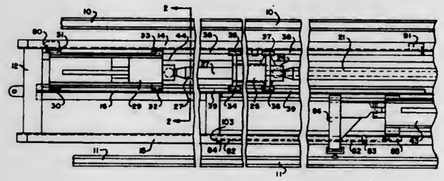
A conveyor system having tracks supporting a carriage having two spaced and wheeled units, each unit including a linear motor, at least one motor being connected at all times to a source of electrical potential.

3,696,753
GUIDEWAY AND SWITCHING LINEAR MOTOR PROPELLED VEHICLE
Howard R. Ross, Grosse Pointe Woods; Lloyd D. Goodrich, Grosse Pointe Park, and Norman McQueen, Bloomfield Hills, all of Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.
Filed Oct. 29, 1969, Ser. No. 872,020
Int. Cl. B60l 9/18; B60n 1/00; B61b 13/08
U.S. Cl. 104—148 LM 7 Claims



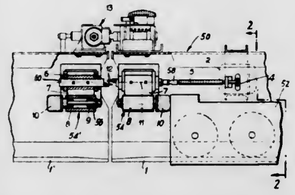
A vehicular transportation system including a guideway having lateral walls of ferromagnetic material and linear induction motors on the opposite sides of the vehicle to provide propulsion thrust and selective magnetic attraction to the walls. To negotiate a route fork, the motors on one side are deenergized so the vehicle follows the wall on the other side.

3,696,754
VARIABLE-STROKE CAR SHIFTING APPARATUS
Charles M. Anderson, and Edward H. Ratcliff, Jr., both of Paris, Ky., assignors to W. R. Stamler Corporation, Paris, Ky.
Filed Dec. 29, 1969, Ser. No. 888,597
Int. Cl. B61j 3/08
U.S. Cl. 104—162 10 Claims



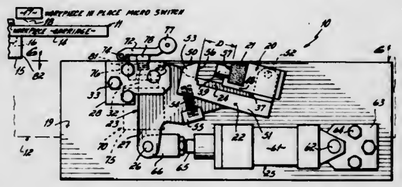
A car shifting apparatus for moving cars of different lengths includes axle-engaging dogs and a sensor mechanism actuated by a car wheel for controlling the respective engagements and disengagements of the dogs with the appropriate axles of the cars. Telescopic fluid pressure motors serve to advance and to retract the dogs through strokes which are dependent upon the distances between successive trucks of the cars as reflected by the action of the sensor mechanism.

3,696,755
BLOCKING MECHANISM FOR AN OVERHEAD CRANE TRACKWAY
Fred Wiggershaus, Silschede, and Klaus Donner, Hohenlimburg, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed April 22, 1970, Ser. No. 30,818
Claims priority, application Germany, July 17, 1969, P 19 36 385.4
Int. Cl. B61k 7/00
U.S. Cl. 104—250 1 Claim



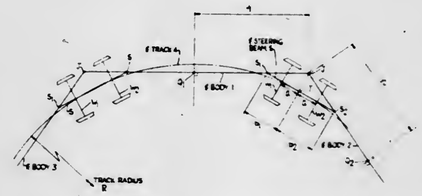
A device for blocking the movement of a movable crane on an overhead trackway when it comes to the end of the trackway includes a mechanism mounted at the end of the trackway and supporting a buffer arm having a buffer end portion thereon which is alignable with the trackway over which a crane is movable in order to block the movement of the crane toward the end of the trackway. The arrangement includes a motor drive for pivoting the buffer arm about an axis which is substantially parallel to the longitudinal axis of the trackway for the purpose of shifting the buffer arm from a position at which it blocks the moving crane to one at which it is removed from a blocking position to permit traveling movement of the crane from one trackway to another trackway which is aligned therewith. The adjacent trackway is adapted to have a similar buffer construction with a pivot lever element which is exposed when the two trackways are aligned in a position such that actuation of one buffer arm to move it out of a blocking position will be effective to move the other buffer arm of the adjacent trackway out of a blocking position.

3,696,756
CAR RETAINING CUSHIONED LATCH MECHANISM
Clifford L. Elmore, Cincinnati, and Richard C. Young, Oregonia, both of Ohio, assignors to Teledyne Mid-American Corporation, Los Angeles, Calif.
Filed Feb. 1, 1971, Ser. No. 111,332
Int. Cl. B23q 5/22; B61k 7/08, 7/18
U.S. Cl. 104—251 13 Claims



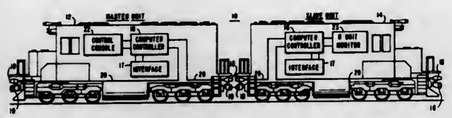
A cushioned latch mechanism for use with a workpiece transfer system of the type wherein a workpiece is carried along a track from one work station to another, while seated on an independently movable vehicle or carrier. The mechanism includes vehicle movement slowing and stopping means which cushions the stop of the vehicle at a work station or other predetermined position, and a latch which blocks rebound movement of the vehicle from the stop point and thereafter holds it in predetermined position. The stopping means and the latch are both mounted on a common movable member which is movable between (a) a vehicle engaging position where the stopping means and latch stop and lock the vehicle at the predetermined position, and (b) a retracted position where the stopping means and latch are moved out of the vehicle's path to permit same to proceed past the predetermined position.

3,696,757
DAMPENED RAILWAY CAR TRUCK
Michael Newman, and David Boocock, both of London, England, assignors to British Railways Board, London, England
Continuation-in-part of Ser. No. 849,322, Aug. 12, 1969, abandoned. This application March 31, 1971, Ser. No. 129,899
Claims priority, application Great Britain, Aug. 20, 1969, 39,818/68
Int. Cl. B61f 3/12, 5/24, 5/38
U.S. Cl. 105—4 R 6 Claims



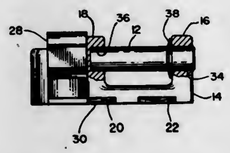
A railway train having articulated vehicle bodies. A steering beam spans across each two adjacent vehicle bodies. Each beam is vertically pivoted or ball-jointed at points along the longitudinal center line of the adjacent vehicle bodies at some distance from the end of each vehicle body. The steering beam acts as a structure to which a suspension unit (bogie truck) is attached. The suspension unit is attached to the beam in a manner which permits the suspension unit to rotate in yaw about a vertical axis. The yaw rotation may be accomplished either freely or against the restraint of springs, viscous dampers or friction devices.

3,696,758
LOCOMOTIVE SIGNALING AND CONTROL SYSTEM
Peter A. Godinez, Jr., West Covina, Calif., assignor to Genisco Technology Corporation, Compton, Calif.
Filed Dec. 18, 1969, Ser. No. 886,295
Int. Cl. B61g 1/08; B61c 3/00
U.S. Cl. 105—61 21 Claims



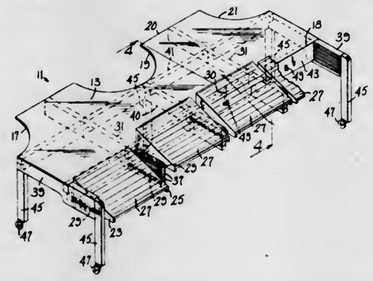
A control system is disclosed permitting the control of a plurality of power traction units in railroad service from a single one of such units as the master control unit. Both indicator and command signaling are provided between the various units by means of inductive couplers mounted in the vicinity of the mechanical unit couplers. Frequency shift keying and redundant signal encoding are employed to provide a high degree of reliability with protection against failure and errors.

3,696,759
TIE-DOWN FITTING
Peter P. Parris, Tustin, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Filed March 9, 1970, Ser. No. 17,659
Int. Cl. B60p 7/08; B61d 45/00
U.S. Cl. 105—369 A 2 Claims



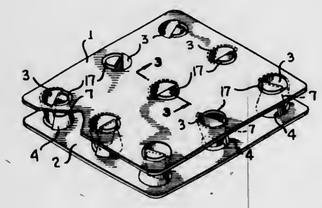
A tie-down fitting having a removable pin that passes through an attachment loop formed in the end of a tie-down strap so that the tie-down can be replaced in the field without cutting the loop or without cutting and resewing the stitching in the loop.

3,696,760
LEARNING TABLE
Jefferson B. Riley, 1545 Chapel Street, New Haven, Conn.
Filed Sept. 10, 1970, Ser. No. 71,145
Int. Cl. A47b 41/04
U.S. Cl. 108—32 10 Claims



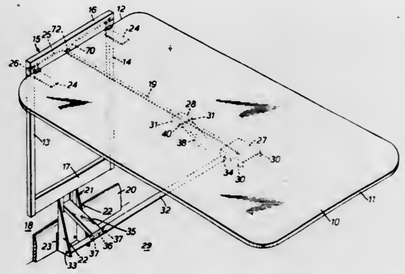
A modular classroom table for cooperating in the promotion of a formal and an informal learning environment, comprising a plurality of inclined desk surfaces disposed along a first edge of a horizontal top panel, which desk surfaces may be independently raised or lowered to fit the individual student. Another edge of the top panel is provided with a plurality of cutouts which, when complementing cutouts of one or more of other cutouts of the tables in modular arrangements, define geometrical figures such as circles and semi-circles.

3,696,761
DUAL PURPOSE NESTING PALLETS
Dwight C. Brown, 414 N. Granada Street, Arlington, Va.
Filed Oct. 27, 1969, Ser. No. 869,748
Int. Cl. B65d 19/18
U.S. Cl. 108—53 6 Claims



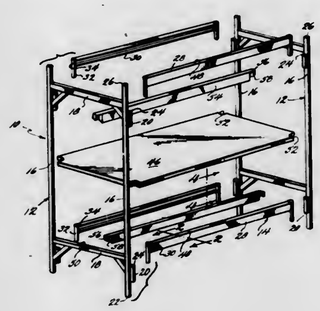
A pallet is used for supporting and transporting a load in either a single deck pallet form, or a double deck pallet form which includes a pair of the single deck units. Each single deck unit includes a deck having a side adapted to receive a load and an underside from which a plurality of spaced hollow support elements project. The single deck units are identical to each other such that the support elements of one deck unit will mate with the support elements of any other deck unit when the deck units are not in use, to permit storage of two or more deck units in overlying relation by registering and nesting the support elements of one within the support elements of the other. Two single deck units may also be placed in back-to-back relation such that the decks are spaced apart with the support elements of one deck unit abutting against the underside of the deck of the opposite deck unit. Thereby, the two deck units form a double deck pallet which enables support of a load on the pallet while maintaining the spaced apart relationship of the two decks, and mating pairs of support elements have their side portions in contact with one another to prevent lateral shifting of the decks relative to one another during loading, handling, and transit. One form of support element has a cup-like shape with a ridge or protrusion adjacent thereto shaped to surround at least a portion of the end of the respective support element on the opposite deck when the two single deck units are assembled in double deck pallet configuration. This secures and interlocks the two single deck units together to further reduce the possibility of lateral shifting. Fasteners having components integral with one or both of the decks are used to secure the two units together in the vertical double deck pallet configuration. In another embodiment, the two deck units differ from one another, in that only one has projecting support elements, the other having holes in the deck, and ridge pockets arranged to receive the projecting elements of the first. Deck units having a plurality of open U-shaped support elements attached to the underside of the respective deck in runner support configuration can be secured and interlocked together in the double deck pallet assembly by use of individual longitudinal members which are inserted through the aligned U-shaped elements when the decks are in back-to-back configuration. In still another form, the support elements may be aligned on individual runners and the runners alone used in single deck or double deck pallet configuration.

3,696,762
FOLDABLE PLATFORM DEVICE
Bertram Roy Holdham, Eastleigh, England, assignor to Polydesigns Limited
Filed June 24, 1969, Ser. No. 835,967
Int. Cl. A47b 3/00
U.S. Cl. 108—134 17 Claims



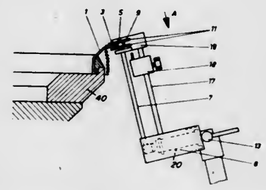
The invention provides a foldable platform device comprising a platform having an end for linear guidance by a guideway between an out-of-use position of the platform and an in-use position of the platform, a guideway for so guiding said platform end, a support member for the platform which support member will extend between the platform and a platform support and will move with the platform between the platform out-of-use and in-use positions, and biasing means operatively connected to the support member for having a controlling influence over movement of the platform between its out-of-use and in-use positions.

3,696,763
STOCK RACK
John D. Evans, Rocky Mount, N.C., assignor to Metals, Inc., Rocky Mount, N.C.
Filed May 4, 1970, Ser. No. 34,456
Int. Cl. A47b 3/06
U.S. Cl. 108—157 10 Claims



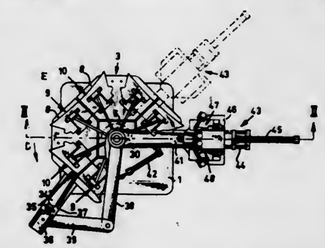
A knock-down stock rack including a pair of upright standards having tubular socket members secured thereto and connected by means of longitudinally extending support members having downwardly extending dowels which are telescopically received in the socket members, the stock rack having a rectangular shelf seated upon the support members for maintaining the posts in rectangular alignment.

3,696,764
APPARATUS FOR THE IMPALING OF WEFT-KNITTED AND WARP-KNITTED GOODS ON NEEDLES
Eberhardt Merkle, Stuttgart-Vaihingen, Germany, assignor to Wilhelm Bleyle KG, Stuttgart, Germany
Filed May 8, 1969, Ser. No. 822,993
Claims priority, application Germany, July 17, 1968, P 17 60 903.9
Int. Cl. D05b 7/00
U.S. Cl. 112—25 6 Claims



Apparatus for the mechanical impaling of weft-knitted and warp-knitted goods on needles of knit-goods machines which includes a pair of rollers having peripheral grooves gripping around the needle heads. The rollers are adapted to act on the goods to be impaled and are arranged so as to have their grooves gripping the needles consecutively with one roller ahead of the other roller in the working direction. The first roller has a groove of less depth than the groove of the second roller to narrowly grip the extremity of each needle. In turn, the second roller has a wider groove than the groove of the first roller adapted to the curvature of the needle and the thickness of the goods. Vibration means are provided to vibrate the rollers in a direction substantially parallel to the longitudinal axis of the needles and the rollers are axially shiftable on their axles.

3,696,765
APPARATUS FOR TRIMMING AND CLIPPING THE EDGES OF TEXTILE FABRIC CUTS
Horst Bernewasser, Steinhagen, Germany, assignor to Kochs Adler AG, Bielefeld, Germany
Filed Aug. 11, 1970, Ser. No. 62,887
Claims priority, application Germany, Aug. 14, 1969, P 19 41 423.4
Int. Cl. D05b 21/00
U.S. Cl. 112—121.12 11 Claims



An apparatus for trimming and clipping the edges of textile fabric cuts, particularly collar cuts of men's shirts after joining together for the purpose of preventing the formation of material accumulation at the points and other places of the collars after these are turned over. The trimming and clipping apparatus, suitable for use in an automatic sewing device having a rotary table, is disposed on a supporting arm pivoted about the axis of the rotary table is fed to the rotary table and taken along by the same within a section of its angle of rotation. After the cutting and clipping operations are completed,

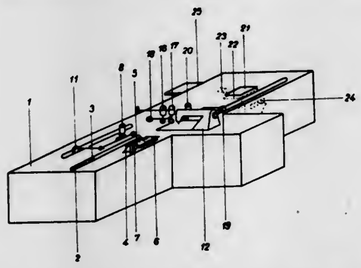
the trimming and clipping apparatus is disconnected from the rotary table and brought automatically into the starting position.

3,696,766

METHOD OF AND APPARATUS FOR FOLDING, SEWING AND CONVEYING SHEET MATERIALS

Gunthard Glasow; Klaus Grosse; Knut Hykel; Werner Schleifer; Eberhard Karste, and Helmut Kliehe, all of Berlin, Germany, assignors to Veb Wtz Fur Bekleidungstechnik, Berlin, Germany

Filed Feb. 24, 1969, Ser. No. 801,346
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 **6 Claims**



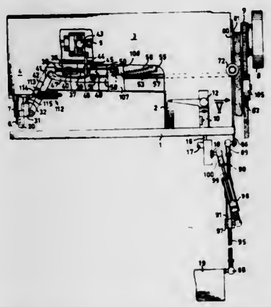
A method of and apparatus for folding and conveying sheet materials. A work support is provided having a work surface. Sheet material blanks are engaged by engaging means and advanced along the work surface while being maintained in a predetermined orientation with respect to a folding device to which they are transported. The folding device folds the sheet materials in a predetermined manner and the folded blank is then advanced again along the work surface to a processing station where it is engaged and moved with respect to a processing device according to a predetermined program while being acted upon by the processing device. Subsequently the thus-produced processed article is engaged and removed from the processing device to be stacked and counted.

3,696,767

INTERSECTING DEVICE FOR SEWING MACHINES

Gunter Landwehr, Sennestadt, Germany, assignor to Kochs Adler AG, Bielefeld, Germany

Filed Oct. 13, 1970, Ser. No. 80,285
Claims priority, application Germany, Oct. 15, 1969, P 19 51 845.7
Int. Cl. D05b *37/04, 27/22*
U.S. Cl. 112—130 **9 Claims**



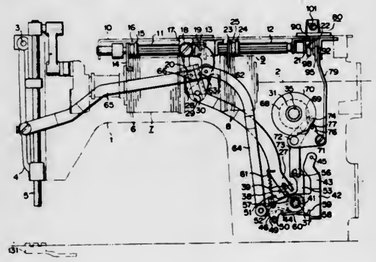
An intersecting device for sewing machines for intersecting the edges of a workpiece at a right angle to the feeding direction and in predetermined intervals during sewing by means of a reciprocating blade. Means are provided for disconnecting the blade during the operation, in the starting position of the sewing machine or for disconnecting the blade during sewing with a reverse feed. The device is provided with a permanently vertically displaceable blade which can be forced into engagement with a counterknife by means of a driven control disk having control paths and determining the cutting intervals.

3,696,768

ORNAMENTAL ZIGZAG STITCH SEWING MACHINE

Masaru Torii, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Dec. 22, 1970, Ser. No. 100,760
Claims priority, application Japan, Dec. 22, 1969, 44/103230
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 R **8 Claims**



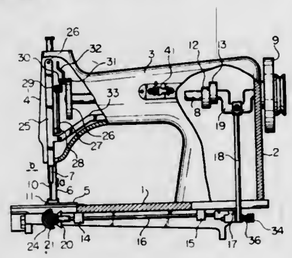
An ornamental zigzag stitch sewing machine comprising zigzag pattern and feed controlling cams which respectively allow a needle to be laterally oscillated and a feed dog to be controlled in the length and direction of feed, the movements of the needle and feed dog being simultaneously adjusted by single manually operable means to produce ornamental zigzag patterns in various sizes similar to that of a base pattern.

3,696,769

BASTING STITCH MECHANISM FOR HOUSEHOLD ZIGZAG SEWING MACHINE

Oshio Sawada, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Dec. 16, 1970, Ser. No. 98,632
Claims priority, application Japan, Dec. 23, 1969, 44/103980
Int. Cl. D05b *3/02*
U.S. Cl. 112—159 **4 Claims**



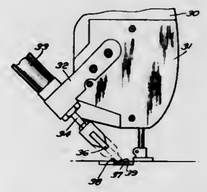
A zigzag sewing machine equipped with mechanism in which an eccentric is utilized in connection with the shuttle driving mechanism to vary cooperation of the shuttle with the needle for selectively preventing the interlocking of the first and second threads respectively carried by the needle and the shuttle, whereby a skip stitch may be obtained to provide a greatly spaced stitches likely to meet the requirement of basting stitches.

3,696,770

THREAD CUTTING ATTACHMENT FOR A SEWING MACHINE

Owen F. Dunne, Tiverton; William E. Hebert, Portsmouth, both of R.I.; Ronald Souza, North Westport, and Edward Wargat, Fall River, both of Mass., assignors to Zalking Sewing Machine & Supply Co., Fall River, Mass.

Filed July 24, 1969, Ser. No. 844,451
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **2 Claims**



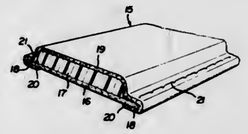
The invention comprises a thread cutter for a sewing machine. The cutter comprises a block of material having a plurality of sides, each side providing a different cutting edge. This permits the cutter to be moved to another edge when the first edge becomes dull. In accordance with the present invention the block of material is mounted in a weighted holder which is in turn mounted at the end of a piston rod slidable in and out of an air cylinder. A backing plate is provided against which the cutter is forced by the air cylinder with a sudden burst of air. The optimum angle at which the particular cutting edge meets the backing plate is an angle of 19°. At this angle the cutter operates virtually without a miss. Experiment has indicated that the cutter will operate at a variance of plus or minus four degrees with reasonable efficiency. The cutter is operated by a conventional type of tripping circuit in which a piece of cloth entering the machine trips a sensing device which causes the cutter to operate in front of and at the rear of the cloth to trim the threads.

3,696,771

DECORATIVE SEAT WELT

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed June 21, 1971, Ser. No. 155,161
Int. Cl. B32b *7/08*
U.S. Cl. 112—417 **2 Claims**



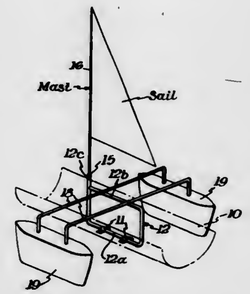
A decorative seat welt for securement to the upholstry fabric covering automobile-type seats, formed of a long, narrow strip of thick, double creped paper upon which is centered a thicker strip of resilient foam plastic material, covered by a cloth-like strip. The side edges of the foam strip are spaced a short distance inwardly from the side edges of the paper strip, and the side edges of the cloth-like strip are bent around the side edges of the paper strip to overlap the edge portions of the rear face thereof. A line of stitches arranged closely adjacent to each of the side edges of the plastic strip secures the edges of the cloth-like and paper strips together. The assembled welt is then stitched to the upholstry cloth covering the seat, for decorative purposes.

3,696,772

BOAT STABILIZER-SAILING RIG

Allen O. Sundelin, 16D Thomas Drive, Monroe Park, Wilmington, Del.

Filed Oct. 6, 1970, Ser. No. 78,405
Int. Cl. B63b *35/00*
U.S. Cl. 114—39 **4 Claims**



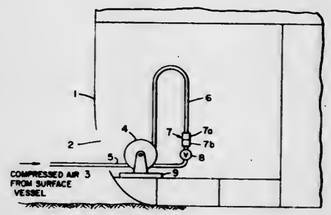
Boat stabilizer-sailing rig wherein the mast is free to move arcuately transverse the boat in fixed relationship with associated outrigger stabilizers as the attitude of the stabilizers changes responsive to the wind action on the sail.

3,696,773

METHOD FOR SALVAGE OF SUNKEN SHIPS

Ross E. Morris, Vallejo, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 23, 1970, Ser. No. 100,945
Int. Cl. B21d *19/00*
U.S. Cl. 114—54 **4 Claims**



A method of raising sunken ships comprising the filling of "lay-flat" plastic tubing having a uniformly, evenly spaced, longitudinally ribbed interior with compressed air while submerged. The plastic tubing is stored on a motor driven reel device, in the flat or collapsed state, and is then unwound within the hull of the sunken ship and simultaneously filled with compressed air.

3,696,774

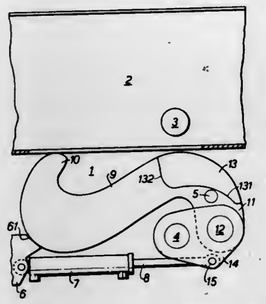
BATTENING SYSTEM FOR HATCH COVERS

Halvor Ostrem, Skarer, Norway, assignor to Kvaerner Brug A/S, Oslo, Norway

Filed Nov. 3, 1970, Ser. No. 86,542
Claims priority, application Norway, Nov. 4, 1969, 4363/69
Int. Cl. B63b *19/14*
U.S. Cl. 114—203 **2 Claims**

An S-shaped hook engages, at one end, a peg on a hatch

cover and, at a distance from that end, is pivotally connected to the hatch coaming and also connected to a power source so



that the hook member is moved to sealingly close the hatch cover to the coaming.

3,696,775

MAGNETIC TAPE RECORDER PARTICULARLY OF THE TAPE CASSETTE TYPE

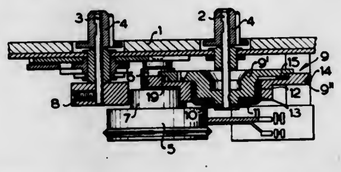
Ernst Markart, Munich, Germany, assignor to Sud-Atlas-Werke G.m.b.H., Munich, Germany

Filed Oct. 26, 1970, Ser. No. 83,817

Claims priority, application Germany, April 21, 1970, P 20 19 050.5

Int. Cl. G08b *3/00*

U.S. Cl. 116—67 A **9 Claims**



A magnetic tape recorder, particularly of the tape cassette type, has support spindles for the tape carrier reels, and these support spindles are provided with driving pulleys which are coupled to a rotary driving element, during forward and reverse movement of the tape, by intermediate driving gear connected with the driving pulleys. A torque responsive clutch is included in at least the intermediate driving gear connected to the support spindle operable to effect forward movement of the tape. The torque responsive clutch includes a driven member fixed to the support spindle and a driving member freely rotatable on the driven member. The driving and driven members are interconnected by a spring wire having one end conformingly fitted in a slot in one member and the other end extending into an annular recess in the other member and bent to engage detent recesses in the other member. When the two members slip over each other, they form an acoustic signal device warning that the tape has been completely unwound from one or the other of the two tape carrier reels.

3,696,776

DIAL ASSEMBLIES

Gerald A. P. Waplington, Colchester, England, assignor to Gamet Products Limited, Hythe, Colchester, England

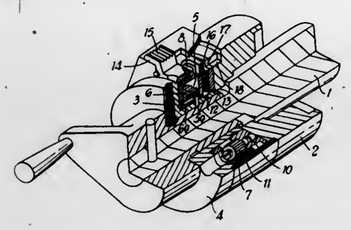
Filed Jan. 19, 1970, Ser. No. 3,918

Claims priority, application Great Britain, Jan. 30, 1969, 5,192/69

Int. Cl. B23q *17/00*

U.S. Cl. 116—115.5 **6 Claims**

A dial assembly for use on a machine tool to enable readings to be taken selectively on the Imperial or Metric scales of measurement, including two gear wheels having the appropriate conversion ratio and a pinion in constant mesh with both gear wheels, a pinion carrier frictionally driven by a shaft



and a clutch, part of which may be moved to prevent rotation of the pinion carrier or to permit such rotation with attendant revealing of the appropriate scale.

3,696,777

MACHINES FOR FORMING WOUND ROLLS OF SHEET MATERIAL

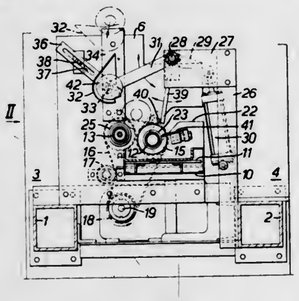
Robert Preen, Clifton, England, assignor to T. H. Dixon & Company Limited, Letchworth, Hertfordshire, England

Filed Aug. 29, 1968, Ser. No. 756,250

Claims priority, application Great Britain, Aug. 29, 1967, 39,467/67

Int. Cl. B05c *1/02*

U.S. Cl. 118—5 **14 Claims**



The invention is concerned with securing the tails or free ends of rolls of sheet material by applying to the outside of each roll at least one annular band of a liquid adhesive and is described in the specification with reference to a preferred form of machine for use with newly wound logs of toilet tissue which are to be cut up into standard size rolls. This machine essentially comprises two sets of rollers, one set of which dip into a tray of liquid adhesive, delivery means for receiving logs one at a time from a winding machine and feeding them into the nip between the sets of rollers and ejector means operative in unison with the delivery means to remove each log from the nip after the rollers have completed more than one revolution in contact therewith.

3,696,778

BREADING MACHINE

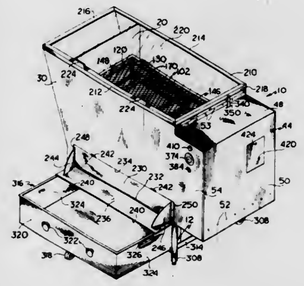
George A. Moore, 843 North Dellrose, Wichita, Kans.

Filed Nov. 17, 1969, Ser. No. 877,299

Int. Cl. A23g *3/26*

U.S. Cl. 118—9 **9 Claims**

A machine for breading pieces of fish, meat, such as cut chicken, and the like, which comprises a perforated container for the pieces mounted for rotation about a horizontal axis in an open-topped housing having a lid, such container means having an access opening normally closed by a latchable cover. A timer controlled power means is provided for rotating the container means, with means also being provided for disabling the power means when the lid is not closed. A hopper feeds breading into the housing, and the power means is coupled to a breading agitator in the hopper. The preferred



container means comprises a rotatable receptacle in which a perforated basket is removably received, with the cover of the receptacle, when latched, retaining the basket in the receptacle. The housing has a closable discharge opening in its front through which breading can be discharged into a drawer that is extensible forwardly from beneath the housing.

3,696,779

VAPOR GROWTH DEVICE

Tsuyoshi Murai, Kokubunji, and Tatsuo Toi, Koganei, both of Japan, assignors to Kokusai Denki Kabuskiki Kaisha, Tokyo-To, Japan

Filed Dec. 21, 1970, Ser. No. 100,115

Claims priority, application Japan, Dec. 29, 1969, 45/1599

Int. Cl. C23c *11/08*

U.S. Cl. 118—48 **6 Claims**

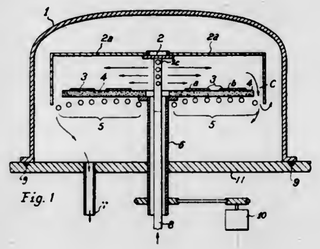


Fig. 1

A vapor growth device for vapor-growing semiconductor crystal films on a plurality of semiconductor crystal wafers arranged on a flat susceptor by injecting a reaction gas of semiconductor compound comprises a metal chamber, a nozzle pipe extending into the chamber and having at the top portion thereof a plurality of holes to inject the reaction gas along directions parallel with the flat suscepter; and a nozzle cover having a flat part and a cylindrical part provided at the edge of the flat part connected to the top of the nozzel pipe at the flat part so that the nozzle cover and the suscepter provide a reaction chamber having a gap between the cylindrical part and the edge of the suscepter, whereby the reaction gas injected in the reaction chamber from the nozzle pipe flows through the gap in the form of a gas curtain and then out an exhaust hole of the metal chamber.

3,696,780

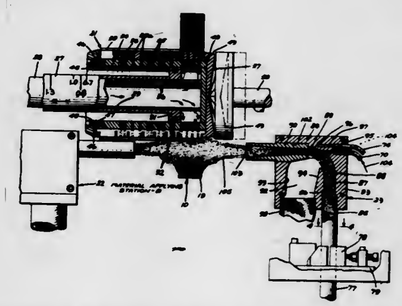
APPARATUS FOR APPLYING POWERED COATING MATERIAL TO AN ARTICLE

Harold L. Fritzsche, Fort Wayne, Ind., assignor to General Electric Company

Continuation-in-part of Ser. No. 802,795, Feb. 27, 1969, abandoned. This application Nov. 25, 1969, Ser. No. 879,664

Int. Cl. B05b *7/14*

U.S. Cl. 118—69 **11 Claims**



Apparatus for selectively masking surfaces of various length stator cores or the like, and applying coating material to other selected surfaces with a fluidic controlled coating nozzle. A circumferential series of ribs on a core support structure sandwich ported pads which pass coolant fluid to the selected core surfaces to prevent coating material buildup on the core. The ported pads are provided with laterally extending grooves at spaced longitudinal locations along their outer surface to restrict conductive heat transfer longitudinally therealong. Insulation between the ribs and pads restrict the conductive transfer of heat from the pads to the ribs. Fluid control signals to the coating nozzle selectively direct coating material through the nozzle to the other core surfaces or return the constantly flowing coating material to the pulverant coating material storage and supply area.

3,696,781

ARRANGEMENT FOR METALLIZING OF PARTS OF A BODY

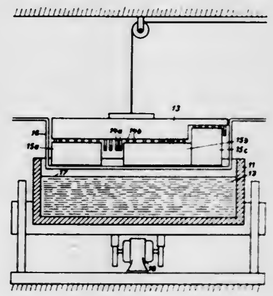
Oskar Wilhelm More, Enskede, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 15, 1971, Ser. No. 106,826

Claims priority, application Sweden, Feb. 5, 1970, 1490/70

Int. Cl. B05c *3/09*

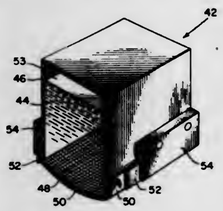
U.S. Cl. 118—425 **2 Claims**



Apparatus for metallizing parts of a body by dipping into molten metal includes a plurality of part vessels or dip tanks

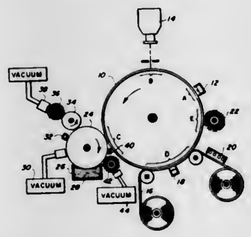
with different heights and widths so chosen in accordance with the parts of the body to be metallized.

3,696,782
ELECTROSTATIC RECORDER
Robert G. McConnell, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 772,306, Oct. 31, 1968, Pat. No. 3,634,867. This application Oct. 22, 1970, Ser. No. 83,255
Int. Cl. B05c *3/00*
U.S. Cl. 118—637 2 Claims



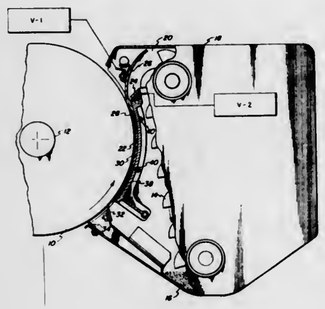
A electrostatic recorder for recording input signals upon a recording medium having a surface coated with a conductive, electrostatically chargeable material is shown including an electrostatic charging device of the corona discharge type for evenly charging the coated surface of the recording medium. The charged surface is exposed to focused electromagnetic radiation which is transversely displaced across the recording medium for discharging the exposed portion thereof in accordance with the input signal to be recorded. The recording medium is then coated with a suspension fluid containing toner particles applied across the full surface thereof by an applicator arranged as a squeegee. The toner particles are attracted to the electrostatic charge gradient formed between the electrostatically charged surface of the recording medium and the discharged portion thereof.

3,696,783
AUTOMATED TOUCHDOWN DEVELOPEMENT SYSTEM
Joseph Fantuzzo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 15, 1970, Ser. No. 98,372
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 10 Claims



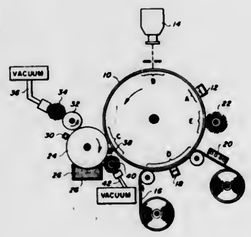
Xerographic apparatus employing a donor member adapted to retain toner on its periphery and a number of processing stations arranged around its periphery. The donor member has a plurality of electrically isolated screen patterns thereon which are in association with programmed means adapted to permit selective independent variation of the electrical potential of one or more of the screen patterns within the range of ground potential to charge potential as the donor member surface is transported past the several processing stations.

3,696,784
XEROGRAPHIC DEVELOPMENT APPARATUS
Marshall Benson, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 15, 1970, Ser. No. 98,374
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 5 Claims



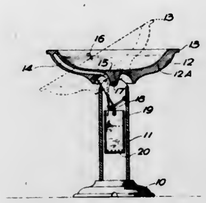
This invention relates to an electroded cascade development system wherein an extended electrically conductive electrode plate is closely spaced from a xerographic surface being developed. The xerographic surface is moved in an uphill direction against the direction flow of the cascading developer. The electrode is completely insulated electrically from its surrounding whereby it is electrically floating with respect to ground and the image bearing surface for improved development of latent electrostatic images developed under its influence.

3,696,785
DEVELOPMENT APPARATUS
Paul G. Andrus, Powell, Ohio, assignor to Xerox Corp., Stamford, Conn.
Filed Dec. 18, 1970, Ser. No. 99,443
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 4 Claims



Xerographic development apparatus employing a donor member adapted to retain toner on its periphery and a number of processing stations arranged around its periphery, including a loading station having means to load toner on the peripheral surface of the donor member, and a toner layer preparation station having means to prepare the toner layer on the donor member prior to presentation of the toner layer to the imaged region of a photoconductor.

3,696,786
SELF-CLEANING BIRD BATH
Moody Ray Garwood, 781 Kiwana Drive, Youngstown, Ohio
Filed April 23, 1971, Ser. No. 136,942
Int. Cl. A01k *15/00, 29/00*
U.S. Cl. 119—1 5 Claims



A self-cleaning bird bath having a vertical support stand, a shallow bowl pivoted to the upper end thereof and incorporating an overflow channel therein and a weighted area. A container is attached to the shallow bowl at a point opposite to the weighted area and in a position to receive water from the overflow channel whereby water entering the overflow channel will be directed into the container so as to over balance the weighted area of the shallow bowl and cause the same to tip and discharge the contents thereof. Drain means in the container acts to empty the same whereby the shallow bowl returns to horizontal,normal position.

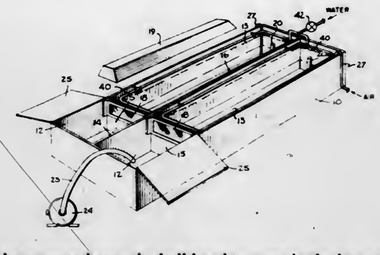
3,696,787
ARTIFICIAL RUMEN STIMULATOR
Cecil D. Cooper, 20161 Glendale Avenue, Lemoore, Calif.
Filed June 24, 1971, Ser. No. 156,404
Int. Cl. A01k *67/00*
U.S. Cl. 119—1 8 Claims



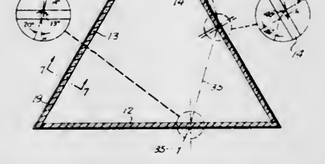
An artificial rumen stimulator for ruminant animals which utilizes a hollow body formed of two telescopically and initially relatively rotatable portions rigidly affixed in adjusted and fluid-tight association, elongated tenacles integral with opposite ends of the body resiliently urged outwardly to radially disposed positions, and a fluid-releasable tube confining the tenacles in folded positions extended longitudinally along the body with the tenacles of the opposite ends of the body being in interlaced relation.

3,696,788
METHOD AND APPARATUS FOR HATCHING CRUSTACEA
John J. Day, and Paul S. Hirschman, both of Fort Lauderdale, Fla., assignors to Ocean Protein Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 887,814, Dec. 24, 1969. This application Dec. 8, 1970, Ser. No. 96,138
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 15 Claims

A tank apparatus and method for providing advantageous environment for the hatching and early development of crustacean larvae. A plurality of hatching chambers, each having an adjacent larval chamber, with a low bulkhead separating the larval chamber from the hatching chamber. Light sources near the larval chambers cause the larvae to migrate to the latter chambers when the water level is above the bulkhead and the screening is removed. A removable screen mesh can be mounted atop the bulkhead to contain the larvae in the larval chamber. A spray arrangement is also provided to wash down the walls forming the larval chamber portion of the hatching tank to prevent larvae from jumping out and air is supplied to the hatching tank.



3,696,789
AQUARIUM WITH IMPROVED OPTICAL QUALITIES
Eugene D. Richard, 3664 Greinwich Boulevard, Lake Charles, La.
Filed Feb. 26, 1971, Ser. No. 119,267
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 11 Claims

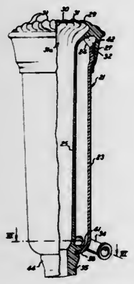


An aquarium of transparent material and of prismatic shape, provided with a vertical elongated lamp or lamps adjacent a rear corner, with an opaque shield between the lamps and the corner. Light rays from the lamps enter the aquarium through its walls and are refracted and dispersed, leaving the front wall in dispersed spectral form, thereby providing unusual prismatic rainbow effects. Because of the angular relationship between the walls, internal reflection effects are also provided, multiplying the images of the objects in the aquarium.

3,696,790
TEAT CUP ASSEMBLY
Penrose Lucas Albright, McLean, Va., assignor to Zero Manufacturing Company, Washington, Mo.
Filed Jan. 8, 1970, Ser. No. 1,457
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.47 17 Claims

A flexible liner known as an inflation for a teat cup of a milking machine wherein the opening for receiving the cow's teat has radially extending corrugations about its edge so as to be expansible, such capacity to expand being augmented by a distensible knuckle spaced from and substantially parallel to the edge of the opening. In a preferred embodiment, the corrugations have a spiral configuration so as to form means

spaced from the opening for distending as the opening is expanded. The spiral corrugations serve a purpose of causing washing and/or rinsing fluid to swirl as it passes through the inflation whereby a more effective cleaning results. The shell for the inflation includes means at the upper edge for swirling the washing and/or rinsing fluid and also for centering the inflation during the washing operation. The conduit for admitting



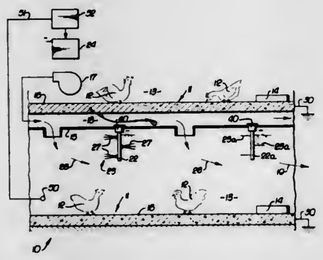
air pulsations in the milking operation and washing fluid in the washing operation joins the shell at a tangent so as to direct washing and/or rinsing fluid into a helical swirling path in the annular space between the inflation and the shell. Optionally the shell may be convoluted to guide the fluid in a helical through the annular space and, further, to provide additional strength to the shell.

3,696,791

POULTRY GROWTH ENHANCEMENT METHOD AND APPARATUS

Donald G. Saurenman, Whittier, and Harold W. Smith, San Marino, both of Calif., assignors to Consan Pacific Incorporated, Whittier, Calif.

Filed April 12, 1971, Ser. No. 133,076
Int. Cl. A01k *31/00*
U.S. Cl. 119—21 **14 Claims**



A method of benefitting animals in a zone which characteristically contains air-borne particles includes:

a. confining the animals in the zone, and
b. dispensing ions into the zone with ion density and polarity to induce collection of the air-borne particles on collection surfaces in the zone.

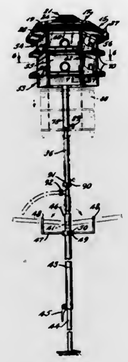
3,696,792

PURPLE MARTIN BIRD HOUSE

Robert Bruhns, 72 South Lake Drive, Leesburg, Fla.

Filed June 21, 1971, Ser. No. 154,972
Int. Cl. A01k *31/00*
U.S. Cl. 119—23 **8 Claims**

Apparatus for accommodating a plurality of nests for purple martins in which the apparatus includes a hollow exterior shell fixed to a post and selectively cooperating core telescopically mounted on the post for movement into and out of the shell to



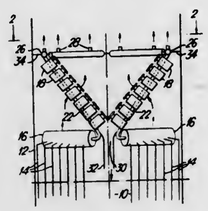
facilitate ease of cleaning as well as apparatus which can be shipped in multiple independent parts and quickly assembled as an integral unit.

3,696,793

STEAM BOILERS

Alan Bell, London, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Sept. 23, 1970, Ser. No. 74,761
Claims priority, application Great Britain, Aug. 6, 1969, 39,468/69
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **7 Claims**



This invention relates to steam boilers fired by fluidized bed burners. A small proportion of bed particles are entrained by the fluidizing gases and so these must be removed by separators so as to ensure that these particles do not form deposits on downstream parts of the boiler. According to the invention a number of centrifugal separators are provided above the bed in the path of the fluidizing gas, those separators being supported and cooled by steam- or water-carrying tubes. Because effective cooling of the separators can be achieved, this arrangement has the advantage that they can be positioned closely above the bed.

3,696,794

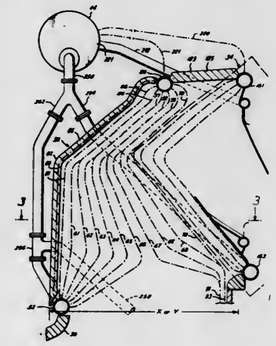
STEAM GENERATING APPARATUS

Michael I. Kearns, 2207 Southern National Bank Building, Houston, Tex.

Filed Feb. 4, 1971, Ser. No. 112,622
Int. Cl. F22b *21/14*
U.S. Cl. 122—235 R **4 Claims**

Knockdown, prefabricated, steam generating apparatus includes a convection unit or boiler, one or more radiation units forming a furnace, and an unfired pressure vessel serving as a steam drum. The boiler includes upper and lower headers connected by front and rear banks of dog leg tubes forming a unit

of rectangular section adapted for transportation with such section coinciding with the right of way cross section, the boiler height lying diagonally therein, and the width of the boiler extending along the length of the right of way. The furnace includes an upper header from which extends a bank of tubes overlying the upper part of the front of the boiler, the tubes fanning out to greater spacing below the front of the boiler to form a slag screen, the bank then dividing into a front portion connecting to a front lower header and a rear portion



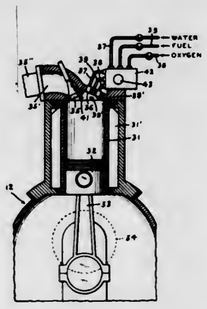
connecting to a rear lower header. The furnace is divided into a plurality of side by side units, each adapted for transportation with its height lying along the length of the right of way. A bank of return bend tubes located interiorly of the boiler between the front and rear banks of dog leg tubes forms a preheater having a lower manifold connected to a feed water pump and an upper manifold discharging to the steam drum. Downcomers connect the steam drum to the lower headers of the furnace and boiler and risers connect the upper headers of the furnace and boiler to the steam drum.

3,696,795

AIR POLLUTION-FREE INTERNAL COMBUSTION ENGINE AND METHOD FOR OPERATING SAME

Richard D. Smith, Palo Alto, and Dale A. Furlong, Sunnyvale, both of Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 59,571, July 30, 1970, which is a continuation-in-part of Ser. No. 796,089, Feb. 3, 1969, Pat. No. 3,608,660, and a continuation-in-part of Ser. No. 820,941, May 1, 1969, Pat. No. 3,608,529. This application Jan. 11, 1971, Ser. No. 105,172
Int. Cl. F02b *75/12*; **F02d** *19/00, 47/00*
U.S. Cl. 123—1 A **7 Claims**



An air pollution-free internal combustion engine and method for operating such engine are provided in which the engine has at least one cylinder, an exhaust port and exhaust valve, fuel, oxygen gas and water spray injectors, a piston in the cylinder, means for cyclically opening and closing the exhaust valve, a fuel storage and supply system for feeding hydrogen gas or a liquid hydrocarbon to the fuel injector, an oxygen storage and supply system for feeding substantially pure oxygen to the oxygen gas injector, means for igniting the injected mixture of fuel and oxygen, and a water recovery system for recovering water from the exhaust discharged from the cylinder and for recycling the recovered water to the water spray injector.

In a typical engine cycle, the exhaust valve is closed prior to completion of the exhaust stroke to entrain some exhaust gas in the cylinder as a working fluid. Oxygen is then injected into the cylinder after the exhaust valve closes and before the piston reaches top dead center on the exhaust stroke, and while relatively low pressures exist in the cylinder. Fuel is next progressively injected under pressure into the oxygen contained in the cylinder so that that fuel burns progressively as it is injected to preclude knocking problems. After combustion is substantially completed, the exhaust valve opens just before the piston reaches bottom dead center on the power stroke whereupon water is injected into the cylinder to cool the cylinder walls, piston, dome, combustion chamber wall and exhaust gas. A portion of the exhaust gas is then discharged from the cylinder through the exhaust port on the exhaust stroke.

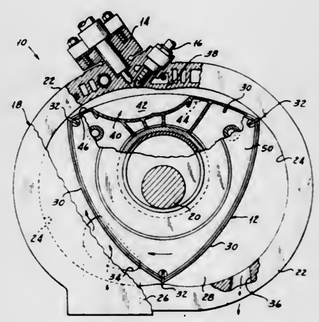
Provision is made for operating the engine either in an air-pollution free mode using pure oxygen as the oxidant or a conventional mode using air as the oxidant.

3,696,796

FUEL COMBUSTION IN A ROTARY PISTON INTERNAL COMBUSTION ENGINE

Michael T. Gavrun, Bayonne, N.J., assignor to Curtiss-Wright Corporation

Filed Feb. 26, 1971, Ser. No. 119,132
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.01 **10 Claims**

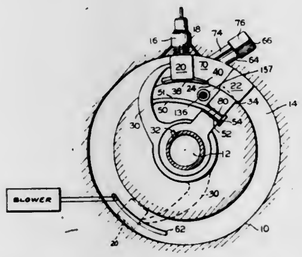


In a rotary piston internal combustion engine, a rotor having in each peripheral surface thereof a recess or pocket comprising a relatively large and deep depression and at least one relatively narrow and shallow channel communicating with and extending from the deep depression in the direction of rotor rotation. The channel defining, in the "waist" area of the engine housing, a "shooting" passageway which propels gaseous fluid in the working chamber at high velocity into the expansion working chamber for additional fuel combustion therein. The relatively large and deep recess provides, as the rotor rotates, high turbulence, residence time and volumetric space for mixing and flame propagation from the point of ignition.

3,696,797
TRAVELING CHAMBER INTERNAL COMBUSTION ENGINE

Warren W. Kessler, 25 West Oneida Street, Oswego, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,920
Int. Cl. F02b 53/00
U.S. Cl. 123—8.09 5 Claims

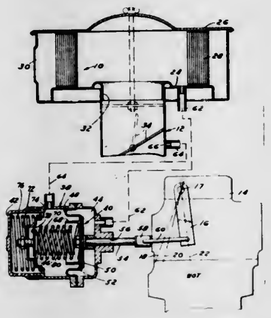


A rotary chamber for an internal combustion engine in which the chamber is defined as formed between two variously rotating members essentially by pivotally disposed arms between fixed walls for forming a rotating or traveling chamber in which the compressing of air into atomized fuel is injected for combustion initiated by spark discharge, and in which the combustion propels one of the pivotal arms about its support shaft, while the other arm is temporarily fixedly held in place, and in which the cycling of the operation of the internal combustion engine is accomplished electronically.

3,696,798
COMBUSTION PROCESS FOR ENGINE OF SPARK IGNITION, FUEL INJECTION TYPE

Irving N. Bishop, Farmington; Richard G. Mosher, Dearborn, and Aladar O. Simko, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1969, Ser. No. 876,717
Int. Cl. F02b 3/00, 75/00, 33/00
U.S. Cl. 123—32 ST 4 Claims

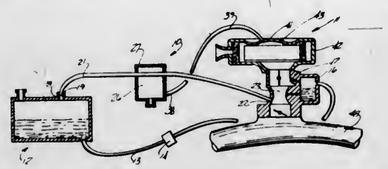


Process minimizes the production of undesirable elements in the engine exhaust by operating the engine with an overall rich mixture air/fuel ratio combustion without air throttling at full load operation, and a progressive fuel supply cutback as the load decreases without air throttling until a desired air-fuel ratio leanness is reached, at which point air throttling is introduced to maintain the air/fuel ratio constant regardless of further decrease in load.

3,696,799
GAS VAPOR DEVICE

Herbert M. Gauck, 2206 North 51st Street, Omaha, Nebr.

Filed Dec. 4, 1970, Ser. No. 95,137
Int. Cl. F02m 59/00
U.S. Cl. 123—136 3 Claims

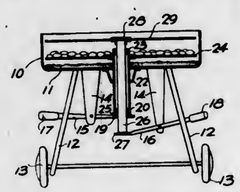


A gas vapor device for an internal combustion engine, the device having: a tube fluidly connecting the gas tank vent pipe to the carburetor and having a hole formed therein intermediate its ends; a canister disposed over the hole and sealed at the points where the tube enters and leaves the canister; and a hose fluidly connecting the canister to the air cleaner of the engine; wherein the combination provides for the direct utilization of gas vapors otherwise lost to the air.

3,696,800
BARBECUE GRILL

Arthur L. Close Jr., 4859 Oak Knoll Drive, Youngstown, Ohio

Filed Aug. 21, 1970, Ser. No. 65,846
Int. Cl. A47j 37/00; F24b 3/00
U.S. Cl. 126—25 A 4 Claims

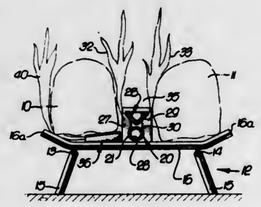


A barbecue grill having a bowl with a relatively flat bottom is provided with a pair of superimposed vertically movable grates normally positioned in spaced relation and above the bottom of the bowl. Telescopically arranged members support the grates and individual operating arms are arranged to impart movement to the telescopically arranged members so as to move the grates relative to one another and to the bowl.

3,696,801
LOG LIGHTER

Jack D. Whitehead, San Marino, Calif., assignor to International Products Inc., Pasadena, Calif.

Filed Dec. 14, 1970, Ser. No. 97,735
Int. Cl. F24b 1/18
U.S. Cl. 126—92 R 15 Claims



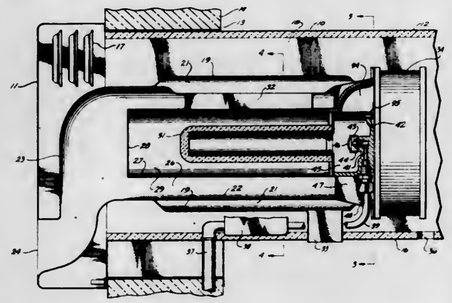
A log lighter includes support structure for transversely extending front and rear logs (which may function as log rests),

together with a transversely elongated gas burner carried by the support structure; flame chute structure extending generally frontwardly of the burner; and the burner having ports located in such combustible gas release relation to the chute structure as to produce full flame projection channeled for forward flow under the front log and to rise at the front of that log, as well as additional flame rising upwardly between the front and rear logs. Other flame chute structure may also produce flame projection below the rearlog to rise at the rear of that log, and a flame deflector may extend lengthwise over the burner and in predetermined relation to the chute structure.

3,696,802
GAS HEATER

Walter D. Teague, Jr., Nyack, N.Y., assignor to Southern California Gas Co., Los Angeles, Calif.

Filed Aug. 20, 1970, Ser. No. 65,374
Int. Cl. F24h 3/02
U.S. Cl. 126—110 B 11 Claims

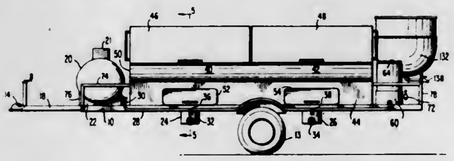


A gas fired space heater is described having a central combustion chamber containing a radiant burner. Combustion products pass upwardly from the combustion chamber to a concentric exhaust conduit within which they divide and pass through semi-cylindrical halves to a lower exhaust port to the exterior of the heater. Recirculation air from a space to be heated is drawn into the front of the heater through a fan at the back thereof. The recirculation air on the suction side of the fan passes through a recirculation conduit concentric with the exhaust conduit for preheating the air. On the pressure side of the fan the air passes through a heated air conduit concentric with and between the combustion chamber and the exhaust conduit for further heating before being discharged back into the space heated. An unusually short radiant burner is provided in the combustion chamber by arranging a concave deflector in front of a fuel gas orifice.

3,696,803
MOBILE KITCHEN

Alta Holloway, Jr., P.O. Box 488, Des Arc, Ark.

Filed July 7, 1971, Ser. No. 160,470
Int. Cl. F24b 3/00; F24c 1/16
U.S. Cl. 126—276 11 Claims

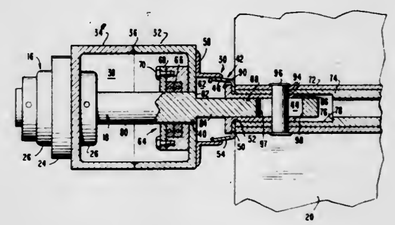


"Chuck Wagon" type apparatus including a pair of generally cylindrical barbecue type grills which may also be utilized as ovens is located on one side of a trailer. Deep fry apparatus is located on the other side and means located at the rear of the trailer is included for making and dispensing hot and cold beverages.

3,696,804
DAMPER WITH DOUBLE FLOATING SIDE RAILS

Candelario Paredes, Dallas, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed Feb. 24, 1971, Ser. No. 118,261
Int. Cl. F23l 13/00
U.S. Cl. 126—285 R 4 Claims

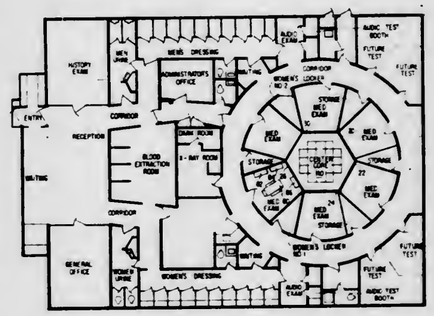


A damper unit is provided for regulating the flow of hot gases through a duct opening under high ambient temperature conditions. The damper blades are provided with a dual floating side rail arrangement to allow for lateral growth in opposite direction of the damper blades due to thermal expansion.

3,696,805
CARROUSEL MULTIPHASIC SCREENING LABORATORY

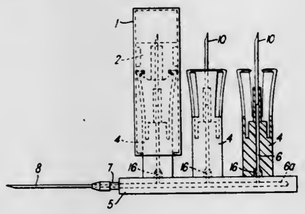
Orlin L. Sweeten, Mesa, and John C. Abromavage, Tempe, both of Ariz., assignors to Advanced Management Engineering & Research Co., Phoenix, Ariz.

Filed Jan. 21, 1971, Ser. No. 108,388
Int. Cl. A61b 5/00
U.S. Cl. 128—2 R 5 Claims



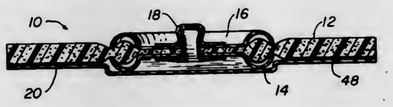
Medical examining laboratories, particularly an annulus defining a plurality of private medical examining rooms surrounding an inner core and a plurality of medical instruments mounted upon a carrousel rotating within said core, so as to deliver said instruments within said individual medical examining rooms.

3,696,806
APPARATUS FOR TAKING SAMPLES OF LIQUID
Andre Sausse, Sceaux, France, assignor to Rhone-Poulenc S. A., Paris, France
Filed Oct. 10, 1969, Ser. No. 865,399
Claims priority, application France, Oct. 10, 1968, 68169501
Int. Cl. A61b 5/14; A61m 1/00
U.S. Cl. 128—2 F 6 Claims



Suction apparatus for taking samples of liquid such as blood. A receiving tube is provided with an axially slidable piston including a perforable resilient partition, and a support rod, carrying a hollow needle connected to a suction tube, is insertable into the open end of the receiving tube, so that the needle when the support is inserted in the open end perforates the partition and places the space beyond the piston in communication with the suction tube. Interengagement of the support and piston prevents the piston moving relative to the support, when the support is moved relative to the receiving tube. More than one rod may be provided on a common suction duct.

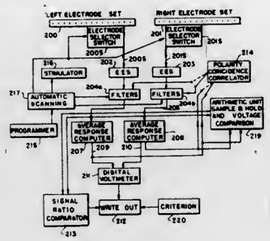
3,696,807
MEDICAL ELECTRODE WITH RELATIVELY RIGID ELECTROLYTE CUP
Roman Szpur, Dayton, Ohio, assignor to MDM Corporation, Dayton, Ohio
Filed Feb. 13, 1970, Ser. No. 11,208
Int. Cl. A61b 5/04
U.S. Cl. 128—2.1 E 17 Claims



An electrode for attachment to the skin is made from an adhesively coated, elastic sheet sandwiched between a non-conducting, low profile cup member and a clamp plate fixed in assembled relation by a conductive snap fastener member extending therethrough. Both the cup member and the clamp plate are in the form of cavity washers, the confronting margins of which squeeze the sheet. In use, the cup member cooperates with the skin to form an enclosed cavity for an electrolyte. When pressed against the skin, the elastic sheet resiliently urges the cup member against the skin.

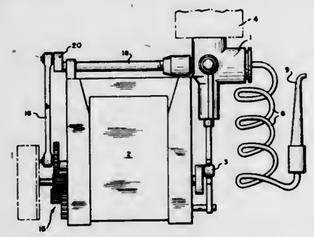
3,696,808
METHOD AND SYSTEM FOR BRAIN WAVE ANALYSIS
John E. Roy, 3135 Netherland Avenue, Riverdale, N.Y., and Robert Laupheimer, 68 Wilson Avenue, Westbury, N.Y.
Continuation-in-part of Ser. No. 748,330, July 29, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,050
Int. Cl. A61b 5/04
U.S. Cl. 128—2.1 B 21 Claims

A plurality of pairs of electrical contacts are applied to the head, the pairs being applied simultaneously or in sequence. Each pair of contacts is in bilateral symmetry. The brain waves from each pair of contacts are amplified and compared to provide a correlation coefficient between the signals. Preferably



the correlation is obtained by an electric automatic polarity coincidence correlator. The correlation coefficient may be utilized as an aid in the diagnosis of certain types of brain injury.

3,696,809
METHOD AND APPARATUS FOR ORAL HYGIENE
Michel A. Moret, Geneva, Switzerland, assignor to Institut De Recherche Et De Diffusion Industrielle P.G.E. Wood, Geneva, Switzerland
Filed Aug. 12, 1969, Ser. No. 849,464
Claims priority, application Switzerland, Aug. 16, 1968, 12400/68
Int. Cl. A61h 9/00
U.S. Cl. 128—66 11 Claims

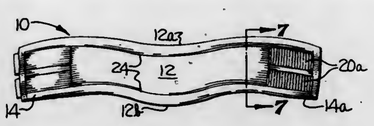


A method and apparatus for cleaning the teeth and massaging the gums are described in which a pulsating jet of liquid is pressure modulated, the modulation frequency being substantially lower than the frequency of the pulsations, and the modulated pulsating jet is directed against the surfaces to be treated. The pulsation frequency may be in the range of 600–6000 pulses per minute, and advantageously above about 3000, to clean the teeth effectively. The modulation frequency may be in the range of 70–600 cycles per minute, and advantageously less than about 300, to massage the gums effectively.

3,696,810
CERVICAL COLLAR HAVING MEANS FOR PROVIDING A PLURALITY OF DIFFERENT ANGULAR POSITIONS
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
Filed Oct. 24, 1969, Ser. No. 869,061
Int. Cl. A61h 1/02
U.S. Cl. 128—75 8 Claims

A cervical collar for immobilizing a wearer's head while supporting the head and neck in a predetermined angular position such as the neutral position of the cervical vertebrae. The collar comprises a central core of a substantially stiff, porous, resilient foam material with a porous fabric outer

covering. A pair of Velcro fasteners are secured at the ends of the collar to retain the collar in a circular arrangement about the wearer's neck. The Velcro fasteners cover a substantial

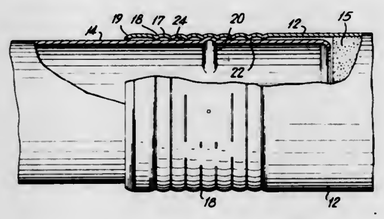


area on the ends of the collar to permit the ends to be engaged in a variety of angular relationships whereby the angular position in which the wearer's head and neck are supported may be varied.

3,696,811
PERIODONTAL BANDAGE AND BACKING THEREFOR
James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 833,140, June 13, 1969, abandoned. This application June 17, 1971, Ser. No. 154,147
Int. Cl. A61l 15/00; A61m 7/00
U.S. Cl. 128—156 8 Claims

A hard but pliable backing for a periodontal bandage is formed from a composition comprising by weight from about 40–50 percent beeswax, from 25–30 percent terpene resin, and from 20–25 percent filler.

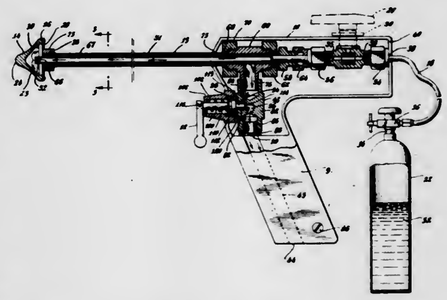
3,696,812
TAMPON APPLICATOR
Willard R. Jaycox, Longmeadow, Mass., assignor to Tampax Incorporated, New York, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,443
Int. Cl. A61f 15/00
U.S. Cl. 128—263 12 Claims



A tampon applicator made with telescoping tubes, the outer tube having a series of rings convex in longitudinal section which meet, forming internal annular ridges, the inner diameter of which is slightly less than that of the undeformed portion of the same tube. The radius of the inner tube is substantially that of the annular ridges to give frictional engagement, and said inner tube has a nib of a height to snap into locking engagement with the concave valleys between said ridges. The rings in the outer tube form an enhanced finer-grip pattern in the rearward end.

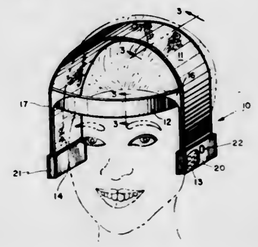
3,696,813
CRYOSURGICAL INSTRUMENT
Ronald M. Wallach, Norwalk, Conn., assignor to Cryomedics, Inc., Bridgeport, Conn.
Filed Oct. 6, 1971, Ser. No. 189,469
Int. Cl. A61b 17/36
U.S. Cl. 128—303.1 12 Claims

An improved method for cooling a probe tip of a cryosurgical instrument is provided by supplying a two phase refrigerant comprising a gaseous phase and a liquid phase to a restricted orifice adjacent an expansion chamber of the instrument, conveying the refrigerant through said orifice into said expansion chamber for expanding the gaseous phase into the chamber thereby providing a Joule-Thomson refrigeration effect and for providing additional cooling of the chamber by the evaporation of the liquid phase therein, and, conveying an effluent gas of the expansion chamber to atmosphere. A cryosurgical instrument comprises an expansion chamber formed of a high thermal conductivity material having an outer surface thereof which is adapted for contacting body tissue which



is to be treated, a means for conveying a gaseous refrigerant from a source thereof to said expansion chamber, said means including a stationary body forming an orifice of fixed dimensions through which said gas expands into said chamber for cooling said chamber, and, a means for exhausting said gas to atmosphere, said exhaust means including a flow channel communicating between said chamber and a quick acting flow valve, said valve biased for interrupting a flow path through the valve between said exhaust conduit and atmosphere and selectively operable to establish the flow path through the valve.

3,696,814
COOLING HEAD GEAR
Samuel Junji Umemoto, 1506 West Vernon Avenue, Los Angeles, Calif.
Filed June 14, 1971, Ser. No. 152,509
Int. Cl. A61n
U.S. Cl. 128—380 4 Claims



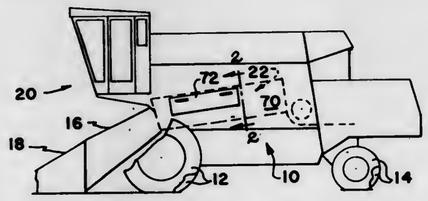
A head gear for supplying water to evaporatively cool the forehead and upper head of the wearer. The head gear includes a main band which extends over the top of the head from ear to ear and a forehead band which extends over the forehead and is stitched at each end to the main band at about the temple areas of the head. A pair of water-tight containers is secured at the ends of the main band near the ears. The bands are of absorbent material and the main band extends inside the containers and is immersed in water. An elastic band is joined to the main band to extend over the back of the wearer's head, firmly supporting the head gear in place. Water

is supplied continually to the band upon the wearer's forehead and upper head by the hygroscopic action of the absorbent material and the evaporation of the moisture in those areas creates a cooling effect.

3,696,815
DETACHABLE SIDE PLATE FOR A THRESHING AND SEPARATING UNIT OF AN AXIAL FLOW COMBINE

Edward W. Rowland-Hill, Lancaster, and Edwin O. Margerum, Paradise, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 55,299, July 6, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 209,721
Int. Cl. A01f *12/26*
U.S. Cl. 130—27 J **14 Claims**

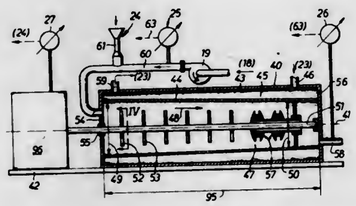


A longitudinally extending cylindrical casing of an axial flow threshing and separating unit of a combine has an outer side plate member extending circumferentially upwardly from the bottom concave portion of the casing. The side plate member is pivotally and detachably attached to the concave and is adapted to move with the concave as the concave is adjusted. The side plate is positioned along the concave to retain the removable rods of the concave. The detachment of the side plate provides ample access to the rotor disposed within the casing and to the concave. Different types of side plates may be mounted in the concave to vary the threshing and separating characteristics of the combine for different type s of crops.

3,696,816
A STIRRER-CRUSHER MILL FOR THE CONTINUOUS MANUFACTURE OF A TOBACCO MASH

Paul Buchmann, Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Tamag Basel A.G., Basel, Switzerland

Division of Ser. No. 846,038, July 30, 1969, Pat. No. 3,605,757. This application Sept. 14, 1970, Ser. No. 72,155
Int. Cl. A24b *13/00, 03/14*
U.S. Cl. 131—133 R **11 Claims**

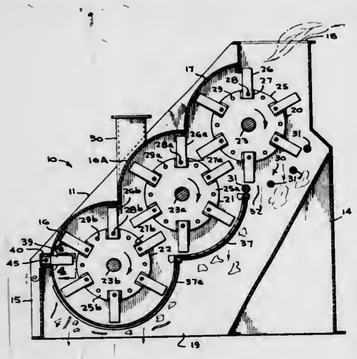


An apparatus is disclosed for the manufacture of reconstituted tabacco from a mash of reduced (pulverized) basic tobacco consituents. In the apparatus, the reduced tobacco is flotated using a liquid and the resultant slurry is forced through a glass grain body which is stirred at the same time. This homogenizes the slurry to form a mash. The glass grains are worn during the process. The detritus is discharged from the glass grain body along with glass grains which have been worn down to an unusable size, in the tobacco mash. New glass grains are used to replenish the glass grain body continuously and thus make good the loss to the glass grain body caused by wear and removal of the unusable glass grains. The apparatus for effecting the tobacco reduction comprises a mill into which the tobacco and the grinding grains are fed. Mixing is effected by a stirrer mechanism and the grinding grains are fed to the mill from a dispenser which is controlled in accordance with the power output of the stirrer drive unit and/or the viscosity of the tobacco mash.

3,696,817
TOBACCO THRESHING MACHINE

Charles W. Bonner, Jr., and Curtis T. Houck, both of Richmond, Va., assignors to The Cardwell Machine Company, Richmond, Va.

Filed June 4, 1971, Ser. No. 149,932
Int. Cl. A24b *05/10*
U.S. Cl. 131—145 **9 Claims**

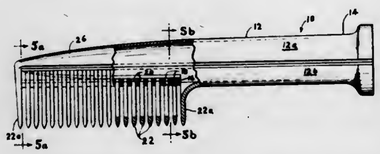


A tobacco threshing machine comprising a casing having a top charging opening and three vertically spaced threshing rotor assemblies having radially projecting knives coacting with cage structures adjacent the knife paths. The top rotor is axially shorter than the other two rotors and the intermediate rotor has no knives in the rotor portion extending beyond the end of the top rotor. A second charging opening is provided over the portion of the bottom rotor extending beyond the top rotor.

3,696,818
HAIR-DRYING COMB

Robert L. Weber, New Canaan, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed April 1, 1971, Ser. No. 130,112
Int. Cl. A45d *20/00*
U.S. Cl. 132—9 **3 Claims**

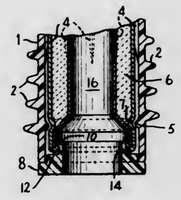


A hair-drying comb having open teeth is supplied with heated air which flows into the comb housing and through slots aligned with the openings in the teeth. Drying air is thereby directed laterally into the hair held between the teeth.

3,696,819
HEAT STORING HAIR ROLLER

Erik Kjaer Jensen, Kalundborg, Denmark, assignor to Bristol-Myers Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,539
Claims priority, application Denmark, March 3, 1970, 1053/70
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 R **11 Claims**

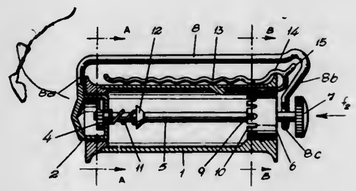


A heat storing hair roller is provided having an outer plastic casing and an inner heat storage body filled with a heat storage material. Means, such as a plurality of radially directed protrusions, are provided between the plastic casing and the inner body in order to impart a radial stress on the plastic casing. This radial stress compensates for the greater thermal expansion rate of the plastic casing as compared to the inner heat storage body and maintains good thermal contact between the casing and the storage body despite the difference in thermal expansion rate.

3,696,820
NEW HAIR-CURLING DEVICE

Eusebio Rodriquez Lara, avenida de Mayo 953, 4th floor, Buenos Aires, Argentina

Filed Feb. 19, 1971, Ser. No. 116,859
Int. Cl. A45d *12/00*
U.S. Cl. 132—40 **2 Claims**

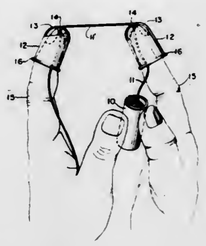


A hair curling device, which consists of a tubular body with a cylinder hollow head mounted rotatably in one end of the body. A cap rotatably mounted in the opposite end of the tubular body. A central rod, which extends axially within the tubular body and has one end rotatably and slidably mounted within the hollow head and another end rotatably and slidably mounted within the cap. A sprocket wheel is mounted upon one end of the central rod and located within the hollow head. A pawl is carried by the hollow head and is adapted to engage the sprocket wheel. A substantially U-shaped rigid member having a central portion extending outside of the tubular body parallel to the central rod is also provided. A U-shaped elastic lamellar clip having a portion removably clamped to the tubular body and another portion extending elastically and longitudinally along an outer surface of the tubular body is also included to hold the hair in place. The parts are interconnected with one another in operative relationship to curl hair.

3,696,821
DEVICE FACILITATING USE OF DENTAL FLOSS

John Q. Adams, IV, 1206 Foxcroft Road, Richmond, Va.

Filed Oct. 14, 1971, Ser. No. 189,082
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **8 Claims**

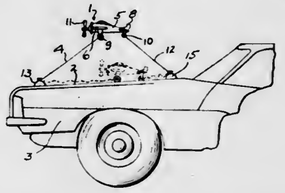


A pair of caps or thimbles engage over two fingers of the user and the closed ends of the thimbles are apertured to allow feeding of the dental floss from a supply container as required to clean the teeth. The thimbles frictionally clamp the dental floss to the fingers so that the floss may be properly tensioned for use without the inconvenience and frequent discomfort which arises when the dental floss must be wound around the finger tips. The device is efficient and economical.

3,696,822
FLYING TOY

Nute Mace, 87 Allen Street, Sylva, N.C.

Filed Dec. 23, 1971, Ser. No. 211,353
Int. Cl. A63h *27/04*
U.S. Cl. 46—77 **9 Claims**

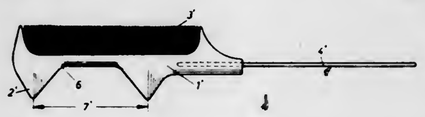


A flying toy, such as an airplane, adapted to be secured to a surface of a vehicle by a tether in such a way that the stream of air caused by the motion of the vehicle will cause the toy to soar in the air over the surface, limited by the tether, the tether being attached to the vehicle by removable means.

3,696,823
HAIR COMB

Heinz Dannat, Stritholzstr. 3 B, 8036 Herrsching, Germany

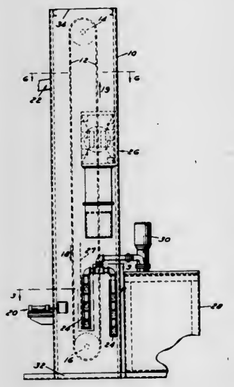
Filed March 16, 1970, Ser. No. 19,613
Claims priority, application Germany, March 12, 1969, G 69 09 802; July 18, 1969, G 69 28 514
Int. Cl. A45d *24/10*
U.S. Cl. 132—122 **2 Claims**



A generally comblike hand-operated instrument for parting of uniform, smooth sections of hair during hairdressing work.

especially in the styling of live hair on the head. The instrument has two spaced transversely projecting fingers which serve to separate a section of hair from the rest of the hair, and a longitudinally extending tail for manipulation of the separated section of hair.

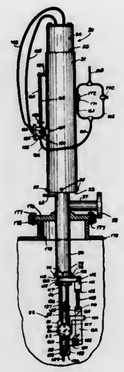
3,696,824
PARTS WASHER
Homer G. Whitfield, Northville, Mich., assignor to Condeco Automation, Inc.
Filed Feb. 13, 1969, Ser. No. 798,927
Int. Cl. B08b 3/02
U.S. Cl. 134—62 **5 Claims**



A washing drying device suitable for washing parts that have internally recessed portions such as pistons. The invention is suitable for use in a manufacturing line where parts are received from one processing operation, washed thoroughly by the present invention and delivered to a subsequent processing operation. The present invention utilizes a substantially vertical conveyor thus minimizing the necessary floor space and providing for the elevating of the parts between operations necessary in many manufacturing sequences. This is accomplished by providing the entrance near the lower portion of the washer and the exit near the upper portion of the washer.

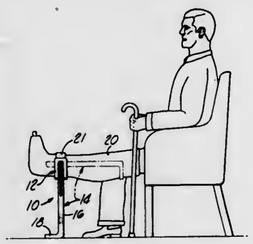
3,696,825
TANK WASHER
John E. Guignon; Helen G. Guignon, both of 12 Clipper Road, St. Louis, Mo., and John E. Guignon, Jr., 5653 Sanger, Apt. 22, Alexandria, Va.
Filed May 19, 1969, Ser. No. 825,748
Int. Cl. B08b 9/08
U.S. Cl. 134—167 R **18 Claims**

An automatically operable tank washer. A power head drives a screw through a fixed nut to rotate a nozzle assembly while moving the nozzle assembly lineally. A linkage causes the nozzle on the nozzle assembly to swivel during lineal movement of the nozzle assembly. The power head includes a piston-operated reversible rotary motor that is controlled by the supply of air to a four-way automatic reversing valve with spring-loaded mechanical switches. An automatic throttle valve to vary the speed of the motor in response to the lineal position of the screw. An automatically operable cam valve to vary the speed of the motor during each 360° cycle of rotation of the screw. Means for interchanging screws to vary the pitch



of the screw. Means for interchanging cams to select the pattern of rotational speed variation.

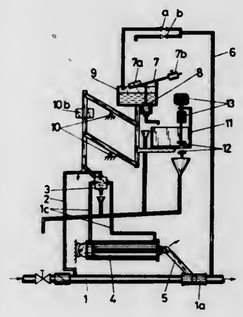
3,696,826
LEG SUPPORTING DEVICE
James A. Gruzalski, 10509 Winnetka Avenue, Los Angeles County, Calif.
Filed July 17, 1970, Ser. No. 55,717
Int. Cl. A61f 5/02; A45b 1/00
U.S. Cl. 135—45 **8 Claims**



A device for supporting an individual's leg in a substantially horizontal position when the individual is seated. The device is particularly designed to support a leg in a cast, and is adapted to be worn on the cast around the user's leg when the device is not in use. The device includes a generally U-shaped ankle engaging member adapted to be secured around the user's ankle or lower calf, and a stanchion rotatably connected to the ankle engaging member. The stanchion includes a pair of parallel support bars, each of which mounts the ankle engaging member at one end thereof. The other end of each support bar is integrally connected to another generally U-shaped member which acts as a base for the stanchion when the device is in use, and which partially encircles the upper calf portion of the user's leg when the device is not in use.

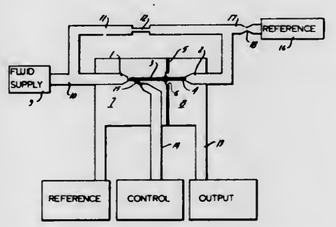
Suitable stop means are provided on the ankle engaging member and the upper ends of the stanchion for limiting rotational movement of the stanchion relative to the ankle engaging member. The support bars are preferably slotted to permit the stanchion to be adjusted to a comfortable position on the user's leg when the device is not in use.

3,696,827
DEVICE FOR AUTOMATIC PLANT WATERING
Heinrich Sterlich, Osterrich 2801, Katzelsdorf, Austria
Filed Dec. 8, 1969, Ser. No. 870,287
Int. Cl. A01g 27/00
U.S. Cl. 137—79 **4 Claims**



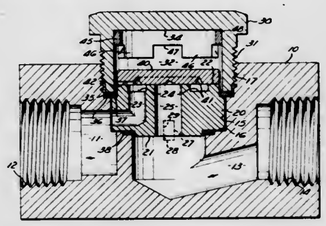
A device for automatic plant watering has a fluid control valve. The valve is actuated by a pump which is controlled by a multi-way cock. The multi-way cock is connected to a scale carrying two vessels on a scale beam. Water is drained from the first vessel when a second scale connected to this vessel is not subjected to the pressure of water flowing into the vessel. Water from the first vessel flows to the second vessel from which it is drained by a heat-sensitive device.

3,696,828
COMMON SUPPLY FOR OPPOSING JET FLUIDIC DEVICE
Bjorn G. Bjornsen, Milwaukee, and Louis D. Atkinson, New Berlin, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Aug. 10, 1970, Ser. No. 62,585
Int. Cl. F15c 1/20
U.S. Cl. 137—81.5 **11 Claims**



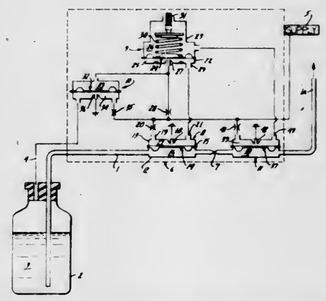
An impact modulator includes a pair of opposed nozzles having corresponding orifices establishing opposed impacting streams. An intermediate wall includes a control orifice aligned with the nozzles and located adjacent the impact position. The nozzles are connected to a fluid source with one nozzle connected through a pressure-dropping restrictor. A bleed conduit is connected to the downstream side of the restrictor and includes a bleed restrictor having an orifice which is preferably of a cross section equal to or greater than that of the nozzle orifice.

3,696,829
AUTOMATIC STEAM TRAP
Allan R. Goellner, Parma Heights, Ohio, assignor to The Clark-Reliance Corp., Cleveland, Ohio
Filed Dec. 30, 1970, Ser. No. 102,645
Int. Cl. F16t 1/00
U.S. Cl. 137—183 **3 Claims**



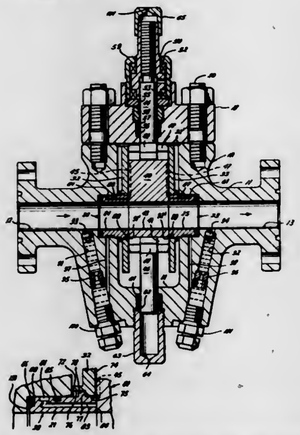
An automatic steam trap that utilizes a floating disc located in a sealed control chamber to open and close inlet and outlet ports in the floor of the control chamber for steam and for air and/or condensate respectively. The disc moves in response to the pressure condition in the chamber between a closed position sealing off the ports and an open position spaced away from the ports. The movement of the disc to its open position is limited by a tubular spacer in the control chamber with spaced projections engageable with the outer margin of the top surface of the disc. The spaces between the projections permit fluid to pass from the lower portion of the control chamber below the disc to the upper portion of the control chamber above the disc so that fluid pressure can act against the top surface of the disc.

3,696,830
FLOW CONTROL SYSTEM EMPLOYING A SERIES REFERENCE RESISTOR
George J. Janu, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed March 4, 1971, Ser. No. 121,038
Int. Cl. F16k 3/385
U.S. Cl. 137—209 **11 Claims**



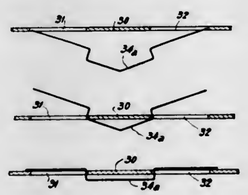
A reference resistor is connected in a flow line connected to a pressurized bottle. A pair of diaphragm repeaters are connected one to each side of the resistor. Each repeater includes a flow chamber in series with the line and having a diaphragm common to an output chamber having a bleed orifice, responsive to the position of the diaphragm. A diaphragm controller has opposite sides of a diaphragm subjected to the outputs of the fluid repeaters and controls a nozzle connected to an air supply and a repeater the output of which connects the air supply to the bottle.

3,696,831
VALVE
John H. Fowler, Glenshaw, Pa., and Robert D. Barnett, Houston, Tex.
Continuation of Ser. No. 21,101, March 19, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 198,001
Int. Cl. F16k 3/26
U.S. Cl. 137—246.12 20 Claims



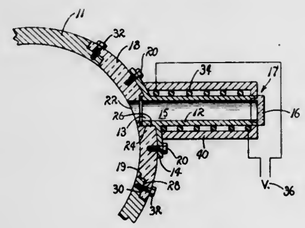
A gate valve comprising a valve body having inlet and outlet conduits with a chamber therebetween and a plane surfaced seat member in the inlet conduit. A plane surfaced gate having an opening therethrough is disposed in the chamber with reciprocating apparatus for moving the gate from a closed position in which flow is blocked through said conduits and an open position in which flow is allowed through said conduits and said gate opening. A resilient member may be installed adjacent the seat member urging the seat member and gate toward and in sealing contact with each other when the gate is in closed position so that the chamber is isolated from the inlet conduit. A plane surfaced skirt member may be mounted in the chamber adjacent to the gate member and with an opening therethrough aligned with the outlet conduit. The skirt member provides a sliding surface for one side of the gate member. There may be no pressure seal isolating the chamber and outlet conduit in the closed position.

3,696,832
VALVE ON A COLUMN FOR EXCHANGE BETWEEN FLUIDS
Guy Maurice, Poitiers, and Yves Jullien, Brioude, both of France, assignors to Societe Pour L'Equipement des Industries Chimiques speichim, Paris, France
Filed Dec. 1, 1969, Ser. No. 881,313
Claims priority, application France, Dec. 2, 1968, 68176217
Int. Cl. F16k 15/00; B01d 47/00
U.S. Cl. 137—512.1 11 Claims



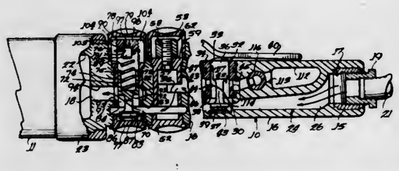
The specification discloses a pair of valve caps for a phase contacting column in which the valve caps of the pair are linked together underneath the separator plate. The caps may be formed as a single composite unit, as a pair of complete caps for connecting one to another, or as a collection of at least three components which may be assembled to form a composite unit of two caps.

3,696,833
OBSERVATION WINDOW FOR A GAS CONFINING CHAMBER
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; James R. Baughman, 7110 Pomelo Drive, Canoga Park, Calif.; Robert Spies, 16980 Cotter Place, Encino, Calif., and Lance G. Hays, 2737 Ridge Pine, La Crescenta, Calif.
Filed Dec. 21, 1970, Ser. No. 99,903
Int. Cl. F16k 37/00
U.S. Cl. 137—559 2 Claims



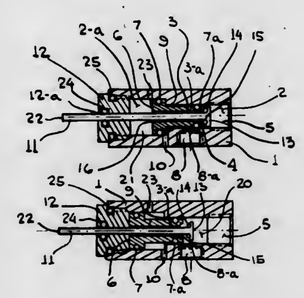
An observation window particularly suited for use in visually observing an internal portion of a casing adapted to confine therewithin a fluid medium. The window is characterized by a body having an internal chamber disposed in direct communication with the internal portions of the casing, a transparent closure of a substantially planar configuration, and a heater coil within which the body is confined, whereby gas delivered from the casing to the chamber is heated by the coil for thus establishing within the chamber a cell of unsaturated gas isolating the transparent closure from the fluid medium.

3,696,834
FLUID CONTROL DEVICE
William Vonhoff, Jr., Aurora, Ill., assignor to Thor Power Tool Company, Aurora, Ill.
Filed Jan. 29, 1971, Ser. No. 110,840
Int. Cl. F16k 11/10
U.S. Cl. 137—596 11 Claims



A fluid control device for controlling a flow of motive fluid to an associated fluid driven mechanism is disclosed, wherein a fluid pressure actuated shut-off valve is provided for automatically shutting off the flow of motive fluid to the associated mechanism whenever the pressure in the fluid passage of the device reaches a predetermined value. A novel adjusting structure is provided for varying the response pressure of the shut-off valve.

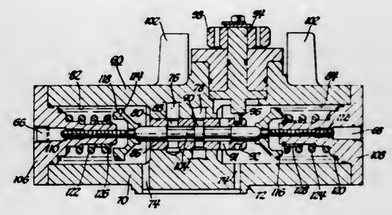
3,696,835
CONTROL VALVE
Richard S. Pauliukonis, 6660 Greenbriar Drive, Cleveland, Ohio
Filed Jan. 25, 1971, Ser. No. 109,242
Int. Cl. F16k 11/07
U.S. Cl. 137—625.6 10 Claims



A fluid power control valve for use with pneumatic or hydraulic pressurized working fluids or a combination thereof comprising a three way valve including a spool with symetrically opposing pistons of differential area at spool extremities of which a small piston of the spool end faces the fluid entrance port whereas the opposite spool end with large diameter piston is blocked from fluid contact by a seal of a centrally situated control rod which passes the spool and protrudes to the outside through the valve end closure for actuation to facilitate shifting of the spool from a valve open first position for cylinder pressurization by the working fluid which moves the spool and the rod assembly sealed toward the end closure constituting a stop, to a second closed position upon actuation of the control rod in terms of a slight motion accompanied by seal cracking and supply of the fluid via clearance hole of the rod to enter behind the large piston of the spool for immediate spool return to the original first position, simultaneously exhausting cylinder and relieving fluid pressure from behind the large piston upon the completion of the cycle, so constructed that the shift of the spool for cylinder actuation can be accomplished externally with very little force to physically move the control rod either manually, by a cam of an electric timer, by pilot pressure of added pilot cap or by other means involving as little as possible axial motion in rod travel, conditions unattainable with other valve designs in existance, other means comprising the automatic self-regulated valve operation with rod end striking a blind end closure for cracking seal to initiate fluid communication behind the large piston and the subsequent shift of the spool for self-reciprocation of the valve without external actuation.

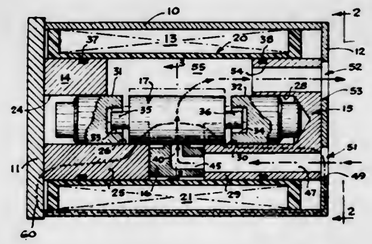
3,696,836
POWER TRANSMISSION
Leo Bauer, Troy, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Jan. 6, 1971, Ser. No. 104,377
Int. Cl. F16k 31/48
U.S. Cl. 137—625.25 5 Claims

A variable speed reversible hydraulic transmission has a control valve which permits any desired value of pressure to be applied to the hydraulic motor in either direction at will. The valve controls a servomotor in the transmission and has two concentric spools slidable in the body and in each other. One spool is pressure responsive in either direction from a central position determined by opposed springs. The other spool is selectively shiftable to move the neutral position of the valve any desired distance to either side of the central position. The device is suitable for controlling the horizontal



swing drive of a power shovel or crane to apply any desired accelerating or decelerating torques.

3,696,837
ELECTROMAGNETIC FLUID CONTROL VALVE
Raymond G. Reip, Clarendon Hills, Ill., assignor to GPE Controls, Inc., Morton Grove, Ill.
Filed May 7, 1971, Ser. No. 141,137
Int. Cl. F16k 31/06
U.S. Cl. 137—625.33 15 Claims

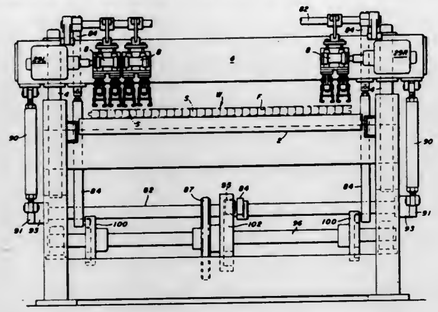


An electromagnetic valve for controlling fluid flow in a line which includes a plug coacting with pole pieces and a coil in a magnetic circuit, and ports in the fluid circuit of the valve, wherein the plug permits or prevents fluid flow respectively in response to deenergization and energization of the coil. The ports are arranged relative the plug to effect a partial pressure balancing.

3,696,838
SPOOL VALVE WITH INTERNAL PASSAGE
John E. Ullman, Huntingdon Valley, and Ernest J. Rollings, Jr., Jenkintown, both of Pa., assignors to United States Steel Corporation
Division of Ser. No. 697,866, Jan. 15, 1968, Pat. No. 3,539,420. This application May 15, 1970, Ser. No. 37,605
Int. Cl. F16k 23/00, 3/26
U.S. Cl. 137—625.38 5 Claims

A spool type valve especially adapted for controlling flow of an adhesive has two spaced apart enlargements in an axial opening with an entry connection to the first enlargement and an exit connection to the second enlargement. The slidable spool has an axial opening which has closed ends and a length

greater than the distance between the enlargements. The closed axial opening has two sets of radial openings which are

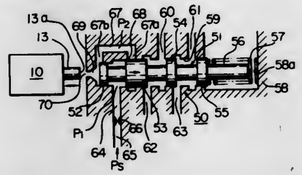


spaced apart the same distance as the enlargements. A bearing portion on the spool is movable into the second enlargement.

3,696,839
HYDRAULIC SERVO VALVE

Namio Irie, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 3, 1970, Ser. No. 69,393
Claims priority, application Japan, Sept. 5, 1969, 44/69959
Int. Cl. F16b 5/00; F16k 11/07
U.S. Cl. 137—625.61 **3 Claims**

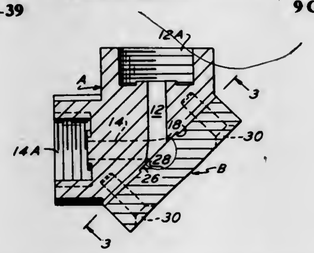


A hydraulic servo valve for controlling the direction of a fluid flow, which servo valve comprises a valve unit including a valve spool moved by a fluid pressure in a hydraulic fluid circuit, and an actuator to control the movement of the valve spool in accordance with electric signals that it receives, said valve unit having a pressure regulating portion for reducing the amount of leaks of an operating fluid.

3,696,840
ADAPTOR FOR ANGULARLY DIVERTING VISCO-ELASTIC MELT FLOW

Oliver Randolph Odhner, Westgrove, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 22, 1970, Ser. No. 100,638
Int. Cl. F15d 1/04
U.S. Cl. 138—39 **9 Claims**

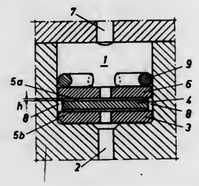


An adaptor for diverting the flow direction of a visco-elastic melt stream employs a deflector cover plate which is detachably secured to a block-like body having angularly arranged channels emerging through an inclined surface. The cover plate includes a centrally disposed outwardly projecting shoulder which is received in a complementary recess formed about an imaginary geometric figure circumscribing the emergent channels. An arcuately cupped surface formed in the shoulder has a lip congruent with the imaginary geometric figure.

3,696,841
HYDRAULIC FLUID THROTTLING DEVICE

Torsten Henry Arsenius, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed May 13, 1970, Ser. No. 36,789
Claims priority, application Sweden, May 13, 1969, 6732/69
Int. Cl. F15d 1/02
U.S. Cl. 138—42 **1 Claim**

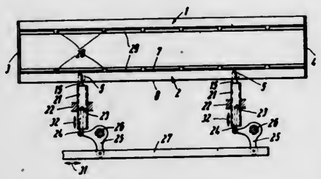


A throttling device included in a hydraulic system, for instance of the kind supplying operating fluid to a hydrostatic bearing, includes plane, superimposed washers arranged in pairs and fitted into a recess having a plane bottom and arranged in the machinery component to be supplied with fluid, in such a manner that the fluid will flow in a generally axial direction through the recess. One first washer of the pair has a shallow groove in each side surface, and when this washer is placed between the plane bottom of the recess and the second washer of the pair, which has unserrated side surfaces but a central passage, the grooves will form the desired restriction to flow. By altering the cross section of the grooves, and/or by varying the number of pairs of washers any desired resistance to flow may be obtained.

3,696,842
DEVICE FOR COUPLING A WEAVING SHAFT WITH A RECIPROCATING DRIVE LIFTER

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Feb. 12, 1969, Ser. No. 798,655
Claims priority, application Switzerland, March 28, 1968, 4619/68
Int. Cl. D03c 13/00, 9/06
U.S. Cl. 139—57 **10 Claims**



The coupling device utilizes a toothed block on the heddle frame to engage a complementary toothed hook of a holder on the drive lifter in order to distribute the lifting and reciprocating forces between the cooperating surfaces. The block has two or more teeth with or without inclined sidewalls which mate within corresponding gaps of the holder.

3,696,843
EXTERNAL WEFT FED LOOM AND A SHUTTLE THEREFOR

Albert E. Moessinger, 1 Grand Place, Fribourg, Switzerland

Filed Jan. 12, 1970, Ser. No. 2,174
Int. Cl. D03d 47/24; D03j 5/06
U.S. Cl. 139—125 **11 Claims**

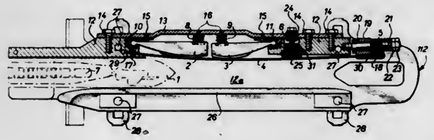


In an external weft fed loom, a shuttle and a circuit for delivering same to and from a shed in which said circuit includes a conduit having a pair of curvilinear portions and a pair of rectilinear portions and in which said shuttle has portions of its external surfaces contoured to conform to said curvilinear portions and portions contoured to conform to said rectilinear portions and is of such a height with respect to said conduit so that impacting of said shuttle in said conduit when said shuttle traverses said conduit is eliminated.

3,696,844
BRAKING SHUTTLE BOX

Adolf Oswald Bernatschek, Hochkreuzweg 2, CH-9320 Arbon/TG, Switzerland

Filed Nov. 4, 1969, Ser. No. 873,995
Claims priority, application Switzerland, Nov. 5, 1968, 16483/68
Int. Cl. D03d 49/54
U.S. Cl. 139—186 **9 Claims**



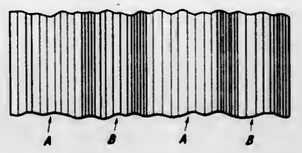
A braking shuttle box has a fixed brake wall and a leaf spring opposite the brake wall forming with the same a brake channel for a shuttle. First energy absorbing means having high mass and inertia and second energy absorbing means having low mass and inertia are provided on the outer side of the leaf spring and urge the same toward and into the brake channel so that a shuttle entering the brake channel and engaging the leaf spring transfers energy to the mass of the first energy absorbing means while the leaf spring is biassed into sliding engagement with the shuttle by the second energy absorbing means so that the shuttle is braked in the brake channel.

3,696,845
CURTAIN

Josef Acker, Seligenstadt; Albert Hofmann, Bischofsgruen, and Georg Fruhholz, Bischofsgruen-Wuelfersreuth, all of Germany, assignors to Jacob Acker & Sohne oHG, Seligenstadt, Germany

Filed Nov. 12, 1969, Ser. No. 875,820
Claims priority, application Germany, Jan. 28, 1969, G 69 03 060.0
Int. Cl. D03d 23/00, 25/00
U.S. Cl. 139—383 **8 Claims**

A curtain made of a transparent curtain material has wavy or undulating selvage at its bottom edge and lengthwise panels. The weft threads of the fabric extend lengthwise and the density of these threads is increased in alternate panels from the lengthwise midline of the panels toward the edges of the adjacent panels and the crosswise warp threads are alternately convexly and concavely curved from panel to panel

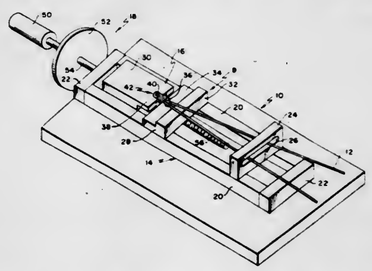


whereby the curtain while actually flat presents when hung the optical appearance of a curtain having the folds of a pleated curtain.

3,696,846
TOOL FOR U-BENDING OF PLATED WIRE

Fortunato N. Rotondo, Concord; Emil Toledo, Natick, and Leslie Lawrence, Needham, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 15, 1971, Ser. No. 153,308
Int. Cl. B21f 1/00
U.S. Cl. 140—102 **10 Claims**

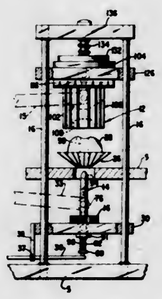


A tool for U-bending plated wire that utilizes a compression type spring to bend the wire around a pin. The resilience of the spring when in contact with the wire contours the wire around the pin to form the U-bend without any damage to the wire or its coating.

3,696,847
APPLE SLICER AND CELLER

Arthur B. Erekson, Scarsdale, N.Y., and Malcolm S. Lane, Baltimore, Md., assignors to Borden Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,222
Int. Cl. A23n 3/08
U.S. Cl. 146—42 **14 Claims**



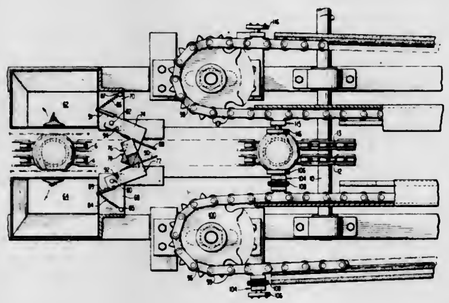
The apparatus includes a cluster of knife blades which is moved up and down to slice the fruit; a free floating cylinder

having axial slots and freely resting on the cluster, the cluster being disposed within the free floating member with its blades being positioned within the slots; an apertured cup holding a cored fruit positioned below the cluster, the core passage of the fruit being aligned with the aperture in the cup; and a celling knife disposed below the cup which is raised into the core passage in the fruit to remove the seed cell material thereupon. The sequence of operation is commenced by positioning the fruit in the cup below the cluster and above the celling knife. The free floating member is brought to rest on the fruit while the celling knife is raised into the core passage in the fruit, gradually expanded to remove the seed cell material therefrom in small particles, collapsed and retracted from the core passage. The cluster of knife blades is advanced against the fruit to slice same and retracted while the free floating member, being restrained by the flexible stop member, extracts wedged slices of the fruit from between the knife blades.

3,696,848
METHOD AND APPARATUS FOR REMOVING SKIN FROM ONIONS OR LIKE VEGETABLES

Eugene P. Mellon, Alexandria, Va., and Lester A. Kisner, Clarksburg, Md., assignors to Marriott Corporation, Montgomery County, Md.

Filed July 22, 1970, Ser. No. 57,224
Int. Cl. A23m *15/04*
U.S. Cl. 146—83 **5 Claims**



An onion skin is cut into two truncated hemispherical segments and a stream of fluid is directed under the skin to remove it from the onion.

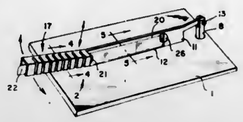
The onion is prepared for the skin-removal operation by cutting off its crown and root ends and making longitudinal cuts in the skin on a first conveyor, transferring the onion to a second conveyor where it is rotated about its polar axis while first being given an equatorial cut and then being subjected to fluid streams directed through the cuts and under the onion skin. The onion-engaging means on the second conveyor are spaced apart a distance equal to the distance between the end cutting blades on the first conveyor.

3,696,849
FOOD CHOPPER

William E. Davis, 10309 South Indian River Drive, Fort Pierce, Fla.

Filed Aug. 7, 1970, Ser. No. 62,038
Int. Cl. B26d *3/26, 1/26*
U.S. Cl. 146—146 R **9 Claims**

A chopper for vegetables and like materials includes a board or base to which one end of a cutting blade assembly is universally pivoted. The assembly includes a main straight cutting blade and a dicer blade which is pivoted to the straight blade for selective pivoting either to a position of use in

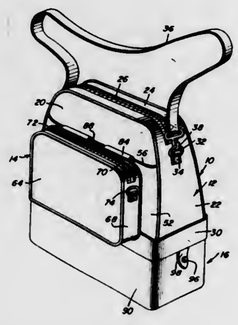


cooperation with the main blade, or to inactive position within the handle part of the main blade.

3,696,850
MULTIPLE UNIT HAND LUGGAGE

Julia R. Rosenblum, 6 West 77th Street, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,827
Int. Cl. A45c *13/26*
U.S. Cl. 150—33 **10 Claims**



An item of luggage to be hand-carried when travelling, especially on airplanes, buses, trains or other public conveyances to enable the articles contained in the luggage to be immediately available and to eliminate the possibility of luggage becoming lost in transit. The luggage includes a larger bag having an access opening therein and a carrying strap detachably connected thereto, a smaller bag detachably mounted on one side of the larger bag for support therefrom when assembled therewith and a detachable tray-like container of substantially rigid construction mounted on and forming a continuation of the bottom of the larger bag. The detachable carrying strap for the larger bag is removed therefrom and attached to the smaller bag when it is desirable to carry only the smaller bag.

3,696,851
CHEMICAL COMPOUNDS AND COMPOSITIONS

Donald R. Randell, Stockport, England, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 753,321, April 26, 1968, Pat. No. 3,536,706, which is a division of Ser. No. 526,401, Feb. 10, 1966, Pat. No. 3,414,618, which is a division of Ser. No. 431,709, Feb. 10, 1965, abandoned. This application Jan. 27, 1970, Ser. No. 6,309
Claims priority, application Great Britain, Feb. 11, 1964, 5,593/64; Feb. 29, 1964, 8,579/64
Int. Cl. C10m *1/34*
U.S. Cl. 252—51.5 A **7 Claims**

Chemical compositions are composed of synthetic lubricant and antioxidant compound of the formula:

A–NH–B

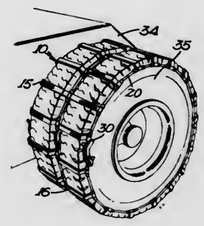
wherein A and B are the same or different and each is an aryl

group, and one of the aryl group A and B contains a tertiary alkyl substituent group having from four to 12 carbon atoms.

3,696,852
FLEXING TIRE TRACTION DEVICE

Loren C. Oulman, 946 Twenty-third Avenue N.E., Minneapolis, Minn.

Filed Aug. 3, 1970, Ser. No. 60,395
Int. Cl. B60c *27/04*
U.S. Cl. 152—220 **4 Claims**

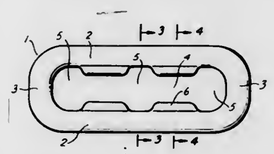


A plurality of traction devices that are rigid fit the profile of a flexing tire and so are gripped by it as it flexes; the units are held in close proximity to the tire by a wire rope structure that takes full advantage of the strength of wire rope.

3,696,853
PROTECTIVE MAIL MESH

Herbert Sobota, Warstein; Walter Siepmann, Sr., and Walter Siepmann, Jr., both of Belecke, all of Germany, assignors to Siepmann-Werke KG, Belecke/Moehnne, Germany

Filed Dec. 19, 1969, Ser. No. 886,684
Claims priority, application Germany, Dec. 27, 1968, P 18 17 170.5
Int. Cl. B60c *27/06*
U.S. Cl. 152—231 **14 Claims**

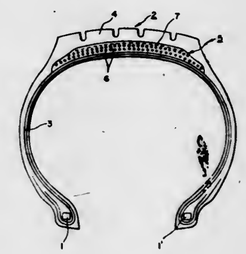


A protective mail mesh for vehicle tires comprises a tread strip for surrounding the tread face of a vehicle tire and two side strips for respectively overlying the side faces of the vehicle tire. The strips are each composed of a plurality of elements each of which comprises at least two discrete sections which are configurated so as to admit of releasable connection solely as a function of their respective configuration and which are releasably connected with one another with each section being connected with and secured against undesired release from the respective strip by at least one adjacent section.

3,696,854
BIAS PLY TIRE HAVING A BREAKER WITH GLASS CORDS

Tetsuo Watanabe; Akira Oikawa, and Masayoshi Kuroda, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed April 14, 1970, Ser. No. 28,340
Claims priority, application Japan, April 24, 1969, 44/31258
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 **6 Claims**

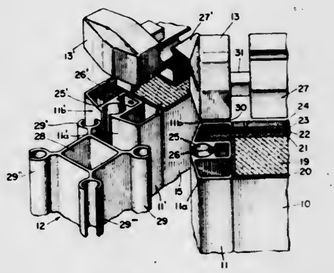


A pneumatic tire having a breaker with glass cords, whose durability and maneuverability are improved by inserting one or more layers of rubberized textile fiber cords between rubberized glass cord layers and the tread portion of the tire.

3,696,855
INTERIOR MODULAR PANEL ASSEMBLIES

Hiroshi Kira, Canoga Park, Calif., assignor to General Telephone Company of Calif.

Filed Oct. 16, 1970, Ser. No. 81,201
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 **3 Claims**

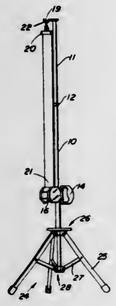


An interior modular panel assembly for office landscaping includes several identical panels having edge railings defining cylindrical recesses for cooperation with cylindrical inserts integrally formed on a hinge structure. Several such hinge structures are provided, all of identical construction and each including four cylindrical inserts so that from one to four panels may be pivotally mounted to a single hinge structure and pivoted with respect to each other to form a desired angular configuration. The assembly is completed by corner and leg pieces cooperating with the end portions of the edge railings to finish off the overall appearance of the assembly.

3,696,856
SWIVEL STANDARD FOR PORTABLE PROJECTION SCREEN

Fred S. Potter, Warsaw, Ind., assignor to Da-Lite Screen Company, Inc., Warsaw, Ind.

Filed Dec. 21, 1970, Ser. No. 100,128
Int. Cl. G03b 21/56
U.S. Cl. 160—24 3 Claims

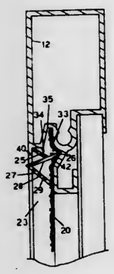


A standard for a portable projection screen providing for improved image focus and picture clarity over the whole of the screen by easy and convenient swivel adjustment of the screen about the stand axis without lifting the standard base off the floor.

3,696,857
PANEL AND FRAME ASSEMBLY

Frank M. Le Tarte, 9094 Yager Road, Smith Creek, Mich.

Continuation-in-part of Ser. No. 799,579, Feb. 17, 1969. This application Jan. 21, 1971, Ser. No. 108,456
Int. Cl. E06b 9/24
U.S. Cl. 160—371 3 Claims

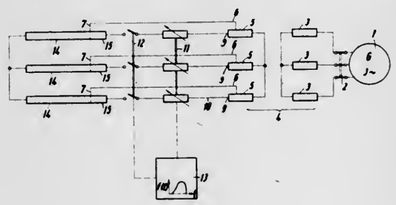


A panel and frame assembly and method for producing same in which the frame is provided with a longitudinally extending channel facing the area to be panelled. The panel is secured by a strip extending longitudinally of the frame and engaging the channel in snap-fitting relationship. In securing solid panels in the frame, the strip is secured in the channel by a cam-locking relationship between the strip and the frame. The strip has three distinct spring actions in which two portions of the strip act as separate compression springs, while another portion acts as a tension spring. In securing fabric panels into the frame, the spring and cam actions are the same as in securing solid panels. Additionally, the portion of the strip which acts as the cam-lock engages the fabric.

3,696,858
METHOD FOR CASTING METERED QUANTITIES OF LIQUID METALS

Gerhard Seulen, Remscheid, and Axel Von Starck, Remscheid-Luttringhausen, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed May 2, 1969, Ser. No. 821,342
Claims priority, application Germany, Sept. 24, 1968, P 17 83 044.3
Int. Cl. B22d 37/00
U.S. Cl. 164—49 7 Claims

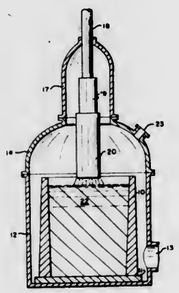


An improved method of using travelling field runners in which liquid metal is conveyed therein by travelling magnetic fields to moulds, die casting machines, casting belts and the like by controlling the flow of liquid metal therein from an initially relatively low rate up to a maximum and thereafter continuously reducing the rate from the maximum until a predetermined amount of metal has been poured.

3,696,859
PRODUCTION OF LARGE STEEL INGOTS WITH CONSUMABLE VACUUM ARC HOT TOPS

Lloyd R. Cooper, Pittsburgh, Pa., assignor to Heppenstall Company

Continuation-in-part of Ser. No. 80,669, Oct. 14, 1970, abandoned. This application May 18, 1971, Ser. No. 144,440
Int. Cl. B22d 27/02
U.S. Cl. 164—52 7 Claims

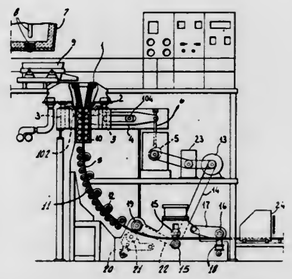


A method is provided for preventing shrinkage cavities and voids in steel ingots by the steps of forming a body of degassed molten steel in an ingot mold and continuously supplying molten steel by vacuum arc remelting an electrode into the body of molten steel at a controlled rate substantially equal to the volume loss by shrinkage on cooling until the body of steel is solidified.

3,696,860
METHOD AND APPARATUS FOR THE CONTINUOUS CASTING OF FLAT BLOOMS OR THE LIKE

Piero Colombo, 27, via Leopordi, Udine, Italy

Filed June 20, 1971, Ser. No. 149,337
Int. Cl. B22d 11/00
U.S. Cl. 164—73 7 Claims

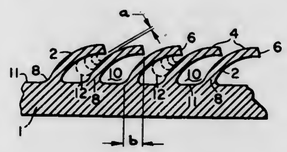


The invention provides a process of, and a continuous casting mould for, continuous casting of metals by pouring molten metal into a mould in a manner such that the metal issues from the mould as a core of still fluid metal encased in a solidified outer sleeve. The sleeve is formed in the mould by the casting of two sections of U-shaped cross-section with the lateral limbs of the U facing and opposed to each other and the facing limbs are engaged with and welded one to the other as they pass through the mould.

3,696,861
HEAT TRANSFER SURFACE HAVING A HIGH BOILING HEAT TRANSFER COEFFICIENT

Ralph L. Webb, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Continuation of Ser. No. 657,155, July 31, 1967, abandoned. This application May 18, 1970, Ser. No. 37,476
Int. Cl. F28f 13/00
U.S. Cl. 165—133 15 Claims



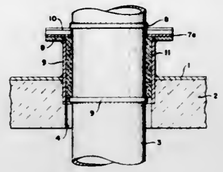
A heat transfer surface comprising a heat conductive base member and a plurality of spaced apart fins extending therefrom, each of said fins being bent over towards the next adjacent fin so as to form therebetween elongated, re-entrant cavities. The gap between the tip of one of said fins and the next adjacent fin is sufficiently small to promote and sustain nucleate boiling of a fluid in contact with said fins and said base member.

3,696,862
INDUSTRIAL FURNACE

Jan Van Dijk, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,243
Claims priority, application Netherlands, March 5, 1970, 70033126
Int. Cl. F28f 9/06
U.S. Cl. 165—178 4 Claims

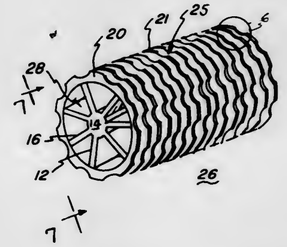
Improved heating tube support means for industrial furnaces having heating tubes extending through the furnace wall.



3,696,863
INNER-OUTER FINNED HEAT TRANSFER TUBES

Sung Chul Kim, Des Plaines, Ill., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 287
Int. Cl. F28f 1/42
U.S. Cl. 165—179 8 Claims

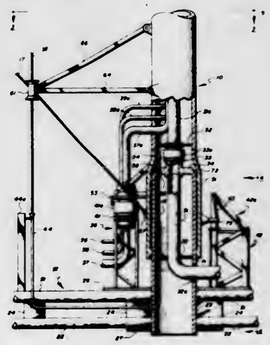


Inner-outer finned heat transfer tubes are provided for use in heat exchangers. The heat transfer tubes include a central core body surrounded by a tubular member. The central core has a plurality of integral elongated fins extending along the length of the core and projecting outwardly therefrom. The tubular member has a plurality of externally protruding fins on the outer surface thereof.

3,696,864
UNDERSEA RISER STRUCTURE

Walter Brown, Long Beach, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed Oct. 24, 1969, Ser. No. 869,078
Int. Cl. E21b 33/035
U.S. Cl. 166—.5 6 Claims



A means, which allows a multipipe riser to be remotely connected to a base located on the ocean floor from a floating

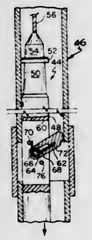
vessel, has, formed on the base, a fixed rigid vertical post and, formed on the riser, a column at the lower end thereof which column mates with the post. A pulldown line is threaded through a suitable structure on the base from a surface vessel and attached to the column on the riser so that the column can be pulled down over the post by pulling on the line. Since various pipes in the riser need to communicate with specific pipes in the base, the riser and base have means for rotating the riser on a vertical axis as the column engages the post to orient azimuthally the riser to the base.

3,696,865

END-OF-TUBING LOCATOR

Ronald W. Chapman, Metairie, La., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 11, 1970, Ser. No. 71,558
Int. Cl. E21b *47/00*
U.S. Cl. 166—64 **10 Claims**



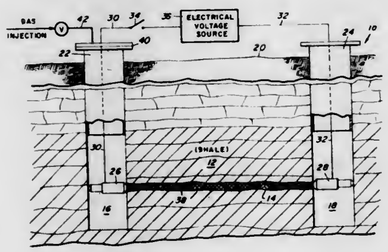
An end-of-tubing locator is disclosed for locating the end of a tubing string depending in a well. Although conventional end-of-tubing locators hang up in tubing joint recesses when the locator is withdrawn through the tubing string without performing its normal sequence of operations, the disclosed locator has the ability to disengage from such recesses for further upward movement.

3,696,866

METHOD FOR PRODUCING RETORTING CHANNELS IN SHALE DEPOSITS

Julian R. Dryden, Laramie, Wyo., assignor to The United States of America as represented by the Secretary of the Interior

Filed Jan. 27, 1971, Ser. No. 110,090
Int. Cl. E21b *43/00*
U.S. Cl. 166—248 **7 Claims**



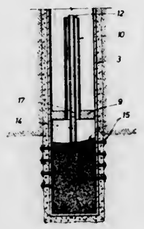
A method for producing in situ retorting channels in subterranean shale deposits. Electro-pneumatic treatment is used for lean shale. Additional electro-chemical treatment is required for rich shale.

3,696,867

RESIN CONSOLIDATED SANDPACK

J. M. Waid, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,191
Int. Cl. E21b *43/04*
U.S. Cl. 166—276 **10 Claims**



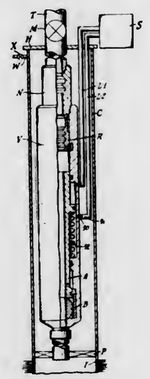
In sandpacking a cased and perforated well completed into an unconsolidated reservoir, a slurry of sand grains that are coated with a self curing epoxy resin formulation is pumped into the well by a procedure that ensures the filling of perforations and formation voids with a mass of resin-coated sand which will consolidate downhole and subsequently be drilled out to leave the interior of the casing free of obstructions.

3,696,868

WELL FLOW CONTROL VALVES AND WELL SYSTEMS UTILIZING THE SAME

Donald F. Taylor, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 18, 1970, Ser. No. 99,534
Int. Cl. E21b *33/00*
U.S. Cl. 166—315 **24 Claims**



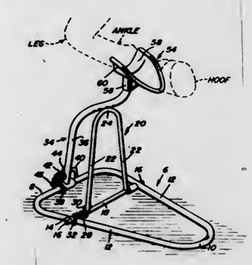
A valve for installation in a flow conductor for controlling flow of fluids through the conductor, which may be controlled from a remote point and which may act automatically as a safety valve, including means for positively propping the valve in the open position to hold the same in such open position when desired, for performing various well service operations through the valve, for taking the valve out of operation permanently or for flowing the well without affecting operation of the valve, and further including means for locating and operating a supplemental flow control valve at such point in the flow conductor. Also includes a releasable restraining device for holding the valve in the open position which is movable to a position freeing the valve for normal functioning.

3,696,869

HOOF MAINTENANCE STAND

Fred H. Anding, P.O. Box 921, West Monroe, La.

Filed Dec. 9, 1970, Ser. No. 96,533
Int. Cl. A01l *07/00*
U.S. Cl. 168—44 **8 Claims**



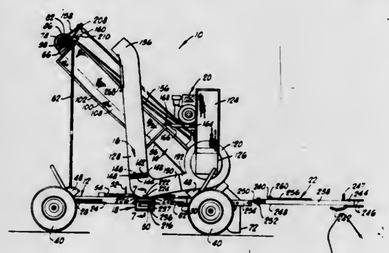
A folding leg-elevating, supporting and hoof maintaining device for use by a farrier, a blacksmith or an experienced person skilled in trimming, shoeing and hoof maintenance work. The device is characterized by a simple, practical and convenient-to-use stand, that is, a stand which when set up for use serves to suspend the ankle and hoof of the animal's leg. Using this stand the user does not have to lift and hold the animal's foot in position when trimming or shoeing. Nor does he have to rely on one hand and his own body as a support. Instead he has both hands free with the weight of the animal's leg elevated and supported whereby he is enabled to perform the work on the hoof with greatest speed, accuracy and precision. It will be noted that the construction and arrangement of component parts is such that they can be collapsed and folded into compact form for carrying, handling and storage.

3,696,870

APPARATUS FOR SEPARATING PELLETIZED LEAD OR THE LIKE FROM GRANULAR COMPOSITIONS SUCH AS SOIL

James L. Hinson, Arkansas City, Kans., assignor to Three Way, Inc., Oklahoma City, Okla.

Filed Jan. 4, 1972, Ser. No. 215,362
Int. Cl. A01d *17/02*
U.S. Cl. 171—17 **8 Claims**



An apparatus for separating pelletized material of relatively high specific gravity from a heterogeneous granular material of relatively low specific gravity which includes a blower having inlet and outlet, a duct communicating with the outlet of the blower and having the opposite end thereof extending upwardly from the blower, a plurality of spaced parallel bars extending across the duct and secured thereto, a conduit communicating with the duct at a point above the bars for conveying a mixture of the pelletized material and the heterogeneous granular material into the duct, a receptacle communicating with the duct at a point below the bars for receiving and holding the pelletized material which has been separated from the granular material and a motor connected to the blower for driving the blower and causing air to be blown thereby through the duct and over the bars. There is further disclosed a frame upon which the previously described apparatus is supported and which further carries a scoop for engaging the surface of the ground, a conveyor for conveying the mixture of granular material and pelletized material scooped from the ground in an upward direction, and a sifting apparatus for separating excessively large and excessively small pieces or particles of the granular material from the mixture of the granular material and the pelletized material as the mixture passes therethrough from the conveyor to the conduit.

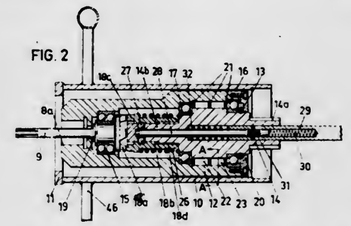
3,696,871

ROTARY POWER TOOL HAVING AUTOMATIC TORQUE SHIFT

Johan Runar Stenbacka, Sodertalje, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed July 6, 1970, Ser. No. 52,421
Claims priority, application Sweden, July 7, 1969, 9611/69
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **12 Claims**

FIG. 2



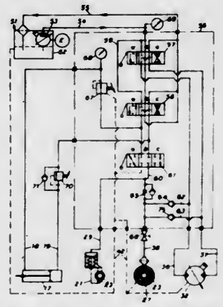
A rotary pneumatic torque tool such as a non-impacting nut runner, a screw driver or like tool, having means for automatic torque shift between a motor unit and an output shaft, said shift being obtained in response to the torque required for rotating a threaded member to be fastened, whereby the threaded member is first rotated at high speed and low torque and, when a predetermined reaction torque at the threaded member is exceeded, at low speed and high torque to reduce the total time for securing the threaded member.

3,696,872

DRILL STRING JOINT BREAKING MEANS

Nils Gunnar Jonsson, Benoni, Republic of South Africa, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 28, 1971, Ser. No. 147,988
Claims priority, application Sweden, June 15, 1970, 8254/70
Int. Cl. E21c *1/10*
U.S. Cl. 173—149 **12 Claims**



A rock drill has a chuck which is arranged to be displaced along a feed bar by means of a feed motor. The chuck is of the

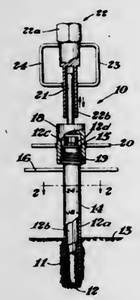
kind which is hydraulically actuated and grips the drill pipe when pressurized and it is rotated by means of a reversible hydraulic motor having two alternative supply conduits. The chuck is connected to the supply conduit for providing reverse rotation by means of a conduit in which a delaying valve is arranged. Thus, when the supply conduit for providing reverse rotation is pressurized upon actuation of a manually operated valve, the drill pipe being firmly held by a drill pipe holder, the delaying valve delays the supply of hydraulic fluid to the chuck until the hydraulic rotation motor and thereby the chuck has started its backward rotation so that the kinetic energy of the chuck and the motor is utilized for breaking a drill string joint located between the holder and the chuck.

3,696,873

SOIL SAMPLING DEVICE

Gene A. Anderson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 31, 1971, Ser. No. 129,781
Int. Cl. E21b *11/02, 49/02*
U.S. Cl. 175—20 **7 Claims**



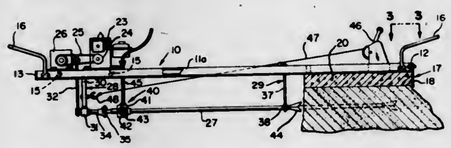
Basic components of the device disclosed herein are a sample tube, driver sleeve, driver cap and driver head. The sample tube is a pipe which is split lengthwise into two semicircular sections. In assembled position, i.e. during the soil collecting function, the split sample tube is a unitary tube which fits inside a larger pipe that defines the driver sleeve. The driver cap is an internally threaded cup-shaped member with an upstanding solid stem thereon and a crosswise handle. The cap is secured to the upper end of the driver sleeve by external threads on the sleeve. The driver head is a one-piece member comprising a solid block, a hollow stem which fits over the solid stem of the driver cap, and loop-type handles. The loop handles enable the driver head to be lifted up and down, so that the driver stem can hammer down against the cap and thereby drive the sleeve and sample tube into the earth.

3,696,874

OPERABLY ALIGNED AND CLAMPED EARTH BORING MACHINE

Dale U. Brinkman, 540 Bonita Avenue, San Jose, Calif.

Filed March 30, 1971, Ser. No. 129,374
Int. Cl. E21b *3/02*; E01g *3/00*
U.S. Cl. 175—122 **7 Claims**



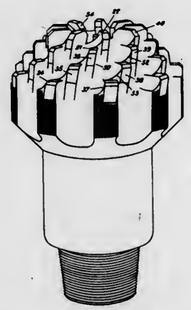
The earth boring machine includes a stationary horizontally disposed frame with guide tracks to straddle a trench next to a pavement. A shaft for a drill bit, supported under the frame, is driven by a motor mounted on a carriage riding on the guide tracks. A pavement aligning member connects to one end of the frame to extend downward over the side of the pavement under which the earth is to be bored. A carriage driver pulls the carriage towards the pavement aligning member and pulls the frame against the side of the pavement in order to enable the drill bit to bore a hole in the earth under the pavement while aligning and clamping the boring machine during the boring operation.

3,696,875

DIAMOND-STUDDED DRILLING TOOL

Abel C. Cortes, Hauts-de-Seine, France, assignor to Compagnie Francaise des Petroles, Societe Anonyme, Paris, France

Filed Nov. 17, 1969, Ser. No. 877,341
Claims priority, application France, March 9, 1969, 6907864
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **19 Claims**



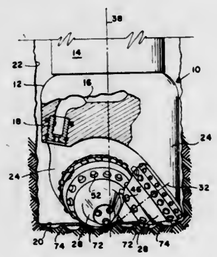
A high output drilling tool for earth of any nature, the drilling tool having openings for the injection of sludge and protuberances distributed over the end surface whose average height is several times greater than its average thickness and which have attack edges for tearing away earth.

3,696,876

SOFT FORMATION INSERT BITS

Eugene G. Ott, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 794,515, Jan. 28, 1969, abandoned.
This application March 15, 1971, Ser. No. 124,421
Int. Cl. E21c *13/00*
U.S. Cl. 175—374 **8 Claims**



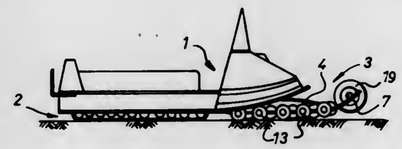
A rotary drill bit is disclosed that is utilized in forming a well bore or the like. The rotary drill bit includes a bit body having three arms journaling three generally conical cutter members. Each of the cutter members is provided with a plurality of annular rows of outwardly projecting, circumferentially-spaced inserts. The inserts are constructed from a material such as tungsten carbide and project from the surface cutter members for a considerable distance. The spacing of the annular rows is such that a substantial quantity of the bottom of the well bore is not subjected to the downward impression of the inserts as the bit is rotated in the well bore. The cutter members are arranged in such a manner that the axes thereof do not intersect each other nor do they intersect the axes of rotation of the bit.

3,696,877

SNOWMOBILE AND ROAD WHEEL UNITS THEREFOR

Jules Dessureault, 2292 Lavergne, Shawinigan, Quebec, Canada

Filed Nov. 23, 1970, Ser. No. 92,052
Int. Cl. B62m *27/00*
U.S. Cl. 180—5 R **6 Claims**



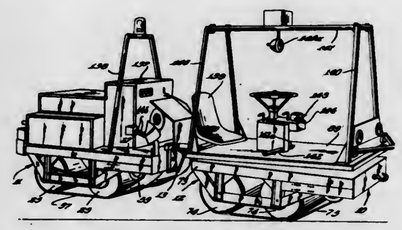
Road wheel units adapted to support the front end of a snowmobile in replacement of the usual skis and a snowmobile arranged with one or two such units to adapt the same for use elsewhere than in snow and on ice. An elongated road wheel unit having a series of wheels along each lateral side, the wheels along one side being staggered relative to the wheels along the other side, the wheels at each end of the unit being arranged such that they do not normally engage the ground, whereby generally only two wheels touch the ground at any-one time for relatively easy steering of each unit and the wheels are closely spaced to provide a smooth side by avoiding joltily rocking or wobbling of the unit about the pitch axis thereof.

3,696,878

BELT TRACTION VEHICLE

Stanford C. Nelson, 8 South Merrill Avenue, Park Ridge, Ill.

Continuation of Ser. No. 41,735, June 1, 1970, abandoned, which is a continuation of Ser. No. 740,328, June 26, 1968, abandoned. This application April 5, 1971, Ser. No. 131,522
Int. Cl. B62d *55/30, 53/00*
U.S. Cl. 180—9.46 **15 Claims**



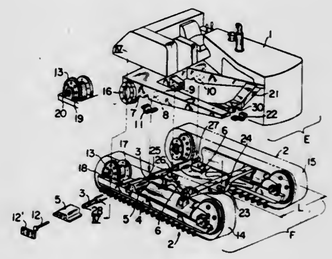
Traction vehicle in which a traction unit and a steering unit are connected together by a universal connection enabling the two units to pivot about longitudinal and transverse axes. Each unit is supported on endless flexible traction devices trained about low pressure rubber tires and maintained under tension by tension idlers forming guides for the flexible traction devices. The wheel base of the wheels of each unit is shorter than the distance between the transverse centers of the endless traction devices and the four wheels of the traction unit are power driven by a reversable drive connection. Steering and the controls for the traction unit are on a platform on the steering unit held in alignment with the traction unit by the universal connection. Steering is attained by turning the steering unit relative to the platform.

3,696,879

HEAVY BULLDOZER

Akio Terai; Eiji Kawamura; Hisashi Fukumoto, and Hidekatsu Aoki, all of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,555
Claims priority, application Japan, May 31, 1969, 44/42663; Oct. 15, 1969, 44/81879
Int. Cl. B62d *55/06*
U.S. Cl. 180—9.48 **5 Claims**



The present invention relates to heavy bulldozer which comprises connecting the right and left belt assemblages through laterally horizontal pivot shaft in such a manner that said belt assemblages can be independently moved up and down, providing upper half circular bearing on the rear lower surface of the body, sealing said bearing with the lower half circular bearing cap capable of connecting or disconnecting said bearing, providing the upper half circular bearing on the front lower surface of the body on the equalizer pin provided in the center of the equalizer bar for connecting the right and left truck frames, and sealing said bearing with removable lower half circular bearing cap wherein said heavy bulldozer can be disassembled into main body portion and the endless track portion, and can be freely transported by reducing the weight and the height thereof, providing bolt or cylinder to be screwed into the end of the above mentioned pivot shaft, on said end surface of the pivot shaft, so that the interval between the right and left belt assmblages can be changed by operating said bolt or cylinder, to easily separate the main body portion and the endless track portion, and at the same time the width of the right and left belt assemblages can be reduced to the effect that the heavy bulldozer can be easily transported.

3,696,880

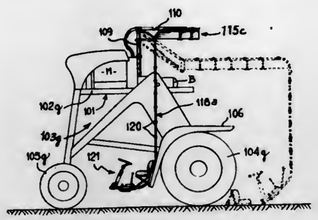
REMOVABLE POSITIONABLE VEHICLE CONTROL CENTER

Emile Bobard, P.O. Box 17, Beaune, France

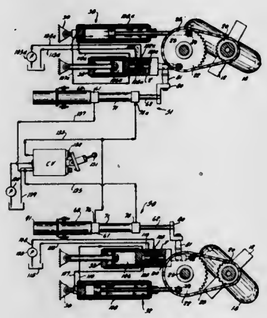
Continuation-in-part of Ser. No. 652,472, July 11, 1967, abandoned. This application Dec. 12, 1969, Ser. No. 884,523
Int. Cl. B60k *29/00*
U.S. Cl. 180—77 R **15 Claims**

A self-contained control unit mounted on a motor vehicle including driving and steering means wherein a control unit for remotely operating the driving and steering means includes at least partially hydraulic flexible pipe lines which are sup-

ported by a pivotal arm connected at one end thereof to an upright equipped with height-regulating means and at the other end to a deformable sheath provided with a terminal spout curved downwardly.



3,696,881
VEHICLE STEERING SYSTEM OF THE FLUID POWER TYPE AND SPRING CENTERED, SPRING MODULATED CONTROL CYLINDER THEREFOR
Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.
Filed June 16, 1971, Ser. No. 153,492
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R **8 Claims**

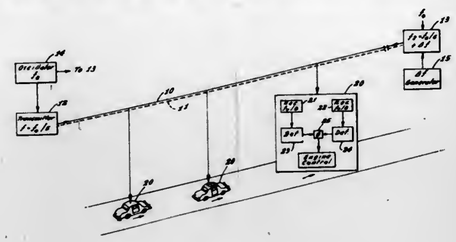


A vehicle steering system having a pair of fluid power cylinders for simultaneously actuating each wheel of a pair of steerable wheels, and also having a control cylinder for one of the power cylinders of each pair to cause said power cylinders to be actuated to different extents, consequently producing angular rotation of said steerable wheels in like directions, but in different amounts.

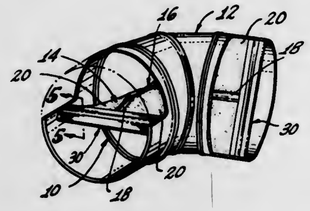
An improved spring centered and spring modulated control cylinder which is extended at a different rate than it is contracted.

3,696,882
METHOD FOR GUIDING VEHICLES AUTOMATICALLY ALONG A PREDETERMINED PATH
Helmut Martin, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Jan. 27, 1971, Ser. No. 110,063
Claims priority, application Germany, Feb. 13, 1970, P 20 06 581.0
Int. Cl. B60k *31/00*
U.S. Cl. 180—98 **9 Claims**

Low rate propagation of descrete phase points between two oppositely propagation and slightly detuned frequencies is used for motion control of vehicles along a prescribed path.



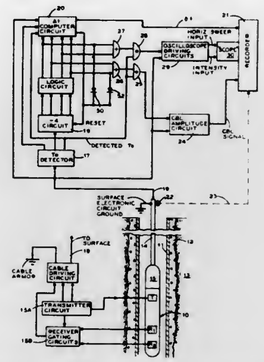
3,696,883
SOUND MUTING ASSEMBLY FOR GAS FLOW DUCT SYSTEMS
Harry M. Devane, 1549 Pine Street, Oxnard, Calif.
Filed Dec. 13, 1971, Ser. No. 207,220
Int. Cl. F01n *1/10, 1/12, 7/18*
U.S. Cl. 181—36 B **14 Claims**



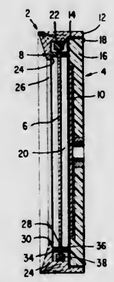
A sound muting assembly comprising a bar extending longitudinally through a duct, and a series of longitudinally spaced, laterally projecting vane supports which are angularly spaced from each other to define a helical path twisting about the bar. In one embodiment, the supports hold a sound muting vane comprising two twisted rectangular sheets of sound absorbing material spiraling around the bar on opposite sides thereof, and in another, two such vanes, each comprising two sheets, are supported to spiral about the bar in angularly spaced relation.

3,696,884
METHODS AND APPARATUS FOR ACOUSTIC LOGGING IN CASED WELL BORES
Clovis L. Lafleur, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,694
Int. Cl. G01v *1/34*
U.S. Cl. 181—5 B **7 Claims**

In accordance with illustrative embodiments of the present invention, techniques are disclosed for providing well logging information which is especially suitable for the evaluation of cased well bores. More particularly, a well logging tool has two acoustic receivers spaced apart from a repetitively energized acoustic transmitter. The amplitude of a selected portion of each electrical signal produced by the receiver nearest the transmitter in response to the emitted energy and the time for such energy to travel to this near receiver is measured to produce logs of the travel time to this near receiver and the bonding of the casing to the cement which surrounds it. The electrical signals produced by the receiver farthest from the transmitter are used to produce a variable density log which can be used in conjunction with the cement bond log to evaluate the bonding of the cement to both the casing and formations. The travel time log can be used to evaluate the accuracy of the other two logs.



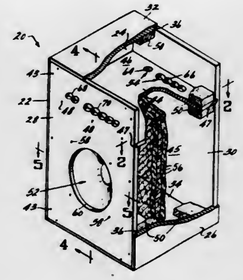
3,696,885
DECORATIVE LOUDSPEAKERS
Donald D. Grieg, Caldwell, N.J., and Herbert Schoengold, Mount Vernon, N.Y., assignors to Electronic Research Associates, Inc., Cedar Grove, N.J.
Filed Aug. 19, 1971, Ser. No. 172,979
Int. Cl. H04r *1/28*; G10k *13/00*
U.S. Cl. 181—31 B **12 Claims**



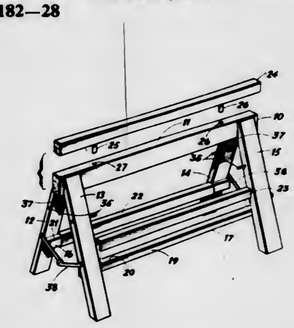
A loud-speaker assembly is provided with a frame, a loud-speaker is secured to the frame at the rear of the opening defined by the frame, a decorative member embodying stiff material and adapted to function as a sound propagating element extends across the opening in the frame in front of the loud-speaker and yieldable material is located between the frame and the marginal portion of the decorative member to permit vibration of the decorative member in response to operation of the loud-speaker.

3,696,886
SPEAKER CABINET ENCLOSURE AND METHOD OF TUNING THEREOF
James C. Armstrong, 4017 Springrock Drive, Colerain Township, Hamilton County, Ohio
Filed May 3, 1968, Ser. No. 726,517
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **6 Claims**

A speaker enclosure comprising a rectangular parallelepiped, main and auxiliary resonating chambers therein, a speaker unit mounted in the front wall of the enclosure forming the main resonating chamber, the chambers being separated by a baffle plate; tuned ports are disposed in the baffle plate adjacent the rear wall of the enclosure, these tuned ports providing communication between such chambers; tuned ports disposed in the front wall of the enclosure providing for communication of the auxiliary chamber with the exterior of the enclosure. Layers of insulation are provided within the cabinet enclosure as shown and described. The number, size, distribution and configuration of the indicated ports provide for faithful and clear reproduction of sound.



3,696,887
COMBINATION SAWHORSE, SCAFFOLD SUPPORT AND TABLE
Jerome J. Brzykcy, 10323 W. Woodward Avenue, Wauwatosa, Wis.
Filed March 4, 1971, Ser. No. 120,810
Int. Cl. A47b *37/00*
U.S. Cl. 182—28 **1 Claim**



A combination saw horse, scaffold support and table including a false removable top element for the upper beam of the saw horse, horizontal braces for the leg elements provided with inverted channel cappings as a metal scaffold support means, and a demountable table top for the top beam.

3,696,888
COMBINATION PORTABLE FIRE ESCAPE AND WARDROBE SUPPORT
Fred L. Brandenberger, 49 Rivoli Street, San Francisco, Calif.
Filed July 8, 1971, Ser. No. 160,644
Int. Cl. E06c *1/38, 1/36, 7/00*
U.S. Cl. 182—35 **6 Claims**

A rigid ladder section is equipped with hooks and rod attachment for hanging over the outside a window sill. One rung of the ladder section is rotatable and carries a rolled up rope or rope ladder which may be released to the ground from high

elevations. When not in use as a fire escape the rigid section is equipped with supporting feet and the hooks serve to steady



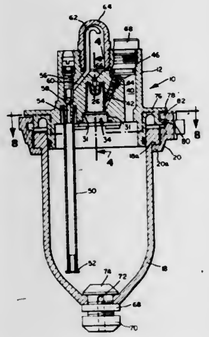
the rod so as to serve as a support for clothes hangers and similar wardrobe holding devices.

3,696,889

AIR LINE LUBRICATOR

Cecil Clifford Brake, Raleigh, N.C., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Aug. 31, 1970, Ser. No. 68,117
Int. Cl. F16n 7/34
U.S. Cl. 184—55 A 3 Claims



An air line lubricator has a resilient flapper which normally closes about a venturi oil feeding passage. The flapper may act in either direction upon the passage of a large flow to permit bypass of the venturi. A simple retaining ring with a pivoted latch holds the reservoir on the lubricator housing.

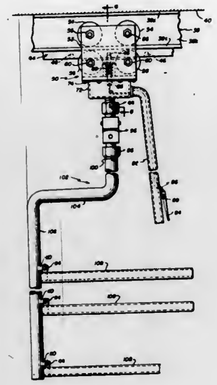
3,696,890

ARTICLE DELIVERY SYSTEM

Gilbert Armstrong, 5N 432 Neva Terrace, Itasca, Ill.

Filed May 5, 1970, Ser. No. 48,772
Int. Cl. E04h 3/04
U.S. Cl. 186—1 6 Claims

An aisle delivery system operable in limited traffice areas such as the passenger aisle in a commercial aircraft, said system permitting delivery of food and beverages by placing trays on pallets pivoted to a bracket depending from an overhead carrier which moves along a conveyor track fixed to the upper part of the fuselage. Means are provided to immobilize the overhead carrier at selected positions along the conveyor track, and a universal joint is provided between the bracket and the overhead conveyor to counteract angular flight



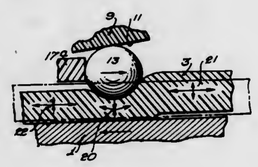
changes. Junction means connect the main conveyor track to branch tracks which lead to service areas or the like.

3,696,891

ENERGY ABSORBING DEVICE

Lloyd Richard Poe, Beverly Hills, Calif., assignor to The Hartwell Corporation, Los Angeles, Calif.

Filed Oct. 29, 1970, Ser. No. 85,001
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 32 Claims



An energy absorbing device which includes a deformable or elastomeric energy absorbing member, an indenting element, and means for effecting relative movement causing the indenting element to be pressed into the energy absorbing member; the energy absorbing member being restrained against translation movement but otherwise not bonded so that, on relative movement of the energy absorbing member indenting elements, the indenting element not only causes localized deformation of the energy absorbing member, but also subjecting the energy absorbing member to tension loads and compressing loads throughout substantial areas at opposite sides of the region of localized deformation so that energy absorbtion is distributed over a substantial region.

3,696,892

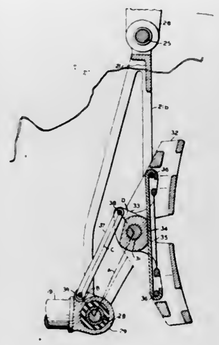
BRAKE HEAD-CENTERING DEVICE FOR RAILWAY BRAKE APPARATUS

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation

Filed Feb. 8, 1971, Ser. No. 113,280
Int. Cl. F16d 65/06
U.S. Cl. 188—212 4 Claims

The disclosure concerns brake apparatus for railway cars and locomotives in which the brake head is journaled on a pivoting hanger and is centered by a biasing spring. The hanger is moved by an elongated actuating member having a substantially fixed orientation with respect to the horizontal,

and a four-bar parallelogram linkage orients the seat of the biasing spring relative to the actuating member so as to main-



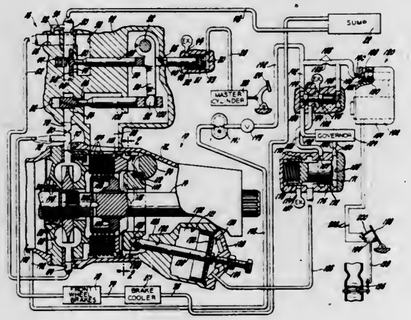
tain alignment of the head with respect to the braking surface of the wheel during pivotal movement of the hanger.

3,696,893

BRAKE AND COOLING SYSTEM

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1971, Ser. No. 114,601
Int. Cl. F16d 65/84
U.S. Cl. 188—264 E 3 Claims



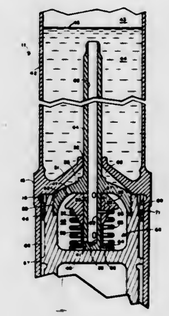
A brake and a cooling system including brake discs mounted in part on a transmission output shaft and secured in part on the transmission housing for stopping the rotation of the output shaft when the discs are engaged, a source of coolant, and means for automatically providing coolant to the brake discs during such braking conditions. An additional brake-engaging device, utilizing the above-mentioned brake discs, is employed to stop the rotation of the output shaft in response to a fluid pressure signal indicative of a substantially zero throttle opening. When front wheel disc brakes are employed, either a vane- or centrifugal-type pump is mounted on the output shaft and supplied with coolant from the above source by a manual brake pedal-actuated valve for cooling the disc brakes.

3,696,894

ACCELERATION SENSITIVE SHOCK ABSORBER VALVE

Jack C. Brady, and Kenneth J. Fewel, both of Arlington, Tex., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 2, 1971, Ser. No. 159,319
Int. Cl. F16f 9/24, 9/342
U.S. Cl. 188—275 16 Claims



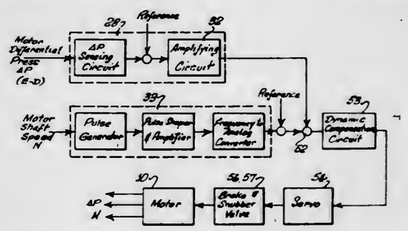
The invention disclosed is a pressurized air-oil, telescopically configured, shock absorber of the type that may be incorporated in an aircraft landing gear or other devices subject to high structural stresses caused by high impact loadings. It consists of a substantially conventional shock absorber modified to include a control valve assembly which programs the opening and closing of the piston position controlling metering orifice thereof by means of a unique valve sleeve normally spring-urged toward a closed metering orifice condition but positioned to effect the opening thereof in proportion with the magnitude of the acceleration to which it is exposed during the impact loading of the aforesaid landing gear or other devices.

3,696,895

FLUIDIC CONTROL FOR MOTOR AND BRAKE

David J. Schaffer, Phoenix, and Trevor G. Sutton, Maricopa, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed June 24, 1971, Ser. No. 156,274
Int. Cl. F16d 67/00
U.S. Cl. 192—3 R 8 Claims



This system controls the operation of a jet engine thrust reversing mechanism of the type operated by a reversible fluid motor. The control system is of the fluidic character having a first circuit portion for sensing the pressure differential at the inlet and outlet of the fluid motor and consequently the torque being exerted at any particular time and a second circuit portion for providing a pulsating signal with a frequency dependent upon the speed of the fluid motor. These signals are combined and dynamically compensated, the result being applied to a servo which controls the application of fluid pressure to

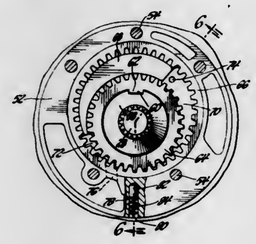
actuators for snubbing and braking the fluid motor. The system is used primarily near the terminations of the deploying and stowing phases of operation of the thrust reversing structure.

3,696,896

LOCK-UP DEVICE FOR FLUID UNIT

Stoddard C. Hamilton, III, 375 Wardlow Road, Highland, Mich.

Division of Ser. No. 83,361, Oct. 23, 1970. This application Nov. 30, 1971, Ser. No. 203,375
Int. Cl. F16d *33/00*
U.S. Cl. 192—3.28 **5 Claims**



Hydrodynamic unit having a lock-up device to prevent slip of the rotors subsequent to the attainment of a predetermined input speed. In one form of the invention camming balls are moved outwardly on special ramps in response to rotary drive of the input by centrifugal force of predetermined magnitude to effect the drive engagement of an input driven locking plate and a turbine member. The locking plate is moved from drive engagement with the turbine member by spring means when the magnitude of the centrifugal force developed by the balls is reduced to a predetermined value for torque transmittal through the hydraulic unit. In another form of the invention a centrifugally operated valve closes off an oil exit port of a hydraulic pump operatively disposed between the input and output of the converter or coupling at predetermined input speeds to hydraulically lock the pump and lock-up the hydrodynamic unit. As the magnitude of the centrifugal force developed by the valve diminishes to a predetermined value, spring means moves the valve to open the discharge port so that the pump pumps fluid therethrough allowing the hydraulic operation of the hydrodynamic unit.

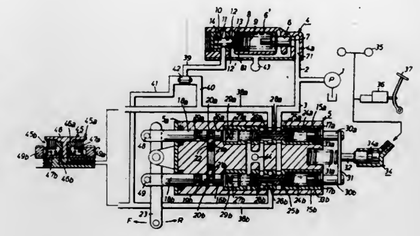
3,696,897

FORWARD-REVERSE AND BRAKE INCHING CONTROL

Shin Kitano, and Yutaka Momose, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichiken, Japan

Filed June 25, 1971, Ser. No. 156,684
Claims priority, application Japan, June 27, 1970, 45/56234
Int. Cl. F16h *57/10*; F16d *67/04*
U.S. Cl. 192—4 C **7 Claims**

A transmission control system for a vehicle having a transmission with fluid actuated clutch means and hydraulic brake means for arresting movement of the vehicle comprising, a source of pressurized fluid, a fluid pressure conduit communicating said pressurized fluid to the clutch means, and control valve means disposed within said conduit. The control valve means may comprise a housing provided with a pair of cylindrical bores, a pair of spool valves slidably engaged respectively within said bores to form pressure chambers disposed within said conduit and to control selectively passageways of pressurized fluid through said conduit to engage and disengage the clutch means, a pair of inching pistons slidably engaged within said bores through resilient members interposed between said inching pistons and said spool valves, means for connecting said brake means with said inching pistons, a pair of shift rods slidably engaged within said bores through resilient members



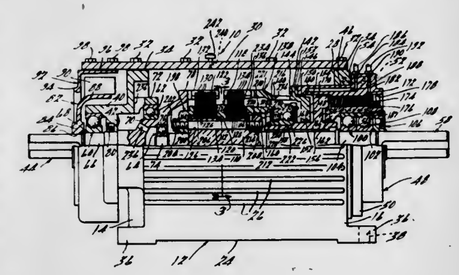
interposed between said shift rods and said spool valves, and a shift lever for selectively operating said shift rods.

3,696,898

CLUTCH-BRAKE UNIT

Gordon M. Sommer, Groose Pointe Woods, Mich., assignor to G. M. Sommer Co., Inc., Detroit, Mich.

Continuation of Ser. No. 809,461, March 6, 1969, abandoned. This application Sept. 18, 1970, Ser. No. 73,665
Int. Cl. F16d *67/04*
U.S. Cl. 192—18 A **17 Claims**



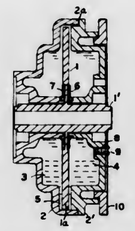
A clutch-brake unit comprising a housing, axially aligned input and output shafts mounted in the housing, a non-rotatable, pneumatically actuated piston in the housing, a series of radially disposed clutch plates mounted for rotation with the input shaft, a series of radially disposed brake plates spaced axially from the clutch plates and non-rotatably attached to the housing, a series of friction discs mounted on the output shaft for rotation therewith and adapted for selective frictional engagement with the clutch and brake plates, a clutch actuating member and a brake actuating member carried on the output shaft adjacent the clutch and brake plates, means extending between the last two members, whereby the members are movable together axially of the output shaft, with movement thereof in one direction serving to simultaneously frictionally engage the clutch plates with certain of the friction discs and to release the remaining friction discs from frictional engagement with the brake plates, and with movement thereof in the other direction serving to simultaneously release the clutch plates from the frictional engagement with certain friction discs and to frictionally engage the remaining friction discs with the brake plates, and spring means mounted in one end of the housing and normally urging the piston toward a position wherein the last mentioned means effects engagement of the brake and release of the clutch.

3,696,899

LEAK-PROOF FLUID COUPLING

Robert Michael Kongelka, Houston, Pa., assignor to Viewlex, Inc.

Filed Dec. 9, 1970, Ser. No. 96,367
Int. Cl. F16d *35/00*
U.S. Cl. 192—58 B **2 Claims**



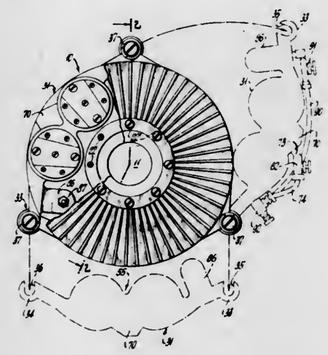
A driving rotor wheel is mounted on a shaft. The shaft and rotor are rotatably mounted in a relatively large hollow housing which comprises the driven part of the coupling. The housing has an annular interior recess into which the periphery of the driving wheel extends. The housing is only partially filled and the fluid drive coupling takes place between the wheel and the housing in the area of the recess. In operation, the fluid is urged by centrifigal force to the recessed area. There is never any fluid at the shaft-housing interface, and, therefore, there is no leakage.

3,696,900

PIVOTED AND REMOVABLE POD MOUNTING FOR BRAKES AND CLUTCHES

Edwin J. Montalvo, c/o Montalvo, P.O. Box 653, 379 Union Street, Hackensack, N.J.

Filed July 29, 1970, Ser. No. 59,188
Int. Cl. F16d *13/38*
U.S. Cl. 192—70 **10 Claims**



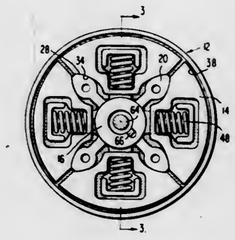
An improvement in a pivoted mounting system for a frictional brake or clutch which facilitates access to working parts for inspection and maintenance. Three sector shaped bodies or pods carry friction members operable to contact relatively rotatable plates. Each of the sector shaped pods is independently outwardly pivotable about either of its ends to expose the working parts. The pivot arrangement includes hooks on each end of each sector shaped pod for rotation about a pivot pin. Each sector shaped pod may alternatively be lifted out of the mechanism entirely by disengagement of the hooks of both ends from their pins.

3,696,901

CENTRIFUGAL CLUTCH

Charles Frederick Heary, Carson, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Oct. 30, 1970, Ser. No. 85,344
Int. Cl. F16d *43/24*
U.S. Cl. 192—105 BA **5 Claims**



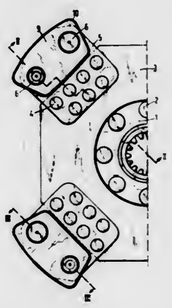
A centrifugal clutch including a U-shaped shroud which supports and partially houses a generally radially extending clutch shoe spring. The shroud cooperates with a clutch shoe mounting aperture to house and surround the spring, yet permit circumferential displacement of the clutch shoe relative to the shroud and a clutch hub. This circumferential displacement permits clutch hub carried cam means to exert clutching force on the clutch shoe, augmenting centrifugal clutching force acting on the clutch shoe.

3,696,902

CLUTCH DISC WITH METALLIC FRICTION FACINGS

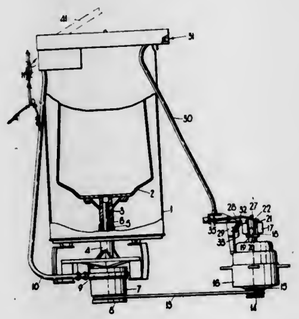
Johann Dantele, Schwebheim, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed July 14, 1971, Ser. No. 162,519
Claims priority, application Germany, July 24, 1970, P 20 36 761.7
Int. Cl. F16d *13/69*
U.S. Cl. 192—107 C **9 Claims**



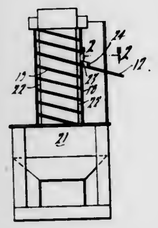
The opposite friction facings of solid metal or sintered powder metal on the driven disc of a friction clutch are mounted on respective, normally convex faces of pairs of carriers which are symmetrical relative to a radial plane and are prevented from bulging apart by rivets which also fasten the facings to the carriers. The convex faces are directed in opposite axial directions, and the rivets pass through them along lines which are farthest from corresponding lines on the other carrier of the pair.

3,696,903
WASHING OR OTHER MACHINES
Barry Herbert Nethersell, Deganwy, Wales, assignor to British Domestic Appliances Limited, Peterborough, England
Filed Oct. 16, 1970, Ser. No. 81,407
Claims priority, application Great Britain, Oct. 20, 1969, 51,301/69
Int. Cl. F16d 67/00; D06f 39/14
U.S. Cl. 192—136 8 Claims



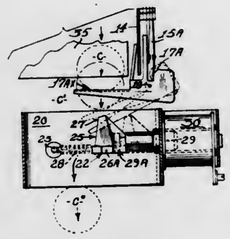
A spin dryer for clothes, or an upright clothes washing machine in which the clothes drum rotates to dry clothes is provided with a lid which is locked at all times when the drum is rotating, the lock mechanism being actuated by bob-weights which are thrown outwards when a drive motor for the drum is rotating. The mechanism also includes an interlock which prevents the motor being energized unless the lid is closed and a control lever is correctly set.

3,696,904
WORK FEEDING TRACK FOR T-SHAPED PARTS
Milford A. Campbell, 17225 McArthur, Detroit, Mich.
Filed Sept. 23, 1970, Ser. No. 74,659
Int. Cl. B23q 7/12
U.S. Cl. 193—43 R 12 Claims



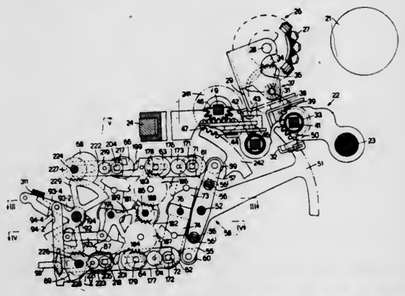
The track is located adjacent to a parts deliverying device so formed as to cause the parts not properly oriented and supported to fall therefrom. The track has two rails spaced apart for the reception of the stem of the parts while the enlarged ends or heads rest on the top thereof. The track slopes sufficiently to have the parts slide downwardly therealong and has a bend therein in the sloping plane thereof to cause those parts not properly supported to fall therefrom when passing thereover. A dip or deflection may be placed in the outside rail at the bend to further assist in the falling of the improperly supported part from the track.

3,696,905
COIN ESCROW MEANS AND CIRCUIT
Roman A. Tojza, Chicago, and Frank C. De Simone, Rolling Meadows, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed Aug. 27, 1970, Ser. No. 67,478
Int. Cl. G07f 5/10
U.S. Cl. 194—9 6 Claims



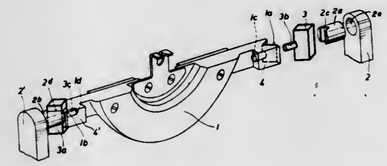
An escrow attachment adapted for use with known types of coin testing chute having one or more coin switches actuated by an accepted coin departing from a guideway or exit to lodge upon and tilt a switch-actuating lever arm and in so doing operate the appertaining coin switch. The "escrow" or holding of the coin is effected by means of a reciprocable escrow slide underlying the switch levers and in a normal position limiting the tilt of the lever in a way to cause the coin to remain upon the lever until such time as a control circuit energizes a release solenoid shifting the escrow slide to permit the switch lever to tilt still farther and effect discharge and collection of the coin.

3,696,906
CHARACTER SELECTING DEVICE FOR A PRINTING MECHANISM
Rinaldo Salto, Ivrea Turin, and Domenico Roano, Parella Turin, both of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Ivrea (Turin), Itlay
Filed March 22, 1971, Ser. No. 126,542
Claims priority, application Italy, March 24, 1970, 68007 A/70
Int. Cl. B41j 1/60
U.S. Cl. 197—18 24 Claims



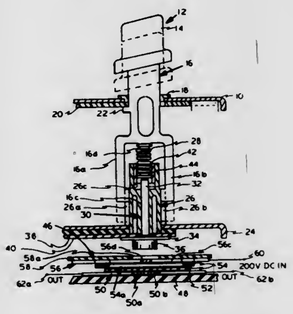
A character selecting device for a printing mechanism comprising a type-bearing element having a set of characters selected in accordance with the combination of a plurality of binary code units. Each code unit is associated with a selector cam rotatable between a first position and a second position. Each selector cam is in turn carried by a shaft, and at least one of the selector cams is so interconnected with at least one of the other shafts to cause the other shaft to shift perpendicularly to its axis when the one cam rotates from the first to the second position. Output means are engaged by the cam carried by the other shaft to move the type-bearing element to select the character to be printed.

3,696,907
SEGMENT GUIDE FOR TYPEWRITERS AND SIMILAR MACHINES
Georg Werner, Heidmuhle, and Detlef Kunst, Sanderbusch, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed May 8, 1970, Ser. No. 35,663
Claims priority, application Germany, May 14, 1969, D 19 24 602.7
Int. Cl. B41j 7/22
U.S. Cl. 197—41 6 Claims



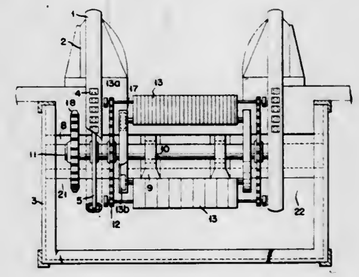
A segment guide for typewriters and similar machines having a pin defining a prism-shaped recess mounted on the machine frame, and a slide element which cooperates with the prism. The slide element is rotatably adjustably mounted on the segment by a pin.

3,696,908
CAPACITIVE KEY
Julius Gluck, Stamford, and Raul Lara, Norwalk, both of Conn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 9, 1970, Ser. No. 88,024
Int. Cl. B41j 5/08
U.S. Cl. 197—98 14 Claims



This is a capacitive keying device suitable for use in an electronic keyboard. Depression of the key drives a stem which stresses a spring beyond the release threshold of a magnetic latch. A projectile is then fired, impacting upon a flexible sheet capacitor electrode. The resulting electrode deflection causes a momentary increase in capacitive coupling.

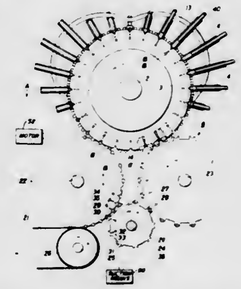
3,696,909
DRIVING MECHANISMS FOR MOVING STAIRWAYS
Mikiharu Kojima, Tokyo, and Tetuo Iwata, Kanagawa-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 8, 1970, Ser. No. 96,219
Claims priority, application Japan, Dec. 10, 1969, 44/116716; Jan. 20, 1970, 45/5513
Int. Cl. B65g 9/12
U.S. Cl. 198—16 4 Claims



In a driving mechanism for a moving stairway including moving hand rails and moving steps along a truss, there are driving wheels for driving the hand rails and sprocket wheels for driving the steps on a common driven shaft mounted on the truss.

The wheels and sprockets are rotated at the same speed as the shaft causing the moving hand rails and moving steps to be driven in synchronization. Those parts of the surface of the shaft disposed near its both ends are carried on bearing to provide a sufficient clearance between said both ends and the inner walls of the trusses facing said ends, thereby permitting easy fitting and detachment of the endless moving hand rail.

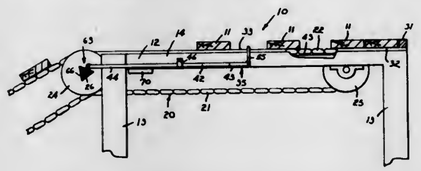
3,696,910
ARRANGEMENT FOR RE-ORIENTATING ROD-SHAPED OBJECTS
Alfred Schmermund, Gevelsberg, and Rudolf O. Scholz, Westfalen, both of Germany, assignors to Maschinefabrik Alfred Schmermund, Gevelsberg, Germany
Filed Jan. 15, 1971, Ser. No. 106,834
Claims priority, application Germany, Jan. 31, 1970, P 20 04 369.0
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AC 8 Claims



An arrangement for re-orientating filter tipped cigarettes comprises a drum conveyor provided with a set of individually pivotable holders for the cigarettes. These pivotable holders are arranged around the circumference of the drum and a plu-

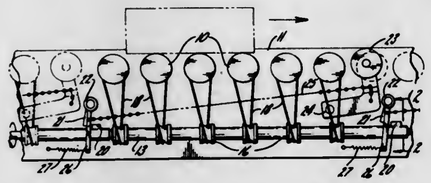
rality of corresponding fixed holders are longitudinally aligned with the first mentioned holders. The pivotably mounted holders engage a three-dimentionally arcuate rod surrounding the drum axis and, as the drum rotates, each of the pivotable holders engages the rod and is angularly displaced thereby through 180° until it overlaps the corresponding fixed holder. Both the sets of holders are connected to suction means which is so co-ordinated with the drum rotation that a cigarette is held in each pivotable holder until it overlaps the corresponding fixed holder, then the cigarette is transferred to the corresponding fixed holder an held therein until released from the drum.

3,696,911
COURSE FORMATION APPARATUS
Sidney L. Lunden, Spokane, Wash., assignor to Moore-Iem, Inc., Spokane, Wash.
Filed Dec. 31, 1970, Ser. No. 103,020
Int. Cl. B65g *43/08*
U.S. Cl. 198—40 **9 Claims**



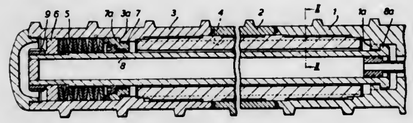
A course formation apparatus is disclosed having an article feed for conveying the articles to a course formation station. A stop means projects into the path of the articles to engage and stop the movement of one of the articles to form a first article in the course. A bobbing finger element periodically projects into the path of the articles at an upstream position to determine if the position is occupied by a stationary article that has built up behind the first article of the course indicating that a full course has been formed.

3,696,912
BRAKE FOR ROLLER CONVEYORS
Fred J. Fleischauer, Oakmont, Pa., and Theodore Hammond, Grand Haven, Mich., assignors to Ermanco Incorporated, Grand Haven, Mich., by said Hammond and General Logistics Corporation, Oakmont, Pa., by said Fleischauer
Filed May 5, 1969, Ser. No. 842,047
Int. Cl. B65g *13/02*; F16d *13/04*
U.S. Cl. 198—127 **15 Claims**



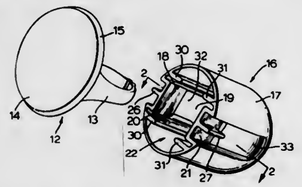
A selectively operable brake for roller conveyors is described in which each roller is connected to a pulley beneath the pass line by a tensioned resilient drive belt and the pulleys are selectively stopped by interposing a sprag. The pulleys may either be positively arrested or allowed to frictionally slip for braking. Interposition of the sprag is controlled by means which permit the device to function as an accumulation conveyor while permitting accumulated objects to be released individually or in groups. The device is usable as a powered live-roller accumulation conveyor or without power as a gravity conveyor.

3,696,913
EXTRUDER WORMS FOR EXTRUDING SYNTHETIC RESINS
Dietmar Anders, Hannover, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany
Filed April 3, 1970, Ser. No. 25,458
Claims priority, application Germany, April 19, 1969, G 69 15 822
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **1 Claim**



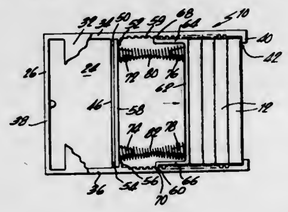
An extruder worm comprises a plurality of co-axial hollow worm sections keyed to a shaft extending therethrough. The sections are urged together by a disc spring.

3,696,914
TRINKET OR RING HOLDER
Kenneth Jack McPhail, 33 Meadowlea Road, Chatham, Ontario, Canada
Filed Nov. 28, 1969, Ser. No. 880,863
Int. Cl. B65d *1/00*
U.S. Cl. 206—1 R **1 Claim**



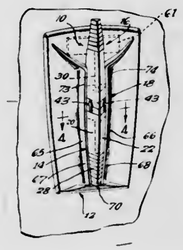
A cup-shaped holder for a ring or like trinket with inner surfaces which engage with and hold the annular part of the ring while the ring mount serves to close the mouth of the holder. The inner surfaces of the holder co-operate with the annular part of the ring to exert a compressive force on the ring which is removed after the major portion of the ring passes into an expanded portion of the holder.

3,696,915
BLADE DISPENSER
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 12, 1970, Ser. No. 88,575
Int. Cl. B65d *83/10*
U.S. Cl. 206—16 BC **5 Claims**



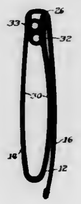
A blade dispenser for razor blades comprising a housing having a partition dividing the housing into a blade dispensing compartment and a used blade receptacle. Double volute springs are disposed on truncated conical studs on the partition and a movable platen for feeding new blades to a position where they may be automatically seated in a razor. The housing has a slot therein and is provided with a baffle for receiving and retaining used blades.

3,696,916
THERMOMETER SET
Allen Penniman, Glendale, and Elmer A. Koenig, Kirkwood, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed Aug. 4, 1969, Ser. No. 847,318
Int. Cl. B05d *85/20*
U.S. Cl. 206—16.6 **7 Claims**



A thermometer container and holder assembly of plastic construction adapted to be placed at the patient's bedside wherein the thermometer container consists of a tapered three-sided base which receives a push-on stopper at the upper end thereof and a cover also receivable on the stopper of identical construction to the base, there being provided a wall or table mounted support for the container that resiliently grasps the container with sufficient force so that if desired the container cover may be removed without the removal of the entire container from the support.

3,696,917
TOBACCO POUCH CLOSURE
Elaine G. Levi, 400 East Randolph Street, Chicago, Ill.
Filed Sept. 10, 1970, Ser. No. 71,059
Int. Cl. B65d *85/16*
U.S. Cl. 206—41 F **6 Claims**



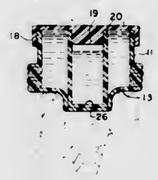
A receptacle closure comprising a pair of resilient beads secured to opposite walls of a receptacle adjacent the receptacle opening. The beads are located on the receptacle walls in a manner such that when the receptacle is closed one bead overlaps and snugly engages the other bead to form a tight seal.

3,696,918
CHRISTMAS TREE ORNAMENTATION PACKAGE
Charlotte F. Lerner, Brooklyn, N.Y., assignor to Small World Importing Corp., New York, N.Y.
Filed March 23, 1971, Ser. No. 127,244
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.31 **11 Claims**



This package contains four different lengths of garland or other elongated flexible ornamentation to drape a Christmas tree at various levels, and to make it easy to drape the tree. To drape the upper end of a Christmas tree, a shortest length of ornament is used. As you drape at lower levels, the lengths of the ornamentation increase. Also the garland for upper levels are of less diameter than the garlands for the lower levels. The package comprises a box that contains separate holders for each length of garland. The holders are of uniform dimension from side to side to fit into a box of uniform width. All the holders are of uniform height to fit the height (or thickness) of the box. A holder holding a greater length of garland is of greater dimension lengthwise of the box than a holder holding a shorter garland. To facilitate use, the box has a window to expose part of the garland on each holder with the windows differing in size corresponding to the lengths of the garlands on said holders.

3,696,919
DOUBLE CONTAINER WITH MIXING MEANS
Gilbert DeWayne Miles, Ossining, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 96,104
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 A **8 Claims**

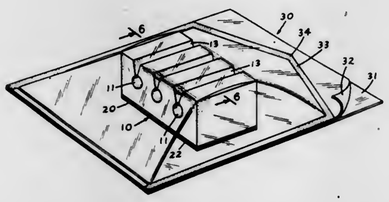


The double container comprises an outer container having positioned therein substantially centrally a smaller inner container. Each mouth of both containers lie in approximately the same plane. Additionally, both containers are closed by the same single cap. The outer container may be longitudinally compressed so that access to the inner container may be obtained due to the elastomeric material with which at least the lower portion of the outer container is constructed. The inner container may be removed from its closed position to expose the contents therein to the contents in the outer container all within the outer container.

3,696,920
DEVICE FOR ORGANIZING OBJECTS

Charles Arthur Lahay, North Kingston, R.I., assignor to International Paper Company, New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,063
Int. Cl. A61b 15/00, 19/02; B65d 81/00
U.S. Cl. 206—63.2 R 14 Claims

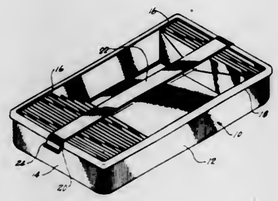


A device is provided for organizing objects such as, for example, surgical instruments which comprises a block of a semi-rigid foam containing therein one or more channels of a configuration adapted to retain the object therein, a beveled slot providing communication between the surface of the block and the channel, the width of the slot narrowing as it approaches the channel, and means for adhesively securing an outer surface of the block to a suitable supporting surface. The object is inserted through the beveled slot into the channel where it is retained in a locked position until needed. The object is then removed for use from the channel by expanding the slot sufficiently to permit the object to be withdrawn from the channel through the slot. The device is conveniently packaged sterile in a strippable sterile enclosure.

3,696,921
RESTRAINING TAPE FOR MAIL PACKAGING

Matthew J. Desmond, 2105 Lorraine Road, San Marino, Calif.

Filed Nov. 5, 1970, Ser. No. 87,273
Int. Cl. B65d 1/34, 63/00
U.S. Cl. 206—73 2 Claims



There is described an arrangement for transporting first-class letters in which the letters are stacked edgewise in an elongated plastic tray. A paper band of sufficient length to bridge the length of the tray and to provide end portions which overlap the sides of the tray is provided, with a pressure-sensitive adhesive on the end portions for securing the tape in place to hold the letters in the tray.

3,696,922
FLOTATION OF COPPER AND NICKEL SULFIDES FROM TALCOSE BEARING ORES

David Weston, 34 Parkwood Avenue, Toronto, Ontario, Canada

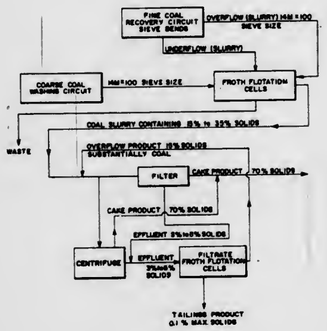
Continuation-in-part of Ser. No. 873,911, Nov. 3, 1969, which is a continuation-in-part of Ser. No. 727,268, May 7, 1968, Pat. No. 3,596,838. This application March 5, 1970, Ser. No. 16,946
Claims priority, application Canada, Nov. 7, 1969, 67,006. The portion of the term of this patent subsequent to June 6, 1989, has been disclaimed.
Int. Cl. B03b 1/04; B03d 1/06
U.S. Cl. 209—5 3 Claims

A method for the flotation of nickel and copper sulphide minerals from talcose bearing ores using an alkaline circuit in which at least one of the alkaline reagents is soda ash or ammonium hydroxide and following conditioning of the pulp with a collecting agent of the xanthate family to activate the nickel and copper sulphide materials, the pulp is conditioned with a flocculating agent to depress the host rock minerals and in which following flotation the rougher concentrate is further conditioned with a dispersant or a flocculant prior to the first cleaner float.

3,696,923
METHOD FOR RECOVERING FINE COAL AND COAL-CONTAINING PARTICLES IN A COAL RECOVERY CIRCUIT

Francis G. Miller, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Continuation of Ser. No. 703,362, Feb. 6, 1968, abandoned, and a continuation of Ser. No. 861,908, Sept. 29, 1969, abandoned. This application July 28, 1970, Ser. No. 59,013
Int. Cl. B03b 7/00
U.S. Cl. 209—12 1 Claim

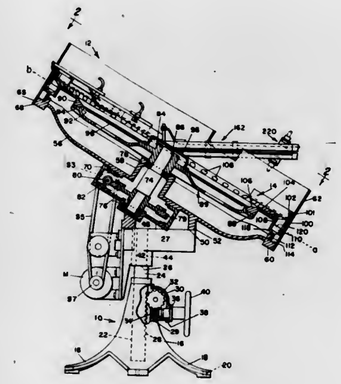


Improved method of treating a fine coal slurry from a coarse coal washing circuit and/or a slurry from a fine coal recovery circuit wherein the slurries are passed to a first froth-flotation step to recover a substantial portion of the fine particles of coal therein as a froth product, dewatering the froth product to obtain a cake product containing usable coal and an effluent containing substantially all finely divided coal particles. The effluent is passed to a second series of froth-flotation cells wherein the fine particles of coal are removed as a second froth product and substantially clean water is recovered as the tailings product. The second froth product is returned to the recovery circuit wherein the fine particles of coal are recovered. The tailings product may be recycled if desired.

3,696,924
CAP FEEDING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Jan. 25, 1971, Ser. No. 109,126
Int. Cl. B07c 5/34
U.S. Cl. 209—73 53 Claims

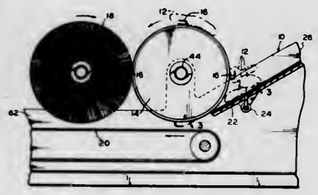


Apparatus comprising a hopper containing a sorting table supported in an inclined position so that a mixed mass of caps deposited in the hopper at the lower edge of the table are carried upwardly by rotation of the table to the level of the upper edge where there is a discharge passageway to which the caps are adapted to be led in single file for transportation to a capping machine and peripherally distributed pockets, guide rails and jets arranged to capture certain of the caps and orient them for entrance into the discharge passage while discarding others.

3,696,925
SEAFOOD SORTER

Foye H. Harper, P.O. Box 352, Newberg, Oreg.

Filed Aug. 24, 1970, Ser. No. 66,451
Int. Cl. B07c 3/04
U.S. Cl. 209—109 3 Claims

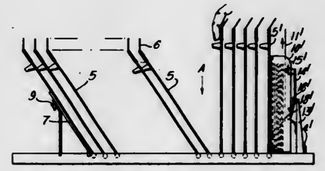


A mass of seafood chuncks is placed on a chute having a reciprocating spreader which spreads the mass on the chute and hooks on a drum are moved through the lower edge of the mass to hook individual chunks and then drop the chunks onto a conveyor, a rotary brush assisting to strip the chunks from the hooks.

3,696,926
COMBINED FEEDING AND SORTING DEVICE FOR SHEET MATERIAL

Finn Kohler Syversen, Solveien 4 A, 1820 Spydeberg, Norway

Filed April 21, 1971, Ser. No. 135,941
Claims priority, application Norway, April 23, 1970, 1555/70
Int. Cl. B07c 7/02
U.S. Cl. 209—122 4 Claims

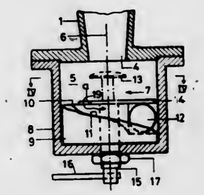


A sorting device having divider cards and a supply tray mounted on a base for receiving sheets. A feeding device for sheets is associated with the tray, so that when the cards are separated to form a filing pocket, the feeding device automatically projects the first exposed sheet from the supply tray. The cards are releasably retained in the base by a displaceable lock rail operable from the front of the base.

3,696,927
HYDROCYCLONE

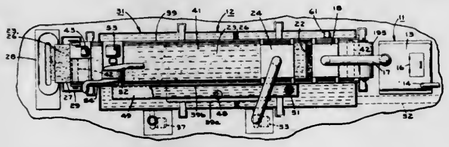
Karl Folke Olof Jakobsson, Taby, and Bo Ake Forsner, Vallentuna, both of Sweden, assignors to Aktiebolaget Cellecc, Tumba, Sweden

Filed Feb. 10, 1970, Ser. No. 9,685
Claims priority, application Sweden, Feb. 23, 1969, 1950/69
Int. Cl. B04c 5/16
U.S. Cl. 209—211 2 Claims



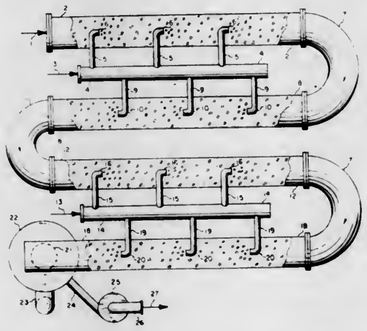
A discharge chamber of circular cross-section extends axially from the vortex chamber and has at one end an inlet from the vortex chamber and at the other end a bottom provided with an outlet, the discharge chamber also having a central axis around which the heavy fraction separated in the vortex chamber is rotated in one direction while passing from said inlet to said bottom, the outlet being located below the plane of the bottom. The bottom has an open discharge groove communicating with the outlet and leading therefrom with a gradually diminishing cross-sectional area in said one direction along the circular side wall of the discharge chamber through an angle less than one revolution; and a covering disc is disposed in close parallel relation to the bottom plane and is movable around the central axis, this disc having a recess in its peripheral portion and otherwise covering said bottom substantially entirely.

3,696,928
METHOD OF RECOVERING SOLID PARTICULATE MATERIAL FROM A LIQUID
William N. Schjerven, Jr., Bellwood, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,939
Int. Cl. B01d 37/02
U.S. Cl. 210—75 **5 Claims**



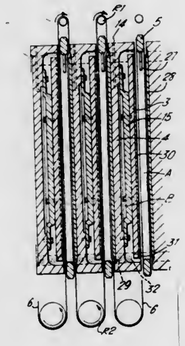
In recovering copper solid particulate material from a rinse water, a filter aid in the form of a relatively thin layer of the solid particulate material is initially formed on a portion of an indexable filter media. This is accomplished by combining solid particulate material of the type which is to be recovered, with water, to produce a relatively thick slurry. This slurry is passed through the filter media and the material which filters out is subsequently leveled to a predetermined uniform depth to form the filter aid layer or bed. The rinse water then is passed through the filter aid and the underlying portion of the filter media, which cooperate to remove solid particulate material from the rinse water. Subsequently, as the filter media is indexed, a filter aid layer is formed on succeeding portions thereof and the filtered solid particulate material and the solid particulate material forming its associated filter aid layer are removed therefrom. After removal of the solid particulate material from the filter media, the media may be incinerated to recover any particulate material embedded therein or adhering thereto.

3,696,929
APPARATUS FOR THE OXIDATION OF LIQUIDS
Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.
Division of Ser. No. 730,294, May 20, 1968, Pat. No. 3,549,314. This application Nov. 27, 1970, Ser. No. 73,385
Int. Cl. C02c 5/04
U.S. Cl. 210—199 **9 Claims**



Black liquor is oxidized in a sinuous pipe or duct oxidizer, by dispersing an oxygen-containing gas into the continuous black liquor phase flowing within the duct. The gas is passed into the black liquor at spaced intervals, and the resulting dispersion of gas in oxidized black liquor is discharged into a vessel or other container below the level of the body of liquor in the vessel. Fully oxidized black liquor is removed from the vessel at a regulated rate, so as to maintain the level of liquor in the vessel, and oxygen-depleted gas is also removed from the vessel. The oxygen-depleted gas removed from the vessel may contain residual foam or entrained liquid droplets. In this case, the gas is passed through a mechanical foam breaker or a cyclonic gas-liquid separator, with separated black liquor being recycled to the vessel.

3,696,930
HORIZONTAL COMPRESSION TYPE AUTOMATIC FILTER PRESS
Tadao Tokura, Handa City, Japan, assignor to NGK Insulators, Ltd., Nagoya City, Japan
Filed Dec. 9, 1970, Ser. No. 96,545
Claims priority, application Japan, April 4, 1970, 45/28271
Int. Cl. B01d 25/32
U.S. Cl. 210—225 **8 Claims**

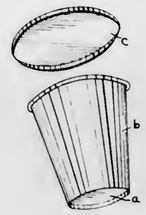


A horizontal compression type automatic filter press for filtering and squeezing slurry through an endless filter cloth, comprises filter plate open and close means for opening and closing all of filter plates simultaneously, diaphragms each having a main portion, which is secured to a movable filter plate, being thicker than the periphery of the diaphragm secured to a stationary filter plate, double surface filter plates each providing a filtration resistance difference between opposite surfaces thereof, filter cloth transfer means having two sets of rollers arranged one above the other, the diameter of the one set of rollers above arranged being smaller than that of the other set of rollers. The filter press according to the invention accomplishes minimization of water content of filter cakes obtained by the press and remarkably high average filtering rates and achieves full automatic operation and shortening of the overall length of the press.

3,696,931
VESSEL HAVING AN OSMOTIC MEMBRANE AS AN ENCLOSING PART THEREOF
William T. Hough, 312 South Finley Avenue, Basking Ridge, N.J.
Continuation-in-part of Ser. No. 442,122, March 23, 1965, abandoned, and a continuation-in-part of Ser. No. 813,376, Feb. 26, 1969, Pat. No. 3,532,621. This application April 16, 1969, Ser. No. 816,765
Int. Cl. B01d 31/00, 13/00
U.S. Cl. 210—244 **15 Claims**

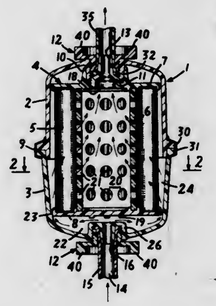
A cup having an osmotic membrane as a cover for an opening in the bottom or side of the cup for a process for desalinization of sea water by regular (natural) osmosis of

water from sea water into a comestible food which is neither separable by volatilizing nor separable from liquid phase water



by other methods, and the diluted comestible food may be consumed without further processing.

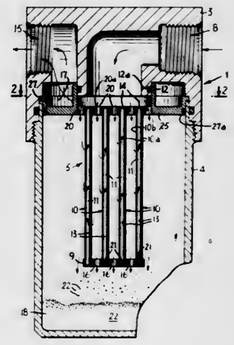
3,696,932
DISPOSABLE FILTER ASSEMBLY
David Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 779,050, Nov. 26, 1968, abandoned. This application Sept. 30, 1970, Ser. No. 76,833
Int. Cl. C02c 1/14
U.S. Cl. 210—437 **39 Claims**



A disposable filter assembly is provided with a leakproof connection between the filter element and the filter housing to prevent external leakage, and a direct fluid connection between the interior of the filter element and one fluid line, thereby ensuring that unfiltered fluid will not by-pass the filter element and contaminate the downstream fluid line. In the preferred embodiment the fluid line connection and the filter element-housing connection are formed as an integral part of one filter element end cap. A vent also is provided to release air from the assembly when the assembly is installed and put on-stream.

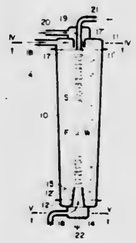
3,696,933
INERTIA FILTER
David B. Pall, Rosyln Estates, and Bernard F. Silverwater, Plainview, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 780,097, Nov. 29, 1968, abandoned. This application June 15, 1970, Ser. No. 46,054
Int. Cl. B01d 29/00
U.S. Cl. 210—444 **15 Claims**

An inertia filter is provided in which a high velocity flow of influent fluid is directed along the surface of the filter via a flow injector at a minimum velocity head loss of at least 2 psi across the flow injector. The inertia filter is positioned in a housing across the line of flow from the inlet to the outlet such that part if not all flow from the inlet to the outlet must pass through the inertia filter, and all flow to the outlet must pass through the inertia filter or another filter. The flow injector constrains and directs the flow at a selected surface portion of the inertia filter at high velocity of at least 20 ft./sec., in a manner to maintain an inertial flow component along the surface of the filter, to retain particles in the fluid and inhibit the



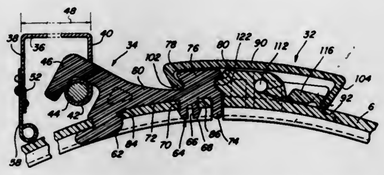
lodging of particles on the filter surface. A sump is preferably provided in the housing to retain and collect contaminant particles swept along and off the surface of the filter, if the inertia filter is the only filter, but a sump is not needed if supplemental filters are provided in addition to the inertia filter.

3,696,934
APPARATUS FOR CENTRIFUGALLY SEPARATING IMPURITIES FROM FLUID SUSPENSIONS
Saburo Oisi, 7-1, 6-chome Oguro, Shizuoka-shi, Japan
Filed Jan. 24, 1968, Ser. No. 700,135
Claims priority, application Japan, Sept. 2, 1967, 42/56498
Int. Cl. B01d 21/26
U.S. Cl. 210—512 **2 Claims**



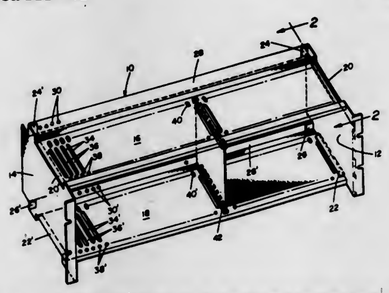
An apparatus for removing objectionable impurities from a fluid suspension of pulp or paper-making material in the manufacture of paper. The apparatus comprises a cylindrical separating chamber through which flows a fluid suspension vortex containing high and low density impurities whereby the impurities are centrifugally separated as a function of their density. The most dense impurities are flung radially outwardly from the fluid suspension vortex whereby they are entrained and carried away by a water vortex which encircles the fluid suspension vortex and advances through the separating chamber in a direction opposite to that of the fluid suspension vortex.

3,696,935
REEL SEALING AND STORAGE APPARATUS
Carl J. Dean, Southbridge, Mass., assignor to Barry Wright Corporation, Watertown, Mass.
Filed Dec. 24, 1969, Ser. No. 887,962
Int. Cl. A47f 7/00
U.S. Cl. 211—13 20 Claims



A reel sealing storage device comprising an elongated flexible band having an undulated lower surface for engaging with the sides of a storage reel, the ends of said band being provided with a latching means in which a catch member is of curved configuration to seat upon the curved surface of the band, the latch being in two basic components assembled in a releasable manner to the ends of the band, one element of the latch being provided with a centering tang for mating with guide legs on one band end.

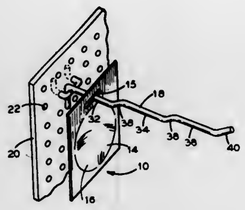
3,696,936
PRINTED CIRCUIT CARD RACK
William J. Straccia, Allentown; Brooke E. Gernert, Topton, and Ronald B. Sherer, Allentown, all of Pa., assignors to Electro-Space Fabricators, Inc., Topton, Pa.
Filed Dec. 15, 1970, Ser. No. 98,222
Int. Cl. A47g 19/08
U.S. Cl. 211—41 8 Claims



A printed circuit card rack is disclosed having end plates and shelf members, which are accurately positioned by and secured together by means of flanges and tabs forming integral portions of the end plates. The shelf members are provided with holes and slots for receiving flexible snap-in card guides which are free to expand and contract so as to accommodate printed circuit cards of varying size. The shelf members are further provided with maximum air flow circulation vents extending between each pair of adjacent card guides.

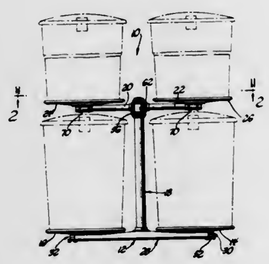
3,696,937
HANGER BRACKET FOR MERCHANDISE
Leslie Braverman, Spring Valley, N.Y., assignor to Solo Products Corporation, Englewood, N.J.
Filed Dec. 15, 1969, Ser. No. 885,016
Int. Cl. A47f 7/00
U.S. Cl. 211—54 10 Claims

A hanger bracket holds packages of merchandise in such a manner that the quantity of merchandise on the bracket at any time is easily visible and quickly ascertainable for inventory control by unskilled help. The bracket is removably mounted on a pegboard and has a stepped finger for holding groups of packages at different levels. Another embodiment uses two



fingers with one finger holding the merchandise and the second finger having telescopic sections biased for urging the merchandise cards or packages forward towards the free end of the first finger. The second finger contains markings or indicia for reordering purposes.

3,696,938
SUPPORT ASSEMBLY FOR GARBAGE CANS
Donald W. Sherman, Apt. 520, The Glens, 7335 Deep Run, Birmingham, Mich.
Filed March 18, 1971, Ser. No. 125,594
Int. Cl. A47g 29/00
U.S. Cl. 211—78 5 Claims

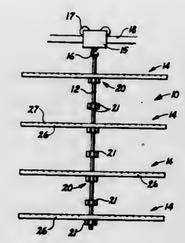


A support assembly of the type which may be utilized to support garbage cans, as in a homeowner's garage. The assembly includes a base having an H-shaped configuration. A pair of circular trays are welded to the sides of the H-shaped base. A tubular post is removably attached to the base by bolts and extends upwardly therefrom. A pair of support arms are rotatably supported at the top of the post by a pair of clevises and a circular tray is welded to the distal end of each arm.

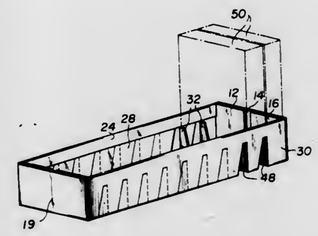
3,696,939
SMOKE TREE
Karl B. Drowatzky, 802 Prairie Park Road, Wichita, Kans.
Filed Jan. 4, 1971, Ser. No. 103,516
Int. Cl. A22c 15/00; A47f 5/08, 5/10
U.S. Cl. 211—117 9 Claims

A smokehouse meat rack which readily disassembles including a vertically hanging support rod and a plurality of

horizontally positioned stations each of which are coupled to the rod by a pair of vertical pins carried on the stations which releasibly engage a pair of corresponding sleeve members on the rod.



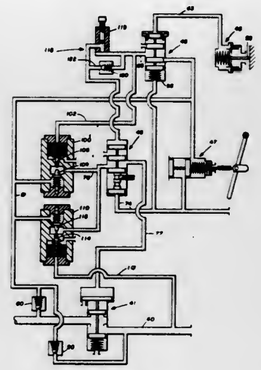
3,696,940
SUPPORT STRUCTURE
Louis S. Hoffman, Morristown, N.J., and Harry Spruyt, New York, N.Y., assignors to Beech-Nut, Inc., New York, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,800
Int. Cl. A47f 3/14
U.S. Cl. 211—126 4 Claims



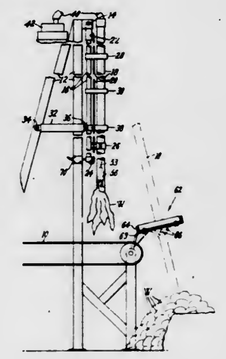
Disclosed herein is a support structure formed from two adjacent walls. The structure can be utilized in tray containers to divide it into partial shelves. The shelves are formed by utilizing a portion of both sides of two adjacent walls which form the shelves and supports thereof.

3,696,941
AUTOMATIC COUPLING SYSTEM FOR FREIGHT CARS
Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed May 12, 1971, Ser. No. 142,657
Int. Cl. B61g 5/08
U.S. Cl. 213—76 6 Claims

An improvement in an automatic coupling system for a railway car which is equipped with a mechanical coupler, a main air line adapted to be connected to a corresponding air line of another railway car, a main valve interposed in the main air line, and means for actuating the main valve responsive to intentional coupling of the railway car. The improvement, in its preferred form, takes the form of a pair of pilot-operated check valves connected in parallel to the air conduit supplying the actuating means to prevent flow of air therethrough when the main air line is charged but uncoupled at one end, and to maintain the flow therethrough when coupled to another car but with either car having a faulty interface valve actuation which would normally allow the main valve to close.



3,696,942
MEANS FOR TRANSFERRING SUCCESSIVE FLEXIBLE WORK PIECES
Charles J. Kitchener, and Paul G. Rumball, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.
Filed Sept. 30, 1970, Ser. No. 77,177
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BB 8 Claims

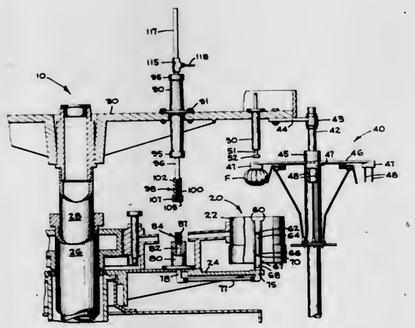


A device is powered for movement heightwise and laterally of a pile of work pieces, for instance articles of fabric or the like, and includes fluid pressure operated jaws for seizing and releasing successive single work pieces. The jaws are operative adjacent to a suctional opening in a work transferring member that contains a fluidically controlled circuit responsive to the change in pressure in the member, when its opening is restricted by a work piece, to effect closure of the jaws thereon. Arrival of the member with its clamped work piece at the release position causes the circuit to release the work piece.

3,696,943
FRUIT SUPPORTING APPARATUS

Charles T. Mulford, Auburndale, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed April 1, 1971, Ser. No. 130,122
Int. Cl. B23q 3/18
U.S. Cl. 214—1 BC 11 Claims

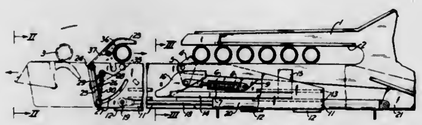


A fruit is arranged to be held upon a plurality of impaling pins with its top surface at a predetermined elevation regardless of the size of the fruit by means of a support for the lowermost surface of the fruit which support is slidably mounted with respect to the pins and is hydraulically controlled. Valve means are provided to permit the support to move vertically with the fruit when the fruit is placed in the proper position upon the pins and to prevent further movement of the support during subsequent processing operations performed upon the fruit.

3,696,944
PIPE HANDLING APPARATUS

Erwin A. Campbell, Bixby, Okla., assignor to Lee C. Moore Corporation, Tulsa, Okla.

Filed Oct. 7, 1970, Ser. No. 78,890
Int. Cl. E21b 19/14
U.S. Cl. 214—2.5 7 Claims

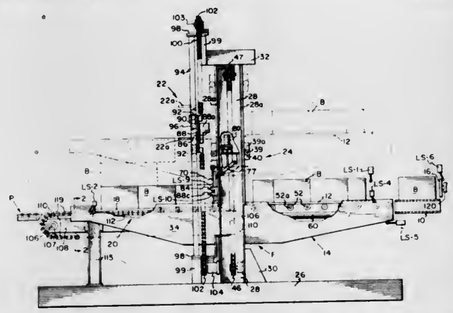


Positioned in an oil well derrick is a pipe carrier having a horizontal slot open at one end for receiving a stand of pipe that is to be moved laterally away from a well. Mounted on the carrier beside the slot for movement parallel thereto is a slide that has an outer end movable toward and away from the carrier. A hook is pivoted to the outer end of the slide for movement toward and away from it. For moving pipe into the slot, the hook is urged to project laterally away from the slide into a position facing the slot. When the slide is reciprocated, the hook pivots and slides past suspended pipe as the slide is moved outwardly so that when the slide is moved in the opposite direction the laterally projecting hook will carry the pipe into the slot. Provision also is made for using the slide and hook to deliver pipe from the carrier to a position above the well.

3,696,945
BLOCK CUBING APPARATUS

Elroy F. Bobolts, Alpena, Mich., assignor to Besser Company, Alpena, Mich.

Filed Dec. 9, 1970, Ser. No. 96,469
Int. Cl. B65g 57/10
U.S. Cl. 214—6 G 19 Claims

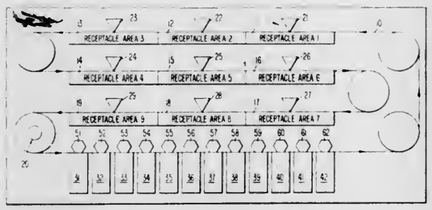


Block cubing apparatus for stacking tiers of blocks, such as cement building blocks, in cubes comprising: a support member on which the tiers of blocks are to be stacked, independently movable block height sensing mechanism engageable with the uppermost tier of blocks on the support member to positively locate the sensing mechanism relative to the uppermost tier of blocks thereon, and a block transfer system responsive to the sensing mechanism for moving tiers of blocks upwardly to the level ordained by the sensing mechanism and thence moving them laterally to a position in which they are released to and supported by the uppermost tier of blocks on the support member.

3,696,946
CONVEYOR SYSTEM HAVING A PLURALITY OF CARRIER POSITION SENSORS

James R. Hunter, Chadds Ford; Bernard B. Dinerman, Norristown; Abe Mann, Bala Cynwyd, and Franklin T. Schroeder, Phoenixville, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 15, 1970, Ser. No. 37,629
Int. Cl. B65g 43/00
U.S. Cl. 214—11 R 14 Claims

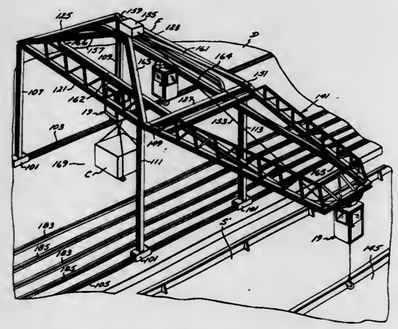


This disclosure relates to an automatic conveyor system having a plurality of sensors to detect the positions of the conveyor carriers so that the difference between a computed carrier position and its actual position will be less than the maximum tolerable error due to wear, stretch or slack in the conveyor belt or chain. At the time an article or parcel is placed in the conveyor system, its carrier designation and position of the destined receiving bin are stored in a memory. During each incremental time period, the contents of the memory are scanned and compared with counters associated with each position sensor. When a comparison is achieved, a signal is sent to the appropriate receiving bin to actuate the corresponding carrier to unload its contents.

3,696,947
DOCK SIDE CARGO HANDLING APPARATUS

Catharinus M. Ponsen, Lomita, Calif., assignor to Colin Craig, Westminster, Calif., a part interest

Division of Ser. No. 812,537, March 12, 1969, Pat. No. 3,543,953, which is a continuation of Ser. No. 754,175, Aug. 21, 1968, abandoned. This application July 15, 1970, Ser. No. 54,907
Int. Cl. B63b 27/10
U.S. Cl. 214—14 6 Claims



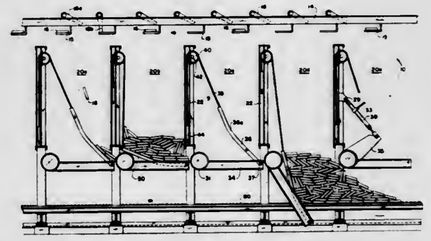
Cargo handling apparatus for transferring cargo between a cargo-receiving area on a dock and the hold of a ship moored alongside such dock. The apparatus includes a frame carried on mount means disposed on the dock and formed with a boom projecting outwardly over the side of the dock and over the hold of the ship. An endless track is carried from the frame and is formed with a pair of turned back loops connected together by a pair of coextensive side portions, one of the side portions projecting over the cargo-receiving area and one of the loops projecting over the hold. The other side portion of the pair of side portions cooperates with the other loop of the pair of loops to form a return from the one loop to the one side portion. A plurality of trolley devices are mounted on the track and carry respective hoists having cargo engaging means suspended therefrom. Operator platforms are carried from the respective trolleys and control means is provided so the operators can move the trolleys into position on the loop disposed over such hold and the respective hoists actuated to lower the load engaging means into such hold to retrieve cargo from the hold and then advance the trolleys over the return and onto the one side portion for lowering the cargo retrieved onto the load-receiving area.

3,696,948
LUMBER BIN SORTER WITH GUIDE SLING AND TILTABLE BIN FLOOR

Kenneth E. Murdoch, Richmond, B.C., Canada, and Donald B. Turner, Portland, Oreg., assignors to Moore Dry Kiln Company of Oregon, North Portland, Oreg.

Filed Oct. 5, 1970, Ser. No. 77,962
Int. Cl. A24f 27/14; B65g 47/18
U.S. Cl. 214—16 B 6 Claims

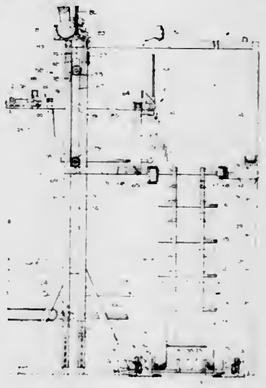
A lumber bin sorter, of the type having a multiplicity of bins to which graded lumber is carried by an overhead conveyor and ejected into designated bin locations, wherein each of the bins is provided with a rotatable torque tube member positioned at the bottom of the bin stall adjacent to and extending laterally of a bin wall. Projecting out horizontally from the periphery of the tube member are a plurality of laterally spaced girders bridging the space between adjacent bin walls and serving as a floor for the bin. At the extended end of certain of the floor girders is pivotally connected a counterweighted sling arm which angles upwards and serves to cushion the impact and guide the positioning of the initial boards dropping into an empty bin. The bin floor is held stationary in a horizontal position by a hydraulic latch securing in a retracted position a hydraulic actuator connected between the floor structure and the bin frame. As the bin fills up, the weight of the collected lumber pulls against the counterweight to gradually drop the sling arm in a vertical arc until eventually it assumes a substantially horizontal position resting against the tube member. When it is desired to empty a filled bin, the floor is allowed to start downward by the release of the latch on the actuator which in turn extends and allows the tube member to rotate about its axis, and pivot the floor downward, so as to form a bottom opening in the bin for gently depositing its contents onto a conveyor traveling underneath.



3,696,949
LOAD TRANSFER APPARATUS

Jean Leblond, and Jean Biet, both of Compiegne, France, assignors to Uniroyal Englebert France S.A., Neuilly sur Seine, France

Filed July 16, 1970, Ser. No. 55,424
Claims priority, application France, July 21, 1969, 6924817
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 13 Claims



An automatic apparatus is disclosed for transferring separate loads or objects individually from the conveying means bringing them to a loading station onto a truck or like vehicle which has a plurality of vertically spaced horizontal compartment tiers and by means of which the loads can be transported to another location for further handling or processing. The apparatus includes a load-hoisting lift movable vertically reciprocally past the various levels of compartments on such a truck in controlled amounts determined by the number and sizes of the horizontal tiers, a horizontal platform for supporting the truck and indexing it horizontally past the lift by increments determined by the number and sizes of

the objects to be disposed in side by side relation in each horizontal compartment, and means for transferring each load individually off the lift and into a respective compartment on the truck. This abstract is not to be taken as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,696,950

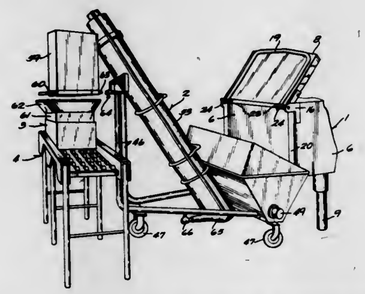
CHEESE MAKING APPARATUS

Norman J. Peters, Fond du Lac, Wis., assignor to Dairy Equipment Company, Madison, Wis.

Continuation-in-part of Ser. No. 669,572, Sept. 21, 1967, abandoned. This application Feb. 10, 1960, Ser. No. 871,441

Int. Cl. B65g *65/44*

U.S. Cl. 214—17 D **15 Claims**



This invention relates to cheese making equipment including a vat to contain cheese curd, and a portable unloading unit for conveying the curd from the vat to an elevated location. The vat is provided with an open end which is enclosed by a hinged door and the cheese curd is removed from the vat by a blade attached to a reciprocating carriage. The blade acts to push the curd out of the open end of the vat into a hopper of a portable unloader unit where a horizontal auger, located within the hopper, conveys the curd to an inclined auger which extends upwardly and discharges the curd into hoops or onto a conveying system.

3,696,951

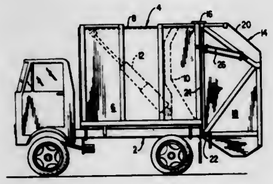
REFUSE COLLECTION VEHICLES

Charles R. Toppins; Samuel E. Harvey; Harvey W. Liberman, all of Knoxville; Houston Ratledge, Maryville, and Steven C. Voorhees, Oak Ridge, all of Tenn., assignors to Dempster Brothers, Inc., Knoxville, Tenn.

Filed July 30, 1970, Ser. No. 59,453

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **17 Claims**



A rear loader for refuse collection vehicles. The rear loader includes a housing with an opening through which refuse is deposited in a hopper. A movable packer plate in the housing moves in opposition to the bottom of the hopper to partially compress the material and subsequently to convey the material through a discharge opening into the body of the vehicle. The packer plate in the housing also cooperates with an ejector plate in the body to further compress the refuse contained within the body.

3,696,952

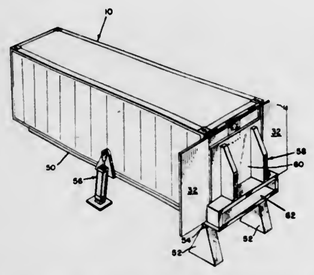
BULK CARGO HANDLING SYSTEM AND METHOD

Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-Land Service, Inc., Elizabeth, N.J.

Continuation-in-part of Ser. No. 21,966, March 23, 1970, abandoned. This application Oct. 26, 1970, Ser. No. 83,952

Int. Cl. B65g *65/34*

U.S. Cl. 214—314 **12 Claims**



A system for transporting bulk cargo within conventional freight containers which includes a disposable container liner adapted to be positioned within a container or truck. The liner includes a flexible bag member having the open end or ends closed by bulkheads. Openings, which are normally sealed during transport of the container, are provided in the rear bulkheads for facilitating loading and unloading of the liner.

3,696,953

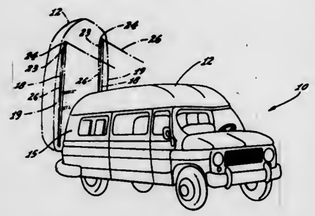
COMBINATION CAMPER VEHICLE AND BOAT

Sunyong P. Kim, 1350 W. Jefferson Boulevard, Apt. No. 1, Los Angeles, Calif.

Filed March 11, 1971, Ser. No. 123,337

Int. Cl. B60r *9/00*

U.S. Cl. 214—450 **10 Claims**



Apparatus is disclosed for automatically loading and unloading a boat relative to the top of a camper vehicle. The apparatus provides a movable linkage mechanism adapted to be secured to the top of the vehicle. A pair of parallel arms connected to the gunwales of a boat is supported on the movable linkage mechanism. A spring means is provided for enabling the movable linkage mechanism to rotate the arms with the boat thereon in one direction, and a cable means is provided for enabling the movable linkage mechanism to rotate the arms with the boat thereon in the opposite direction. The movable linkage mechanism is effective in reducing the height of the swing of the boat being rotated through an arc of 180° between a rest position contingent to the ground in the back of the camper vehicle and an inverted rest position on the top of the vehicle, and is further effective in balancing the boat on the movable linkage mechanism during the swinging thereof such as to facilitate and minimize the power required to accomplish the movement.

3,696,954

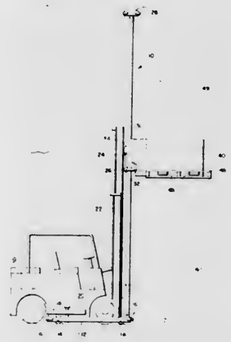
SIDE LOADING STACKER

Alexander Weisker, Easton, and Raymond L. Smith, Jr., Southbury, both of Conn., assignors to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed April 13, 1970, Ser. No. 27,728

Int. Cl. B66f *9/14*

U.S. Cl. 214—731 **17 Claims**



Forks are reciprocated through a carrier as the carrier moves laterally across a carriage. The carrier undergoes a motion similar to a storing or retrieving function. When no load is on the forks, the forks may be changed to serve racks to the right or the left of the stacker.

3,696,955

CONTAINER CLOSURE

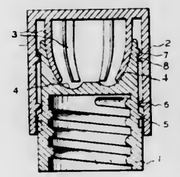
Edmund Kundt, Obermumpf; Max Klaiber, Muttenz, Basel-land, both of Switzerland; Wilfried Leitz, Muellheim, Baden, and Herbert Vom Rath, Neuenburg, Baden, both of Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 5, 1971, Ser. No. 113,018

Claims priority, application Switzerland, Feb. 13, 1970, 2134/70

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **12 Claims**



A safety closure for containers is particularly intended to prevent young children unscrewing caps from bottles containing medicine or poison. The closure has a screw cap which screws on the container and a safety cap which surmounts the screw cap and rotation of which in a normal position does not apply significant torque to the screw cap. Springs located and acting between the caps to provide an axial thrust bias the caps apart to the normal position determined by limiting stops. The safety cap is axially pushed down against the springs to a position where rotational coupling means on the caps can be engaged and the screw cap rotated by rotation of the safety cap. The springs are in the form of arms or tongues fixed at one end to one of the caps or to a ring interposed between the caps. The spring arms bear on one or more cap surfaces to develop the required axial thrust. As the safety cap is axially pushed down each spring arm slides on the cooperating cap surface. The latter is made concave and preferably has a curvature which increases in the direction in which the spring arm slides as the screw cap is pushed down. This feature provides an increased axial thrust in a short axial displacement.

3,696,956

CONTAINER CLOSURE GASKET MADE FROM A NOVEL PLASTISOL COMPOSITION

Edward W. Merrill, Cambridge, and Jacob M. Pikarsky, Amherst, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 729,651, May 16, 1968, Pat. No. 3,563,936. This application Feb. 8, 1971, Ser. No. 113,188. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.

Int. Cl. B65d *53/00*; **C08f** *45/38*

U.S. Cl. 215—40 **15 Claims**

Container closure gaskets are molded from a plastisol composition containing as the resin component 10 to 50 parts by weight of dispersion grade vinyl chloride polymer and 50 to 90 parts by weight of mass-polymerized vinyl chloride polymer. The amount of plasticizer employed in the composition can range from 50 to 110 parts by weight per hundred parts by weight of the resin component.

3,696,957

FLUID-TIGHT, FLEXIBLE AND TAMPER-PROOF CAPS FOR CONTAINERS HAVING A MATCHING NECK PROFILE

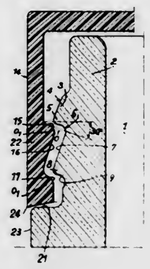
Paul S. Van Baarn, Monte Carlo, Monaco, assignor to Captocap Limited, Vaduz, Liechtenstein

Filed Nov. 13, 1970, Ser. No. 89,377

Claims priority, application France, Nov. 19, 1969, 6939752

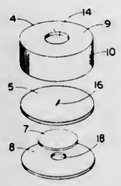
Int. Cl. B65d *41/22*

U.S. Cl. 215—41 **4 Claims**



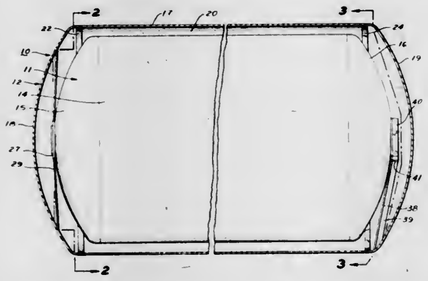
A fluid-tight and tamper-proof assembly comprising a container having a neck and a cap of elastomeric material, which cap comprises a top portion, and a skirt portion which engages around the neck, in which the outer surface of the neck is provided with at least two parallel collars and the inner surface of the skirt is provided with the same number of annular ribs as there are collars on the neck of the container, these ribs forming, with the inner surface of the skirt, grooves in which the collars engage resiliently when the cap is forced onto the neck characterized in that there are recesses formed under the collars on the neck to form a gap between each rib and the neck into which gaps the material of the ribs is forced when the cap is moved along the neck in a direction to remove the cap.

3,696,958
GAS VENTING LIQUID RETAINING CLOSURE
Hong Man Lee, Danbury, Conn., assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio
Filed July 22, 1971, Ser. No. 165,216
Int. Cl. B65d *51/16*
U.S. Cl. 215—56 **6 Claims**



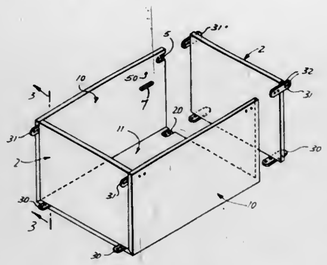
A container closure, e.g., a bottle cap, vents gases and/or vapors while retaining liquids. The closure has a liquid retaining diaphragm of film sandwiched tightly between a flexible venting disk and a support disk, all of which are held on the container by a cap body which may have threads, bayonet lugs, or the like. The venting disk has a slit which is blocked by the film. Gas to be vented travels past the film in a kind of labyrinth path, traveling radially outwardly to the edge of the film and then back on the other side of the film radially inwardly to where the slit is.

3,696,959
CRYOGENIC STORAGE VESSEL CONSTRUCTED OF DISSIMILAR MATERIALS
Paul J. Elfel, Walnut Creek, and Cesar E. Cavanna, Livermore, both of Calif., assignors to Lox Equipment Company, Livermore, Calif.
Filed Jan. 11, 1971, Ser. No. 105,413
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 **12 Claims**



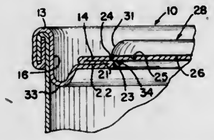
A vessel for storing and transporting cryogenic fluids such as liquid hydrogen, nitrogen and helium. The vessel comprises inner and outer elongated containers supported one within another in coaxial circumjacent relation by support means that includes transverse support structure adjacent each end of the vessel to constrain the containers against transverse or radial displacements relative to each other. The inner and outer containers are constructed of materials having different coefficients of thermal expansion; the inner container being formed of a material having a high coefficient such as aluminum and the outer container being formed of material having a lower coefficient such as steel. The transverse support structure includes elements comprised of each such material, and the invention is particularly concerned with a means for uniting the dissimilar materials at their junction adjacent the ends of the inner container.

3,696,960
MODULAR BOX
James M. Smirle, 309 Windsor Road, Wood-Ridge, N.J.
Filed Sept. 3, 1970, Ser. No. 69,276
Int. Cl. B65d *21/02, 11/18*
U.S. Cl. 220—23.4 **5 Claims**



A modular box formed of only two types of pieces is described, the pieces being capable of formation into a single unit or into a series of units, each of the same form. One of the pieces is provided with tabs through which locking members can be inserted to join to the second piece, the tabs being provided in such a way as to allow for joining of additional members. The box has particular utility as a display vehicle for flowers, especially artificial flowers.

3,696,961
PROTECTIVE EDGE FOR EASY OPENING CONTAINER
Albert J. Holk, Jr., Frankfort, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 815,043, April 10, 1969, abandoned. This application Oct. 20, 1970, Ser. No. 82,260
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **6 Claims**

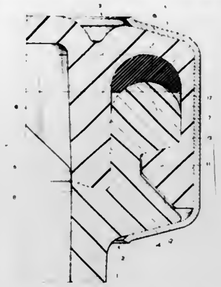


An easy opening container in which the end closure is formed with annular fold bands. A weakening line to define a removable panel portion is formed in the central panel slightly outboard of the folded smooth edge of the annular fold bands so that the folded edge protects the user from the sharp edges after removal of the removable panel portion.

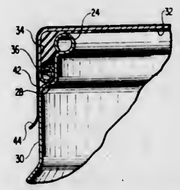
This disclosure also relates to a method for forming the above described easy opening end closure wherein the weakening line is formed in the end panel prior to complete formation of the fold band.

3,696,962
LIQUID SEALED CONTAINER
Hans Fehres, Essen, Belgium, and Lucas W. P. Boogert, Roosendaal, Netherlands, assignors to Van Leer (U.K.) Limited
Filed Dec. 10, 1970, Ser. No. 96,752
Claims priority, application Netherlands, Dec. 12, 1969, 6918704
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **6 Claims**

A container having a liquid tight lid retained by a locking ring with a resilient sealing member held within a channel-shaped profiled edge. To prevent undue compression of the sealing member when other heavy articles are piled on top of a container, the inner periphery of the container has a recess engaged by the inner flange on the channel-shaped profiled edge of the lid.

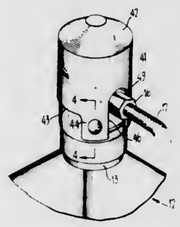


3,696,963
TOOL-FREE HAND-OPENABLE CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed Dec. 11, 1969, Ser. No. 884,134
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **7 Claims**



Easy-open container structure with enlarged opening for direct consumption of beverages or substantially full-opening for removal of container contents, and without the disadvantages of tear-strip openings, is provided. A snap-on, reclosable, closure with predetermined contouring of the outer diameter of the closure and a portion of the container provides a co-extensive surface for effective operation of tape means which exert maximum strength for sealing purposes and minimum strength for removal purposes.

3,696,964
CAP FOR OXYGEN AND SIMILAR CONTAINERS
Alfred Deakin, deceased, late of 1307 Mount Pisgah Road, Walnut Creek, Calif. (by Ida Mae Deakin, administratrix)
Filed Feb. 19, 1970, Ser. No. 12,584
Int. Cl. G07f *11/00*
U.S. Cl. 220—85 P **11 Claims**



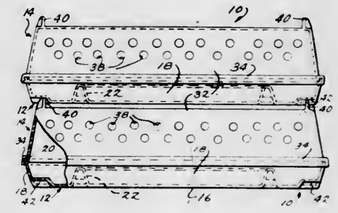
A cap for oxygen cylinders having an annular first portion threaded to the neck of the cylinder and a second portion telescopically engageable with the first portion and pivotally movable from a normal closed position in which the valve mechanism of the cylinder is enclosed to an open position wherein access is had to such valve mechanism.

3,696,965
CHILD'S LIQUID SPILL CONTAINER
Jack C. Napper, 3815 Volk Avenue, Long Beach, Calif.
Filed Jan. 15, 1971, Ser. No. 106,849
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.4 **1 Claim**



A device for preventing a liquid dribbling from a child's chin while the child is drinking from a glass, the device comprising a container securable by means of a band to a side of the drinking vessel and into which the dribbling liquid drops, thereby not soiling the child's garment.

3,696,966
DEVICE FOR HANDLING BABY CHICKS AND THE LIKE
Ralph H. Herolzer, Cincinnati, Ohio, assignor to Vanguard Industries, Inc., Cincinnati, Ohio
Filed Jan. 22, 1971, Ser. No. 108,769
Int. Cl. B65d *21/04, 11/00*
U.S. Cl. 220—97 F **5 Claims**



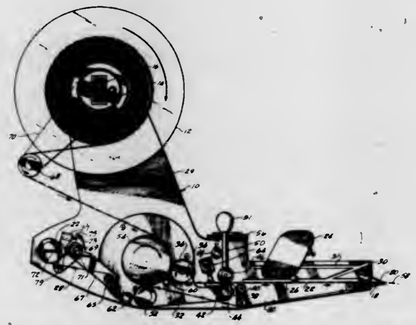
A device for handling baby chicks and the like consisting of two parts cooperable together to form a container serving to receive a multiplicity of baby chicks at the hatchery and to contain the chicks for unitary handling during transportation from the hatchery to the chicken house and subsequent positioning in supported relation on the floor of the chicken house, the top part being removable from the bottom part after the cooperating parts are positioned in the chicken house to liberate the chicks in supported relation on the bottom part, the latter providing means for receiving feed for sustaining the growth of the chicks for an initial period within the chicken house, the parts in cooperating relation providing stacking means for stably supporting a plurality of like cooperating parts in stacked relation during transportation, each part being freely nestable within like parts for convenient storage and return transportation.

3,696,967

LABEL DISPENSING SYSTEM

John R. Moore, Collegeville, Pa.; William L. Noack, Whittier, and Robert A. Roser, Claremont, both of Calif., assignors to Avery Products Corporation, San Marino, Calif.

Filed April 29, 1971, Ser. No. 138,689
Int. Cl. B65h 5/28
U.S. Cl. 221—73 24 Claims



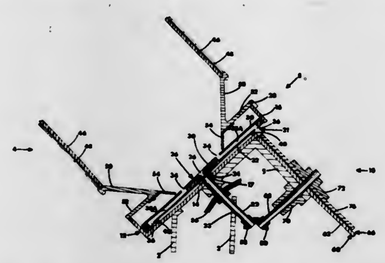
There is provided a system for accurately dispensing labels such as pressure sensitive labels from a carrier web having a release surface, on a continuous or synchronized basis. The system is based on a brake mechanism and a pressure roll pivoted about a common point, the former adapted to prevent transport of labels to a label dispensing element or mechanism and the latter for advancing a web or residue matrix by engagement with a constant running drum, upon release of the brake. Accurate dispensing of labels using the system is achieved through alternating brake-drive of the web or matrix in combination with the maintenance of a constant tension between the brake and rewind mechanism.

3,696,968

ARTICLE DEPOSITING MACHINE IMPROVEMENT

Merrell O. Jaech, Florisfant, Mo., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Dec. 10, 1970, Ser. No. 96,894
Int. Cl. B65g 65/18
U.S. Cl. 221—265 8 Claims



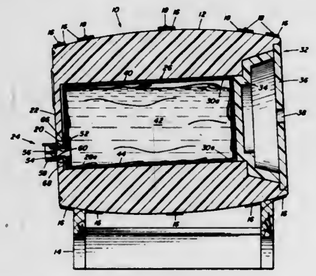
An improvement in the selector element of an article selector and depositing construction which selects articles from a mass and transfers them to a point of deposit. The improvement resides in the selector disc which is formed of a cooperatively engaged top and bottom plate, the top plate carrying a plurality of first spaced apart apertures disposed in a single ring concentrically to the center axis of the disc. The bottom plate defining an equal number of spaced apart second transfer apertures on its bottom surface and elongate depressions on its upper surface, the first and second apertures communicating with each other through said elongate depressions to form a plurality of radially disposed magazines for holding and transferring articles.

3,696,969

BEVERAGE DISPENSING SYSTEM

William T. De Van, and Ken Van Dyck, both of Weston, Conn., assignors to Auberge Corporation, Southport, Conn.

Filed Dec. 18, 1969, Ser. No. 886,114
Int. Cl. B65d 35/56
U.S. Cl. 222—105 4 Claims



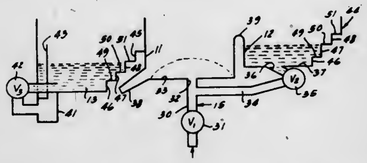
A beverage dispensing system comprising an enclosure in the form of a decorative wine cask, and a disposable beverage container for use within the enclosure. The disposable beverage container comprises an outer box also suitable for shelf display, and an enclosed flexible bag for containing the beverage. An integral tap is provided on the flexible bag, and means are provided for extending the tap through the box and enclosure for dispensing of the beverage.

3,696,970

MULTIPLE COMPARTMENT DISPENSER FOR A LAUNDRY APPLIANCE

Douglas E. Bunnell, Berrien Springs, and Douglas J. Walker, St. Joseph, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed April 23, 1971, Ser. No. 136,956
Int. Cl. B67d 5/60
U.S. Cl. 222—145 8 Claims



A dispensing device adapted for use with an appliance such as a washing machine for dispensing from separate compartments at least two different types of laundry agents such as a detergent, bleach, fabric conditioner, rinsing additive or the like at distinct periods during the operation of the washing machine. A water supply system directs water through a first valve and through the bottom wall of one of the compartments to flush the contents to the treatment zone. A second valve may be selectively actuated in co-relation with the programmed periods of a preset cycle to direct water closely adjacent or through the bottom wall of a second compartment to float the contents by overflow into the first compartment and then to the treatment zone. At the conclusion of the operation, the diluted contents of both compartments readily empty through the bottom wall openings and minimize the accumulation of any residue of the agent or additives in the plumbing or

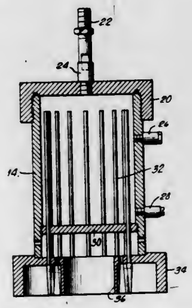
conduit system. In one embodiment a third compartment is associated with the first two compartments and has a separate valve controlled drain for selectively draining the contents contained therein into the treatment zone.

3,696,971

MECHANISM FOR SIMULTANEOUSLY METERING AND DISPENSING LIQUIDS

Ernest Maclin, Paramus, N.J., assignor to Electro-Nucleonics, Essex County, N.J.

Filed Sept. 24, 1970, Ser. No. 75,109
Int. Cl. B65d 5/06
U.S. Cl. 222—183 3 Claims



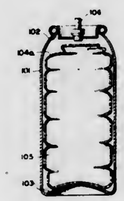
A multiple liquid dispensing type pipette apparatus has a chamber having a body closed at the top by a cap and at its bottom by a base member. A plurality of pipettes extend through the base of the chamber such that their inner ends are spaced from the cap. A vacuum and pressure connection extends through the chamber whereby the pipettes may be filled with liquid from a source thereof under the influence of vacuum. After the pipettes are filled they may be discharged by venting the chamber to atmosphere and then purged by putting the dispensing chamber under air pressure. A liquid drain extends through the body of the chamber at a point not substantially above its base plate.

3,696,972

GAS FLOW DISPENSER BAG

Fleix Rousselot, Liguge, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed March 12, 1970, Ser. No. 18,957
Claims priority, application France, March 14, 1969, 6907343
Int. Cl. B67d 5/58
U.S. Cl. 222—189 5 Claims



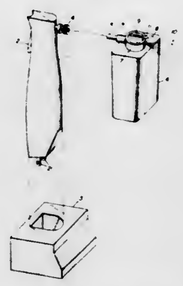
A dispenser for dispensing a stream of gas includes a lacunary mass which holds the liquefied gas. The mass is enclosed in a bag which is impermeable to the mass, but is permeable to the liquid and to the gas resulting from vaporization of the liquid.

3,696,973

HAND-HELD AIR COMPRESSOR AND LIQUID SPRAY DEVICE

Eric C. Cottell, Windermere, Bayville, L.I., N.Y.

Filed Dec. 9, 1969, Ser. No. 883,562
Int. Cl. B67d 5/54
U.S. Cl. 222—193 6 Claims



A hand-held air compressor having motor air pump and air discharge fitting which mates with a male fitting on a disposable plastic container for liquid to be sprayed, the top of the container having a movable inner plug containing a smooth plastic jet, which in one position aligns a conduit from the male fitting to the jet and also connects with a conduit extending to near the bottom of the container, permits spraying of the liquid, such as a hair spray, when connected with a plug in the position described. When the plug is turned through an angle, connection from the male fitting is sealed off and the jet is moved so that it is no longer opposite an opening in the top of the container. This seals off the container. Adjacent the jet is an air passage down into the container, half of which is indented into the plug and the other half of which is indented into the wall of the hole so that when the air jet passage is in line, this air passage is in line also. It is also sealed off when the plug is turned. The air compressor has charging contacts which fit into a conventional battery charger when the spray device is no longer in use.

3,696,974

APPARATUS FOR TRANSFERRING A PRODUCT, LIQUID OR SUCHLIKE IN A LIQUID

Germaine Van der Veken, Vrijheidslaan, 171, Brussels, Belgium

Filed Sept. 19, 1969, Ser. No. 859,308
Claims priority, application Belgium, June 27, 1969, 49257
Int. Cl. G01f 13/00, 11/10
U.S. Cl. 222—251 2 Claims

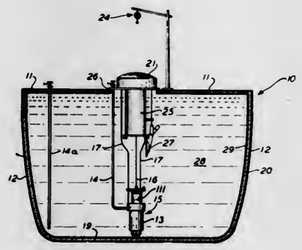


Apparatus for transferring a product, liquid or suchlike into another liquid, comprising the combination of an outer and of an inner element, whereby one of these elements is provided at one extremity with at least one cavity, the capacity of which corresponds to the dose of product or liquid to be handled.

3,696,975
SUBMERGED PUMP REMOVAL SYSTEM

Gerald T. Bryant; Hans D. Linhardt, both of Costa Mesa, Calif., and Kenneth E. Nichols, Denver, Colo., assignors to Airco, Inc., New York, N.Y.

Continuation of Ser. No. 776,946, Nov. 19, 1968, abandoned. This application July 13, 1970, Ser. No. 56,190
Int. Cl. F04b 47/06
U.S. Cl. 222—333 22 Claims

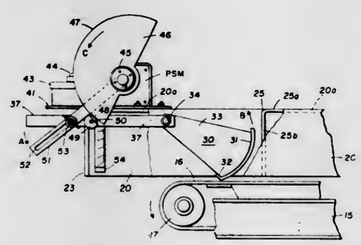


This invention relates to a submerged pump system for a tank, comprising a discharge housing in the bottom of the tank, means to lower a pump into said housing and to raise said pump into a chamber in the top of the tank, valve means to seal said chamber from the tank after the pump has been lifted into the chamber, said valve means thereby sealing the tank from theatmosphere and allowing the pump to be safely removed from the chamber.

3,696,976
LINEARIZED GATE CONTROL SYSTEM FOR MULTIPLE FEEDER AND HOPPER ARRANGEMENTS

Wayne B. Jacobson, Cedar Rapids, Iowa, assignor to Iowa Manufacturing Company, Cedar Rapids, Iowa

Division of Ser. No. 793,962, Jan. 27, 1969, Pat. No. 3,581,947. This application June 17, 1970, Ser. No. 57,885
Int. Cl. B67d 5/60
U.S. Cl. 222—504 5 Claims

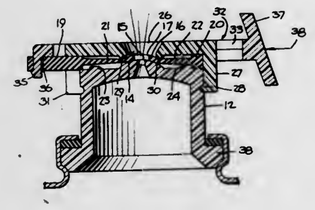


A linearized gate control for multiple hopper-feeders of the cold feed system of an asphalt plant is disclosed. Each hopper includes a cam, driven by a position servo motor, which opens or closes the gate governing the flow of aggregate from the hopper to its feeder, the latter being driven at a constant speed. The cam is profiled so that equal increments of motor shaft rotation produce equal increments of gate opening. The servo motors of all hoppers are connected into an electrical bridge circuit such that, after the respective proportionate openings of the gates are initially established by the setting of individual electrical controls for the gate motors, adjustment of a single master control to produce a certain percentage increase or decrease in the total aggregate delivered from all the hoppers will also increase or decrease the opening of each gate by the same percentage, as the case may be.

3,696,977
STRETCH ELASTOMER VALVE

Richard L. Davenport, and Gerald M. Niemiec, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed April 21, 1971, Ser. No. 135,955
Int. Cl. B65d 47/20
U.S. Cl. 222—561 8 Claims

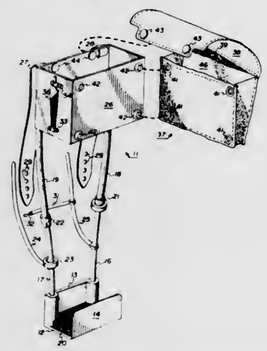


The discharge orifice in an aerosol valve is controlled by means of a stretchable elastomeric membrane having an aperture therein. The membrane is arranged to be selectably stretched across the mouth of the orifice to draw the aperture into and out of registration with the orifice thereby opening and closing the valve.

3,696,978
ADJUSTABLE QUIVER

Gerald F. Gentellalli, 8817 La Mesa Boulevard, La Mesa, Calif.

Filed May 11, 1970, Ser. No. 36,074
Int. Cl. F41b 5/06
U.S. Cl. 224—1 B 1 Claim

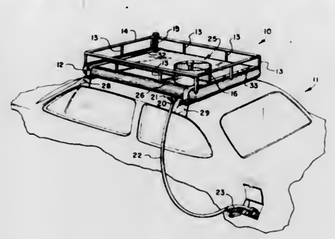


An adjustable quiver for carrying arrows having a bottom platform adapted for receiving the arrow points and a framework adjustable in length coupled to a rectangular cylinder above the bottom portion, the arrows being loaded through the rectangular cylinder, and a flexible cover having one end attached to one wall of the guide cylinder and another end attached to an opposite wall of the guide cylinder for covering the top of the guide cylinder and compressing arrows therein between the bottom surface of the cover and the bottom platform; the cover having a pouch therein for carrying various archery accessories or supplies, and a pair of carrying brackets for carrying a sharpening file therein.

3,696,979
CAR TOP CARRIER

Keith Duane Erickson, 3727 South 900 East, Salt Lake City, Utah

Filed April 28, 1971, Ser. No. 138,060
Int. Cl. B60r 9/04
U.S. Cl. 244—42.1 E 4 Claims

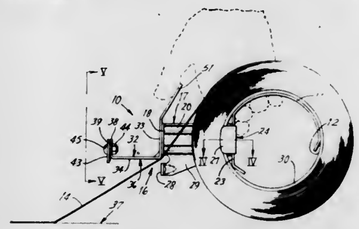


A car top carrier having a base forming a gas or water tank and a walled top to support luggage and the like.

3,696,980
HAND-HELD DISPENSER

Edward Waltz, Grand Rapids, Mich., assignor to The E. O. Bulman Manufacturing Co., Inc., Grand Rapids, Mich.

Filed June 22, 1970, Ser. No. 48,402
Int. Cl. B26f 3/02
U.S. Cl. 225—66 3 Claims



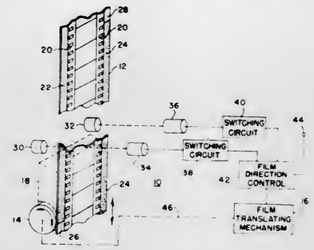
A portable, hand-held dispenser having a substantially semi-cylindrical member, upon which a roll of tape is mounted, and support structure extending outwardly from said member. Resiliently biased stop means is mounted on said member for releasably holding the roll of tape on the member, and a cutting edge on the outer end of the support structure is engageable by the strip of tape. A guide element and thumb engaging flange are also provided on the supporting structure.

3,696,981
FILM POSITION AND BREAK DETECTOR

Kenneth Levy, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Sept. 5, 1968, Ser. No. 757,714
Int. Cl. B65h 25/10
U.S. Cl. 226—11 6 Claims

The disclosed exemplification of the present invention is a film position and break detector for use with a motion picture projector and the like. An opaque magnetic material in the form of a strip extends along each longitudinal edge of the film and preferably contains information relating to film speed. A portion of one strip is removed at the beginning end of the film and a portion of the other strip is removed at the finish end of the film leaving transparent portions of the film exposed. A pair of light sources are mounted on one side of the prescribed path of film travel and are positioned to illuminate a respective magnetic strip. A pair of light sensing diodes are mounted on the opposite side of the prescribed path of film travel and are positioned to be illuminated from a corresponding light source in the absence of any magnetic strip interposed therebetween. A circuit is responsive to the conduction of one light sensing diode to actuate the film translating mechanism of the projector to drive the film in one direction and is

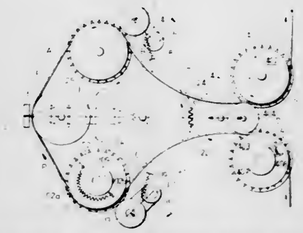


responsive to the conduction of the other light sensing diode to actuate the translating mechanism to drive the film in the opposite direction. The circuit is further responsive to the conduction of both light sensing diodes to de-energize the film translating mechanism.

3,696,982
FILM-DRIVING ROLLER WITH DEVICE FOR STOPPING THE DRIVE MECHANISM IF THE FILM IS OVERLOADED

Gernot Gottschall, Boblingen, Germany, assignor to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Filed Dec. 2, 1970, Ser. No. 94,457
Claims priority, application Germany, Jan. 8, 1970, P 20 00 612.6
Int. Cl. B65h 25/00
U.S. Cl. 226—25 8 Claims



In an optical-electronic scanning device wherein a control film is passed by film driving means and a film cassette, a means for reacting to excessive tension or pull which stops the driving means when a preselected tension is exceeded on the film.

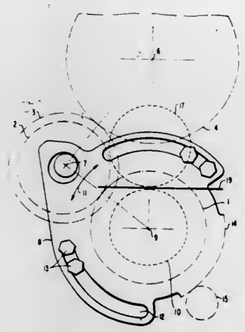
3,696,983
ROLL FEED FOR STRIP- OR BAND-SHAPED WORKPIECES, ESPECIALLY AT QUICK-MOTION PRESSES

Ewald Bergmann, Goppingen, and Alfred Bareis, Uhingen, both of Germany, assignors to L. Schuler GmbH, Goeppingen, Germany

Filed March 20, 1970, Ser. No. 21,338
Claims priority, application Germany, March 22, 1969, P 19 14 773.0
Int. Cl. B65h 17/22
U.S. Cl. 226—141 25 Claims

A roll feed for strip- or band-shaped workpieces, particularly for quick-motion presses, comprising two cooperating

rolls and an intermittent feed motion being imparted to one of the rolls by an intermittent drive means via gears. The gears are exchangeable in order to obtain different feed lengths. The gears include a first gear coaxially arranged with the drive roll



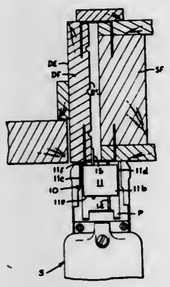
and connected with the driven roll for rotation therewith, a second gear meshing with the first gear and coaxially arranged with and connected to a third gear for rotation therewith, and a fourth gear meshing with the third gear and driven by the intermittent drive means.

3,696,984

STAPLER ADAPTER FOR INSTALLING DOORS

Peter F. Fitchen, 19294 DeHavilland Drive, Saratoga, Calif.

Filed June 28, 1971, Ser. No. 157,477
Int. Cl. B25c 7/00
U.S. Cl. 227—110 **7 Claims**



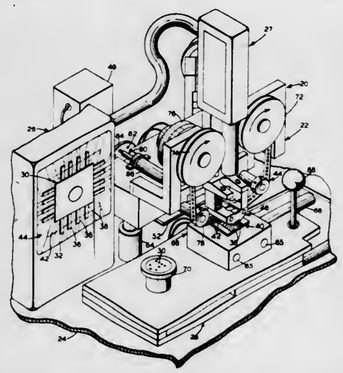
A stapler adapter mounted on the face plate of a conventional pneumatic stapler for guiding the ejection of the stapler so that one leg of the staple penetrates the structural frame and the other leg of the staple penetrates the door frame. For accurately locating the legs of the staple with respect to the area of penetration of the structural frame and the area of penetration of the door frame, guide members are optionally and selectively employed to engage the back edge of the door frame either from the right-hand or left-hand working position. The stapler adapter of the present invention includes a first guide member and second guide member that are respectively movable between a retracted position and an extended position for optional and selective use depended on whether the selected guide member is to engage the door frame either from the right-hand or left-hand working position.

3,696,985

METHODS OF AND APPARATUS FOR ALIGNING AND BONDING WORKPIECES

Carl R. Herring, Allentown, and Fred J. Schneider, Catasauqua, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,447
Int. Cl. B23k 1/00
U.S. Cl. 228—4 **20 Claims**



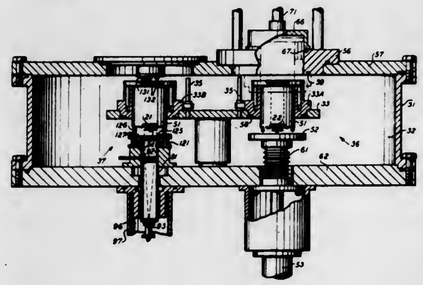
Bonding machines have transparent elements on their bonding axes. Magnified optical means are positioned to view bonding tips and integrated-circuit chips simultaneously through the transparent elements thereby facilitating alignment of the chips to the tips. In one embodiment a bonding tip is transparent and a transparent compliant bonding member is utilized in conjunction with the tip to produce compliant bonds. Another embodiment utilizes a transparent tip in a "hard tip" type of bonding operation. A third embodiment utilizes a transparent tray closely positionable to the bonding tip. After alignment of the tip to one of the chips is achieved the tray is removed and bonding proceeds on an accurately positioned substrate.

3,696,986

APPARATUS FOR PRODUCING A SEALED ARTICLE

Albin R. Anderson, Lowell; John D. Jennings, Andover, and Walter E. Killerby, Lowell, all of Mass., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,093
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 **5 Claims**



Sealed piezoelectric crystal devices with desired frequency response characteristics are manufactured by treating and sealing each crystal in a vacuum environment within a common apparatus housing. Vapor deposition treatment is utilized, with treating material replenishing mechanisms being positioned within the vacuum environment in order to avoid disturbing the vacuum environment during replenishing operations. Sealing is performed by cold weld sealing a pair of covers about each treated crystal device. The arrangement is designed to minimize alterations in the crystal frequency response characteristics subsequent to the vapor deposition treatment.

A die stripping device for ejecting each sealed article from two article-forming, cold weld sealing dies is incorporated entirely into the dies. An ejector on a bottom die is activated during sealing by an actuator of a top die. Ejection of the article from the bottom die then occurs upon die separation. The apparatus also includes a pair of turntables which overlap peripherally at a sealing station within the housing. A loading and unloading station, for introducing top covers and crystals into upper sealing dies and removing sealed crystal filter assemblies from the apparatus, and a vapor deposition crystal treating station are arrayed about one turntable. Manual and automatic loading stations for loading bottom covers into lower sealing dies are arrayed about the other turntable. Also included in the apparatus are various loading and unloading mechanisms and associated air-lock arrangements at the different stations.

3,696,987

COATED CUP AND METHOD OF MANUFACTURE

Richard William Schuff, Phoenix, and Edson Sheppard Harris, Jr., Scottsdale, both of Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Feb. 26, 1971, Ser. No. 119,162
Int. Cl. B65d 3/06; B44d 1/08
U.S. Cl. 229—1.5 B **12 Claims**



An improved package comprising an expanded plastic bead container preferably of styrene and a coating on the container comprising a saran latex material set in direct contact with the expanded plastic bead container. The improved package of the invention provides a vapor and liquid barrier and restricts the entrance of oxygen and other gases to the package as well as providing greater insulation capacity.

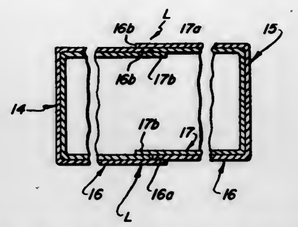
3,696,988

CONTAINER CONSTRUCTION

Terrill L. Nederveld, Neffsville, Pa., assignor to Packaging Corporation of America, Evanston, Ill.

Filed July 6, 1971, Ser. No. 159,822
Int. Cl. B65d 19/06, 13/06
U.S. Cl. 229—23 R **10 Claims**

A heavy duty container is provided which is adapted for use in the bulk packaging of siftable material or the like. The container is formed from a pair of complemental sections which cooperate to form end walls and elongated side walls. Each side wall is provided with a lap joint disposed intermediate the end walls. The lap joints are of multi-ply construction and



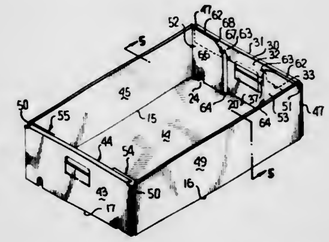
reinforce the side walls against bulging or distortion when the container is loaded or arranged in stacked relation with other loaded containers.

3,696,989

CARTON HAVING NOVEL INTERLOCKED CORNER CONSTRUCTIONS

John W. Kochevar, Downers Grove, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,071
Int. Cl. B65d 5/22
U.S. Cl. 229—34 **14 Claims**



This disclosure relates to a novel carton which at each of the corners thereof includes a conventional bottom panel and a pair of upright normal end and side panels, the improvement residing in the provision of an intermediate panel joined by a fold line to the side panel, the intermediate panel including first fold line means setting off first and second panel portions, the end panel including second fold line means beyond which is a terminal panel, and the second panel portion and the terminal panel being folded about the respective first and second fold line means in such a manner as to at least partially sandwich the terminal panel between the first and second panel portions thereby interlocking the panels together and reinforcing the same at each corner. More particularly the terminal and intermediate panels are provided with notches which facilitate the folding of the terminal and intermediate panels from planar form to the set-up condition of the carton.

3,696,990

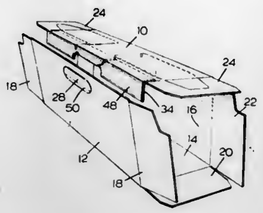
PAPERBOARD CONTAINER

Ernest James Dewhurst, Toronto, Ontario, Canada, assignor to Somerville Industries Limited, London, England

Filed Nov. 5, 1970, Ser. No. 87,185
Int. Cl. B65d 5/16
U.S. Cl. 229—37 R **7 Claims**

The invention relates to an end-loading container for consumer products, such as beer, and a principal feature of the container is the provision of a bridging arrangement across the top wall that gives strength to the container as it is lifted by

means of a hand opening formed in a side wall opposite the bridge. A further feature of the container is the reinforcement

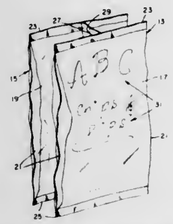


of the area adjacent the hand opening by means of added plies of paperboard folded from the container blank.

3,696,991
DOUBLE PACKAGE

William F. Willis, 174a Addison Road, Palos Verdes Estates, Calif.

Filed Nov. 30, 1971, Ser. No. 203,318
Int. Cl. B65d *31/00*
U.S. Cl. 229—53 **6 Claims**

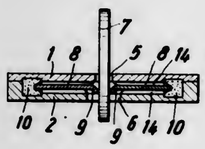


A double package construction utilizing a single rectangular sheet of flexible material folded and sealed to form two containers each having front and rear broad surfaces, side edges, and top and bottom sealed edges, the rear broad surfaces of the packages being joined by a web portion midway between their side edges, the web portion including perforations along its length to facilitate the separation of the packages without disturbing any indicia disposed on their front broad surfaces.

3,696,992
SAVINGS BANK INSERTION SLOT SAFETY MECHANISM

Heinz Krone, Asperg, and Wilhelm Hoffmann, Ludwigsburg, both of Germany, assignors to Krone G.m.b.H., Ludwigsburg/Wurttemberg, Welt, Germany

Filed Dec. 4, 1970, Ser. No. 95,072
Claims priority, application Germany, Dec. 4, 1969, P 19 60 978.0
Int. Cl. A47g *29/00*
U.S. Cl. 232—4 **7 Claims**

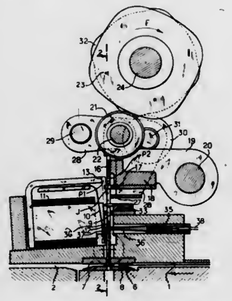


Savings bank insertion slot safety mechanism with several locking clasps situated on the inside of the insertion slot and movable against one another and held in a locking position by means of spring tension, the front ends of the locking clasps entering, in the locked position, into the slot up to the middle of the insertion slot and being pressed into released position when a coin is inserted in the slot in which the locking clasps are guided independently of one another and transversely to the insertion slot, the front ends of the locking clasps are tilted downward, and the locking clasps rest with their rear ends each on a common spring element arranged on the corresponding side.

3,696,993
APPARATUS FOR PUNCHING RECORD CARDS OR TAPES

Jacques Roland DeProux, Sevres, France, assignor to Societe Industrielle Honeywell Bull, Paris, France

Continuation of Ser. No. 861,813, Sept. 29, 1969, abandoned. This application April 9, 1971, Ser. No. 132,828
Claims priority, application France, Oct. 23, 1968, 68171013
Int. Cl. G06k *1/05*
U.S. Cl. 234—118 **15 Claims**

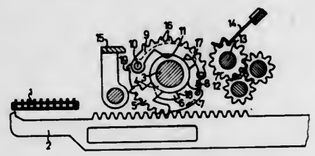


A cyclically operating punching apparatus in which each punch of a row can occupy an inactive position in which it is maintained by an electromagnet when the latter is energized, or an active position into which it is pushed by a spring when the electromagnet is not energized and in which it is subjected to the action of actuating members for performing a punching operation, whereafter it is returned by a return bar into the inactive position in which it is or is not maintained, depending upon whether the electromagnet is energized.

3,696,994
CALCULATING MECHANISM FOR TEN KEYS - FOUR SPECIES - CALCULATING MACHINES

Gottfried Burkhardt, Winkelhaid, Germany, assignor to Diehl, Nurnberg, Germany

Filed July 19, 1971, Ser. No. 163,944
Claims priority, application Germany, Aug. 1, 1970, P 20 38 370.4
Int. Cl. G06c *15/12, 27/00*
U.S. Cl. 235—60 R **4 Claims**



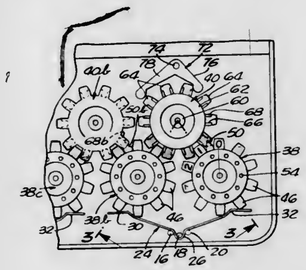
The specification discloses a calculating mechanism for transferring values from a value detecting rack to a counter

gear in which a setting disc has teeth meshing with the rack and a peripheral cam with a sharp rise at one end. A control wheel which rotates on each machine cycle has a toothed sector pivotally mounted thereon and biased away from engagement with the counter gear. The sector has a cam on the inner side in the plane of the cam on the setting disc with a sharp rise at the leading end. The cams move the sector into engagement with the counter gear when the rises meet so the adjusted position of the disc determines the amount of rotation imparted to the counter gear when the control wheel makes a rotation.

3,696,995
CALCULATOR

William Kasner, 1330 Hollydale, Fullerton, Calif.

Continuation-in-part of Ser. No. 94,222, Dec. 2, 1970. This application Sept. 27, 1971, Ser. No. 184,151
Int. Cl. G06c *7/10, 15/26*
U.S. Cl. 235—139 R **8 Claims**



A calculator of the type with successive digit or numeral wheels with improved carryover or transfer means between wheels. Transfer wheels are used between successive digit or numeral wheels. Each digit wheel has a finger or projection which picks up abutments on a transfer wheel for driving it and effecting the transfer or step movement. The transfer wheel has spaced abutments which are picked up by the projection on the digit or numeral wheel. These abutments on each transfer wheel are displaced angularly from ten predetermined stopping positions of the transfer wheel. When there are simultaneous transfers or carryovers of several digit wheels, there is a slight delay in the pick up of each transfer wheel for effecting the transfer with the result that the transfer takes place sequentially thereby eliminating the imposition of a sudden, heavy torque load on a single driving digit wheel.

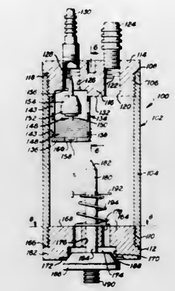
3,696,996
WATER THERAPY SAFETY CONTROLS

Harold B. Lloyd, 2037 South Cedar Street, Sioux City, Iowa, and Sterling E. Stewart, 523 E. 19th Street, South Sioux City, Nebr.

Filed Jan. 27, 1971, Ser. No. 110,039
Int. Cl. G05d *23/12*
U.S. Cl. 236—92 **7 Claims**

A first form of water therapy safety control to discontinue the flow of liquid to a therapy device responsive to increase in temperature of the liquid over a predetermined limit has a receptacle with a strut at a mid-depth location. A thermally actuated bellows operator is mounted on the strut and carries a rod with a closure which is placed in shut-off position by expansion of the bellows. The receptacle has a member adapted to open upon increase of pressure therewithin;

In a second form of the invention, a receptacle has liquid inlet and outlet openings, the outlet being provided with a thermal operator which closes the outlet in response to increased temperature of the liquid past a predetermined limit.

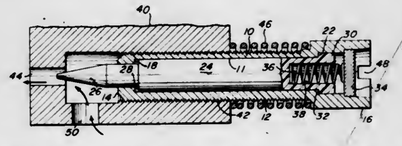


A normally closed discharge opening has a spring biased closure which opens responsive to pressurization of the receptacle upon closing of the outlet.

3,696,997
VALVE REPSONSIVE TO TEMPERATURE CHANGES OVER A LIMITED RANGE

Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed April 9, 1971, Ser. No. 132,666
Int. Cl. G05d *23/275*
U.S. Cl. 236—102 **14 Claims**



A fluid flow metering valve which varies effective flow area in response to temperature changes over a limited temperature range. The valve core, having a conically shaped end positioned in the fluid flow port, expands freely as temperature increases to a predetermined value from a temperature below that value. Thereafter, an abutment in the valve casing is engaged by a shoulder on the valve core to prevent the conically shaped end of the core from advancing further into the port, with additional expansion of the core being accommodated at the opposite end of the casing. A spring retains the core in the casing and returns it to its original position upon a decrease in temperature to and below the predetermined value.

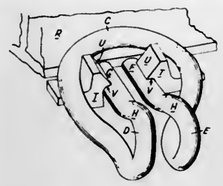
3,696,998
DEVICE FOR HOLDING DOWN THE RAIL TO THE SLEEPER IN A RAILWAY TRACK

Padinjarai-Madom Narayanan Nair Bhaskaran Nair, Research Designs & Standards Organization, Lucknow, India

Filed Dec. 9, 1970, Ser. No. 96,435
Int. Cl. E01b *9/48*
U.S. Cl. 238—349 **3 Claims**

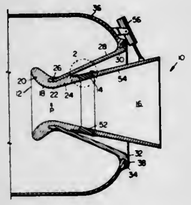
The improved device consists of an elastic fastening made of spring steel rod. The rod is bent to form a loop portion which rides over and sits on the bottom flange of the rail. The two ends of the loop are bent downwardly thus providing humps. Then the ends of the same rod after bending downwardly are shaped each into a coil. The ends of the coil then project towards the loop and lie within the loop. These projections form legs. This elastic fastening is secured to the

sleeper by a securing device such that the loop rides and sits on the bottom flange of the rail. The legs are forced down by the securing device such that the ends of the legs bear against



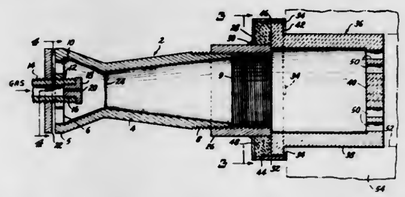
the edge of the foot, i.e. the bottom flange of the rail. The loop thus holds down or presses the rail while the legs bearing against the foot of the rail help to maintain the gauge of the rail.

3,696,999
MOVABLE THRUST NOZZLE FOR ROCKETS
Stanley P. Desjardins, Brigham City; Alan R. Canfield, North Ogden, and Jonathan W. Wilson, Brigham City, all of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed July 17, 1967, Ser. No. 653,764
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.35 **3 Claims**



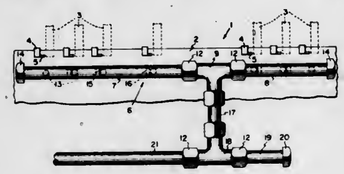
A thrust nozzle of the hollow-cone type, fixed to the aft closure of the rocket. An annular portion of the divergent cone being constructed of rigid laminae bonded to interposed layers of elastomer functions not only as a part of the expansion surface of the nozzle but also as a flexible bearing to permit lateral movement of the rigid portion of the divergent cone downstream therefrom.

3,697,000
GAS BURNER FOR FURNACES, KILNS, AND THE LIKE
Dudley F. Giberson, Jr., Box 202 Joppa Road, Warner, N.H.
Filed April 1, 1970, Ser. No. 24,727
Int. Cl. B05b *7/12*
U.S. Cl. 239—407 **10 Claims**



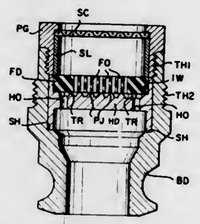
A gas burner for use with kilns, furnaces, and the like, having a tubular body with a venturi throat. A ceramic burner head of high-heat resistent material is mounted on one end of the body. A regulated volume of air, and gas are admitted at the opposite end. A gas supply orifice is adjustable relative to the venturi throat. The burner head is cup-shaped and provides a mixing chamber for the air and gas. The mixture discharges through a series of passageways in the head to form separate high-heat flames. The burner head is aligned and carried by a coupling that is detachable from the body. A refractory seal is formed between the coupling and the adjacent end of the burner head.

3,697,001
FLUID DISTRIBUTING APPARATUS
Clifford A. Skodak, 11747 Brady, Chesaning, Mich.
Filed Dec. 9, 1970, Ser. No. 96,470
Int. Cl. B05b *1/26*
U.S. Cl. 239—521 **8 Claims**



Fluid distributing apparatus especially adapted for discharging copious quantities of cooling fluid on multiple grinding wheels and dressers comprises a tubular, distributing header connected between its ends to a source of fluid and closed at each of its opposite ends by removable caps. The header is provided with a plurality of openings spaced along its length and through which fluid may be discharged, each of the openings except those nearest the end of the header having deflectors at the downstream side for controlling the direction of fluid discharged therethrough. The header is adjustable about its own axis to any one of a number of selected positions.

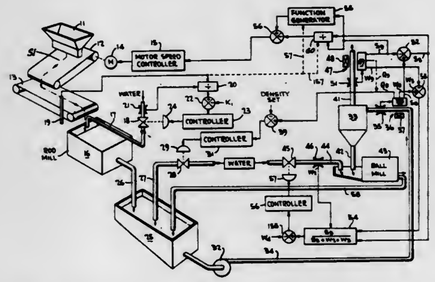
3,697,002
FLOW CONTROL DEVICE
Richard G. Parkinson, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of Ser. No. 24,248, March 31, 1970, Pat. No. 3,630,455. This application July 21, 1971, Ser. No. 164,727
Int. Cl. B05b *1/30*
U.S. Cl. 239—535 **15 Claims**



Covers a fluid flow device or pressure regulator suitable for a spout-end structure for a plumbing fitting or fixture. The equipment includes two tandem arranged disk structures to be inserted in the spout-end to control the flow through the spout-end. The upstream element comprises a substantially flat cylindrical flexible disk having a plurality of substantially identical cylindrical parallel apertures. The downstream element comprises a hard metallic or plastic disk having a plurality of hard substantially non-flexible projections which may be located in the central region of the disk, a plurality of parallel

substantially identical apertures which are peripherally arranged about the projections of the disk and a plurality of supports or barriers near the several projections. The two disks are positioned closely adjacent or contiguous to each other so that, in the absence of fluid pressure or under low fluid pressure conditions, the hard or non-flexible projections on the hard or lower disk barely contact the adjacent surface of the upstream or upper flexible disk. As the fluid pressure reaches a predetermined value or exceeds the predetermined value, the projections on the second or hard disk will remain rigid and unchanged in shape, but the upper flexible disk will be compressed so that the overall area of the apertures of the first disk through which fluid flows will be reduced so that the fluid flow through the two disks will remain substantially unchanged, notwithstanding changes in the pressure of the applied fluid however rapid or however slow.

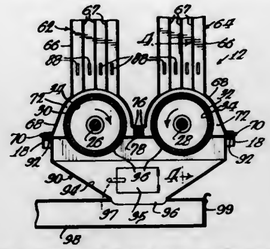
3,697,003
GRINDING MILL METHOD AND APPARATUS
Michael P. Grant, Columbus, and Edward J. Freeh, Worthington, both of Ohio, assignors to Industrial Nucleonics Corporation
Filed Feb. 4, 1970, Ser. No. 8,661
Int. Cl. B02c *25/00*
U.S. Cl. 241—24 **14 Claims**



Rate of input ore fed to a grinding mill, including a hydrocyclone particle classifier in a recirculating loop, is controlled to maintain a predetermined relation between particle size and production rate. From the actual production rate and the predetermined relationship a value for the ratio of recycled solid feed rate to output or input solids feed rate is determined. The determined ratio value is compared with the actual ratio value derived from measurements to control input ore feed rate. The consistency of slurries fed to each of a rod mill, ball mill and the classifier is maintained constant.

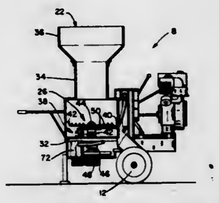
3,697,004
METHOD AND APPARATUS FOR GRANULATING WAX
Joseph H. Lazar, 530 Green Bay Road, Highland Park, Ill.
Filed June 23, 1971, Ser. No. 155,761
Int. Cl. B02c *13/00*
U.S. Cl. 241—27 **11 Claims**

Multiple sets of blocks of solid wax which is a byproduct of the distillation of crude oil into gasolene and other useful direct products are vertically supported over a pair of oppositely rotating spirally wound wire brushes about twelve inches in diameter having stiff bristles of high tensile steel wire about 1 inch long. The sets of blocks are enclosed within feeders rockably positioned over the brushes and mounted on hemispherically shaped enclosures for the upper portions of the brushes. The brushes and feeders are mounted on an open frame which also supports a separate driving motor for each brush. Below the brushes is a hopper shaped accumulator, the



outlet of which opens into a 6 inch pipe connected to a suction blower which feeds directly to the process or product using the waxes or to a bagging apparatus.

3,697,005
APPARATUS FOR COMMINUTING ARTICLES
Andrew P. Lundin, 323 Covington Road, and John D. Milner, 11945 Country Club Drive, both of Los Altos, Calif.
Filed May 3, 1971, Ser. No. 139,488
Int. Cl. B02c *21/02*
U.S. Cl. 241—101 M **15 Claims**

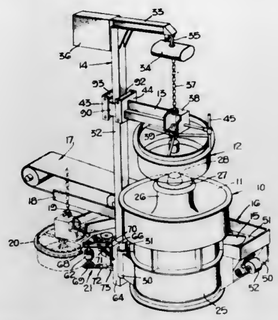


A comminuter for reducing articles to small particles which has an upright housing with vertically spaced intake and discharge openings. Rotatable cutting blades have a vertically downwardly extending housing floor scraper with off-set scraper teeth on at least a pair of blades and upwardly extending splitting wedges. The blades are rotatably mounted within the housing and actuated by a hydraulic motor. A hydraulic pump powered by an internal combustion engine or the like is coupled with the hydraulic motor via a valve that permits the reversal of the direction of rotation of the motor and cessation of its rotation.

3,697,006
HOIST PANS AND HOIST PAN HANDLING APPARATUS
Bernard S. Reckseit, Cincinnati, and George A. Burgess, Fairfield, both of Ohio, assignors to Sweco, Inc., Los Angeles, Calif.
Filed May 19, 1969, Ser. No. 825,862
Int. Cl. B02c *17/00*
U.S. Cl. 241—171 **13 Claims**

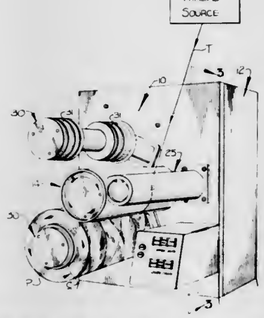
A material handling system for vibratory finishing or grinding mills into which are placed materials and abrasive media and wherein the materials are operated upon. In a finishing mill the materials are parts which are finished, polished, or deburred, and in a grinding mill the materials usually are chemicals which are reduced in size. The system includes a vibratory mill into which such materials and media are placed, a vibratory screen separator for separating the materials from media after completion of the operation thereon, a hoist pan for handling the media or material and media, and a jib hoist system for moving and positioning the pan. Media or material and media are loaded into the pan, and same is lowered to the top of the finishing machine causing the load to be evenly

dumped into the finishing machine. After the finishing operation, the material may be moved or transported in any suitable manner to any further operation stage, and the media is returned to the hoist pan. A pan driving mechanism is pro-



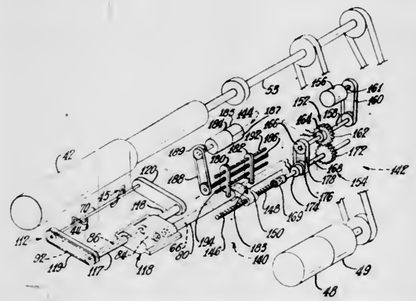
vided for rotating the pan as the media is supplied thereto from the separator or mill such that the pan is evenly loaded. Several bottom-dumping pan configurations are disclosed which provide a relatively even discharge of the media into the mill when the pan engages the mill.

3,697,007
WINDING APPARATUS
Larry H. Taylor; William D. Porter; William J. Anderson, all of Asheville, N.C., and Ralph Caneer, Taylor, S.C., assignors to Northrop Carolina, Inc., Asheville, N.C.
Filed Oct. 6, 1970, Ser. No. 78,542
Int. Cl. B65h *54/42*
U.S. Cl. 242—18 DD **11 Claims**



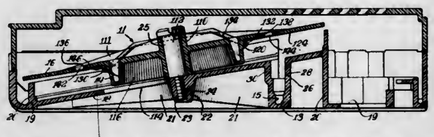
Winding apparatus characterized by maintaining a desired pressure relationship between drive and package rolls for consistency in the winding operation. The apparatus comprises a driven drive roll rotatably mounted on a stationary housing in a fixed position, a freely rotatable linearly movable package roll driven by the drive roll and receiving material for winding thereon, carriage means having stationary and movable portions in which the movable portion carries the package roll for reciprocating linear movement, and means for maintaining a predetermined desired pressure relationship between the drive roll and the package roll and for linearly driving the package roll. The last-named means comprises a variable torque reversible motor, a screw shaft driven by the motor and a nut means secured to the movable carriage portion and receiving the screw shaft therethrough for converting rotary movement of the shaft into linear movement of the package roll. The torque motor can drive the package roll linearly toward and away from the drive roll for start-up and doffing and can hold a package roll in frictional peripheral driving engagement with the drive roll and maintain a predetermined pressure relationship.

3,697,008
APPARATUS FOR PACKAGING LINEAR MATERIAL
Roy E. Smith, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Dec. 29, 1969, Ser. No. 888,706
Int. Cl. B65h *54/32*
U.S. Cl. 242—43 **2 Claims**



Apparatus for and method of packaging linear material such as a glass strand by advancing the linear material to a collector and reciprocating the advancing linear material across a zone while reciprocating the zone with increasing and decreasing stroke lengths.

3,697,009
FILM CARTRIDGE FOR ENDLESS FILM
George J. Zahradnik, Wheaton, Ill., assignor to Elco Corporation, Jenkintown, Pa.
Filed April 16, 1970, Ser. No. 29,147
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 **12 Claims**

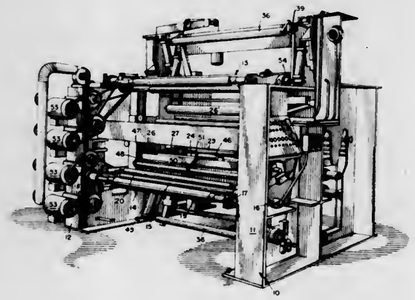


A film cartridge designed to carry an endless roll of film having a rotatably-mounted drive member with a central hub portion and a flange portion. The spiral roll portion of the endless film is disposed about the central hub portion and is loosely contained between the flange portion and a support surface perpendicular to the rotational axis of the drive member. The inner end of the spiral roll extends as a single loop upwardly and forwardly through a film guide passageway to the front wall of the cartridge, where there are openings provided in the film cartridge housing to receive the various movie projector operating components before returning to the outer convolution of the spiral roll.

The drive member has a pair of diametrically-opposed friction pads disposed on the innermost edge of the hub portion to impart a momentary increase in the frictional force applied to the innermost convolutions of the spiral roll during each revolution of the disc. To assist the spiral roll in moving its inner convolutions towards the hub portion, the space in between the flange portion surface and the support surface increases in a radial inward direction. The inner convolution is

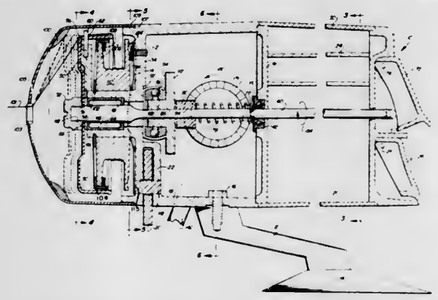
urged positively away from the disc by employing an annular step formed around the innermost end of the hub portion. The inner end of the spiral roll is pushed off the hub and towards the film gate by driving the disc at a speed greater than can be accommodated by the claw drive mechanism of the movie projector so that a compensated loop is formed in the film guide passageway to provide a supply of film for the claw drive mechanism used to advance the film frame by frame through the film gate.

3,697,010
WEB WINDER WITH IMPROVED TRANSFER
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed Jan. 20, 1971, Ser. No. 108,067
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 A **2 Claims**



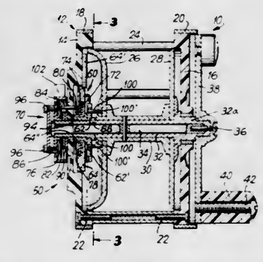
A winder having a double mandrel turret equipped with a cutoff having an air-assist to obtain a secure start on an empty mandrel after a portion of the web has been wound on the other mandrel.

3,697,011
FISHING REEL
Jay Arthur Christensen, Bloomington, Minn., and Theron Frank Compton, 571 Oak Street, Hugo, Minn., assignors to said Compton, by said Christensen
Filed Feb. 6, 1969, Ser. No. 797,088
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.1 A **3 Claims**



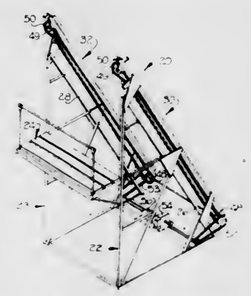
A spinning reel is provided with both manual crank operating means and battery operated motor means interconnected through a gear train to operate a pick-up rotor assembly. A plurality of one-way roller clutches are provided such that (1) when either the manual operating means or the motor operating means is functioning to retrieve the line the other will be disengaged from the gear train, and (2) both the manual operating means and the motor operating means as well as the gear train will be prevented from operation when the line is provided with drag as when a fish has been hooked.

3,697,012
FLY REEL
Archie L. Walker, 754 Winter Avenue, Uniondale, N.Y.
Filed July 9, 1970, Ser. No. 53,560
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.51 R **1 Claim**



A fly reel including a brake mechanism for controlling the reel action as the fly line unwinds from the reel. A novel ratchet arrangement for the reel is also described. Specifically, the fly reel brake mechanism includes deformable spring plates connected by brake posts, all attached on one end of the fly reel, such that the brake mechanism is removable as a unit for replacement or repair. A threaded cap is used to force a greater frictional engagement of the brake mechanism and thus to control the braking force during run-out of the fishing line. The ratchet engagement includes a large and a small ratchet wherein the large ratchet operates with relative motion between the ratchet and its pawl during the run-out operation and the small ratchet operates during the winding motion of the reel.

3,697,013
YARN BEAM RACK
James T. Cobble, Dalton, Ga., assignor to B & J Machinery Co., Inc., Dalton, Ga.
Filed April 23, 1971, Ser. No. 136,711
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 **10 Claims**



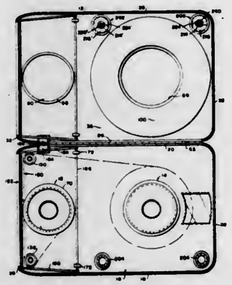
A yarn beam rack incorporating a system for applying a braking torque to the axles of each supported beam which automatically diminishes as the yarn is withdrawn from the beam such that the yarn tension required to rotate the beam and thereby withdraw the yarn remains substantially constant. The rack may also include a chain conveyor system for automatically loading and unloading a number of beams without the use of auxiliary lifting trucks or hoists.

3,697,014

TAPE HANDLING MECHANISM FOR COMPUTER

Alan B. Lowry, Canton; Gregory Mathus, Cambridge, both of Mass.; Herbert Morello, Phoenixville, and Robert J. Miller, Salford, both of Pa., assignors to Data Packaging Corporation, Cambridge, Mass. and Digital Information Devices, Inc., Norristown, Pa., part interest to each

Continuation of Ser. No. 781,875, Dec. 6, 1968, abandoned.
This application Nov. 27, 1970, Ser. No. 93,467
Int. Cl. G11b *15/58, 23/12*; G03b *1/04*
U.S. Cl. 242—182 34 Claims



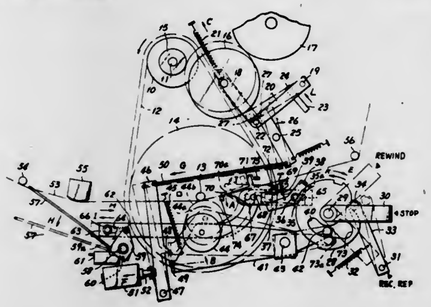
A cartridge having a stabilizer system for a standard IBM-type computer tape reel that may be placed in the cartridge for recording and subsequently be removed from the cartridge for use on a computer. A separate take-up reel is provided in the cartridge onto which the tape is wound. Each reel is movable axially and laterally in the cartridge and can be engaged by external drive spindles.

3,697,015

AUTOMATIC OPERATING CONTROL FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Mitsuo Iwata, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

Filed Jan. 26, 1971, Ser. No. 109,804
Claims priority, application Japan, Jan. 27, 1970, 45/7823
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—186 6 Claims



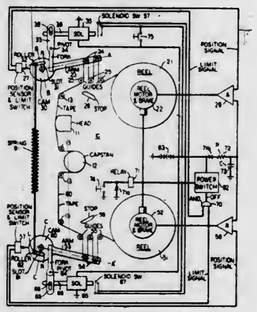
An automatic operating apparatus for magnetic recording and reproducing apparatus in which there is provided a cam integrally revolving by revolution of an operating knob, means for engaging a pinch roller cooperating with a capstan and an idler cooperating with a reel disk in a waiting position in association with the revolution of the cam, and means for releasing the pinch roller and idler from the waiting position by closing of a timer switch at a pre-set time thus starting an automatic recording or reproducing operation. There is further provided means for detecting the presence or absence of a magnetic tape and means for returning the cam to the stop position thereby stopping the recording or reproducing operation.

3,697,016

TAPE LOADING AND UNLOADING MECHANISM

Noel Arthur Leifer, Pine Brook, and Henry Walter Ott, Fairfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 21, 1971, Ser. No. 136,126
Int. Cl. B65h *59/38, 63/02*; G03b *1/04*
U.S. Cl. 242—189 8 Claims



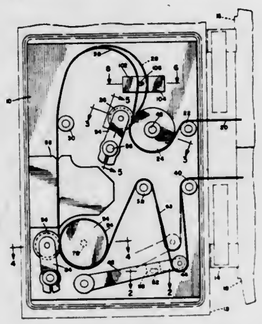
In a tape transport including the proposed tape loading-unloading mechanism, multiple-loop tape-storage arms are automatically retracted for tape loading and unloading, and then returned to normal operation about their associated predetermined null positions. Multiple-loop tape-storage arms are especially useful in high acceleration tape transports. The combination including an arm tension spring, a roller, a cam further including an elongated slot, and the reel motor-brake assembly is utilized during normal operation of the arm about its predetermined null position and during the arm retract-return sequence. Commercially available tape loading-unloading mechanisms require additional components, such as a motor, which remain idle during normal operation of the tape transport, in order to effect the retract-return function.

3,697,017

FILM TRANSPORT DECK UNIT

Lloyd M. Adams, Santa Ana, and Robert L. Hoelscher, San Diego, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed July 23, 1971, Ser. No. 165,632
Int. Cl. B65h *59/38, 63/02*; G03b *1/04*
U.S. Cl. 242—189 11 Claims



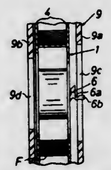
A film transport deck unit having a driven supply capstan and a driven film advance capstan, each with a pinch roller in driving contact with its capstan to prevent slippage. In each capstan and pinch roller combination, the emulsion side of the film is held against a polished surface of one element and driven by a frictional surface of the other element. Film supply and take-up is controlled by sensing means having no physical contact with the film or the drive means. The unit is adaptable to existing camera and control apparatus.

3,697,018

REEL AND RETAINING MEANS FOR MOTION PICTURE FILM OR THE LIKE

Gabriele Ehgartner, Pullach, and Herbert Wilsch, Unterhaching, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1971, Ser. No. 166,702
Claims priority, application Germany, July 31, 1970, P 20 38 082.9
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—197 10 Claims



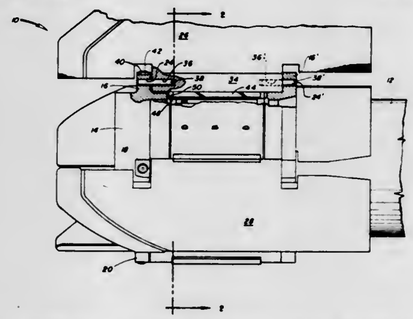
A supply real for motion picture film has a socket which can receive the free end of the innermost convolution of film, and an integral retaining device which can be readily broken off and has a clamping portion insertable into the socket to clamp the free end of the innermost convolution against the reel. The retaining device is further provided with an additional portion which extends beyond the socket when the latter received the clamping portion to serve as a means for preventing improper insertion of the reel into certain types of cassettes. The additional portion can be broken away from the clamping portion so that the reel, with the clamping portion inserted into the socket and with the additional portion broken away, can be inserted into cassettes of another type which do not permit insertion of reels with the additional portions of retaining devices extending beyond the sockets.

3,697,019

STABILIZING FIN ASSEMBLY

James K. Watson, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 13, 1970, Ser. No. 36,830
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.29 6 Claims



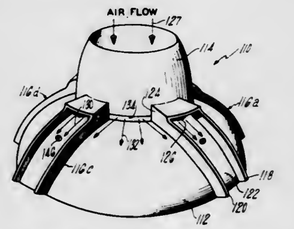
A fin assembly for stabilizing aerial vehicles having a plurality of curved fins pivotally connected to a shroud on the vehicle for pivotal movement from a folded position to an erected position about axes parallel to the direction of flight of the vehicle. Each fin is locked in its erected position by a latch mechanism which includes a locking lug on the fin and a slot in the shroud to receive both the lug and a lug locking wedge which prevents movement of the fin in any direction from its erected position.

3,697,020

VERTICAL LIFT MACHINE

Raymond V. Thompson, Simsbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 836,393, June 25, 1969, Pat. No. 3,592,413. This application Sept. 14, 1970, Ser. No. 72,091
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 13 Claims



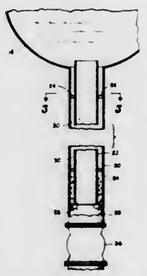
A maneuverable lifting body wherein pressurized gas is discharged at supersonic velocity over the surface of at least three downwardly sloping lifting surfaces, the supersonically flowing gas separating and thereafter reattaching to the surface to provide a low pressure region intermediate the points of separation and reattachment. The low pressure region created on the upper surface, in cooperation with atmospheric pressure on the bottom of the body, results in vertical lifting forces which add to the vertical component of the momentum forces of the gas. Attitude control and maneuverability are accomplished by selectively venting ambient air into the low pressure regions whereby the low pressure region may be selectively destroyed with resultant force unbalance.

3,697,021

GEYSERING INHIBITOR FOR VERTICAL CRYOGENIC TRANSFER PIPE

Frank S. Howard, Indian Harbor Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1971, Ser. No. 103,078
Int. Cl. F25b *19/00*
U.S. Cl. 244—1 SB 1 Claim

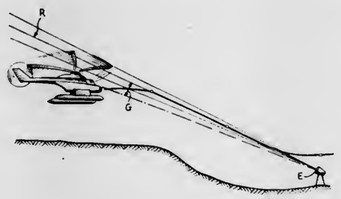


A geysering inhibitor utilizing a thin wall tube carried within a vertical pipe which enables convective circulation of a liquid cryogen for preventing the liquid cryogen from geysering as a result of heat input to the vertical pipe.

3,697,022
METHOD AND APPARATUS FOR AIRCRAFT GUIDANCE

Denis Autechaud, Paris, and Jean-Claude Grisard, Boulogne Billancourt, both of France, assignors to Societe De Fabrication D'Instruments De Mesure (SFIM)

Filed July 6, 1970, Ser. No. 52,388
Int. Cl. B64c 13/50
U.S. Cl. 244—17.13 20 Claims

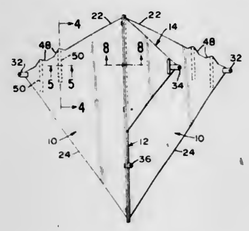


A method of guiding aircraft to effect an automatic approach to a landing place in which radar waves are transmitted to be received by the flight controls of the aircraft. The radar waves are transmitted from the ground at a carrier frequency of the order of gigahertz and define a radioelectric guiding axis situated at the intersection of a vertical radioelectric plane of alignment and a radioelectric descent plane perpendicular to the vertical plane and inclined to the horizontal. The method is particularly suitable for use with helicopters. Apparatus for carrying out the method includes a transmitter on the ground for transmitting radar waves of very short wavelength and equipment on board the helicopter comprising a receiver for the radar waves connected by a coupler to an automatic pilot of the helicopter flight controls.

3,697,023
KITE

Richard R. Jackson, 8 Trinity Road, Marblehead, Mass.

Filed May 12, 1971, Ser. No. 142,492
Int. Cl. B64c 31/06
U.S. Cl. 244—153 R 12 Claims

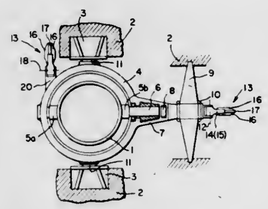


A kite is formed from highly flexible sheet of material and has a pair of symmetrical wing sections which extend transversely from a central longitudinal keel. A bridle is connected to the kite at the lateral tips of each wing section and to the keel. The lines of the bridle are arranged so that, in flight, the wing sections will billow out in an arcuate pattern in which the outermost ends of each of the wing sections are disposed in a generally vertical attitude. Outwardly flared tabs are provided at the leading edge of the outermost ends of the wings to maintain the billowed configuration of the kite and to preclude inward buckling of the outer generally vertical regions of the wings.

3,697,024
ROTOR MAST SUPPORT FOR HELICOPTERS

Karl-Heinz Koeziech, Friedrichshafen, and Kurt Teschner, Immenstaad, both of Germany, assignors to Dornier A.G., Friedrichshafen/Bodensee, Germany

Filed Jan. 21, 1971, Ser. No. 108,295
Claims priority, application Germany, Feb. 26, 1970, P 20 08 977.4
Int. Cl. B64c 27/04; F16f 15/10
U.S. Cl. 248—15 5 Claims

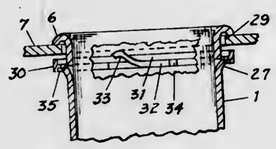


This invention relates to a movable rotor mast support for helicopters adapted to be mounted between the rotor mast and the airframe comprising a universal joint including gimbal ring means and journal means, said gimbal ring means including lateral cantilever means having journal means therein, said latter journal means being extended to form a torsion spring rod, and rotation-preventing means connecting the end of the torsion spring rod with said cantilever means.

3,697,025
NECK-MOUNTED LIGHTER SOCKET

Jones B. Edwards, 1923 Woodcrest Avenue, Apt. 6, Charlotte, N.C.

Filed July 1, 1970, Ser. No. 51,454
Int. Cl. G12b 9/02; F23g 7/22
U.S. Cl. 248—27 7 Claims



A neck-mounted socket or holding device with a thermostatic latch for an electric pop-out cigarette lighter, in which a cordless lighter plug unit is received and stored, and generally used in automobiles.

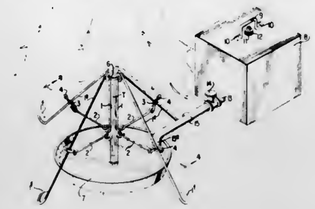
3,697,026
STAND FOR CHRISTMAS TREES

John Earl Hambrick, Route 1, Hahira, Ga.

Filed April 14, 1971, Ser. No. 133,859
Int. Cl. A47g 33/12
U.S. Cl. 248—46 4 Claims

The stand for cut Christmas trees or the like has a plurality of inverted V-shaped frames evenly spaced around the tree trunk. Each frame is formed of heavy gauge wire and has a vertical leg adapted to contact the tree trunk, the lower end of the leg being adapted to rest on a floor and has an offset upturned pointed end adapted to be driven into the lower end of the tree trunk. The frame also has a second leg integrally connected with the upper end of the first leg by a coil and it extends downwardly and outwardly and has a lower portion

adapted to rest on the floor. A link between the legs is provided to adjust the spaced relation of the lower ends of the legs

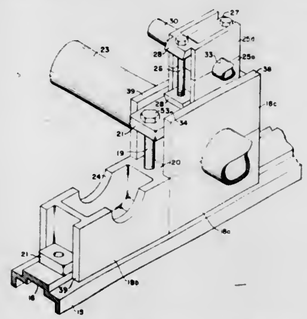


to thereby support the tree trunk substantially perpendicular to the floor. A flexible cord is secured around the tree trunk and passes through all the coils.

3,697,027
TUBE CLAMP

Donald A. Girard, P.O. Box 172, Rancho Cordova, Calif.

Filed Dec. 10, 1970, Ser. No. 96,868
Int. Cl. F16l 3/10, 3/22
U.S. Cl. 248—68 CB 10 Claims



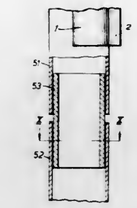
Multiple layers of substantially parallel tubes are fastened to a structure which extends generally transversely to the tubes by two rows of opposed large blocks along the structure and two rows of opposed small blocks, the blocks of each row having at each end at staggered locations bolting lugs and the blocks in each row being terminally juxtaposed with the lugs overlapping. The mating faces of each pair of rows have tube-receiving recesses. The large blocks have anchor means (internally threaded holes) which receive the bolts which secure the small blocks. Each block has a pair of longitudinal flanges on the outer face (away from the mating face) to define a longitudinal recess. The large blocks are fastened to the structure by bolts which are anchored in the structure, extend through the bolting lugs, and have heads which lie above the outer faces of the second-row blocks, the heads being situated within the longitudinal recesses of the small blocks of the third row, which small blocks are nested between the longitudinal flanges of the second-row blocks.

3,697,028
CLIPS

Neil Duncan Nimmo, Strawberry House, Square Drive, Kingsley Green, England

Filed May 9, 1969, Ser. No. 823,444
Claims priority, application Great Britain, May 27, 1968, 25225/68; July 17, 1968, 34007/68; Nov. 21, 1968, 55350/68
Int. Cl. A47g 29/02; A44b 21/00; E04h 1/00
U.S. Cl. 248—121 5 Claims

A clip which can be snapped-on to a tube, the clip having an arcuate gripping part and a foot. The clip may be made of aluminum alloy and the tube can have an oval passageway which can co-operate with an oval cam-locking tube for use in join-

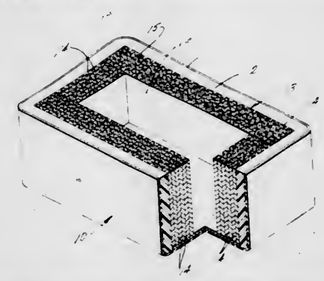


ing two tubes together. The aluminum alloy clip may be made by extrusion.

3,697,029
SUPPORTING PAD FOR A PALLET

Fred E. Lauffer, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Dec. 23, 1970, Ser. No. 100,914
Int. Cl. B65d 19/44
U.S. Cl. 248—188.8 1 Claim

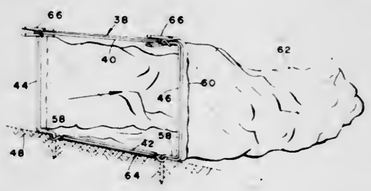


A pad for supporting a pallet, the pad comprising a container-like shell, a compression-resistant composite material disposed within the shell, which is comprised of a rigid paperboard embedded into a foamed urethane plastic, the material filling at least a portion of the shell and coextensive with the depth of the shell, providing a pallet support.

3,697,030
MATERIAL COLLECTING MEANS

Pius Dale Schultz, 16 Maple Road, York, Pa.

Filed Dec. 11, 1970, Ser. No. 97,171
Int. Cl. B65b 67/12
U.S. Cl. 248—101 6 Claims



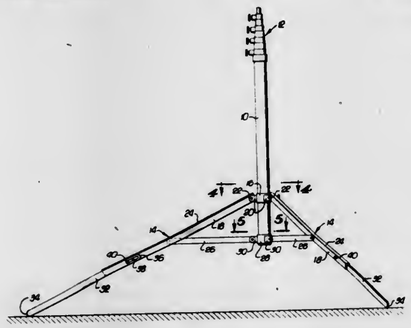
Material collecting means comprising a frame formed of rigid elongated members to form an open geometrical figure such as a right-angled parallelogram having a pair of prongs extending downward from opposite sides and adapted to be projected into the ground to support the frame in substantially perpendicular position. Several embodiments are provided which respectively are of a rigid and a collapsible nature. The

frame is adapted to have an elongated, flexible collection bag disposed with its open mouth folded around the members comprising the frame and connected thereto by clamping means so as to hold said mouth in generally rectangular position to receive leaves, lawn sweepings and the like, which may be swept into the bag until the bag is full.

3,697,031
EXTENSIBLE LEG STRUCTURE FOR TRIPOD OR THE LIKE

Richard B. Glickman, Sherman Oaks, and George R. Hartz, Canoga Park, both of Calif., assignors to Berkey/Colortran, Inc.

Continuation-in-part of Ser. No. 37,158, May 14, 1970. This application Dec. 14, 1970, Ser. No. 97,813
Int. Cl. F16m 11/38
U.S. Cl. 248—171 **4 Claims**

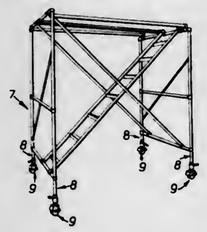


Each leg of the tripod carries a leg extension by the aid of a simple pin and slot connection. In the retracted position the leg extension allows the main leg to contact the floor. The leg extension is moved to operative projected position by a combination of simple angular and sliding movements. The leg extension can be, and normally is, locked against angular movement in both retracted and projected positions.

3,697,032
SCAFFOLDING

Douglas Henry Pearce, Berkhampsted, England, assignor to Access Equipment Limited, Hemel Hempstead, England

Filed Dec. 15, 1969, Ser. No. 884,969
Claims priority, application Great Britain, Dec. 19, 1968, 60,413/68
Int. Cl. E06f 7/28
U.S. Cl. 248—188.4 **9 Claims**

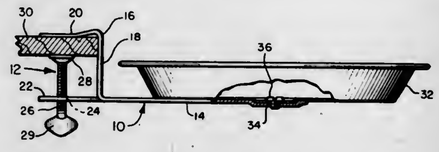


A leg of adjustable length, for scaffolding, has an externally screw threaded leg member slidably received in an upright tubular scaffolding member the lower end of which abuts a nut on the leg member rotatable to provide fine adjustment of the leg length. The nut has a lever arm and is tiltable to disengage its screw threads from the screw threads of the leg member to provide for coarse adjustment of the leg length. The tubular scaffold member normally seats in a recess in the nut to prevent tilting of the nut.

3,697,033
MERCHANDISING FIXTURE

Donald R. Jacobs, River Forest, Ill., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 20, 1971, Ser. No. 107,981
Int. Cl. A47f 5/00
U.S. Cl. 248—226 A **1 Claim**

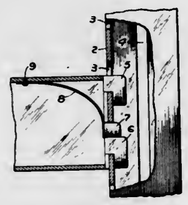


A merchandising fixture for displaying a stack of articles has a clamp for attaching the fixture to the edge of a shelf and a support arm adapted to have attached thereto one of said articles to form a base for the stack thereof.

3,697,034
LOCKING SHELF BRACKET SUPPORT STRUCTURE

Irving W. Shell, 442 Wellington Avenue, Chicago, Ill.

Filed Jan. 12, 1970, Ser. No. 2,106
Int. Cl. A47g 29/02
U.S. Cl. 248—243 **1 Claim**



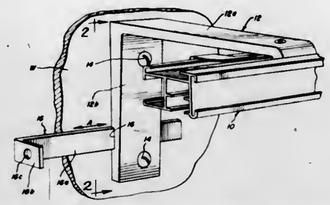
A lockable coupling is provided for shelving assemblies employing bracket members and upright members which are assembled to each other in a cantilever fashion. The coupling incorporates hook-shaped projections at the end of the bracket members which engage receiving slots in the upright members, and in addition, a spring biased bar is provided at the end of the bracket member which springs outward into one of the receiving slots in the upright member upon completion of assembly of the two members.

3,697,035
DRAPERY SUPPORT

George H. Baker, Sr., Dunlap, Ill., assignor to Baker Drapery Corporation

Filed Dec. 14, 1970, Ser. No. 97,592
Int. Cl. A47h 1/142
U.S. Cl. 248—260 **7 Claims**

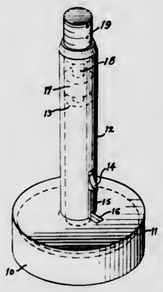
In a drapery support assembly which has a generally horizontal traverse track supported by brackets along a wall or the like, with the track spaced from the wall, and the track being adapted to have a drapery panel attached thereto, a generally L-shaped return hook plate for receiving one end of the drapery panel around one end of the track adjacent the wall. The L-shaped return hook plate has a horizontal portion clamped between a bracket adjacent one end of the track and the wall and held therebetween by pressure between the bracket and wall, and an arm portion extending outwardly from the wall for attaching the end of the drapery panel thereto. By loosening the bracket, the return hook plate is adjustable lengthwise of the track, transverse to the bracket, to compensate for different lengths of track extending beyond the bracket.



3,697,036
PATTY-FORMING DEVICE

Maurice S. Kanbar, 4 East 77th Street, New York, N.Y., and Salvatore Benenati, 1603 Givan Avenue, Bronx, N.Y.

Filed March 11, 1970, Ser. No. 18,547
Int. Cl. A22c 7/00
U.S. Cl. 249—74 **5 Claims**



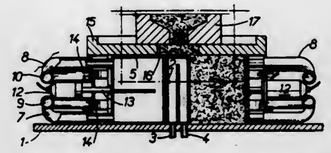
A food-patty-forming device in which moldable food, such as ground meat, is receivable within a molding cup and is caused to assume the shape thereof, the cup having an adjustable molding plate therein whose position relative to the base of the cup determines the thickness of the patty. The base of the cup is attached to one end of a cylinder serving as the handle of the device, a piston secured to the molding plate being telescoped within the device to an extent limited by an adjustable screw operated by a control knob projecting from the other end of the cylinder. The knob is calibrated in terms of patties per pound whereby the position of the molding plate may be set to provide a predetermined number of patties, all having the same thickness.

3,697,037
CLUSTER CASTING APPARATUS FOR WORKPIECES MADE OF POURED MOLTEN REFRACTORY MATERIAL

Joseph Recasens, Sorgues, France, assignor to L'Electro-Refractaire, Paris, France

Filed May 26, 1971, Ser. No. 146,962
Claims priority, application France, May 26, 1970, 7019102
Int. Cl. B22d 27/04
U.S. Cl. 249—81 **10 Claims**

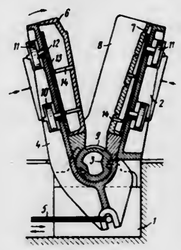
The invention relates to an apparatus for cluster casting of workpieces made of refractory material. This apparatus comprises a bottom plate; metallic wedges cooled internally, mutually spaced, arranged circularly and radially around a cooled core resting on the bottom plate; vertical and top means confining the volumes between the wedges, said top means delimiting a central aperture communicating with said volumes and through which a molten refractory material is poured, and said wedges being movable from a position where they are in contact with the core (for the casting) to a position where they are apart from said core (for extracting the cluster). This apparatus is useful, for example, for producing plates, workpieces derived from the plate form as well as pump rotors.



3,697,038
MACHINE FOR CASTING THIN-WALLED LARGE-SIZE PIECES

Emelyan Semenovich Stebakov, ulitsa Lobanchevskogo, 82, kv. 15; Alexandr Ivanovich Leontiev, ulitsa Vishnevskogo, 9, korpus 2, kv. 33; Petr Mikhailovich Simpura, ulitsa Perekopskaya, 11, korpus 2, kv. 90, all of Moscow; Ivan Ivanovich Kozlov, poselok Nekrasovsky, ulitsa L. Tolstogo, 15/1, Moskovskaya Oblast; Evgeny Borisovich Glotov, ulitsa Krivorozhskaya, 21, korpus 1, kv. 30, Moscow; Alexandr Stepanovich Musiyachenko, ulitsa Chapaeva, 17, kv. 61, Moskovskaya Oblast, Skhodnya; Vladimir Alexandrovich Antonov, ulitsa K, Libknekhta, 146, kv. 11, Moldavskaya SSR, Tiraspol; Boris Alexandrovich Vshivkov, ulitsa Gorkogo, 16, kv. 9 Primorsky Kral, Arseniev; Sevantyan Ivanovich Podgorny, ulitsa Sovetskaya, 9 Primorsky Kral, Arseniev both of Moscow; Vyacheslav Petrovich Zubkov, ulitsa Lomonosova, 24, kv. 65, Primorsky Kral, Arseniev; Vladimir Nikolaevich Milov, ulitsa Krivorozhskaya, 27, korpus 2, kv. 67, Moscow; Nikolai Viktorovich Navrotsky, ulitsa Junost, 17, kv. 113, Tiraspol, and Leonid Alexandrovich Nikolsky, Dokhturovsky pereulok, 20, kv. 13, Moscow, all of U.S.S.R.

Filed May 10, 1971, Ser. No. 141,824
Int. Cl. B28b 7/10
U.S. Cl. 249—137 **2 Claims**

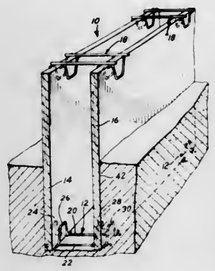


A machine for casting thin-walled large-size castings, such as panel-type parts, incorporating two leaves, one of which is fixed on a bed-plate and the other one on a movable shaft having a reversible drive, and secured on the same bed-plate. The shaft exterior is formed with a recess extending along the shaft length and further through the spacing between the leaves, the depth of the recess is adequate to accommodate the metal crust formed on the shaft surface from the moment the pouring process is started until the shaping of a piece being cast is completed; the machine leaves are provided with means for detaching and releasing the cast pieces from the half moulds.

3,697,039
CONCRETE FORM CLIP

Thomas E. Phelps, 700 Campbell Drive, and Ben F. Kraft, 531 Parkway East, both of, Las Vegas, Nev.

Filed Jan. 21, 1970, Ser. No. 4,623
Int. Cl. E04g 17/00
U.S. Cl. 249—219 5 Claims

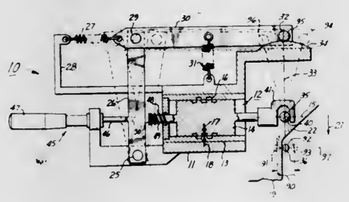


A concrete form assembly in which a plurality of lower clips are mounted in engagement with the bottom of a pair of sheet sides. A second plurality of upper concrete clips engage the top f the sheet sides and cooperate with the lower clips to hold the sheet sides in a substantially vertical attitude to hold the sheet sides in position while wet concrete is poured into the space between the sheet sides. All of the clips are identical in their construction. Each clip includes a pair of parallel spaced rails and a pair of U-shaped braces fixed to each end of the pair of spaced rails for engaging the sheet sides and holding the sheet sides upright.

3,697,040
TOOL OFFSET MEANS FOR TRACER MECHANISMS

Paul J. Weaver, San Marino, Calif., assignor to Automatic Control Systems, Inc., El Monte, Calif.

Filed Dec. 23, 1970, Ser. No. 100,955
Int. Cl. B23q 35/18
U.S. Cl. 251—3 12 Claims

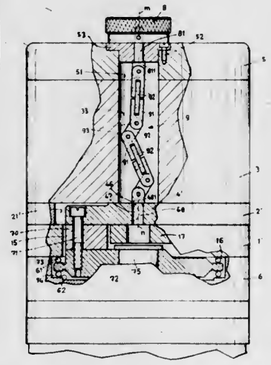


A tracer valve for controlling a machine tool for duplicating on a workpiece the contour of a template or pattern. For a given tool setup, the offset of the stylus from the tracer valve sensor is known and geometry, for in the system's geometry. including the geometry of the tools being used. However, when a different machining operation is to be performed, or when a new tool is used for a second operation of the same kind, the offset must often be changed. This invention provides a means for pre-setting and for changing tool offsets in order that sequential operations can be carried out without changing the template and even without changing the tool for a given setup. It includes a stylus support having three pivoted links and four pivots, one pivot being a joinder with the tracer sensor whereby the latter is semi-fixed in space and acts as a fulcrum in determining the offset of the stylus tip from the tracer sensor.

3,697,041
HYDRAULIC CONTROL VALVE HAVING LATERALLY AND ROTATIONALLY DISPLACEABLE VALVE PLATE

Konrad Bschorer, Wolfratshausen, Germany, assignor to Friedrich Deckel Prazisions Mechanik und Maschinenbau, Munich, Germany

Filed July 8, 1971, Ser. No. 160,594
Claims priority, application Germany, July 10, 1970, P 20 34 432.5
Int. Cl. B23q 35/18; F17d 3/00
U.S. Cl. 251—3 9 Claims

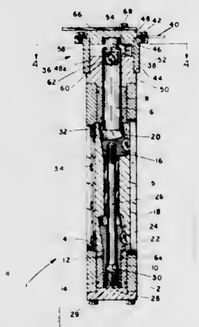


A hydraulic control valve for controlling copying-milling machines and the like. The movements of the associated machine are controlled by moving a valve plate laterally in one direction or another, relative to the fixed valve body. The edges of the associated ports in the valve plate and the valve body are so shaped that by turning the valve plate, a larger or smaller valve port opening will occur for a given extent of lateral movement of the valve plate relative to the body. A pivoted link chain connecting the valve plate to an actuating knob controls the turning movements of the valve plate, and a conventional stylus or tracer connected to the valve plate controls the lateral movements thereof.

3,697,042
DUAL ACTION BUTTERFLY VALVE

Henry R. Killian, Greensburg, Pa., assignor to Walworth Company, Bala Cynwyd, Pa.

Continuation-in-part of Ser. No. 843,510, July 22, 1969. This application Jan. 21, 1971, Ser. No. 108,323
Int. Cl. F16k 5/20
U.S. Cl. 251—163 6 Claims



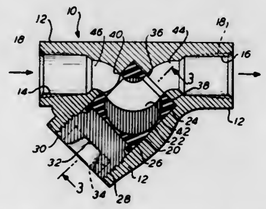
A rotatable valve structure, such as a butterfly valve, wherein the shaft is movable axially, with a camming surface

on the shaft engaging a complementary camming surface on the disc to produce transverse movement of the valve disc in response to axial movement of the shaft. Hence, the valve disc may be turned to a face-to-face position relative to the seat and then, in response to axial movement of the shaft, pressed into firm seating engagement. Both the rotary and axial movements of the shaft are produced by rotary movement of an operator. Means are provided for adjusting the plane of the disc.

3,697,043
BALL VALVE

Joseph W. Baker, 193 Rutledge Center, North Plainfield, N.J.

Continuation of Ser. No. 3712, Jan. 19, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 206,111
Int. Cl. F16k 5/06
U.S. Cl. 251—315 6 Claims

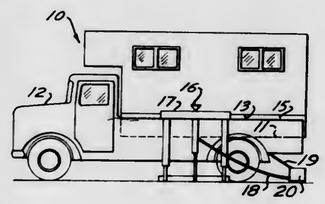


An in-line ball valve for on-off, throttling or diverting operation in a fluid line which has a one-piece housing with integral and axially aligned inlet and outlet ports or chambers terminating at orifices in adjacent walls of the valve's main cavity is disclosed. The ball is held between an annular sealing ring and an annular support ring coaxially aligned in an access bore of the housing that is positioned between the inlet and outlet ports and is directed at an angle to the common axes of the in-line inlet and outlet ports. The ball has a non-linear passage which, upon rotation of the ball, is operative selectively to provide and prevent communication between the inlet and outlet ports through the access bore in the housing. The angularly directed access bore is provided with a threaded plug at its outer end which permits adjustment of the sealing ring as well as the torque required to rotate the ball in the valve even while the valve is in operation. Further, the plug can be removed from the access bore to permit repair or replacement of the ball and ring assembly without disturbing the connecting fittings in the fluid line.

3,697,044
CAMPER UNIT LIFTING DEVICE

Leon Kowalski, 6162 Fleming Street, Vancouver 15, British Columbia, Canada

Filed March 26, 1971, Ser. No. 128,312
Int. Cl. B66f 7/26
U.S. Cl. 254—45 11 Claims

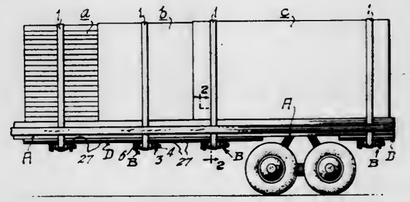


Lifting device, operable by one operator, for lifting camper units on and off trucks. Hydraulic equalizer supplies equal volume flows of fluid to hydraulic jacks of jacking devices which carry camper unit. Jacks are straddled by telescoping guides to reduce bending moments on jacks. Jacking devices are canted inwards from bases of jacking devices, increasing stability of camper unit when carried on jacking devices. Equalizer ensures equal extension of jacks, reducing tendency of camper unit to topple.

3,697,045
ADJUSTABLE WINCH FOR CARGO TIE-DOWN

Holt A. Farley, Annandale, N.J., assignor to American Aluminum Company, Mountainside, N.J.

Filed May 11, 1971, Ser. No. 142,176
Int. Cl. B66f 1/00
U.S. Cl. 254—51 6 Claims

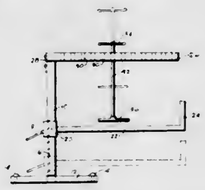


A U-shaped winch frame has a winding drum for a flexible tie-down element journaled in its arms which have notches in their opposite edges into which extend inwardly projecting flanges on a track which is fixedly secured to the body of a vehicle so that the winch can be freely slid along said track into different positions relative to the truck body and the cargo load thereon.

3,697,046
COMBINED, JACK, AND CLAMP, SURE, CLAMP

Ferdinand F. Sur, RR 3, Effingham, Ill.

Filed Sept. 25, 1969, Ser. No. 860,941
Int. Cl. B66f 1/06
U.S. Cl. 254—111 4 Claims



An elongated horizontal member is adapted by jack operated means to be moved up and down in a vertical plane. A horizontal frame overlying and spaced from the member contains a vertical clamp member which can be moved into engagement with the horizontal member in any one of a plurality of available positions.

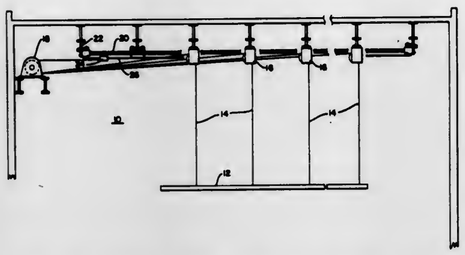
3,697,047
FLUID ACTUATED STAGE CONTROL SYSTEM WITH FLUID FLOW READOUT SIGNAL

William M. Cruse, 333 North Norton Avenue, Los Angeles, Calif.

Filed Dec. 18, 1969, Ser. No. 886,222
Int. Cl. A63j 1/02
U.S. Cl. 254—141 16 Claims

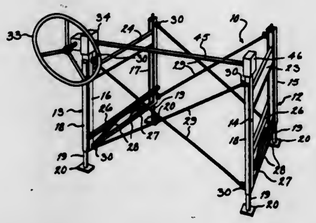
An arrangement for raising and lowering the various movable scenery settings of a theater stage by fluidic control systems. The actuators employed may be utilized as structural tie members providing lateral support for the building beam

elements. The control system may be transferred between groups of actuators to economize on installation cost. Furthermore the control system selectively directs pressurized fluid



into the actuators when raising or lowering the scenery settings and is provided with a readout system which is indicative of the rate of fluid flow into the actuators.

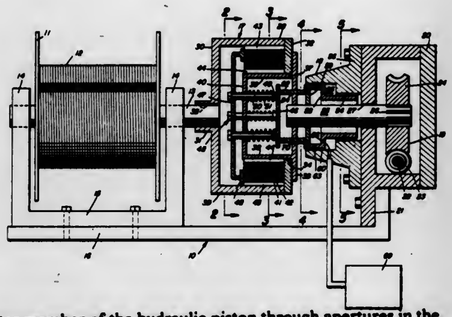
3,697,048
BOAT HOISTS
Richard L. Sarno, New Berlin, Wis., assignor to Leisure Products, Inc., Milwaukee, Wis.
Filed Jan. 22, 1971, Ser. No. 108,897
Int. Cl. B63c *23/60*
U.S. Cl. 254—148 **6 Claims**



A novel boat hoist including a supporting framework which is designed to be readily assembled and installed wherever desired, said hoist apparatus featuring a new and improved manually-actuated winch assembly adapted to simultaneously actuate lifting members positioned beneath the bow and stern portions of a boat to smoothly and easily raise said boat out of the water as well as to positively lower the boat into the water when desired, said improved elevating mechanism being simpler in design and operation than those heretofore employed in boat hoists of the general type herein concerned.

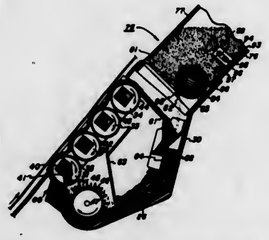
3,697,049
WINCH DRUM DRIVE AND CONTROL
David B. Wallace, 630 Camp Circle, Birmingham, Ala.
Filed April 22, 1971, Ser. No. 136,324
Int. Cl. B66d *1/00*
U.S. Cl. 254—187 R **5 Claims**

There is provided in a winch structure, rotational speed reduction gearing in a fixed housing supporting an hydraulic actuator piston housed in an extension of the rotational speed reduction gearing, the piston being centrally open through inner and outer relatively rotatably connected members thereof, through which central opening a power output shaft of a rotational speed reduction worm gear extends and is connected to rotate with a power input casing component of a selectively slip, normally non-slip coupling, and a power output component of the casing is connected relatively rotatably with the power input casing component and to rotate with a drum of the winch, there being discs in the casing in sets connected respectively to rotate with the casing components and biased by spring-loaded means in the casing to maintain non-slip conditions between the sets and be actuated by lugs on the



outer member of the hydraulic piston through apertures in the power input casing component against the bias of the spring-loaded means for slip to occur between the sets of discs when the piston is hydraulically energized.

3,697,050
CROSS-MIXING BAFFLE
Michael R. Stanley, 32 Arlington Drive, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1970, Ser. No. 97,688
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **4 Claims**

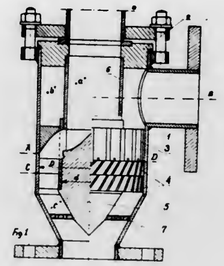


A cross-mixing device which is arranged in the flow stream of electrostatic developing material for mixing the material as it flows therethrough. The device is formed with a plurality of deflection elements which effect small incremental movements of some of the material from some zones of the flow stream transversely to other zones thereof utilizing gravitational forces exclusively.

3,697,051
PROCESS OF HETEROGENEOUS MIXING SPINNING SOLUTIONS AND OTHER VISCOUS LIQUIDS OR MASSES AND THE DEVICE THEREOF
Rudolf Lachman; Jan Paszke; Stanislaw Kaney; Henry Pstrocki; Janusz Ploszajski, and Jan Wiszczor, all of Lodz, Poland, assignors to Instytut Wlokien Sztucznych i Syntetycznych, Lodz, Poland
Division of Ser. No. 811,263, Aug. 15, 1968, abandoned. This application Jan. 2, 1970, Ser. No. 5,403
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **3 Claims**

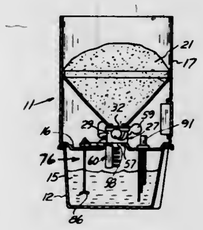
Apparatus for mixing spinning solutions comprising a housing having a pair of inlet chambers and an outlet with a third chamber upstream of the outlet: a divider in the housing com-

municates the two inlet chambers with the third chamber so that streams from the inlet chambers are uniformly distributed over the cross-section of the third chamber in alternation. The



divider includes a central core; or a pair of spaced apertured plates with conduits connecting apertures in one plate to apertures in another plate; or a structure including concentric rings.

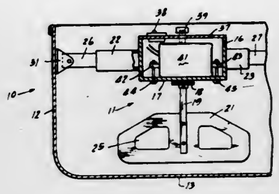
3,697,052
AUTOMATIC VOLUMETRIC CHEMICAL MIXER
Fred A. Andris, 671 East Elmwood, Troy, Mich.
Continuation of Ser. No. 865,009, Oct. 9, 1969, abandoned. This application March 22, 1971, Ser. No. 165,829
Int. Cl. B01f *7/16*
U.S. Cl. 259—8 **46 Claims**



An automatic volumetric chemical mixer which has a mixing tank with agitator, an electronic liquid level control and a tank cover together with a hopper secured to said cover for delivering of dry granular chemicals, a power operated chemical feed metering mechanism between the hopper and cover to deliver to the tank predetermined quantities of chemical for a given time element and a chemical prewetting device for facilitating the production of homogenious solutions in the tank, with the total liquid feed to the tank delivered through the prewetting device in a predetermined volume for a given time element, together with a circuit to provide an automatic operation.

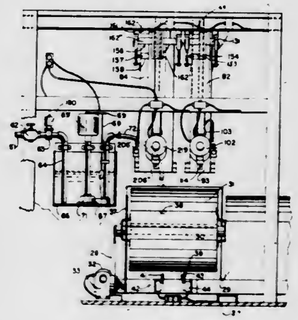
3,697,053
STIRRING DEVICE
Michael J. Will, 448 Rex Boulevard, Elmhurst, Ill.
Filed May 10, 1971, Ser. No. 141,611
Int. Cl. B01f *7/16*
U.S. Cl. 259—108 **10 Claims**

This invention relates in general to stirring devices and in particular to an appliance that may be detachably mounted in a cooking container and energized for stirring material in the container. The appliance may be spring driven, battery



operated or may be powered by a motor directly connected to power in a wall socket, for example.

3,697,054
MACHINE FOR MAKING BATCHES OF MORTAR
Frank G. Moratschek, c/o The David Hummel Building Co., 1326 Tennessee Avenue, Cincinnati, Ohio
Filed Dec. 10, 1970, Ser. No. 96,831
Int. Cl. B28c *7/04*
U.S. Cl. 259—154 **2 Claims**

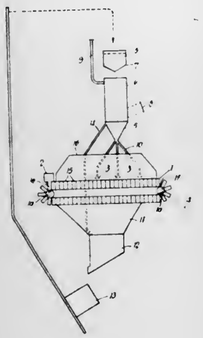


A mortar mixing machine including a mixing hopper, weigh frames pivotally mounted above the mixing hopper, weigh hoppers mounted on the weigh frames, conveyors for advancing granular solid material to the weigh hoppers, and means for supplying a predetermined amount of water to the mixing hopper. Switches are actuated by the weigh hoppers to arrest the conveyors when there is a predetermined weight of the sold material in the weigh hopper. The contents of the weigh hoppers is dumped into the mixing hopper after the water has been supplied thereto to be mixed to form a batch of mortar.

3,697,055
HEAT TREATMENT OF BODIES OF COMBUSTIBLE MATERIAL
Cyril Walker Cooper, deceased, late of Pontefract, England, and by Edgar Knight, executor, Leeds, England, assignors to Cawood Wharton & Company Limited, Yorkshire, England
Filed Sept. 18, 1970, Ser. No. 73,362
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 R **6 Claims**

A method of and apparatus for heat treating bodies of combustible material in which a bed of bodies is continuously moved by means of a conveyor which is capable of conveying

the bed in such manner that the individual bodies do not move relatively to one another or to the conveyor and in which



heated granular material is passed through the conveyed bed so as to transfer heat to the individual bodies.

3,697,056

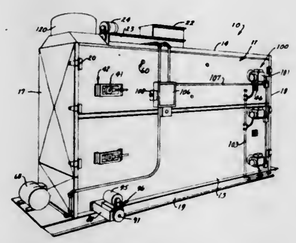
POULTRY MANURE DRIER AND STERILIZER

Richard Prins, Sr., and Richard Prins, Jr., both of Grand Haven Township, Ottawa County, Mich., assignors to Wolverine Manufacturing Company, Grand Haven, Mich.

Filed Dec. 31, 1970, Ser. No. 103,274

Int. Cl. F27b 9/24

U.S. Cl. 263—8 R **11 Claims**



An animal waste material drier and sterilizer and more particularly a poultry manure drier and sterilizer having endless conveyors each cooperating with a respective pair of vertically spaced material receiving trays. Each of the material receiving trays comprises a plurality of tray sections. The conveyor includes a pair of conveyor chains disposed adjacent the opposite side of the trays and having a plurality of agitator elements fixedly secured to and extending between the chains, whereby the agitator element on the upper reach of the conveyor move longitudinally along the upper surface of the upper tray and the agitator elements on the lower reach more longitudinally along the upper surface of the lower tray. The agitator elements are alternatingly disposed above and below the reachs of the chains to which they are attached, ones of the elements pushing the material along the upper surfaces of the trays, causing an agitating or tumbling action of the material and alternative ones of the elements leveling the material on the tray. Hydrocarbon fuel fired burners are coupled to individual combustion chambers between which are interleaved the trays. The combustion chambers are located in stacked relationship adjacent one end of the trays for heating the tray located thereabove and carrying of vapor from the tray located therebelow. Bladed devices are disposed adjacent the discharge end of several of the trays for breaking apart caked drying material as it falls from tray to tray.

3,697,057

Patent Not Issued For This Number

3,697,058

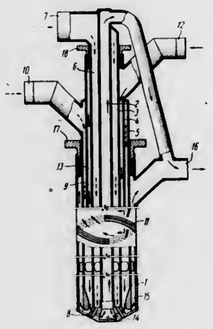
OXYGEN TOYERE OF A STEEL-MELTING MILL

Boris Semenovich Chaikin, Moscow; Lev Ivanovich Kozlov, Khimki Moskovsko oblasti; Thomas Vasilievich Malchenko; Konstantin Dmitrievich Mokrushin, both of Cherepovets Vologodskoi; Lev Volfovich Yarovsky, Moscow; Grigory Efimovich Maryanchik, Moscow; Boris Stepanovich Zhelnov, Moscow; Vasily Mikhailovich Tarasov, Moscow; Kirill Mikhailovich Trubetskov, Moscow; Igor Konstantinovich Borschevsky, Moscow, and Dmitry Pavlovich Chermensky, Vidnoe Moskovskoi oblasti, all of U.S.S.R., assignors to Gosudarstvenny Sojuzny Institut Po Proektirovanijuagregatov Staleliteinogo I Prokatnogo Proizvodstva Dlya Chernoi Metallurgii, Moscow, U.S.S.R.

Filed Feb. 2, 1971, Ser. No. 111,926

Int. Cl. C21c 7/00

U.S. Cl. 266—34 L **1 Claim**



The present invention relates to an oxygen tuyere of a steel-melting mill, whose body has pipes for supplying oxygen, a cooling medium and a shielding gas, coaxially arranged therein. The lower portion of the body of the tuyere has nozzles for supplying oxygen into liquid metal and slot-like nozzles for supplying a shielding gas, disposed above the former ones and forming a spiral, at least, a double-turn one, which embraces the body along its periphery.

3,697,059

HELICAL SPRING FOR PRODUCING ARTIFICIAL REVERBERATION

Werner Fidl, Baden near Vienna, Austria, assignor to Akustische U. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria

Filed Aug. 10, 1970, Ser. No. 62,442

Claims priority, application Austria, Aug. 19, 1969, 7934/69

Int. Cl. F16f 1/34

U.S. Cl. 267—161 **10 Claims**



A helical spring for producing artificial reverberation, with the frequencies to be reverberated being impressed thereon in the form of torsional vibrations, has individual turns, at random locations therealong, deformed irregularly from a normally circular configuration. Portions of the deformed turns may be deformed outwardly from the normally circular configuration or deformed inwardly therefrom, or in both directions, but in the plane of the circular configuration.

3,697,060

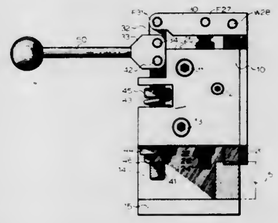
ADJUSTABLE HEIGHT AND VARIABLE FORCE CLAMP

Walter A. Kulson, 30034 Paul Court, Warren, Mich.

Filed May 20, 1971, Ser. No. 145,260

Int. Cl. B25b 1/14, 5/12

U.S. Cl. 269—228 **5 Claims**



A quick-acting, spring-pressed clamp adjustable for spring compression clamping force having a body with a lever fulcrummed on a pillar which is heightwise adjustable. A post on the body is also heightwise adjustable for compensating for the adjusted height of the pillar fulcrum point. Thus height adjustment of the post and pillar adjust the height of the lever. A clamp jaw is connected to the weight end of the lever with the jaw thereby being height opening adjustable relative to a workpiece. The post pivotally supports a toggle knee block which is connected by link to the power end of the lever. The knee block is actuated by a handle. A spring supported on the body surrounds the post and an adjustment nut on the body supports the post on the spring. An opposing nut on the post opposes the adjustment nut on the post so that the spring may be pre-compressed under load therebetween to adjust the clamping force as desired without changing the adjusted height of the jaw relative to a workpiece in its open position and without interference in its clamped position.

3,697,061

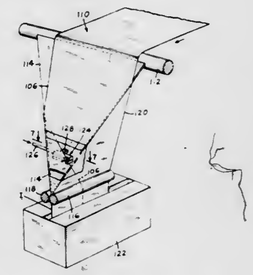
METHOD AND APPARATUS FOR MAKING TWELVE-PAGE BOOKLETS OR SIGNATURES

Sidney V. Levine, 1 Skibo Lane, Mamaroneck, N.Y., and Christopher Hastalis, 1338 Leonard Way, North Valley Stream, N.Y.

Filed March 24, 1971, Ser. No. 127,595

Int. Cl. B41f 13/58

U.S. Cl. 270—5 **7 Claims**



Method and apparatus for use with a web printing press and associated conventional folding devices for the continuous production from a single web of 12 page pasted booklets or signatures instead of or in addition to the eight page, or multiples thereof, booklets or signatures, pasted or not, which are customarily produced on web press and folder combinations. The apparatus constitutes a device for applying a thin continuous line of adhesive to both opposing surfaces of the printed web with said lines of adhesive extending lengthwise of and lying very close to a free edge of the web as it progresses from the press rolls to the first unit of the folding apparatus. The edge with applied adhesive is then folded into the interior of the 12 page assembly so as to bind all pages of the same firmly together.

3,697,062

MACHINE FOR THE ZIGZAG FOLDING OF SHEETS

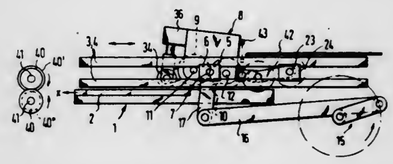
Harri Mones, Am Marktweg 4, D-5601 Grulten, and Walter Mones, Breidenhoferstrasse 30, D-5657 Haan, both of Germany

Filed Dec. 3, 1969, Ser. No. 881,818

Claims priority, application Germany, Dec. 4, 1968, P 18 12 557.0

Int. Cl. B65h 29/46

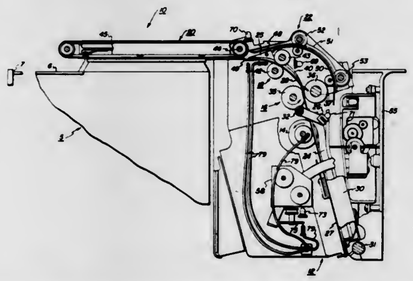
U.S. Cl. 270—30 **4 Claims**



A machine is used for the zigzag folding of sheets, particularly paper sheets, in predetermined sizes. The machine has a table carrying the sheets to be folded and a carriage reciprocating above the table. A swing carried by the carriage carries a driven pair of folding rollers which are actuated in such manner that when the carriage moves forwardly one of

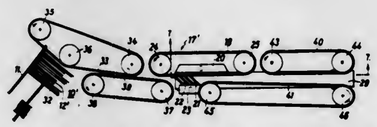
the rollers table against the ta and when the carriage moves rearwardly the other one of the rollers presses against the table.

3,697,063
DOCUMENT HANDLING APPARATUS
Stephen J. Greenfield, Fairport; Anthony Howard, Henrietta, and Lowell W. Knapp, Victor, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 28, 1970, Ser. No. 101,565
Int. Cl. B65h 3/06
U.S. Cl. 271—4 **3 Claims**



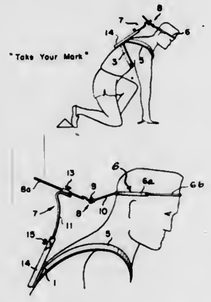
A document handling apparatus of the type in which documents are fed one by one from a document supply station to a work station and returned to the supply station for either recycling or removal. The apparatus incorporates a tray for holding the documents, feed means for feeding documents one by one from the bottom of the tray to the work station and back to the tray, a bail bar interposable above the tray to maintain documents returning to the tray segregated from documents awaiting feeding, and a cover for the tray. An operating control system for the document handling apparatus is provided, with light responsive detectors disposed at strategic points within the apparatus confines to trace movement of the documents. To provide light for the various detectors while facilitating repair and replacement of the light without the need to resort to substantial disassembly of the apparatus, a central light source is provided, there being individual fiber optic type light conductors to lead the light into an operative position opposite each detector.

3,697,064
APPARATUS FOR PRODUCING AN ORDERLY STACK OF FLAT ITEMS
Karl-Heinz Kummerer, Konstanz, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany
Filed Dec. 2, 1969, Ser. No. 881,368
Int. Cl. B65h 3/12, 31/06
U.S. Cl. 271—5 **6 Claims**



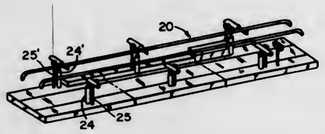
An arrangement for producing an orderly stack of items from a conveyed flow of flat items arriving in irregular amounts and overlapping one another, such as mail shipments, the arrangement including a pass-through separator and a stacker disposed in the conveying path behind the separator, the pass-through separator and the stacker being disposed with respect to one another in such a manner that the suction trough of the separator and the stack formed in the stacker are disposed on respectively opposite sides of the conveying path defined by the items passing from the separator to the stacker.

3,697,065
TRAINING AID FOR SPRINTERS
Thomas M. Glassburner, Jr., 1008 Westover Ave., Apt. 2-B, Norfolk, Va.
Filed Jan. 12, 1971, Ser. No. 105,800
Int. Cl. A63b 69/00
U.S. Cl. 272—59 R **5 Claims**



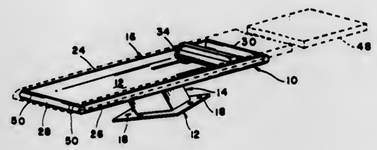
A training aid for maintaining the body of a runner in a proper sprinting form from start to finish during a race. The apparatus includes base plate means adapted for connection with the torso of the sprinter, head engaging means for engaging the sprinter's head, and connecting means for coupling the head engaging means with the base plate means so as to maintain the head and neck of the runner in an extended forward position relative to the torso during sprinting.

3,697,066
MOTORIZED PARALLEL BAR DEVICE MANUFACTURED IN VARIOUS LENGTHS
Roman G. Wieland, A. John Weber, Clair A. Bearfield and Gordon E. Nelson, all of Valley, N. Dak., assignor to Tri W-G, Inc., Valley City, N. Dak.
Filed Oct. 22, 1968, Ser. No. 769,643
Int. Cl. A63b 3/00
U.S. Cl. 272—63 **4 Claims**



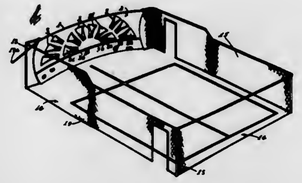
The invention comprises a motorized parallel bar device, having a pair of parallel bars. Each parallel bar is made in sections. A platform supports the bars and the platform is made in corresponding sections. A pair of vertically telescoping columns are mounted on each section to raise and lower the parallel bars, and telescoping drive shafts are on each platform section for moving the parallel bars horizontally. A reversable motor is mounted to one of the platform sections, and transmission shafts extend along the platform to transmit power to the telescoping columns and telescoping drive shafts. The transmission shafts are also made in sections corresponding to the platform sections and sleeves couple the shaft sections together and the parallel bar sections are coupled together.

3,697,067
CANTILEVER STAND
Carl R. Meyer, West Covina, Calif., assignor to Aquaslide 'n' DIVE CORPORATION, South El Monte, Calif.
Filed Jan. 17, 1969, Ser. No. 791,886
Int. Cl. A63b 5/10
U.S. Cl. 272—66 **5 Claims**



The invention provides a cantilever stand for diving boards. A diamond shaped tubular column is employed having a base at its lower end and a platform supported on its upper end and having means for anchoring the diving board at its butt end. A movable fulcrum is carried on the platform for selectively changing the fulcrum point of the diving board as desired. For higher stands, a step is provided.

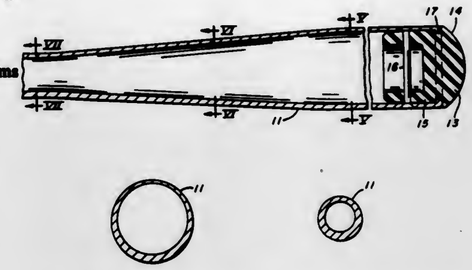
3,697,068
NON-PLANAR BALL REBOUND WALL
Julia P. McDougall, Transvaal, Republic of South Africa, assignor to Tranly Walls and Mini Courts (Proprietary) Limited, Johannesburg, Transval, Republic of South Africa
Filed Sept. 9, 1969, Ser. No. 856,292
Claims priority, application South Africa, Sept. 18, 1968, 68/6047; June 27, 1969, 69/4579
Int. Cl. A63b 61/00
U.S. Cl. 273—29 A **7 Claims**



A wall structure for practicing tennis or similar games. The structure provides a rebound surface which is non-planar so that rebound characteristics are obtained which differ from those of a conventional flat practice wall. In particular the rebound surface defines a generally concave configuration coupled with indented or projecting formations so that generally a ball rebounds towards a center line of the wall but an unexpected bounce is obtained when the ball strikes a formation.

3,697,069
BALL BAT WITH ECCENTRICALLY THICKENED WALLS
Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.
Filed Nov. 12, 1970, Ser. No. 88,916
Int. Cl. A63b 59/06
U.S. Cl. 273—72 **8 Claims**

This invention relates to ball bats and particularly to a bat with a tubular metal body wherein the wall thickness of the

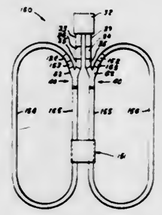


tube is eccentric to present a stronger ball striking area when the bat is properly oriented.

3,697,070
METALLIZING COATING COMPOSITIONS
Walter R. McAdow, Grosse Pointe Farms, Mich., assignor to Mobil Oil Corporation
Continuation-in-part of Ser. No. 33,106, April 29, 1970. This application June 19, 1970, Ser. No. 47,881
Int. Cl. C09c 1/62, 1/64
U.S. Cl. 106—291 **7 Claims**

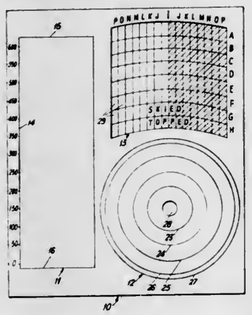
Metallizing coating compositions having greater sparkle and glitter are formed by including in the coating composition insoluble resin-supported planar reflective metal flakes in an amount of from about 0.0003 percent to about 0.035 percent of metal (particularly aluminum) based on the weight of the composition. The flakes are supported and rendered more planar by using a metal film surfaced on both sides with a relatively insoluble resinous film having a thickness of at least 0.01 mil. When the supported metal film is broken up to form flakes, the flakes are flatter and reflect light over a larger portion of their surface to permit use in smaller amount.

3,697,071
FLUID ACTUATED TRACK SYSTEM WITH CONSTANT FLOW VALVE
John E. Anderson, 217 Sesame Drive, Mesquite, Tex.
Filed Nov. 10, 1969, Ser. No. 875,212
Int. Cl. A63f 9/14; B65g 51/04
U.S. Cl. 273—86 D **12 Claims**



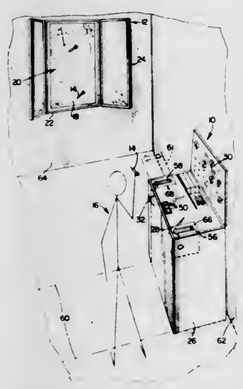
A toy system having transparent conduit forming a track for projectiles such as toy trains propelled by air or water. A constant flow-type valve admits the fluid from a source of air or water under pressure controlling the rate of fluid admission to the conduit track to control the speed of the projectile along the track. The track is arranged in various configurations including closed loops and parallel straight drag strips. Indicating devices are included for counting the laps traversed by projectiles on the closed tracks and for indicating a winner in the drag strip arrangement.

3,697,072
GOLF BOARD GAME
James Millar Park, 12 Coltness Road, Wishaw, Lanarkshire, Scotland, England
Filed June 29, 1971, Ser. No. 157,919
Claims priority, application Great Britain, July 16, 1970, 34,445/70
Int. Cl. A63f 7/00
U.S. Cl. 273—87 H 4 Claims



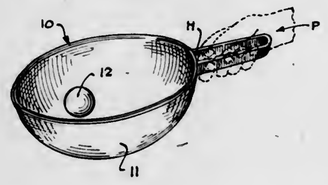
A board game based on golf comprises a board, a chart representing distances allied to different golf clubs, a distance and direction indicator, counters, markers representative of golf balls, and parts representative of arbitrary features of a hole on a golf course. The board includes first section devoted to the construction of a golf hole using said parts, and a second section which includes a grid comprising rows and columns of cavities referenced, respectively, in conformity with said chart and with an arcuate scale on said indicator, and spaned from said grid a target with concentric circles about a central cavity and from which counters can be flipped into cavities of said grid.

3,697,073
GOLF PHOTOGRAPHY DART BOARD GAME INCLUDING SCENE CHANGING MEANS
John F. Dooley, 212 Water Street, Janesville, Wis.
Filed May 21, 1969, Ser. No. 826,608
Int. Cl. A63b 71/04
U.S. Cl. 273—95 R 6 Claims



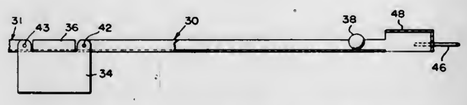
Apparatus for and method of projecting on a screen, views of different phases of a game, such as views of the fairways of the golf course, onto which darts may be thrown for representing distances of drive of the ball, and including overlay projections for indicating on the screen what the drive distances are as indicated by the landing positions of the darts, and arrows indicating the positions of the players for the next throw according to the position of the darts in previous plays.

3,697,074
CATCHER AND PROJECTOR EMPLOYED WITH A SUBSTANTIALLY NON-RESILIENT BALL
Alfred D. Duncan, Elmhurst, Ill., assignor to Duncanlite Laboratory, Inc., Villa Park, Ill.
Filed May 13, 1970, Ser. No. 36,878
Int. Cl. A63b 63/00
U.S. Cl. 273—96 R 4 Claims



A game and equipment therefor, including a hand manipulated launcher and a ball, in which the ball is impelled along a trajectory by first placing the ball on a reaction surface presented by the launcher, rocking the launcher to impart momentum to the ball and then withdrawing the launching surface by swift movement so that the ball is launched on its trajectory by reaction, whereafter a gamesman endeavors to catch the ball by a launcher used in the game. The reaction surface is an arc of no more than 180°, and preferably about 160°. The ball is to be caught or captured in such a fashion that the ball does not bounce or ricochet into an ungoverned trajectory.

3,697,075
SWINGABLE GUIDEWAYS FOR PROPELLING A ROLLABLE DEVICE
John J. Nania, 879 Embury Road, Penfield, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,534
Int. Cl. A63b 71/04
U.S. Cl. 273—110 3 Claims

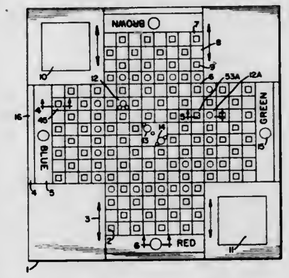


A game including two vertically swingable guideways mounted on a common base. The players send a rolling device back and forth from one guideway to the other, each trying to drive the device over the end of his opponent's guideway and to stop the device just before it reaches the end of his own. The guideways may be of flexible material, but are preferably rigid, with detent means to limit their upward travel.

3,697,076
BOARD GAME APPARATUS
Charles B. Vogel, 5612 Wickersham, Houston, Tex.
Continuation-in-part of Ser. No. 659,627, Aug. 10, 1967, Pat. No. 3,588,114. This application April 17, 1969, Ser. No. 817,116
Int. Cl. A63f 3/00
U.S. Cl. 273—131 A 15 Claims

This board game apparatus comprises a board and playing pieces constructed so as to produce visual and audible indications in response to manipulation of the pieces during a game.

Attached to the board are sources of electrical energy, electrical indicators, switches and patterns of electrodes which are repeated at board positions occupied by the pieces. These electrical components are connected so as to form incomplete circuits. The playing pieces bear hidden electrodes which cooperate with the other electrical components to complete one of the circuits and actuate one of the indicators when the pieces occupy certain combinations of positions. Certain of



the pieces are symmetrical and can be placed upon the board in either of two visually indistinguishable orientations ; the hidden electrodes then cooperate with the patterns only if the pieces are suitably oriented. Certain other pieces are provided in pairs having identical outward appearance but different internal structures. One piece of a pair then coopetates with the patterns while the other does not. Still other pieces are provided which have no electrodes but bear concealed indicators responsive to mechanical energy supplied by the players.

3,697,077
BOARD GAME APPARATUS
Stanley D. Palmer, 1810 Empire, Joplin, Mo.
Filed June 15, 1970, Ser. No. 46,162
Int. Cl. A63f 3/00
U.S. Cl. 273—135 B 2 Claims



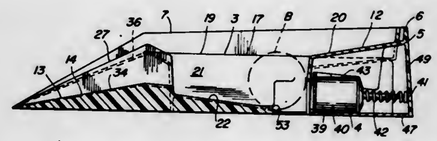
Game apparatus comprising individual frames for two or more players, each frame being provided with a plurality of invertible sections having different indicia on opposite sides susceptible of section combination to form contrasting panoramas of desired and undesired scenes, and dice for directing reversing of player-selected sections to complete a panorama.

3,697,078
FOLDABLE GAME PLAYING BOARD
Harald Riehle, Esslingen/Neckar, Germany, assignor to IWA-Rechenschieberfabrik F. Riehle KG, Esslingen/Neckar, Germany
Filed March 4, 1971, Ser. No. 121,107
Int. Cl. A63f 3/00
U.S. Cl. 273—136 G 5 Claims



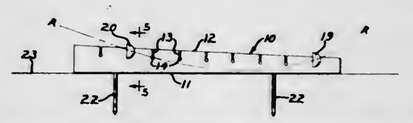
To reduce the packing space of game playing boards, which are formed with depressions to place game chips or the like therein, a plate member is formed with a preferably central opening into which a plastic body can be inserted. The plastic body has the depressions therein into which the chips can be placed. The plate member itself is formed with a fold line. The plastic body has a laterally projecting flange underlying the fold line and projections which fit into openings with an interference fit so that the plastic body can be pushed into the opening of the plate when the game is to be played, and can be removed therefrom, and the plate-like board folded.

3,697,079
GOLF PUTTING PRACTICE DEVICE
John R. Brandell, Glenview, Ill., assignor to Brandell Products Corporation, Rosemont, Ill.
Filed Aug. 23, 1971, Ser. No. 173,794
Int. Cl. A63b 57/00
U.S. Cl. 273—179 A 23 Claims



A golf putting practice device embodying a ball receiving pocket simulating an actual putting cup and operable to kick a ball received in the device back to the person making a putt. The device includes a front ramp having a central portion which rises to a lesser height and at a lesser slope than the portions on either side thereof. A second ramp slopes rearwardly and downwardly from the front ramp to a floor area including a pocket which simulates a putting cup. The floor area around the pocket is inclined so that all balls thereon will roll into the pocket. The rear wall of the pocket remote from the front ramp may include a concave depression straddled by two flanges which together provide a recess for receiving a golf ball to be ejected from the pocket. The ejection device may be a solenoid including a coil and a plunger held in a retracted position by a compression coil spring. The ejection device is actuated when the ball engages a plunger type switch which may be located in the depression in the rear wall of the pocket. The central portions of the front and rear ramps are straddled by upstanding ribs which may guide a properly putted ball into the pocket. Additional upstanding guiding ribs are provided on the side portions of the front ramp and the floor of the pocket. The bottom surface of the pocket slopes downwardly and rearwardly so that any ball thereon is caused to roll rearward to the ejection device. An inclined portion of the pocket's bottom surface adjacent the ejection device is so sloped that an ejected ball is caused to engage same and be thrown forwardly over the top of the front ramp.

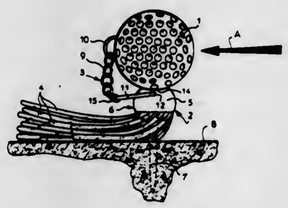
3,697,080
GOLF PRACTICING DEVICE
Alfonso L. Liotta, P.O. Box 2066, Pullman, Wash.
Filed Aug. 20, 1970, Ser. No. 65,577
Int. Cl. A63b 69/36
U.S. Cl. 273—186 R 1 Claim



A longitudinally elongated upright support member made of wood or other suitable material includes a planar lower surface adapted to be secured to the supporting surface for a practicing golfer. The upper inclined longitudinal surface of the member has a plurality of vertical transversely-directed

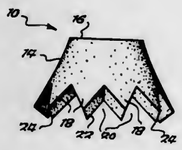
slots formed through it at differing elevations, the slots being longitudinally spaced from one another. First and second transverse flexible tabs are seated within selected slots and extend outwardly from the members beyond a common side of it. Simulated golf ball surfaces are integrally formed at the outer end of each tab, the center of one such surface being located above the plane of the lower surface of the member by a distance greater than the corresponding distance between the plane of the lower surface and the center of the remaining golf ball surface.

3,697,081
DEVICE FOR GOLF TRAINING
Marie Alexandre Jacques Louis Peyroux, 22, avenue de la Grande Armee, 17-Paris 17°, France
Filed March 18, 1971, Ser. No. 125,746
Claims priority, application France, Feb. 17, 1971, 7105353
Int. Cl. A63b 69/36
U.S. Cl. 273—199 A 5 Claims



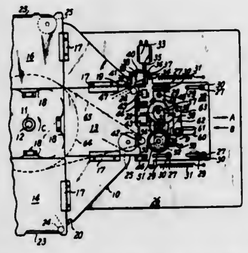
The invention relates to a device for golf training including a standard golf ball and an aerodynamic braking member secured thereto by means of a flexible tie, said braking member having incorporated therein a substantially rigid support member with a head integral therewith, which head is adapted to receive said golf ball before hitting the same.

3,697,082
GOLF TEE
Arnold E. Di Laura, 414 Brisbane Building, Buffalo, N.Y., and Donald P. Pratt, 3083 Schoolview Road, Eden, N.Y., assignors to said Di Laura, by said Pratt
Filed Aug. 29, 1969, Ser. No. 854,137
Int. Cl. A63b 57/00
U.S. Cl. 273—205 1 Claim



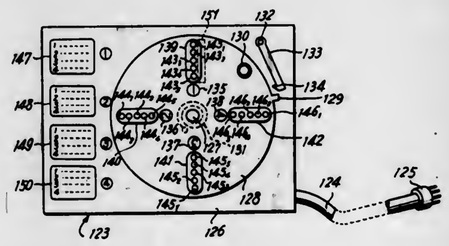
A golf tee comprising a generally conically shaped wall defining a central opening therein and formed of a synthetic plastic foam material. The upper edge of the wall is inclined radially inwardly toward the opening, providing a seating surface for a golf ball. The lower edge is provided with a plurality of downwardly extending, ground engaging projections having recesses therebetween for accommodating irregularities in the ground surface. The tee is formed by stamping out an arcuately shaped section from a flat strip of synthetic plastic foam material with the cut edges extending normal to the plane of the section. The opposite ends of the section are brought together and secured to form the generally conically shaped tee.

3,697,083
TAPE PLAYER UTILIZING PLURALITY OF ENDLESS MAGNETIC TAPE CARTRIDGES
Itsuki Ban, 829 Higashi-Oizumimachi, Tokyo-to, Japan
Filed Jan. 19, 1970, Ser. No. 3,916
Claims priority, application Japan, Jan. 22, 1969, 44/4059
Int. Cl. G11b 23/12, 23/06
U.S. Cl. 274—4 F 8 Claims



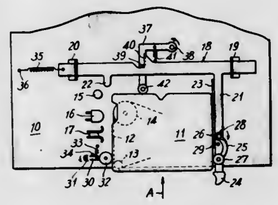
A tape player utilizing a plurality of endless magnetic tape cartridges, comprising a rotatable container accommodating the plurality of endless magnetic tape cartridges, a container latch means for arresting rotation of the container to position the cartridge to be played in a predetermined position, a swingable reciprocating deck provided with a capstan and a reproducing member for playing the cartridge held in the playing position such as a magnetic head or the like, a deck latch means for retaining the reciprocating deck at a position where the cartridge in the playing position is played, a tension spring for moving the reciprocating deck which has been released from the deck latch means to the direction away from the cartridge, a deck moving means moving the cartridge to a position where it is played by rotation of the capstan against the bias of the tension spring, and a means for positioning another cartridge in the playing position by rotation of the capstan while the deck is being moved by the deck moving means to a position where the cartridge is played whereby the cartridge is suitably played by controlling rotation of the container and movement of the reciprocating deck.

3,697,084
PROGRAMMED TRACK SELECTING APPARATUS
Itsuki Ban, 829 Higashi-Oizumimachi, Tokyo-to, Japan
Filed Jan. 21, 1970, Ser. No. 4,601
Claims priority, application Japan, Jan. 22, 1969, 44/4060
Int. Cl. G11b 23/06, 23/08
U.S. Cl. 274—4 F 3 Claims



A programmed track selecting apparatus for a multiple tape cartridge player utilizing a plurality of multi track endless magnetic tape cartridges, has a plurality of track selecting switches for designating a desired track to be played mounted below an assignment plate that rotates at a rotational speed less than that of the container carrying the cartridges. The assignment plate carries a plurality of pushbutton rods associated with each cartridge operable when manually depressed to actuate the track selecting switch. The track selecting switches cooperate with a rotary switch having a second set of switches corresponding to the track selecting switches, the rotary switch being rotated in synchronism with the container and operable to actuate a rotary cam to move the magnetic head across the tracks on the tape to the desired track.

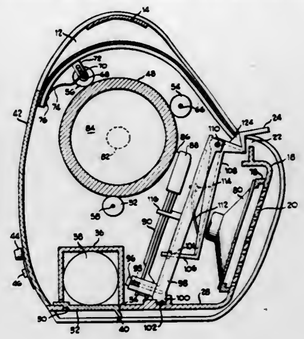
3,697,085
TAPE CARTRIDGE POSITIONING APPARATUS
Itsuki Ban, 829 Higashi-Oizumimachi, Tokyo-to, Japan
Filed Dec. 22, 1970, Ser. No. 100,561
Int. Cl. G11b 23/04
U.S. Cl. 274—4 B 8 Claims



A tape cartridge positioning apparatus for an endless magnetic tape cartridge player, which comprises a reciprocating lever member slidably provided on a deck in a player so as to be transverse to a direction that the tape cartridge is laterally inserted into the player housing and adapted to be urged by a tension spring in one direction, a stopper means retaining the lever member in a first portion where the cartridge to be inserted into the player housing is interposed between a rear arm parallel with a front arm on the lever member, a first guide member movably provided on the lever member and adapted to be urged by a spring, and a second guide member movably provided on the deck and adapted to be urged by a spring. The stopper is disengaged from the lever member in conjunction with the insertion of the cartridge into the player housing whereby the lever member is moved from the first position to a second position by the bias of the tension spring. The cartridge is movably advanced by pressing its rear edge by the rear arm when the lever member is moved to the second position. The first and second guide members serve to guide the cartridge when inserted into the player housing and to press the side wall of the cartridge under influence of the springs when moved to the play position thereby positioning the same in the play position in association with the lever member.

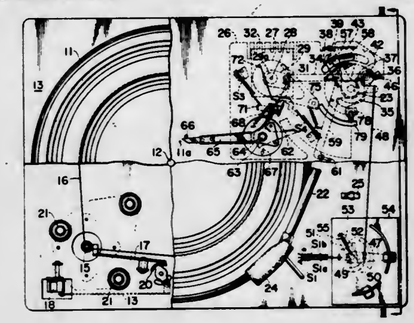
3,697,086
PHONOGRAPH INDEX MEANS
Gunars Licitis, Lombard, Ill., assignor to Marvin Glass & Associates, a partnership
Filed Feb. 8, 1971, Ser. No. 113,299
Int. Cl. G11b 17/06
U.S. Cl. 274—17 6 Claims

Apparatus for indexing a stylus relative to any of a plurality of recording bands on a record. The apparatus includes an elongated tone arm mounting a stylus and which is received in a bridge on an indexing arm movably mounted for indexing relative to a record. The tone arm is connected to the indexing arm by means of a connection which permits pivotal movement of the tone arm relative to the indexing arm and cocking of the tone arm relative to the indexing arm. A spring is provided to bias the tone arm about the connection in such a way that the stylus of the same will be in contact with the record and a manual operator is provided and connected to the indexing arm such that upon movement of the same, the tone arm will be cocked about the connection and pivoted about



the same to a predetermined position on the indexing arm which then may be moved to a desired band on the record.

3,697,087
AUTOMATIC RECORD PLAYER
Yoshio Takahashi, Yokohama-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,683
Claims priority, application Japan, Nov. 13, 1968, 43/82540; July 3, 1969, 44/52588
Int. Cl. G11b 3/10, 17/08
U.S. Cl. 274—23 R 7 Claims

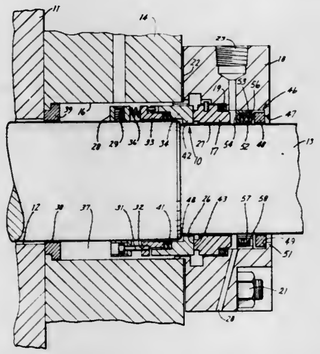


An automatic record player controlling automatically a tone arm to reproduce a record disk which can be of various diameters. The tone arm is moved from an arm rest onto a record to reproduce the record and is returned from the record to the arm rest when the record is reproduced either completely or only halfway. The tone arm of the automatic record player can also be controlled manually.

3,697,088
FLOATING BUSHING
Herbert B. Hummer, Kalamazoo, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.
Filed Aug. 28, 1970, Ser. No. 67,846
Int. Cl. F16j 15/38
U.S. Cl. 277—9 6 Claims

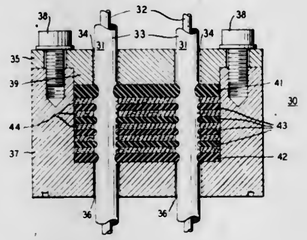
A mechanical seal construction for use between a wall and a shaft extending therethrough and rotatable relative to the wall. The seal construction includes a conventional mechanical seal assembly having a pair of seal members with mutually contacting seal faces thereon, one seal member being fixed

with respect to the wall and the other seal member being capable of rotation with the shaft. A floatable bushing assembly is disposed adjacent the mechanical seal assembly and includes an annular bushing member surrounding the shaft and floatable relative to a surrounding stationary housing member. The bushing member is resiliently urged against the housing member to sealingly engage same. A small radial clearance is



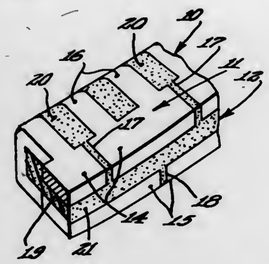
provided between the bushing member and the shaft to permit relative rotation therebetween whereas the bushing is free to radially float in response to deflection or whip of the shaft. The floating bushing assembly is disposed outwardly from the mechanical seal assembly to act as a safety or back-up for preventing large quantities of fluid from suddenly escaping in the event of a failure of the mechanical seal assembly.

3,697,089
HIGH-PRESSURE PACKING GLAND
Joseph Michael Jacisin, and Sam Duane Tropello, both of Parsippany, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and Western Electric Company, Incorporated, New York, N.Y., part interest to each
Filed Dec. 30, 1970, Ser. No. 102,668
Int. Cl. F16k *41/04*; B65d *53/04*
U.S. Cl. 277—35 **3 Claims**



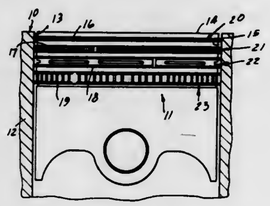
A high-pressure packing gland adapted for surrounding a portion of a wire having an external polymeric covering. The packing gland comprises layers of viscoelastic material compressed around the covered wire for exerting a restraining frictional force thereon. This force is distributed at spaced intervals along the wire by layers of incompressible material interlocated between the layers of viscoelastic material thus forming a series of annular indentations in the polymeric covering for increasing the restraining effect. An additional layer of viscoelastic material has a different characteristic which causes it to form a deeper annular indentation for impeding the extrusion of the polymeric covering.

3,697,090
PLASTICS FILLED PISTON RING
Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio
Filed June 29, 1970, Ser. No. 50,677
Int. Cl. F16j *15/16*
U.S. Cl. 277—157 **12 Claims**



A compression piston ring composed of a segmented circumferentially expansible metal ring and an elastomeric plastic ring, preferably a fluorocarbon plastic ring, anchored to and supported by the metal ring and providing a peripheral sealing surface conforming with and riding on the cylinder in which the piston operates. The elastomeric plastic material is oil resistant, has a low coefficient of friction, and retains its integrity under the operating conditions existing in an internal combustion engine. The plastics material is preferably injected into the segmented metal ring to fill all voids of the metal ring, eliminating all gap leakage, and insuring low blowby, minimized air pollution, and oil oxidation.

3,697,091
PISTON RING FACINGS
Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Filed May 11, 1970, Ser. No. 36,143
Int. Cl. F16j *9/12*
U.S. Cl. 277—235 A **4 Claims**

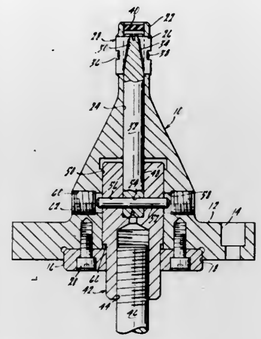


This invention covers piston rings, including compression and oil control rings for internal combustion engine pistons, having a bearing face coated with a hard coating, particularly exhibiting good scuff-resistance comprising either a zirconium oxide base coating or a titanium oxide-aluminum oxide coating. The coating is preferably a plasma jet applied coating formed in situ on the bearing face.

3,697,092
EXPANDING ARBOR
Russell W. Anthony, Harper Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed March 23, 1971, Ser. No. 127,147
Int. Cl. B23b *31/40*
U.S. Cl. 279—4 **5 Claims**

An expanding arbor having a pin with cam slots receiving

expanding wedges and an adapter for effecting expanding



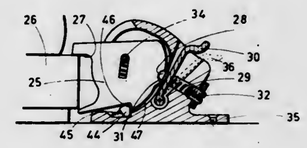
movement of the pin relative to the arbor.

3,697,093
ARRANGEMENT FOR SECURING A CONTAINER TO A VEHICLE
Sean Cadiou, Paris, France, assignor to Ste. An. Automobiles Citroen, Paris, France
Filed March 8, 1971, Ser. No. 121,878
Claims priority, application France, March 13, 1970, 7009234
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 A **9 Claims**

A gasoline tank or like container is fastened to a vehicle, say to the lower surface of a floor-board, by means of yielding straps whose ends of which are secured to the floor-board or like support and engage in grooves formed in the side walls and bottom of the container in parallel vertical planes. The grooves form ribs along the inner surface of the container so as to partition partly the inside of the latter and have a depth which, measured vertically, decreases across the bottom of the container from the side wall towards the center of its bottom.

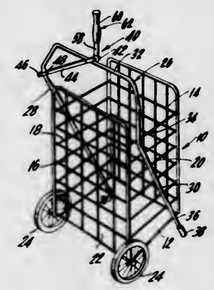
3,697,094
SAFETY BOOT BINDING FOR SKIS WITH TWO-STAGE RECOCKING
Georges P. J. Salomon, 34 de Loverchy Avenue, 74 Annecy, France
Filed Dec. 15, 1969, Ser. No. 885,304
Claims priority, application France, Dec. 16, 1968, 68178545
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **10 Claims**

A rear safety boot binding for skis with two-stage recocking requiring much less effort for recocking the binding. The boot heel retaining jaw has a slot accommodating a shaft and a spring abutting against the shaft and the end of the slot. The jaw forms a cam profile in its portion opposed to the boot heel receiving portion with a notch for receiving a stud or the like carried by a lever pivoted on the binding base, a spring constantly urging the stud in contact with the cam profile and being the spring of the safety locking mechanism. When the stud engages the notch, the jaw pivots upwardly about said stud as a first center of rotation and causes compression of the first-named spring, thereby allowing raising of the boot heel up to a certain limit, this constituting the elastic play of the



jaw. Upon additional raising of the boot heel, the first-named spring is completely compressed and the jaw pivots about the shaft, causing the safety locking mechanism to release the jaw, thereby resulting in the safety opening of the binding. During this release, the spring of the safety locking mechanism is compressed, thereby constituting the first recocking stage of the binding, while the second recocking stage occurs during downward closing movement of the jaw when a sector-shaped member causes upward movement of the jaw with consequent compression of the first-named spring.

3,697,095
ADJUSTABLE AUXILIARY HANDLE FOR SHOPPING CART
Peter T. Howell, 69 Pinehurst Boulevard, Apt 3D, New York, N.Y.
Filed May 14, 1971, Ser. No. 143,402
Int. Cl. B62b *5/06*
U.S. Cl. 280—47.26 **3 Claims**

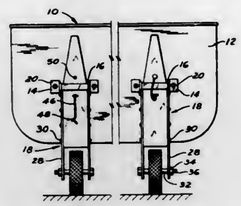


A shopping cart is provided with an adjustable handle which is movable transversely across the handle of the cart, to thereby facilitate movement of the cart in different orientations.

3,697,096
BOAT HANDLING APPARATUS
Floyd H. Hadley, 1534 Bluebell Drive, Livermore, Calif.
Filed June 25, 1970, Ser. No. 49,846
Int. Cl. B60p *3/10*
U.S. Cl. 280—47.32 **1 Claim**

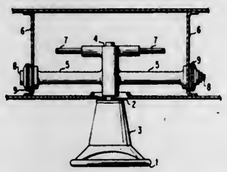
Wheeled devices for rapid, easy, removable, attachment to

the transom of a boat, for maneuvering the boat about on



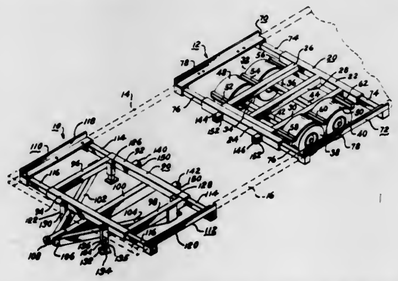
land, for launching the boat into water, and for pulling the boat out of the water.

3,697,097
SAFETY STEERING FOR MOTOR VEHICLES
Karl Wilfert, Gerlingen-Waldstadt, and Bela Barenyi, Maichingen (Wurtt.), both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 26, 1969, Ser. No. 880,104
Claims priority, application Germany, Nov. 27, 1968, P 18 11 093.5
Int. Cl. B60r *21/02*
U.S. Cl. 280—87 A **22 Claims**



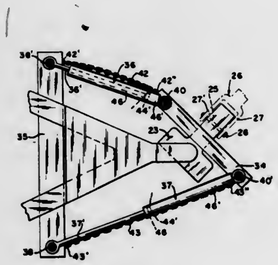
A safety steering arrangement for motor vehicles in which the steering wheel or a part carrying the steering wheel is so secured at the vehicle superstructure that a pivoting of the steering wheel about a vehicle transverse axis can take place under the influence of a force which exceeds the force acting on the steering wheel during normal operation.

3,697,098
MODULAR HOME TRANSPORT VEHICLE
Robert L. Fisher, Elkhart, Ind., assignor to Elkhart Welding and Boiler Works, Inc., Elkhart, Ind.
Filed Oct. 7, 1970, Ser. No. 78,901
Int. Cl. B60p *3/40*; E04h *1/12*
U.S. Cl. 280—415 R **9 Claims**



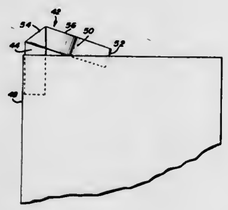
A modular home transport vehicle having a front section with a tongue and coupling means for connection with a tractive vehicle, and a second section having an undercarriage for transporting the module, the two sections are secured to the under side of a module in spaced relation to one another, and in transporting the vehicle on a return trip, the two sections are coupled together to form a unitary trailer vehicle.

3,697,099
TRAILER CUSHIONING AND STABILIZING DEVICE
Robert L. Potts, and Wiley G. Post, both of Columbus, N. Dak.
Continuation-in-part of Ser. No. 808,502, March 19, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 90,911
Int. Cl. B60d *1/12*
U.S. Cl. 280—446 B **4 Claims**



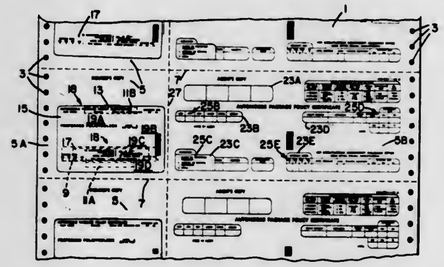
The invention comprises a trailer cushioning and stabilizing device having a T-shaped mounting block mounted to the rear of a towing vehicle. A horizontal plate is fixed laterally across the mounting block. and a ball is fixed to the rear of the mounting block. A V-shaped forward end frame of a trailer has a ball socket at its forwardmost end with the socket attached to the T-block. A second plate extends laterally across the V-shaped frame and hydraulic pistons and cylinders connect the first and second plates together.

3,697,100
AUTOMATIC BOOKMARK
Benjamin K. Hawkins, P.O. Box 5097, Greenville, Miss.
Filed Oct. 23, 1969, Ser. No. 868,804
Int. Cl. B42d *3/12*, *9/00*
U.S. Cl. 281—42 **2 Claims**



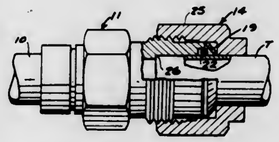
A bookmark made of a single blank of flexibly elastic sheet material having leg portions that extend from mounting arms at an acute angle. The leg portions are joined at a central fold and are received between the leaves of a book when the arms are adhesively bonded to the outside sheets or inside of the covers adjacent the back binding.

3,697,101
PRODUCTION OF DOCUMENTARY EVIDENCE
Edwin Loos, and James William Caudle, both of Regina, Saskatchewan, Canada, assignors to The Saskatchewan Government Insurance Office, Regina, Saskatchewan, Canada
Filed March 10, 1970, Ser. No. 18,175
Claims priority, application Canada, March 12, 1969, 045,452
Int. Cl. B42d *15/06*; B41l *1/26*
U.S. Cl. 283—62 **6 Claims**



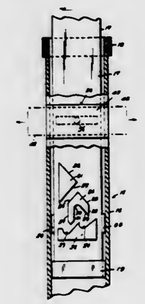
This specification relates to the production of policy certificates and separate records of individual policy details on a high speed printer. A roll of paper strip has printed on it at spaced locations along its length standardized text relating to the general form of insurance transaction. Plasticized cards each bearing printed information and provided with sensitized blank spaces for the addition of data peculiar to a given transaction, and provided with printed explanatory text are secured to the strip. In one transit through the high speed printer, all the data relating to a particular insurance data is printed out. Each card has a sensitized zone for a manually applied signature and an aperture in the strip opposite the signature zone so that the signature can be applied through the aperture without removing the card from the strip.

3,697,102
TUBING COUPLING
Jay F. Falke, P.O. Box C, Adrian, Mich.
Continuation-in-part of Ser. No. 27,706, April 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 850,908, Aug. 18, 1969, abandoned. This application Dec. 9, 1970, Ser. No. 96,411
Int. Cl. F16l *19/08*
U.S. Cl. 285—340 **4 Claims**



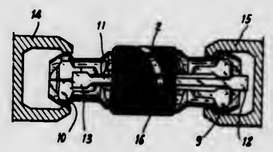
A refrigeration tubing coupling for connecting deformable tubing to a refrigeration unit or to another length of refrigeration tubing. The coupling comprises two bodies having openings therein. A deformable crimping member is interposed between the bodies and cooperating surfaces between the bodies are adapted to deform the crimping member and cause it to in turn deform an annular portion of the tubing upon axial movement of the bodies toward one another.

3,697,103
TELESCOPIC TUBE LOCKING AND UNLOCKING SYSTEM
William D. Mostyn, Canberra, Australia, assignor to The Government of the Commonwealth of Australia as represented by the Minister of State for Defense
Filed Nov. 3, 1970, Ser. No. 86,575
Int. Cl. E21d *15/16*
U.S. Cl. 287—58 CT **6 Claims**



A telescopic tube locking and unlocking system in which one square tube is slidable within another square tube of larger diameter. The outer tube is provided with a transverse slot and a pin mounted in a slide which slides laterally in a guideway plate fixed to the wall of the outer tube. The pin extends through the slot to engage the edges of a series of vertically arranged and vertically spaced cams fixed to at least one wall of the inner tube. By pulling the tubes apart then pushing them together the pin cooperates with the cams to lock the inner tube in an extended position or permit telescoping thereof in the outer tube.

3,697,104
COUPLINGS FOR TOOLS AND SAFETY DEVICES USED IN OIL-WELLS
Guy Soulie, Billere, and Gerard Lozach, Neuilly-Plaisance, both of France, assignors to Entreprise de Recherches et d'Activities Petrolieres (ELF), Paris, France
Filed Feb. 11, 1971, Ser. No. 114,471
Claims priority, application France, Feb. 16, 1970, 7005350
Int. Cl. F16b *1/04*
U.S. Cl. 287—111 **2 Claims**

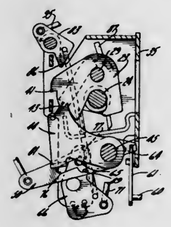


A coupling used to connect together two laying or safety devices used in oil-wells, consisting of a hollow cylindrical shell, with two spiral apertures, of the same pitch, cut in opposite sides of it, and containing two split cylindrical components, which cannot move lengthwise in relation to the shell, and which include a narrower section beyond each end of the shell, followed by a wider section with truncated shoulders and plane sides; two wedges fit inside these components, and can push them apart, lengthwise mobility of these wedges being provided by pins which fit into the spiral apertures.

3,697,105
LATCH FOR VEHICLE DOORS

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Dec. 24, 1969, Ser. No. 887,917
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 8 Claims

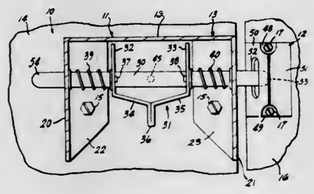


A free-wheeling, dual preset vehicle door latch with a force transmitting pin mounted for controlled floating within slots formed in a side-by-side contactor and locking lever. The latch is of the "impulse" type in that the second preset operation may be performed completely while the door is open so that the door may be closed and locked simply by being swung shut in a normal fashion. The latch is disposed within the door in a so-called "upside-down" manner in that the contactor and locking lever are disposed below the latching element to facilitate connecting the contactor and locking lever to the inside and outside release members and the inside and outside locking members of the door.

3,697,106
LIVESTOCK GATE LATCH

Ivan W. Meyer, Rural Route No. 1, Sherwood, Mich.

Filed Feb. 8, 1971, Ser. No. 113,231
Int. Cl. E05c *1/04*; E05b *15/02*
U.S. Cl. 292—175 9 Claims

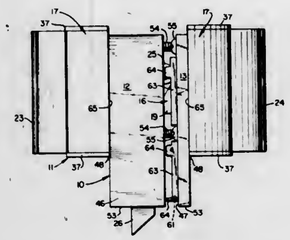


A latch is provided for use on gates to be particularly utilized on livestock enclosures. The latch comprises in combination a latching member and a keeper. The latching member comprises a housing having a latching bolt slidably mounted therein and spring loaded in extended position. A bracket is affixed to the bolt terminating in a finger hold, the bracket and finger hold being entirely recessed within the housing to prevent actuation by animals contained within the enclosure. In an improved version, both ends of the bolt extend out of the housing and the bolt is spring biased to a median position. The bolt may be moved in either direction from the center position by grasping the finger hold, thereby permitting the latch to be used either for right-hand opening or left-hand opening doors.

3,697,107
DOOR LOCK MOUNTING BRACKET

Walter Krantz, 42 South Meridian Road, Youngstown, Ohio

Filed Feb. 19, 1971, Ser. No. 116,824
Int. Cl. E05b *9/08*
U.S. Cl. 292—337 12 Claims

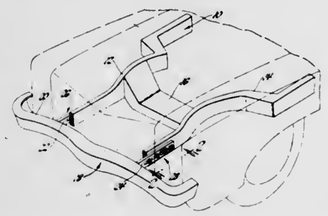


A bracket for effecting factory preassembly of door latch mechanisms, including the door face engaging mounting plates and the operating knobs or handles, and clamped installation in an edge opening notch formed in a passage door merely by inserting the bracket of the preassembly endwise into the door notch and threading home a single clamp screw and nut assembly provided to effect factory preassembly. The bracket is composed of a pair of shell-like castings respectively fixedly secured to the latch mechanism mounting plates and formed at their meeting edges to form a telescopic connection which fixedly orients the mounting plates, operating knobs or handles, and latch operating mechanism upon factory assembly.

3,697,108
ENERGY ABSORBING BUMPER MOUNT

James H. Diener, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,703
Int. Cl. B60r *19/04*
U.S. Cl. 293—89 3 Claims

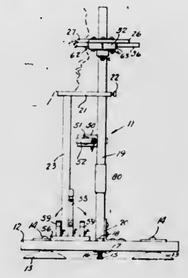


A collision bumper is supported on a vehicle chassis frame for relative longitudinal bodily movement by a pin and slot connection with relative bodily movement being normally rigidly resisted by substantial mechanical friction between the bumper and the chassis frame. A metal strap formed with a single convolution is connected at one end to the bumper and at the other end to the chassis frame. When an impact on the bumper results in a force on the latter of extraordinary magnitude, the frictional resistance to relative bodily movement is overcome and the bumper is forced rearwardly against the friction to effect primary energy absorption. Simultaneously, tensile forces exerted by the bumper on the strap initiate localized plastic deformation thereof to effect secondary energy absorption.

3,697,109
CONTACT LENS INSERTER

Ottis L. Parrent, 368 East 64th Avenue, Hialeah, Fla.

Filed March 30, 1971, Ser. No. 129,361
Int. Cl. G02c *1/00*
U.S. Cl. 294—1 CA 12 Claims
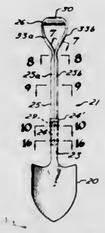


A contact lens inserting apparatus consisting of an upstanding support with a pair of horizontal parallel tubes slidably mounted on the support, spaced by the same spacing as the eyes. The tubes have seats at their ends in which contact lenses can be removably mounted. Respective lamps project into slots in the tubes and are energized from a source of current carried by the support. A chin rest is provided subjacent the tubes. The tubes can be manually moved longitudinally by the user to place the lenses in his eyes while his chin is supported on the chin rest.

3,697,110
TOOL HANDLE CONSTRUCTION

William E. Portz, Geneva, and Harry B. Stump, Ashtabula, both of Ohio, assignors to True Temper Corporation, Cleveland, Ohio

Filed Oct. 15, 1968, Ser. No. 768,203The portion of the term of this patent subsequent to July 15, 1983, has been disclaimed.
Int. Cl. B25g *3/26*
U.S. Cl. 294—57 14 Claims

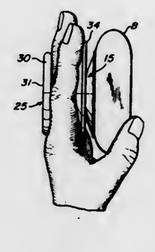


There is disclosed herein a shovel comprising a blade portion having a handle receiving socket, a handle portion made of a single length of tubing having its central portion formed into a gripping portion and the remainder thereof brought together and disposed in parallel, side-by-side relation to provide a shank portion inserted within the socket, and a plastic insert carried by the gripping portion.

3,697,111
SOAP BAR ATTACHMENT DEVICE

Bernard C. Thompson, 3245 West Altadena Ave., Phoenix, Ariz., assignor to William P. Sherman, Dayton, Ohio, a part interest

Filed Jan. 4, 1971, Ser. No. 103,621
Int. Cl. A47g *35/00*; A47k *5/00*
U.S. Cl. 294—64 10 Claims

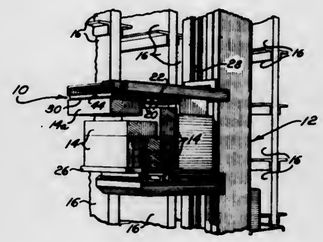


A soap bar is attached to a resilient suction cup having a pointed stud which projects from the face of the cup and penetrates the bar to prevent relative sliding movement. The suction cup may be mounted on a spool-like member having a base portion adapted to rest on a sink-top and connected by a neck portion to a tapering flange portion defining a soap dish. The suction cup may be attached to other elements for support or use thereby. The handle member is adapted to fit between the second and third fingers of a person's hand, and the suction cup may incorporate integral flute-like teeth for shaving the soap bar to form a smooth seat.

3,697,112
VACUUM PICK UP HEAD

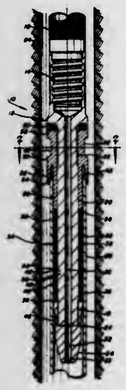
Jay P. Nielson, Bountiful, and G. Allen Allred, Salt Lake City, both of Utah, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed April 15, 1971, Ser. No. 134,208
Int. Cl. B66c *1/02*
U.S. Cl. 294—65 18 Claims



An improved pick-up assembly for use in moving articles includes a pick-up head having an array of suckers for applying suction to articles to be moved. A control apparatus is provided for controlling a flow of fluid through passages extending from a source of low pressure to the suckers so that only the suckers which are adjacent to the surface of an article to be moved are maintained in a fluid communication with the source of low pressure. This control apparatus includes a plurality of solenoid operated valves each of which is associated with one of the passages. An actuator circuit effects initial operation of the solenoids to open the valves for a short period of time. If a sucker applies suction to the surface of an article to be moved during this short period of time, a holding circuit is completed to prevent subsequent closing of the valve associated with the sucker. However, the valves associated with suckers which are ineffective to apply suction to the article to be moved are closed at the end of the short period of time. An indicator circuit is associated with each of the holding circuits to provide an indication of which of the suckers are effective to apply suction to an article to be moved.

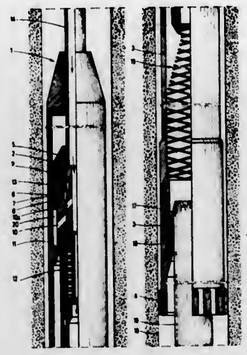
3,697,113
DRILL ROD RETRIEVING TOOL
Dieter K. Palauro, Denver, Colo., and James R. Mayer, Dallas, Tex., assignors to Gardner-Denver Company, Quincy, Ill.
Filed March 25, 1971, Ser. No. 127,988
Int. Cl. E21b 31/02
U.S. Cl. 294—86.24 9 Claims



A tool for retrieving tubular drill rods or the like from a drill hole. The tool includes an elongated cylindrical member which is dimensioned to be insertable into the broken or disconnected drill rod to be retrieved. The elongated member includes a frictional coupling made up of a plurality of elastically deformable gripping rings which are retained in sleeved relationship on the elongated member. The retrieving tool also includes a drill rod engaging member having a skirt defining a conical surface which surrounds and wedgingly engages the broken end of the drill rod. The drill rod engaging member is threadedly connected to the elongated cylindrical member. In response to rotation of the retrieving tool the two members move axially with respect to each other to compress the stack of deformable rings into frictional engagement with the broken drill rod whereby the broken drill rod may be retrieved from the drill hole. In an alternate embodiment the elongated cylindrical member is formed in two sections threadedly connected and thereby being axially movable with respect to each other for compressing the deformable gripping rings.

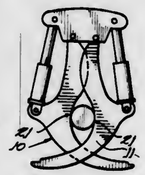
3,697,114
DEVICE FOR GRIPPING ELONGATED MEMBERS
Michel Chatard, Chatou; Pierre Grolet, Montesson, and Remi Reynard, Viroflay, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison (Haute de Seine), France
Filed Dec. 14, 1970, Ser. No. 97,884
Int. Cl. E21b 31/02
U.S. Cl. 294—86.26 11 Claims

Device used for withdrawing from a well a section of drill string wedged therein. The device includes a rod ending with a prolonging member containing a sock-like member adapted to cap said drill string section and to contract under the effect of a longitudinal traction force applied thereto while raising said



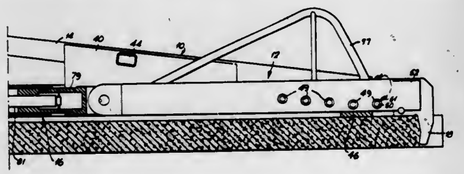
rod, thereby gripping the drill string section as a result of the friction force generated by said contraction.

3,697,115
LOG GRAPPLE
Keith E. La Beck, Portland, Oreg., assignor to Esco Corporation, Portland, Oreg.
Filed Jan. 25, 1971, Ser. No. 109,322
Int. Cl. B66c 1/10
U.S. Cl. 294—88 1 Claim



A log grapple of the fixed tong pin type wherein the tongs have a reverse curvature in their confronting surfaces.

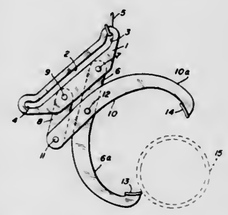
3,697,116
LIFTING DEVICE
Ronald Frank Carroll, Hemel Hempstead, England, assignor to National Research Development Corporation, London, England
Filed Nov. 18, 1969, Ser. No. 877,839
Int. Cl. B66c 1/00
U.S. Cl. 294—103 6 Claims



A lifting device includes a lifting toe adapted to engage under an article to be lifted by the device, a top abutment adapted to engage with a top surface of the article, an actuating screw jack adapted to move said lifting toe and said top abutment towards one another and into gripping relationship

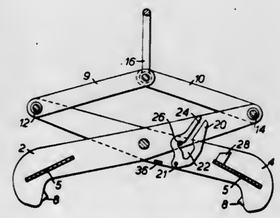
with the article, and slotted grid plates presenting a plurality of recessed attachment positions one to which is located substantially over the center of gravity of the article. Where the lifting device is to be used for lifting cast concrete panels, an insert for the lower edge of the panel is used during casting of the panel to provide the panel with a recess adapted to receive said lifting toe.

3,697,117
LIFTING TONGS
Clarence E. Larson, Columbus, and Harold G. Schneider, Westerville, both of Ohio, assignors to Martin Marietta Corporation, New York, N.Y.
Filed April 28, 1971, Ser. No. 138,111
Int. Cl. B66c 1/48
U.S. Cl. 294—106 25 Claims



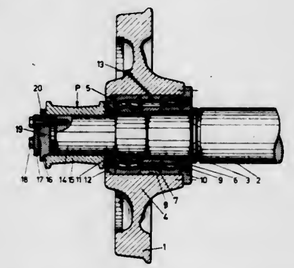
Lifting tongs have curved link members with clamp pads attached to the ends thereof that close upon the object to be lifted, such as a pipe section, when a lifting hook exerts an upward force while positioned in one end portion of a slot in the body portion of the tongs. The clamp pads open to release the object being held upon movement of the lifting hook to the opposite end portion of the slot. Manual fastening of the clamping pads to the object being lifted and manual releasing thereof are avoided, facilitating the convenient transport of the object from one location to another, such as the placement of pipe in a ditch at a construction site. The tongs can be adapted for lifting non-round objects as well as round objects.

3,697,118
AUTOMATIC LIFTING TONGS
Crichton Lockhart Johnstone, 135 Avon Street, Motherwell, and John Woodhouse Paton, 3 Clark Street, Newmains, both of Scotland
Filed Nov. 30, 1970, Ser. No. 93,698
Claims priority, application Great Britain, Dec. 2, 1969, 58,899/69
Int. Cl. B66c 1/44
U.S. Cl. 294—110 R 10 Claims



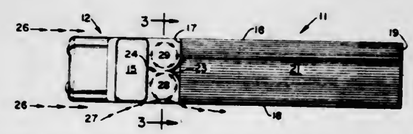
Lifting tongs have a pair of primary arms forming a pair of jaws for engagement with a workpiece. A latch mechanism interlocks the two arms so that the tongs can be opened and closed automatically by successive movements opening the jaws. Following a first movement opening the jaws, the latch mechanism is engaged to hold the jaws open; the latch mechanism is disengaged by a subsequent movement opening the jaws whereupon it releases the arms to allow the jaws to close. The latch mechanism includes a pivoted latch member mounted on one arm, which latch member is movable between two equilibrium positions to define the engaged and disengaged positions of the latch mechanism.

3,697,119
RAILWAY WHEEL AND AXLE ASSEMBLY
Wilhelmus Lambertus Van Wierst, Santpoort, and Pieter Jozef Marie Paffen, Alkmaar, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V., Ijmuiden, Netherlands
Filed Oct. 19, 1970, Ser. No. 82,002
Claims priority, application Netherlands, Oct. 27, 1969, 6916178
Int. Cl. B60b 37/10; F16b 39/02; F16c 37/10
U.S. Cl. 295—36 R 5 Claims



A flanged wheel and axle assembly of the type having a bearing enclosed against a collar on the axle by a pressure plate system, is provided with two pressure plates, one mounted axially behind the other, the plates being in mutual contact only in a central zone, the plate closest to the wheel resting directly or indirectly against the bearing structure, and the second plate being drawn towards the end of the axle by drawing means extending through the first plate. A sleeve preferably is provided on the axle between the pressure plate system and the bearing structure; the bearing structure preferably comprises spaced cylindrical and adjustable bearing; the drawing means preferably comprises three or more bolts positioned symmetrically about the central zone of contact; and the assembly forms part of a railway car subjected to high loads.

3,697,120
DRAG REDUCER FOR LAND VEHICLES
Walter Selden Saunders, Route #1, P.O. Box 155, Dillwyn, Va.
Filed Nov. 3, 1969, Ser. No. 873,234
Int. Cl. B62d 35/00
U.S. Cl. 296—1 S 10 Claims



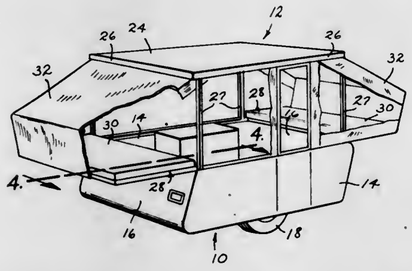
A drag reducer for a gap in a land vehicle moving through air capable of stabilizing the stagnant air in the gap which tends to rotate and form a horseshoe shaped vortex. The vortex directs the surrounding airstream around the stable vortex and thereby reduces air resistance. The drag reducer is a substantially V-shaped plate having concave sides vertically

mounted midway in the gap existing between a tractor and trailer on the forward panel of the trailer. The plate stabilizes the rotating vortices and, particularly, prevents side winds from forcing the vortices out of the gap, thereby reducing operating costs by eliminating the expensive process of continuously converting high speed air to stagnant air.

The drag reducer can be used on all land vehicles and is readily adaptable for use on railroad box cards, trailers in tandem, single chassis trucks, and vehicles towed by car. The drag reducer can take the form of two plates mounted in parallel on one wall or can be mounted on opposite walls substantially in the same plane. The drag reducer not only reduces operating costs, but also improves the stability of the trailing vehicles and increases car safety.

The drag reducer can also take the form of an opened ended conduit that has one end located at the base of the rotating vortex and the other end either in the slip stream or connected to vacuum apparatus so that stagnant air can be sucked out of the middle of the vortex and thereby stabilize the vortex.

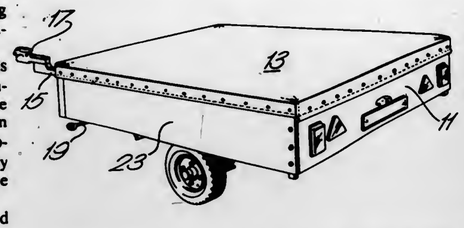
3,697,121
TOWED FOLDING CAMPER HAVING A LOW PROFILE
John R. Park, Route 1, Juniper Drive, Elkhar, Ind.
Filed March 17, 1971, Ser. No. 125,168
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **11 Claims**



A camper adapted for towing and having a body and a shiftable top. Sliding platforms are carried by the body and are each shiftable in a generally horizontal plane betwcen a retracted position within the body and an extended position outside the body. The platforms are supported upon vertically shiftable tracks and are urged when in their retracted positions downwardly into the body of the vehicle by the top as it spans and encloses the body.

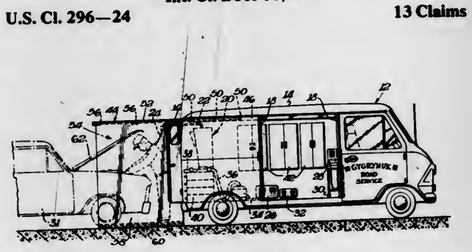
3,697,122
CAMPING TRAILERS
Dennis H. Richards, 62 Church Green Road, Bletchley, England
Filed July 29, 1970, Ser. No. 59,266
Claims priority, application Great Britain, Aug. 1, 1969, 38,626/69
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **12 Claims**

The invention relates to a trailer for towing behind a vehicle which trailer is designed specifically for camping and is convertible from a compact towing state into a large size unit for supporting a tent and it comprises a main chassis in a longitudinal direction so as to provide a substantially continuous floor surface having an area substantially twice that of the floor area of the trailer in its unextended position. Once the trailer has been moved to its extended position, a frame tent is



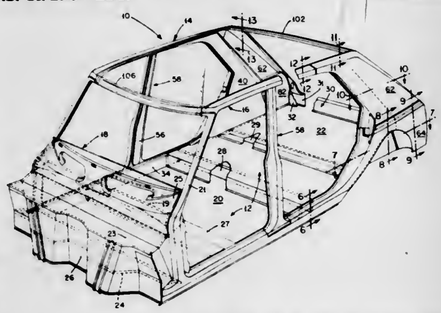
erectible around the trailer and is supported on it, together with seat/bunks and a kitchen unit.

3,697,123
MOBILE VEHICLE TESTING APPARATUS
Walter Gygrynuk, 45 Millwright Drive, Old Mill Manor, Newark, Del.
Filed March 24, 1970, Ser. No. 22,166
Int. Cl. B60r *11/00*
U.S. Cl. 296—24 **13 Claims**



A mobile vehicle testing apparatus includes a van-type vehicle having means in its body for testing the electrical performance of a motor. A power source for these means is also mounted in the body as well as storage facilities for replacement parts. The means are exposed by the opening of a door on the vehicle for ready accessibility with respect to the vehicle being tested.

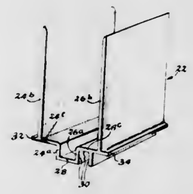
3,697,124
TORSION RESISTANT OPEN END AUTOMOBILE BODY
Henry W. Wessells, c/o The Budd Company 2450 Hunting Park Avenue, Philadelphia, Pa.
Filed Dec. 29, 1970, Ser. No. 102,473
Int. Cl. B62d *25/02*
U.S. Cl. 296—28 R **14 Claims**



A unitized automobile body having a pair of hollow side frames connected to a floor panel and a roof panel. The rear-

ward extensions of the side frames form hollow D-posts and hollow rear sills in the area over the rear wheel housings. The rear sills are connected by a deep rigid transverse rear panel. The forward extensions of the side frames form hollow A-posts and cowl side panels which are connected to a box-shaped rigid transverse panel formed by the cowl and firewall.

3,697,125
DETACHABLE VEHICLE GLARE SHIELD
John Van Sickle, 1841 Billington Road, East Aurora, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,929
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 C **9 Claims**

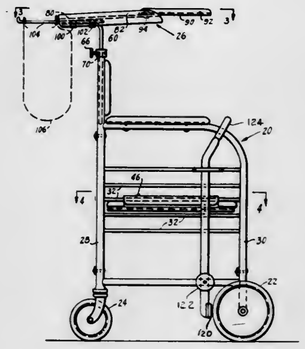


A glare shield for detachable mounting to a vehicle sun visor, vertically disposed, as a downward extension thereof, comprising a body of glare reducing sheet material and a separately constructed clip device having opposing arms for engaging the sun visor, a connecting member between the lower end of each arm, a groove in the lower end of one of said arms extending transversely across its width adapted to receive and hold said body as a downward extension of the sun visor, and a raised portion on the outside surface of either arm for gripping the device, said connecting member and attached arms having a minimal downward extent below the lever edge of the sun visor so as not to create distracting images.

3,697,126
REINFORCED FOAM HEADLINER
James R. Tiffin, Newark, and David C. Trimble, Yorklyn, both of Del., assignors to Haskon, Inc., Wilmington, Del.
Filed Feb. 19, 1971, Ser. No. 117,088
Int. Cl. B62d *25/06*; **B32b** *3/26, 7/02*
U.S. Cl. 296—137 A **10 Claims**

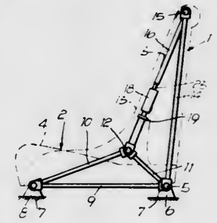
A foam headliner for a vehicle is provided which comprises a wire mesh support sandwiched between two laminated layers of cross-linked ethylene or propylene homopolymer or copolymer foam, one layer being thicker than the other. A composite of a polyvinyl chloride homopolymer or copolymer foam and a decorative solid polyvinyl chloride homopolymer or copolymer film layer is laminated to the thick layer of cross-linked foam. The cross-linked foam is for energy absorption and the vinyl foam is to prevent the vinyl film from developing creases when the headliner is flexed during handling or installation. The wire mesh is for keeping the headliner from sagging between points of support. The wire mesh may be designed to be more flexible about one axis than the one transverse thereto to prevent deforming premolded areas of the headliner when handling or installing the headliner.

3,697,127
PORTABLE SHAMPOO CHAIR
Aura M. Robertson, 1715 Park Avenue, Red Bluff, Calif.
Filed Feb. 23, 1971, Ser. No. 117,911
Int. Cl. A47c *7/02*
U.S. Cl. 297—182 **3 Claims**



Tray and reservoir removably attached to the headrest of a chair for adjustment relative thereto.

3,697,128
MOTOR VEHICLE SEAT
Werner Strien, Stuttgart-Heumaden, and Eberhard Faust, Stuttgart-Degerloch, both of Germany, assignors to Recaro Aktiengesellschaft, Glarus, Switzerland
Filed Dec. 3, 1969, Ser. No. 881,687
Claims priority, application Germany, Dec. 5, 1968, P 18 12 785.0; Jan. 31, 1969, P 19 04 687.8
Int. Cl. B60r *21/00*
U.S. Cl. 297—216 **7 Claims**

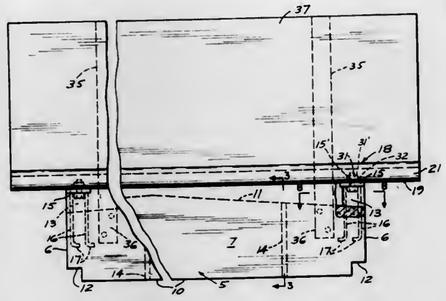


A seat construction for a motor vehicle in which the seat occupant is strapped to the back rest by a safety belt which is secured to the seat rather than to the vehicle body and in which energy-absorbing or dissipating means are provided for consuming a considerable amount of the energy which is produced by the forward propulsion of the seat occupant, for example, in a headon collision, so that the pressure which is then exerted by the safety strap upon the body of the seat occupant will not exceed the bearable limit and this person will thus not be injured at least by the safety belt.

3,697,129
BENCH
Richard L. Sklaar, 88 Fairfield Lane, Roslyn Heights, N.Y.
Filed Dec. 9, 1970, Ser. No. 96,526
Int. Cl. A47c *1/00*
U.S. Cl. 297—217 **5 Claims**

This invention is directed to an outdoor bench having a heavy, not readily displaceable, concrete base with a lateral drainage trough, and extruded hollow seat sections tamper-

proof fastened to the top of the base and fashioned to cooperate with the drainage trough in the base and to maintain such seat sections at ambient temperatures. An advertis-



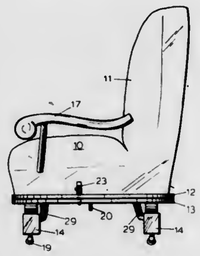
ing display panel may form the back of the bench. The bottom ends of the base are relieved to provide access for the levers of wheeled pry bars to enable the bench to be precisely located without the use of heavy duty construction equipment.

3,697,130
CONNECTOR ASSEMBLY FOR CHAIRS
Chester J. Barecki, Grand Rapids, and Kenneth O. Schneider, East Grand Rapids, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed April 20, 1971, Ser. No. 135,578
Int. Cl. A47c *1/124*
U.S. Cl. 297—248 **10 Claims**



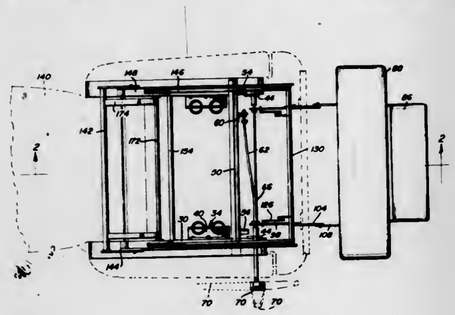
A connector assembly for releasably connecting a pair of adjacent chairs includes a male connector and a female connector, each of the connectors including an elongated generally channel-shaped body adapted to be secured to a tubular supporting base of the chair. The female connector includes an elongated slotted flange which extends laterally outwardly and upwardly from one of the sides of the connector and a second flange which extends laterally outwardly from the bottom of that side. The male connector includes a flange which extends laterally outwardly and upwardly from one side thereof and which can be inserted into the slotted flange of the female connector. The side of the male connector from which the flange extends is shorter than the other side of the connector, and the short side abuts the female connector and is supported by the second flange thereof when the connectors are interlocked.

3,697,131
THERAPEUTIC ROCKER HAVING LATERAL AND LONGITUDINAL ROCKING MOTION
William M. Thompson, 1724 West 11th Street, Erie, Pa.
Filed Jan. 27, 1971, Ser. No. 110,095
Int. Cl. A47c *3/02*
U.S. Cl. 297—258 **4 Claims**



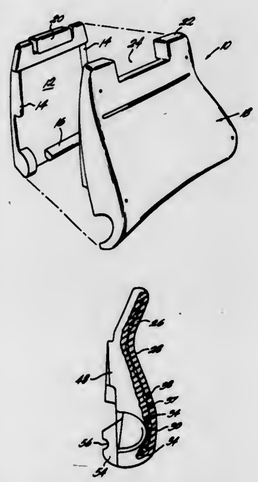
This specification discloses a two-way rocking chair in the form of a platform rocker. The chair seat and backrest are supported on a turntablelike arrangement made up of two disks rotatable relative to each other so that the seat will rock back and forward in a conventional manner or the disks may be rotated ninety degrees relative to each other rotating the seat and backrest ninety degrees relative to the base whereby the rocker will rock from side to side.

3,697,132
MULTIPOSITION LOCK-ROCK ROCKER AND ROCKING TYPE RECLINING CHAIR
Edwin J. Van Surksum, Omaha, Nebr., assignor to Mastercraft Furniture Corporation
Filed April 3, 1970, Ser. No. 25,509
Int. Cl. A47c *3/02*
U.S. Cl. 297—269 **8 Claims**



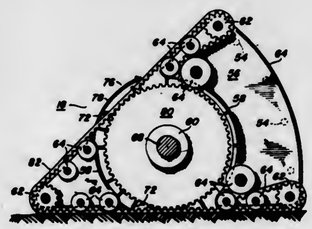
A mechanism incorporated into a platform rocker which enables the rocker to be employed as a conventional platform rocker, as a platform rocker with a multi-position lock, as a reclining chair and as a rocking reclining chair with the lock for the rocking action being manually actuated by lateral movement of a lever-type handle to lock the chair in multiple positions of tilt. The leg rest structure is also manually actuated by the same lever being operable in a fore and aft direction. An arc slide interconnects the chair seat and chair backrest in which the seat is not movable longitudinally and fixed to pivot at the front to retain optimum balance conditions in all positions of the chair structure.

3,697,133
SEAT BACK STRUCTURE
Nicholas Wolofski, Whitmore Lake, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Aug. 6, 1970, Ser. No. 61,704
Int. Cl. B60n *1/06*; A47c *3/00*, *7/14*
U.S. Cl. 297—460 **10 Claims**



A seat back structure consisting of a supporting frame and a unitary seating back unit mounted on the frame. The seating back unit consists of a molded foam body of seat back shape having a spring assembly embedded therein. The spring assembly includes a plurality of linear springs which yieldably resist seating loads and a border wire on which the linear springs are mounted. Rearwardly extending projections on the foam body engage the frame so as to provide a space into which the linear springs can deflect when subjected to seating loads. The spring assembly is shaped to conform to the seat back shape of the foam body and cooperates with the foam body to provide added stiffness in the lower back area of the seat occupant.

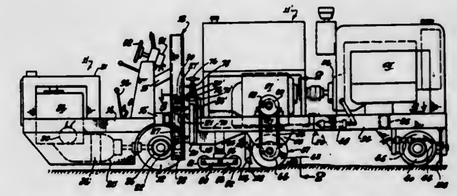
3,697,134
NODULE COLLECTOR
Robert H. Murray, Wescosville, Pa., assignor to Bethlehem Steel Corporation
Filed March 25, 1971, Ser. No. 127,911
Int. Cl. E02f *7/00*
U.S. Cl. 299—8 **3 Claims**



A mechanical nodule collector is lowered to the ocean floor and towed along by a floating towing vessel. The towing means may be either a hoisting rope or a pipe through which collected nodules may be continuously pumped to a floating transport vessel. If the towing means is a pipe, the pipe is connected directly to a buoyant vessel, or pod, which is connected to the floating towing vessel and the floating transport vessel. The collector can be readily raised or lowered by varying the buoyancy.

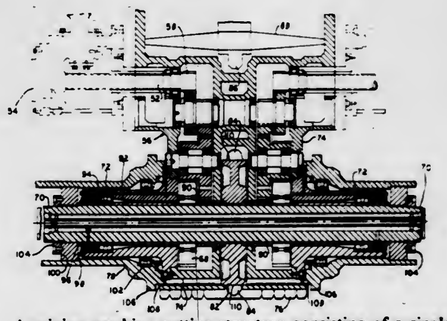
The collector comprises a framework having a rotating paddle wheel attached thereto which penetrates the ocean bottom and sweeps nodules up a grating where they fall into a basket. The peripheral speed of the paddle wheel equals the peripheral speed of treads supporting the framework so that there is little or no relative motion between the tread and the ocean bottom, thereby minimizing disturbance of the bottom soil during the traversal thereof by the collector.

3,697,135
CONCRETE PAVEMENT CUTTING MACHINE
Cecil W. Hatcher, and Gene Warner, both of P.O. Box 1263, El Monte, Calif.
Filed Feb. 25, 1971, Ser. No. 118,909
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **13 Claims**



A self-propelled pavement cutting machine comprising a drive truck having a front end having an upright sliding coupling with the rear of a vehicle having an elongated cutter for cutting bumps or grooves, the vehicle having front wheels and rear wheels. When the cutter is active, the vehicle is supported by its two sets of wheels, depth control means being provided for the cutter. The truck has a pump supplying hydraulic fluid to raise and support the rear end of the vehicle with its cutter and rear wheels, the vehicle being supported then by its front wheels. When the vehicle is being pushed by the truck, side sway of the vehicle is prevented as the coupling is arranged on opposite sides of the longitudinal center of the truck and vehicle.

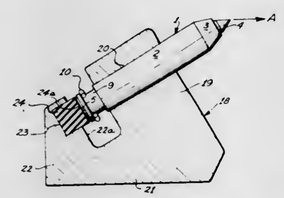
3,697,136
DRIVE SPROCKET FOR WIDE CHAIN OF DRUM CUTTING HEAD
George R. Teeter, 111 Glenview, Oil City, Pa.
Division of Ser. No. 786,650, Dec. 24, 1968, Pat. No. 3,614,162. This application Feb. 17, 1971, Ser. No. 115,965
Int. Cl. E21c *27/24*
U.S. Cl. 299—83 **9 Claims**



A mining machine cutting structure consisting of a single centrally located cutter supporting chain and cutter support-

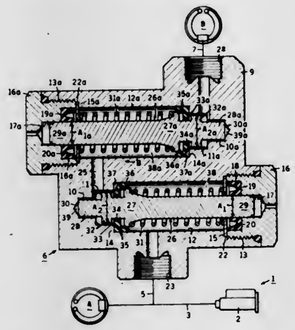
ing rotary elements extending outwardly from the sides of the cutter supporting chain.

3,697,137
RESILIENT MOUNTING FOR CUTTING TOOLS OF MINING MACHINES AND THE LIKE
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio
Filed Dec. 15, 1969, Ser. No. 885,255
Int. Cl. E21c *25/12, 25/46*
U.S. Cl. 299—86 **24 Claims**



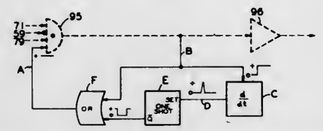
In the combination of a cutting tool for a mining machine or the like, a tool mounting lug and means for mounting the lug, a resilient means in association with the lug permitting limited movement of the cutting tool in at least a direction substantially opposite the cutting direction so as to ease the load on the cutting tool and permit the cutting tool to build up a fracturing pressure against the material being cut.

3,697,138
CONTROL VALVE AND SYSTEM
Paul G. Marting, Ballwin, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed May 8, 1970, Ser. No. 35,823
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C **30 Claims**



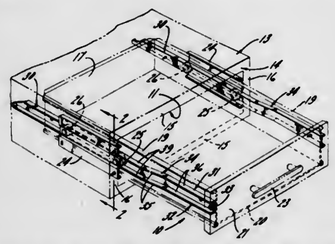
A control valve for use in a hydraulic brake system having a pressure source and a pressure responsive brake is provided with a pair of proportioning members in series flow relation which respectively proportion the fluid pressure supplied from said source to said brake. One of the proportioning members is actuated in response to supplied fluid pressure from the source in excess of a predetermined value to effect the application of a proportionally reduced pressure to the brake, and the other of the proportioning members is actuated in response to the proportionally reduced pressure of another predetermined value predeterminately in excess of the first named predetermined value to further proportionally reduce the pressure applied to said brake.

3,697,139
SKID CONTROL SYSTEM MAXIMUM CYCLIC LIMITER
Delbert R. Elliott, and William T. Lewis, both of South Bend, Ind., assignors to The Bendix Corporation
Filed July 8, 1970, Ser. No. 53,045
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 P **8 Claims**



An inhibit to prevent the premature operation of a solenoid valve of a modulator in an adaptive braking system. Upon application of the brakes of a wheeled vehicle, if an imminent skid condition is sensed, a signal will actuate the solenoid valve of the modulator to decrease brake pressure. Once the solenoid valve has been actuated, the subsequent cycle of the modulator for the same brake application will be inhibited until a time period has passed. After the time period has passed wherein brake pressure has been rebuilt, another signal can actuate the solenoid to again decrease the brake pressure if another imminent skid condition is sensed. The inhibit prevents intermediately received signals from actuating the modulator until the time period has occurred. Such an inhibit reduces electrical noise problems on rough surfaces, as well as erroneous signals due to vehicle mechanical and hydraulic resonances.

3,697,140
DRAWER SLIDE ASSEMBLY FOR SELF-CLOSING DRAWER
Richard D. Livingston, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed July 6, 1971, Ser. No. 160,008
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.8 **7 Claims**



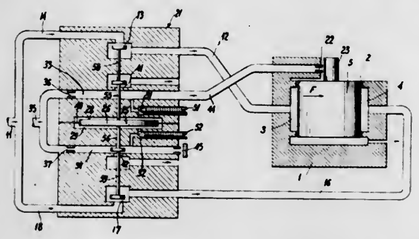
Tracks are secured to the sides of a drawer and ride along sets of front and rear rollers at the front of a cabinet to guide the drawer for back and forth sliding in the cabinet. Downwardly inclined ramps are formed intermediate the ends of the tracks and act upon the rear rollers to cause the drawer to pivot about the front rollers to close the drawer automatically with an improved and more positive self-closing action.

3,697,141
DRILL PIPE WEAR SLEEVE
William R. Garrett, Midland, Tex., assignor to Smith Industries, International, Inc., Midland, Tex.
Filed May 21, 1970, Ser. No. 39,255
Int. Cl. F16c *17/00*
U.S. Cl. 308—4 A **23 Claims**

A metal drill pipe is provided with a metal wear sleeve and an elastomer insert between the wear sleeve and the pipe. The sleeve is mechanically interlocked to the insert, e.g., by a thread on the inside of the sleeve. The sleeve is made in sections welded together while clamped against the insert with sufficient force to press the thread into the insert. The insert is secured against axial motion on the pipe by cement. There is a mechanical interlock between the insert and the cement, e.g., serrations on the inner periphery of the insert, the cement being applied to the inner periphery of the insert before curing, or a thread formed on the outer periphery of the cement which is cured on the pipe before the insert is compressed thereagainst during application of the sleeve to the insert. The cement extends beyond the ends of the wear sleeve to protect the pipe against corrosion due to well fluid trapped around the pipe adjacent a sleeve end. The sleeve is provided with annular grooves therearound at each end; the grooves increase the flexibility of the sleeve and also serve as wear indicators.

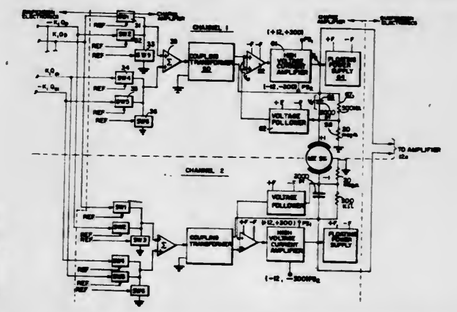


3,697,142
FLUID DEVICES FOR STABILIZING THE POSITION OF A MOVING ELEMENT
Andre Fortier, 22 rue Leon Cambillard, Clamart, France
Filed April 21, 1970, Ser. No. 30,510
Int. Cl. F16c *1/24*
U.S. Cl. 308—5 **4 Claims**



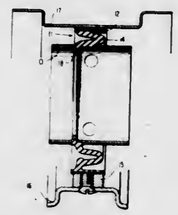
There is described a pneumatic control system for varying pneumatic pressure on opposite sides of a pneumatic bearing so that a variable lateral force on a shaft supported by the bearing may be balanced so as to minimize undesirable lateral displacement of the shaft. The system includes a control device in which primary and secondary pneumatic circuits are separated by a movable diaphragm which moves along so as to vary the pressure on opposite sides of the bearing. The primary and secondary circuits are supplied with pneumatic fluid separately from a pneumatic supply for the bearing. The primary circuit pressure acts on one side of the diaphragm through a first adjustable throttle and responds to pressure variation produced by a sensing jet placed in close proximity to the shaft. The secondary circuit pressure acts on the opposite side of the diaphragm through a second adjustable throttle and contains a reference jet. Both primary and secondary circuits contain variable vents or restrictions to atmosphere which are simultaneously opened or closed depending upon the direction of diaphragm movement. All valve elements are independent members, but move simultaneously with the diaphragm. The system described enables a pneumatically supported shaft to be accurately position-controlled against displacement by lateral variable force.

3,697,143
ELECTROSTATIC GYROSCOPE SUSPENSION SYSTEM
John F. Klinchuch, Orange, Calif., assignor to North American Rockwell Corporation
Filed May 21, 1971, Ser. No. 145,679
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **5 Claims**



The invention is directed to a suspension system for an electrostatic gyroscope wherein the pulse charges applied to electrode pairs to maintain the gyroscope rotor centered between the electrodes is alternated in polarity so as to minimize the accumulated charge on the rotor.

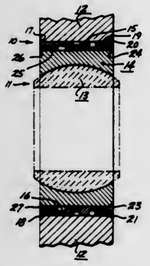
3,697,144
INTERMEDIATE SUPPORT FOR THE UNIVERSAL JOINT SHAFT OF MOTOR VEHICLES
Bruno Beeskow, Bietigheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed March 16, 1971, Ser. No. 124,845
Claims priority, application Germany, March 20, 1970, P 20 13 305.5
Int. Cl. F16c *35/00*
U.S. Cl. 308—15 **14 Claims**



An intermediate mounting support for the universal joint shaft of motor vehicles that consists of an inner rigid part, accommodating the shaft bearing, of an outer rigid part secured at a fixed vehicle part and of an elastic ring body disposed between the same and consisting of rubber or the like whereby the inner part is eccentrically arranged with respect to the outer part and both the elastic ring body as well as the outer part have an approximately eliptical shape with the major axis thereof extending in the transverse direction; the outer rigid

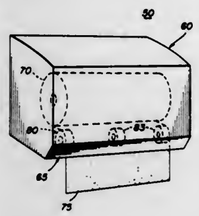
part is secured by means of an elastic spacer at a fixed vehicle part thereby providing an appropriate adjustability by selection of such spacer.

3,697,145
BEARING RETAINER
John W. Day, Jr., Seattle, Wash., assignor to Sealth Aero Marine Company, Seattle, Wash.
Filed Dec. 18, 1970, Ser. No. 99,455
Int. Cl. F96c 23/04
U.S. Cl. 308—72 7 Claims



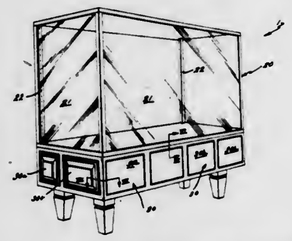
A bearing retainer is disclosed for removably or detachably mounting a bearing in a fixed structure comprising a bushing having a pair of external and a pair of internal locking means or flanges thereon, one locking flange of each pair being on a ring which is detachable for releasably mounting the bearing in the bushing and for removably mounting the bushing in the structure for providing a reliable and economical bearing retainer for easily removing and replacing a bearing without requiring special tools, and yet providing high axial load carrying capabilities for both bearing and bearing retainer regardless of the number of replacements.

3,697,146
PAPER TOWEL DISPENSER
Christian K. F. Boisen, deceased, late of Vanlose, Denmark (by Karen V. Boisen, administratrix), assignor to Steiner Company Lausanne S.A., Lausanne, Switzerland
Filed April 23, 1971, Ser. No. 136,714
U.S. Cl. 312—39 19 Claims



A dispenser for dispensing paper towel from a supply roll thereof in a dispensing cabinet includes a dispensing roller and a control shaft concentrically disposed therein for rotation independent thereof, time stop means coupled to the control shaft for halting rotation thereof for a predetermined time interval during each revolution thereof, clutch mechanism releasably coupling the control shaft to the dispensing roller, and adjustable clutch control apparatus for varying the angle through which the dispensing roller rotates before the clutch mechanism is engaged and thereby varying the length of towel web dispensed during each dispensing operation; two embodiments of the invention are disclosed, respectively affording selection among two and three different lengths of towel web to be dispensed.

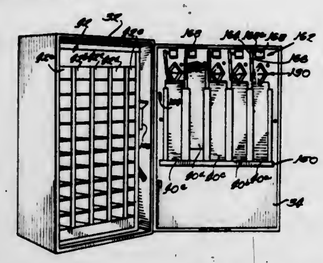
3,697,147
SHOWCASE
Donald W. Schulte, Grand Rapids, Mich., assignor to American Store Equipment Corporation, Muskegon, Mich.
Filed Jan. 6, 1971, Ser. No. 104,256
Int. Cl. F16b 12/00
U.S. Cl. 312—111 22 Claims



The showcase has a chipboard base with a frame mounted thereon. The base is dimensioned such that three of its sides are covered by a combination of panels having modularly interrelated dimensions. All of the panels have a wood grain finish and are painted with a non-intumescent fire retardant paint.

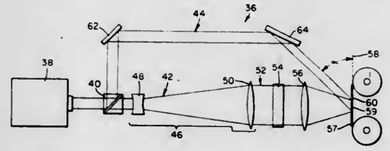
The base is supported by tubular metal posts with a leveler guide threaded into the bottom thereof. A decorative sheath designed to blend with the panels is slidably mounted on the post to cover both the tubular metal post and the threaded post of the leveler glide. The back of the showcase includes a trim strip with a flange projecting beyond the side of the base for overlapping a similar flange of an adjacently positioned showcase. The flange is grooved and can be trimmed off along the groove if the showcase is not placed adjacent another.

3,697,148
VENDING MACHINE
Carl Weber, 1119 Manchester Mall, McHenry, Ill.
Filed Dec. 29, 1969, Ser. No. 888,439
Int. Cl. A47b 49/00
U.S. Cl. 312—268 33 Claims



The vending machine includes a plurality of product carriers mounted for free-swinging movement on one or more elongated endless conveyors. Carrier leveling means at the top and bottom of the conveyor loop maintains the carriers in substantially horizontal orientation as they are moved about the ends of the conveyor loop from one vertical run to the other. The contents of the carriers are passed in front of and discharged through an opening in the vending machine cabinet in which one or more transparent windows are mounted for vertical sliding movement. Each window may be urged toward its closed position by means of a spring biased rhombic frame.

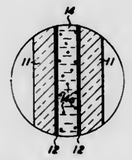
3,697,149
FOURIER TRANSFORM HOLOGRAPHIC STORAGE AND RETRIEVAL SYSTEM
Jacob Van Heeckeren, Stanford; David R. Rodal, and Bob V. Markevitch, both of Palo Alto, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Dec. 10, 1969, Ser. No. 883,738
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 16 Claims



A storage and retrieval system wherein information is represented as a Fourier transform, which in turn is recorded on film by a holographic process to thereby preserve the phase as well as the amplitude of the Fourier transform. Coherent light is introduced to a reflective or a transmissive light modulator, which includes a bit array which is selectively energized to represent the information. The Fourier transform is taken of the whole (optical) array of bits with a lens, and is recorded on film as a hologram utilizing both an object and a reference beam obtained from the coherent light source. All bit transforms cover the same area of the hologram since the Fourier transform of each bit covers the exact same area of the recording. A series of holograms may be recorded along a preselected length and width of film in the form of a microfiche or on a continuous tape.

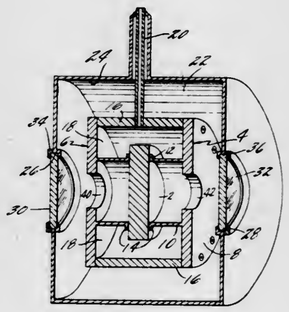
The reproduce portion of the system includes a beam of coherent light which impinges the hologram preferably at an angle equal to the angle with which the reference beam impinged the film during the record process. An image of the modulator array is produced which is visually manipulated, or which may be focused via a lens onto a vidicon picture tube, or other readout device, which provides a continuous electrical signal representative of the light pattern.

3,697,150
ELECTRO-OPTIC SYSTEMS IN WHICH AN ELECTROPHORETIC-LIKE OR DIPOLAR MATERIAL IS DISPERSED THROUGHOUT A LIQUID CRYSTAL TO REDUCE THE TURN-OFF TIME
Joseph J. Wysocki, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,366
Int. Cl. G02f 1/16
U.S. Cl. 350—150 20 Claims



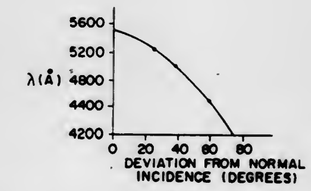
A system for transforming an optically negative liquid crystalline mesophase composition to an optically positive liquid crystalline mesophase composition by an applied electrical field, and imaging compositions which facilitate the relaxation of the transformed optically positive composition into the initial optically negative state. The invention also encompasses imaging systems wherein this electrical field-induced transition images a liquid crystalline imaging composition.

3,697,151
CRYOGENICALLY COOLED FARADAY ROTATOR ELEMENT
Michael L. Skolnick, Monroe, and Carl J. Buczek, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 14, 1970, Ser. No. 63,737
Int. Cl. G02f 1/22
U.S. Cl. 350—151 2 Claims



A semiconductive optical window of the type exhibiting a Faraday rotation in the presence of a magnetic field is cryogenically cooled in a dewar having flexure mounts for the element. The flexure mounts comprise metallic supports having a suitable aspect ratio (length to thickness) to guarantee adequate flexure, the supports being bonded to the element. The flexure mounts are disposed on opposite faces of the element and circumscribe a clear optical path through the element near the periphery of the element; this provides a fluid seal between the clear optical path through the element and the extreme periphery of the element, whereby the extreme periphery is immersed in cryogenic fluid. The element is disposed in an evacuated chamber for insulating purposes.

3,697,152
TUNING METHOD FOR PLURAL LAYER LIQUID CRYSTAL FILTERS
James E. Adams, Ontario, and Lewis B. Leder, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,368
Int. Cl. G02f 1/24
U.S. Cl. 350—158 8 Claims

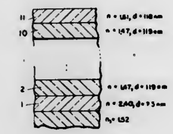


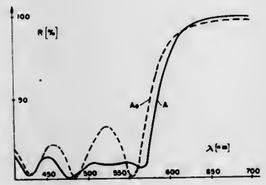
A method for tuning optical devices constructed with one or more liquid crystal films possessing optically negative characteristics which comprises rotating the liquid crystal films with respect to the beam of incident light.

3,697,153
MULTILAYER OPTICAL INTERFERENCE FILTER WITH WIDEBAND SPECTRAL TRANSMISSION REGION AND REDUCED RIPPLE

Harald Zycha, Ampfing, Germany, assignor to Balzers Patent- und Beteiligungs-Aktiengesellshaft, Balzers, Furstentum, Liechtenstein

Filed Dec. 16, 1970, Ser. No. 98,786
Claims priority, application Switzerland, Dec. 17, 1969, 18884/69
Int. Cl. G02b 5/28
U.S. Cl. 350—166 **2 Claims**





A multiple layer optical interference filter having a wideband spectral transmission region with reduced ripple structure is designed to reflect radiation of longer wavelengths. It comprises a carrier having an alternate system of layers of alternately high and low refractivity. Each of the layers are of an optical thickness which satisfies the relation

$$n_i d_i \cos \alpha_i = \lambda 0/4$$

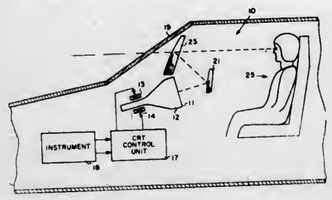
(where n_i denotes the index of refraction of the layer substance, d_i the thickness of the layer, the λ_o the wavelength of the reflection region adjacent the long wave side to the transmission region of interest, and α_i the angle which is formed by the light ray passing through the filter and then normal to the layer plane of the layer in question). The system of layers comprises a light transparent equalizing layer adjacent to the outer one of said low reflectivity layers having a refractive index and having a thickness d such that undesired secondary maxima of reflection are reduced. The thickness of the equalizing layer is equal to $d = 3\lambda/8 \cdot 1/n \cos\alpha$. In this formula, λ denotes the mean wavelength of the transmission region of interest to be smoothed. The letter α represents the angle which the light ray in the equalizing layer forms with the wavelength of the transmission region of interest to be smoothed. The index of refraction of the equalizing layer (n) is larger than the index of refraction of the low refractivity outer layer adjacent to the equalizing layer.

3,697,154
OPTICAL VIEWING SYSTEM

Frithiof V. Johnson, Binghamton, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 12, 1971, Ser. No. 142,707
Int. Cl. G02b 27/14
U.S. Cl. 350—174 **7 Claims**

Images formed on the screen of a cathode ray tube (CRT) are reflected from a curved mirror having a general aspheric surface of revolution to a partially reflective combiner having two nonparallel hyperboloid surfaces. The combiner is positioned in the normal line of sight of an observer, for instance, in the windshield area of an aircraft cockpit. A collimated CRT image is reflected from the near surface of the combiner

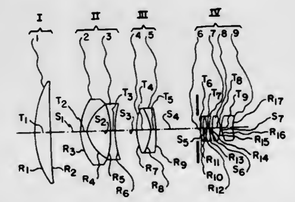


to the observer's eyes. The combiner is adapted to transmit light incident from the outside so that the CRT display is superimposed without parallax on the real world to provide a head-up display.

3,697,155
COMPACT ZOOM LENS

Paul L. Ruben, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,307
Int. Cl. G02b 15/16
U.S. Cl. 350—184 **5 Claims**

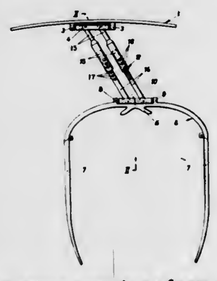


Particular lens parameters are provided which give good corrections in a high aperture, wide-angle zoom lens which has a positive power zoom portion and a strong fourth surface. The zoom lens has a minimal number of elements and is compact in both length and diameter.

3,697,156
COSMETIC MIRROR

Kauko Juhani Hyvarinen, Joensuu, Finland, assignor to Nlplex International Establishment, Vaduz, Liechtenstein

Filed Dec. 28, 1970, Ser. No. 102,002
Claims priority, application Switzerland, Dec. 30, 1969, 19459/69
Int. Cl. G02b 7/18
U.S. Cl. 350—298 **2 Claims**



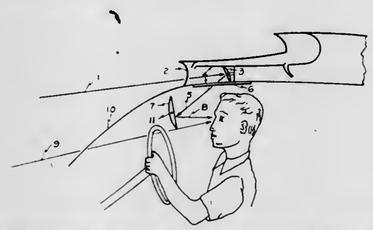
A cosmetic mirror comprises a frame worn on the face of a user in a manner similar to a pair of eyeglasses but with only

the top rim thereof, the nose support and the arms. A mirror is supported in front of the frame for pivotal movement in horizontal and vertical directions by means of a connecting parallelogram linkage which frictionally holds the mirror in adjusted position so that the user can view his reflection in the mirror.

3,697,157
MOTOR VEHICLE ALL-WEATHER FORWARD VIEW MIRROR

Roger Philip Pizzimenti, 1725 S. W. 72 Court, Miami, Fla., and James Ware Satcher, 12204 S. W. 27 Street, Miami, Fla.

Filed May 10, 1971, Ser. No. 141,840
Int. Cl. B60r 1/10; G02b 5/08
U.S. Cl. 350—302 **1 Claim**

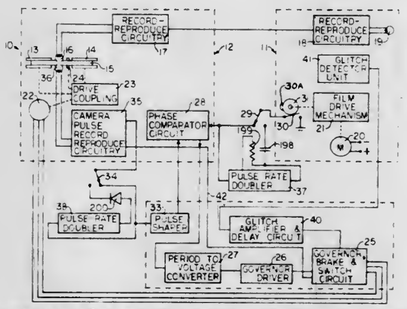


A forward view mirror system which provides a motor vehicle driver with maximum visibility during inclement weather (rain, sleet, snow, etc.). The system includes a first mirror located above the driver's head in a forward view chamber and positioned to reflect an image of the road in front of the vehicle to a second adjustably mounted mirror located directly in front of the driver, a high pressure air chamber including a forwardly directed duct inlet which collects air and precipitation during the forward movement of the vehicle, and a drain duct which evacuates moisture from the high pressure air chamber. The moisture-free air then enters a high velocity air chamber to a duct outlet above the forward view opening and is redirected downwardly to form an air boundary layer which prevents precipitation from reaching the first mirror. Reciprocating wipers remove any moisture which may collect upon the reflecting surface of the first mirror and outer surface of the clear glass panel located above the driver's head.

3,697,158
SOUND-ON-FILM RECORDING SYSTEM

Eugene V. Mateja, Norridge, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 28, 1970, Ser. No. 76,147
Int. Cl. G03b 31/02
U.S. Cl. 352—17 **13 Claims**

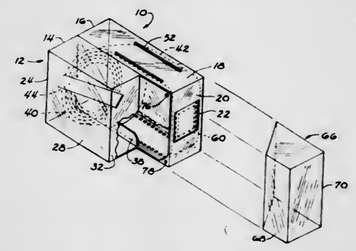


An apparatus for recording on developed motion picture film an audio signal previously recorded on a separate magnetic tape during initial exposure of the film in a camera which also carries a pulsed synchronizing signal. A projector generates a pulsed signal related to the rate of film movement therethrough which is compared with the pulsed synchronization signal upon the magnetic tape. A phase comparator compares the signal from the projector with that played back from the tape and develops a control signal. The control signal is fed to a period to voltage converter which in turn controls the speed of the recorder to maintain synchronization.

3,697,159
FILM STRIP CARTRIDGE

Forrest D. Fernkopf, 2521 Sunset Road, and Gilbert E. Wehmeier, 5608 W. 24th Street, both of Topeka, Kans.

Filed April 5, 1971, Ser. No. 131,097
Int. Cl. G03b 21/00
U.S. Cl. 352—128 **9 Claims**

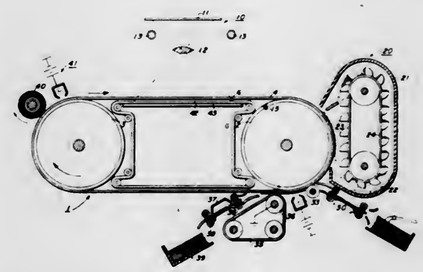


A film cartridge employing an endless, unspooled roll of film having an external loop presenting the active part of the film and feeding from the outside of the roll to the inside thereof. The cartridge has a rectangular case provided with a pair of side-by-side compartments which receive the roll and the loop respectively, the roll being held in an inclined position in which it leans into the adjacent compartment to dispose the outside and inside of the roll therein with the loop. The case has a flat bottom upon which it is self-supporting in an upright position, and a protective sheath fits over the front of the case to provide a self-storing cartridge assembly.

3,697,160
CONTINUOUS IMAGING APPARATUS

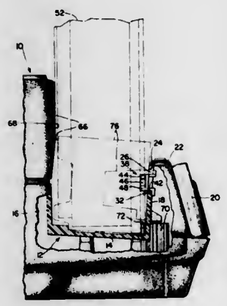
Harold E. Clark, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed April 30, 1969, Ser. No. 820,573
Int. Cl. G03g 15/00
U.S. Cl. 355—3 **10 Claims**



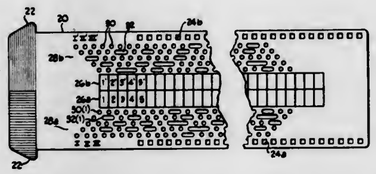
There is disclosed an electrostatic imaging apparatus which incorporates the continuous use of a reusable, flexible imaging member in an imaging system in conjunction with full-frame exposure.

3,697,161
CIRCULAR TRAY SUPPORT AND INDEXING APPARATUS
Stephen Blecher, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed April 1, 1970, Ser. No. 24,582
Int. Cl. G03b 23/06
U.S. Cl. 353—117 7 Claims



A unique elongated indexing means and bowed shaped tray supporting means for use in a slide projector to enable circular trays that are of different diameters to be rotatably supported on a common support and to enable each of these different size trays to be indexed by a common indexing means.

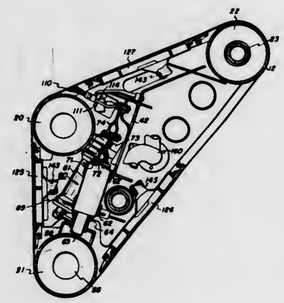
3,697,162
AUDIO-VISUAL EDUCATIONAL APPARATUS
Alfred E. Gells, Prospect Heights; William J. Raymond, Des Plaines; Richard W. Roberts, Lombard, and Peter K. Shreck, Mount Prospect, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 615,547, March 13, 1967. This application Oct. 8, 1969, Ser. No. 871,154
Int. Cl. G03b 21/00
U.S. Cl. 353—120 1 Claim



An audio-visual educational apparatus employing a disc record having audio messages recorded in spaced relationship and film strips mounted on an image carrier. The movement of a tone arm is synchronized with the position of the image carrier so that the images are positively correlated with the audio messages. A response mechanism for registering choices to the questions and/or instructions presented includes a series of pins which are adapted to be selectively inserted through holes or slots in coded sections on the control card to either hold or allow controlled advancement of the card relative to a display station.

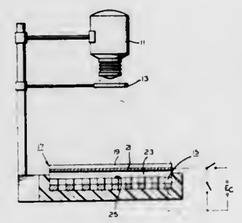
ERRATUM
For Class 355—3; see:
Patent No. 3,697,160

3,697,163
PLUG-IN VACUUM AND CIRCUIT SYSTEM FOR ELECTROSTATIC PRINTING MACHINES
William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1970, Ser. No. 102,384
Int. Cl. G03g 15/00
U.S. Cl. 355—3 4 Claims



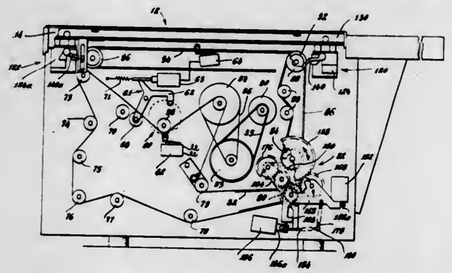
A vacuum and electrical connecting arrangement for an electrostatic printing machine of the type employing a belt assembly module which is adapted to be mounted and dismounted in the machine. The belt module is equipped with a vacuum conduit connection device which can be attached to and detached from a mating device mounted on a fixed frame of the machine. There is also a metallic brush on the frame serving as an electrical connecting device for the conductive belt substrate. Both the vacuum connection and the electrical connection are made automatically when the assembly is inserted into place.

3,697,164
APPARATUS FOR APERTURE CONTROLLED ELECTROSTATIC IMAGE COLOR REPRODUCTION OR CONSTITUTION
Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.
Filed Feb. 18, 1969, Ser. No. 800,236
Int. Cl. G03g 15/00
U.S. Cl. 355—4 38 Claims



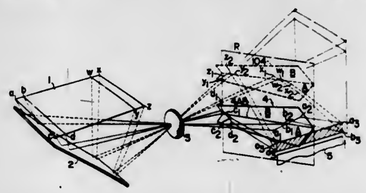
A device is disclosed which relates to the field of electrostatics, and is concerned with electrostatic reproducing or constituting in color. An apertured carries charge distributions in accordance with selected color patterns, such that particles directed at the screen pass therethrough under modulation control dictated by the pattern. The patterns may be determined by the primary or other selected colors applied in sequence, or applied simultaneously. A multi-layered screen comprising preferably at least an insulative and a conductive layer is characterized by an array of electrostatically sensitive apertures. A propulsion field directs charged particles through the screen to a receiving medium, preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of the apertures being in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. This is true for each color or filter employed to produce the patterns of varying tone for sequential use in reconstituting the image in color, with or without contact with the substrate.

3,697,165
RECIPROCATING DOCUMENT CARRIAGE FOR PHOTOCOPIER
Douglas I. Morriston, Norwalk, and Salvatore J. Calvi, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 9, 1970, Ser. No. 96,503
Int. Cl. G03g 15/00
U.S. Cl. 355—8 18 Claims



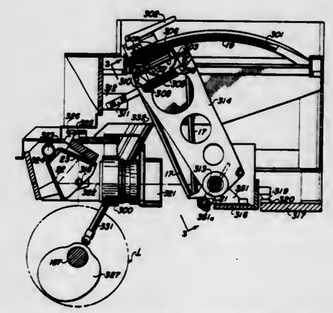
A reciprocating carriage translates an original document sheet through an illuminating station in synchronism with the feeding of copy paper through an imaging station. Sensing switches actuated by the carriage movement control withdrawal of copy paper from a supply roll and severance thereof into sheet length corresponding to the document sheet length. A drive chain loop linked to the carriage is driven via a transmission to translate the carriage through a uniform forward stroke and a slower return, copy stroke. The linkage between the chain loop and carriage includes a lost-motion coupling to accommodate rapid deceleration and acceleration of the carriage as it is transferred from one stroke to the other.

3,697,166
EXPOSING DEVICE FOR COPYING APPARATUS
Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan
Filed Aug. 10, 1971, Ser. No. 170,462
Claims priority, application Japan, Aug. 13, 1970, 45/71304
Int. Cl. G03g 15/04; G03b 27/50
U.S. Cl. 355—8 6 Claims



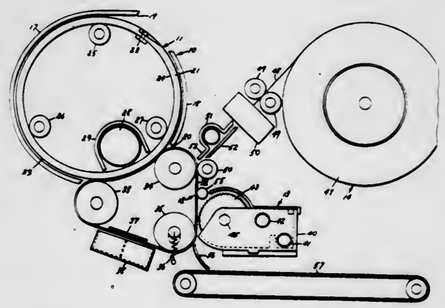
An exposing device for copying apparatus wherein a photoreceptive surface and a reflector are moved, while a copying lens and an original to be duplicated remain stationary, for exposing the photoreceptive surface to an optical image of the original by a slit system for the purpose of producing a duplicate of the original. The reflector comprises two reflecting surfaces meeting at a 90° angle, along a line of juncture lying in a plane oriented at 45° to the optical axis of the lens. It is interposed between the copying lens and photoreceptive surface and moves at a rate which is one-half the rate of movement of the photoreceptive surface in the direction of movement of the photoreceptive surface.

3,697,167
OPTICAL PROJECTION APPARATUS
Ralph A. Hamaker, Penfield, and Edwin Zucker, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,849
Int. Cl. G03b 27/50, 27/70
U.S. Cl. 355—8 8 Claims



Apparatus for projecting a flowing image of a stationary graphical original onto a moving image plane. The apparatus moves lamps and an optical component from a single cam and a linearly driven cam follower moving synchronously with the moving image plane. Crank arms connect from the cam follower arm to concentric shafts driving the lamps and mirror in synchronous movement with the moving image plane.

3,697,168
ELECTROSTATIC REPRODUCTION DEVICE
Jules Nisenson, New York, N.Y., assignor to Kelvin Research Corp., New York, N.Y.
Continuation of Ser. No. 690,113, Dec. 13, 1967, abandoned. This application Dec. 29, 1969, Ser. No. 888,167
Int. Cl. G03g 15/00
U.S. Cl. 355—12 6 Claims



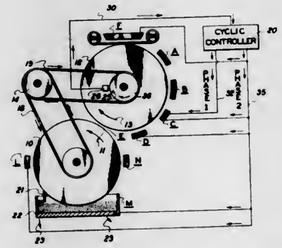
An electrostatic reproduction device employing a continuous belt having a charge imparted thereto of a first polarity which is exposed to an image to be reproduced. One surface of a paper web upon which the reproduction will be made is brought in direct contact with the belt after charging and ex-

posure. The second oppositely disposed surface of said paper is subjected to the action of a toner which is attracted to the second surface as a result of a charge imparted to the paper by the charged belt.

3,697,169
ELECTROSTATIC RECORDING APPARATUS AND METHOD

John Maksymiak, Penfield; Kenneth M. Beach, Jr., Webster, and James W. Smith, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,339
Int. Cl. G03g 15/22
U.S. Cl. 355—14 17 Claims

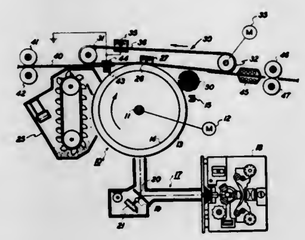


An electrostatic copying device including a donor roller for supplying a layer of toner and a photoreceptor drum and associated components for generating a latent image are operated in consort in a two-rotation cycle of operation under controlled condition. During the first rotation of the cycle of operation the photoreceptor is uniformly charged with a relatively low corona charge and the photoreceptor is used as a biased roller to make uniform the layer of toner placed on the donor roller. During the second rotation of the cycle of operation the latent image is generated and the latent image is developed using the uniformly made toner layer.

3,697,170
AUTOMATIC DUPLEXING APPARATUS

Gopal C. Bhagat, Rochester, and John M. Randall, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,884
Int. Cl. G03g 13/00
U.S. Cl. 355—17 7 Claims

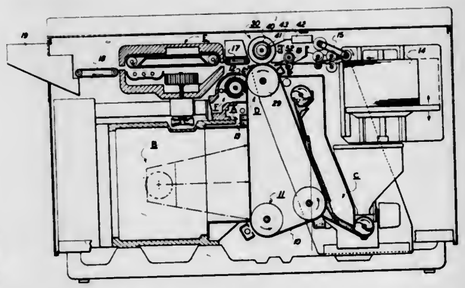


The method of producing a duplex copy by simultaneously placing images of the original subject matter to be reproduced on both sides of a sheet of final support material. A first latent electrostatic image and a second latent electrostatic image containing original input scene information are sequentially formed on a photoconductive plate and developed in the conventional xerographic manner by contacting the charged images with oppositely charged toner particles. The first image is transferred to an image storage member where the polarity of the charged toner particles making up the image is reversed. The first image, carried on the support member, is then brought adjacent to the second image on the photoreceptor surface and a sheet of final support material interposed therebetween. The two oppositely charged images are subjected to an electrostatic force of a polarity and a potential to produce simultaneously a transfer of the images to opposite sides of the final support sheet.

3,697,171
SIMULTANEOUS IMAGE TRANSFER

William A. Sullivan, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,970
Int. Cl. G03g 13/00, 15/00
U.S. Cl. 355—17 4 Claims

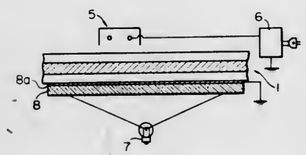


Toner images are sequentially formulated on a photoconductive element. A biased transfer member, adapted to electrically coact with the photoconductor, is brought into operative communication therewith so that a first image is attracted from the photoconductor to the biased member. The image on the member is transported to a region of low voltage contrast and the charge on the image is reversed. A sheet of final support material is brought into contact with a second image on the photoconductor and simultaneously therewith, the first image on the biased member is applied to the opposite side of the sheet whereby the two images are electrostatically transferred to the sheet.

3,697,172
ELECTROSTATIC PHOTOGRAPHY

Wasaburo Ohta, Yokohama-shi, and Setsuo Soga, Tokyo, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 24, 1969, Ser. No. 844,536
Claims priority, application Japan, Sept. 9, 1968, 44/64493
Int. Cl. G03g 13/00
U.S. Cl. 355—17 2 Claims

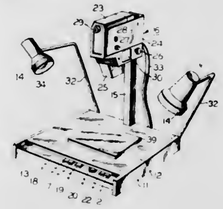


There is disclosed herein an electrostatic photography method wherein photoconductive sensitive layers are provided on both sides of a support of a photosensitive plate and the reverse side of said plate is illuminated by light either during or before or after corona discharge, to form reproductions on both sides of the photosensitive plate.

3,697,173
ELECTROPHOTOGRAPHIC PROCESSOR CAMERA

Toshiharu Sasaki; Ryuzo Miyano, and Masaru Onishi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed March 10, 1971, Ser. No. 122,819
Claims priority, application Japan, March 13, 1970, 45/21780
Int. Cl. G03b 27/32
U.S. Cl. 355—27 14 Claims

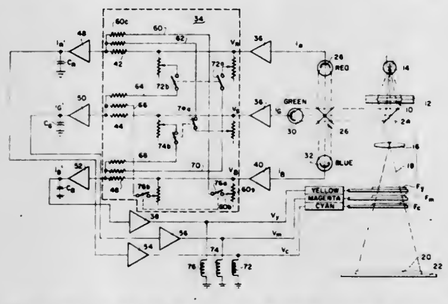


A photographic apparatus for producing a visible image on a photosensitive unit including a photosensitive film mounted on a film mount. The apparatus comprises a first transfer means for transferring said unit from a supplying station to an exposure station and a second transfer means for transferring said unit from the exposure station to a processing station, whereby at said exposure station said unit is exposed to produce a latent image and said processing station includes a processing means having an opening at a side thereof. The processing means press fits the opening against the unit and forms a processing chamber to receive a processing liquid for producing a visible image on said unit. The apparatus further comprises a removing means for removing said unit from the processing station to a take-out position and driving means for driving said first and second transfer means and said processing means.

3,697,174
AUTOMATIC COLOR SUBJECT FAILURE CORRECTION WITH ILLUMINANT DISCRIMINATION FOR PHOTOGRAPHIC PRINTERS

Ellsworth J. McCune, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,788
Int. Cl. G03b 27/78
U.S. Cl. 355—38 13 Claims

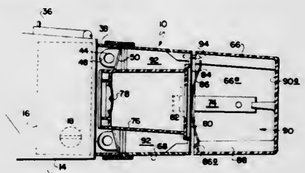


The color correction level of the printing beam of a color printer is automatically varied from a high color correction level to a low color correction level in proportion to the differences between the detected red, green and blue LATD's of the negative to be printed. A higher degree of color correction is automatically applied to alter the color composition of the printing beam when the negative exhibits an illuminant failure.

3,697,175
CAMERA ATTACHMENT FOR COPYING PHOTOGRAPHIC TRANSPARENCIES

Robert T. Sullivan, Norwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 18, 1970, Ser. No. 99,395
Int. Cl. G03l 27/32
U.S. Cl. 355—39 26 Claims

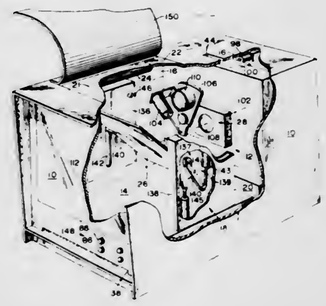


A print-copying attachment or accessory device primarily for a so-called "close-up" camera incorporating an electronic flash component with variable intensity control means. Light rays from the flash element which, conventionally, would fall directly upon the frontal surface of a subject are redirected by the attachment so as to be incident upon the rear surface of a photographic transparency mounted therein. At the same time a correct focus and correct average light level are established, the latter being capable of adjustment to accommodate to differences in density of the transparencies.

3,697,176
SYSTEM FOR RECORDING DATA ON MICROFICHE AND FOR VIEWING AND MAKING PRINTS OF THE RECORDED DATA

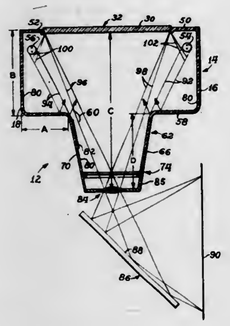
Manfred R. Kuehnle, Lexington, and Dieter Jochimsen, Winchester, both of Mass., assignors to Audac Corporation, Burlington, Mass.

Filed Sept. 16, 1969, Ser. No. 858,375
Int. Cl. G03b 13/28
U.S. Cl. 355—45 11 Claims



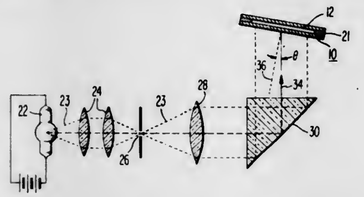
A system records graphic data in microimage form on either a temporary, recording medium or a permanent microfiche. Full-size reproductions are made by projecting the recorded microimages onto a photosensitive medium. The reproductions are made via the temporary storage medium when a quick copy of the original data is desired; they are made from the microfiche when the full-size reproductions are to be retrieved from long-term storage. The system can also display the recorded graphic data.

3,697,177
ILLUMINATING SYSTEM FOR A COPYING MACHINE
Thomas A. Booth, Elgin, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed June 26, 1970, Ser. No. 50,249
Int. Cl. G03b 27/70
U.S. Cl. 355—67 4 Claims



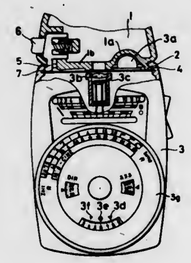
An illuminating system for use in a copying machine to illuminate an original document to be copied and project an image thereof to an exposure plane includes a light chamber having a diffusedly reflective interior surface. The chamber comprises an upper portion having along the upper wall thereof an object window for receiving the original document, and an open ended lower channel portion joined at one end to the lower wall of the upper chamber portion in alignment with an aperture in the latter. A lens is mounted at the free, open end of the lower channel portion, and a pair of lamps are mounted in the upper chamber portion at the sides of the object window outside the field of view of the lens to prevent rays reflected directly from the object window from passing through the lens. The lower wall of the upper chamber reflects rays from the lamps which would otherwise pass through the lens, and is spaced a predetermined distance from the upper wall to fully and uniformly illuminate the original receiving object window with light reflected therefrom.

3,697,178
METHOD OF PROJECTION PRINTING PHOTORESIST MASKING LAYERS, INCLUDING ELIMINATION OF SPURIOUS DIFFRACTION-ASSOCIATED PATTERNS FROM THE PRINT
Edward Curtis Douglas, Cranbury, N.J., assignor to RCA Corporation
Filed Nov. 1, 1971, Ser. No. 194,447
Int. Cl. G03b 27/32
U.S. Cl. 355—77 15 Claims



A substrate covered with photoresist is positioned in a parallel, spaced, fixed relationship to a photomask to form a photomask assembly. Then, the photoresist is exposed to a diffraction image of the photomask by projecting collimated light through the photomask. The diffraction image comprises a primary image and a spurious, diffraction-associated secondary image. The light is projected with an oblique orientation to the photomask. The oblique orientation is varied during the exposing to selectively prevent the secondary image from resulting in the uncovering of corresponding areas of the substrate upon development. Then the photoresist is developed to uncover selected areas of the substrate.

3,697,179
LIGHT MEASURING DEVICE
Erwin Pfaffenberger, and Hans Forsterling, both of Erlangen, Germany, assignors to P. Gossen & Co. G.m.b.H., Erlangen, Bavaria, Germany
Continuation of Ser. No. 631,947, April 19, 1967, abandoned. This application Jan. 18, 1971, Ser. No. 107,584
Claims priority, application Germany, Oct. 29, 1966, P 15 47 309.3
Int. Cl. G01n 21/00; G01j 1/42
U.S. Cl. 356—73 3 Claims

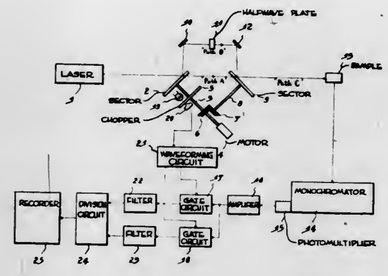


The present disclosure relates to a universally applicable light measuring divice, especially photometer, which comprises a main measuring device, e.g., an exposure meter, and a plurality of easily exchangeable auxiliary measuring devices or adapters which, when individually attached to the main measuring device, form therewith new unitary devices, as to outer appearance and function. All adapters have identical bottom portions with two hook-like extensions to be received in corresponding recesses in the main measuring device. One of the extensions is resiliently journalled and may be displaced by a push button for disconnecting the adapter from the main device.

Various new adapters are proposed, as for instance, an adapter for reducing the measuring angle, a dark room adapter, an adapter for determining the exposure time when taking micro-photographs, a focusing screen scanner, an adapter which transforms the main measuring device into an illumination meter, an adapter for determining the "color temperature" when taking color photographs, and an adapter for making densitometric measurements.

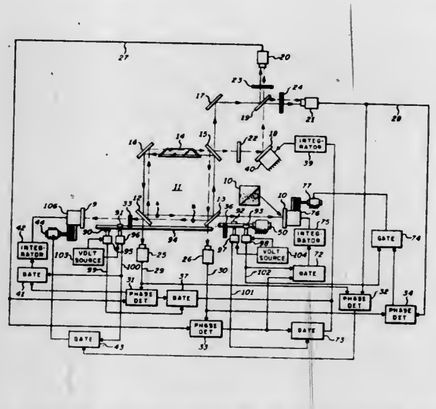
3,697,180
APPARATUS FOR AUTOMATICALLY RECORDING THE HEDEPOLARIZATION RATIOS OF RAMAN BANDS
Hajime Mori, and Mamoru Irizuki, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 7, 1970, Ser. No. 95,700
Claims priority, application Japan, Dec. 8, 1969, 44/98527; Feb. 28, 1970, 45/17383
Int. Cl. G01j 3/44; G01n 21/40
U.S. Cl. 356—75 4 Claims

Two rays of light polarized parallel and perpendicular with respect to a plane are produced from a single ray of light generated by a laser. By alternately illuminating a sample with the said two rays of light, two Raman scattering light rays having different intensities are produced and in turn applied to a monochromator where they are dispersed according to wave length. After dispersion, the rays are detected by a photomultiplier and the resultant signals applied to a division circuit where the depolarization ratio is automatically calculated.



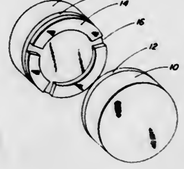
This process is repeated for subsequent sets of signals, thereby effecting a continuous operational sequence.

3,697,181
RING LASER HAVING AMPLITUDE AND PHASE CONTROLLED CROSSED-BEAM ANTI-LOCKING FEEDBACK
Warren M. Macek, Huntington Station, and Chao Chen Wang, Mineola, both of N.Y., assignors to Sperry Rand Corporation
Filed March 14, 1967, Ser. No. 622,983
Int. Cl. G01b 9/02
U.S. Cl. 356—106 LR 6 Claims



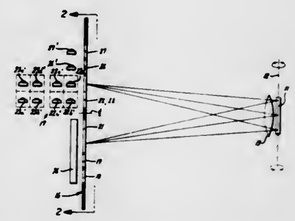
A ring laser provided with at least one mirror external to the ring cavity for reflecting energy from one of the two counterrotating laser beams back into the ring to couple to the other beam. The mirror is arranged to have varying reflectivity along one of its dimensions and is positioned along said dimension (to vary the amplitude of feedback) and in a direction perpendicular thereto (to vary the phase of feedback). Each of the counterrotating laser beams is extracted from the cavity and the amplitude modulation thereon (due to cross-beam coupling) is detected. If two external mirrors are used, each is positioned to eliminate the amplitude modulation on a respective extracted beam. If only one external mirror is used, it is positioned to make the amplitude modulation on one extracted beam equal in amplitude and opposite in phase to the amplitude modulation on the other extracted beam.

3,697,182
FABRY-PEROT INTERFERENCE MIRROR SEPARATION SYSTEM AND METHOD THEREFOR
Allen M. Erickson, Silver Spring, and Bernard V. Kessler, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 24, 1970, Ser. No. 58,028
Int. Cl. G01b 9/02
U.S. Cl. 356—112 2 Claims



A Fabry-Perot interferometer is provided by vacuum depositing mirrors on two separate quartz supports, vacuum depositing a separator ring of a few wavelengths thickness on one of the mirrors, and then clamping the two mirror sections together, the separator ring thickness providing the separation between the two mirrors.

3,697,183
OPTICAL APPARATUS USING SLITTED MASKS FOR DETECTING ROTARY MOTION OF OBJECT
Sheldon Knight, Mountain View, and Kerwin Peter McCarron, Sunnyvale, both of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.
Filed June 14, 1968, Ser. No. 737,274
Int. Cl. G01b 11/27, 9/10
U.S. Cl. 356—114 9 Claims

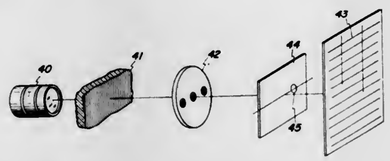


A digital angle readout subsystem for an infrared horizon tracker provides a position reference for the tracker and a readout counter for indicating the angular displacement of the tracker from the reference position. The tracker is coupled to a movable mirror, which moves in synchronism with the tracker. The mirror reflects light projected through a primary mask and causes the light to strike a secondary mask at a location which varies with movement of the mirror. Photodetectors behind the secondary mask are responsive to the moving light patterns to provide electrical signal indications of the reference position and angular displacement of the mirror. The counting portion of the primary mask has evenly spaced slits and bars, the secondary counting mask includes left and right sections for splitting the field of movement of the tracker into two parts. Each section has four individual subsections shifted 90° in phase from an adjacent subsection. Switching between left and right counting sections is provided by switching pulses produced by primary and secondary reference masks. The reference masks have a pattern based on a $vk\lambda$ mathematical difference set and provide a reference position signal for the tracker.

3,697,184
APPARATUS FOR EVALUATING THE RECORDING CHARACTERISTICS OF A THERMOPLASTIC PHOTORECEPTOR

Donald R. Lehmbeck, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed April 1, 1971, Ser. No. 130,346
Int. Cl. G01j 3/46
U.S. Cl. 356—175 8 Claims

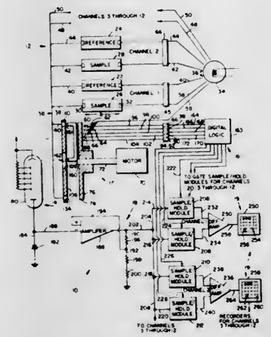


A target for evaluating the characteristics of a thermoplastic photosensitive element is herein disclosed. The target includes a partially transparent or partially absorbing film having at least two fixed narrow bandwidth slits therein and a mask of varying optical density placed on top of or underneath the slit containing film. The target is capable of being positioned in contact with the photosensitive element to reside between the element and a source of exposing radiation. When exposed to a calibrated source of light, an image of known high frequency spatial intensity distribution surrounded by a normal sensitometric exposure results. By observing the effects of this known exposure on a developed thermoplastic photoreceptor characteristics of major concern can be determined.

3,697,185
METHOD AND APPARATUS FOR THE TIME SHARING OF MULTIPLE CHANNEL ANALYSIS MEANS

Aaron Kassel, Tarrytown, and Donald F. Kopelman, New York, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,582
Int. Cl. G01j 3/46; G01n 21/22
U.S. Cl. 356—181 13 Claims

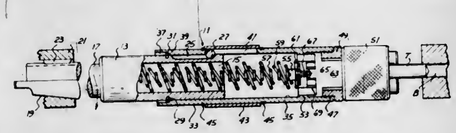


New and improved method and apparatus for the time sharing of multiple channel fluid sample analysis means are provided and comprise operatively associated light source, light sensitive detector means, digital logic means, detector and logic means timing and control means, detector circuit means, multiple channel fluid sample analysis result read-out means and read-out means timing and control means, respectively, said detector means is constituted by a single light-sensitive detector means in the nature of a photo-multiplier tube, and said detector circuit means comprises a single, temperature stabilized log diode and amplifier. An embodiment is disclosed wherein said light source is automatically and precisely tunable light source. In operation, the apparatus is effective to repeatedly scan said multiple channel analysis means and provide simultaneous recordings of the analysis results which are linear with regard to the respective fluid sample optical densities on said analysis result read-out means. The apparatus is applicable for use with multiple channel analysis means which include only colorimeters, and for use with multiple channel analysis means which include colorimeters and fluorimeters. The advantageous disposition of the analysis means on the manifold of operatively associated fluid sample supply and treatment means is also made possible by the apparatus of the invention.

3,697,186
HARD START TOOL HOLDER

Theodore M. Smith, Detroit, Mich., assignor to Lucille G. Smith and Theodore M. Smith, Detroit, Mich., trustees of the Theodore M. Smith Trust

Filed Oct. 12, 1970, Ser. No. 79,818
Int. Cl. B23q 5/22
U.S. Cl. 408—142 5 Claims

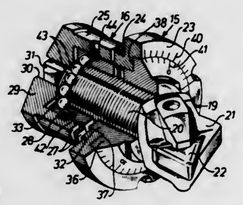


A compensating hard start tool holder for taps, drills, reamers, boring tools, counterbores and milling cutters, having a tool holding chuck and a power rotated longitudinally fed shank, having an operative drive and longitudinally feed relationship between said shank and chuck with springs interposed normally resisting compressive movements of the parts towards each other and normally biasing said parts outwardly of each other, which includes a yieldable restraining means on the shank and a cam means on the chuck to provide yieldable resistance against relative movement of said shank and chuck towards each other to provide an initial high end thrust of the tool relative to the workpiece and, whereby, upon an extreme resistance between the tool and workpiece, said yieldable restraining means is overcome to provide such relative longitudinal movement of said shank and chuck towards each other preventing damage to the tool, to the tool holder or to the drive spindle, or to the workpiece.

3,697,187
BORING BAR INSERT

Kurt H. A. E. Faber, and Lars E. Norgren, Sandviken, both of Sweden, assignors to Sandvikens Jernverks AB, Sandviken, Sweden

Filed Feb. 19, 1971, Ser. No. 116,762
Int. Cl. B23b 29/02
U.S. Cl. 408—154 8 Claims



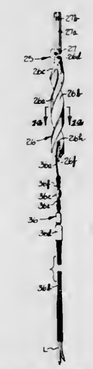
A boring bar insert for holding a cutting tool in an adjusted position in a boring bar. A non-rotatable threaded shank of

the tool is engaged by an interiorly threaded, rotatable but axially immovable adjustment sleeve so that rotation of the adjustment sleeve causes axial movement of the shank. Resilient means are provided for eliminating axial and radial play between the shank and the adjustment sleeve.

3,697,188
APPARATUS FOR FORMING HOLES IN AND INSTALLING LINES IN STRUCTURAL MEMBERS

George F. Pope, Burlington, N.C., assignor to Diversified Manufacturing and Marketing Co., Inc., Burlington, N.C.

Division of Ser. No. 838,270, July 1, 1969, Pat. No. 3,611,549.
This application April 19, 1971, Ser. No. 134,960
Int. Cl. B23b 35/00, 41/00, 51/08
U.S. Cl. 408—230 2 Claims

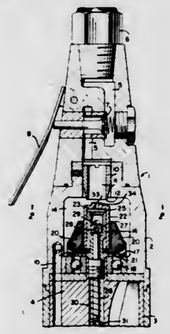


Holes for electrical conductor lines and the like are formed through oftentimes inaccessible wooden obstructions, such as structural frame members of a hollow wall, by utilizing a novel drill having an elongate spring-like shaft with a drill bit on its leading end, and wherein the shaft may be bowed to insert the same into the wall to direct the drill bit in the desired direction. The method further comprises connecting a pliable line (a pull line or conductor line) to one end of the drill after it has passed through the wall, and then removing the drill while pulling the line therewith to position a length of the pliable line extending through the wall.

3,697,189
PNEUMATIC MOTOR GOVERNOR

David W. Tibbott, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed March 23, 1971, Ser. No. 127,293
Int. Cl. F01b 25/06
U.S. Cl. 415—36 7 Claims

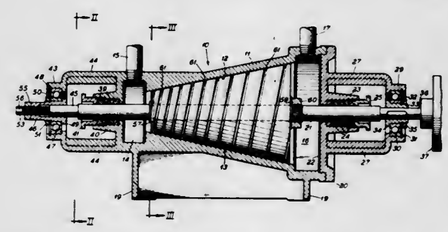


A pneumatic motor governor including a valve port located in the motor supply passage and axially aligned with the motor. The end of the motor carries a spindle and a closed end valve sleeve is slidably mounted on the spindle to reciprocate toward and away from the valve port to throttle air flowing through the port and between the port and the closed end of the valve sleeve. The closed end of the sleeve includes a small hole to allow the air pressure beneath the closed end to balance itself with the pressure on the top or outer face of the closed end, thereby preventing the air pressure in the inlet air from creating forces interfering with the free operation of the valve sleeve. The valve sleeve is moved back and forth by a system of conventional flyweights mounted on the motor spindle.

3,697,190
TRUNCATED CONICAL DRAG PUMP

Walter D. Haentjens, RD 1, Sugarloaf, Pa.

Filed Nov. 3, 1970, Ser. No. 86,429
Int. Cl. F01d 5/00
U.S. Cl. 415—73 4 Claims

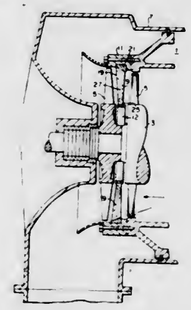


High pressure low volume rate drag pump having a frusto-conical rotor cooperating with a frusto-conical stator wall and having close clearance with the stator wall. The rotor has a helical channel extending therealong, in which the base or root of the channel is formed along a different angle than the cone angle of the rotor. The high pressure is attained by the maximum drag surface along the relatively small passageways together with the centrifugal force of the fluid due to increasing linear velocity of the rotor from its inlet to its discharge end. The rotor is axially adjustable to maintain a close clearance and a high pressure capability of the pump.

3,697,191
EROSION CONTROL IN A STEAM TURBINE BY MOISTURE DIVERSION

Frank J. Heymann, Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

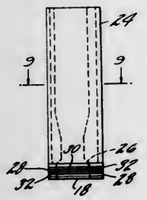
Filed March 23, 1971, Ser. No. 127,234
Int. Cl. F01d 1/00
U.S. Cl. 415—168 8 Claims



An annular array of circumferentially spaced nozzle blades having an airfoil shaped cross section on the low pressure

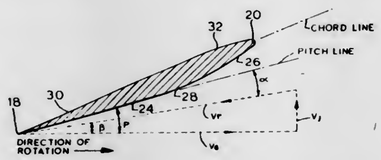
stages of an axial flow steam turbine wherein the stationary nozzle blades have a first slot adjacent their trailing edge and adjacent a turbine casing, a second slot adjacent the trailing edge and adjacent a rotor and a conduit connecting the slots so that water collected on the stationary nozzle blades is aspirated by the first slot, flows through the conduit, and is ejected from the second slot in atomized form and approaches the rotating blades at a location where the tangential velocity of the rotating blades is substantially lower, thus reducing the erosive effect of the water droplets on the rotating blades of the turbine.

3,697,192
HOLLOW TURBINE BLADE
Charles W. Hayes, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed May 7, 1970, Ser. No. 35,361
Int. Cl. F01d *5/08, 5/18*
U.S. Cl. 416—96 **3 Claims**



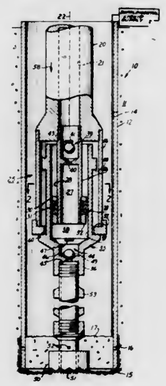
A hollow cooled gas turbine blade is made by forming an insert with a hollow airfoil and a hollow root portion and with lateral cooling air passages extending through the wall of the airfoil and positioning the insert in a hollow main blade having an airfoil portion and a notch in the root to receive the root portion of the insert with both root portions having aligned serrations on opposite surfaces for supporting the blade and the insert in a turbine disk.

3,697,193
FLUIDFOIL SECTION
Adrian Phillips, 14 Deer Park Cresent, Toronto, Ontario, Canada
Continuation-in-part of Ser. No. 11,382, Feb. 16, 1970. This application Dec. 10, 1970, Ser. No. 96,851
Int. Cl. B63h *1/26*
U.S. Cl. 416—223 **13 Claims**



Airfoil sections having improved lift characteristics are described for use as propeller blades for air or marine craft for wings of aircraft for hydrofoil sections of hydrofoil vessels and for rotor blades in compressor stages of gas turbine engines. The improved section is characterized by a planar upper portion and convex face extending rearwardly of the leading edge for approximately one-third of the chord length of the section whereupon the face assumes a planar shape terminating at the trailing edge in either convergent or parallel relation with the upper surface of the section. The camber line of the trailing edge may be deflected in a direction away from the upper surface at an angle to the mean camber line of the section. Such improved airfoils provide lift by generation of a large positive pressure on the face of the section and only a small negative pressure on the upper surface of the section.

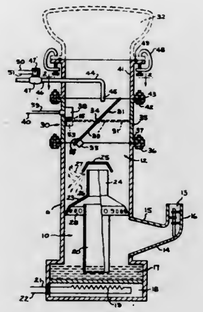
3,697,194
METHOD AND APPARATUS FOR REMOVING SAND FROM WELLS
Fred S. Holmes, P.O. Box 785, Maricopa, Calif.
Filed Sept. 14, 1970, Ser. No. 71,693
Int. Cl. F04b *21/04, 39/10*; **E21b** *27/00*
U.S. Cl. 417—54 **9 Claims**



A method and apparatus for cleaning out wells which have a casing subject to intrusion by sand and other detritus. A tubing, which may be the same tubing used in the routine operation of the well for the removal of liquids such as oil or water, is adapted for reciprocal motion for purposes of this invention, and carries a plunger which telescopically fits into a reference tube which is biased by its own weight or otherwise toward the bottom. A sliding seal fits between the reference tube and plunger to form a variable-volume pumping chamber. A check valve is placed at each end of the pumping chamber, so as to provide for unidirectional movement of sand from the reference tube into the tubing, and up to the surface. The result is the pumping of sand and liquid to the surface. Should there be insufficient liquid in the well to provide velocity sufficient to hold the same in suspension, it may be supplemented by dumping more liquid down the well.

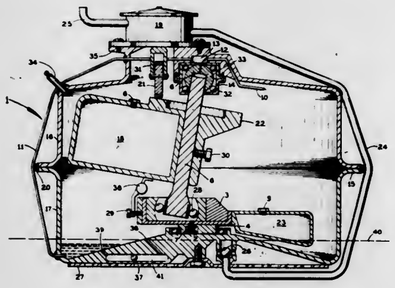
3,697,195
MEANS FOR RESTRICTING VAPOR BACKSTREAMING IN A DIFFUSION PUMP
Frederick R. Johnson, Chittenango, and David R. Palmer, Liverpool, both of N.Y., assignors to General Electric Company
Filed March 26, 1970, Ser. No. 22,896
Int. Cl. F04f *9/08, 5/48*
U.S. Cl. 417—154 **3 Claims**

For use with a diffusion pump having an inlet connectable to an enclosure sought to be evacuated by the pump, an outlet, and means including a liquid chamber between the inlet and the outlet and means for vaporizing the liquid, the present invention provides improved means for restricting backstreaming of vapors of the liquid from the chamber and into the enclosure. Basically, the improved means comprises pivotally mounted baffle means positionable between the chamber and the enclosure and being pivotable between a first position permitting substantially free flow of fluid between the enclosure



and the chamber and a second position substantially restricting flow of fluid between the chamber and the enclosure.

3,697,196
VACUUM PUMPING UNIT
R. Francois Moisdon, 4875 SW 28th Avenue, Fort Lauderdale, Fla.
Filed Sept. 23, 1970, Ser. No. 74,708
Int. Cl. F04b *19/00*
U.S. Cl. 417—211 **8 Claims**

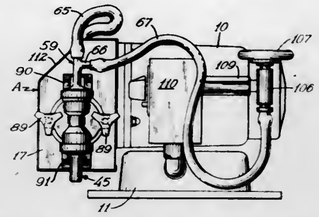


A pumping unit having two swinging unbalanced weights rotating into a vacuum body around a vertical axle. The both unbalanced weights being working together to actuate a pump through a special high frequency device.

Also provided is a lubricating pump actuated by the motion of the axles of the said unbalanced weights.

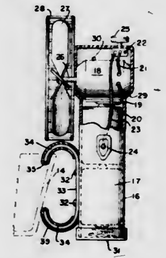
3,697,197
ICE CREAM PUMP
Harold A. Berglund, Afton, and David F. Thomas, West St. Paul, both of Minn., assignors to Waterous Company, St. Paul, Minn.
Filed Aug. 6, 1970, Ser. No. 61,658
Int. Cl. F04b *17/00, 35/00, 35/04*
U.S. Cl. 417—360 **16 Claims**

A double acting pump is provided for pumping air in one cylinder and liquid mix into another. The cylinders and valve housings, together with the inlet and outlet fittings, are readily



separable for cleaning. The entire pump unit may be disassembled for cleaning by the removal of four knobs or nuts.

3,697,198
ATTACHMENT FOR CHARCOAL BURNING UNIT
David A. Holder, Jr., 8303 Donoghue Drive, Hyattsville, Md.
Filed Dec. 1, 1970, Ser. No. 94,236
Int. Cl. F04b *35/04*
U.S. Cl. 417—411 **1 Claim**



An attachment for a charcoal burning structure whereby an induced draft is provided by means of a relatively small portable unit which may readily be secured to the charcoal burning structure when needed and readily released therefrom for storage when not in use.

3,697,199
SLIDE VALVE PUMP
Harry L. Spears, 10919 Sageriver Drive, Houston, Tex.
Filed Aug. 14, 1969, Ser. No. 850,201
Int. Cl. F04b *7/04, 39/10*
U.S. Cl. 417—498 **7 Claims**



A cylindrical piston fixed to the lower end of a cylindrical rod and a second tubular piston slideably carried over the rod.

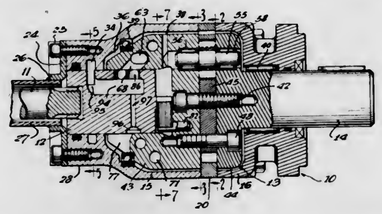
The pistons and a portion of the rod are disposed within the bore of a tubular housing. The housing includes inlet and outlet ports adjacent to its lower and upper ends, respectively, which extend from the bore through the housing wall. Reciprocating movement of the rod through the bore causes the fixed and tubular pistons to cyclically seal and unseal the inlet and outlet ports respectively whereby fluid is drawn into the inlet ports and expelled through the outlet ports.

3,697,200

HYDRAULIC SERVO DEVICE

Frederic W. Pollman, Rockford, Ill., assignor to Sundstrand Corporation

Filed July 7, 1969, Ser. No. 839,381
Int. Cl. F01c *1/08*
U.S. Cl. 418—61 **4 Claims**



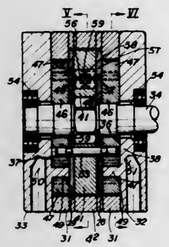
A hydraulic servo motor having a rotary valve for supplying fluid to a rotary servo motor that follows movement of the valve about the same axis driving a concentrically disposed output shaft, with the servo motor taking the form of a stationary internally toothed ring gear, a carrier drivingly connected to the output shaft supporting a plurality of planetary gears interengaging the stationary ring gear and defining therewith a plurality of expanding and contracting fluid chambers, there being provided a pressure balancing recess for the rotary valve member to hydraulically balance the same as well as coplanar ports in the rotary valve member of circular configuration to provide gradual and controlled communication between the main supply and return ports and adjacent ports in the carrier member communicating with the expanding and contracting gear tooth spaces.

3,697,201

MULTIPLE ROTORS AND CONTROL MEANS THERETO IN FLUID HANDLING DEVICES WITH WORKING CHAMBERS OR RADIALLY VARIABLE VOLUME

Karl Eickmann, 2420 Ishiki, Hayama-machi, Kanagawa-ken, Japan

Filed June 4, 1969, Ser. No. 830,246
Int. Cl. F01c *19/08, 11/00*; F03c *3/00*
U.S. Cl. 418—132 **7 Claims**



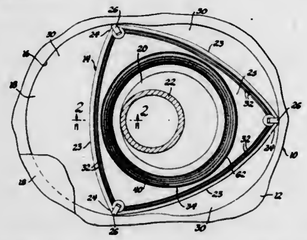
This disclosure is related to improvements in fluid handling devices with working chambers of radially variable volume, such as pumps, motors, transmissions, compressors, engines or combustion engines of the vane type, radial piston type, gear type, trochoid piston type and the like, and the improvement consists in the provision of multiple rotor members and control means thereto. While one of the rotor members is a fluid handling member and another rotor member is a traction member. The rotor members are axially moveable relatively to each other and the control means includes thrust means for thrusting one of the rotor members against the respective stationary control face of the device.

3,697,202

SIDE SEAL FOR ROTARY COMBUSTION ENGINE

Henry F. Reinhart, Utica, and Robert L. Dega, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 7, 1971, Ser. No. 131,891
Int. Cl. F01c *19/00*; F03c *3/00*; F04c *27/00*
U.S. Cl. 418—142 **2 Claims**



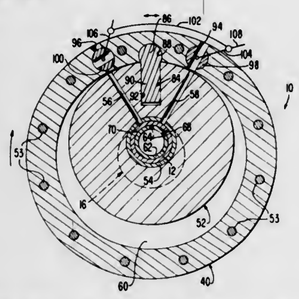
A side seal for a rotary combustion engine includes an elastomeric biasing ring and an L-shaped sealing annulus which has an axial support sleeve loosely retained within a groove formed in the engine rotor and a radial sealing flange engaging the sidewalls of the engine working chamber. The biasing ring is compressively retained within the groove and serves in conjunction with fluid pressure in the engine crankcase to bias the sealing flange into operative contact with the sidewalls. A spiral groove formed in the sealing flange functions upon planetary motion of the rotor to generate hydrodynamic forces which oppose fluid leakage toward the working chamber. The spiral groove is defined by a multiple turn buttress thread which additionally functions as a helical wiping blade for sweeping the sidewalls during the radial component of rotor movement to mechanically direct the fluid toward the crankcase.

3,697,203

ROTARY ENGINE

James L. Butler, 16th and Highway 1, Montara, Calif.

Filed June 22, 1970, Ser. No. 48,220
Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*
U.S. Cl. 418—173 **9 Claims**



A fluid-activated engine having a pair of rotors with one of the rotors being eccentrically mounted within the other rotor

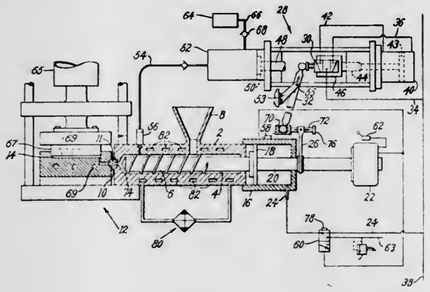
and rotatable about a tubular axle having a fluid inlet port. A buttress interconnects the rotors and is pivotally mounted on the inner periphery of the outer rotor to cause both rotors to rotate in the same plane and direction about their different axes. Inlet valve means in said axle controls the flow of a fluid under pressure through a passage in the inner rotor to an expansion chamber defined between the rotors to cause a fluid force to be exerted on the buttress to effect rotation of the rotors and a power take-off shaft coupled thereto. Valve means is provided in the outer rotor to exhaust the fluid from the expansion chamber. The inlet valve means and the outlet valve means can be constructed to permit forward or reverse rotation of the rotors.

3,697,204

APPARATUS FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL

William T. Kyritsis, Beverly Farms, and Robert C. Simmonds, Jr., Topsfield, both of Mass., assignors to USM Corporation, Boston, Mass.

Division of Ser. No. 714,612, March 20, 1968, abandoned.
This application May 7, 1970, Ser. No. 47,921
Int. Cl. B29f *1/04*
U.S. Cl. 18—30 CV **2 Claims**



A method of molding articles of foam material comprising melting an injection molding material and mixing the material with a blowing agent in liquid form in a plasticator at a temperature and pressure such that the temperature is below the temperature at which the liquid foaming agent converts to a gas, and forcing the mixture through an orifice which resists the flow of the material to impart heat thereto, the heat imparted being of a magnitude sufficient to raise the temperature of the mixture to at least equal that at which the liquid foaming agent converts to a gas, and delivering the mixture, containing the gas, to a mold cavity.

An apparatus for molding articles of foam materials in accordance with the above method.

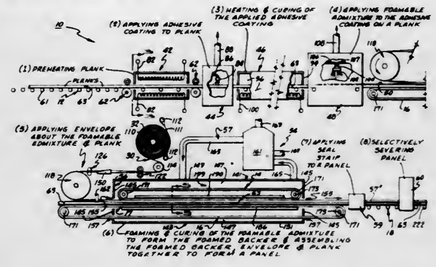
3,697,205

MOLD SYSTEM AND APPARATUS FOR PRODUCING A COMPOSITE PANEL

Richard J. Ross, Moraga, and Harry X. Tjoa, Fremont, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed July 2, 1969, Ser. No. 838,431
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 **20 Claims**

An improved mold system and apparatus for producing a composite building panel comprised primarily of a foam backed plank, wherein during manufacture of the panel means are provided for selectively applying and holding a moisture impervious envelope about a foamable backer material in such a fashion that the envelope can assist in molding the foamable material into the desired shape during the foaming



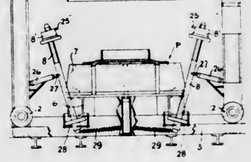
and curing thereof and thereafter serve as a moisture impermeable membrane in the finished product.

3,697,206

PRESS FOR REBUILDING OF TIRES

Pericle Bonazzi, via 4 Nov., Boretto, Italy

Filed March 10, 1971, Ser. No. 122,794
Int. Cl. B29h *5/02*
U.S. Cl. 425—20 **4 Claims**



The retreading of automotive tires may be effected by means of a movable frame, guided on rails, supporting the upper half of a tire mold and a single set of controlling means for a plurality of press molds.

3,697,207

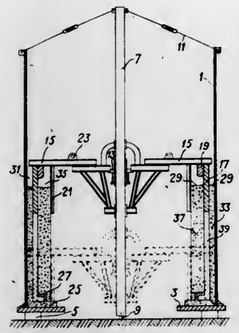
APPARATUS FOR PRODUCTION OF CASTING MOULDS

Olof Albert Ordqvst, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 18, 1971, Ser. No. 116,559
Claims priority, application Sweden, March 31, 1970, 4420/70
Int. Cl. B28b *1/14*
U.S. Cl. 425—63 **5 Claims**

Apparatus for making inner and outer casting mould parts of settable mould material and shaped for forming elongated castings having substantially congruent transverse cross-sections along their lengths comprises a stationary outer shell that serves as a form for the outer wall of the outer mould part and has a length exceeding the length of the casting. An annular pattern shaped in cross-section to conform to the cross-sectional shape of the casting and an inner shell that serves as a form for the inner wall of the inner mould part, both of which are of a length substantially less than the length of the casting, are mounted for movement axially of the outer shell such that

the pattern and inner shell can be positioned successively at different positions along the length of the outer shell to enable

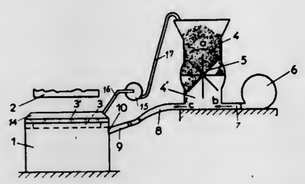


the mould parts to be made in a series of sequential stages section by section.

3,697,208
APPARATUS FOR FILLING MOLDS

Edmund Munk; Herbert Haas, and Gerd Weinberg, all of Oberstenfeld, Germany, assignors to Furnier-Und Sperrholzwerk, J. F. Werz Jr. K.G., Oberstenfeld, Germany

Division of Ser. No. 655,024, July 21, 1967, abandoned. This application Dec. 15, 1969, Ser. No. 889,781
Claims priority, application Germany, July 29, 1966, F 49820
Int. Cl. B28b *13/04*
U.S. Cl. 425—147 **9 Claims**



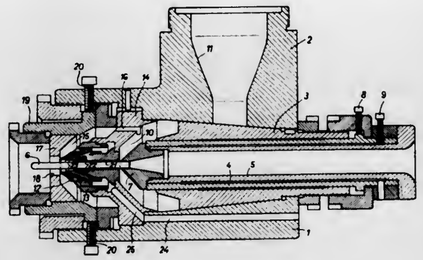
The nonflowing molding materials are blown into the mold cavity which has a screen defining one surface of the article to be molded. The materials first fill up the remote areas of the cavity as the carrying air vents through the screen. As the cavity fills up to the feeding nozzle, a vent flap in the nozzle body opens up, allowing the carrying air to vent through the screened opening exposed by the flap until the mold is completely filled and the air is cut off.

3,697,209
APPARATUS FOR MANUFACTURING REINFORCED TUBINGS FROM PLASTIC MATERIALS

Walter Hugo Schiesser, Zurich, Switzerland, assignor to Schiesser AG, Zurich, Switzerland

Filed Sept. 16, 1969, Ser. No. 858,368
Claims priority, application Austria, Sept. 20, 1968, 9172/68
Int. Cl. B29f *3/04*, *3/10*
U.S. Cl. 425—109 **5 Claims**

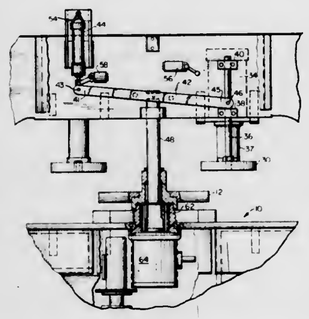
In the manufacturing of tubings from rubber or other plastic materials the steps of continuously extruding a first inner layer of the tubing wall in an extruder head over a guide serving to form the cavity of the tubing, continuously applying strand-like reinforcing material through feed passages onto the outer surface of the wall part forming in such way and still in plastic state and then coating this reinforced inner wall part by at least one further layer of a plastic substance, to thereby provide tubings containing a reinforcing lining in the wall material to give reinforcement against internal pressures.



3,697,210
CLOSURE DEVICE FOR MULTIPLE INJECTION BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., Brigantine, N.J.

Filed Aug. 24, 1970, Ser. No. 66,442
Int. Cl. B29d *23/03*
U.S. Cl. 425—168 **3 Claims**



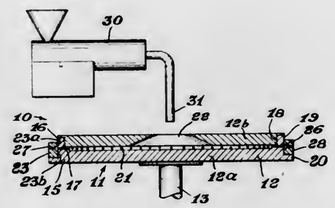
A closure device for blow molding apparatus having a rotatable turret with parison pins projecting from the face thereof and separable mold halves encompassing the pins to define mold cavities thereabout. A lever interconnects the movable segment of the mold half and a relatively fixed pivot point. The turret is connected to the lever intermediate the pivot point and the mold half to move a fraction of the distance of the mold half such that the pins and molded objects thereon clear the mold halves upon opening thereof for rotation of the turret.

3,697,211
EXTRUSION DIE

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 13, 1970, Ser. No. 63,546
Int. Cl. B29f *3/04*
U.S. Cl. 425—191 **3 Claims**

Extrusion dies are prepared from diverse materials having diverse thermal coefficients of expansion in such a manner that the die plate is held to the die body by the differential

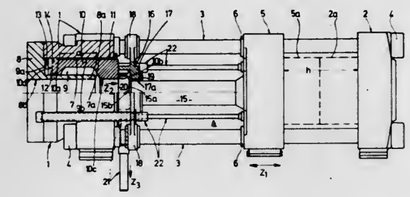


thermal expansion or contraction of the die as it attains operating temperature.

3,697,212
MOLDING PRESS

Richard Herbst, Munich, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed April 16, 1971, Ser. No. 134,680
Claims priority, application Germany, April 24, 1970, P 20 19 883.8
Int. Cl. B29c *3/00*
U.S. Cl. 425—450 **11 Claims**



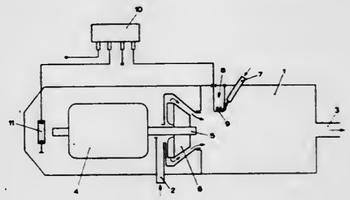
A molding press has hydraulic transporting means for rapidly moving a mold-supporting movable platen toward and away from a fixed mold-supporting platen. A hollow main piston is connected by coupling means with a connecting beam projecting from the movable platen to open and close the mold with great force. Before the transporting means retract the movable platen, the coupling means is withdrawn from the path of the beam so that the beam can enter the hollow piston whereby the length of the machine is reduced.

3,697,213
COMBUSTION SYSTEM FOR A HEATER OR THE LIKE

Hans Joachim Ehrenberg, Wolfsburg, Germany, assignor to Volkswagenwerk AG, Wolsburg, Germany

Filed May 3, 1971, Ser. No. 139,374
Claims priority, application Germany, May 5, 1970, P 20 21 893.3
Int. Cl. F23h *5/08*
U.S. Cl. 431—79 **5 Claims**

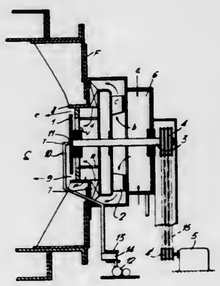
A combustion system, particularly for a fuel burning heater that incorporates a glow plug for initiating combustion and a spark plug for maintaining the combustion. An improved switching arrangement is employed for shutting off the glow plug and initiating the spark plug operation at the appropriate period. This system includes a temperature sensing arrangement that senses the temperature in the combustion chamber by means of a remotely positioned radiantly sensitive switching element. This switching element in effect views the temperature in the combustion chamber through a hollow shaft that drives a fan, which fan circulates the combustion products through the chamber. The sensing element may also be employed for continuing the operation of the fan for a predetermined time period after combustion in the combustion chamber ceases.



3,697,214
ROTARY PLATE OIL BURNER

Shoichi Tsuji, Tokyo, Japan, assignor to Ishikawajima Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 18,146, March 10, 1970, abandoned. This application Jan. 12, 1971, Ser. No. 105,934
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 **1 Claim**



An oil burner wherein a rotary blower system supplies air to a stationary fuel supply pipe. The pipe has no internal horizontal part except for a short tip of its nozzle. This arrangement counteracts solidification of oil in the supply pipe. Said tip is positioned in such manner that liquid fuel is discharged therefrom centrally of, and in the direction toward, a rotary plate. A blower supplies compressed air to the interstice between housing and plate. From there, a mixture of oil and air then enters a burner ring or the like.

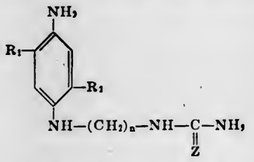
3,697,215

DYEING HAIR WITH N-(UREIDOALKYL)- AND N-(THIOUREIDOALKYL) - PARA - PHENYLENE DIAMINES

Gregoire Kalopissis and Jean Gascon, Paris, Andree Bugaut, Boulogne sur Seine, Jacqueline Gallien, La Garenne-Colombes, and Hubert Gaston-Breton, Paris, France, assignors to Societe Anonyme dite: l'Oreal, Paris, France

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,784
Claims priority, application Luxembourg, Sept. 9, 1968, 56,846; Jan. 16, 1969, 57,792
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 9 Claims

Dye compositions containing the oxidation dye:



and the method of using it to dye live human hair.

3,697,216

PROCESS FOR THE PRODUCTION OF WATER-INSOLUBLE AZO DYESTUFFS ON TEXTILE MATERIAL OF CELLULOSE OR PROTEIN FIBERS

Hasso Hertel and Kurt Gehre, Offenbach (Main); Rudolf Lowenfeld, Buchschlag; and Uwe Kosubek, Offenbach (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfort am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 728,899, May 14, 1968. This application Feb. 10, 1971, Ser. No. 114,387
Claims priority, application Germany, May 18, 1967, F 52,448
Int. Cl. D06p *3/68*
U.S. Cl. 8—46 5 Claims

Process for the production of water-insoluble azo dyestuffs on textile material of cellulose or protein fibers by impregnation with a substantive azo component and developing with a diazonium compound of an aromatic amine, wherein the developing stage is carried out by adding the diazonium compound as well as alkali binding agents to the impregnation bath in the presence of a wetting or dispersing agent.

3,697,217

BLEACHING AND WASHING COMPOSITION AND PROCESS

Lodric L. Maddox, Oakland, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Jan. 26, 1970, Ser. No. 5,600
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 2 Claims

A solid bleaching mixture of a peroxygen compound such as sodium perborate tetrahydrate, sodium perborate monohydrate, or sodium monopersulfate, and an alkalinity booster such as sodium carbonate, sodium silicate or trisodium phosphate, effectively removes stains from household laundry when the mixture is added to the wash water in an amount which provides between about 50 and 150 parts per million available oxygen and a pH between about 10 and 12. When between about 50 and 500 parts per million of a surfactant, and between about 5 and 25 parts per million of an anti-deposition agent such as carboxymethyl cellulose or polyvinyl pyrrolidone are added to the wash water either together with the bleaching mixture or separately, the laundering is particularly effective. A sequestering agent for softening water, such as sodium tripolyphosphate may be included.

3,697,218

FLAME-PROOF FIBERS

Akira Nakajima, Saidalji, Japan, and Hiroshi Suzuki, Wayne, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Dec. 16, 1965, Ser. No. 514,395. Divided and this application Aug. 27, 1969, Ser. No. 853,535
Int. Cl. D06
U.S. Cl. 8—115.5 4 Claims

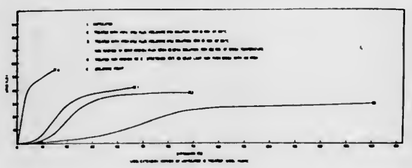
A process for preparing flame-proof polymers, particularly in fiber form, comprising reacting a polymeric material containing, as one constituent thereof, a polymerized ethylenically unsaturated glycidyl compound with a bromine, chlorine, and/or phosphorus compound capable of reacting with epoxy groups. Preferably such reaction is conducted after said polymer is spun into fiber form.

3,697,219

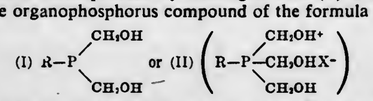
SHRINKPROOFING AND IMPROVEMENT IN STRETCH CHARACTERISTICS OF WOOL

Harold R. Richards, Guelph, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 8, 1969, Ser. No. 839,840
Int. Cl. D06m *3/04, 3/10*
U.S. Cl. 8—127.6 14 Claims



Wool is shrinkproofed by treating it with (1) a water soluble organophosphorus compound of the formula



where R is hydrogen, alkyl or alkenyl and X is an anion in Formula II or the wool is treated with the phosphorous oxide of a compound of Formula I and (2) melamine; a water soluble alkyl ether of methylol melamine or methylolmelamine. Then the wool is washed with an alkaline solution to impart stretch characteristics.

3,697,220

BACTERIA GROWTH INHIBITING TEXTILES AND DRY CLEANING AND DISINFECTING COMPOSITIONS AND PROCESSES

George C. Schwartz, Sanford, Fla., assignor to Schwartz Chemical Company, Incorporated, Casselberry, Fla.

No Drawing. Continuation-in-part of application Ser. No. 852,491, Aug. 22, 1969. This application July 6, 1970, Ser. No. 52,764
Int. Cl. D06l *1/00*
U.S. Cl. 8—142 11 Claims

Disinfection of, and production of bacteria growth inhibiting fabrics or textiles is accomplished by simultaneous dry cleaning and disinfection procedures involving contact of the textile with an antimicrobial agent containing drycleaning solution in the form of an emulsion of the "water-in-oil" type and which contains a fat solvent in the continuous phase and an aqueous solution of 1 - (3 - chloroallyl - 3,5,7 - triaza - 1 - azoniaadamantane chloride in the dispersed phase.

3,697,221

USE OF THIONIUM DERIVATIVES AS CORROSION INHIBITORS

Derek Redmore, Ballwin, and Bernardus A. Oude Alink, St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,046
Int. Cl. C23f *11/04, 11/16*
U.S. Cl. 21—2.5 6 Claims

1,2-dithiole - 3 - thiones, particularly the quaternaries thereof (i.e., thionium derivatives), are particularly useful as corrosion inhibitors in aqueous and/or aerated and/or highly acidic systems. The yields of thionium derivatives are increased by reacting 1,2-dithiole-3-thiones with quaternizing agents by reducing the amounts of, and preferably in the substantial absence of, solvents.

3,697,222

STERILIZATION WITH GLUTARALDEHYDE

Gonzalo Sierra, Mississauga, Ontario, Canada, assignor to Ontario Research Foundation, Toronto, Ontario, Canada

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,623
Int. Cl. A61l *13/00*
U.S. Cl. 21—54 A 16 Claims

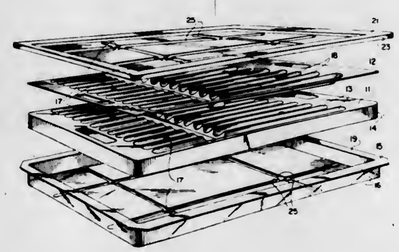
Sterilization is achieved by contacting a contaminated object with an aqueous acid glutaraldehyde solution at temperatures above about 45° C. The sterilizing action may be enhanced by ultrasonic energy. Sterilization also may be achieved using ultrasonic energy and aqueous alkaline glutaraldehyde solution.

3,697,223

CONTAINER FOR SURGICAL INSTRUMENTS AND APPLIANCES

John N. Kovalcik and Donald B. Hovis, Port Credit, Ontario, Canada, assignors to Medipak Corporation Limited, Toronto, Ontario, Canada

Filed July 14, 1970, Ser. No. 54,792
Int. Cl. A61l *3/00*
U.S. Cl. 21—83 11 Claims



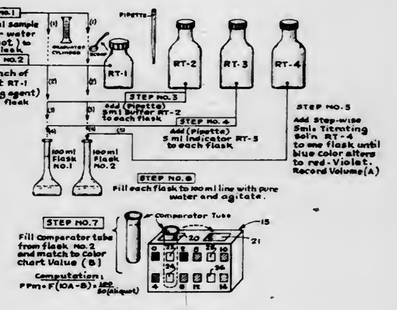
An autoclavable tray for surgical implements having a transparent lid and liner of a plastic material, having a non-sticky non-scratching surface, dimensionally stable at autoclave temperatures, and tending not to provoke an immune reaction when introduced into the human body.

3,697,224

TITRATION OF EXCESS CHELATING AGENT

Jay C. Means, River Forest, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 30, 1970, Ser. No. 85,676
Int. Cl. G01n *21/24, 31/22, 33/18*
U.S. Cl. 23—230 R 3 Claims



The amount of excess chelating agent used to counteract water hardness is determined by spectrophotometric means using Calcon as an indicator. The spectrophotometric means may be of laboratory scale or may be an empirical part of a field kit.

3,697,225

INDICATOR FOR THE DETECTION OF COBALT IONS

Dieter Schmitt, Alfred Stein, and Wilhelm Baumer, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung Patentabteilung, Darmstadt, Germany

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,542
Claims priority, application Germany, Sept. 10, 1970, P 20 44 801.5
Int. Cl. C09k *3/00*; G01n *31/22*
U.S. Cl. 23—253 TP 21 Claims

An indicator for the colorimetric detection of cobalt ions is formed by impregnating an absorbent carrier with a composition comprising a water-soluble rhodanide salt, an alkali-metal or ammonium thiosulfate, an alkali metal fluoride and one or more of emulsifier and/or wetting agent, a tertiary amine and a quaternary ammonium salt.

3,697,226

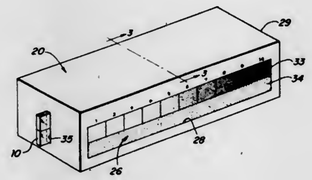
HYDROCARBON DETECTOR SYSTEM

Tomas Hirschfeld, Framingham, and Noboru Matsu, Marblehead, Mass., assignors to Block Engineering, Inc., Cambridge, Mass.

Filed Apr. 29, 1971, Ser. No. 138,486
Int. Cl. G01m *21/38, 33/22*
U.S. Cl. 23—254 R 12 Claims

A system for detecting and quantitatively measuring the presence of unsaturated and aromatic hydrocarbons, particularly vapors of partially burned and residual unburned hydrocarbons in the exhaust emissions of gasoline internal combustion engines. The system includes a partially shielded membrane adapted to react with aromatic and

unsaturated hydrocarbons to produce derivatives having strong absorption characteristics in the ultraviolet region. There is also provided an ultraviolet fluorescence photometer including an ultraviolet source and a visible fluorescent screen between which the exposed membrane is introduced. The photometer includes a gray scale or step wedge for visually comparing the ultraviolet absorption in the



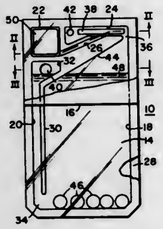
unshielded section of the membrane against a calibrated standard including the shielded section of the membrane and the gray scale.

3,697,227

CHEMICAL CONSTITUENT SAMPLER

Robert P. Goldstein, Forest Hills, and Frank R. Agnew, Penn Hills, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1966, Ser. No. 549,862
Int. Cl. G01n *31/00*
U.S. Cl. 23—253 TP **12 Claims**



A disposable sampler for testing for the presence of constituents in fluids comprising a laminated package having a base sheet and a retainer sheet, the sheets being composed of relatively impermeable materials, the base sheet having a fluid-holding chamber, the retainer sheet being applied to the base sheet and covering the chamber, detachable opening means leading to the chamber including a fluid inlet in one of the sheets, and a cover sheet detachably mounted on said sheet and covering the inlet in a fluid-tight manner.

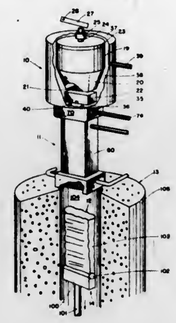
3,697,228

APPARATUS FOR GROWING CRYSTALS IN PLATE FORM

Joseph F. Wenckus, Needham, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 7, 1969, Ser. No. 797,556
Int. Cl. B01j *17/24*
U.S. Cl. 23—273 V **6 Claims**

Apparatus for growing crystals of such materials as sapphire, ruby, spinel and the like in strip or plate form by the Verneuil method. A plurality of spaced powder feed tubes, having means surrounding each one to supply a combustible mixture, are positioned to direct fused



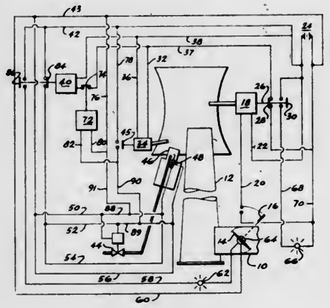
particles onto a boule to build up the crystal in an even continuous growth pattern.

3,697,229

AUTOMATIC IGNITION SYSTEM FOR FLARING WASTE COMBUSTIBLE GASES

Donald J. Frey, North Canton, and Warren P. Opp, Simsbury, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 25, 1970, Ser. No. 75,542
Int. Cl. F23d *13/20*; F23q *9/08*
U.S. Cl. 23—277 C **3 Claims**



An automatic ignition system for flaring waste combustible gases being exhausted through a stack, which utilizes an ignitor burner which is automatically energized when gases are passed to the stack. A main flame scanner, ignitor burner scanner, and a timer are so interrelated that a safe, economical, and efficient operation is performed.

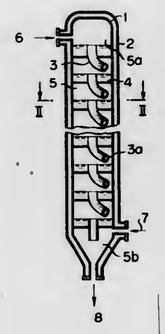
3,697,230

APPARATUS FOR POLYMERIZING LIQUIDS TO POLYMERS

Yoshihisa Fujimoto, Yoshio Kimura, Iwao Terasaki, and Takanobu Kitago, Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Original application Apr. 21, 1969, Ser. No. 817,938, now Patent No. 3,609,124, dated Sept. 28, 1971. Divided and this application July 13, 1970, Ser. No. 61,044
Int. Cl. C08g *17/01*
U.S. Cl. 23—283 **4 Claims**

A polymerization vessel comprises a vertical series of reaction chambers each having bottom and side walls. An inlet connected to the top chamber supplies polymerizable liquid and an outlet is connected to the lowest chamber to discharge polymer product. Connecting tubes connect a chamber with the chamber immediately below it. Each connecting tube has its upper end above the bottom wall of a chamber located thereabove; and has its



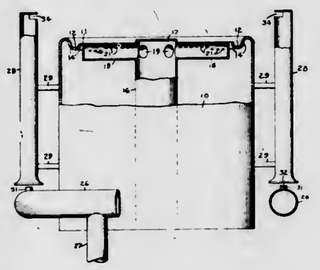
lower end directed at an angle to the surface of the polymerizable liquid and located near the wall of the reaction vessel. A jet stream of vapor from the lower end of the tube flows along the inside surface of the chamber and then strikes the surface of the liquid to impart a rotating movement to the liquid.

3,697,231

BURNER ASSEMBLY FOR FLARE STACK

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Dec. 23, 1970, Ser. No. 101,030
Int. Cl. F23d *13/20*
U.S. Cl. 23—277 C **10 Claims**



A burner assembly for the upper end of a flare stack designed for the combustion of gases at significant elevations above the surrounding terrain wherein a smoke suppressant is thoroughly mixed with the gas prior to the burning reactions and to a structural arrangement which distributes the smoke suppressant in volumes proportional to the quantity of the gases to be burned.

3,697,232

PREPARATION OF POTASSIUM CYANOBOROHYDRIDE

Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.

No Drawing. Filed June 16, 1969, Ser. No. 833,766
Int. Cl. C01b *6/14, 35/00*; C01c *3/08*
U.S. Cl. 23—358 **1 Claim**

The invention relates to the preparation of potassium cyanoborohydride. This compound is prepared by mixing substantially anhydrous hydrogen cyanide with a substantially anhydrous potassium borohydride at a temperature between 0° C. and 100° C. in substantially anhydrous dimethylformamide at atmospheric pressure. If desired to avoid loss of hydrogen cyanide, a pressure of from about 1 to 5 pounds per square inch may be used. Preferably, the preparation is carried out in two stages (1) initially at a temperature between about 10° C. to about 35° C. until substantially all hydrogen has ceased to be evolved, and (2) then at a temperature between about 35° C. and the boiling point of the solvent until all the intermediate products have been converted to the desired cyanoborohydride.

3,697,233

CLARIFYING AMMONIUM PHOSPHATE SOLUTIONS USING ATTAPULGITE AND BENTONITE

Alvin W. Peck, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,048
Int. Cl. B01d *21/01*; C01b *25/28*
U.S. Cl. 23—293 R **2 Claims**

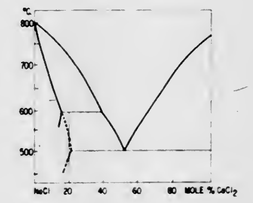
A method of clarifying phosphate solutions, containing extraneous suspended matter introduced with the phosphoric acid employed in their manufacture, by the use of clay.

3,697,234

PURIFICATION OF IMPURE SOLID NaCl BY COUNTER-CURRENT CONTACT WITH MOLTEN NaCl

Charles F. Bonilla, Tenafly, N.J., assignor to Barry F. Haskett, New York, N.Y., and Joan Hixon Martin, Washington, D.C., a fractional part interest to each

Filed Mar. 14, 1969, Ser. No. 807,375
Int. Cl. B01d *11/02*
U.S. Cl. 23—312 AH **11 Claims**



A process for the purification of salt and other fusible materials which comprises washing a finely ground impure material, e.g., sodium chloride, with a counter-current flow of a smaller molten stream of the same material at high purity (e.g., a portion of the purified final product

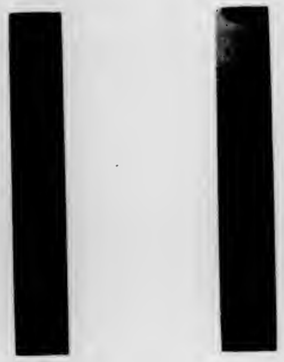
of the process). The outlet temperature of the feed material is preferably kept just below the melting point of the same, the inlet temperature being selected in accordance with the impurities to be removed, such temperature being generally slightly above 720° C. in the case of sodium chloride.

3,697,235

METHOD OF PURIFYING URANIUM HEXAFLUORIDE BY REDUCTION TO LOWER URANIUM FLUORIDES

Pearl R. Ogle, Jr., Chillicothe, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 31, 1960, Ser. No. 19,132
Int. Cl. C01g *43/06*
U.S. Cl. 23—346 16 Claims



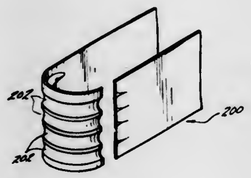
The invention relates to the purification of uranium hexafluoride contained in gaseous mixtures by reduction to lower uranium fluorides through formation of an intermediate compound having the empirical formula $UF_6N(O)_x$, where x is a number from 1 to 2.

3,697,236

COMBINATION TUBE FORM BEND AND INFLATION APPLICATION

Richard A. Shive, Alton, Ill., assignor to Olin Corporation

Original application Feb. 26, 1969, Ser. No. 823,220, now abandoned, which is a division of application Ser. No. 709,636, Mar. 1, 1968, now Patent No. 3,545,394. Divided and this application Aug. 13, 1970, Ser. No. 63,427
Int. Cl. B21c *37/02*; B21d *11/20*
U.S. Cl. 29—191 5 Claims



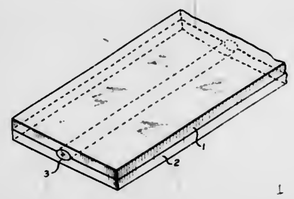
A metal strip having at least one inflatable fluid passageway sandwiched within it and containing at least one groove in substantial correspondence to the inflatable passageway extending intermediate the ends of the strip. The groove is in the bend area of the strip. Preferably the strip is bent in the bend area at least 25° and the bend radius is less than 1 inch. In the most preferred embodiment the inflatable passageway corresponds to a pattern of stop-weld material.

3,697,237

COMPOSITE METAL COIN

Richard Seiz, Bruchkobel, Germany, assignor to W. C. Heraeus GmbH, Hanau am Main, Germany

Filed Dec. 29, 1970, Ser. No. 102,349
Int. Cl. A44c *21/00*; G07f *1/06*
U.S. Cl. 29—191 13 Claims



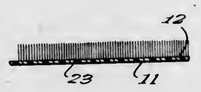
Composite metal coin including one or more wire-like elements of a magnetic metal or alloy disposed between two plate-like elements of a non-magnetic coin metal or alloy or a weak magnetic metal or alloy as compared to the wire-like element, the plate-like elements surrounding the wire-like element and being joined at their interface, and the wire-like element extending from edge to edge of the coin. A metallic coating can also be applied as by electroplating to the exterior of the plate-like elements.

3,697,238

METAL FLOCKING

Perry H. Brown, Norwell, Maurice H. Tremblay, Westboro, and Norman F. Surprenant, Littleton, Mass., assignors to Brunswick Corporation

Filed Sept. 29, 1969, Ser. No. 861,787
Int. Cl. B23p *3/00*; B44c *1/08*
U.S. Cl. 29—191.2 13 Claims



A flocked fabric wherein metal flock fibers are secured to a base. The fibers may be secured as by adhesive, metal fusion bonding, etc. The flock fibers may be metal fusion bonded to each other, may be maintained in spaced relationship, may be provided in tufts, etc.

3,697,239

LITHIUM CONTAINING FUEL SUITABLE FOR PRODUCING CALORIFIC ENERGY BY REACTION WITH SF_6

Johann Schröder, Aachen, Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 860,978
Claims priority, application Netherlands, Sept. 30, 1968, 6813991
Int. Cl. F24j *1/00*
U.S. Cl. 44—3 R 4 Claims

A lithium and calcium containing fuel producing calorific energy by reaction with sulfur hexafluoride.

3,697,240

AEROSOL BOMB FILLED WITH STARTING AGENT FOR DIESEL ENGINE

Shojiro Hori, Yokosuka, and Hisao Maruta, Kashiwa, Japan, assignors to Kashiwa Asechiren Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,502
Claims priority, application Japan, Apr. 21, 1970, 45/33,488
Int. Cl. C10l *1/18*
U.S. Cl. 44—52 3 Claims

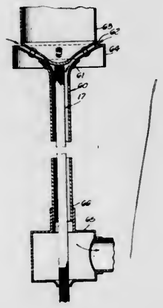
A starting agent of the aerosol-type to be jetted into a combustion chamber of a diesel engine to aid in starting the engine in a cold climate contains diethyl ether, dimethyl ether and n-butyl alcohol as main components.

3,697,241

METHOD AND APPARATUS FOR PROVIDING CONTROLLED QUENCH IN THE MANUFACTURE OF FIBER GLASS

Edward T. Strickland and Homer C. Amos, Palm Springs, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 14, 1969, Ser. No. 790,933
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 14 Claims



Disclosed herein are methods and apparatus for controlling the quench of glass fibers as they are extruded. A fluid, such as air, is caused to flow evenly with controlled impingement at the roots of fibers as they are being extruded from a bushing, and/or a controlled temperature environment is provided along the extruding cone of fibers. With either or both approaches small fibers with greatly reduced breakage can be produced. Several embodiments of the present concepts are disclosed wherein a manifold device is used at the bushing to provide a controlled even flow of air at the roots of the extruding fibers, and wherein a chamber may be used along a length of the drawn fibers to provide a controlled environment and to reduce the stress in such fibers during attenuation.

3,697,242

STRENGTHENING BOROSILICATE GLASS BY CROWDING SURFACE LAYER WITH LiOH AND/OR KOH

Francis J. Shonebarger, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,071
Int. Cl. C03c *15/00*; C03b *27/00*
U.S. Cl. 65—30 18 Claims

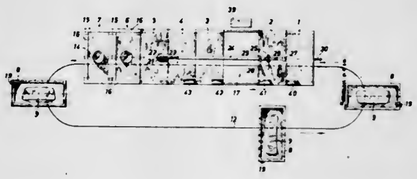
Glass articles are strengthened by "crowding" or "stuffing" molecules of the hydroxide of lithium and/or potassium into a surface zone of the glass network. The crowding of the surface zone is accomplished by molecular migration rather than by ion exchange, and must be carried out at an elevated temperature which is below the strain point of the glass. The process is especially useful as a means of strengthening commercial borosilicate glasses which are generally difficult to strengthen significantly by ion exchange, and it can also be used to strengthen soda-lime and other glasses.

3,697,243

FURNACE FOR HEATING AND BENDING GLASS PLATES FOR WINDSHIELDS AND THE LIKE

Arvi Artama, Artama Laukontori 4C, Tampere, Finland

Filed Aug. 17, 1970, Ser. No. 64,342
Int. Cl. C03b *23/02*
U.S. Cl. 65—273 11 Claims



A furnace for heating and bending glass plates, particularly windshields of motor vehicles, wherein the glass plates are loaded on bending forms in form carriers which are moved successively into and out of the furnace, comprising successive heating and cooling chambers, including a movable preheating chamber and a main heating chamber, the two latter being arranged separately from each other, there being formed a space between two successive chambers (preferably the preheating and the main heating chambers) for controlling and adjusting purposes.

3,697,244

CROP CULTURE WITH 4H-1,2,4-TRIAZOLES

Henry H. Scott, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 15, 1968, Ser. No. 767,851
Int. Cl. C05g *3/08*
U.S. Cl. 71—1 4 Claims

The present invention relates to crop culture and is particularly concerned with practices for conserving soil nitrogen and for supplying the requirements for plant nutrition. These practices involve the employment, as active agent, of 4-amino-4H-1,2,4-triazole, 3,4-diamino-4H-1,2,4-triazole or a mineral acid addition salt of these compounds. Useful compositions employing such compounds are also disclosed. Typical compositions comprise a reduced nitrogen fertilizer and a triazole compound.

3,697,245

COATED FERTILIZER

Joseph T. Dilday, 3971 Glenmere Road, North Little Rock, Ark. 72116

No Drawing. Original application Apr. 16, 1969, Ser. No. 816,808. Divided and this application Aug. 12, 1970, Ser. No. 63,315

Int. Cl. C05c 9/00

U.S. Cl. 71—28 3 Claims

Tenacious coatings of fertilizer supplements are applied to granular high analysis fertilizers, by adding, in order, minor amounts of mineral oil and of aqueous calcium lignosulfonate and then substantial amounts of fertilizer supplements, maintaining the granules in motion during and after each addition until the added material uniformly coats the granules.

3,697,246

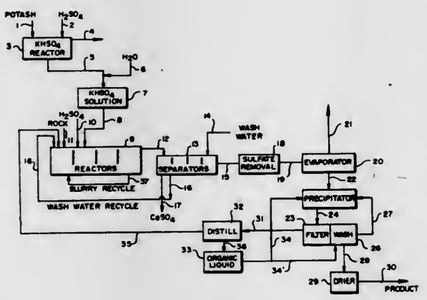
POTASSIUM PHOSPHATE MANUFACTURE

Erhart K. Drechsel, Houston, Tex., and John B. Sardisco and James R. Stewart, Jr., Shreveport, La., assignors to Pennzoil United, Inc., Houston, Tex.

Filed Oct. 16, 1970, Ser. No. 81,280

Int. Cl. C05b 7/00

U.S. Cl. 71—34 17 Claims



Fertilizer materials, especially potassium dihydrogen phosphate, are produced by the reaction of phosphate rock or a solubilized form thereof, such as mono calcium phosphate, dicalcium phosphate, etc., concentrated sulfuric acid, potassium hydrogen sulfate and, optionally fresh or recycle phosphoric acid, the resulting mixture is filtered to remove the calcium sulfate precipitate and the potassium dihydrogen phosphate is recovered from the filtrate, either by concentration and filtration or by extraction with an organic solvent.

3,697,247

ELIMINATION OF MAGNESIUM GELS IN LIQUID AND SUSPENSION FERTILIZERS DERIVED FROM WET ACID

Thomas M. Jones, Sheffield, and Alva W. Frazier, Florence, Ala., assignors to Tennessee Valley Authority

No Drawing. Continuation of application Ser. No. 81,591, Oct. 16, 1970, now Defensive Publication T889,024. This application Apr. 1, 1971, Ser. No. 130,488

Int. Cl. C05b 7/00

U.S. Cl. 71—34 7 Claims

A method for preventing formation of or destroying strong resinous-like gels in liquid and suspension fertilizer products resulting from the ammoniation of wet-process orthophosphoric acids containing relatively high magnesium and low aluminum congeneric impurities as well as polyphosphates either added thereto or formed in situ therein in such a manner as not to substantially delete the congeneric fluorine impurities content level. The method consists of adding aluminum as a soluble compound to the wet-process acid to increase the weight ratio Al_2O_3:MgO to at least about 1. Typically, wet acids prepared from North Carolina rock as well as some western rock, unless specially treated, display a weight ratio Al_2O_3:MgO of less than 1 and usually in the range from about 0.5 to about 0.8.

3,697,248

RECOVERY OF SULPHUR DIOXIDE (SO_2) FROM GAS STREAMS AND PRECIPITATION OF ALUMINUM FLUORINE PRODUCT

Anson G. Betts, Plainfield, Mass. (West Cummington, Mass. 01265)

No Drawing. Continuation-in-part of application Ser. No. 559,371, June 16, 1966, which is a continuation-in-part of application Ser. No. 361,207, Apr. 20, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 153,741, Nov. 21 1961, now abandoned, which in turn is a continuation-in-part of application Ser. No. 768,554, Oct. 21, 1958, now abandoned. This application Dec. 31, 1970, Ser. No. 103,307

Int. Cl. C05b 11/14

U.S. Cl. 71—38 7 Claims

In this invention a fluoriferous calcium phosphate mineral of the group which includes phosphate rock, apatite, aluminous phosphate, and a concentrate of any of them, suitably in finely-particled condition, is used in an aqueous suspension to combine with sulphur dioxide (SO_2) of a gas stream resulting from combustion of a sulphur-containing substance, for example, of coal or other fuel. The mixture is then reacted with aluminum compounds to precipitate an aluminum fluorine product from the fertilizer product.

3,697,249

SUBSTITUTED s-TRIAZINE FORMALDEHYDE ADDUCTS USEFUL AS HERBICIDES

Rodney L. Wells, Chester, Harry E. Ulmer, Hopewell, and Paul J. Mason, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,000

Int. Cl. A01n 9/22

U.S. Cl. 71—93 1 Claim

Novel 2-alkylamino-4-amino-6-chloro-s-triazine-formaldehyde adducts are prepared by reacting a 2-alkylamino-4-amino-6-chloro-s-triazine with formaldehyde in an inert organic solvent using an alkaline catalyst. Reaction temperatures of 60 to 80° C. for one to three hours are preferred. The reaction mixture may be cooled to separate the product; evaporation of the solvent at advanced temperatures should be avoided as this may cause formation of by-products. The products are highly selective herbicides.

3,697,250

METHOD OF DESUCKERING TOBACCO PLANTS

David W. Young, Homewood, and Jerry A. Dieter, Park Forest, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,910

Int. Cl. A01n

U.S. Cl. 71—78 9 Claims

A method of improving plant health by applying horticultural chemicals is disclosed. The horticulturally-active compounds are esters of styrene-maleic anhydride copolymers and both of a lower alkoxy polyethylene glycol and an alkanol containing about 8 to 24 carbon atoms. The method is useful, for instance, for combatting tobacco sucker formations.

3,697,251

PYRIDINES AND PHYTOTOXIC COMPOSITIONS

Frank Long, Llangollen, and Kamal Naguib Ayad, Wrexham, Wales, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Original application June 30, 1967, Ser. No. 650,176, now Patent No. 3,555,031, dated Jan. 12, 1971. Divided and this application Mar. 23, 1970, Ser. No. 24,921.

Claims priority, application Great Britain, July 6, 1966, 30,295/66

Int. Cl. A01n 9/22

U.S. Cl. 71—94 2 Claims

Substituted-pyridines selected from the group consisting of

(1) a pyridine base,
(2) acid addition salts of (1),
(3) quaternary ammonium salts of (1), and
(4) N-oxides of (1),

said pyridine base having at least one aromatic group as a substituent in the pyridine nucleus and at least one other substituent in the pyridine nucleus selected from the group consisting of halogen, cyano, amino, acylamino, hydroxyl, mercapto, aliphatic, aliphatic-oxy, aliphatic-thio and aliphatic sulphonyl groups, provided that when the pyridine nucleus contains both a chlorine atom and a cyano group an aromatic group is present in an α- or β-position of the pyridine nucleus and further provided that when the pyridine nucleus contains an aliphatic group, there is also present in the pyridine nucleus at least one additional substituent selected from the said other substituents.

Utility as phytotoxicants.

3,697,252

PHYTOTOXICANT

Paul J. Stoffel, Creve Coeur, and David J. Beaver, Richmond Heights, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,297

Int. Cl. A01n 9/22

U.S. Cl. 71—95 6 Claims

It has been found that N-(3,4 - dichlorocarbanilino) succinimide is useful as a phytotoxicant in the control of noxious plant life.

3,697,253

PLANT GROWTH REGULATION

Robert R. MacMurray, 21 Colonial Ave., Haddonfield, N.J. 08033

No Drawing. Filed Apr. 11, 1969, Ser. No. 815,493

Int. Cl. A01n 9/00, 9/24

U.S. Cl. 71—97 22 Claims

Plant growth regulant compounds and compositions, particularly stimulants, containing N,N-di-n-propyl-4-trifluoromethyl-2,6-dinitroaniline generically named trifluralin or cacodylic acid and its salts or combinations thereof with each other and with 2,4-dichlorophenoxyacetic acid and/or 2,4,5-trichlorophenoxyacetic acid and methods of using these compounds and compositions to stimulate plant growth and stimulate and increase crop yield and adjust fruiting time.

3,697,254

DECAFLUOROBENZHYDROL AS A SELECTIVE HERBICIDE

David Thomas Saggers, Saffron Walden, England, assignor to Fisons Pest Control Limited, Harston, Cambridgeshire, England

No Drawing. Filed May 6, 1968, Ser. No. 727,033

Claims priority, application, Great Britain, May 16, 1967, 22,558/67

Int. Cl. A01n 9/24

U.S. Cl. 71—122 3 Claims

Decafluorobenzhydrol possesses herbicidal activity and is particularly useful as a selective herbicide, especially for the selective control of crabgrass.

3,697,255

SCRAP TANTALUM RECLAMATION PROCESS

Wiley M. Baldwin, Winston-Salem, N.C., and Edward O. Fuchs, Union, Donald J. Sharp, Trenton, and James H. Swisher, Stirling, N.J.; said Baldwin and said Sharp assignors to Western Electric Company, Incorporated, New York, N.Y., said Fuchs and said Swisher assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Nov. 17, 1970, Ser. No. 90,250

Int. Cl. C22b 7/00, 51/00; C22c 1/06

U.S. Cl. 75—.5 AB 16 Claims

Scrap tantalum bodies having impurities therein are reclaimed as substantially pure tantalum metal by a process which includes immersing the bodies in a molten metal such as calcium or magnesium at elevated temperatures, and under non-oxidizing conditions for a prolonged period of time sufficient to cause entrapped impurities within the body to diffuse out and react with the molten metal.

3,697,256

METHOD OF INCINERATING REFUSE

Isaiah B. Engle, Rte. 3, Tiffin, Ohio 44883

Filed Feb. 8, 1971, Ser. No. 113,167

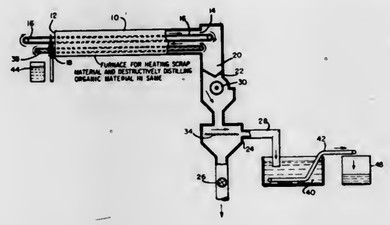
Int. Cl. F23g 5/02; C21b 15/00; C22b 7/00

U.S. Cl. 75—40 7 Claims

A method and apparatus for incinerating solid refuse in which large amounts of useful by-products are recovered and which is substantially air pollution free. The incinerator includes a feed-shaft, a combustion chamber including a low temperature, medium temperature and high temperature zone having a reducing atmosphere, and a chemical reaction zone having an oxidizing atmosphere. Unsorted refuse along with selected additives are placed into the incinerator on top of a coke-bed in the high temperature zone. During incineration, distillates from low temperature pyrolysis in the low temperature zone, and high temperature pyrolysis in the medium temperature zone, are withdrawn through condensers. A variable speed fan operably exhausting the chemical reaction zone is operated to create a neutral pressure point between the medium temperature and the high temperature zone whereby the pyrolysis distillates may be easily separated from a stream of high temperature volatiles and CO produced in the high temperature zone.

The stream of air blowing across the refuse carries the high temperature volatiles into the chemical reaction zone. The chemical reaction zone has a checker-wall constructed of various reactive bricks so that the volatiles react with the bricks to form basic and acidic slag oxides. The slag oxides condense and flow into the hearth of the high temperature zone. Molten iron collects in the interstices of the coke-bed and is removed by casting.

3,697,257
SCRAP RECOVERY PROCESS
John E. Perry, Bay Village, Ohio, assignor to Horizons Research Incorporated
Filed Nov. 7, 1969, Ser. No. 874,891
Int. Cl. C22b *25/06*
U.S. Cl. 75—64 6 Claims



The recovery of metal values in scrap materials by destructive distillation removal of organic non-metal materials, at temperatures which leave the metal relatively unaffected.

3,697,258
HIGHLY CORROSION RESISTANT MARAGING STAINLESS STEEL
Stephen Floreen, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed Oct. 13, 1969, Ser. No. 865,962
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 B 12 Claims

A maraging stainless steel containing correlated amounts of nickel, chromium, cobalt, silicon and metal from the group consisting of aluminum and titanium, the steel being particularly suitable in cast form since it affords a combination of good strength, toughness and high corrosion resistance and also exhibits excellent foundry characteristics.

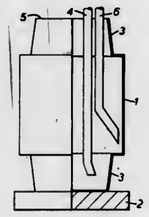
3,697,259
FLUXLESS ALUMINUM BRAZING COMPOSITION
William J. Werner, Clinton, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Oct. 2, 1970, Ser. No. 77,762
Int. Cl. C22c *33/100*
U.S. Cl. 75—134 N 3 Claims

This disclosure relates to a fluxless brazing alloy for use in forming brazed composites made from members of aluminum and its alloys, said brazing alloy consisting of, in weight percent, 35–55 percent aluminum, 10–20 percent silicon, 25–60 percent germanium; 65–88 percent aluminum, 2–20 percent silicon, 2–18 percent indium; 65–80 percent aluminum, 15–25 percent silicon, 5–15 percent yttrium.

3,697,260
ALUMINUM CONDUCTOR WIRE
Harold Y. Hunsicker, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,315
Int. Cl. C22c *21/00*; C22f *1/04*
U.S. Cl. 75—139 11 Claims

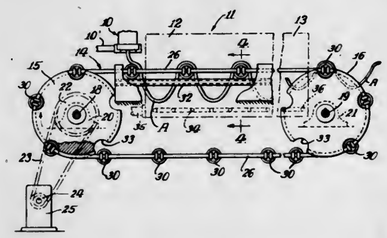
Improved aluminum wire generally ranging from 16 to 24 gauge (0.050 to 0.020 inch diameter), particularly useful in telephone cable and similar applications, contains careful additions to aluminum of magnesium, copper, nickel and iron and is fabricated by steps which impart to the wire a controlled amount of strain hardening. The improved wire exhibits the delicate balance of properties, including strength, ductility, bendability, electrical connection stability and electrical conductivity, to make it highly suitable for telephone service.

3,697,261
MANUFACTURE OF CYLINDRICAL BODIES FROM METAL POWDER
Peter Alexander Edward Jump, Bushey, and Barclay Keegan, Doncaster, England, assignors to Davy and United Engineering Company Limited, Sheffield, England
Filed Mar. 25, 1970, Ser. No. 22,424
Claims priority, application Great Britain, Apr. 2, 1969, 17,287/69
Int. Cl. B22f *5/00*
U.S. Cl. 75—208 R 9 Claims



A generally cylindrical body such as the roll for a rolling mill or calender is manufactured from at least two metallic powders. The powders are introduced into different parts of a thin-walled mould and the mould and the powder therein are compacted to compact the powder into a solid body and the compacted powder is sintered. It is preferable for one of the powders introduced into the mould to constitute a core which is surrounded by the other powder or powders. To introduce the powders into the mould it is preferred for the mould to be rotated about its longitudinal axis with one of the powders introduced into the mould to form a layer on the inner longitudinally extending wall of the mould and the second powder is introduced into the mould to form the core. The compaction process may be a hot or cold isostatic compaction process.

3,697,262
METHOD OF HANDLING SHRINKABLE MATERIAL
James M. Fenner, Niles, Mich., assignor to National-Standard Company, Niles, Mich.
Continuation-in-part of abandoned application Ser. No. 807,391, Mar. 14, 1969. This application Jan. 15, 1971, Ser. No. 106,787
Int. Cl. B22f *1/00*
U.S. Cl. 75—214 8 Claims



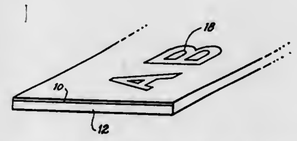
The method of conveying an elongated component which is characterized by being shrinkable upon heating

thereof through a heat treating furnace in which the elongated component is formed into sinuous configuration and conveyed in that configuration through the heat treating furnace.

3,697,263
METHOD OF CLEANING RESIDUAL LIQUID DEVELOPER FROM ELECTROPHOTOGRAPHIC PLATES
Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
No Drawing. Filed Oct. 31, 1969, Ser. No. 873,103
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.4 11 Claims

In liquid development systems, cycling electrostatographic imaging surfaces are substantially completely cleaned of developer remaining on the surface after transfer to copy paper by cyclically contacting the imaging surface with a small quantity of highly absorbent dry powder and removing the powder from the imaging surface after the powder has absorbed the residual liquid developer.

3,697,264
NOVEL PHOTOCONDUCTIVE CARBAZOLE POLYMERS AND PHOTOCONDUCTIVE ELEMENTS EMBODYING SAME
Richard M. Podhajny, 914 W. Margate Terrace, Chicago, Ill. 60640
Filed Mar. 2, 1970, Ser. No. 15,736
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 8 Claims



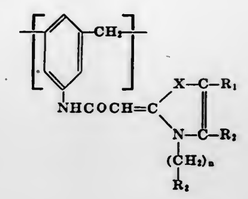
This invention is addressed to novel substituted N-vinyl carbazole polymers and copolymers and to the preparation of an electrophotographic element having a photoconductive layer formulated of same.

3,697,265
VITREOUS SELENIUM ALLOY MATRIX CONTAINING ISOLATED PARTICLES AND PARTICLE NETWORKS OF RESIN
Leon A. Teuscher, Webster, Michael P. Trubisky, Fairport, Frank M. Palermiti, Pittsford, and Charles J. Levine, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 25, 1969, Ser. No. 836,560
Int. Cl. G03g *5/04, 5/08*
U.S. Cl. 96—1.5 20 Claims

A xerographic plate having a novel photoconductive layer comprising a major portion of a vitreous selenium alloy blended with a minor portion of an insulating resin in the form of isolated particles and/or a partial resin network surrounded by a vitreous selenium alloy matrix.

3,697,266
ORGANIC PHOTOCONDUCTIVE MATERIALS FOR ELECTROPHOTOGRAPHY
Hisatake Ono, Chiakai Osada, Syu Watarai, and Harumi Katsuyama, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Dec. 30, 1970, Ser. No. 102,881
Claims priority, application Japan, Dec. 30, 1969, 45/1,635
Int. Cl. G03g *5/00*; H01l *13/00*
U.S. Cl. 96—1.5 3 Claims

An electrophotographic material comprising an electroconductive layer having coated thereon a layer containing a polymer of a compound of the following general formula,



wherein X is an atom or atomic group of atoms necessary for completing a heterocyclic ring, R_1 and R_2 are each a hydrogen atom, an alkyl group or an aryl group, R_3 is a hydrogen atom, alkoxyl group, cyano group or phenyl group, and n is an integer having the value of 1–4, and the aforementioned R_1 and R_2 may, in combination, form an unsubstituted or substituted arylene group.

3,697,267
SENSITIZABLE COATED PAPER SHEET ADAPTED FOR PHOTOELECTROSTATIC REPRODUCTION
Jay J. Uber, 67 Hitchcock St., Holyoke, Mass. 01040, and Johan F. Dirks, 12 Grandview St., South Hadley Falls, Mass. 01075
Continuation of application Ser. No. 541,866, Jan. 27 1966, which is a continuation-in-part of application Ser. No. 162,657, Dec. 28, 1961. This application Mar. 7, 1967, Ser. No. 621,365
Int. Cl. G03g *5/00*; C03c *5/00*; D21h *5/00*
U.S. Cl. 96—1.8 8 Claims

A photosensitive paper sheet which is useful in an electrophotographic process wherein a liquid toner is employed, said sheet having a coating on one side thereof which comprises a finely divided, photoconductive, inorganic pigment dispersed in a film-forming, electrically insulating binder material, and a coating on the other side thereof which acts as a barrier coat, to prevent retention of the liquid toner on the back of the sheet. A photosensitive paper sheet having a barrier coating on both sides thereof is also disclosed.

3,697,268
ELECTROSTATIC PRINTING METHOD
Wasaburo Ohta, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 9, 1969, Ser. No. 814,547
Claims priority, application Japan, Apr. 10, 1968, 43/23,888
Int. Cl. G03g *5/04, 5/06, 5/08, 9/02, 13/06, 13/18*
U.S. Cl. 96—1 R 2 Claims

An electrostatic printing method and device therefor comprising the steps of (1) forming an electrostatic latent image upon a conductive photoreceptor by an electronic photography, (2) developing said image with an electrically insulating and water repellent developing agent and fixing the developed image if necessary, (3) rendering non-image portions (that is the portions having no developing agent attached thereto) hydrophilic with a hydrophilic agent after said fixing, (4) rendering said hydrophilic portions electrically conductive with a conducting agent, (5) electrically charging the electrostatic printing plate, thus obtained thereby binding the charge upon the electrically chargeable or charge retainable and water repellent image portion, (6) transferring said charge upon an electrically insulating body, thereby forming an electrostatic latent image, and (7) developing said electrostatic latent image and if necessary fixing said image thus developed.

Representative figures: FIGS. 6, 7 and 8.

3,697,269
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES
William J. Timson, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 21, 1970, Ser. No. 99,970
Int. Cl. G03c 1/48, 5/54, 1/40
U.S. Cl. 96—3 28 Claims

The present invention relates to photography and, more particularly, to diffusion transfer process photographic film units which comprise a photosensitive element adapted to provide, by diffusion transfer photographic processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of essential layers including a direct negative photosensitive silver halide layer comprising photosensitive silver halide grains the majority of which possess a substantially uniform grain size within the range of ~0.5 to 3.0μ having associated therewith dye image-forming material which is diffusible during processing as a function of the point-to-point degree of silver halide layer exposure to incident actinic radiation and a layer adapted to receive image-forming material diffusing thereto; and to specified diffusion transfer processes employing such film units.

3,697,270
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES
William J. Timson, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 21, 1970, Ser. No. 99,971
Int. Cl. G03c 1/40, 1/48, 5/54
U.S. Cl. 96—3 29 Claims

The present invention relates to photography and, more particularly, to diffusion transfer process photographic film units which comprise a photosensitive element adapted to provide, by diffusion transfer photographic processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of essential layers including a direct negative photosensitive silver halide layer having associated therewith dye image-forming material which is diffusible during processing as a function of the point-to-point degree of silver halide layer exposure to incident actinic radiation and comprising a plurality of photosensitive silver halide dispersions which comprise silver halide grains, the majority of which possess a substantially uniform grain size and which dispersions taken together possess a mean particle size within the range of ~0.5 to 3.0μ and a layer adapted to receive image-forming material diffusing thereto; and to specified diffusion transfer processes employing such film units.

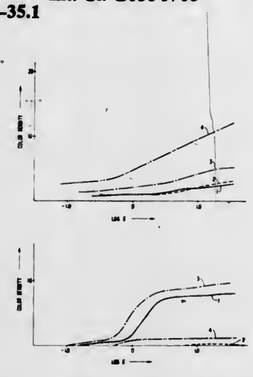
3,697,271
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR COLOR DIFFUSION TRANSFER UTILIZING SILVER HALIDE EMULSIONS WITH SPECIFIC PROPORTIONS OF AVERAGE HALIDE GRAIN SIZE
William J. Timson, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 16, 1971, Ser. No. 134,773
Int. Cl. G03c 1/48, 5/54, 7/00
U.S. Cl. 96—3 31 Claims

The present invention relates to photography and, more particularly, to diffusion transfer process photographic film units which comprise a photosensitive element adapted to provide, by diffusion transfer photographic processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of essential layers including a photosensitive silver halide layer, comprising photosensitive silver iodochlorobromide which contain in terms of the halide thereof, by weight, not substantially in excess of about 5% iodide and about 10% chloride with bromide sufficient to provide 100%, the grains of the layer preferably possessing a mean particle size within the range of about 0.3 to 3.0μ, having associated therewith dye image-forming material which is diffusible during processing as a function of the point-to-point degree of silver halide layer exposure to incident actinic radiation and a layer adapted to receive dye image-forming material diffusing thereto; and to specified diffusion transfer processes employing such film units.

3,697,272
PROCESS FOR MAKING NON-SILVER FREE RADICAL FILM IMAGES VISIBLE
Lothar Ramins, Cleveland, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated
No Drawing. Filed June 18, 1971, Ser. No. 154,609
Int. Cl. G03c 5/04
U.S. Cl. 96—27 5 Claims

An improvement over the optical development procedure disclosed in United States Patent 3,510,300 which resides in the use of two separate exposures to radiation of two different wavelengths to develop a visible image from a latent image bearing material, the first exposure being a brief exposure to radiation of relatively shorter wavelength and the second exposure being to relatively longer wavelength radiation.

3,697,273
FORMATION OF PHOTOGRAPHIC IMAGES
Yoshihide Hayakawa and Yasuhiro Noguchi, Asaka-shi, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 21, 1969, Ser. No. 817,520
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 24 Claims



Vinyl or vinylidene polymer images are formed in conformance with a photographic latent image by developing a silver halide emulsion layer in the presence of a vinyl or vinylidene monomer using a reducing agent which initiates polymerization as a result of the development of the silver halide. The specific improvement comprises developing the emulsion layer in a solution containing both reducing agent (A) and a developing agent containing a structure represented by the following formula:

$$B-(\overset{|}{C}=\overset{|}{C})_a-B'$$

The foregoing moieties are defined in the specification. The amount of developing agent is less than 1/100 mole per mole of reducing agent (A). An alternative embodiment comprises preliminarily developing the silver halide emulsion layer with a developing agent having the above general formula, and then conducting development and polymerization with reducing agent (A).

3,697,274
MATERIAL AND PROCESS FOR THE PREPARATION OF PRINTING PLATES
Heinz Herrmann, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Continuation of application Ser. No. 500,486, Oct. 14, 1965. This application Sept. 16, 1969, Ser. No. 860,161
Claims priority, application Germany, Oct. 15, 1964, K 54,270
Int. Cl. G03f 7/02
U.S. Cl. 96—36.3 5 Claims

This invention relates to a presensitized printing plate comprising a base material having a coating thereon comprising a solvent-soluble, acid-curable amine-formaldehyde resin and a light-sensitive organic halogen compound in which chlorine, bromine, or iodine is attached to carbon.

3,697,275
PROCESS FOR POLYMERIZING VINYL COMPOUNDS
Yoshihide Hayakawa and Masato Satomura, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of abandoned application Ser. No. 643,978, June 6, 1967. This application Apr. 26, 1971, Ser. No. 137,718
Claims priority, application Japan, June 6, 1966, 41/36,388
Int. Cl. G03c 1/68, 5/00
U.S. Cl. 96—48 R 5 Claims

A process for polymerizing vinyl monomers. The initiation of the polymerization is caused by intermediate compounds formed during the development of photographic silver halide emulsions by certain phenolic reducing agents in the presence of vinyl monomers. The suitable phenolic compounds are resorcinol, m-aminophenol and their derivatives. Thus, a photographic image consisting of polymeric material can be formed corresponding to the photographic latent image produced in the emulsion. The polymerization is promoted by the presence of sulfite iron.

3,697,276
POLYVINYLCARBAZOLE PHOTOGRAPHIC SYSTEMS
James M. Lewis, Aurora, and John E. Shirey, Bedford, Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated
No Drawing. Continuation-in-part of abandoned application Ser. No. 20,052, Mar. 16, 1970, and applications Ser. No. 28,548 and Ser. No. 28,558, both Apr. 14, 1970. This application Feb. 1, 1971, Ser. No. 111,649
Int. Cl. G03c 1/72, 5/24
U.S. Cl. 96—48 21 Claims

Compositions suitable for photographic duplication and reproduction either by projection or contact printing, the compositions comprising at least one N-vinyl monomer, such as N-vinylcarbazole, dispersed in polyvinylcarbazole along with a free radical source, such as iodoform, and the procedures whereby such compositions are utilized.

3,697,277
NONGLARE PHOTOGRAPHIC PRINTS
Frank O. King, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 14, 1969, Ser. No. 850,222
Int. Cl. G03c 5/26
U.S. Cl. 96—50 PL 9 Claims

The invention comprises a nonglare reflective type photographic print and a method of preparing the same. The article is prepared by applying a protective coating of polyester film having a matte surface on the surface of a reflective type photographic print.

3,697,278
PHOTOGRAPHIC MATERIAL COMPRISING A SILVER HALIDE ELEMENT WITH AN OVERLAYER OF GELATIN HARDENED WITH MUCOCHLORIC ACID
Albert Edward Harris and Ian Blundell, Ilford,, Essex, England, assignors to Ilford Limited, Ilford, England
No Drawing. Filed Apr. 10, 1969, Ser. No. 815,218
Int. Cl. G03c 1/76
U.S. Cl. 96—67 5 Claims

This application describes photographic material suitable for use for the production of glazed prints, which material comprises in the unexposed and unprocessed state a support base having coated on at least one side a gelatino silver halide emulsion layer the said gelatin having been hardened by the presence of formaldehyde therein, the improvement that there is coated on this layer a gelatin supercoat layer which has been hardened by the presence of mucochloric acid therein.

3,697,279
POLYMER ENCAPSULATED SILVER HALIDE GRAINS AND PHOTOGRAPHIC MATERIALS EMPLOYING SAME
Howard G. Rogers, Weston, and Lloyd D. Taylor, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Feb. 17, 1971, Ser. No. 115,985
Int. Cl. G03c 7/00, 1/40; B01j 13/02
U.S. Cl. 96—77 13 Claims

This invention is directed to microscopic capsules comprising a continuous synthetic polymeric layer surrounding a nucleus composed of photosensitive silver halide grains wherein the polymeric layer is of sufficient thickness to substantially overcome the attractive forces of said silver halide grains for adjacent silver halide grains. Thus, the present invention contemplates individual grains of photosensitive silver halide which are spatially separated from adjacent grains by means of a polymeric layer encasing the grains. The present invention is also directed to methods for providing such encapsulated products and to photographic products employing said capsules.

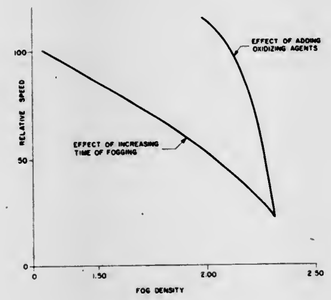
3,697,280
HEXAARYLBIIMIDAZOLE-SELECTED AROMATIC HYDROCARBON COMPOSITIONS
Peter S. Strilko, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 22, 1969, Ser. No. 827,071
Int. Cl. G03c 1/72, 1/68, 5/24
U.S. Cl. 96—90 34 Claims

Photoactivatable compositions comprising a hexaarylbiimidazole and a selected aromatic hydrocarbon having at least three fused benzenoid rings, and optionally, a leuco dye and/or a polymerizable monomer or inert components such as binders, solvents and the like. The compositions are photoactivated in the near ultraviolet or visible light wavelengths.

3,697,281
FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSIONS CONTAINING STRONG OXIDIZING AGENTS

Kirby Mitchell Milton, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,997
Int. Cl. G03c 1/28, 5/24
U.S. Cl. 96—108 14 Claims



Fogged, direct-positive silver halide emulsions are disclosed which have improved speed vs. maximum density characteristics. In one aspect, the improved fogged emulsions are made by reduction and noble-metal fogging the emulsion and then adding an oxidizing agent, such as potassium ferricyanide, to the emulsion prior to imagewise exposure.

3,697,282
SILVER HALIDE EMULSIONS WHICH ARE SPECTRALLY SENSITIZED AND WHICH CONTAIN COLOR COUPLERS

Oskar Riester, Leverkusen, and Marie Hasé, Schildgen-Bergisch, Gladbach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 15, 1969, Ser. No. 866,520
Claims priority, application Germany, Nov. 9, 1968, P 18 08 041.6
Int. Cl. G03c 1/10
U.S. Cl. 96—139 1 Claim

Light sensitive photographic silver halide gelatine emulsion can be sensitized optically in the blue range of spectrum (range of inherent sensitivity) by quinoline monoazocyanines, wherein the second heterocyclic group is a quinoline benzothiazole or benzoselenazole group, and at least one of the ring nitrogen atoms carries an alkyl group containing an acid substituent.

3,697,283
METHOD FOR MAKING A FOOD PRODUCT IN PORTIONS OF CONTROLLED SIZE AND SHAPE

Alan B. Rogers, Palos Park, and Michael Sebring, Downers Grove, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Filed Sept. 8, 1969, Ser. No. 858,561
Int. Cl. A23l 1/32
U.S. Cl. 99—1 13 Claims

An uncooked food product and method for preparing the same wherein gelatin is incorporated into a food product which is normally liquid before cooking. The food product with added gelatin is then stuffed into a casing and chilled. The molded product is sliced and cooked to provide a controlled portion of food product having natural flavor and texture.

3,697,284
PROTEIN-TRIAZINE RUMINANT FEED MATERIAL

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,474
Int. Cl. A23k 1/22
U.S. Cl. 99—2 R 4 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and a di- or trihalo-substituted triazine. Exemplary of such triazines is cyanuric chloride.

3,697,285
FISH PROTEIN SOLUBILIZATION USING ALKALINE BACTERIAL PROTEASE

William T. Faith, Jr., Warminster, Ronald B. Steigerwalt, Levittown, Ernest A. Robbins, Bristol, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,534
Int. Cl. A23j 1/04
U.S. Cl. 99—18 16 Claims

The use of alkaline bacterial protease in enzymatic hydrolysis to effect solubilization and extraction of protein from fish, fish products or fish parts.

3,697,286
METHOD OF TREATING POWDER OR GRANULATE SUBSTANCES

Gustav Grun, Lissberg/Oberhessen, Germany

Continuation-in-part of abandoned application Ser. No. 93,011, Mar. 1, 1961, which is a division of application Ser. No. 474,134, July 22, 1965, U.S. Patent No. 3,469,562, which in turn is a continuation of abandoned application Ser. No. 842,742, Feb. 13, 1969. This application Dec. 16, 1970, Ser. No. 98,946
Int. Cl. A23c 9/00; B44d 1/02
U.S. Cl. 99—56 3 Claims

Substances in powder or granulate form are treated with substances in fluid form by injecting the powder or granulate substance downwardly in a reaction chamber into a spraying zone substantially removed from the upper end of the reaction chamber and near an outlet at the lowermost end of the reaction chamber while at the same time spraying the fluid substance into the spraying zone through a plurality of peripherally spaced openings in the side wall of the reaction chamber from nozzles located outside the chamber near the lowermost end of the chamber. During spraying, air is drawn through the outlet opening and upwardly through the chamber whereby the powder or granulate substance is caused to swirl in cloud formation while being treated with the fluid substance. The air is drawn upwardly at a rate to maintain the lighter and untreated substances in whirling motion and to allow the heavier treated substances to pass through the outlet opening by the action of gravity.

3,697,287
AMINO ACID FOOD COMPOSITION

Milton Winitz, Palo Alto, Calif., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 510,778, Dec. 1, 1965, now abandoned, Ser. No. 550,204, May 16, 1966, and application Ser. No. 705,290, Feb. 14, 1968, now abandoned. This application Jan. 28, 1969, Ser. No. 794,790.
Int. Cl. A23l 1/00
U.S. Cl. 99—1 31 claims

A composition palatable to the human species which contains all of the essential amino acids, essential minerals and carbohydrate. A complete palatable diet is shown

which contains in an aqueous emulsion the essential and non-essential amino acids, minerals, vitamins, carbohydrate and fat in balanced quantities to supply all of the nutritional needs for the human species and in a form to bypass normal digestive functions. The same diet in dry form is soluble as an aggregate in water.

3,697,288
VIBRATION ENERGY MILLING OF GROUND COFFEE SLURRIES

Joseph R. McSwiggin, Cincinnati, Ohio. assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,511
Int. Cl. A23f 1/08
U.S. Cl. 99—71 4 Claims

Vibration energy milling of ground coffee slurries to provide a sediment-free additive for instant coffee.

3,697,289
AUTOMATIC POPCORN POPPING METHOD

Alan M. Day, Oakland, and Gordon D. Browning, Castro Valley, Calif., assignors to Compupop, Inc., San Leandro, Calif.

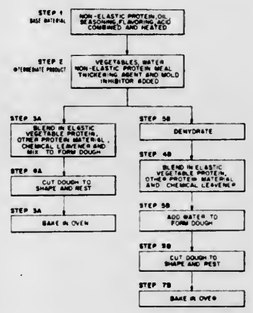
Filed Nov. 12, 1969, Ser. No. 875,759
Int. Cl. A23l 1/18
U.S. Cl. 99—81 5 Claims

The method for automatically popping corn in heated seasoning oil. Raw corn is fed by an air conveyor to a hopper above the popping pot, and an air current is used for injecting a charge of corn and salt into the pot. Seasoning oil is metered into the pot by an adjustable valve providing precise volume measurement. The pot remains closed throughout a series of popping cycles. A vacuum is created in the pot during the popping cycle to prevent effluent from discharging into the display case and to draw it into the condenser.

3,697,290
HIGH PROTEIN EDIBLE PRODUCTS AND METHOD OF PREPARING SAME

Charles S. Lynn, 102—30 66th Road, Forest Hills, N.Y. 11375

Continuation-in-part of application Ser. No. 846,428, July 31, 1969. This application Nov. 25, 1969, Ser. No. 879,717
Int. Cl. A21d 13/04, 13/06
U.S. Cl. 99—86 18 Claims



High protein edible products and the method of preparing same are described. A baked, leavened product includes a non-elastic protein such as sesame or a combination of sesame and soy bean, an elastic type vegetable protein such as wheat gluten or wheat gluten in combination with edible gums, and flavoring and texturing agents including vegetables. Crackers and cereal are made using a much lower amount or eliminating the elastic type vegetable protein.

3,697,291
FURANONE MEAT FLAVOR COMPOSITIONS

Christiaan Herman Theodoor Tonsbeek, Orpington, Kent, England, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,700
Claims priority, application Great Britain, Sept. 22, 1967, 43,364/67
Int. Cl. A23l 1/26
U.S. Cl. 99—107 11 Claims

Improved meaty foodstuff in which the flavour of a meaty product or a meat simulating product is improved by the incorporation of 2,5-dimethyl- or 5-methyl-4-hydroxy-2,3-dihydrofuran-3-one or a precursor of these compounds.

3,697,292
USING SALVAGE CHEESE IN PREPARING PASTEURIZED PROCESS CHEESE

Robert M. Lauck, New City, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 812,916, Apr. 2, 1969, which is a continuation-in-part of application Ser. No. 553,633, May 31, 1966. This application Aug. 21, 1970, Ser. No. 65,823
Int. Cl. A23c 19/00, 19/12
U.S. Cl. 99—115 18 Claims

Extrudable pasteurized process cheese utilizing large quantities of salvage cheese can be prepared by incorporating in the blend of the raw cheese, salvage cheese and usual process cheese emulsifiers, from about 0.00015% to about 2%, by weight, of a surface-active agent.

3,697,293
METHOD OF MAKING COTTAGE CHEESE

Kenneth R. Breidenstein, Winlock, Wash., assignor to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,484
Int. Cl. A23c 19/02
U.S. Cl. 99—116 4 Claims

The present invention relates to an improved dairy product and is particularly directed to cottage cheese. The invention involves a method for manufacturing a cottage cheese having an extended shelf life. The method of the invention relates to the heating of cottage cheese while being transported to a packaging station. During such transport the cheese curd is heated to a temperature of at least about 130° F.

3,697,294
PROCESS FOR PRODUCING A BAKERY FAT PRODUCT WITH IMPROVED ABILITY TO RETARD THE STALING OF BREAD

Ulo Riiner, Asarum, Sweden, assignor to AB Karlshamns Oljefabriker, Karlshamn, Sweden

No Drawing. Continuation-in-part of application Ser. No. 761,395, Sept. 16, 1968, now abandoned. This application Jan. 20, 1971, Ser. No. 108,156
Claims priority, application Sweden, Sept. 18, 1967, 12,810/67
Int. Cl. A23d 5/00
U.S. Cl. 99—123 3 Claims

A process for producing a bakery fat emulsion with the ability of retarding the staling of bread, comprising

the steps of (1) preparing a dispersion of mainly 1-monoglyceryl esters of saturated fatty acids, containing 14 to 22 carbon atoms, in water and (2) emulsifying said dispersion into an edible fat component forming the continuous phase of the bakery fat emulsion.

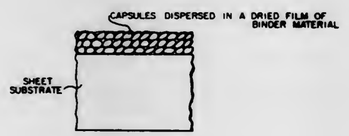
3,697,295
FLAVOURING SUBSTANCES
Godefridus Antonius Maria van den Ouweland and Henricus Gerardus Peer, Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed June 26, 1969, Ser. No. 836,968
Claims priority, application Great Britain, July 1, 1968, 31,378/68
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **3 Claims**

A food flavour substance is prepared by reacting an heterocyclic ketone such as a furanone or a pyrone in the presence of water with hydrogen sulphide or a substance which is capable of giving rise to hydrogen sulphide.

3,697,296
ELECTROLESS GOLD PLATING BATH AND PROCESS
Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 9, 1971, Ser. No. 122,538
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **17 Claims**

A gold chemical plating bath is provided for depositing gold on a catalytic surface which is an aqueous solution having a pH of 1.5 to 5 and contains as essential ingredients a soluble gold compound and an alkali metal cyanoborohydride as the reducing agent. Optional, but preferred, ingredients are a chelating agent and an organic monovalent or divalent sulfur compound. Plating is preferably carried out at a temperature of 80 to 90° C.

3,697,297
GELATIN-GUM ARABIC CAPSULES CONTAINING CHOLESTERIC LIQUID CRYSTAL MATERIAL AND DISPERSIONS OF THE CAPSULES
Donald Churchill, James V. Cartmell, and Robert E. Miller, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Continuation of application Ser. No. 856,891, Sept. 2, 1969, now abandoned, which is a continuation of application Ser. No. 618,751, Feb. 27, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 558,354, June 17, 1966, now abandoned. This application Oct. 22, 1970, Ser. No. 83,181
Int. Cl. G01k *11/16*
U.S. Cl. 106—131 **4 Claims**



A temperature-responsive display device or composition, comprising mesomorphic ("liquid crystal") material(s) contained in minute capsules as the temperature-responsive component, is provided. The minute capsules, when placed in heat-conductive relation with a heat source together with an associated thermal gradient pattern to be displayed, exhibit an iridescence indicative of a certain characteristic temperature range, which temperature range varies according to the types and mixtures of mesomorphic materials affords physical and chemical protection from various kinds of degradation and allows their use in practical and efficient thermal-gradient display systems.

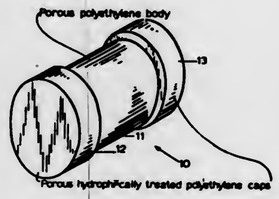
ERRATUM

For Class 106—291; see:
Patent No. 3,697,070

3,697,298
AIR DRYING POLY(VINYLIDENE FLUORIDE) COATINGS
Martin R. Hastings, Pittsburgh, and Glenn W. Luckock, Natrona Heights, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,505
Int. Cl. B23p *7/00;* **B32b** *27/30*
U.S. Cl. 117—2 R **13 Claims**

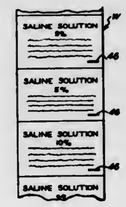
A method of applying continuous coatings comprising poly(vinylidene fluoride) without baking at high temperatures comprises applying on a substrate a thin layer of a composition comprising poly(vinylidene fluoride) and certain organic liquids, the liquids usable being those having a boiling point between about 125 and about 250° C. in which poly(vinylidene fluoride) forms a substantially clear solution in concentrations of at least 10 percent by weight. The method can be used to "touch-up" or repair baked poly(vinylidene fluoride) coatings, or for the application of continuous protective coatings on a substrate.

3,697,299
MICROSCOPY TISSUE RECEPTACLE METHOD
John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C. 27705
Original application Aug. 3, 1967, Ser. No. 658,252, now Patent No. 3,536,040. Divided and this application Sept. 23, 1969, Ser. No. 860,256
Int. Cl. A01n *1/00*
U.S. Cl. 117—3 **4 Claims**



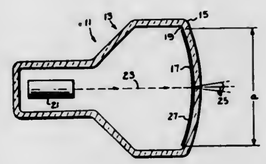
Minute tissue particles for light or electron microscopy are processed in a receptacle comprised of a porous polyethylene or polypropylene open-ended, cylindrical body and a pair of porous hydrophilically treated polyethylene or polypropylene caps for closing the respective ends. During processing, tissue particles having at least one dimension in the order of one millimeter are stored in the receptacle after which the receptacle is submerged in various organic fixative and processing liquids which gain access to the particles by passing through the porous cylindrical body and caps and in various aqueous fixative and processing solutions which gain access to the tissue by passing through the porous hydrophilically treated caps.

3,697,300
CONTINUOUS STRIP OF LABEL WEB
George W. von Hofe, Millington, N.J., assignor to New Jersey Machine Corporation, Hoboken, N.J.
Continuation-in-part of application Ser. No. 523,756, Jan. 28, 1966, now Patent No. 3,536,550. This application July 29, 1970, Ser. No. 59,151
Int. Cl. H01f *10/00*
U.S. Cl. 117—15 **10 Claims**



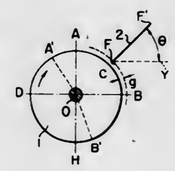
A continuous web having a plurality of items such as labels printed successively along the web and including a first series of control elements each of which is located in a given position on the web relative to one of the items, and a second series of control elements located at different positions on the web relative to such items.

3,697,301
PROCESS OF FORMING CATHODE RAY TUBE SCREENS TO UTILIZE THE LUMINOUS EFFICIENCY OF THE PHOSPHOR MATERIAL
Robert L. Donofrio, Syracuse, and Charles H. Rehkopf, Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated
Continuation-in-part of application Ser. No. 846,348, July 31, 1969. This application Apr. 5, 1971, Ser. No. 130,962
Int. Cl. H01j *31/20*
U.S. Cl. 117—33.5 C **11 Claims**



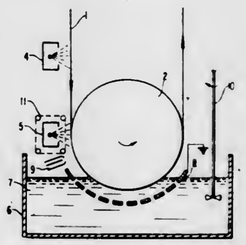
A process of forming the cathodoluminescent screen of a cathode ray tube wherein the characteristics of the phosphor material, i.e., particle density, bulk density, atomic weight, atomic number and average particle size are related in a manner to provide a screen having a prescribed phosphor weight and thickness to effect efficient utilization of the luminescent brightness of the respective phosphor material when excited by subsequent electron beam impingement.

3,697,302
DRUM-PHOTOSENSITIVE MEMBER AND METHOD FOR MANUFACTURING THEREOF
Takashi Ihara, Kawasaki-shi, Takehiko Matsuo, Tokyo, and Katsunobu Ohhara, Kawasaki-shi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 2, 1969, Ser. No. 854,714
Claims priority, application Japan, Sept. 6, 1968, 43/64,205
Int. Cl. B05c *11/04;* **B44d** *1/02;* **G03c** *1/74*
U.S. Cl. 117—34 **13 Claims**



A photosensitive member having a smooth and uniform surface provided by coating photosensitive material on a drum in uniform thickness. The principal novel method comprises rotating a cylinder on its horizontal axis, placing a knife edge of a blade along a cylinder generating line outside of the cylinder surface, maintaining a predetermined gap between the knife edge and the cylinder surface, facing the knife edge to the surface, supplying a wet photosensitive material to the V-shaped section formed by the upper surface of the blade and the cylinder surface, thereby coating the cylinder surface through said gap and then tilting the blade to bring the knife edge to a higher position than the opposite edge of the blade so as to cause excessive wet photosensitive material to flow from the drum over the surface of the blade to leave a uniform coating of photosensitive material on the drum.

3,697,303
PROCESS FOR COATING THE SURFACE OF A MATERIAL
Walter Busch, Wiesbaden-Biebrich, Heinz Kramer, Wiesbaden-Bierstadt, Erwin Lind, Auringen uber Wiesbaden, and Dieter Messner, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Sept. 29, 1969, Ser. No. 861,794
Claims priority, application Germany, July 31, 1969, P 17 90 220.4
Int. Cl. B44d *1/06*
U.S. Cl. 117—37 LE **13 Claims**



This invention relates to a process for coating the surface of a material with an electrically conductive, semiconductive, or non-conductive substance, in which process either a highly insulating base material or base material

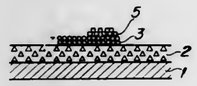
with a highly insulating backing is completely discharged, the surface of the material is then electrically charged by means of a direct-current corona discharge, and coated within a field of uniform field strength distribution with the substance dispersed in a dielectric liquid, while the material is in close contact with an electrically conductive support.

3,697,304

METHOD FOR RETOUCHING AN ELECTROPHOTOGRAPHIC OFFSET MASTER PLATE

Koji Uchida and Sadao Kuriu, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 10, 1970, Ser. No. 96,726
Claims priority, application Japan, Dec. 12, 1969, 44/99,420
Int. Cl. B41n *5/00;* **B41o** *3/08*
U.S. Cl. 117—37 R **6 Claims**



An electrophotographic offset master plate can be retouched by applying a solution to areas of the plate which are to be deleted from printed products, prior to rendering non-imaged portions ink-repellent. The solution contains metal compound which reacts with rendering solution (which renders the non-imaged portions ink-repellent and water-receptive) comprising water soluble metal salt of hexacyano metallic acid and/or ammoniumphosphate to produce hydrophilic water insoluble precipitates. In spite of uniform wiping of the surface with rendering solution, the imaged portions are still oleophilic while non-imaged portions become hydrophilic. This is because that near the non-imaged surface there exist materials which react with rendering solution to form hydrophilic and water insoluble precipitates e.g. $K_2Zn_3[Fe(CN)_6]_2$, $ZnNH_4PO_4$ etc., while near the imaged surface such materials don't exist.

3,697,305

METHOD FOR PRODUCING A PHOTOGRAPHIC ELEMENT

Sumitaka Tatsuta, Wataru Ueno, Tatsuya Tajima, and Mutsuo Akao, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1970, Ser. No. 96,207
Claims priority, application Japan, Dec. 8, 1969, 44/98,485; Mar. 11, 1970, 45/20,695
Int. Cl. G03c *1/78*
U.S. Cl. 117—47 A **6 Claims**

A method for producing a useful and practical photographic element having excellent water-resisting properties, dimensional stability and rapid-drying qualities comprising treating a biaxially-stretched and roughed polystyrene film base with a corona discharge or electron irradiation, applying, if necessary, a gelatin layer to said base, and then applying a gelatin-containing photographic emulsion or suspension onto the treated surface of the support.

3,697,306

BONDING COATINGS, DYES AND ADHESIVES TO SUBSTRATES

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,491
Int. Cl. B44d *1/092*
U.C. Cl. 117—47 A **9 Claims**

Organic coating compositions, e.g., siccative coatings such as paints, varnishes, enamels, lacquers, inks and the like, dyes, adhesives, and the like, can be applied to substrates which have been subjected to elemental phosphorus, partially oxidized and thereafter washed with water.

3,697,307

STRONG DURABLE PRESS CELLULOSIC FABRICS

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,513
Int. Cl. B44d *1/092;* **D06m** *15/52*
U.S. Cl. 117—56 **7 Claims**

Tensile properties and abrasion resistance of durable press cellulosic fabrics are improved by treatment with cyclic acetals obtained by reaction of glyoxal with ethylene glycol. The cyclic glyoxal acetals usually are applied to the fabric as a mixture of two isomeric forms, and the treated fabric is cured in the presence of the durable press formulation.

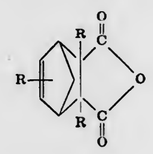
3,697,308

BORON REINFORCED POLYIMIDE COMPOSITES

Hyman R. Lubowitz, Hawthorne, and Robert W. Vaughan, Manhattan Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Continuation-in-part of application Ser. No. 875,523, Nov. 10, 1969. This application May 25, 1970, Ser. No. 40,405
The portion of the term of the patent subsequent to Feb. 23, 1988, has been disclaimed
Int. Cl. B32b *15/08*
U.S. Cl. 117—65.2 **20 Claims**

This invention is directed to a process for preparing reinforced resin laminates and the products obtained therefrom characterized as having improved thermal stability and low-void content. More specifically this invention is directed to a process of preparing reinforced polyimide laminates or plastic composites which comprises impregnating a substantially fibrous material, i.e., boron filaments with an effective amount of an organic solution of a polyamide-acid precursor. The boron filaments impregnated with the precursor, i.e., the polyamide-acid, may be heated to temperatures ranging up to about 125° C. to remove a substantial part of the solvent and thereby obtain an intermediate which may be characterized as having tack and drape. Subsequently, the polyamide-acid may be imidized, in situ, to the imide prepolymer and then cured or alternatively cured directly by the application of heat with temperatures ranging from about 125° C. to 350° C. and at pressures ranging up to about 1200 p.s.i. Under these conditions, the polyamide-acid will be cured, in situ, to form a reinforced thermosetting resin laminate or composite. The precursor of the polyimide prepolymer, i.e., the polyamide-acid, may be prepared by coreacting approximately stoichiometric amounts of at least one polyfunctional amine with a mixture of anhydrides consisting essentially of at least one polyfunctional anhydride and a monoanhydride having the formula:



wherein R is selected from the group consisting of hydrogen and lower alkyl radicals having 1 to 5 carbon atoms per molecule and combinations thereof.

3,697,309

ADHESION OF FLUOROPOLYMER TOPCOAT

Ervin R. Werner, Jr., Levittown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 45,945, June 12, 1970, which is a division of abandoned application Ser. No. 778,828, Nov. 25, 1968. This application Dec. 22, 1970, Ser. No. 100,764
Int. Cl. B44d *1/36;* **B32b** *15/08*
U.S. Cl. 117—72 **14 Claims**

A method for improving the adhesion of a fluorocarbon polymer coating to its substrate with a composition of 10–75% of lithium polysilicate, 25–90% of a fluorocarbon polymer and a liquid carrier.

3,697,310

METHOD OF BONDING POLYESTER SYNTHETIC FIBROUS MATERIAL TO RUBBER COMPOUND

Osamu Kurihara, Naoya Kuramoto, Masaya Kamiyoshi, and Takeshi Yamaguchi, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,274
Claims priority, application Japan, Jan. 29, 1970, 45/7,840
Int. Cl. C08d *13/16;* **B32b** *27/36*
U.S. Cl. 117—76 T **8 Claims**

A polyester fibrous material is bonded to rubber with superior bond strength by applying to the polyester material an aqueous adhesive dispersion comprising (A) a water-insoluble phenol/aldehyde resin having a melting point of not more than 160° C. or a viscosity of at least 50 centipoises obtained by condensing one mol of phenol or its derivative, 0.2 to 1.0 mol of formaldehyde and 0.05 to 0.5 mol of an alkyl or arkenyl aldehyde such as n-butyraldehyde and (B) a rubber latex, and bonding the polyester material to rubber by heating and vulcanization.

3,697,311

COATED ETHYLENE-POLAR MONOMER COPOLYMER SUBSTRATE

John F. Aleckner, Jr., Buffalo Grove, Ill., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Ser. No. 782,719, Dec. 10, 1968. Divided and this application Mar. 31, 1971, Ser. No. 129,941
Int. Cl. B32b *27/08, 27/32*
U.S. Cl. 117—72 **6 Claims**

The adhesion of coatings to ethylene-polar monomer copolymer substrates is enhanced by the use, as an adhesion promoter, of vinyl acetate polymer in the form of a primer coat.

3,697,312

EPOXY RESIN AND GRADED ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,495
Int. Cl. C08g *45/05, 41/04;* **C08f** *15/00*
U.S. Cl. 117—93.31 **10 Claims**

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated epoxy resin having molecular weight in excess of about 370, and an addition prouct of a hydroxy-functional graded rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,697,313

METHOD OF SPRAYING CLOSED END CANS

William C. Stumphauzer, Sheffield Lake, Edwin F. Hogstrom, North Olmsted, Eric T. Nord, Oberlin, Richard E. Schneider, Elyria, and Alvin A. Rood, Westlake, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Feb. 24, 1970, Ser. No. 13,598
Int. Cl. B44d *1/08*
U.S. Cl. 117—96 **8 Claims**



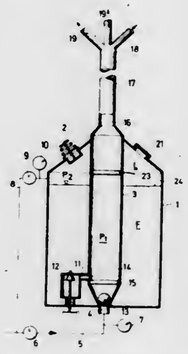
Method and means for coating the interior cylindrical surface of objects such as metal cans for food, beverages and other substances which need protection against injurious reaction with or pollution from contact with the material of the can. Rapid airless spray coating of such surfaces, while the surfaces are revolving at high speed, from a stationary spray nozzle external of the can, by projecting a spray having an asymmetrical pattern into the single open end of a can having one closed end, with the pattern of flow emerging from the nozzle being matched to the internal surface configuration to apply a uniform coating. Also disclosed are spray nozzles having their outlet orifices designed to provide desirable spray patterns for use in this method of spraying, as well as methods for making and shaping the outlet orifices.

3,697,314

METHOD FOR TREATING A YARN WITH FOAM

Vilem Stritzko, Zofingen, Switzerland, assignor to Bleiche AG, Zofingen, Switzerland

Filed July 29, 1970, Ser. No. 59,131
Claims priority, application Switzerland, July 30, 1969, 11,579/69
Int. Cl. B44d *1/02*
U.S. Cl. 117—120 **6 Claims**



A foam is continuously made in a hollow body by pressing a gaseous medium into a liquid. The foam is made

finer by passage through at least one porous member, and then continuously applied to a yarn moving across an outlet for the foam and through a foam agglomeration forming at the outlet. The foam-forming liquid is a yarn-finishing agent, such as a smoothing polish, a stiffening agent, or a dye.

3,697,315

SELF-ADHESIVE AND REMOVABLE NON-WOVEN FABRIC AND PROCESS FOR PRODUCING THE SAME

Keiji Mine, Matsubarashi, Japan, assignor to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed May 7, 1970, Ser. No. 35,448

Claims priority, application Japan, July 21, 1969, 44/58,111

Int. Cl. A61l *15/00;* **C09j** *7/04*

U.S. Cl. 117—122 P **9 Claims**

A self-adhesive non-woven fabric comprising a rough surfaced fiber sheet of staple fibers, wherein the staple fibers on both sides of the sheet are coated with an adhesive mixture of a natural rubber latex, a synthetic resin latex, and an antioxidant, wherein said latex mixture is characterized by being generally non-adhesive toward said fibers.

3,697,316

FIRE-RESISTANT ORGANIC PRODUCTS AND METHOD FOR PRODUCTION

John V. Beninate, Gretna, Donald J. Daigle, New Orleans, and George L. Drake, Jr., Wilson A. Reeves, and Darrell J. Donaldson, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 7, 1971, Ser. No. 141,352

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **12 Claims**

Methylol phosphines, methylol phosphines in combination with amine or amido compounds or water soluble adducts of these methylol phosphines and amides or amines when mixed and reacted with mono, di or polyisocyanates wherein the isocyanate groups are attached to carbon atoms are particularly valuable for the preparation of thermosetting flame resistant polymers. The polymers which are produced are crosslinked phosphorus and nitrogen containing polymers in which the reoccurring structure units each contain a phosphorus atom, that is a component of a radical of the group tris(methylene)-phosphine ($—CH_2)_3P$ and is linked to at least one isocyanate radical by connecting urethane structure. The polymer forming solutions are also valuable for the preparation of flame-, glow-, wrinkle- and shrink-resistant textiles by impregnating fabrics with these solutions and causing reaction and polymer formation by application of heat.

3,697,317

CORROSION INHIBITION OF COPPER-ZINC ALLOYS

Charles R. Schmitt, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 19, 1971, Ser. No. 145,034

Int. Cl. C23c *3/00*

U.S. Cl. 117—130 R **3 Claims**

The corrosion of copper-zinc alloys in water due to the dissolution of zinc is inhibited by passivating exposed surfaces of the alloy with magnesium.

3,697,318

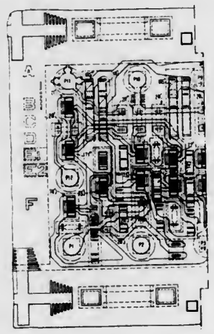
MONOLITHIC INTEGRATED STRUCTURE INCLUDING FABRICATION THEREOF

Irving Feinberg, Poughkeepsie, and Jack L. Langdon and Carl L. Sitler, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application May 23, 1967, Ser. No. 640,610, now Patent No. 3,539,876, dated Nov. 10, 1970. Divided and this application Dec. 12, 1969, Ser. No. 889,807

Int. Cl. B44d *1/18;* **H01b** *13/00;* **H05k** *3/00*

U.S. Cl. 117—212 **5 Claims**



This invention relates generally to monolithic integrated structures including the fabrication thereof and, more particularly, to a monolithic integrated structure that is used to provide a multiplicity of various circuit interconnections so as to permit more than one circuit to be made for each structure. Many logic type integrated structures can be fabricated from a single master slice configuration which contains a number of components in a pattern favorable to the formation of any selected logic circuit from a class of many such circuits. Additionally, fabrication techniques are described for facilitating formation of the integrated chip which include mask alignment techniques, chip testing techniques, chip identification, process step identification, engineering change number identification, etc.

3,697,319

METHOD OF METALLIZING AN ELECTRICALLY INSULATING SURFACE

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,661

Int. Cl. B41m *3/08;* **B44d** *1/14*

U.S. Cl. 117—212 **6 Claims**

A layer of a resinous adhesive having a metal formate salt dispersed therein is applied to the insulating surface. The layer is then heated to decompose the metal formate salt and to produce decomposition products of the metal of the salt and gases, which form micropores in the layer at the surface. The surface of the layer is then electrolessly plated with a metal for which the metal of the formate salt is a catalyst.

3,697,320

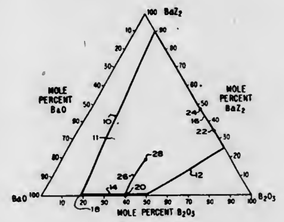
METHOD AND FLUX FOR GROWING SINGLE CRYSTALS OF GARNET OR ORTHO FERRITES

Ronald Hiskes, Palo Alato, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1971, Ser. No. 105,405

Int. Cl. B01j *17/20*

U.S. Cl. 117—234 **9 Claims**



A flux consisting of BaO, B_2O_3 and a barium halide such as BaF_2, $BaCl_2$, $BaBr_2$ or BaI_2 is used for the solution growth of synthetic garnets and orthoferrites when appropriate amounts of the proper nutrients are dissolved in this flux and allowed to precipitate out as single crystals. This occurs either by slowly cooling an initially unsaturated solution, or by continuously dissolving nutrient in a hotter region of the solution, transporting it down a temperature gradient and allowing it to precipitate out in the cooler region of the solution. The precipitation may occur on a seed crystal of the same material placed in the cool region of the solution (a bulk growth process), or it may occur homoepitaxially on a thin substrate of the same material or heteroepitaxially on a substrate of different composition.

3,697,321

THERMIONIC CATHODE AND METHOD OF MANUFACTURING THE SAME

Georg Eckert, Munich, and Günther Ciriack, Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

No Drawing. Filed June 20, 1968, Ser. No. 738,402

Claims priority, application Germany, June 21, 1967, P 16 14 541.8

Int. Cl. B44d *1/18;* **H01j** *1/14*

U.S. Cl. 117—217 **11 Claims**

A thorium film thermionic cathode in electron discharge devices and method of manufacturing the same wherein a high melting metal carrier, such as tungsten or tungsten alloy, contaminated with thorium oxide is provided with a coating containing an inner layer of tungsten carbide and an outer layer of a high melting metal having migrational properties and functioning as an emission base for thorium, such as osmium or rhenium.

3,697,322

MAGNESIUM OXIDE COATINGS

Leonard S. Lee, Daly City, and Yoshio Uyeda and Leo F. Heneghan, San Mateo, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 40,479, May 22, 1970. This application Aug. 17, 1970, Ser. No. 64,644

Int. Cl. H01f *1/04*

U.S. Cl. 117—234 **5 Claims**

Lithium additives in magnesium oxide/magnesium hydroxide coatings for silicon steel and the material coated by such process.

3,697,323

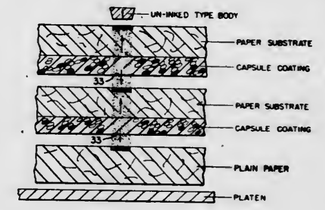
PRESSURE-SENSITIVE RECORD MATERIAL

George T. Brown, Jr., and Donald B. Clark, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Jan. 6, 1971, Ser. No. 104,378

Int. Cl. B41m *5/10;* **C04b** *35/00*

U.S. Cl. 117—234 **37 Claims**



Record material coating formulations and record material sheets coated with thick, pad-like, pressure-responsive, compressible and collapsible coatings comprising minute bits of material held firmly together on a surface of a record material substrate with binder material. Said bits of material are randomly mixed in loose-packed interspersion with each other throughout the breadth and depth of the coatings and comprise minute marking-liquid droplets which are held individually confined by organic, polymeric, film material and optionally comprise filler material particles occupying part of the space between the loose-packed marking-liquid droplets. Because they are loosely packed, the coatings are crushable in two stages or degrees in that they yield to weak pressures, such as those associated with careless handling, by being compressed and packed to a first stage without release of marking liquid, and collapse under greater applied pressure associated with printing or writing to a second compressed state to yield marking liquid in a pattern conforming to the printing or marking pressure pattern applied.

3,697,324

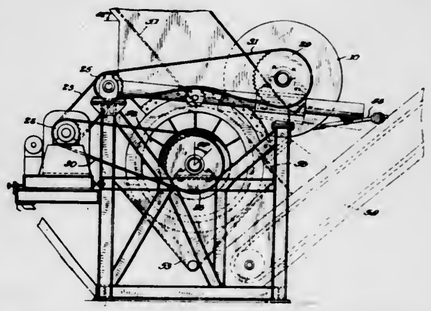
APPARATUS FOR REMOVING LIQUID FROM FIBROUS MATERIALS

Clarence R. Steele, Frank B. Price, and John M. Marshall, Denver, Colo., assignors to CF&I Engineers, Inc., Denver, Colo.

Filed Oct. 2, 1969, Ser. No. 863,160

Int. Cl. B30b *3/04, 9/20;* **C13d** *1/02*

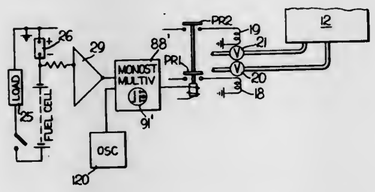
U.S. Cl. 127—2 **13 Claims**



An apparatus for removing liquid from a mixture of liquid and fibrous material is provided for use in accomplishing the first stage removal of water from a sugar

cane processing by-product known as bagasse. The apparatus is generally constructed of a lower perforated cylindrical roller which is provided with a plurality of openings adapted to receive water from the bagasse, an upper cylindrical roller which is offset from a vertical orientation with the lower roller by an offset angle of 30° to 60° from vertical, a system for removing water collected from the wet bagasse, motor drive systems for individually rotating the upper and lower rollers and conveying system for delivering the wet bagasse between the upper and lower rollers.

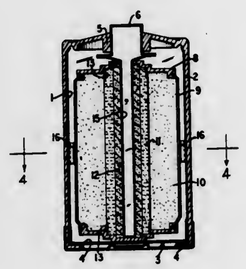
3,697,325
PURGE CONTROL FOR FUEL CELL
John Baude, Milwaukee, Wis., assignor to Isotopes, Inc., Westwood, N.J.
Filed Aug. 21, 1969, Ser. No. 851,948
Int. Cl. H01m 27/12
U.S. Cl. 136—86 B **19 Claims**



Impurities accumulated within a fuel cell from the reactants are flushed from the cell by periodic operation of valves which permit reactant flow at a sufficiently high rate to purge, i.e., clean the cell plates. Operation of the valves is governed by the ampere-hour output of the fuel cell. The voltage developed by the flow of fuel cell load current through a shunt controls the frequency of output pulses from a voltage-to-frequency converter, and the pulses are supplied to frequency dividing means including a binary type counter which controls the purge valves. The submultiple of the input pulse frequency to the counter is selectively variable to adjust the number of ampere-hours between purges, and the frequency dividing means includes a monostable multivibrator whose period is selectively variable to adjust the duration of each purge.

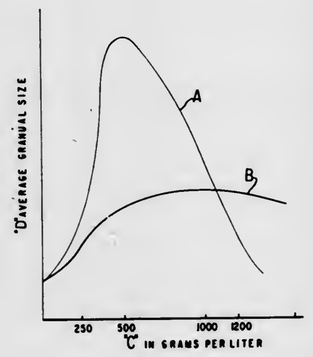
3,697,326
BATTERY INCLUDING PAIR OF AIR-DEPOLARIZED CELLS
Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Filed June 9, 1971, Ser. No. 151,292
Claims priority, application France, June 8, 1970, 7020985; Oct. 29, 1970, 7039012
Int. Cl. H01m 29/04
U.S. Cl. 136—86 A **25 Claims**

Primary electric battery comprising an outer metallic cup coated externally except at its bottom with a casing of synthetic material, the bottom constituting one terminal and a metallic cap in the cover of the casing constituting the other terminal. A pair of flat air depolarized cells connected in parallel are housed in the cup and embody main trays whose openings face each other and whose bottoms are parallel to the axis of the cup, each of the trays containing a negative electrode, an immobilized electrolyte preferably carried by a separator, and a positive electrode arranged in layers in each tray. The trays are separated by a space in communication with the exterior of the battery during its operation. The space is positioned preferably between the positive electrodes of the facing trays. The positive and negative electrodes of



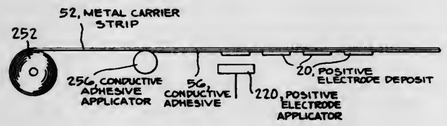
both trays are parallelly connected electrically respectively to the metallic cap and the metallic cup. Provision is made for expansion of the negative electrodes when the batteries are in use.

3,697,327
ELECTROLYTE FOR DRY BATTERIES AND DRY CELL BATTERIES USING SUCH ELECTROLYTE
Pierre Michel Rene Croissant, Smarves, Jean-Claude Armbruster, Poitiers, and Andree Chaumeau, Saint-Julien-l'Ars, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Filed Apr. 15, 1970, Ser. No. 28,787
Claims priority, application France, Apr. 22, 1969, 6912686; Jan. 29, 1970, 7003141
Int. Cl. H01m 9/04
U.S. Cl. 136—157 **10 Claims**



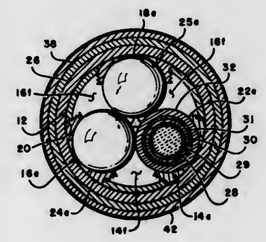
Electrolyte for dry cells and batteries of the Leclanché type embodying a salt solution of zinc chloride free from ammonium chloride and an organic gelling agent of reticulated granules of selected starches, the reticulated structure of the granules preventing liquefaction of the electrolyte and preventing leakage of said electrolyte, dry cells and batteries including such electrolyte and method of manufacturing dry cells and batteries embodying such electrolyte to improve operation and minimize production cost, as well as prevent leakage.

3,697,328
DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS METAL CARRIER STRIP COATED ON ONE SIDE WITH CONDUCTIVE ADHESIVE
John M. Bilhorn, Edgerton, Wis., assignor to ESB Incorporated
Filed Dec. 21, 1970, Ser. No. 100,267
Int. Cl. H01m 1/00
U.S. Cl. 136—175 **4 Claims**



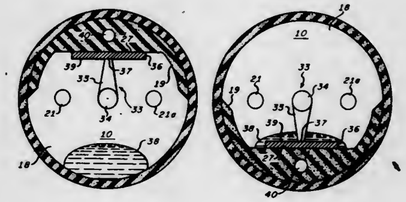
A duplex electrode is constructed by first coating one side of a continuous metal carrier strip with electrically conductive adhesive material and then placing intermittent deposits of positive electrode along the coated side of the carrier strip. The duplex electrode is then assembled into a multicell battery where a segment of the metal carrier strip functions as the negative electrode of one cell, the deposit of positive electrode functions as the positive electrode in an adjacent cell, and the deposit of conductive adhesive functions as the intercell connector. The assembly preferably occurs while the duplex electrodes are structurally and electrically connected by the continuous carrier strip after which the carrier strip is subsequently cut between duplex electrodes to obtain structurally and electrically unconnected batteries. Alternatively, the electrodes are assembled into multicell batteries. Preferably, the metal carrier strip is zinc and the positive electrodes comprise manganese dioxide.

3,697,329
RADIOISOTOPE HEAT SOURCE SYSTEM
James F. Bunker, Malvern, James E. Poland and Emerson H. Sayell, Phoenixville, and George V. Schmidt, Norristown, Pa., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed June 4, 1971, Ser. No. 149,967
Int. Cl. G21h 1/10
U.S. Cl. 136—202 **12 Claims**



A radioisotope heat source system which comprises a plurality of radioisotopic heat source devices arranged helically or in offset levels about and within an elongated supporting member. The supporting member provides protection and effective heat utilization thereof. Additional protective and heat transfer layers may be provided about the heat source devices and supporting member along with means for utilizing heat produced thereby.

3,697,330
LIQUID EPITAXY METHOD AND APPARATUS
Henry T. Minden, West Concord, and John A. Donahue, Sudbury, Mass., assignors to Sperry Rand Corporation
Filed Mar. 27, 1970, Ser. No. 23,148
Int. Cl. B01j 17/20; H01l 7/38
U.S. Cl. 148—1.5 **5 Claims**



A method and apparatus for practicing liquid-phase epitaxial purification of semiconductor materials and for the preparation of semiconductor films or junction semiconductor devices employs a novel closed cylindrical graphite crucible element. The molten material to be deposited on a substrate is brought into contact with the substrate by simple rotation of the crucible about an axis of symmetry.

3,697,331
PROCESS FOR THE AFTER-TREATMENT OF PHOSPHATE-COATINGS
Malcolm H. Shatz, Williamsville, N.Y., and Edward Leon, Parkersburg, W. Va., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,060
Int. Cl. C23f 11/00
U.S. Cl. 148—6.15 R **14 Claims**

A process for the after-treatment of phosphatized metal articles, which process comprises treating the phosphatized surface of the metal article with aqueous solution containing an alkali metal salt of a novolac phenol-formaldehyde resin having a molecular weight of from about 300 to about 5,000, and heating the treated article at a temperature of at least about 190° C. in the presence of an oxygen-containing atmosphere.

The articles so treated are rendered exceptionally resistant to corrosion and to undercutting when coated with final finish coatings.

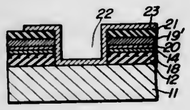
3,697,332
METHOD FOR COATING ALUMINUM WHILE AVOIDING OBJECTIONABLE WASTES
Mark A. Kuehner, North Hills, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
No Drawing. Filed Feb. 11, 1971, Ser. No. 114,667
Int. Cl. C23f 7/14
U.S. Cl. 148—6.15 R **5 Claims**

Aluminum surfaces with good corrosion resistance and paint adhesion properties, together with a waste liquid substantially free of objectionable ions are produced when the aluminum is treated with a solution of phosphate, molybdate, and fluoride, and when the waste stream is rendered basic with lime (pH 11) and then neutralized with sulphuric acid (pH 7).

3,697,333
WELDING PASTE FOR RESISTANCE WELDING COPPER PARTS
Albert Hoeffleur, Alte Landstrasse 29, Kusnacht, Switzerland
No Drawing. Original application May 2, 1968, Ser. No. 730,919, now Patent No. 3,602,682. Divided and this application Oct. 21, 1970, Ser. No. 90,229
Int. Cl. B23k *35/34, 11/18*
U.S. Cl. 148—24 1 Claim

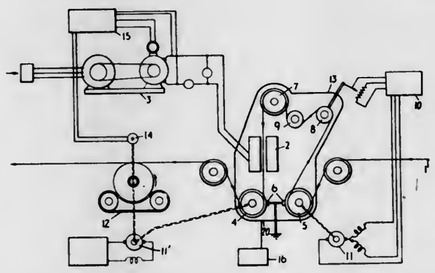
A welding paste for joing copper parts by resistance welding by coating such parts to be joined at the points prior to welding with the paste containing a mixture of powdered silver solder or powdered silver and a soldering flux.

3,697,334
SEMICONDUCTOR DEVICE FOR AND METHOD OF MANUFACTURING THE SAME
Masayuki Yamamoto, Hisashi Toki, and Hideo Shibuya, Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 30, 1967, Ser. No. 664,461
Claims priority, application Japan, Sept. 2, 1966, 41/57,558; Sept. 12, 1966, 41/59,837; Mar. 24, 1967, 42/17,991
Int. Cl. H01l *3/14*
U.S. Cl. 148—33.3 41 Claims



A semiconductor device comprising a silicon substrate, an insulating film containing silicon oxide and phosphorus oxide which is formed on the surface of said silicon substrate, and a protective coating containing aluminum oxide which is formed on the insulating film.

3,697,335
METHOD FOR ANNEALING FLEXIBLE METALLIC MATERIAL
John Kyriakis, Greenford, and Walter Roland Tole, High Wycombe, England, assignors to Beta Instrument Company Limited, High Wycombe, England
Filed Nov. 7, 1969, Ser. No. 874,896
Claims priority, application Great Britain, Nov. 11, 1968, 53,364/68
Int. Cl. C21d *1/26, 1/42*
U.S. Cl. 148—154 4 Claims

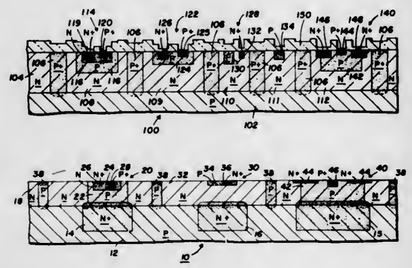


A method and apparatus for annealing flexible metallic material in which the material is passed by means of an electric motor through an annealing device. A length of the material is formed into a loop and short circuited to form a shorted single turn secondary of an induction coil so that induced current in the material heats and anneals it. The tension in the material is controlled by a device which detects changes in tension and which is coupled to two identical control circuits controlling the speed of the motor.

3,697,336
METHOD OF MAKING SEMICONDUCTOR DEVICES
Michael F. Lamorte, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 2, 1966, Ser. No. 546,814
Int. Cl. H01l *7/00*
U.S. Cl. 148—171 7 Claims

A laser diode is made by forming on a first layer of a semiconductor material a second layer of a semiconductor material. Masking strips of silicon dioxide are provided in spaced relation on the surface of the second layer leaving portions of the surface exposed. The exposed portions of the second layer are dissolved to the depth of the junction between the first and second layers using a molten mixture of Ga and GaAs. By solution regrown, a third material is deposited in place of the portions dissolved.

3,697,337
PROCESS FOR FABRICATING A MONOLITHIC CIRCUIT WITH HIGH Q CAPACITOR
Robert A. Stehlin, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Original application June 30, 1967, Ser. No. 650,496, now Patent No. 3,474,309, dated Oct. 21, 1969. Divided and this application Feb. 5, 1969, Ser. No. 810,436
Int. Cl. H01l *7/36, 19/00*
U.S. Cl. 148—175 6 Claims



A process for fabricating a monolithic circuit having both matched complementary PNP and NPN transistors and double junction capacitors having a high Q value. Insolated n-type regions for each transistor and the capacitor are formed by diffusing p-type isolation rings through an n-type epitaxial layer into a p-type substrate. Separate diffusions are then made for the collector, base and emitter of the PNP transistor and for the base and emitter of the NPN transistor. The capacitor is formed by the same diffusions that form the collector region of the PNP transistor and the diffusion that forms the emitter of the NPN transistor. The collector diffusion for the PNP transistor is relatively deep and the emitter diffusion for the NPN transistor is relatively shallow, thus providing a low resistivity charging path through the p-type region to the opposed junctions forming the capacitor.

3,697,338
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES
Shojiro Asai, Hachioji, Motohisa Hirao, Tokyo, and Eiichi Maruyama, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 17, 1971, Ser. No. 116,133
Claims priority, application Japan, Feb. 18, 1970, 45/13,484
Int. Cl. H01l *7/44*
U.S. Cl. 148—188 5 Claims

A method of manufacturing semiconductor devices by solid-solid diffusion wherein a Group III–VI compound such as Ga_2S_3, Al_2S_3, etc. is deposited on a substrate of a Group III–V compound semiconductor such as GaAS, GaP, etc., and the Group VI element is diffused into the Group III–V compound semiconductor.

3,697,339
SOLID PROPELLANT CHARGE FOR COMBINED ROCKET-RAM-JET ENGINES AND PROCESS FOR MAKING THE SAME
Paula Sarten, Munich, and Winfried Mair, Riemerling, Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany
No Drawing. Filed Jan. 16, 1969, Ser. No. 791,802
Claims priority, application Germany, June 20, 1968, P 16 46 311.9
Int. Cl. C06b *11/00*
U.S. Cl. 149—19 9 Claims

A solid propellant charge for combined rocket-ram-jet engines contains a combination of compounds capable of yielding upon combustion an extremely high percentage of hydrogen and a high percentage of nitrogen, both calculated on the carbon present, said nitrogen-containing compound having cyano- or hydrazine groups capable of releasing high energy, said combination also including an oxidizer in an amount insufficient for complete combustion. The propellant charge has not only an unusually high effectiveness, but exhibits among others the advantage that during the rocket phase no carbon will be deposited as soot, including other combustible residues. The invention also discloses a process for producing the propellant charge.

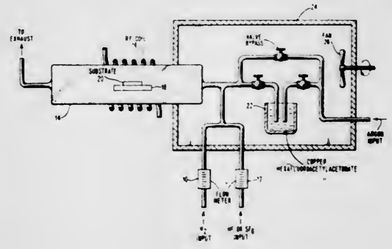
3,697,340
HOMOGENEOUS SOLID SOLUTION OXIDIZING COMPOSITION
Clyde J. Swedenberg, Oxon Hill, Md., and Manfred J. Cziesla, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed May 13, 1969, Ser. No. 826,081
Int. Cl. C06f *1/04*
U.S. Cl. 149—19 15 Claims

A homogeneous solid solution oxidizing composition which is the result of the admixture of a hydroxylammonium salt and a hydrolyzed polymer or certain other polar polymer binder materials, e.g., polar polymers containing poly-hydroxyl, poly-amine, poly-ester and poly-carboxyl functionality.

3,697,341
COOL BURNING SMOKELESS POWDER COMPOSITION CONTAINING NITRAMINE ETHERS
Ronald Rosher and Ronald L. Simmons, Cumberland, Md., assignors to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Aug. 29, 1969, Ser. No. 855,463
Int. Cl. C06b *15/02*
U.S. Cl. 149—92 6 Claims

Cool burning smokeless powder compositions providing high impetus with flame temperatures not exceeding about 2900° K. are disclosed. These smokeless powder compositions contain nitrocellulose, about 20% nitramine ether and optionally can contain nitramine azides.

3,697,342
METHOD OF SELECTIVE CHEMICAL VAPOR DEPOSITION
Jerome J. Cuomo, Bronx, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,533
Int. Cl. B44d *1/02;* C03c *15/00*
U.S. Cl. 156—13 8 Claims

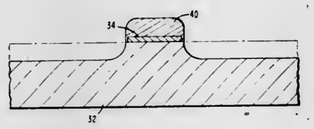


Metals are caused to be deposited selectively in the hydrogen reduction of their compounds which are either gaseous bearing or of adequate vapor pressure. The process is termed selective-chemical vapor deposition since the metal is deposited only on prepatterned areas of a substrate. The substrate is suitably a glass such as a borosilicate, boroalumino-silicate, phosphoaluminosilicate, phosphosilicate or soda-lime glass. The selective-chemical vapor deposition process occurs when two surfaces with different chemical reactivities are exposed to the chemical vapor deposition environment. The prepatterned areas provide one of these surfaces, such areas comprising a nucleation layer of a material such as chromium, tungsten, molybdenum, copper, aluminum, silicon, silicon dioxide, aluminum oxide, silicon nitride and the like, or a composite layer of chromium-copper, chromium-copper-chromium and the like. The other surface is provided by the remainder of the surface of the exposed substrate. The surface provided by the prepatterned area acts as a metal nucleation site while the glass surface is chemically eroded (ablated) and the metal does not nucleate thereon. An example of the process is the chemical reduction of copper hexafluoroacetylacetonate by hydrogen in the presence of hydrogen fluoride or sulfur hexafluoride in a reaction chamber. The chamber contains a substrate having a patterned nucleating layer thereon on which the reduced copper deposits while the substrate is ablated by the fluoride. The deposition reactions and simultaneous ablation reaction, acting in close proximity, are essential elements of the inventive process.

3,697,343
METHOD OF SELECTIVE CHEMICAL VAPOR DEPOSITION
Jerome J. Cuomo, Bronx, and Robert A. Laff, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,534
Int. Cl. C03c *15/00*
U.S. Cl. 156—13 8 Claims

Tungsten and other refractory metals such as molybdenum, tantalum, hafnium, zirconium, rhenium, etc. and metalloids such as silicon are caused to be deposited selectively by the hydrogen reduction of their fluorides and

chlorides. The process is termed selective-chemical vapor deposition since the metal is deposited only on prepatterned areas of a substrate. The substrate is suitably a glass such as a borosilicate, boroalumino-silicate, phospho-alumino-silicate, phospho-silicate or a soda-lime glass. The selective chemical vapor deposition process occurs when two surfaces with different chemical reactivities are exposed to the chemical vapor deposition environment. The prepatterned areas provided one of these surfaces, such areas comprising a nucleating layer of a material such as chromium, tungsten, molybdenum, copper,



aluminum, silicon, silicon dioxide, aluminum oxide, silicon nitrile, and the like or of composite layers of chromium-copper, chromium-copper-chromium, and the like. The other surface is provided by the remainder of the surface, i.e. the exposed surface of the substrate. The surface provided by the prepatterned area acts as a metal nucleation site while the substrate, i.e., the glass surface chemically erodes (ablates) and the metal does not nucleate thereon. In considering the mechanism of the inventive process, the deposition reactions and simultaneous ablation reactions acting in close proximity are an essential element thereof.

3,697,344

METHOD OF AND APPARATUS FOR LOCATING A BIT OF MATERIAL IN A PILE FABRIC

Stephen Temple, Cambridge, England, assignor to Durcam Research and Development Company Limited, London, England

Filed Dec. 8, 1970, Ser. No. 96,081
Claims priority, application Great Britain, Dec. 9, 1969, 60,135/69
Int. Cl. C09j *5/00*
U.S. Cl. 156—72 **15 Claims**

This invention relates to a method of and apparatus for delivering yarn bits or tufts to a backing sheet for producing a pile fabric. More particularly, a bit of material is delivered pneumatically to the backing sheet and the delivery air is separated from the bit prior to its location on the backing sheet to allow the bit to continue under its own inertia to its position on the backing sheet.

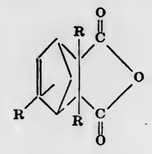
3,697,345

PROCESS FOR PREPARING POLYIMIDE LAMINATES

Robert W. Vaughan, Manhattan Beach, and Hyman R. Lubowitz, Hawthorne, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Continuation-in-part of application Ser. No. 738,403, June 20, 1968. This application Nov. 10, 1969, Ser. No. 875,523
The portion of the term of the patent subsequent to Feb. 23, 1987, has been disclaimed
Int. Cl. B32b *5/28, 31/12;* **C09j** *5/06*
U.S. Cl. 156—155 **12 Claims**

This invention is directed to a process for preparing reinforced resin laminates or plastic composites of improved thermal stability and low void content which comprises impregnating a substantially fibrous material e.g., glass fibers with an effective amount of an organic solution of a precursor of an imide prepolymer i.e., a polyamide-acid. The precursor-impregnated fibrous material is heated to a temperature ranging up to about 300° F. to remove part of the solvent and thereby obtain an intermediate product which may be characterized as having tack and drape. Subsequently, the polyamide-acid is imidized, in situ, to the prepolymer and cured by the application of heat e.g., temperatures ranging from about 250° F. to 700° F. and, with pressures ranging up to about 1000 p.s.i. Under these conditions, the prepolymer is cured to form a reinforced thermoset plastic composite. The precursor of the imide prepolymer i.e., the polyamide-acid is prepared by coreacting approximately stoichiometric amounts of at least one polyfunctional amine with a mixture of anhydrides consisting essentially of at least one polyfunctional anhydride and monoanhydride having the formula:



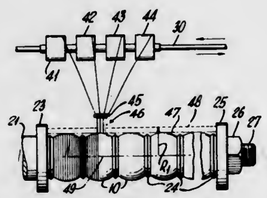
wherein R is selected from the group consisting of hydrogen and lower alkyl radicals having 1 to 5 carbon atoms per molecule.

3,697,346

METHOD OF MAKING A COMPOSITE PLASTIC BEARING

Horace B. Van Dorn, Kensington, Richard J. Matt, Simsbury, and Thomas P. Rolland, Bristol, Conn., assignors to Textron Inc., Providence, R.I.

Filed Dec. 1, 1970, Ser. No. 93,945
Int. Cl. B21c *13/00;* **B65h** *81/08;* **B21d** *53/10*
U.S. Cl. 156—161 **18 Claims**



The invention contemplates an improved sliding bearing, and method of making the same, wherein a low-friction fabric liner of non-cylindrical shape is part of an outer-ring member which has a sliding rotational interface with the matching surface of inner bearing-ring member.

According to the method of the invention, plural inner bearing-ring members are first arrayed upon a common support or mandrel. A braided sock of low-friction fabric is slipped over the inner-ring members and is axially elongated to cause the main body of the sock to conform generally with the external contour of the arrayed inner rings. Hardenable plastic such as epoxy or phenolic

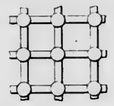
is applied to impregnate the threads of the sock and to wet applied reinforcing threads of back-up layers, resulting in a single impregnated cylinder in which the liner material is held to the countour of all inner rings, for curing to ultimate hardness. Separate assembled bearings result from the radial cut-off between adjacent inner rings, and removal of the mandrel. Various further refining details are disclosed.

3,697,347

PROCESS OF PREPARING AIR-PERVIOUS SPOT-BONDED NONWOVEN FABRICS

Leonard T. Lehmann, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 610,855, Jan. 23, 1967. This application Dec. 22, 1969, Ser. No. 887,455
Int. Cl. D04h *1/58, 1/72*
U.S. Cl. 156—81 **5 Claims**



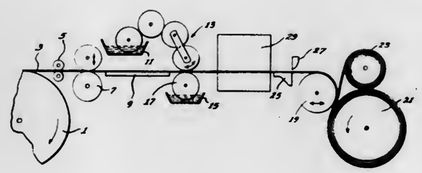
A process of forming air-pervious reinforced nonwoven fabrics comprises heating a nonwoven web in contact with a thermoplastic net material which has uniformly spaced thick portions connected by thinner strands. The temperature is sufficiently high to melt the net material, causing the strands to draw back into the thick portions making uniformly spaced spots of melted thermoplastic material.

3,697,348

METHOD OF MAKING GASKETS

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co.

Filed July 9, 1969, Ser. No. 840,171
Int. Cl. B65h *81/02*
U.S. Cl. 156—190 **6 Claims**



A gasket having improved sealing properties and the method of forming such a gasket wherein a continuous strip or web of gasket material is wound on a core with the core having a cross-sectional configuration corresponding to the internal configuration of the gasket being made. The web material is wound upon itself and, in the preferred embodiment, has a series of intermediate bonding layers of a fluid-impermeable polymer material which in the end product form a plurality of parallel fluid barriers to produce effective sealing. The winding of the web material on the core and the application of the polymer material to the web provides a tube which is then cut into preselected thicknesses to provide individual gaskets. Additional polymer material may be provided on the cut or exposed surfaces of the gasket if desired. The cross-sectional thickness of the gasket is dictated solely by the convolute gasket material and the polymer material layer or layers. One aspect of the improved method consists in preparing a roll of the gasket material which is to be wound on the core with the base material having applied to one or both sides thereof an adhesive coating which has been dried, at least to the extent that it will not adhere or cohere to itself when rolled upon itself, before the tube is formed.

3,697,349

THERMOPLASTIC MOULDING COMPOSITIONS AND SHAPED ARTICLES ON THE BASIS OF POLYVINYL CHLORIDE

Hans-Joachim Andraschek and Erich Zentner, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,078
Claims priority, application Germany, Oct. 19, 1968, P 18 04 049.8
Int. Cl. C08f *15/00;* **B29c** *17/00;* **B31f** *23/10*
U.S. Cl. 156—219 **3 Claims**

Emulsion graft polymers on the basis of vinyl chloride containing specific amounts of known elastomer components are used for the manufacture of plasticizer-free films, sheets or shaped articles which undergo a permanent change in color by deformation, preferably beyond the yield point. The films are especially suitable for labeling and decorating purposes.

3,697,350

METHOD OF MAKING AN ENAMELED DECORATIVE BOARD

Akira Yamanouchi, Neyagawa-shi, Seisuke Takenaka, Kadoma-shi, and Yukio Mitori, Neyagawa-shi, Japan, assignors to Matsushita Kenko Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 10, 1969, Ser. No. 831,988
Claims priority, application Japan, June 25, 1968, 43/44,320
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 **4 Claims**

The present invention relates to an enameled decorative board prepared by fixing, with adhesive in between an enameled aluminum sheet on a base material made of veneer boards, fiber boards, asbestos boards or laminate of paper or cloth dipped into a thermosetting resin solution, and by drying the composite board. The decorative board of this invention can be advantageously produced by placing an enameled aluminum sheet prepared by melt-baking frit of a low melting point on the surface of the aluminum onto said base material, and then by placing damper layer provided on the enameled surface and a suppression plate on the damper layer, to be pressed together.

The thus prepared enameled decorative board has excellent resistance against water, heat, light, and corrosion, and the enameled surface is beautiful; therefore, it is especially effective as a decorative board for outdoor use.

3,697,351

METHOD OF BONDING HOLLOW FIBERS TO PLASTIC RESIN SUPPORTS BY RADIATION GRAFTING

David E. Harmer, Midland, Mich., John R. Jarema, Indianapolis, Ind., and Douglas E. Leng, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 19, 1968, Ser. No. 714,349

Int. Cl. B29c *19/02*

U.S. Cl. 156—272 7 Claims

The bond between a plastic resin support or header and a hollow fiber embedded therein is improved by forming a graft polymer bond between the resin and the fiber. The graft polymer bond is formed by curing the resin with high energy radiation.

3,697,352

BONDING AND ASSEMBLING PROCESS BY A MAGNETIC FORCE

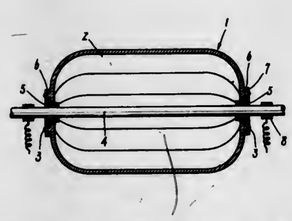
Hideo Itokawa, Tokyo, Japan, assignor to Taiyo Kogyo Company Limited, Tokyo, Japan

Filed Jan. 15, 1969, Ser. No. 791,260

Claims priority, application Japan, Jan. 19, 1968, 43/3,048

Int. Cl. H01f *13/00*

U.S. Cl. 156—272 7 Claims



This invention is a method wherein a ferromagnetic substance is used for the bonded parts of small divided pieces to be bonded together, said pieces are bonded together by flowing an instantaneous electric current to it and the respective pieces are separated from each other by flowing the electric current in a direction reverse to that of the above mentioned current.

3,697,353

PROCESS FOR BONDING TWO SOLID ARTICLES TOGETHER IN WHICH A CATALYZED UNSATURATED POLYESTER RESIN IS USED IN COMBINATION WITH A PROMOTED UNSATURATED POLYESTER RESIN

Rene Robert Brochu, Fairfield, Conn., and Lytton Taylor, Guilford, N.C., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,383

Int. Cl. B32b *7/10*

U.S. Cl. 156—310 10 Claims

A process for bonding two solid articles together comprising coating the surface of one of the articles with a catalyzed unsaturated polyester resin, coating the surface of the other article with a promoted unsaturated polyester resin and bringing each of the coated surfaces into direct contact with one another.

3,697,354

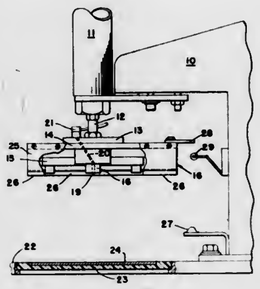
STAY FUSING MACHINE

Fred A. Brown III, Ballston Spa, and Roger Le Mere, Petersburg, N.Y., assignors to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,059

Int. Cl. B29c *19/02*; B65c *9/08*

U.S. Cl. 156—380 3 Claims



Improved stay fusing machine for attaching stays to collars, the machine including self-shielding features and angled stay feed. The machine is adapted for use with long stays.

3,697,355

UREA-ALDEHYDE RESIN ADHESIVE PROCESS

William Raymond Black, Springfield, Oreg., assignor to The Borden Company, New York, N.Y.

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,253

Int. Cl. C09j *3/16*

U.S. Cl. 156—319 2 Claims

This invention relates to the method of bonding waterpentrable cellulosic substrates with urea-aldehyde resin adhesives as illustrated by bonding of wood flakes into particle boards, and in particular to a method of improving the efficiency of said adhesives, which comprises replacing from about 1% up to about 35% by weight of the resin solids by a salt selected from the group consisting of alkali and alkaline earth halides and mixtures thereof; and to the resultant products.

3,697,356

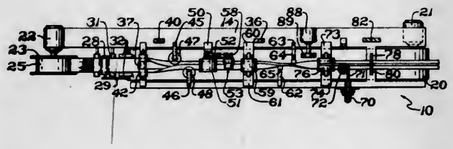
MANUFACTURE OF WINDSHIELD WIPER BLADES

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 19, 1971, Ser. No. 135,092

Int. Cl. B32b *3/04*

U.S. Cl. 156—467 8 Claims



An apparatus for making a distendable stationary window wiper blade which is suitable for cleaning a movable window as in station wagons. The blade is distendable by fluid pressure to simultaneously press the wiper blade against the window and spray liquid against the window to provide means for lubricating and wetting the window. Such wiper blade is made by encasing a tube with fabric reinforced material and setting a bead centrally along the central length thereof.

3,697,357

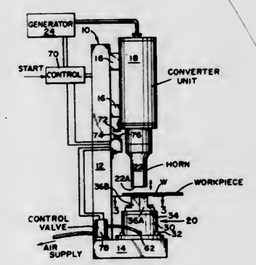
ULTRASONIC SEALING APPARATUS

Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed July 17, 1970, Ser. No. 55,886

Int. Cl. B33b *31/00*

U.S. Cl. 156—510 2 Claims



An ultrasonic buttonhole apparatus comprises an ultrasonic generator, a converter with horn, and a stationary anvil. The anvil is provided with a patterned face to cause a frame-like fused portion and with a movable slitting means which is raised during a portion of the sealing (weld) cycle, thereby causing selective fusing of the workpiece interposed.

3,697,358

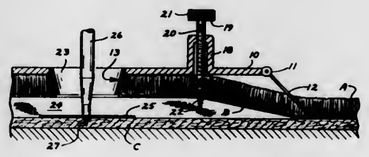
APPARATUS FOR REPAIRING DAMAGED CARPETING

Jacob A. Ronning, 3525 Irving Ave. S., Minneapolis, Minn. 55408

Original application July 27, 1967, Ser. No. 656,482, now Patent No. 3,558,386. Divided and this application Aug. 27, 1970, Ser. No. 67,541

Int. Cl. B32b *31/04, 31/18, 31/20*

U.S. Cl. 156—514 4 Claims



Apparatus for use in repairing spot damaged carpeting including a plate for disposition on the carpeting with an aperture exposing the damaged area and for guiding a cutting tool therethrough, with means attaching the plate to the carpeting to lift a portion of the same above the underlying floor to facilitate the passage of a member for securing a section of undamaged carpeting in the opening from which the damaged section has been cut.

3,697,359

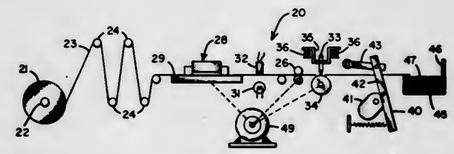
METHOD OF ATTACHING HANDLES TO FILM BAGS

William E. Javarey, Jr., Glocester, and Richard C. Adams, West Barrington, R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed Dec. 29, 1969, Ser. No. 888,224

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—518 5 Claims



Apparatus for bonding a pair of handles from superimposed continuous webs of handle blanks onto the open end of a bag structure formed of flexible heat sealable film, the apparatus comprising web handling means adapted to draw a continuous bag forming web of flexible film onto the upper surface of a web support assembly, and second web handling means adjacent the first web handling means adapted to draw superimposed continuous webs of handle blank pairs along the upper surface of a second web supporting assembly and into predetermined disposition relative to said bag forming retention or web, and means for forming knock-out ears partially through said superimposed handle blanks with the ear in the upper handle blank being retained within the corresponding opening formed in the lower handle blank so as to releasably retain the handle blank pairs in predetermined superimposed relationship for bonding to the continuous web of flexible film.

3,697,360

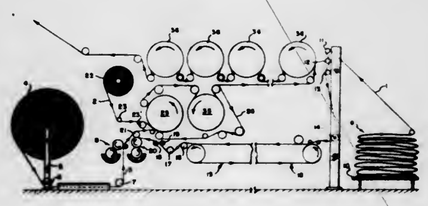
METHOD FOR MAKING SANDWICH LAMINATIONS IN ONE PASS

Terrance L. Chamberlain, Corinna, Richard P. Sears, Abbot Village, and Ivan H. Fletcher, Jr., Newport, Maine, assignors to Coin Sales Corporation

Filed Dec. 4, 1969, Ser. No. 882,147

Int. Cl. B32b *31/08, 31/20*

U.S. Cl. 156—551 1 Claim



Method for bonding two moving webs of a cover material to opposite sides of a moving web of a core material including means for applying discrete portions of

adhesive to the surface of one of the webs of cover material and to one of the surfaces of the core material, means for bringing the two moving webs of cover material into contact with the moving web of core material and means for holding all the webs together while subjecting the adhesive to heat in order to cure the adhesive in one pass through the apparatus.

The method of bonding two webs of a cover material to opposite sides of a moving web of core material comprising the steps of applying discrete portions of adhesive to one surface of the web of core material and discrete portions of adhesive to one side of one web of cover material, bringing a web of cover material into contact with each side of the web of core material and compressing the resultant laminate of webs together while subjecting the laminate to heat in order to cure the adhesive.

3,697,361

DEVICE FOR THE CONTINUOUS PRODUCTION OF LAMINATED WOOD OF THE PARQUET TYPE

Leif Thorvald Olsen, Boen, Norway, assignor to Boen Bruk, Kristiansand, Norway

Original application Mar. 26, 1969, Ser. No. 810,589. Divided and this application Oct. 22, 1970, Ser. No. 83,024

Claims priority, application Norway, Apr. 1, 1968, 1,252/68; June 27, 1968, 2,554/68; Feb. 11, 1969, 526/69

Int. Cl. B27d *3/00;* **B32b** *31/20*

U.S. Cl. 156—558 **2 Claims**

The invention relates to a process for the step by step pressing of material which is fed continuously, particularly wood laminate such as laminated parquet, and the like, in which the pressing is carried out by means of a press which can move to and fro in the feed direction of the material and supported by rollers or wheels. The press carries out the pressing and the heating of the laminate in order to harden the glue while moving in the feed direction of the material and which is open during the return movement, and the press is pushed forward by the material sheet itself and one thereby achieves a desired mutual compression of the lamellae in the horizontal direction.

3,697,362

ARTIFICIAL FLOWERS HAVING TILTABLY ADJUSTABLE PETALS

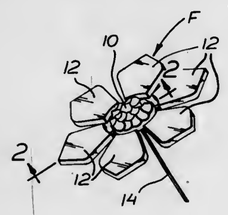
Ronald S. O. Zane, La Sierra, Calif. (2572 Hammer Ave., Norco, Calif. 91760), and Lester W. Mendell, Jr., 1432 Mariposa, Corona, Calif. 91720

Filed Dec. 29, 1969, Ser. No. 888,796

Int. Cl. A01n *3/00;* **A41g** *1/00;* **A47g** *33/04*

U.S. Cl. 161—30 **6 Claims**

An artificial flower having a plastic center, or pistil, and plastic petals spaced outwardly from, and arranged evenly around, the periphery of the pistil. The petals are connected to the pistil by means of flexible "stems" of deadsoft character. These stems are of U-shaped configuration and comprise the outer portions of the legs of a spider-like member, the central part of which is embedded in the flower pistil. Each of the legs extends laterally from a common center a fixed distance, then is bent to extend perpendicularly through the bottom of the pistil and formed into the shape of a U, the outer terminus of which is embedded in the inner end of one of the flower petals. As a result, each of the flower petals has a U-shaped stem which permits it to be tilted through a relatively wide arc.



The flower is molded from a suitable polyester resin in a mold having a central well for the pistil and surrounding depressions for the petals. The petal depressions are separated from the central well, so there is no channel for resin flow therebetween. The legs of the spider-like member are shaped to permit the central portion of the member to fit into the central well in the mold, with each leg extending radially from a central hub, then curving upwardly over the rim of the well, and downwardly into one of the petal depressions.

3,697,363

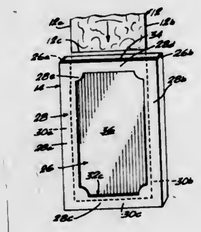
PANEL ASSEMBLY FOR FURNITURE CONSTRUCTION

Jorge Sueiras Martinez, 961 W. 36th Terrace, Hialeah, Fla. 33012

Filed Nov. 2, 1970, Ser. No. 86,121

Int. Cl. A47b *47/04;* **B32b** *1/04*

U.S. Cl. 161—44 **8 Claims**



A single panel assembly of the invention may be embodied in a furniture piece, a counter top or other planar wall or construction element. The panel assembly includes a base panel and at least one thin broad decorative display panel adapted for selective use with the base panel. The display panel is adapted for quick attachment and detachment flatwise over the base panel; sliding display

panel means or magnetic attraction means are provided for ready removal and replacement of a display panel on a base panel for changing the color pattern of decorative design of a furniture piece, counter top fixture or the like.

3,697,364

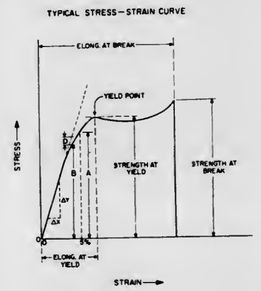
DISCONTINUOUS CELLULOSE REINFORCED ELASTOMER

Kamel Boustany and Aubert Yaucher Coran, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 16, 1970, Ser. No. 29,033

Int. Cl. B32b *5/00;* **B60c** *1/00*

U.S. Cl. 161—59 **15 Claims**



Bonded composites of discontinuous cellulose and vulcanizable elastomer having modulus and strength sufficiently high for use as replacements for composites from continuous fiber.

3,697,365

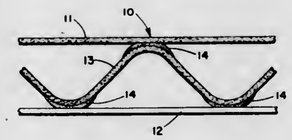
RIGID-WHEN-WET BOXBOARD

Abraham J. Reisman, Springfield, Mass., and Thomas B. Wilkinson III, Houston, Tex., assignors to Alton Box Board Company, Alton, Ill., and Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 647,624, June 21, 1967. This application Feb. 25, 1971, Ser. No. 119,009

Int. Cl. B32b *3/28, 9/06, 29/06*

U.S. Cl. 161—133 **8 Claims**



Corrugated containerboard of the type adapted to be rigid when wet having at least one sheet of the board structure impregnated with a mixture of resole type phenolic resin and an organo silyl compound and procedure for making.

3,697,366

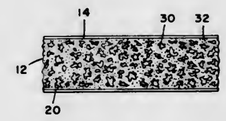
LIGHTWEIGHT GYPSUM PANEL

George H. Harlock and Edward A. Burkard, East Amherst, N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,755

Int. Cl. B32b *13/00*

U.S. Cl. 161—159 **10 Claims**



Gypsum wallboard in which about half the volume of the core consists of very lightweight particles formed by tearing foamed polystyrene beads into a shredded form.

3,697,367

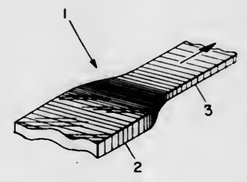
LOW DENSITY COMPOSITE POLYMER FILM

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 31, 1969, Ser. No. 889,481

Int. Cl. B29d *27/00*

U.S. Cl. 161—168 **5 Claims**



An opaque microporous film suitable as paper and capable of being printed. The film has at least two polymers which are incompatible with each other and one polymer which is in excess has a glass transition temperature at least 40° C. lower than that of another polymer with which it is incompatible. Drawing at about the glass transition temperature of the polymer in excess results in film opacity.

3,697,368

POLYAMIDE-POLYETHYLENE COMPOSITE FILMS

Mahendra Bhuta, Mendham, and William Sacks, Gillette, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

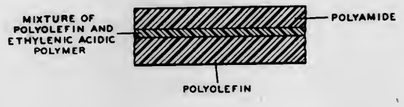
Filed Feb. 26, 1971, Ser. No. 119,325

Int. Cl. B32b *27/08, 27/34;* **C09j** *3/14*

U.S. Cl. 161—227 **12 Claims**

Composite films are provided by coextruding a polyamide with at least one combination of polymeric materials selected from the group of (1)(a) an ethylenic

acidic polymer and (b) a polyolefinic hydrocarbon; or (2) a mixture of an ethylenic acidic polymer and a polyolefinic hydrocarbon or (3)(a) a mixture of an ethylenic acidic polymer and a polyolefinic hydrocarbon and (b)

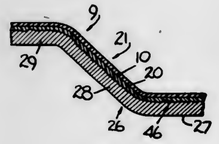


a polyolefinic hydrocarbon in a novel process which provides films having an excellent balance of properties including high strength, clarity and low moisture and gas permeability.

3,697,369
PLASTIC LINED RECEPTACLE OR THE LIKE

Stephen W. Amberg, St. James, N.Y., and Ralph G. Amberg, Monticello, Ind., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of application Ser. No. 445,926, Apr. 6, 1965, which is a continuation-in-part of application Ser. No. 415,930, Dec. 4, 1964. This application Dec. 10, 1969, Ser. No. 880,485
Int. Cl. B32b 27/10; B65d 5/56
U.S. Cl. 161—250 **16 Claims**



Molded pulp plate having continuous and unseamed liner of polypropylene film bonded to its interior surfaces by polyethylene. Underside of polypropylene film may be printed with decorative design. Method includes clamping a sheet of polypropylene film, having polyethylene coating on its underside surface, against the mouth rim of the plate; heating the plate and film to a temperature which is above the softening point temperature of the polyethylene material but below the softening point temperature of polypropylene; and drawing a vacuum through the bottom of the plate to press the film against the interior surfaces of the plate.

3,697,370
METHOD FOR MANUFACTURE OF DRY STRENGTH PAPER CONTAINING METHYLAMINE-EPICHLOROHYDRIN POLYMER

Daniel Elmer Nagy, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

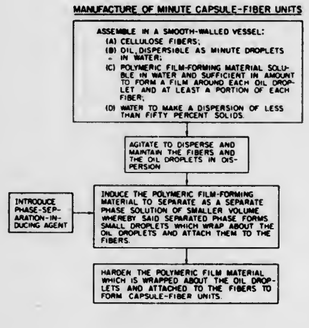
Application May 22, 1970, Ser. No. 39,874, which is a division of application Ser. No. 778,934, Nov. 26, 1968, now Patent No. 3,567,659. Divided and this application Dec. 8, 1970, Ser. No. 96,191
Int. Cl. D21h 3/38
U.S. Cl. 162—164 **3 Claims**

A cationic, water-soluble, storage-stable, methylamine-epichlorohydrin polymer is prepared by reacting a quantity of a methylamine-epichlorohydrin polymer which is well below its gel point with successively added small amounts of epichlorohydrin until the polymer nears the stage at which it is an irreversible gel, and then reacting the polymer with sufficient methylamine to inactivate substantially all amine reactive epichlorohydrin residues present. At least the last step of the reaction is performed at a temperature at which a particle depolymerization of the polymer occurs.

3,697,371
CAPSULE-FIBER UNIT MANUFACTURE

Lowell Schleicher, Xenia, and Robert E. Miller and Erland C. Porter, Jr., Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 12, 1971, Ser. No. 114,929
Int. Cl. D21d 3/00
U.S. Cl. 162—183 **10 Claims**

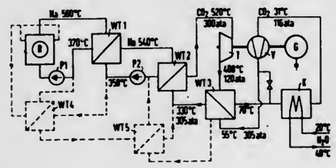


A process of manufacture of minute capsule-fiber units, en masse, comprising the steps of (1) dispersing cellulose fibers and oil material as droplets in an aqueous solution of a film-forming polymeric material, (2) changing the conditions of the solution to make the polymeric material less soluble so as to give an emergent coacervate phase of polymeric material which wraps the oil droplets and attaches them to the fibers to give capsule-fiber units and (3) hardening the polymeric material of the capsule-fiber units.

3,697,372
NUCLEAR REACTOR INSTALLATION

Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 14, 1968, Ser. No. 767,126
Claims priority, application Germany, Oct. 13, 1967, P 16 01 004.1
Int. Cl. G21d 1/02
U.S. Cl. 176—60 **9 Claims**



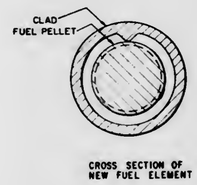
Nuclear reactor installation for power production includes a gas turbine circulatory system operating with a nonideal gas such as CO_2 and having a compressor stage

supplied at full-load operation with noncondensed working medium having a density of at least 200 kg./m.³ and preferably at supercritical pressure and substantially critical temperature.

3,697,373
NUCLEAR FUEL ELEMENT

Donald E. Emon, Rockville, and Donald R. Riley, Potomac, Md., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 2, 1970, Ser. No. 42,660
Int. Cl. G21c 3/18
U.S. Cl. 176—68 **8 Claims**

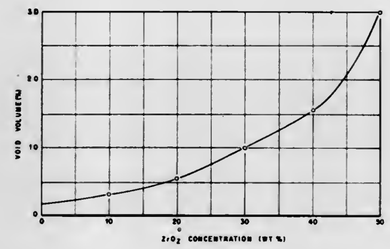


Overall fuel element clad strain due to fuel expansion during burnup is reduced by breaking the symmetry of the outer surface of the expanding fuel material. The inner surface of the clad is non-cylindrical so that at points of non-symmetry the slowly expanding fuel material is forced inward, thereby breaking the symmetry of the expanding fuel material and thus forming stress relieving paths.

3,697,374
GRADIENT-TYPE NUCLEAR FUEL PLATE

Rodney W. Knight, Melvin M. Martin, and William R. Martin, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 3, 1970, Ser. No. 86,576
Int. Cl. G21c 3/20
U.S. Cl. 176—69 **5 Claims**



Gradient-type nuclear fuel plates exhibiting minimal blister formation are provided by introducing an inert ceramic dispersoid into the filler material of the fuel plate, said dispersoid providing a void volume of between about 2–4 volume percent in said filler material. In one embodiment a gradient-type nuclear fuel plate comprising an aluminum-base dispersion fuel clad with aluminum metal is prepared wherein the dispersoid is alpha-phase Al_2O_3.

3,697,375
FUEL ASSEMBLY FOR INSERTION FROM ABOVE INTO A NUCLEAR REACTOR CORE

Antti Suvanto and Aart van Santen, Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 24, 1969, Ser. No. 793,812
Claims priority, application Sweden, Dec. 2, 1968, 16,411/68
Int. Cl. G21c 3/32
U.S. Cl. 176—78 **13 Claims**

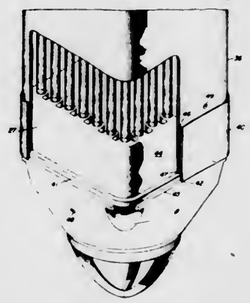


In a fuel assembly for insertion from above into a nuclear reactor core a fuel rod bundle is arranged as a freely removable loose insert in a weight-carrying square sheathing tube, which has at its upper end connection members such as two diametrically opposed lifting lugs permitting a grab member in a lifting device to grab the sheathing tube for lifting the entire fuel assembly. The upper part of the sheathing tube is formed as springs supporting the fuel assembly laterally against an upper core grid and supporting the fuel rod bundle laterally against the sheathing tube wall.

3,697,376
NUCLEAR FUEL ASSEMBLY WITH FLOW CHANNEL RESTRAINING MEANS

Carl R. Mefford, James L. Lass, Bart A. Smith, Dominic A. Venier, and Thomas Trocki, San Jose, Calif., assignors to General Electric Company

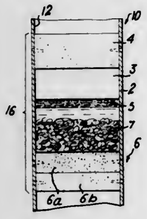
Filed Aug. 15, 1969, Ser. No. 850,483
Int. Cl. G21c 3/34
U.S. Cl. 176—78 **9 Claims**



A nuclear fuel assembly incorporating a restraining arrangement for engaging the flow channel and limiting its

deflection away from the lower tie plate to control the bypass flow of coolant into the spaces between the fuel assemblies of a nuclear reactor.

3,697,377
VENTED NUCLEAR FUEL ELEMENT
Maurice Gauthron, Paris, France, assignor to Commissariat a l'Energie Atomique
Filed July 8, 1968, Ser. No. 743,125
Claims priority, application France, July 13, 1967, 114,361
Int. Cl. G21c *3/10*
U.S. Cl. 176—79 **16 Claims**



A vented fuel element for a nuclear reactor of the liquid-metal cooled type is designed to prevent the penetration of the liquid metal coolant into the fuel element can through the fission-gas discharge vent.

The vent according to the invention comprises a compartment which is separated from the can interior by a first porous plug and from the liquid metal by a second porous plug.

The liquid metal which has passed through the second plug is intended to transport a powdered product which is present within the compartment either into the first plug which is thereby rendered impermeable to the liquid metal or in the direction of the second plug so as to bring the powdered product into contact with the second plug and thus permit the discharge of fission gases.

3,697,378
DEXTRINIZATION OF STARCH WITH α-AMYLASE FROM *BACILLUS COAGULANS*
Henry M. Smalley, Ulverston, England, assignor to Glaxo Laboratories Limited, Middlesex, England
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,197
Claims priority, application Great Britain, Sept. 9, 1968, 42,856/68
Int. Cl. C12d *13/10*
U.S. Cl. 195—31 R **19 Claims**

An α-amylase having a molecular weight of 11,000± 1000 as determined by the method of Andrews, Biochem. J. 1964, 91, 222; a pH for optimal activity at 37° C. of 4.8; in the purified state an optimal pH for thermal stability in the range 6–8; in the purified state a half-life at 90° C. of 90 minutes; in the presence of starch a half-life at 90° C. of 120 minutes; in 20 mm. glycerophosphate/acetate buffer containing calcium chloride at a molarity of 5 mm. and 0.5% starch at pH 5–7, an optimal temperature for activity of 75° C.; an optimal calcium molarity for enzymic activity of 5–25 mm.; enhanced stability in the presence of organic acids; ability to degrade starch to produce polysaccharides consisting of 6 glucose units; ability to attack the cycloheptylamylose system in Schardinger β-dextrins; and a mobility of 5 cm. towards the anode on gel electrophoresis for 16 hours at 4° C. at 400 volts and 20 ma. on 5% polyacrylamide gel in tris-borate-EDTA buffer at pH 8.7.

The α-amylase is prepared by submerged aerobic culture of *B. coagulans* strain NCIB 10278 or a mutant thereof in a nutrient medium and isolating the enzyme therefrom. The enzyme is used for the dextrinisation of starch in an aqueous medium at a temperature of 80° C. or greater.

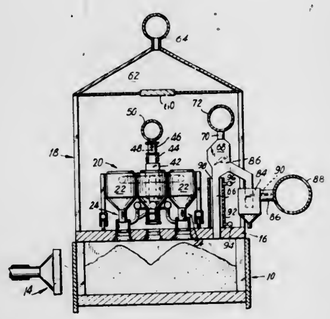
3,697,379
ASYMMETRIC REDUCTION OF SECO-STEROIDS
George C. Buzby, Jr., Philadelphia, George Greenspan, Narberth, and Emmett L. Buhle, Media, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Apr. 28, 1970, Ser. No. 32,727
Int. Cl. C07c *167/00*
U.S. Cl. 195—51 R **6 Claims**

Optically active seco-steroids are prepared by microbiological reduction. The compounds are useful in the production of physiologically active steroids.

3,697,380
LINCOMYCIN PRODUCTION
Alexander D. Argoudelis, Portage, John H. Coats, Kalamazoo, and Thomas R. Pyke, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,141
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **3 Claims**

A microbiological process for preparing the antibiotic lincomycin without the concomitant production of lincomycin B (4'-depropyl-4'-ethyllincomycin). The absence of lincomycin B in the fermentation beer results in increased lincomycin recovery efficiency from the fermentation beer.

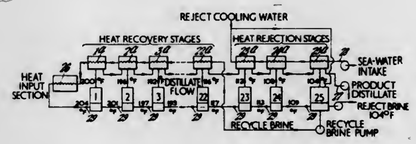
3,697,381
METHOD AND APPARATUS FOR POLLUTION-FREE CHARGING OF COKE OVENS
Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.
Filed Feb. 7, 1972, Ser. No. 224,157
Int. Cl. C10b *27/04*
U.S. Cl. 201—40 **21 Claims**



A method and apparatus for carrying out pollution-free charging of coke ovens. During introduction of a charge into a coke oven from a larry car gas which escapes through the larry car connections to the coke oven is collected with a suitable gas-collecting pipe. Standpipes which communicate with the interior of the coke ovens communicate with a second gas-collecting pipe so that additional

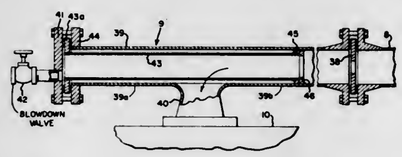
gas escaping from the interior of the coke ovens is collected. The entire space over the coke ovens is enclosed and the interior of the enclosure communicates with a third gas-collecting pipe in which gas is collected from the space over the coke ovens. All of this collected gas is cleaned before being discharged to the outer atmosphere.

3,697,382
METHOD OF AND APPARATUS FOR THE MULTI-FLASH DISTILLATION OF LIQUIDS
Andrew Porteous, Bearsden, Dunbartonshire, Scotland, assignor to National Research Development Corporation
Filed Nov. 17, 1969, Ser. No. 877,145
Claims priority, application Great Britain, Nov. 19, 1968, 5,483/68
Int. Cl. B01d *3/10, 3/06, 3/02*
U.S. Cl. 202—173 **2 Claims**



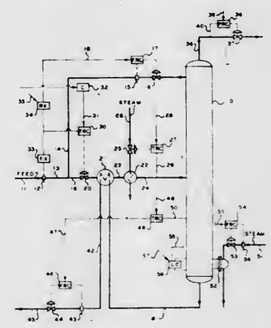
The invention relates to the multi-flash distillation of liquids wherein distillation is effected by a plant comprising a series of distillation stages each having a heat exchanger and associated flash chamber, a heater introduced between the final heat exchanger and the first flash chamber, the heater and flash chambers being all connected in series and means by which the pressure is reduced in successive chambers.

3,697,383
FEEDWATER HEATER AND STRAINER ARRANGEMENT FOR MULTIPLE-EFFECT THIN FILM DESALINATION PLANT
Earle R. Weaver, Topsfield, Mass., assignor to General Electric Company
Filed Dec. 14, 1970, Ser. No. 97,729
Int. Cl. B01d *1/26, 3/00, 3/02, 3/08, 3/28, 21/24*
U.S. Cl. 202—174 **7 Claims**



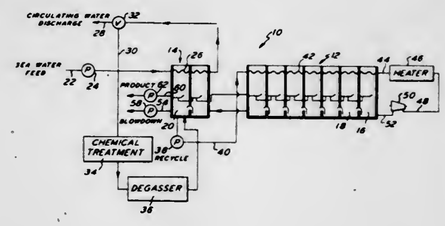
A vertical double fluted tube evaporator for water desalination has multiple closely-coupled effects with individual feedwater heaters in each effect. Feedwater manifolds in each effect supply feedwater to double fluted tubes through individual porcelain spray nozzles providing thin films on the tubes. The feedwater heaters are fed in series through each effect, while parallel branch lines supply the manifolds via in-line strainers with provisions for blow-down during normal operation if strainer blockage occurs.

3,697,384
FRACTIONATION CONTROL SYSTEM AND PROCESS WITH PLURAL FEED STREAM CONTROLS
Harry L. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 12, 1969, Ser. No. 823,699
Int. Cl. B01d *3/42*
U.S. Cl. 203—1 **7 Claims**



Method and apparatus for controlling the fractional distillation of a fluid mixture by separating the total feed stream into two streams, regulating the flow rate of each stream, heating one of the streams, delivering each stream into a distillation column at spaced locations, regulating the flow of fluid from the column, and regulating the temperature within the column.

3,697,385
FLASH DISTILLATION APPARATUS AND METHOD
Robert A. Tidball, Swarthmore, Pa., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Oct. 6, 1970, Ser. No. 78,534
Int. Cl. B01d *3/00, 3/02, 3/10*
U.S. Cl. 203—11 **9 Claims**



A flash distillation apparatus and method wherein fluid energy in unflashed distilland is recovered in the form of useable mechanical energy. The apparatus has a series of flash evaporation stages, condenser tubes associated with the stages through which distilland passes as a condensing medium, a heater for heating of the distilland after it emerges from the condenser tubes, a pump for circulating the distilland, and a turbine for receiving heated distilland prior to flashing of the distilland. The

turbine serves to reduce distilland pressure prior to introduction of the distilland into a first distillation stage, and to produce mechanical energy which may be used to supply the energy requirements of the apparatus.

3,697,386
METHOD OF ISOLATING TETRAOXANE BY AZEOTROPIC DISTILLATION AND CRYSTALLIZATION

Tadashi Iwai, Hayamamachi, Isshiki, Hisao Yamashina, and Teiitsu Takagi, Yokosuka, and Shoichi Adachi, Zushi-shi, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan

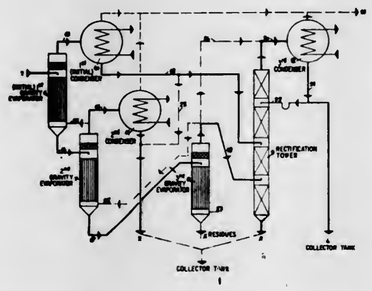
No Drawing. Filed Mar. 10, 1971, Ser. No. 123,072
Claims priority, application Japan, Mar. 18, 1970, 45/22,303; June 9, 1970, 45/49,136; Dec. 1, 1970, 45/105,440
Int. Cl. B01d *3/36;* **C07d** *21/00*
U.S. Cl. 203—48 **4 Claims**

Tetraoxane is isolated from a system containing tetraoxane and an azeotropic solvent therefore selected from di-n-butyl ether, cumene, o-, m-, and p-chlorotoluene, diisobutyl ketone, n-hexyl alcohol and cyclooctane by azeotropically distilling a mixture of the tetraoxane and the azeotropic solvent from the system and by crystallizing the tetraoxane from the distilled mixture.

3,697,387
PROCESS AND DEVICE FOR THE PURIFICATION OF A MIXTURE OF ORGANIC SUBSTANCES OF HIGH MOLECULAR WEIGHT

Hans Joachim Munch, Frankendorf, Switzerland, assignor to Buss A.G., Basel, Switzerland

Filed May 13, 1969, Ser. No. 824,071
Claims priority, application Sweden, May 16, 1968, 7,504/68
Int. Cl. B01d *3/04, 3/10*
U.S. Cl. 203—72 **8 Claims**

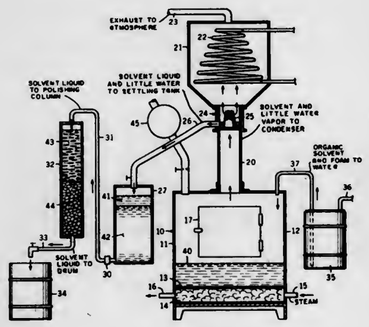


A process for the purification of a mixture of organic substances of high molecular weight, which comprises conveying the mixture continuously in even flow through a plurality of heating and cooling zones under vacuum, while first adding sufficient heat to the mixture for evaporating substantially all of the first running fraction together with a small portion of the middle fraction, thereafter subjecting the distillate so obtained to rectification so as to obtain a pure product of first quality, which is withdrawn, and a slightly impure product of second quality, and continuing the purification process by evaporating the residual mixture remaining after withdrawal of the first-quality product, in additional heating stages followed by condensations, to obtain further amounts of first-quality products, the heat energy of the hot vapors and the hot condensates being utilized for said rectification. The invention also comprises a device for carrying out the above process.

3,697,388
PROCESS OF RECLAIMING A LIQUID ORGANIC SOLVENT FROM A FOAM CONTAMINANT

Willis S. Hobson and John T. Gregory, Seymour, and Clarence H. Kleinhaus, Columbus, Ind., assignors to Seymour Manufacturing Co., Seymour, Ind.

Filed Nov. 6, 1969, Ser. No. 874,659
Int. Cl. B01d *3/36*
U.S. Cl. 203—96 **7 Claims**



The process of reclaiming a liquid organic solvent from a foam contaminant consisting of a synthetic polymer mixed with a catalyst to form a foam, in which a quantity of liquid is placed into a still pot, the liquid being one that has a boiling point that is greater than that of the solvent, and feeding the solvent and foam contaminant mixture into the still pot liquid that has been heated to a temperature above the boiling point of the solvent yet below the boiling point of the liquid whereby the solvent vaporizes, the solvent vapor being passed through a condenser and the resultant solvent liquid being recovered. The solvent can be a chlorinated solvent of a class including methylene chloride, trichloroethylene and methyl chloroform, the still pot liquid can be water, and the foam contaminant can be of a class including polyurethane foam and polystyrene foam. The solvent and foam contaminant mixture is fed into the heated water above the liquid level and at a rate determined by the capacity of the condenser. The amount of water provides sufficient depth to cover the batch of solvent and contaminant mixture fed into the pot, the foam contaminant being removed physically from the water after the solvent has been vaporized from the batch. The solvent vapor, together with a minor amount of water vapor, is delivered into a settling tank, the water being lighter than the solvent liquid to provide a covering layer in the settling tank to prevent evaporation of the solvent liquid. The solvent liquid is drawn from the settling tank and passed through a desiccant to remove any remaining quantity of water.

3,697,389
METHOD OF FORMING ELECTRICAL CONTACT MATERIALS

Wayne John Jacobs and Robert William Fritz, Camp Hill, and Howard Richard Peiffer, New Cumberland, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of application Ser. No. 695,123, Jan. 2, 1968. This application Apr. 23, 1970, Ser. No. 31,188
Int. Cl. C23b *5/52*
U.S. Cl. 204—37 R **4 Claims**

Electrical contact device is fabricated by spraying fine particles of arc resistant material (e.g., WC) against surface of conductive metal (e.g., Au or Ag) in a manner such that particles penetrate, and become embedded in, the conductive metal. Conductive metal against which particles are sprayed may be of button or solid conductive metal or may comprise coating or plating of conductive metal on contact device such as switch arm or electrical terminal.

3,697,390
ELECTRODEPOSITION OF METALLIC BORIDE COATINGS

Frank X. McCawley, Cheverly, Md., Charlie Wyche, Washington, D.C., and David Schlain, Greenbelt, Md., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,020
Int. Cl. C23b *5/00*
U.S. Cl. 204—39 **9 Claims**

Platings of titanium, zirconium and hafnium borides are produced on substrate materials by electrodeposition from a fused, borate-type bath.

3,697,391
ELECTROPLATING PROCESSES AND COMPOSITIONS

Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

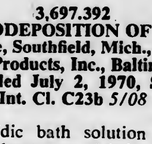
No Drawing. Filed July 17, 1970, Ser. No. 55,959
Int. Cl. C23b *5/08, 5/32, 5/46*
U.S. Cl. 204—43 **13 Claims**

In accordance with certain of its aspects, this invention relates to a process for the preparation of an electrodeposit which contains at least one metal selected from the group consisting of nickel and cobalt which comprises passing current from an anode to a cathode through an aqueous plating solution containing a member selected from the group consisting of cobalt compounds and nickel compounds providing cobalt or nickel ions for electrodepositing cobalt or nickel and containing in combination an effective amount of:

(1) At least one member selected from the group of cooperating additives consisting of:

(a) primary brightener
(b) secondary brightener
(c) secondary auxiliary brightener
(d) anti-pitting agent; and

(2) An organic hydroxy-sulfonate compound of the formula:



wherein M is a cation having a valence of 1–2; *k* is an integer 1–2 corresponding to the valence of M; and R is hydrogen or a monovalent aliphatic group of 1–16 carbon atoms; for a time period sufficient to form a sound metal electroplate upon said cathode surface.

3,697.392
ELECTRODEPOSITION OF NICKEL

Joseph R. Duchene, Southfield, Mich., assignor to Allied Research Products, Inc., Baltimore, Md.

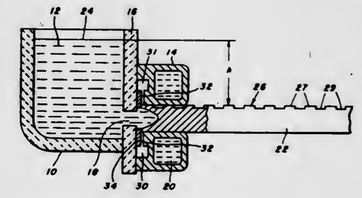
No Drawing. Filed July 2, 1970, Ser. No. 52,083
Int. Cl. C23b *5/08*
U.S. Cl. 204—49 **4 Claims**

An aqueous acidic bath solution for electroplating nickel includes at least one nickel salt as a source of nickel and, as a brightener, a combination of a sulfolene compound and a water-soluble allyl sulfonate in an amount sufficient to produce a bright nickel electrodeposit.

3,697,393
ANODIZED CONTINUOUSLY CAST DECORATIVE PLATE WITH TEXTURED SURFACE

Clement Roger Howle, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 27, 1970, Ser. No. 23,205
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **2 Claims**



Decorative plate or sheet having an attractive textured surface is continuously cast in an open ended chilled mold. The freezing plate ingot has a surface solidified in a varying and cyclic fashion by applying thereto a volatile lubricant at a rate much higher than that normally employed in similar casting arrangements. The resulting plate exhibits a textured surface with accompanying variations in composition and metallurgical structure such that the response to electrolytic anodizing treatments varies and the anodized surface exhibits varying shades and colors.

3,697,394
SYNTHESIS OF OXYCHLORINE TRIFLUORIDE

Donald Pilipovich and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Apr. 3, 1968, Ser. No. 720,434
Int. Cl. C01b *11/02, 11/24*
U.S. Cl. 204—157.1 R **5 Claims**

A synthesis of ClF_3O comprising reacting under ultraviolet radiation oxygen and either chlorine and fluorine or a compound consisting of chlorine and fluorine.

3,697,395
PHOTOCURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Division of application Ser. No. 44,607, June 8, 1970, now Patent No. 3,661,744, which is a continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 567,841, July 26, 1966, now abandoned. This application June 25, 1971, Ser. No. 156,931
Int. Cl. C08d *1/00;* **C08f** *1/16;* **C08c** *11/54*
U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new photocurable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule, and a photocuring rate accelerator. The photocurable liquid polymer composition upon curing in the presence of actinic light forms odorless, solid, elastomeric or resinous products which may serve as sealants, coatings, adhesives and molded articles.

3,697,396
PHOTOCURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Division of application Ser. No. 44,607, June 8, 1970, now Patent No. 3,661,744, which is a continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 567,841, July 26, 1966, now abandoned. This application June 25, 1971, Ser. No. 156,976
Int. Cl. C08d *1/00*; C08f *1/16*; C08c *11/54*
U.S. Cl. 204—159.14 17 Claims

The invention disclosed is for a new photocurable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule, and a photocuring rate accelerator. The photocurable liquid polymer composition upon curing in the presence of actinic light forms odorless, solid, elastomeric or resinous products which may serve as sealants, coatings, adhesives and molded articles.

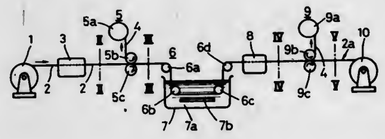
3,697,397
HIGH ENERGY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Division of application Ser. No. 49,191, June 23, 1970, which is a continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 567,841, July 26, 1966, now abandoned. This application June 25, 1971, Ser. No. 157,038
Int. Cl. C08d *1/00*; C08f *1/16*; C08c *11/54*
U.S. Cl. 204—159.14 17 Claims

The invention disclosed is for a new high energy curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The high energy curable liquid polymer composition upon curing in the presence of high energy irradiation forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,697,398
PROCESS FOR ELECTROLYTICALLY APPLYING POLYMER COATINGS ON ELECTROCONDUCTIVE ARTICLES
Ritchie A. Wessling and William J. Settineri, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation of abandoned application Ser. No. 879,510, Nov. 24, 1969. This application July 6, 1971, Ser. No. 160,222
Int. Cl. C23b *5/00*; B01k *5/00, 1/00*
U.S. Cl. 204—14 N 9 Claims

Hydrophobic polymer coatings are applied to solid electroconductive articles by subjecting a polysulfonium salt in solution in an electrolysis solvent to an electrical potential sufficient to reduce the sulfonium salt. The solid electroconductive articles are used as the cathode in the electrolysis process. In example, a lead electrode is coated with poly(p-xylylene) by electrolyzing an aqueous solution of (p-phenylenedimethylene)bis(dimethylsulfonium chloride).

3,697,399
METHOD OF CONTINUOUSLY PLATING A STEEL STRAP ON ONE SURFACE
Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto-gun, Shizuoka Prefecture, Japan
Filed June 3, 1971, Ser. No. 149,655
Claims priority, application Japan, July 11, 1970, 45/60,795
Int. Cl. C23b *5/48, 5/58, 1/02*
U.S. Cl. 204—15 6 Claims

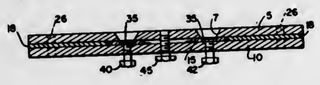


This invention relates to a novel one-surface continuously electroplating method for continuously applying an electroplating film to one surface of a comparatively thin steel strap.

3,697,400
RECOVERING METALS BY EXTRACTION WITH A QUINALDINIC ACID AND ELECTROWINNING FROM THE STRIPPED CHELATE
Michael Pang, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 17, 1971, Ser. No. 116,065
Int. Cl. C22d *1/16*; C22b *3/00, 15/00*
U.S. Cl. 204—106 5 Claims

Copper is recovered from ores, or slags, or tailing piles, in which the cupriferous material is finally subdivided by leaching with a dilute aqueous acidic leach solution, the leach solution separated from insolubles, and the copper extracted using as extractant an alkyl-3-methylquinaldinic acid, the alkyl group being from 6 to 25 carbon atoms, such as 6-dodecyl-3-methylquinaldinic acid, in an organic solvent system, such as 75/25 kerosene/aromatic petroleum fraction and which may contain up to 25% of a C_9 to C_{14} alkanol, the organic extractant in solution separated from the aqueous leach solution, and the copper stripped from the organic extractant by strong sulfuric acid, the copper being stripped as copper sulfate in acid solution, from which copper is recovered as electrolytic grade copper by electrolysis.
New quinaldinic acids and methods of synthesis are disclosed.

3,697,401
ELECTROCHEMICAL MILLING PROCESS
Joseph G. Lucas, Trumbull, and John Zuryk, Fairfield, Conn., assignors to Avco Corporation, Stratford, Conn.
Continuation-in-part of abandoned application Ser. No. 638,298, May 15, 1967. This application Jan. 9, 1970, Ser. No. 1,830
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 R 9 Claims



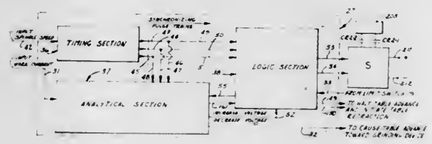
A process and apparatus for the selective removal of metal from a corrosion resistant metal piece by electrochemical milling by covering the piece with an aluminum

or titanium electrically conductive mask which is provided with a protective surface through anodization during the process, the non-masked, etched surfaces of the metal piece being electrochemically dissolved to a predetermined depth.

3,697,402
PHOTOCURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Application June 23, 1970, Ser. No. 44,607, now Patent No. 3,661,774, dated May 9, 1972, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,969
Int. Cl. C08c *11/54*; C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.14 17 Claims

The invention disclosed is for a new photocurable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule, and a photocuring rate accelerator. The photocurable liquid polymer composition upon curing in the presence of actinic light forms odorless, solid, elastomeric or resinous products which may serve as sealants, coatings, adhesives and molded articles.

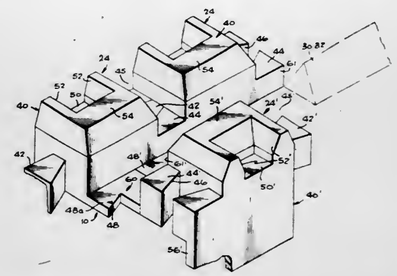
3,697,403
ELECTROCHEMICAL GRINDING APPARATUS
Lester V. Colwell, Ann Arbor, Mich., assignor to Hammond Machinery Builders Inc., Kalamazoo, Mich.
Filed Nov. 7, 1968, Ser. No. 774,009
Int. Cl. B23p *1/02*
U.S. Cl. 204—218 17 Claims



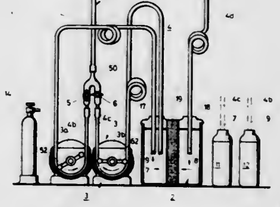
A process and apparatus for automatically searching for, establishing and maintaining one or more selected performance parameters in an electrochemical grinding operation.

3,697,404
APPARATUS TO SUPPORT THE ELECTRODES AND BUS BARS IN AN ELECTROLYTIC CELL
Peter M. Paige, 1200 N. Flores, Los Angeles, Calif. 90069
Filed Jan. 29, 1971, Ser. No. 110,943
Int. Cl. C23b *5/70*
U.S. Cl. 204—267 14 Claims

Electrolytic cell apparatus comprising as an essential feature a capping board formed of a plurality of interlocking, e.g., plastic molded, units forming a structure designed to be supported on the walls of electrolytic tanks, and to support a series of anodes, cathodes and bus bars in operable relation, each of such units including a body portion with a seat and extending dovetail members which interlock adjacent units. Anode and cathode hanger bars rest at one end on the seats of the capping board and are supported at their opposite ends on a bus bar between aligned interlocking units of the capping board.



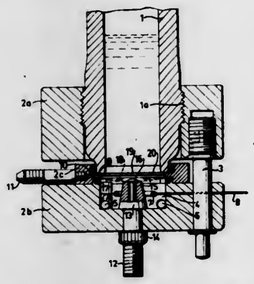
3,697,405
APPARATUS FOR PARTIAL ELECTROPLATING INCLUDING AN ELECTROPLATING HEAD
Karl Butter, Munich, and Willibald Wittich, Ottobrunn, Germany, assignors to Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed Nov. 3, 1969, Ser. No. 873,376
Claims priority, application Germany, Nov. 7, 1968, P 18 07 481.2
Int. Cl. B01k *3/00*
U.S. Cl. 204—275 6 Claims



A process for partial electroplating using a plating head carrying the anode and which is traversed by the electrolyte is characterized by the fact that it proceeds continuously with the exclusion of air or oxygen. The electrolyte is supplied from an electrolyte tank by means of a pump unit through a hose system to the plating head which is pressed against the article to be plated so that the article therefore acts as a cathode. The ends of the hose system for the head are immersed in tanks which may be filled for example, with cleaning liquid or an etchant and may be thereafter connected with gas tanks and the electrolyte as desired. The apparatus includes hose pumps comprising rotating members which cyclically operate upon a portion of the hoses connected to the electrolyte or the fluid for the purpose of directing the electrolyte or fluid from a tank source up to the electroplating head. The head is held against the article for example, a boiler which is to be electroplated with the interposition of a sealing material. Within the plating

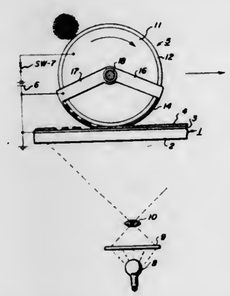
head the direction of flow of the electrolyte is opposed to that of the electrical current and the anode is located behind the cathode in respect to the flow direction, precious metal electrode which is insoluble in the electrolyte may also be used so that the material to be deposited is then taken only from the electrolyte.

3,697,406
APPARATUS FOR ELECTROPHORETIC SEPARATION
Per Just Svendsen, Glostrup, Denmark, assignor to LKB-Produkter AB, Bromma, Sweden
Filed Dec. 29, 1970, Ser. No. 102,484
Claims priority, application Sweden, Jan. 15, 1970, 502/70
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **6 Claims**



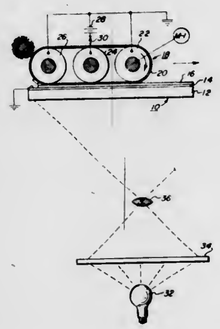
An elution chamber for an electrophoretic separation column. The chamber is located at the lower end of the column above the lower end electrode chamber and is separated from the electrode chamber by membrane. The lower end of the elution chamber has a diameter which exceeds the diameter of the column. Elution liquid is supplied to the chamber either from the membrane or from an inlet at the periphery of the elution chamber and the chamber is drained from a central outlet.

3,697,407
PREVENTION OF ARCING IN AN ELECTRODE IMAGING SYSTEM
John M. Lacagnina, Rochester, N.Y., and Robert G. Davies, Clarksville, Va., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 2, 1969, Ser. No. 821,202
Int. Cl. B01k *5/02*
U.S. Cl. 204—300 **15 Claims**



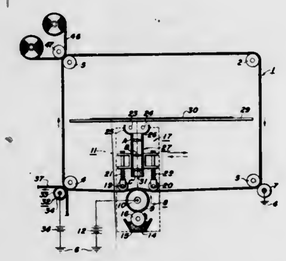
Method and apparatus for eliminating corona arcing between electrodes in an electrophoretic imaging system by introducing a member at the entrance and exit of the nip between adjacent electrodes during the application of an electric field for imaging of an electrophoretic suspension between the electrodes.

3,697,408
IMAGING SYSTEM
Gerard T. Severynse, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 2, 1969, Ser. No. 821,255
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—300 **2 Claims**



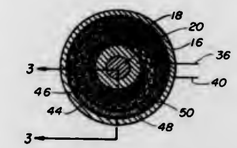
Method and apparatus for eliminating corona arcing during imaging of an electrophoretic imaging system having an elongated blocking electrode and an injecting electrode contacting each other during imaging to form a contact zone and applying a field confined within the area of the contact zone.

3,697,409
BELT ELECTRODE IMAGING SYSTEM
John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,428
Int. Cl. C23b *13/00*; **B01k** *5/02*
U.S. Cl. 204—300 **9 Claims**



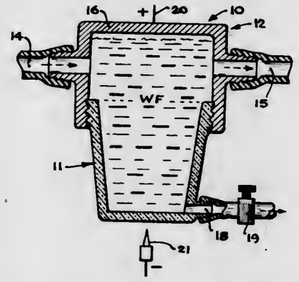
A flexible transparent belt electrode is formed into a loop with a roller electrode positioned against the loop on its outside surface. Platens are positioned inside the loop and light is projected through the belt to photoelectrophoretic ink between the belt and roller electrodes.

3,697,410
ELECTRODIALYSIS DEMINERALIZATION APPARATUS
Allan M. Johnson, Reseda, and Richard F. Gilman, Simi, Calif., assignors to CCI Aerospace Corporation, Van Nuys, Calif.
Filed Feb. 8, 1971, Ser. No. 113,509
Int. Cl. B01d *13/02*; **C02b** *1/82*
U.S. Cl. 204—301 **9 Claims**



An apparatus to effect demineralization of water by the process of electrodialysis wherein an ion exchange membrane and a salt storage element are located in a cross sectional spiral configuration, the water to be demineralized by passing through the apparatus also in a cross sectional spiral configuration.

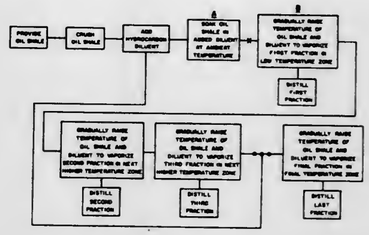
3,697,411
ELECTROSTATIC FUEL FILTER
Oscar C. Blomgren, Jr., Lake Bluff, Ill., assignor to Inter-Probe, Inc., Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 97,626
Int. Cl. B01d *13/02*; **B03c** *5/00*
U.S. Cl. 204—302 **5 Claims**



A device for separating or filtering water from fuel including a container or vessel into which is received an emulsion or mixture of water and fuel, wherein the container includes a body of electrically insulating material and a cover member of electrically conductive material, and wherein the cover is connected to ground potential, and an electrode or probe to which is supplied a high voltage direct current potential arranged adjacent to or in engagement with the body of insulation material at a point generally opposite the position of the cover member.

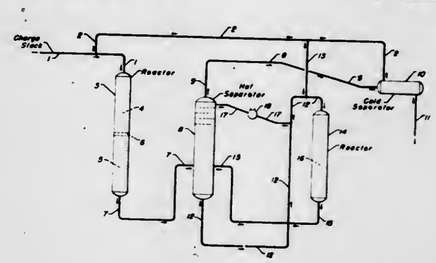
3,697,412
METHOD OF PROCESSING OIL SHALE
Ray S. Brimhall, deceased, late of Salt Lake City, Utah, by Walker Bank and Trust Co., administrator, P.O. Box 1169, Salt Lake City, Utah 84110
Filed Feb. 16, 1970, Ser. No. 11,727
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **6 Claims**

The present invention comprises a method of economically processing oil shale at low temperatures and pressures in such a manner that the effective yield of end products from kerogen in the shale is measurably increased, and at reduced cost, over that possible by the employment of conventional methods. In the present invention, the process employs the twin steps of, first, soaking crushed oil shale in a liquid, hydrocarbon diluent, and then, after the soaking has been completed, subjecting the shale-diluent mixture to heat to gradually increase mixture temperature



from ambient condition, so as to enable maximum recovery ultimately, of distillates. The dual functions of, first, soaking the oil shale in a diluent under ambient temperature conditions and, secondly, gradually and progressively increasing the temperature of the shale, has been found to increase measurably the yield of products vaporized from the kerogen of the shale.

3,697,413
SIMULTANEOUS PRODUCTION OF GASOLINE AND LPG
Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 5, 1971, Ser. No. 113,002
Int. Cl. C10g *13/00, 23/00, 37/00*
U.S. Cl. 208—59 **6 Claims**

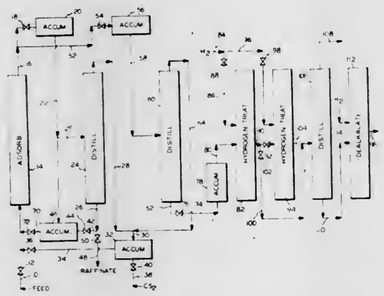


A multiple-stage hydrocracking process for the simultaneous production of gasoline and LPG (liquefied petroleum gas). A first stage functions to produce from about 40.0% to about 90.0% of the desired quantity of gasoline. Heavier material is processed in the second stage at LPG-producing conditions. The hydrocracked effluent from both stages is introduced into a common separation zone from which the gasoline and LPG are recovered, and from which the heavier material is withdrawn and introduced into the second stage.

3,697,414
METHOD FOR PRODUCING NAPHTHALENE
David B. Carpenter, Hackettstown, N.J., and Edward A. Thompson, Louisa, Ky., assignors to Ashland Oil, Inc., Columbus, Ohio
Filed Apr. 5, 1971, Ser. No. 131,053
Int. Cl. C07c *7/12*
U.S. Cl. 208—85 **18 Claims**

Hydrocarbon mixtures, such as light cycle oils from a catalytic cracking unit, are selectively separated by a

cyclic adsorption technique involving passing the hydrocarbon mixture through a fixed bed of activated carbon to adsorb selectively polycyclic aromatic components as an adsorbate phase while collecting less readily adsorbed components as a raffinate phase; passing a first portion of a predetermined volume of carbon disulfide through the carbon to displace the adsorbate phase while collecting a portion of the raffinate phase as a recycle stream; passing the remainder of the carbon disulfide through the carbon while collecting an adsorbate phase; passing a first portion of the collected recycle material through the carbon while collecting an adsorbate phase; passing the remainder of the collected recycle material through the carbon while collecting a raffinate phase; separating carbon disulfide from the raffinate and adsorbate phase for reuse as a displacing fluid; passing the adsorbate to at least one hydrogen treating operation under conditions such that residual aliphatic hydrocarbons are cracked, residual alkyl monocyclic hydrocarbons are dealkylated, polycyclic aromatics remain unreacted and the mixture is desulfurized, separating the hydrogen-treated product into a light fraction and a heavy fraction and subjecting the heavy fraction to a hydrodealkylation treatment to produce substantial volumes of naphthalene.

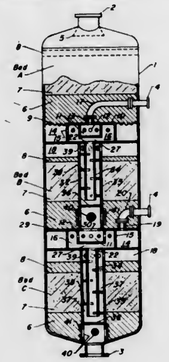


3,697,415
CATALYTIC HYDROGENATION PROCESS
Walter H. Seitzer, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
No Drawing. Filed June 25, 1971, Ser. No. 157,017
Int. Cl. C10g *23/02;* **B01j** *11/40*
U.S. Cl. 208—143 **8 Claims**

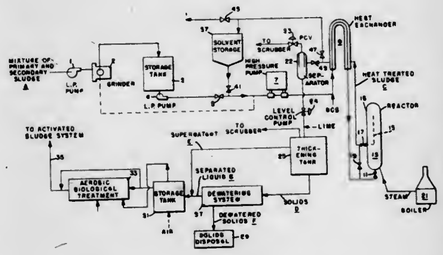
A hydrogenation process for mineral oil by contacting said oil with hydrogen in the presence of a catalyst consisting essentially of a Y-type zeolite molecular sieve containing tin promoted with manganese, vanadium, or zinc. The invention also embodies the catalyst composition used in the process.

3,697,416
FLUID CONTACTING METHOD FOR FLUID-SOLID CONTACTING CHAMBERS
Don B. Carson and William R. Hennemuth, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 835,679, June 23, 1969. This application Mar. 8, 1971, Ser. No. 121,668
Int. Cl. C10g *11/10*
U.S. Cl. 208—146 **10 Claims**

Method for contacting two fluids in a fluid-solids contacting zone, such as an adsorption zone or a reaction zone. A first fluid is passed into a central chamber having a plurality of fluid openings in the chamber wall, while a second fluid is passed into an annular chamber encompassing the central chamber and spaced apart therefrom. The second fluid is discharged via fluid openings in the inner annular chamber wall, into an annular space between the chambers, and the first fluid is discharged from the central chamber into the second fluid discharge. A resulting fluid mixture is passed from the annular space into a first conduit means confined within a second conduit means in a first direction of flow. The mixture is then passed into an annular passageway confined between the first and second conduit means in a second direction of flow substantially countercurrent to the first direction of flow. The mixture is then passed from the annular passageway into a bed of particulated contact solids. Specific application is in hydrogenation, hydrotreating, hydrocracking and hydrodealkylation reaction zones.

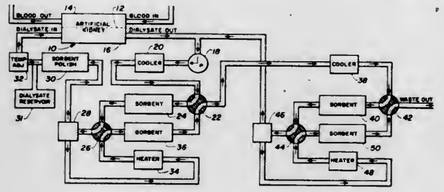


3,697,417
HEAT TREATMENT OF SEWAGE SLUDGE
Gerald H. Telletzke, Paul V. Knopp, and Allen H. Erickson, Wausau, Wis., assignors to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 861,894, Sept. 29, 1969. This application Mar. 2, 1971, Ser. No. 120,246
Int. Cl. C02c *3/00*
U.S. Cl. 210—10 **10 Claims**



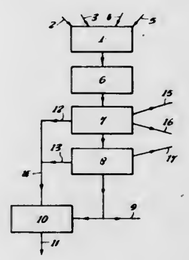
Sewage sludge is briefly heated in a continuous process to a temperature between 190° C. and about 230° C. for a period of time, up to about 240 seconds, which is inversely proportional to the temperature to which the sludge is heated and which is just sufficient to substantially improve the dewatering characteristics of the sludge, and immediately thereafter cooled thereby reducing color and BOD (biological oxygen demand) formation in the supernatant liquid.

3,697,418
METHOD AND APPARATUS FOR REGENERATING THE DIALYZING FLUID FOR AN ARTIFICIAL KIDNEY
Allan M. Johnson, Reseda, Calif., assignor to CCI Aerospace Corporation, Van Nuys, Calif.
Filed Jan. 25, 1971, Ser. No. 109,234
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 **22 Claims**



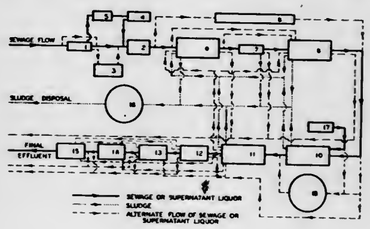
The method and apparatus for removing the waste metabolites from the dialyzing fluid of an artificial kidney wherein the temperature of the dialyzing fluid is lowered prior to the fluid entering a first carbon sorbent chamber, the carbon absorbing the waste metabolites, a portion of the fluid leaving the first chamber being raised in temperature and moved into a second carbon sorbent chamber having a high percentage of adsorbed waste metabolites, the fluid after leaving the second sorbent chamber being lowered in temperature and caused to come into contact with a third sorbent chamber, a portion of the fluid after leaving the third sorbent chamber being returned to reenter the first sorbent chamber.

3,697,419
PROCESSES FOR THE PURIFICATION OF WASTE EFFLUENT
Roy Arthur Grant, Great Shelford, Cambridge, England, assignor to Tasman Vaccine Laboratory Limited, Upper Hutt, New Zealand
Filed July 14, 1969, Ser. No. 841,430
The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed
Claims priority, application New Zealand, July 15, 1968, 153,129
Int. Cl. B01d *15/04*
U.S. Cl. 210—27 **2 Claims**



The specification describes the use of a particulate ion exchange material for the purification of waste effluents, such as washings obtained from slaughter houses, which contain protein or fat, or both. The use of the material can provide effluent with a sufficiently low contamination level for it to be readily disposed of, or even reused for further cleaning purposes. By suitable elution of the material, the protein or fat can be released and isolated for use, for example, as animal food. The ion exchange material can be regenerated for reuse.

3,697,420
METHOD AND APPARATUS FOR TREATMENT OF AQUEOUS LIQUOR
Donald Stapf Blaisdell, 780 Summit Ave., St. Paul, Minn. 55105, and Ruth Elizabeth Barry Klaas, 3531 Ridgewood Road, Arden Hills, Minn.
Continuation of application Ser. No. 373,701, June 9, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 206,184, June 29, 1962, now Patent No. 3,142,638, which in turn is a continuation-in-part of applications Ser. No. 724,785, Mar. 31, 1958, and Ser. No. 786,906, Jan. 15, 1959, both abandoned. This application Mar. 19, 1968, Ser. No. 714,362
Int. Cl. B01d *35/06;* **B03c** *1/10*
U.S. Cl. 210—42 **8 Claims**



Sewage treatment methods and apparatus are disclosed including those relating to catalytic oxidation, digestion under the influence of magnetic fields, the use of weighting agents which, preferably, are magnetically susceptible, and magnetic densification. Magnetic densification is achieved by adding cationic polyelectrolytic coagulants and magnetic weighting agents to sewage and densifying the coagulated solids under the influence of a magnetic field which may be either uniform or nonuniform, thus producing a clarified effluent.

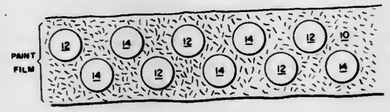
3,697,421
CYANIDE REMOVAL FROM WASTE EFFLUENTS
Andrew Carmine Lauria, Ballwin, and Jeffrey Lynn Owens, Florissant, Mo., assignors to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,475
Int. Cl. C02b *1/18*
U.S. Cl. 210—59 **8 Claims**

Undesirable cyanide compounds in waste effluents can be converted to non-toxic biodegradable materials by treating such waste effluents with a starch conversion syrup. Preferably the waste effluent is also treated with a metal chelating composition when such effluent contains heavy metal cyanides.

3,697,422
INTUMESCENT FILLERS FOR PAINTS
William L. Mackie, Ventura, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Nov. 23, 1970, Ser. No. 92,185
Int. Cl. C09d *5/18;* **C09k** *3/28*
U.S. Cl. 252—8.1 **3 Claims**

A conventional anti-corrosion paint composition containing a mixture of microspheres some of which contain

a foamable plastic material while others contain a spumific material. In the event that a surface coated with this formulation is exposed to heat, the microspheres will melt



causing an intermingling of their contents which will produce gas. Such gas causes the other liquids released by the ruptured microspheres to swell and foam creating a nonflammable insulative barrier.

3,697,423

WASH CYCLE SOFTENER

Bjorn Sundby, Highland Park, and Harold Eugene Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 736,292, June 12, 1968. This application July 21, 1971, Ser. No. 164,827

Int. Cl. C11d *1/00*; D06m *13/34*

U.S. Cl. 252—8.8 **5 Claims**

Washing and softening of fabrics by including, with the detergent, an N-2-hydroxy higher alkyl amine.

3,697,424

SOLUBLE OIL COMPOSITION

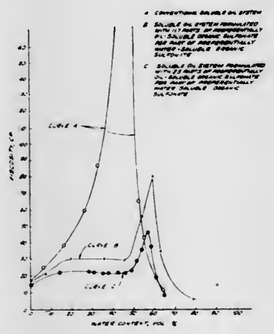
Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 713,496, Mar. 15, 1968, now Patent No. 3,500,919. This application Dec. 31, 1969, Ser. No. 889,640

The portion of the term of the patent subsequent to June 27, 1989, has been disclaimed

Int. Cl. C09k *3/00*; E21b *13/22*

U.S. Cl. 252—8.55 D **26 Claims**



A soluble oil composition comprising a liquid hydrocarbon, a preferentially oil-soluble organic sulfonate, a preferentially water-soluble organic sulfonate, and a stabilizing agent is disclosed. The composition has particular utility as a displacement fluid in a flooding process for the recovery of oil. The soluble oil composition can be substantially anhydrous, or it can contain water present as a water-in-oil microemulsion.

3,697,425

BEARINGS COMPRISING POLYOLEFINS AND AN IMINE MODIFIED CARBON BLACK COMPOUND

Paul Lagally, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Oct. 29, 1969, Ser. No. 872,382. Divided and this application Jan. 14, 1971, Ser. No. 106,530

Int. Cl. C10m *7/02*

U.S. Cl. 252—12 **3 Claims**

A cyclic imine and carbon black compound is provided which can be used as a reinforcing agent for a polyolefin material.

3,697,426

AMINES AS ANTIWEAR ADDITIVES IN MARINE CYLINDER OILS

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 807,087, Mar. 13, 1969. This application Apr. 15, 1971, Ser. No. 134,437

Int. Cl. C10m *1/32, 1/54*

U.S. Cl. 252—42.7 **4 Claims**

Combinations of overbased calcium phenates and relatively high molecular weight aliphatic hydrocarbon substituted alkylene polyamines are used in lubricating oils, particularly marine lubricating oils, to reduce wear and provide acid neutralization capacity.

3,697,427

LUBRICANTS HAVING IMPROVED ANTI-WEAR AND ANTI-CORROSION PROPERTIES

Derek Clark Byford, Staines, and Howard Bernard Silver, Hinchley Wood, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 653,681, July 17, 1967. This application Apr. 30, 1971, Ser. No. 139,182

Int. Cl. C10m *1/34, 1/46*

U.S. Cl. 252—49.9 **7 Claims**

A lubricant, especially for supersonic jet aircraft engines, is based on a hindered ester and contains a dialkyl hydrogen phosphate as a load-carrying additive, a copper passivator and an aromatic amine antioxidant. The lubricant may also contain a lead corrosion inhibitor and a neutral phosphate.

ERRATUM

For Class 252—51.5 A; see:
Patent No. 3,696,851

3,697,428

ADDITIVES FOR LUBRICANTS AND FUELS

Norman A. Meinhardt, Lyndhurst, and Robert Widmer, Painesville, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation of application Ser. No. 162,704, July 14, 1971, which is a continuation of application Ser. No. 812,405, Apr. 1, 1969, both abandoned. This application Nov. 1, 1971, Ser. No. 194,566

Int. Cl. C10m *1/26*

U.S. Cl. 252—56 D **16 Claims**

Oil-soluble compositions produced by reacting polycarboxylic acid acylating agents having at least fifty aliphatic

carbon atoms with a di- or trihydric alcohol and a polyhydric alcohol having at least four hydroxyl groups are useful as ashless dispersants in lubricants and fuels. Polyolefin-substituted succinic anhydride simultaneously treated with a mixture of trismethylolpropane and pentaerythritol produces such an oil-soluble composition.

3,697,429

LUBRICANT CONTAINING LOW ETHYLENE CONTENT AND HIGH ETHYLENE CONTENT ETHYLENE-ALPHA-OLEFIN COPOLYMERS

Lawrence J. Engel, Green Brook, and Marvin F. Smith, Jr., Matawan, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 2, 1970, Ser. No. 42,869

Int. Cl. C10m *1/18*

U.S. Cl. 252—59 **11 Claims**

A lubricating oil composition comprising a lubricating oil and a viscosity index improving amount of an oil-soluble polymer composition comprising a first copolymer of ethylene and a C_3 to C_{18} higher alpha-olefin having an ethylene content of 50–95 mole percent (40–83 wt. percent), and a second copolymer of ethylene and a C_3 to C_{18} higher alpha-olefin having an ethylene content of 5–80 mole percent (3–70 wt. percent), the ethylene content of the first copolymer being at least 5 mole percent (4 wt. percent) more than the ethylene content of the second polymer.

3,697,430

PIEZOELECTRIC MATERIALS

Noboru Ichinose, Harutoshi Egami, Katsunori Yokoyama, and Yohachi Yamashita, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 3, 1971, Ser. No. 149,613

Claims priority, application Japan, June 13, 1970, 45/50,719

Int. Cl. C04b *35/46*

U.S. Cl. 252—62.9 **1 Claim**

Piezoelectric materials having a composition which may be expressed by the general formula:

$$(1-x)PbTiO_3 \cdot xPb(Me_{1/2}Te_{1/2})O_3$$

(where Me represents at least one metal selected from the group consisting of Mg and Zn and x denotes a value of 0.02 to 0.25).

3,697,431

LIQUID DRAIN OPENING COMPOSITION AND METHOD

Vernon E. Summerfelt, South San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.

No Drawing. Filed Jan. 22, 1971, Ser. No. 109,057

Int. Cl. C11d *7/54*

U.S. Cl. 252—103 **2 Claims**

An aqueous solution of between about 1% and 9% by weight sodium or potassium hypochlorite and between about 2% and 9% by weight sodium or potassium hydroxide provides a very effective drain opener which is not as hazardous to use as the conventional highly concentrated caustic drain openers. Between about 1% and 7% by weight sodium or potassium chloride is present in the solution, and the potassium ion concentration in the drain opener solution is in excess of the sodium ion concentration. Sodium or potassium silicate may be included in the drain opener solution to inhibit the corrosive action of the solution upon metal plumbing fixtures, and a small amount of a wetting agent, or in other words surface active agent, increases the rate at which the drain opener solution penetrates fatty material.

3,697,432

CHEMILUMINESCENT REACTION OF CHLORINATED GLYCOLIDE WITH HYDROGEN PEROXIDE IN THE PRESENCE OF A FLUORESCER

Donald Roy Maulding, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,045

Int. Cl. C09k *3/00*

U.S. Cl. 252—188 **4 Claims**

Novel glycolide compounds which obtain chemiluminescent light when reacted with other necessary chemiluminescent reactants in the direct generation of light from chemical energy. By "light" as referred to herein is meant electromagnetic radiation at wavelengths falling between about 350 mμ and about 1000 mμ.

3,697,433

S,S'-CARBONYL-BIS-DIALKYLDITHIOPHOSPHATE CONTAINING VULCANIZATION ACCELERATOR

Rudiger Schubart, Ulrich Eholzer, Theo Kempermann, and Ernst Roos, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,361

Claims priority, application Germany, Jan. 13, 1970, P 20 01 151.2

Int. Cl. C08c *11/66*; C08d *13/28*

U.S. Cl. 252—182 **7 Claims**

Vulcanization accelerators based on S,S'-carbonyl-bis-dialkyldithiophosphates and a thiazole accelerator with the optional inclusion of thiuramic or dithiocarbamate accelerators and/or thiourea, process of vulcanizing terpolymers of ethylene and propylene, i.e., EPDM rubbers, and resulting product.

3,697,434

CHEMILUMINESCENT SPRAY FORMULATION

Sydney Shefler, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 5, 1965, Ser. No. 493,284

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 **5 Claims**

1. An oxyluminescent spray formulation comprising a mixture of

a chemiluminescent compound,

a liquefied gas and

a flocking material;

said chemiluminescent compound being a member selected from the group consisting of tetrakis(dimethylamino)ethylene, tetrakis(N - pyrrolidinyl)ethylene, 1,1',3,3' - tetramethyl - $\Delta^{2,2'}$ - bi(imidazolidine), 1,1', 3,3'-tetraethyl - $\Delta^{2,2'}$ - bi(imidazolidine), 1,1'-diethyl-3,3'-dimethyl - $\Delta^{2,2'}$ - bi(imidazolidine) and tetrakis-(dimethylamino-methyleneamino)ethylene;

said liquefied gas being a member selected from the group consisting of butane, ethane, propane, carbon dioxide, nitrogen, nitrous oxide, dimethylether, dichlorodifluoromethane, trichlorofluoromethane, chlorodifluoromethane, chlorotrifluoromethane, 1,1,2-trichloro - 1,2,2-trifluoroethane, dichlorotetrafluoroethane, octafluorocyclobutane, hexafluoroethane, tetrafluoromethane and mixtures thereof, and

said material being a member selected from the group consisting of cotton, nylon, Dacron, polypropylene and polyethylene.

3,697,435

URANIUM DIOXIDE-YTTRIUM OXIDE-ZIRCONIUM DIOXIDE MICROSPHERES

Jean G. Smith, Baltimore, Md., and Frederick T. Fitch, Shaker Heights, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 495,352, Oct. 17, 1965. This application Mar. 16, 1967, Ser. No. 623,554

Int. Cl. C09k *3/00*; G21c *19/42*

U.S. Cl. 252—301.1 1 Claim

Microspheres containing 30–55% uranium dioxide, 10–45% yttrium oxide, and 15–55% zirconium dioxide.

3,697,436

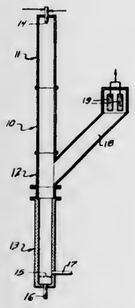
PRODUCTION OF URANIUM AND PLUTONIUM CARBIDES AND NITRIDES

Eugene A. Coppinger, Richland, and Benjamin M. Johnson, Kennewick, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 26, 1969, Ser. No. 880,067

Int. Cl. C09k *3/02*

U.S. Cl. 252—301.1 R 3 Claims



Sugar is dissolved in an aqueous solution of an actinide nitrate, such as uranium and/or plutonium nitrate, and the resulting solution is subjected to radiant-heat spray calcination, producing a calcined mixture of carbon with actinide oxide. This intimately mixed, highly reactive mixture is then heated at a high temperature in the presence of nitrogen to produce actinide nitride or, in the presence of an inert gas, to produce the corresponding carbide.

3,697,437

ENCAPSULATION PROCESS BY COMPLEX COACERVATION USING INORGANIC POLYPHOSPHATES AND ORGANIC HYDROPHILIC POLYMERIC MATERIAL

Mark V. Fogle, Lewisburg, Ohio, and Georg Hörger, Steppach, Germany, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed May 27, 1970, Ser. No. 41,109

Int. Cl. A61k *9/04*; B01j *13/02*; B44d *1/02*

U.S. Cl. 252—316 5 Claims

A process is disclosed for manufacturing capsules, en masse, by use of a liquid-liquid phase separation which includes polyphosphate inorganic material as a complexing, phase-separation-inducing, polymer. The disclosed process is conducted in an aqueous capsule manufacturing vehicle and the material which emerges as a liquid phase is an aqueous solution of organic hydrophilic polymeric material and inorganic polyphosphate material. The liquid-liquid phase separation of this invention is the type generally named "complex" coacervation wherein the separated, emergent, liquid phase includes a major portion of both, the organic hydrophilic polymeric material and the phase - separation - inducing material—in this invention, polyphosphate polymeric material. The organic polymeric material and the inorganic polymeric material are complexed together by virtue of opposite electrical charges, the complex is at least partially immiscible with the manufacturing vehicle, and the manufacturing vehicle contains only a minor amount of either polymeric material. Preferred materials for use in practicing the present invention include gelatin as the organic hydrophilic polymeric material and polyphosphates as the inorganic polymeric phase-separation-inducing material.

3,697,438

FINE PAPER MILL DEFOAMER AND ITS USE

Hillel Lieberman, Andalusia, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,062

Int. Cl. B01d *17/00*

U.S. Cl. 252—321 10 Claims

The present invention is directed to a method and composition for controlling foam in aqueous systems and in particular paper making systems. The method basically comprises adding to foam-prone areas of the systems a composition comprising a mineral oil, a mixture of polyethylene glycol esters, a polypropylene glycol and a fatty alcohol.

3,697,439

COMPOSITION FOR CONTROLLING FOAMING IN AQUEOUS SYSTEMS AND ITS METHOD OF USE

Hillel Lieberman, Andalusia, Carlos A. Duharte-Francia, Fort Washington, and John W. Henderson, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed May 26, 1969, Ser. No. 827,943

Int. Cl. B01d

U.S. Cl. 252—321 14 Claims

This disclosure relates to defoaming compositions and their use in controlling foam in aqueous systems. The compositions which can be emulsive in character consist essentially of a combination of aluminum oxide particles, at least one alkali metal or alkaline earth metal hydroxide, at least one fatty acid containing from 6 to 24 and preferably 16 to 22 carbon atoms, and a water-insoluble liquid organic carrier. The composition may contain water, and where the liquid carrier is hydrophobic in character, the composition will be an emulsion. Moreover, in certain instances it is desirable to incorporate surface-active agents (surfactants) or spreading agents in the composition.

3,697,440

DEFOAMER COMPOSITIONS CONTAINING ORGANIC PARTICLES

Irwin A. Lichtman, Oradell, and Fred E. Woodward, Watchung, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 27, 1969, Ser. No. 837,297

Int. Cl. B01d *17/00*

U.S. Cl. 252—321 4 Claims

Defoamer compositions are prepared by using particular oil insoluble normally solid organic polymer particles, secondary organic polymers which may be oil soluble or oil insoluble and liquid hydrocarbons. Optionally, amides and silicone oils are present.

3,697,441

METHOD FOR PREPARING STABLE ACTINIDE PEROXIDE SOLS

George S. Petit and Charles A. Kienberger, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Dec. 8, 1970, Ser. No. 96,237

Int. Cl. B01d *17/04*

U.S. Cl. 252—301.1 S 11 Claims

A method for preparing stable actinide peroxide sols comprising precipitating the actinide as a peroxide from an acid solution at a pH of −0.5 to 1.5 and thereafter separating and suspending the actinide peroxide precipitate in water or a dilute hydrogen peroxide solution to form the actinide peroxide sol.

3,697,442

COMPOSITIONS FOR CONTROLLING FOAM IN AQUEOUS SYSTEMS AND ITS METHOD OF USE

Hillel Lieberman, Andalusia, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,636

Int. Cl. B01d *17/00*

U.S. Cl. 252—321 22 Claims

This disclosure relates to defoaming compositions and their use in controlling foam in aqueous systems. The compositions which can be emulsive in character contain a combination of a mixture of aluminum oxide particles and hydrophobic silica particles, at least one alkaline earth metal hydroxide, at least one fatty acid containing 6 to 24 and preferably 16 to 22 carbon atoms, and a water-insoluble liquid organic carrier. The composition may contain water, and where the liquid carrier is hydrophobic in character, the composition will be an emulsion. In certain instances it is desirable to incorporate surface-active agents (surfactants) or spreading agents in the composition.

3,697,443

ALUMINUM FLUORIDE FLUORINATION CATALYST

Kiyonori Shinoda, Tadayoshi Watanabe, and Shigeru Mizusawa, Fukushima, Japan, assignors to Kureha Kagaku Kogy Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed Aug. 12, 1969, Ser. No. 849,472

Claims priority, application Japan, Aug. 14, 1968, 43/57,888

Int. Cl. B01j *11/78*

U.S. Cl. 252—442 1 Claim

A catalyst having higher activity in fluorination of acetylene and other hydrocarbons is obtained by treating an acidic active alumina containing 2 to 20% by weight of silica with hydrogen fluoride at a temperature of 200 to 430° C.

3,697,444

PREPARATION AND USE OF SILICA/ALUMINA-BASED HYDROCARBON CONVERSION CATALYST

Jakob van Klinken, Herman Wouter Kouwenhoven, and Pieter Aldert van Weeren, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,707

Claims priority, application Netherlands, Oct. 11, 1968, 6814628

Int. Cl. B01j *11/36, 11/40*

U.S. Cl. 252—451 9 Claims

A silica/alumina based catalyst is prepared by neutralizing the xerogel with a nitrogen base, impregnating it with salts of Groups VII and Group VI-B metals in an alkaline solution, and subjecting it to a controlled calcination whereby temperature is increased stepwise in an oxygen-regulated atmosphere. The catalyst is useful in hydrocarbon-coversion processes. It is particularly useful in hydrodesulfurizing and hydrocracking residual oils containing asphaltenes, large amounts of sulfur and/or heavy metals.

3,697,445

HIGH SURFACE AREA NICKEL CATALYST

James L. Carter, Chatham, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 717,903, Apr. 1, 1968. This application Oct. 6, 1970, Ser. No. 78,601

Int. Cl. B01j *11/32, 11/34*

U.S. Cl. 252—452 12 Claims

A stabilized high surface area nickel catalyst which is particularly useful for removing trace quantities of oxygen from inert gases is described. The nickel-silica catalyst has a nickel surface area greater than 70 $m.^2/g.$ and a total surface area in the range of about 225 $m.^2/g.$ to about 300 $m.^2/g.$ The active catalyst contains from about 25 wt. percent to about 50 wt. percent nickel and of its total silica content 30 to 90 wt. percent is derived from precipitated silicate ions.

3,697,446

CATALYST COATING METHOD

David G. Braithwaite, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 1, 1971, Ser. No. 120,040

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z 6 Claims

A method for bonding zeolites to substrate such as silica-alumina wherein water is used to fill the pores of the substrate prior to placing a thin coating of silica thereupon and subsequently placing a coating of zeolite on the silica coated substrate.

3,697,447

CATALYTIC OXIDATION UNIT COMPRISING A FLUID PERMEABLE BODY OF FIBROUS ADMIXTURE

Edward Robert Bettinardi, New York, N.Y., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed May 7, 1969, Ser. No. 822,732

Int. Cl. B01j *11/06, 11/08*

U.S. Cl. 252—458 15 Claims

A catalyst oxidation burner unit for the flameless combustion of gaseous carbonaceous fuel comprising a gas permeable, composite fiber porous body of an intimate admixture of asbestos fiber and ceramic type refractory fiber containing a deposited metal catalyst.

3,697,448

SELECTIVE ISOMERIZATION EMPLOYING METAL ARSENIDE CATALYST

Marvin M. Johnson, Donald C. Tabler, and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 6,971, Jan. 29, 1970. This application June 8, 1970, Ser. No. 44,665

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—464 2 Claims

A method and catalysts for selective hydrogenation and isomerization which involves contacting a feedstream with hydrogen and with various supported catalysts of metallic arsenides and antimonides, with carbon monoxide being optionally introduced into the reaction as a modifier.

3,697,449
ALKALI MODERATION OF SUPPORTED RUTHENIUM CATALYSTS
Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 691,991, Oct. 20, 1969, which is a continuation-in-part of abandoned application Ser. No. 516,084, Dec. 23, 1965. This application Dec. 14, 1970, Ser. No. 98,048
Int. Cl. B01j 11/08, 11/22
U.S. Cl. 252—474 9 Claims

Supported ruthenium catalysts are moderated with an alkali metal hydroxide or alkoxide by mixing the supported catalyst and the alkali metal compound in the reaction medium of a hydrogenation process which may contain up to about 5% of water, at a temperature ranging from about 30° C. to about 300° C. The moderated catalyst is an effective hydrogenation catalyst for the hydrogenation of aromatic amines to the corresponding saturated cyclic amines.

3,697,450
PROCESS FOR PRODUCING RESISTANCE FILMS
Haruo Takenaka, Toshiaki Okiyama, and Nobuo Hiratsuka, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed June 23, 1969, Ser. No. 835,774
Claims priority, application Japan, June 22, 1968, 43/43,299
Int. Cl. H01b 1/06
U.S. Cl. 252—511 10 Claims

A resistance film and process therefor, including forming a dispersion of (1) a solution of an organic solvent-soluble plastic of a softening point greater than 80° C., (2) a conductive substance having a volume resistivity of less than $10^{-1}\Omega$ cm. and (3) an inorganic silicon-containing material of a volume resistivity of more than $10^{-4}\Omega$ cm., casting a film of the dispersion, and drying the film.

3,697,451
STABLE ENZYME CONTAINING LIQUID DETERGENT
Marvin L. Mausner, Teaneck, and Arnold Wiesenfeld, North Haledon, N.J., assignors to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed Jan. 2, 1969, Ser. No. 788,628
Int. Cl. C11d 1/83
U.S. Cl. 252—545 10 Claims

Stable, liquid, concentrated detergent compositions containing (A) from about 0.001 to 5% by weight of active enzyme selected from the group consisting of proteolytic, amylolytic and lipolytic enzymes and mixtures of said enzymes; at least about 88% by weight of a polyfunctional essentially 100% active stable liquid detergent, particularly one composed of a combination of (i) an ethanolamine salt of alkyl benzene and/or alkyl toluene sulfonic acid, (ii) an ethoxylated or propoxylated ether of an aliphatic alcohol and/or of an alkyl phenol, and (iii) a fatty acid alkanolamide.

3,697,452
SHAMPOO
Frank Wesley Olson, Jr., Pompton Plains, and Karl Hutcheson Roberts, Flemington, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 558,266, June 17, 1966. This application May 19, 1969, Ser. No. 826,010
Int. Cl. A61k 7/08; C11d 1/32, 1/825
U.S. Cl. 252—545 10 Claims

A conditioning shampoo suitable for cleaning hair which has previously been treated with hairspray having a pH of 8.8 to 9.6 is disclosed which comprises an aqueous mixture of (a) a higher alkyl amine oxide surfactant, (b) a water-soluble, foaming amphoteric surfactant, and (c) a higher alkyl, quaternary ammonium salt surfactant, the total amount of said surfactants being about 12% to 30% by weight of the shampoo.

3,697,453
IMINODISUCCINIC ACID SALTS AS DETERGENT BUILDERS
Bryce E. Tate, Niantic, and Rudolph G. Berg, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.
No Drawing. Filed Mar. 8, 1971, Ser. No. 122,195
Int. Cl. C11d 3/26
U.S. Cl. 252—546 4 Claims

The water-soluble salts of iminodisuccinic acid are used as detergent builders in cleansing and laundering compositions with an organic water-soluble detergent surfactant such as anionic, nonionic, zwitterionic, and amphoteric detergent surfactants or mixtures thereof.

3,697,454
FOAMED POLYMER PARTICLES OF DISTINCTIVE SHAPE AND METHOD OF MAKING SAME
Robert L. Trimble, Center Township, Monaca County, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.
Filed Aug. 27, 1970, Ser. No. 67,304
Int. Cl. C08j 1/14
U.S. Cl. 260—2.5 B 6 Claims



Foamed particles of thermoplastic polymers and copolymers are prepared by suspension of thermoplastic polymer granules or pellets in an aqueous medium, heating to deform the pellets to plano-convex, disc-shaped beads, impregnating the beads with an organic blowing agent, and expanding the beads to distinctively shaped, foamed particles having a wavy periphery and a generally rounded middle section containing a hard core of unexpanded thermoplastic polymer. The foamed particles have a diameter of about ¾ inch and a flatness index of at least 3.0. The particles are suitable for loose-fill packaging of sensitive or fragile articles.

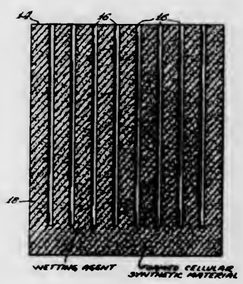
3,697,455
METHOD FOR MAKING CELLULAR RUBBERY POLYMER
Lawrence Spenadel, Elizabeth, Homer J. Hall, Cranford, and Isidor Kirshenbaum, Westfield, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed June 22, 1959, Ser. No. 822,713
Int. Cl. C08c 17/10
U.S. Cl. 260—2.5 R 6 Claims

1. Method for making a gas-free cellular rubbery polymer sponge having open cells which comprises, cold mixing and milling a curable rubbery polymer, a curing agent for curing said polymer, and 5 to 30% by weight of an organic liquid blowing agent based on the weight of the polymer, said organic liquid blowing agent being a liquid having a boiling point in the range of 70° to 200° C. and at least 5° C. below the curing temperature of the polymer, and being selected from the group consisting of aromatic hydrocarbons, naphthenic hydrocarbons, paraffinic hydrocarbons, fluorine-substituted paraffins, chlorine-substituted paraffins, and ketones free of dissolved gas and compatible with the polymer to compound the rubbery polymer with the curing agent and said organic liquid blowing agent dissolved into the polymer as plasticizer, curing the resulting compounded polymer at a curing temperature in the range of 120° to 205° C. with simultaneous blowing of the polymer undergoing curing by volatilization of said organic liquid blowing agent under about atmospheric pressure for about five minutes to an hour, the curing and blowing of the compounded polymer being thus carried out in a mold cavity in which there is room for at least 50% expansion so that the volatilized organic liquid blowing agent forms open cells in the resulting sponge matrix of the cured polymer maintained free of gas and the cells of the cured sponge are filled with vapors of the organic liquid blowing agent, which on cooling to below its boiling point condenses to a liquid that dissolves in the cured sponge polymer.

3,697,456
FLAME-RETARDANT POLYURETHANE FOAM
James J. Pitts, Wallingford, and Peter H. Scott, Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,430
Int. Cl. C08g 22/46, 54/56
U.S. Cl. 260—2.5 AJ 12 Claims

In a process for making flame-retardant polyurethane foam by incorporating in the foam forming formulation a halogenated organic compound and antimony oxide, an improvement is disclosed wherein part of the antimony oxide is replaced with another, less expensive metal oxide from the group consisting of ferric oxide, cupric oxide, titanium dioxide, and mixtures thereof.

3,697,457
SELF-WETTING FOAM PRODUCT AND METHOD OF MAKING SAME
Albert M. Palombo, Arlington, Mass., assignor to American Poly-Plastics Laboratories, Inc.
Continuation-in-part of abandoned application Ser. No. 652,229, July 10, 1967. This application Mar. 17, 1971, Ser. No. 125,441
Int. Cl. C08v 1/16
U.S. Cl. 260—2.5 F 22 Claims



Solid self-wetting floral foam containing ammonium neutralized residue of mineral acid catalyst with interconnected cells having connately and generally uniformly distributed unreacted anionic sulfonate wetting agent content of 1½ to 3 weight percent isolated by nonionic wetting agent from the catalyst residue and the phenolic of the foam, manufactured by mixing phenolic resin and carbon black with nonionic wetting agent, mixing in the sulfonate, adding and mixing more nonionic wetting agent, foaming the mixture with mineral acid, recovering the resulting solid foam product, and neutralizing residual acid with ammonia to turn the foam from black to green.

The nonionic wetting agent and sulfonate wetting agent additions can be split into two additions so that a portion of the nonionic wetting agent is added followed by a portion of the sulfonate, the remainder of the nonionic and then the remainder of the sulfonate. This achieves faster wetting and maximum water absorption in the foam product.

3,697,458
POLYURETHANE FOAM
Christian Burba, 1 Wilhelmstr., 4628 Lunen, Germany; Manfred Drawert, 4 Selmer Str., 4712 Werne, Germany; and Hartmut Voigt, 22 Fritz-Husemann-Str.; and Eugen Griebsch, 22 Steinstr., both of 475 Unna, Germany
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,718
Claims priority, application Germany, Aug. 15, 1968, P 17 93 201.3
Int. Cl. C08g 22/14, 22/44
U.S. Cl. 260—2.5 AQ 1 Claim

Polyhydroxy compounds obtained by propoxylation of compounds of the formula

$$(HO)_n—R—[OCA_2CH(OH)CH_2—]_q—Y_m$$

where Y is —OH or



R is a divalent or trivalent hydrocarbon radical, or

R_1 and R_2 are lower alkylene; and *m*, *n*, *p*, and *q* have small integral values or are, in part, zero. Methods of making these compounds by propoxylation of the reaction product of: (1) a dialkanolamine and a monohalohydrin or epihalohydrin; (2) the hydrolyzed or dialkanolamine-reacted reaction product of a diol or triol and an epihalohydrin; or (3) the reaction product of a halocarboxylic acid or dicarboxylic acid and a dialkanolamine. Methods of making rigid polyurethane foams from these polyhydroxy compounds.

3,697,459
AROMATIC POLYMERS CONTAINING AN ELEMENT OF THE PHOSPHORUS FAMILY
Bobby F. Dannels and Alvin F. Shepard, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Continuation of application Ser. No. 749,983, Aug. 5, 1968, which is a continuation-in-part of application Ser. No. 414,867, Nov. 30, 1964. This application Mar. 20, 1970, Ser. No. 19,561
Int. Cl. C08g 5/18, 51/62
U.S. Cl. 260—17.2 10 Claims

Novel esters of a member of the phosphorus family and a phenol-aldehyde or phenol-ketone condensate are characterized in that:

(1) a major proportion of the moiety of the member of the phosphorus family has the formula

in which the unsatisfied bonds are attached to aryl nuclei of the same phenolic condensate, and in which M is an atom of the phosphorus family, and X is halogen.

hydroxyl, mercapto, hydrocarbyl, hydrocarbyloxy, halogen-substituted hydrocarbyl, halogen-substituted hydrocarbyloxy, or an aryloxy radical of the same phenolic condensate to which M is attached;
(2) at least 60 percent of the phenol-aldehyde or phenol-ketone condensate has o,o'-alkylidene linkages; and
(3) the phenolic condensate has an average number of aryl nuclei per molecule in the range of 3.5 to 8.
Suitable members of the phosphorus family of elements are phosphorus, arsenic, antimony and bismuth.

The thermoplastic products of the invention can be modified to produce additional thermoplastic products such as reaction products with an oxyalkylation agent. Thermosetting products can be produced by curing the thermoplastic products of the invention with agents such as hexamethylene tetramine, or other donors of methylene radicals, or polyepoxides, or polyisocyanates, and the like. The products are useful to produce shaped articles such as molded articles, laminates, protective coatings, including drying oil varnishes; abrasive structures; friction elements and the like. Other uses are as inhibitors and stabilizers for polymers, in basing cements and as foundry sand binders. The polyurethane derivatives can be used for the preparation of foamed products, castings, coatings, and the like. Compositions of the invention are also useful for the treatment of normally combustible cellulosic materials to render them fire retardant.

3,697,460

SUBSTITUTED ESTERS OF PHENYL ACETIC ACIDS

Rolf Denss, Basel, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,408
Claims priority, application Switzerland, Apr. 29, 1968, 6,377/68
Int. Cl. C07d *27/24*
U.S. Cl. 260—247.2 B **11 Claims**

Substituted [p-(1-pyrryl)-phenyl]-acetic acid aminoalkyl esters and pharmaceutically acceptable acid addition salts thereof have analgesic and anti-inflammatory activity; the compounds are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases in mammals: an illustrative embodiment is [p-(1-pyrryl)-phenyl]-acetic acid [3-(1-pyrrolidinyl)-propyl]-ester.

3,697,461

COATING MATERIALS FOR THE PRODUCTION OF ELECTRODEPOSITABLE COATINGS

Gottfried Troeger, Hiltrup, Gerhart Hermann Mueller and Gerhard Bachmann, Ludwigshafen, Herbert Spoor, Limburgerhof, and Wolfgang Batzill, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,136
Claims priority, application Germany, Jan. 25, 1969, P 19 03 703.7
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 U **13 Claims**

Coating materials for the production of coatings on metal substrates by electrodeposition.

These coating materials contain, as binder dissolved or dispersed in water, a mixture of a conventional phenol resin and a copolymer (partly in the form of a salt) which contains units of an acrylic or methacrylic ester, at least one copolymerizable α,β-olefinically unsaturated carboxylic acid having three to five carbon atoms, acrylamide or methacrylamide or their methylolation products (which may be etherified) and at least one oil containing an olefinically unsaturated fatty acid.

The coating materials according to the invention are suitable for coating metal articles, particularly for priming automobile bodies.

3,697,462

LIQUID CURING AGENT FOR EPOXY RESINS COMPRISING A MIXTURE OF AN IMIDAZOLE AND AN ANILINE-FORMALDEHYDE CONDENSATE

Ronald Lee De Hoff, Maplewood, N.J., assignor to R. T. Vanderbilt Company, Inc., New York, N.Y.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,144
The portion of the term of the patent subsequent to Nov. 10, 1987, has been disclaimed
Int. Cl. C08g *45/10*
U.S. Cl. 260—21 **9 Claims**

The specification relates to a liquid curing agent for epoxy resins. The curing agent contains an imidazole compound as a first component, an anilineformaldehyde condensate having a molar ratio from 1.6:1 to 1.7:1 as a second component and a reactive amine diluent as an optional third component. The specification also relates to epoxy resin cured with this curing agent.

3,697,463

VINYL CHLORIDE RESINS STABILIZED WITH METAL COMPOUND-EPOXY COMPOUND-PHOSPHITE COMBINATIONS

Vincent Oakes, Eccleston, St. Helens, and David F. W. Cross, Liverpool, England, assignors to Interstab Limited, Liverpool, England

No Drawing. Filed Sept. 6, 1967, Ser. No. 665,725
Claims priority, application Great Britain, Sept. 8, 1966, 40,114/66, 40,115/66, 40,116/66
Int. Cl. C08f *45/58, 45/62*
U.S. Cl. 260—23 XA **1 Claim**

Halogen containing resins, e.g., vinyl chloride resins, and diolefin polymers, e.g., butadiene-styrene rubber and acrylonitrile-butadiene-styrene terpolymer are stabilized, e.g., against heat by mixed phosphites having at least one aryl group having an ortho or para directing ring activating substituent and at least one alkyl or alicyclic group. The preferred alkyl or alicyclic group is cyclohexyl. Some of the compounds, particularly those having cyclohexyl groups, are novel per se as are compounds in which the aryl group has an amino, amido, acetyl or acyloxy substituent.

3,697,464

PREPARATION OF PIGMENTARY BETA-QUINACRIDONE

Vito Albert Giambalvo, Middlesex, and Philip Randolph Ruby, Millington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 622,941, Mar. 14, 1967. This application Mar. 15, 1971, Ser. No. 124,451
Int. Cl. C07d *37/18*
U.S. Cl. 260—279 R **7 Claims**

This invention relates to a process of producing pigmentary linear quinacridone of the "beta" crystalline form by treating quinacridone material with an aryl sulfonic acid, optionally in the presence of sulfuric acid, diluting the resultant mixture with water to cause precipitation, heating the precipitated product in the aqueous menstruum and recovering the desired product from the mixture.

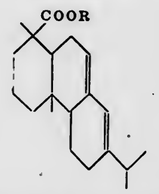
3,697,465

DECORATABLE POLYOLEFIN PLASTICS

Frederick B. Joyner, George O. Cash, Jr., and Max F. Meyer, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,371
Int. Cl. C08f *29/12*
U.S. Cl. 260—27 R **10 Claims**

A polyolefin composition comprising (1) about 35 to 92 percent of a crystalline polymer of an α-olefin having 2 to 8 carbon atoms containing at least 90 percent α-olefin units and at least part of which has been chemically combined with maleic anhydride, (2) 0 to 30 percent of a crystalline ethylene polymer having a density of about 0.91 to about 0.97, (3) about 5 to 20 percent of an ethylene-propylene copolymer rubber containing 20 to 80 percent ethylene units, and (4) about 0.5 to about 15 percent of an abietic acid ester of the formula



wherein R is a hydrocarbyl group containing 1–8 carbon atoms.

These polyolefin plastics exhibit excellent adhesion to paints, lacquers, and inks without the need for expensive primers or other surface treatments. They also exhibit advantageous impact strength, especially at low temperatures.

3,697,466

POLYMER COMPOSITION

Charles I. Sullivan, Melrose, Mass., and Richard H. Cahill, Levittown, Pa., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of application Ser. No. 579,847, Sept. 16, 1966. This application June 23, 1967, Ser. No. 648,243
Int. Cl. C08f *45/24, 45/52, 19/02*
U.S. Cl. 260—29.6 TA **16 Claims**

A latex polymer of (A) at least one vinyl ester of a saturated aliphatic monocarboxylic acid, (B) at least one polymerizable monovinyl aromatic monomer and (C) at least one alpha,beta-ethylenically unsaturated acid in proportions such that monomers (A), (B) and (C) comprise at least 60 percent by weight of the polymer, 90 to 99.5% by weight of monomers (A), (B) and (C) are monomers (A) and (B) in a weight ratio of (A) to (B) in the range of 4:6 to 9:1 and correspondingly 0.5 to 10% by weight is monomer (C), preferably formed by polymerizing all of monomer (A) in a first step and all of monomer (B) in a second step, compositions containing said polymer and polyvalent metal salt, alkali-insoluble, alkali-dispersible polymer, suitable for clear wood coatings and/or floor polishes.

3,697,467

AQUEOUS DISPERSION OF POLYCARBOXYLIC ACID RESIN WITH SILICA

Joseph P. Haughney, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Nov. 3, 1969, Ser. No. 873,531
Int. Cl. C08f *29/34, 29/38*
U.S. Cl. 260—296 TA **11 Claims**

There are provided an improved electrocoating process, composition and article characterized by the inclusion in each of a polycarboxylic acid resin and a minor amount of extremely finely divided silica. Electrodeposition of a dielectric coating from a bath including an acidic polymer, a base, and a minor amount of such silica enables more



nearly uniform electrocoating and when cured, as by thermal means, yields an improved product exhibiting higher dielectric breakdown voltages along edges and other contoured surfaces.

3,697,468

ETHYLENE/METHYL METHACRYLATE HOT TACK BARRIER COATINGS

Edward C. Ballard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 677,750, Oct. 24, 1967. This application Dec. 16, 1970, Ser. No. 98,858
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AV **2 Claims**

Hot tack at low melt viscosity is provided by barrier coatings for form-fill packaging consisting essentially of (a) 20 to 50 percent by weight of ethylene/acrylic polymer consisting essentially of ethylene, 18 to 35 weight percent of acrylic ester of the general formula

$$CH_2=\underset{\displaystyle R}{\underset{|}{C}}-COOR'$$

wherein R is H or CH_3 and R' is alkyl of 1 to 4 carbon atoms, and 0 to 10 weight percent methacrylic acid, (b) 0 to 40 weight percent alkyl aromatic polymer and (c) paraffin wax to make 100 percent.

3,697,469

METHOD FOR EMULSION POLYMERIZATION OF ORGANOSILOXANES

Masanobu Ikoma, Gunma-ken, Japan, assignor to Shinetsu Chemical Company, Tokyo, Japan

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,229
Claims priority, application Japan, Apr. 9, 1968, 43/23,533
Int. Cl. C08g *31/34*
U.S. Cl. 260—29.2 M **12 Claims**

When organosiloxane represented by the unit formula

$$R_aSiO_{\frac{4-a}{2}}$$

where

R is a hydrogen atom or a monovalent hydrocarbon radical or a substituted monovalent hydrocarbon radical, and

a has an average value of from 1 to 3

is emulsified in water containing a salt-type or salt form of an anionic surface active agent, and then brought into contact with an acid type cationic exchange resin, said anionic surface active agent is subjected to ion exchange and turns from salt type into acid type, thereby starting the polymerization of the organosiloxane. Therefore, by this method, not only the arrangement and control of the reaction condition are made easier, but also the polymerization reaction is made to proceed uniformly, enabling the preparation of stable organopolysiloxane emulsions.

3,697,470

N-ALKYL-N-ARYLHYDROXYLAMINES AS SHORT-STOPPING AGENTS AND POPCORN POLYMER INHIBITORS

Paul G. Haines, Lafayette Hill, Pa., and Harry Elmer Albert, deceased, late of Lafayette Hill, Pa., by Dorothy S. Albert, executrix, Lafayette Hill, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed May 21, 1969, Ser. No. 827,129
Int. Cl. C08d 5/02, 7/10
U.S. Cl. 260—29.7 N 7 Claims

N-alkyl-N-arylhydroxylamine is disclosed as a short-stopping agent in emulsion polymerizations and as an inhibitor or suppressor of the undesirable polymerization of olefinic monomers resulting in the formation of popcorn polymers.

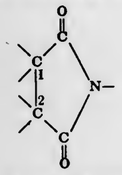
3,697,471

POLYESTER IMIDE RESIN LACQUERS

Karl Schmidt, Ferdinand Hansch, Hans-Malte Rombrecht, and Hans-Joachim Beck, Hamburg, Germany, assignors to Dr. Beck & Co. AG, Hamburg, Germany

No Drawing. Continuation of application Ser. No. 238,315, Nov. 2, 1962. This application Aug. 8, 1967, Ser. No. 659,234
Claims priority, application Germany, Nov. 2, 1961, P 12 686.5-43; Dec. 12, 1961, P 14 45 263.2; July 6, 1962, P 14 95 100.9
Int. Cl. C08g 20/32, 51/34
U.S. Cl. 260—33.4 P 22 Claims

Polyester imide resin having ester groups of acid and alcohol moieties in the chain, and also in the chain a content of 5-membered imide rings of the general formula:



The resin is soluble in cresol solvents and can be combined with such solvents to form a lacquer suitable for enameling of wire.

3,697,472

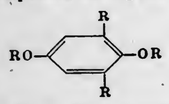
LIQUID POLYSULFIDE POLYMERIC GLASS-TO-METAL SEALANT COMPOSITION

John P. Gallagher, Hamilton Square, N.J., Robert M. Meyers, Fairless Hills, Pa., Earl H. Sorg, Trenton, N.J., and Clark M. Willitts, Levittown, Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,300
Int. Cl. C08g 51/04, 51/30, 51/60
U.S. Cl. 260—33.8 R 14 Claims

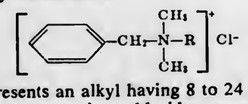
A liquid polysulfide polymer sealant composition for sealing glass to metal having greatly improved adhesion stability when exposed to ultraviolet radiation or sunlight transmitted through glass and greatly improved penetrometer cure and adhesion rate properties is obtained by use of hydroquinone and quinone ultraviolet radiation adhesion stabiliers and quaternary ammonium chloride curing and adhesion rate regulators.

Quinone and compounds having the structure

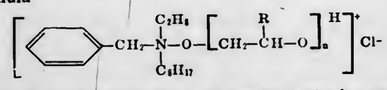


where R represents H or alkyl groups having 1–6 carbon atoms, e.g. hydroquinone and p-methoxy phenol, are effective additives for preventing loss of cohesive strength or loss of adhesion of cured polysulfide polymer compositions to glass where the sealant/glass interface is exposed to ultraviolet radiation, including sunlight. However, the addition of these adhesion stabilizers have an adverse effect on quick adhesion and curing rate of the sealant. Therefore, the addition of curing and adhesion rate regulators is required.

Improved quick adhesion and cure rate properties are obtained by the use of quaternary ammonium chlorides represented by the formula



where R represents an alkyl having 8 to 24 carbon atoms and quaternary ammonium chlorides represented by the formula



where R' represents hydrogen or methyl and *n* is a number from 3 to 5.

3,697,473

COMPOSITION CURABLE THROUGH Si-H AND Si-CH EQUALS CH_2 WITH IMPROVED PROPERTIES

Keith E. Polmanteer, David N. Willing, and Thomas D. Talcott, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 852,103, Aug. 21, 1969. This application Jan. 4, 1971, Ser. No. 103,830
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 20 Claims

A composition contains a polydiorganosiloxane having two vinyl radicals, a mixture of silicon compounds having silicon-bonded hydrogen atoms where one organosiloxane compound has two silicon-bonded hydrogen atoms and the other organosiloxane compound has three to ten silicon bonded hydrogen atoms. The composition is cured by a platinum catalyst. The cured composition has elastomeric properties.

3,697,474

ORGANO-CLAY-POLYMER COMPOSITIONS

Horton H. Morris, James P. Oliver, and Paul I. Prescott, Macon, Ga., assignors to Freeport Sulphur Company, New York, N.Y.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,752
Int. Cl. C08f 45/06; C08k 1/12
U.S. Cl. 260—40 R 8 Claims

Polymeric materials which contain as a filler an inorganic material the surface of which has been reacted with an organo derivative of ortho titanic acid containing at least two hydrolyzable groups are described. The filled polymeric materials, which may contain other conventional ingredients, can be conventionally formed to provide products having improved properties.

3,697,475

INORGANIC-ORGANO TITANATE POLYMERIC FILM

Horton H. Morris and Paul I. Prescott, Macon, Ga., assignors to Freeport Sulphur Company, New York, N.Y.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,757
Int. Cl. C08f 45/06; C08k 1/12
U.S. Cl. 260—41 A 7 Claims

Oriented opaque ultrathin films comprising thermoplastic polymers containing up to about 60 parts by weight of an inorganic filler-organo titanate compound are described. The films are prepared by extruding the compositions as films and thereafter drawing the resultant films at a temperature below that at which the films remain translucent. The films of our invention are useful as packaging material in preparing ultrathin paper, and in laminates, non-woven fabric, rug backing and mesh structures.

3,697,476

POLYOLEFINS CONTAINING AN IMINE MODIFIED CARBON BLACK COMPOUND

Paul Lagally, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Oct. 29, 1969, Ser. No. 872,382. Divided and this application Jan. 14, 1971, Ser. No. 106,529
Int. Cl. C08f 45/08
U.S. Cl. 260—41 R 2 Claims

A cyclic imine and carbon black compound is provided which can be used as a reinforcing agent for a polyolefin material.

3,697,477

METHOD FOR CURING AN ORGANOPOLYSILOXANE USING AN ORGANOTIN AMINOCARBAMATE

Gunther F. Lengnick and Kailash Chandra Pande, Manitou Beach, Mich., assignors to Stauffer-Wacker Silicone Corporation

No Drawing. Original application Dec. 23, 1966, Ser. No. 604,139, now Patent No. 3,520,910. Divided and this application Apr. 23, 1970, Ser. No. 43,296
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 G 1 Claim

A hydroxyl terminated organopolysiloxane is cured at room temperature with an organotin aminocarbamate.

3,697,478

POLYAMIDES FROM PSEUDO-CONJUGATED AZO-AROMATIC DIAMINES

Hartwig C. Bach and Helmuth E. Hinderer, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 782,004, Dec. 6, 1968. This application Oct. 19, 1970, Ser. No. 82,184
The portion of the term of the patent subsequent to Mar. 17, 1987, has been disclaimed
Int. Cl. C08g 20/20, 20/22
U.S. Cl. 260—47 CZ 9 Claims

Linear polyamides derived from aromatic diacid halides and diamines containing at least one azo linkage and at least one pseudo-conjugated aromatic radical are useful in the manufacture of fibers, films and other shaped articles.

3,697,479

POLYESTERS HAVING INCREASED WHITENESS

William E. Maycock, Charlotte, N.C., assignor to Fiber Industries, Inc.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,854
Int. Cl. C08g 17/013, 17/08
U.S. Cl. 260—47 C 4 Claims

Linear synthetic polyesters having increased whiteness, the improvement in whiteness being obtained by incorporation into the polyesters of a minor amount of a difunctional compound selected from the group consisting of 1,3-bis(2-hydroxyethoxy)benzene, 3-(2 - hydroxyethoxy) phenol, lower alkyl esters of adipic acid, lower alkyl esters of suberic acid, lower alkyl esters of azelaic acid, and lower alkyl esters of sebacic acid, with 1,3-bis(2-hydroxyethoxy)benzene, bis(2-hydroxyethyl) azelate, and dimethyl azelate being preferred. The polyesters may be prepared via either direct esterification or ester interchange. When ester interchange is employed the ester interchange catalyst is selected from the group consisting of salts of transition metals in groups II–B, VII–B, and VIII of periods 4 and 5 of the periodic table of the elements, with salts of manganese and cobalt being preferred. Whiteness improvements are in the range from 6 to 41 percent relative to the unmodified polyesters.

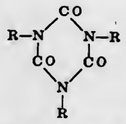
3,697,480

PROCESS FOR THE MANUFACTURE OF ESTER RESINS CONTAINING ISOCYANURATE GROUPS AND IMIDE GROUPS

Gerhard Schade, Witten-Bommern, and Franz Blaschke, Witten-Annen, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

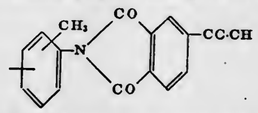
No Drawing. Filed May 14, 1970, Ser. No. 37,326
Claims priority, application Germany, May 16, 1969, P 19 24 808.9
Int. Cl. C08g 17/06, 20/32
U.S. Cl. 260—47 CB 10 Claims

Process of producing ester resins containing isocyanurate groups and imide groups in the polymer chain comprising condensing a polyalcohol with a tricarboxylic acid of the formula:



I

wherein R represents a moiety having the formula:



II

characterized by the step of forming said tricarboxylic acid by contacting triphenolic urethane trimerized toluylene diisocyanate and trimellitic acid anhydride in a medium containing the polyalcohol, at a temperature and for a time sufficient for formation of said tricarboxylic acid.

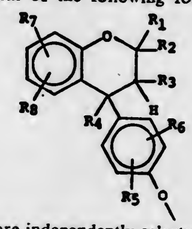
3,697,481

CHROMANYL TERMINATED POLYCARBONATE

Charles A. Bialous, Mount Vernon, Allen J. Campbell, Evansville, and Frank N. Liberti, Mount Vernon, Ind., assignors to General Electric Company

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,087
Int. Cl. C08g 17/13
U.S. Cl. 260—47 XA 9 Claims

A carbonate polymer containing as terminal groups a chromanyl radical of the following formula:



wherein R_1–R_8 are independently selected from the group consisting of hydrogen and alkyl radicals of 1–9 carbon atoms and wherein R_5–R_8 are further independently selected from the group consisting of bromine and chlorine.

3,697,482

HEAT CURABLE RESINS PREPARED FROM PHENOL, FORMALDEHYDE, DIMETHYLOLPROPIONIC ACID AND AN ALKANOLAMINE

Jerry H. Hunsucker, 7098 Williamsburg Lane, Terre Haute, Ind. 47802

No Drawing. Continuation-in-part of application Ser. No. 36,678, May 12, 1970. This application Apr. 7, 1971, Ser. No. 132,225
Int. Cl. C08g 5/18
U.S. Cl. 260—58 4 Claims

Resin compositions suitable for baked coatings consisting of the condensation product of dimethylolpropionic

acid (DMPA), with a lower aliphatic aldehyde and a compound selected from the group consisting of phenol, alkyl phenol, an alkanolamine or mixtures thereof. A method is provided for coating paper with the composition.

3,697,483

SEQUENTIAL PROCESS OF PREPARING POLYURETHANE ELASTOMERS

Adolfas Damusis, Detroit, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Aug. 18, 1969, Ser. No. 851,099
Int. Cl. C08g *22/14*
U.S. Cl. 260—75 NE 11 Claims

Polyurethane elastomers produced by incorporating normally solid linear urethane polymers in a blend of liquid linear and branched isocyanate-terminated adducts and curing this composition to form a solid elastomer by incorporation of a curing agent. The normally solid linear urethane polymers are prepared by reacting linear organic compounds having at least 1 active hydrogen atom and an average equivalent weight of about 31 to 400 with isocyanate in the blend of liquid adducts. The blend of liquid isocyanate-terminated adducts is prepared by reaction of organic isocyanate with a linear alcohol having 2 hydroxyl groups and an average equivalent weight of about 500 to 1500 and a branched chain alcohol having more than 2 hydroxyl groups and an equivalent weight of about 45 to 2500.

3,697,484

PREPARATION OF POLYAMIDE-IMIDE ESTERS BASED ON ISOCYANATES, ACID ANHYDRIDES AND LACTONES

Wilfried Zecher, Cologne, and Rudolf Merten, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,320
Claims priority, application Germany, Dec. 16, 1969, P 19 62 900.6
Int. Cl. C08g *22/00, 22/16*
U.S. Cl. 260—77.5 R 3 Claims

The invention relates to a process for the preparation of polyamide-imide esters by reacting together a lactone, an acid anhydride, a carboxylic acid and an isocyanate. This process enables polyamide-imide esters to be produced which are distinguished by their particularly high temperature resistance and which are suitable for use as lacquers, foils and compact or foamed mouldings. Their properties can be varied for particular purposes by the addition of fillers, pigments and low molecular weight and high molecular weight components.

3,697,485

PROCESS FOR PREPARING POLYISOCYANURATES AND POLYURETHANES USING ORGANIC ORTHOBORATE CATALYSTS

George M. Rambosek, Maplewood, Minn., Michael George Allen, Hudson, Wis., and George Van Dyke Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 10, 1969, Ser. No. 840,834
Int. Cl. C08g *22/34, 22/40*
U.S. Cl. 260—77.5 NC 22 Claims

Isocyanates are trimerized, polymerized, or reacted with polyols, in the presence of a new catalyst comprising an organic orthoborate and an alcoholate or phenolate salt to produce isocyanurates, polyisocyanurates, urethane-modified polyisocyanurates, or isocyanurate-modified polyurethanes.

3,697,486

HIGH MOLECULAR WEIGHT INCREASE OF POLYAMIDES WITH BIS(IMINO-OXAZOLIDINES)

Frank Dobinson, Gulf Breeze, and James H. Saunders, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 851,425, Aug. 19, 1969. This application Feb. 8, 1971, Ser. No. 113,709
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 SC 3 Claims

A filament-forming polycarbonamide of inordinately high molecular weight is obtained by incorporating certain bis(imino-oxazolidines) in a suitable polycarbonamide and heating the same. The preferred amount of oxazolidine is about 0.1–1.0% by weight based on the polyamide.

3,697,487

RECOVERY OF DILUENT IN ARYLENE SULFIDE POLYMER PRODUCTION

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 5, 1971, Ser. No. 140,567
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 6 Claims

A polar organic diluent selected from amides and sulfones is extracted from an aqueous reaction mixture solid slurry. In the production of arylene sulfide polymers by the reaction of a polyhalo-substituted aromatic compound with an alkali metal sulfide in a polar organic diluent, the polar organic diluent is recovered by extraction with a solvent of the aqueous mixture of reaction effluent solids and polar organic diluent. In a preferred embodiment N-methyl-2-pyrrolidone is recovered from the aqueous reaction mixture solid slurry by extraction with a solvent such as dichloromethane or benzene.

3,697,488

PROCESS FOR POLYMERIZING EPISULFIDES

Llewellyn Delphin Booth, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 52,124, July 2, 1970, which is a continuation-in-part of application Ser. No. 701,537, June 30, 1968. This application June 14, 1971, Ser. No. 153,008
Int. Cl. C08f *3/84*
U.S. Cl. 260—79.7 10 Claims

A process for polymerizing episulfides which comprises contacting, at a temperature of 0° to 120° C., episulfides with 0.1 to 10.0 percent by weight of monomeric or polymeric zinc salts of 3,3'-thiodipropionic acid.

3,697,489

HIGH TEMPERATURE NITRILE ELASTOMER

Rajendra N. Chadha, Farmingdale, N.Y., and Ralph P. Arthur, George C. Schweiker, and Carroll R. Shingleton, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 851,471, Aug. 19, 1969. This application Aug. 5, 1970, Ser. No. 61,439
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.7 6 Claims

An improved nitrile elastomer having superior high heat properties. This class of elastomers is constituted by tetrapolymers which are prepared by copolymerizing butadiene, acrylonitrile, α-chloroacrylonitrile and an alkyl acrylate by means of a redox emulsion process, and then vulcanizing or curing the elastomers in a conventional manner.

3,697,490

POLYMERS OF ALKOXY ALKYL ACRYLATES, ALKYL ACRYLATES AND SUBSTITUTED NORBORNENE

Philip H. Starmer, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,243
Int. Cl. C08f *15/16, 15/18*
U.S. Cl. 260—80.76 7 Claims

Acrylate elastomers having an improved retention of abrasion resistance after oil immersion, which are readily vulcanized, are prepared with 9 to 59 percent by weight alkoxy alkyl acrylate, 40 to 90 percent by weight alkyl acrylate and about 0.5 to 5.5 percent by weight substituted norbornene compounds.

3,697,491

AMINE SALTS OF POLYHYDROSULFURIC ACIDS AS SHORTSTOPPING AGENTS FOR EMULSION POLYMERIZATIONS

Joan L. Wilson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 21, 1970, Ser. No. 100,412
Int. Cl. C08d *1/09, 1/22, 3/02*
U.S. Cl. 260—82.3 7 Claims

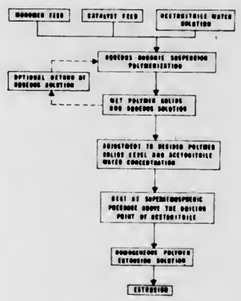
There is disclosed a method for terminating free radical initiated emulsion polymerizations which comprises adding to said free radical initiated emulsion polymerization systems at least one shortstopping agent selected from the group consisting of (A) amine salts of polyhydrosulfuric acids, and (B) mixtures of at least one amine salt of a polyhydrosulfuric acid and at least one compound selected from the group consisting of alkali metal salts of di-lower-alkyl dithiocarbamates; hydroxylamines; hydroxylamine salts; N,N-dialkylhydroxylamines and N,N'-dialkyl-N,N'-methylene bishydroxylamines.

3,697,492

ACRYLONITRILE POLYMERIZATION

Antony E. Champ, and Charles Malcolm Hendry, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 16, 1969, Ser. No. 833,538
Int. Cl. C08f *13/76, 15/38*
U.S. Cl. 260—85.5 ES 9 C'aims



A method of polymerizing acrylonitrile polymers if a novel aqueous, organic reaction medium in which the monomeric reactants are soluble whereas the polymerized acrylonitrile is insoluble under the polymerization conditions. On changing the polymerization conditions to polymer shaping conditions, the polymer becomes soluble in the reaction medium. The organic portion of the polymerization medium is a lower alkyl nitrile solvent of two to four carbon atoms, preferably acetonitrile, in an amount of 10 to 90 percent by weight of the solvent solution with the residual amount being water. The process is particularly suitable for continuous reaction wherein an effluent mixture of polymer solids and aqueous organic solution is continuously withdrawn from the reaction medium and converted to a homogeneous polymer solution suitable for extrusions such as in the production of shaped articles by heating the mixture of solvent and polymer under a superatmospheric pressure at least equal to the autogeneous pressure of the solution to temperatures above the boiling point of the lower alkyl nitrile-water phase. The process is suitable for the production of as high acrylic polymers containing 85 percent or more acrylonitrile.

3,697,493

PREPARATION OF POLYVINYLCHLORIDE

Gunther Meyer, Siegias Augustinusstr., Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed March 27, 1969, Ser. No. 811,208
Claims priority, application Germany, March 30, 1968, P 17 70 094.6
Int. Cl. C08f *1/11, 3/30, 15/02*
U.S. Cl. 260—85.5 XA 9 Claims

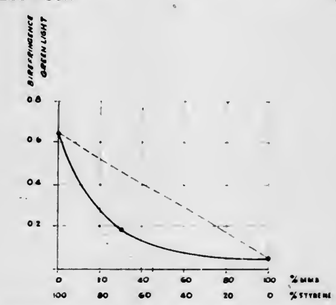
Process for preparing an improved polyvinyl chloride comprising polymerizing vinyl chloride in the presence of a peroxide and/or azo compound as catalyst, a protective colloid and in the additional presence of 1 to 20 weight percent referred to the vinylchloride of a polyvinylchloride including an emulsifier, the polyvinyl chloride having a particle size of 0.03 to 2.0 μ, introducing a salt of a bivalent or trivalent metal to precipitate the emulsifier which has been introduced with the polyvinylchloride emulsion, and recovering the polyvinylchloride product of improved properties thereby formed.

3,697,494

NON-CRAZING, BIAXIALLY ORIENTED STYRENE-METHYL METHACRYLATE COPOLYMER SHEETS

Henry Alsberg, Northbrook, Ill., assignor to The Richardson Company, Melrose Park, Ill.

Filed Dec. 21, 1970, Ser. No. 99,810
Int. Cl. C08f *15/02*
U.S. Cl. 260—86.7 2 Claims



Plastic sheets between 4 and 30 mils thickness comprising a biaxially oriented copolymer of about 55 to 80 percent styrene and 20 to 45 percent methyl methacrylate are characterized by an unexpected birefringence value, high impact strength and virtually no crazing cracks when fabricated into packages and containers.

3,697,495

PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH OZONE

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1970, Ser. No. 61,465
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV 7 Claims

Polyvinyl alcohol having improved color properties is prepared in a process in which an alcoholic solution of the

polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with ozone prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,697,496
METHOD FOR THE POLYMERIZATION OF A COMPOUND CONTAINING AN OXIRANE GROUP

Katsuji Ueno, Hirakata-shi, Osaka; Takao Oshima, Ibaraki-shi, Osaka, and Hideo Seki, Toyonaka-shi, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed July 25, 1969, Ser. No. 845,047

Claims priority, application Japan, July 25, 1968, 43/52852; March 1, 1969, 44/15705

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **21 Claims**

Polyalkylene oxides are produced advantageously by contacting an alkylene oxide monomer with a novel and excellent catalyst obtained by reacting (i) aluminum alkoxide, (ii) phosphoric acid or an organophosphoric acid ester, and (iii) an aliphatic alcohol and/or an organometallic compound of metals of Group II or III of Mendeleev's Periodic Table.

3,697,497
HEXAMETHYLENE TETRAMINE DERIVATIVES OF ALKALI LIGNINS

Sten I. Falkehag, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,197

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 A **5 Claims**

Hexamethylene tetramine derivatives of alkali lignins are formed by reacting, at a temperature between 70° C. and 180° C., 0.17 to 2.0 moles of a hexamethylene tetramine forming solution with 1 mole of an alkali lignin solubilized in an alkaline solution. These derivatives, characterized by having a high molecular weight and a high melting point, are useful as stabilizers in rubber emulsion, high molecular weight resin-like fillers and may be converted into products having large surface areas.

3,697,498
COMPOSITION AND PROCESS FOR CROSS-LINKING MODIFIED CARBOHYDRATES WITH CHROME SULFATE AND LIGNIN

William C. Browning, and Billy G. Chesser, both of Harris County, Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed June 18, 1970, Ser. No. 47,325

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R **9 Claims**

A cross-linking agent for macromolecular polysaccharide materials consisting essentially of a chelating composition formed from (1) an organic polyelectrolyte ligand component, and (2) a component of a metal of the first series of the transition elements of the Periodic Table. This cross-linking agent has been found to provide enhanced rheological properties without obtaining metal ion overtreatment characteristics. In a preferred form, said cross-linking agent also includes a compound containing a metal from Group II of the Periodic Table. The cross-linked materials may be utilized in textile sizing agents, paints, drilling fluids, and the like.

3,697,499
POLYSULFURIZED OLEFINS

Herbert Myers, Barrington, N.J., assignor to Mobil Oil Corporation

Division of Ser. No. 620,621, March 6, 1967, Pat. No. 3,471,404. This application May 15, 1969, Ser. No. 842,055

Int. Cl. C07c *161/00*

U.S. Cl. 260—139 **10 Claims**

Sulfurized olefins are produced by (1) reacting sulfur monochloride with a stoichiometric excess of a low-carbon atom olefin, (2) treating the resulting product with an alkali metal sulfide in the presence of free sulfur in an alcohol-water solvent, and (3) reacting that product with an inorganic base. This reaction sequence produces novel stable oil-soluble organic sulfides having extreme pressure properties and low corrosiveness to metal. Lubricating oil compositions containing an effective amount of these additives evidence good load carrying capability.

3,697,500
WATER-SOLUBLE DISAZO PYRAZOLE DYESTUFFS CONTAINING FIBER-REACTIVE SUBSTITUENTS

Hans Ackermann, Riehen, and Fabio Beffa, Basle, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Aug. 20, 1968, Ser. No. 753,876

Claims priority, application Switzerland, Aug. 21, 1967, 11738/67

Int. Cl. C09b *62/08*

U.S. Cl. 260—154 **8 Claims**

Water-soluble disazo dyestuffs are described, the molecule of which contains a 3- or 4-[pyrazolylene-(1)-benzoylamino]-6-sulphophenyl moiety wherein the 4-position of the pyrazole ring and the 1-position of the sulphophenyl group, respectively, are linked each to one of the two azo bridges in the said molecule; these dyestuffs have from zero to at most two fiber-reactive groupings and are useful as dyes for cellulose and polyamide fibers.

3,697,501
BASIC INDAZOLE AZO DYE SUBSTITUTED BY A SULFONAMIDE GROUP

Johannes Dehnert, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

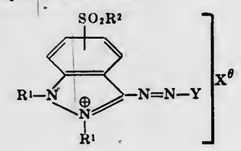
Filed Aug. 22, 1969, Ser. No. 852,505

Claims priority, application Germany, Aug. 24, 1968, P 17 95 227.1

Int. Cl. C09b *29/06, 29/08*

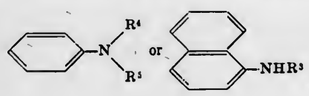
U.S. Cl. 260—163 **4 Claims**

A basic azo dye of the formula



wherein:

R^1 is methyl or ethyl, R^2 is amino or a substituted amino radical, X is an anion, Y is the radical of the formula



R^3 being cyclohexyl, p-methoxyphenyl, p-ethoxyphenyl or p-methylphenyl, R^4 being methyl, ethyl, butyl, p-methoxyphenyl or p-ethoxyphenyl and R^5 being methyl, ethyl or butyl. These dyes are useful in dyeing textile material of an acrylonitrile polymer or an anionically modified polyester in blue and violet shades with good light and wet fastness properties.

3,697,502
METHOD OF MAKING IRON DEXTRAN-PREPARATIONS

Henry Marinus Christensen, Frederiksborgvej 107, Ny-Himmelev, 4000 Roskilde, Denmark

Filed Nov. 3, 1969, Ser. No. 873,682

Int. Cl. C08b *25/04*

U.S. Cl. 260—209 D **8 Claims**

A substantially pure iron-dextran preparation is produced by a specific and simple process of reacting ferric chloride and dextran in aqueous solution in the presence of citric acid while maintaining the reaction temperature between about 50° C. and about 100° C. and the pH-value of the reaction mixture at a pH between about 9.0 and 10.0. The resulting iron-dextran preparation is substantially free of chloride ions. The novel process permits the preparation of iron-dextran preparations with a predetermined iron content.

3,697,503
LINCOMYCIN ISOTHIOURONIUM SALTS AND PROCESS FOR PREPARING SAME

Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 3, 1969, Ser. No. 873,716

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **18 Claims**

A peracylated trans-1-bromoglycoside is treated with thiourea in a tertiary amide, dipolar, aprotic solvent to form the corresponding peracylated cis- and trans-glycosyl isothiouronium salt, which is then converted to the corresponding peracylated 1-thioglycoses and alkyl peracylated 1-thioglycosides, and if desired, the cis anomers are isolated. 1-thioglycoses

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3,697,504
PROCESS OF MAKING PURINE BASE NUCLEOSIDE-5' CARBOXYLIC ACIDS

Robert Richard Schmidt, Stuttgart, Germany, assignor to Zellstoffabrik Waldhof, Mannheim, Germany

Filed July 29, 1969, Ser. No. 846,656

Claims priority, application Germany, July 30, 1968, P 17 95 020.8

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **11 Claims**

Purine-nucleoside-5'-carboxylic acids are made by subjecting a purine-nucleoside, in which the 2',3'-cis-oriented hydroxy groups are protected by blocking groups, to oxidation with an excess of potassium permanganate in an alkaline aqueous solution, followed by precipitation of the 5'-carboxylic acid. Subsequently the blocking groups may be split off.

The compounds are valuable intermediates for making various pharmaceutical products, particularly cancerostatics.

3,697,505
AROMATIC SUBSTITUTED AMIDINES

Franklyn W. Gubitz, Nassau, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 796,187

Int. Cl. C07d *27/06, 29/16, 41/04*

U.S. Cl. 260—239 B **5 Claims**

Substituted amidines of the formula $Ar(CH_2)_nC(N{=}Z){=}NR$ where Ar is pyridyl, phenyl or substituted phenyl, n is O or an integer from 1 to 3, N=Z is tertiary-amino and R is lower-alkyl, lower-alkenyl or substituted lower-alkyl, having diuretic and anti-inflammatory activity, are prepared by interacting an amide of the formula $Ar(CH_2)_nCONHR$ with phosphorus pentachloride, and interacting the resulting imidyl chloride, $Ar(CH_2)_nC(Cl){=}NR$ with a secondary-amine, HN=Z.

3,697,506
CRYSTALLINE ALKALI METAL SALTS OF α-CARBOXYBENZYLPENICILLIN AND PROCESS THEREFOR

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 804,275, March 4, 1969, which is a continuation-in-part of Ser. No. 768,497, Oct. 17, 1968, abandoned. This application Aug. 7, 1970, Ser. No. 62,138

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **13 Claims**

Crystalline mono-alkali metal and crystalline di-alkali metal salts of α-carboxybenzylpenicillin and a process for their preparation from crude and amorphous forms of a α-carboxybenzylpenicillin and salts thereof, and from aqueous and organic solvent solutions of α-carboxybenzylpenicillin and salts thereof.

3,697,507
ESTERS OF α-AMINOBENZYLPENICILLIN

Erling Knud Frederiksen, Holte, and Wagn Ole Godtfredsen, Vaerlose, both of Denmark, assignors to Lovens kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

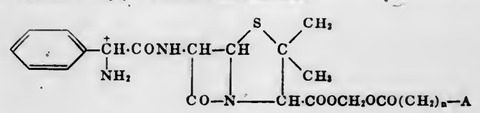
Filed Sept. 26, 1968, Ser. No. 762,987

Claims priority, application Great Britain, Sept. 29, 1967, 44,535/67; Oct. 5, 1967, 45,600/67; Oct. 23, 1967, 48,127/67; Nov. 10, 1967, 51,358/67; Dec. 6, 1967, 55,489/67; Jan. 3, 1968, 499/68; March 22, 1968, 14,041/68; March 29, 1968, 15,312/68

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

The invention comprises antibiotically active new esters of α-aminobenzylpenicillin of the formula:



(I)

in which the asterisk indicates an asymmetric carbon atom; *n* is an integer from 0 to 5; and A is an unsubstituted or substituted aliphatic, alicyclic, aromatic, or heterocyclic radical; the salts of said esters with pharmaceutically acceptable acids; and methods of preparing the esters and salts.

3,697,508
PROCESS FOR PREPARING BENZODIAZOCINES AND BENZODIAZONINES

Hisao Yamamoto, Nishinomiya-shi; Shigeho Inaba, Takarazuka-shi; Tadashi Okamoto, Ashiya-shi; Toshiyuki Hirohashi, Kobe; Kikuo Ishizumi, Minoo-shi; Michihiro Yamamoto, Takarazuka-shi; Isamu Maruyama, Minoo-shi; Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Dec. 9, 1968, Ser. No. 782,451

Claims priority, application Japan, Dec. 12, 1967, 42/79925; Dec. 18, 1967, 42/81297; Dec. 21, 1967, 42/82272; Dec. 21, 1967, 42/82275; Jan. 30, 1968, 43/5908; Jan. 30, 1968, 43/5909; Feb. 5, 1968, 43/7357; Feb. 13, 1968, 43/8952; Feb. 21, 1968, 43/11299; Feb. 23, 1968, 43/11638; March 3, 1968, 43/15246

Int. Cl. C07d *53/00*

U.S. Cl. 260—239.3 **42 Claims**

Novel 2-oxo-6-phenyl-1,5-benzodiazocine and 2-oxo-7-phenyl-1,6-benzodiazonine derivatives are prepared by such a manner that an indole-2-alkylamine derivative is formed by reducing an indole-2-aliphatic acid amide or thioamide, or by other processes, and oxidizing the resulting indole-2-alkylamine derivative. These 2-oxo-6-phenyl-1,5-benzodiazocine and 2-oxo-7-phenyl-1,6-benzodiazonine derivatives are useful as tranquilizers, muscle-relaxants and hypnotics.

3,697,509
N-(3-OXOPREGNA-4, 17(20)-DIEN-21-YL) QUATERNARY SALTS AND 19-NOR DERIVATIVES CORRESPONDING

Frank B. Colton, Evanston; Richard A. Mikulec, Chicago, and Robert T. Nicholson, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed April 13, 1970, Ser. No. 28,001

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.5 **10 Claims**

N-(3-oxopregna-4,17(20)-dien-21-yl) quaternary salts and the 19-nor derivatives thereof are prepared by alkylation of

the appropriate amine with a 21-halopregna-4,17(20)-dien-3-one or a 21-halo-19-norpregna-4,17(20-dien-3-one followed, if necessary, by ion exchange. These quaternary salts display anti-microbial properties, e.g., anti-bacterial, anti-protozoal, anti-fungal, anti-algal and anthelmintic.

3,697,510
NOVEL PREPARATION OF PREGNANES

Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois; Jean-Claude Gasc, Bondy, and Andre Pierdet, Noisy le Sec, all of France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 20, 1970, Ser. No. 82,482

Claims priority, application France, March 4, 1970, 7007756

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **16 Claims**

Novel process for the preparation of steroids of the pregnane series from certain estrane derivatives which pregnanes are intermediates for cortisone derivatives.

3,697,511
NOVEL PROCESS FOR PRODUCING 10-HYDROCARBON-19-NOR-STEROIDS

Robert Bucourt, and Lucien Nedelec, both of Clichy-sous-Bois, France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 714,107, March 18, 1968, abandoned. This application Oct. 20, 1970, Ser. No. 82,552

Claims priority, application France, March 20, 1967, 6799496; March 4, 1970, 7007756

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **40 Claims**

A novel process for introducing a 10-hydrocarbon group into a $\Delta^{5(11)}$-19-nor-steroid by reacting a 13β-lower alkyl-$\Delta^{5(10),9(11)}$-19-nor steroid with a per carboxylic acid to form a mixture of the corresponding 5α, 10α- and 9β, 10β-epoxy steroids and reacting the latter with a hydrocarbon magnesium halide to form the corresponding 10-hydrocarbon-13β-lower alkyl-5-hydroxy-$\Delta^{9(11)}$-19-nor-steroid and to novel intermediates.

3,697,512
5-BENZYL PYRIMIDINES INTERMEDIATES

Ronald M. Cresswell, Scarsdale; John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, all of N.Y., assignors to Burroughs Wellcome Co.

Filed March 4, 1970, Ser. No. 16,606

Claims priority, application Great Britain, March 6, 1969, 11,908/69; March 6, 1969, 11,909/69; May 16, 1969, 25,171/69; June 13, 1969, 30,247/69

Int. Cl. C07d *29/32*

U.S. Cl. 260—240 R **32 Claims**

Compounds comprising selected N-substituted β-amino-α-benzyl-acrylonitriles and methods of preparing said compounds substantially free from the corresponding benzalacrylonitrile.

The compounds are useful as intermediates in the preparation of antibacterial and antimalerial agents.

3,697,513
HETEROCYCLIC COMPOUNDS CONTAINING ETHYLENE DOUBLE BONDS AND PROCESSES FOR THEIR MANUFACTURE

Adolf Emil Siegrist, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

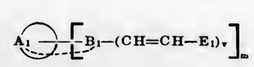
Filed April 16, 1968, Ser. No. 721,593

Claims priority, application Switzerland, April 21, 1967, 5735/67

Int. Cl. C07d *63/18*

U.S. Cl. 260—240 R **39 Claims**

The invention refers to a class of new compounds as well as a new process for making these compounds. The new compounds correspond to the general formula



wherein A_1 represents a heterocyclic ring system which (a) contains at least one five-membered to six-membered heterocyclic ring having at least one ring oxygen atom and/or one ring sulphur atom, (b) is free of ring nitrogen atoms and of hydrogen atoms which are replaceable by alkali metal, and (c) is bonded by a ring carbon atom to a ring carbon atom of B_1, or has two adjacent ring carbon atoms in common with two adjacent ring carbon atoms of B_1, and wherein furthermore (a) B_1 denotes a benzene ring or a heterocyclic ring of aromatic character containing five to six ring members, with these rings being permitted to contain further condensed-on aromatic, heterocyclic or hydroaromatic five-membered to six-membered rings, but preferably only one such ring, and (b) v denotes an integer from 1 to 2, and (c) wherein m denotes an integer from 1 to 4 in the case of a single bond between A_1 and B_1, and denotes the numbers 1 or 2 in the case of rings A_1 and B_1 being condensed with one another, and wherein E_1 represents an aromatic carbocyclic or heterocyclic rings system containing five to six ring members, which may contain further condensed-on aromatic or hydroaromatic ring system of carbocyclic or heterocyclic nature, and may contain aromatic, araliphatic, cycloaliphatic, aliphatic or other non-chromophoric substituents, with the exception of methyl groups, which are capable of carbanion formation in the presence of alkali metal ions.

3,697,514
4-NITROPYRROLE-2-CARBOXYLIC ACID AMIDE DERIVATIVES

Shigeru Yamabe, Toyonaka-shi; Masanao Shimizu, Kobe-shi, and Tadatsugu Yamamoto, Nara-shi, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

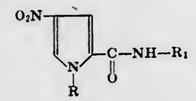
Filed Dec. 29, 1969, Ser. No. 888,427

Claims priority, application Japan, Dec. 29, 1968, 43/725; Jan. 7, 1969, 44/1434

Int. Cl. C07d *27/26*

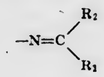
U.S. Cl. 260—240 G **2 Claims**

Novel 4-nitropyrrole-2-carboxylic acid amide derivatives of the general formula I below:



I

in which R is selected from the group consisting of hydrogen atom and alkyl groups of one to eight carbons, and R_1 is selected from the group consisting of amino, amidino, and



groups, R_2 and R_3

being each selected from the group consisting of hydrogen, alkyl of one to eight carbons, phenyl, and substituted phenyl, and which may be same or different, processes for their preparation, pharmaceutical compositions comprising said derivatives, and a method for using said compositions. These novel derivatives exhibit anti-Trichomonas vaginalis action as well as a very unique action of promoting release of virus out of cells.

3,697,515
PROCESS FOR SPLITTING THE 7-N-ACYL GROUP FROM CEPHALOSPORIN COMPOUNDS

Bruno Fechtig, Binningen; Ernst Vischer, Basel; Hans Bickel, Binningen; Rolf Bosshardt, Arlesheim, and Jakob Urech, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 842,359, July 16, 1969, abandoned, Continuation-in-part of Ser. No. 493,223, Oct. 5, 1965, abandoned, which is a continuation-in-part of Ser. No. 344,803, Feb. 14, 1964, abandoned. This application Nov. 19, 1971, Ser. No. 200,511

Claims priority, application Switzerland, Feb. 18, 1963, 1992/63; March 1, 1963, 2675/63; April 3, 1963, 4249/63; June 13, 1963, 7358/63; July 2, 1963, 8246/63; Oct. 2, 1963, 12112/63; Nov. 6, 1963, 13600/63; Jan. 22, 1964, 730/64; Oct. 9, 1964, 13166/64; Nov. 13, 1964, 14696/64

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **24 Claims**

The present invention is directed to an improved process for splitting the N-acyl group in 7-position from cephalosporin type compounds. It is characterized by formation of the N_7-imide halide, conversion of the latter into the iminoether and splitting of the C=N double bond of the latter.

3,697,516
CERTAIN THIAZINE-2-THIONE COMPOUNDS AND METHOD OF PREPARING SAME

Jack E. Reece, Willernie, Minn., and George B. Fozzard, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 19, 1970, Ser. No. 82,175

Int. Cl. C07d *93/08*

U.S. Cl. 260—243 R **5 Claims**

Certain thiazolidine- and thiazine-2-thione compounds, including 5-carboxythiazolidine-2-thione and 3,4-tetramethylene-4H,5,6-dihydro-1,3-thiazine-2-thione, and methods for preparing same are disclosed.

3,697,517
1,3-BENZOXAZINES

Jurgen Kurz; Kolling Heinrich, and Manfred Federmann, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 634,835, May 1, 1967, abandoned. This application March 28, 1969, Ser. No. 832,527

Int. Cl. C07d *87/00*

U.S. Cl. 260—244 R **5 Claims**

New thionosalicyclic acid anilides and salts with bases are provided which have parasiticidal activity in sheep and cattle particularly against adult liver flukes in sheep and cattle and other domestic animals, especially against juvenile liver flukes. The new compounds are reaction products of poly-substituted phenols with substituted aromatic isothiocyanates, the hydrolysis products of oxo-thiono- or dithiono-dihydrobenzoxazines or the reaction products of N-phenyl-salicyl-imide chlorides with thio-compounds. Typical compounds are 3,5-dichloro-4'-bromo-thionosalicylic acid anilide and 2-acetoxy-3,5-dichloro-N-(2'-methyl-4'-chlorophenyl)-thionobenzamide. Novel benzoxazines obtainable from the above anilides are also provided and have similar properties Typical compounds are 3-(3',5'-bis-trifluoromethyl-phenyl)-6,8-dibromo-21-oxo-4-thiono-dihydrobenzoxazine-(1,3), 3-(3',4'-dichlorophenylc6,8-dichloro-2,4-dithiono-dihydrobenzoxazine-(1,3) and (4'-bromophenyl)-6-chloro-8-bromo-2,4-dithiono-dihydrobenzoxazine-(1,3). Methods for preparing a large number of both types of compounds are described. The compound are administered orally or subcutaneously in doses of 2.5 to 100 mg/kg, preferably 5 to 15 mg/kg, of body weight.

3,697,518
PHOSPHORUS ACID ESTERS OF 3-HYDROXY-BENZO-1,2,4-TRIAZINE -1-N-OXIDE

Karl-Julius Schmidt, Wuppertal-Vohwinkel, and Ingeborg Hammann, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 10, 1969, Ser. No. 875,553

Claims priority, application Germany, Nov. 16, 1968, P 18 09 390.8

Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS **10 Claims**

Phosphorus acid esters of 3-hydroxy-benzo-1,2,4-triazine-1-N-oxide, i.e. phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters of 3-hydroxy-benzo-1,2,4-triazine-1-N-oxide, or 3-[(alkyl, phenyl and O-alkyl)-O-alkyl-phosphoryloxy, phosphonyloxy, thiono-phosphoryloxy and thionophosphonyloxy]-benzo-1,2,4-triazine-1-N-oxide, which possess arthropodicidal especially acaricidal and insecticidal, properties, and which may be produced by conventional methods.

3,697,519
PROCESS FOR SEPARATING OFF MELAMINE FROM A HOT SYNTHESIS GAS MIXTURE WHICH CONTAINS MELAMINE VAPOR

Petrus J. C. Kaasenbrood, Sittard, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Continuation-in-part of Ser. No. 837,479, June 30, 1969. This application Dec. 9, 1970, Ser. No. 96,466

Claims priority, application Netherlands, Dec. 11, 1969, 6918571

Int. Cl. C07d *55/24*

U.S. Cl. 260—249.7 P **6 Claims**

A process relating to the separation of melamine from hot synthesis gas mixtures is described, wherein such gases are contacted directly with a urea melt containing ammonium carbamate, so that the desublimation heat released as the melamine is converted from the vapor to the solid state is utilized for the decomposition of the ammonium carbamate to release ammonia and carbon dioxide.

3,697,520
TRIAZINE CARBOXYLIC ACIDS AND ESTERS

Roland A. E. Winter, Armonk, N.Y., assignor to Ciba-Geigy AG, Basel, Switzerland

Filed April 30, 1970, Ser. No. 33,527

Int. Cl. C07d *55/22*

U.S. Cl. 260—249.6 **12 Claims**

Triazine carboxylic acids and esters are useful as starting materials in the preparation of high temperature polymers, antioxidants and plastercizers.

These compounds are prepared by reacting cyanuric chloride or an amino substituted dichloro-s-triazine with amino acids or amino esters in the presence of a base and water.

3,697,521
INTEGRATED PROCESS FOR THE PREPARATION OF UREA AND MELAMINE

Petrus J. M. Van Nassau, Geleen; Wilhelmus K. Brand, Munstergeleen, and Petrus J. C. Kaasenbrood, Sittard, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Dec. 15, 1970, Ser. No. 98,466

Claims priority, application Netherlands, Dec. 20, 1969, 6919152

Int. Cl. C07d *55/28*

U.S. Cl. 260—249.7 A **4 Claims**

An integrated process for the preparation of urea and melamine is described wherein heat requirements for the decomposition of ammonium carbamate contained in the urea

product solution, which is cycled as feed to the melamine synthesis stage, is supplied, at least in part, from the heat released by the desublimation of the melamine vapors obtained in the melamine synthesis gas product stream, by bringing this gas stream into direct contact, either in counter-current or co-current flow, with the ammonium carbamate-containing urea product solution.

3,697,522
PYRIDAZONE DERIVATIVES

Franz Reicheneder; Rudolf Kropp, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Feb. 3, 1969, Ser. No. 796,182

Claims priority, application Germany, Feb. 10, 1968, P 16 70 315.4

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **4 Claims**

New and valuable pyridazone derivatives, especially m-trifluoromethylphenyl pyridazone derivatives, and a process for controlling unwanted plants with these compounds.

3,697,523
2-SUBSTITUTED-11-(4-METHYL-1-PIPERIZINYL)-DIBENZO [B,F]-1,4-OXAZEPIN-(4-OXIDE)

Fritz Hunziker, Berne, and Jean Schmutz, Muri b/Berne, both of Switzerland, assignors to Sandoz Ltd., (aka Sandoz AG), Basle, Switzerland

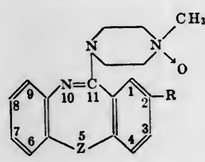
Filed Aug. 12, 1969, Ser. No. 849,522

Claims priority, application Switzerland, Aug. 23, 1968, 12731/68; Nov. 4, 1968, 16388/68; Jan. 24, 1969, 1042/69; May 2, 1969, 6772/69

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **1 Claim**

The invention concerns novel compounds of the formula:



wherein Z is oxygen or sulfur, and R is chlorine, bromine, nitro or methyl, and pharmaceutically acceptable acid addition salts thereof. A process for the production of the above compounds is also described.

The compounds are useful neuroleptics.

3,697,524
PROCESS FOR PREPARING 1,4-DISUBSTITUTED PIPERAZINES

Donald A. Tomalia, and Narayanlal D. Ojha, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 31, 1969, Ser. No. 873,121

Int. Cl. C07d *51/72*

U.S. Cl. 260—268 SY **8 Claims**

1,4-Disubstituted piperazines are prepared by contacting a basic catalytic aziridine with sulfur dioxide in the presence of a catalystic amount of iodide ion. In example, N-ethylaziridine dimerized when contacted with sulfur dioxide and a catalytic amount of sodium iodide to form 1,4-diethylpiperazine.

3,697,525
FLUORESCENT NAPHTHALIMIDE DERIVATIVES

Hitoshi Okada; Seiichi Imahori, and Susumu Hirako, all of Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

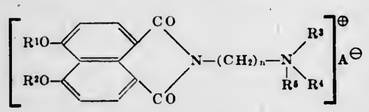
Filed June 4, 1969, Ser. No. 830,504

Claims priority, application Japan, June 8, 1968, 43/39102; June 8, 1968, 43/39103; June 8, 1968, 43/44712

Int. Cl. C07l *39/00*

U.S. Cl. 260—281 **7 Claims**

Naphthalimide derivatives of the formula



wherein R^1, R^2, R^3, and R^4 are lower alkyl, R^5 is hydrogen, lower alkyl or carbamoyl methyl, n is 2 or 3, and A is an anionic radical, are effective optical brighteners for acrylic fibers and cellulose acetate when dyed from an acid aqueous bath. They are prepared by quaternizing corresponding tertiary amines with inorganic or organic acids, lower alkyl esters which are known alkylating agents, or chloroacetamide.

3,697,526
CRYSTALLINE PERYLENETETRACARBOXYLIC ACID DIBENZOYLHYDRAZIDE

Andre Pugin, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 17, 1970, Ser. No. 90,423

Claims priority, application Switzerland, Nov. 28, 1969, 17777/69

Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **1 Claim**

Crystalline perylenetetracarboxylic acid dibenzoyl-hydrazide is prepared by condensing perylenetetracarboxylic acid dianhydride with benzhydrazide in the presence of non-basic solvents or in the presence of a mixture of basic and non-basic solvents. The compound is used as pigment.

3,697,527
DOETHYL PHENYL SULFONYLUREAS

Hans Hoehn, Tegernheim, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 2, 1970, Ser. No. 94,522

Int. Cl. C07d *31/44*

U.S. Cl. 260—294.8 C **9 Claims**

New [pyrazolo[3,4-b]pyridin-5-ylformamidoethyl]-phenylsulfonylureas are useful as hypoglycemic agents.

3,697,528
RADIATION SENSITIVE MATERIALS CONTAINING BIPYRIDILIUM SALT OF A STRONG ACID

Timothy Douglas Andrews; Glyn David Short, both of Northwich, and Ieuan Thomas, Frodsham, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 26, 1970, Ser. No. 40,714

Claims priority, application Great Britain, May 28, 1969, 26,925/69; Sept. 12, 1969, 45,151/69; Nov. 24, 1969, 57,392/69

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 **2 Claims**

A radiation sensitive material based on nitrogeneous dications such as bipyridyls, preferably with a water soluble polymer as a support. Sensitisers and desensitisers are described. The materials are sensitive to X-rays, electrons and UV up to about 500 nm, in the presence of sensitisers.

3,697,529
ARALKYL PENTA-AND HEXAMETHYLENIMINE AND INTERMEDIATES THEREFOR

Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.

Division of Ser. No. 799,943, Feb. 17, 1969, Pat. No. 3,637,659, which is a continuation-in-part of Ser. No. 717,363, March 29, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,615

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.81 **3 Claims**

The compounds are of the class of aralkyl penta- and hexamethylenimines which are useful as anti-arrhythmic agents; and to certain intermediates useful in the syntheses of such methylenimines.

3,697,530
OXADIAZOLE DERIVATIVES

Yoshio Imai, Hyogo; Haruki Matsumura, Osaka; Shojiro Yurugi, Kyoto, and Akio Miyake, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Dec. 31, 1970, Ser. No. 103,294

Int. Cl. C07d *31/34, 85/52*

U.S. Cl. 260—295 R **34 Claims**

The present invention is concerned with certain 5-aryl or heteroaryl-1,2,4 oxadiazoles and derivatives and methods for their preparation. The compounds possess hypocholesterolemic activity.

3,697,531
N,N'-ALKYLENEBIS(PYRIDINE-CARBOXAMIDES)

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 119,027

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **16 Claims**

N,N'-Alkylenebis(alkoxypyridinecarboxamides) where alkylene has from seven to ten carbon atoms inclusive, having endocrinological properties, are prepared either by reacting an alkylenediamine with an alkoxypyridinecarboxylic acid or stepwise by reacting an alkylenediamine with an hydroxypyridinecarboxylic acid, halogenating the resulting N,N'-alkylenebis(hydroxypyridinecarboxamide) to form the corresponding N,N'-alkylenebis(halopyridinecarboxamide) and reacting said halopridinecarboxamide with a metal lower-alkoxide.

3,697,532
5-METHYLDIPYRAZOLO [3,4-B;3',4'-D] PYRIDIN-3(2H)-ONES

Hans Hoehn, Tegernheim, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,326

Int. Cl. G07d *31/44*

U.S. Cl. 260—295.5 T **9 Claims**

New 5-methyldipyrazolo[3,4-b:3',4'-d]pyrdiin-3(2H)-ones are useful as central nervous system depressants. This type of compound also increases the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,697,533
2-(2-METHYLAN ILINO)-NICOTINIC ACID

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 866,012, Oct. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 835,743, June 23, 1969, abandoned. This application March 26, 1971, Ser. No. 128,514

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **3 Claims**

This invention relates to 2-(2-methylanilino)-nicotinic acid, the non-toxic pharmaceutically acceptable salts thereof and to the methods for the preparation and use thereof.

The tangible embodiments of this invention are prepared by condensing a 2-halonicotinic acid, or a functionally reactive equivalent thereof, with an o-toluidine, or a functionally reactive equivalent thereof, to produce either 2-(2-methylanilino)-nicotinic acid or a derivative which is convertible thereinto.

3,697,534
PREPARATION OF 2,2'-BIPYRIDYL

Dhafir Yusuf Waddan, and Derek Williams, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 1, 1969, Ser. No. 862,944

Claims priority, application Great Britain, Oct. 3, 1968, 47,023/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D **4 Claims**

Pyridines are converted into 2,2'-bipyridyls by treatment with Ziegler catalysts.

3,697,535
4,5-DIHYDROIMIDAZOLINE-3-OXIDE-1-OXYL

Richard K. Leute, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Synvar Associates,, Palo Alto, Calif.

Filed Dec. 15, 1969, Ser. No. 885,332

Int. Cl. C07d *105/00*

U.S. Cl. 260—299 **9 Claims**

4,5-dihydroimidazoline-3-oxide-1-oxyl-2-yl mercuric compounds having tertiary carbon atoms in the number 4 and 5 positions of the imidazoline ring. Typical is 4,4,5,5-tetramethylimidazoline-3-oxide-1-oxyl-2-yl mercuric chloride.

3,697,536
COMPOSITION OF MATTER

Mervin E. Brokke, Richmond, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 490,664, Sept. 27, 1965, Pat. No. 3,513,172. This application Nov. 20, 1969, Ser. No. 877,538

Int. Cl. C07d *91/60*

U.S. Cl. 260—302 R **1 Claim**

This invention relates to the compound 2-(3,4,4-trifluoro-3-butenylthio)-4-methylthiazole which is effective as a nematocide.

3,697,537
2-(ARYLOXY)-2-THIAZOLINIUM COMPOUNDS

Donald A. Tomalia, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1967, Ser. No. 671,957

Int. Cl. C07d *91/24*

U.S. Cl. 260—306.7 **9 Claims**

2-(Aryloxy)-2-thiazolinium hydrochlorides (A) and chlorides (B), useful as pesticides, are prepared by reacting, for (A) compounds, an N-unsubstituted aziridine with an aryloxy-thiocarbonyl chloride; and by reacting, for (B) compounds, an N-alkyl- or an N-arylaziridine with an aryloxy-thiocarbonyl chloride. The 2-(aryloxy)-2-thiazolines are liberated from their thiazolinium hydrochlorides by reaction with aqueous base.

3,697,538
2,4,5-SUBSTITUTED N-OXY AND HYDROXYIMIDAZOLES

David G. B. Boocock, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Synvar Associates, Palo Alto, Calif.

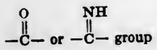
Filed June 3, 1968, Ser. No. 733,820

Int. Cl. C07d *49/36*

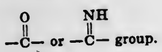
U.S. Cl. 260—309 **12 Claims**

Dihydroimidazoles having tertiary carbon atoms in the number 4 and number 5 positions of the imidazole ring, ox-

idized ring nitrogen atoms in the form of oxides and hydroxides and a



attached to the carbon atom at the 2 imidazole ring position. The free radical structures are useful as spin labels when bonded to other molecules through the



3,697,539

BIS-(1-γ-AMINOPROPYL-HYDANTOINYL-3)-ALKANES

Daniel Porret, Binningen, and Juergen Habermeier, Allschwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 12, 1969, Ser. No. 876,037

Claims priority, application Switzerland, Nov. 22, 1968, 17419/68

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5 5 Claims

New bis-(1-γ-aminopropyl-hydantoinyl-3)-alkanes, for example 1,6-bis-(1'-(γ-aminopropyl)-5',5'-dimethylhydantoinyl-3')-hexane or β,β'-bis-(1-(3'-aminopropyl)-5,5-dimethylhydantoinyl-3)-diethyl ether, and their use as curing agents in curable moulding, coating and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A. Curing can be carried out at relatively low temperatures, for example at 40° C. The new type of curing agent bridges, in respect of its gradation of reactivity, a gap between aliphatic polyamines and cycloaliphatic polyamines. The new curing agents furthermore have the advantage relative to the aromatic polyamines of being non-toxic.

3,697,540

CHROMENOPYRAZOL AND PROCESS FOR PREPARATION THEREOF

Shiro Kimura; Sadao Ishige, and Teruo Kobayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

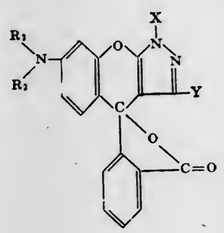
Filed Sept. 16, 1969, Ser. No. 858,522

Claims priority, application Japan, Sept. 16, 1968, 43/66822

Int. Cl. C07d 49/18

U.S. Cl. 260—310 R 11 Claims

Chromenopyrazol compounds having the formula



and a process for their preparation are disclosed. The chromenopyrazol compounds are useful as couplers in pressure-sensitive duplicating papers.

3,697,541

PROCESS FOR THE MANUFACTURE OF PYROMELLITIC ACID DIIMIDE

Gunther Ibing, Gladbeck, and Kurt Neubold, Bottrop, both of Germany, assignors to Scholven-Chemie Aktiengesellschaft

Filed June 30, 1969, Ser. No. 837,946

Claims priority, application Germany, July 10, 1968, P 17 70 840.6

Int. Cl. C07d 27/52

U.S. Cl. 260—326 C 7 Claims

Pyromellitic acid diimide is manufactured with yields of greater than 99 percent by the reaction of pyromellitic acid or its anhydride with formamide in an organic solvent at an elevated temperature of up to about 170°C and under an inert atmosphere.

3,697,542

METHOD OF PRODUCING α-CARBOXYLATED 5-MEMBERED LACTONES

William L. Parker, North Brunswick, N.J.; Francis Johnson, Newton Lower Falls, and John Martin, Framingham, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 10, 1969, Ser. No. 875,520

Int. Cl. C07d 27/28, 5/06, 5/46

U.S. Cl. 260—326.3 9 Claims

Five-membered lactones are α-carboxylated by reacting in solution the lactone with methyl methoxy-magnesium carbonate. The lactone reactants are restricted to those having an α-methylene group.

3,697,543

EPITHIO COMPOUNDS

Albert Pfiffner, Ariesheim, and Ulrich Schwieter, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 16, 1969, Ser. No. 858,534

Int. Cl. A61k 27/00; C07d 59/00

U.S. Cl. 260—327 E 7 Claims

Epithio unsaturated aliphatic acids, nitriles, and alcohols, and ether, ester and amide derivatives thereof and epoxy unsaturated aliphatic acids, nitriles, and alcohols, and ether, ester and amide derivatives thereof, which are useful in killing and preventing proliferation of insects by upsetting their hormone balance.

3,697,544

THIAXANTHONE-10,10-DIOXIDES

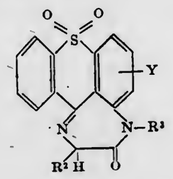
Edward L. Engelhardt, Gwynedd Valley, and David C. Remy, North Wales, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 661,784, Aug. 21, 1967, Pat. No. 3,530,116. This application March 19, 1970, Ser. No. 21,795

Int. Cl. A61k 27/00; C07d 65/18

U.S. Cl. 260—328 9 Claims

This invention pertains to pharmacologically active compounds of the following structure:



wherein Y is hydrogen, halo, alkyl, NO_2, perfluoroalkyl, cyano, PO—, RSO_2—, R_2NSO_2—, R_2NCO— (R being alkyl, aryl, aralkyl, alkaryl or hydrogen); and R^2 is alkyl, aryl, aralkyl, alkaryl or hydrogen and R^3 is alkyl, aralkyl or hydrogen. The disclosed process is summarized in the flow sheet at pages 2–3 of the specification. The compounds exhibit anti-anxiety activity and a depressant effect on the central nervous system.

3,697,545

IRRADIATED PRODUCTS OF 3H-1,4-BENZODIAZEPINE 4-OXIDES

George Francis Field, West Caldwell, and Leon Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 665,293, Sept. 5, 1967, Pat. No. 3,555,022. This application Sept. 19, 1969, Ser. No. 861,545

Int. Cl. C07d 87/54

U.S. Cl. 260—333 1 Claim

1,3,6-Benzoxadiazocines and 1,2-dihydro-quinoxalines are useful as anti-inflammatory agents, anti-convulsants and anti-bacterial agents and methods for their production.

3,697,546

METHOD OF PRODUCING TRIOXAN

Kazuo Asakawa, and Kaoru Narita, both of Niigata-shi, Japan, assignors to Japan Gas-Chemical Company, Inc. Tokyo, Japan

Filed Jan. 14, 1970, Ser. No. 2,694

Int. Cl. C07d 19/00

U.S. Cl. 260—340 8 Claims

The present invention relates to a method of producing trioxan which involves heating a liquid mixture of formaldehyde and a lower aliphatic hydrocarbon in the presence of a solid acid catalyst. More specifically, according to the present invention, raw formaldehyde having a relatively high water content can be used as the starting material by removing the water from the system in an azeotropic mixture with the lower aliphatic dihalide by a distillation procedure and heating the residual formaldehyde—lower aliphatic hydrocarbon halide in the presence of a solid acid catalyst to form the objective trioxane product.

3,697,547

ERYTHRONOLIDE B DERIVATIVES

Paul Kurath, Waukegan, and Richard Stephan Egan, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 18, 1970, Ser. No. 99,641

Int. Cl. C07d 9/00

U.S. Cl. 260—343 3 Claims

8,9-Anhydroerythronolide B 6,9-hemiketal and 8-hydroxyerythronolide B are respectively successive intermediates for the preparation of 3-mycarosyl-8-hydroxyerythronolide B which is useful as an antipyretic.

3,697,548

ZEARALENONE REDUCTION

Edward B. Hodge, Terre Haute, Ind., assignor to Commercial Solvents Corporation

Filed April 2, 1970, Ser. No. 25,265

Int. Cl. C07d 9/00

U.S. Cl. 260—343.2 F 9 Claims

A method for reducing zearalenone to zearalanol in which the product contains a major amount of the high melting diastereoisomer and a minor amount of the low melting diastereoisomer of zearalanol is disclosed. Zearalenone is catalytically reduced with hydrogen in the presence of a solvent, a strong acid, and a platinum catalyst for a time sufficient to reduce the zearalenone to zearalanol.

3,697,549

2,3-CYCLOETHYLENE-3-METHYLPENTANO-5-LACTONE

John B. Siddall, Palo Alto, Calif., assignor to Zoicon Corporation, Palo Alto, Calif.

Division of Ser. No. 880,966, Nov. 28, 1969. This application June 25, 1971, Ser. No. 156,943

Int. Cl. C07d 7/06

U.S. Cl. 260—343.2 R 1 Claim

Synthesis of cis 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol, a component of the boll weevil sex attractant, and intermediates therefor, in which 5-hydroxypent-2-ynoic acid or ethers thereof is methylated followed by cyclization to yield 3-methylpent-2-eno-5-lactone which is irradiated in presence of ethylene to yield 2,3-cycloethylene-3-methylpentano-5-lactone which is cleaved and converted into 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol.

3,697,550

VAPOUR PHASE OXIDATION OF BENZENE TO MALEIC ANHYDRIDE USING AN ALUMINUM PHOSPHATE SUPPORTED CATALYST

John Bayne; Ian Robert King, and John Richard Morey, all of Luton, England, assignors to Laporte Industries Limited, London, England

Filed Dec. 17, 1970, Ser. No. 99,315

Claims priority, application Great Britain, Dec. 19, 1969, 61,900/69

Int. Cl. C07c 57/14

U.S. Cl. 260—346.8 10 Claims

This invention relates to the use of a support of aluminium phosphate in the cristobalite form in a process for the vapor phase oxidation of benzene to maleic anhydride in which a gaseous mixture containing benzene and oxygen with an inert diluent gas is contacted at a temperature in the range of 350° to 450° C with the supported catalyst, whose catalyst component, present to the extent of between 5 and 30 percent by weight in the supported catalyst, comprises two or more of vanadium oxide, molybdenum oxide, tungsten oxide and phosphorus oxide.

3,697,551

SILANE SULFONYL AZIDES

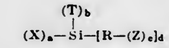
J. Brent Thomson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 789,974, Dec. 31, 1968, abandoned. This application Sept. 30, 1969, Ser. No. 862,531

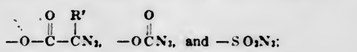
Int. Cl. C07c 117/00

U.S. Cl. 260—349 3 Claims

Disclosed are nitrogen containing silane compounds of the formula



where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; T is selected from alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals; *a* is an integer from 1 to 3; *b* is an integer from 0 to 2; *c* is an integer from 1 to 10; *d* is an integer from 1 to 3; and *a+b+d* equals 4; and Z is selected from



where R' is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR'' radicals; where R'' is selected from alkyl, cycloalkyl, and aryl radicals. Also disclosed is a process to promote the adhesion of polymers to siliceous materials, metals, metal oxides, and other polymers using the said silane compounds.

In particular, there is disclosed a process of improving the adhesion of tire cord to rubber tire stock using the said silane compounds. The cross-linking of polymers with the silane compounds is also disclosed.

3,697,552
ANTHRACYCLIDINE-ACETIC ACID DERIVATIVES

Lloyd H. Conover, Quaker Hill, Conn., and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc.

Division of Ser. No. 569,052, Aug. 1, 1966, Pat. No. 3,509,184, which is a continuation-in-part of Ser. No. 209,269, July 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 132,304, Aug. 18, 1961, abandoned. This application Oct. 31, 1969, Ser. No. 873,077

Int. Cl. C07c *49/76*

U.S. Cl. 260—351 **11 Claims**

The total synthesis of tetracycline-type antibiotics by a multistep process beginning with 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes comprising: (1) an aldol condensation with a glyoxalic acid ester to give a 2-carboxymethylidene-3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene ester; (2) Michael reaction of said ester with an amine to produce a 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid ester; (3) conversion of the triketone to the corresponding 4,10-diketone by (a) selective reduction of the Michael reaction product to the corresponding 3-hydroxy compound, followed by conversion of the 3-hydroxy compound to the corresponding 3-formyloxy compound and removal of the 3-formyloxy group by treatment with zinc dust to give a 4,10-dioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid ester; or (b) conversion of the hydrochloride salt of the Michael reaction product to a lactone by reaction with p-toluene-sulfonic acid and treatment of the lactone with zinc dust formic acid; (4) conversion of the 4,10-diketo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid to a mixed anhydride; (5) followed by acylation of a malonic acid ester with the mixed anhydride; (6) cyclization of the acyl malonate derivative to a 12a-deoxytetracycline which is then hydroxylated to a tetracycline. The preparation of the 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes from benzoyl halides by (a) Friedel-Crafts reaction of a benzoyl halide with a pyrocatechol ether, e.g., a di-(lower)alkyl ether, to produce a 3,4-di-(lower)alkoxybenzophenone; (b) conversion of the benzophenone by partial or complete reduction of the carbonyl group by chemical or catalytic methods to a 3,4-di-(lower)alkoxy diphenyl methanol or 3,4-di-(lower)alkoxy diphenyl methane; or to a 3,4-di-(lower)alkoxy diphenyl alkane via a Grignard reaction and reduction of the thus-produced alkanol; (c) oxidation of the 3,4-di-(lower)alkoxy diphenyl alkane, or the corresponding dihydroxy compound, to a dienedioic acid ester or dienedioic acid; (d) hydrogenation of the dienedioic acid compound to a benzyl adipic acid derivative; (e) cyclization of said compound to a 2-(2-carbalkoxyethyl)-4-tetralone by means of dehydrating or dehydrohalogenating agents; (f) cyclization of the 4-tetralone derivatives by condensation with a dialkyloxalate to give a 2-carbalkoxy 3,4,10-trioxo-octahydroanthracene; and (g) removal of the 2-substituent by decarboxylation. The intermediates and final products are useful as bactericides and/or chelating agents.

3,697,553
2-(3-INDOLYL)-1(1-IMINOMETHYL)-INDOLINES AND PROCESS FOR THEIR PREPARATION

Yao Hua Wu, and Arthur Jacob Mueller, both of Evansville, Ind., assignors to Mead John & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 709,941, March 4, 1968, abandoned. This application Jan. 19, 1970, Ser. No. 4,108

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **9 Claims**

2-(2- or 3-Indolyl)indolines, unsubstituted and carbon substituted, condense with N-mono substituted carboxamides or with lactams under the influence of phosphorus oxychloride to produce 1-(N-substituted imino-alkyl)-2-(2- or 3-indolyl)indolines. The 2-(3-indolyl)-1-[2-(1-pyrrolinyl)]indolines rearrange to produce benzodiazepine derivatives. These products have diuretic activity on oral administration.

3,697,554
FORMYLAMINOTHIOARYLOXYANTHRAQUINONES

Guido R. Genta, Lock Haven, Pa., assignor to American Aniline Products, Inc.

Continuation-in-part of Ser. No. 582,062, Feb. 17, 1966, abandoned. This application March 25, 1969, Ser. No. 810,363

Int. Cl. C09b *1/56*

U.S. Cl. 260—377 **5 Claims**

Anthraquinone dyestuffs containing a formylamino groups in the 1-position and a thioaryloxy group, such as a thiophenoxy group, in the 4-, 5-, or 8-position are made by reacting the appropriate 1-aminoanthraquinone with an organosulfonyl halide and dimethylformamide and heating the resulting intermediate in aqueous alkaline solution to form the 1-formylaminoanthraquinone. The products are excellent colors for polyester fibers, ranging from yellow to reddish-orange in shade.

3,697,555
ISOTHIOCYANO-DIPHENYL ETHERS, SULFIDES, SULFOXIDES AND SULFONES

Fritz Paltauf, Graz, Austria; Alfred Margot, and Paul Brenneisen, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 669,653, Sept. 21, 1967, Pat. No. 3,558,784, Continuation of Ser. No. 516,096, Dec. 23, 1965, abandoned. This application Dec. 29, 1969, Ser. No. 888,957

Claims priority, application Switzerland, Dec. 30, 1964, 16868/64; Dec. 30, 1964, 16869/64

Int. Cl. C07c *161/04*

U.S. Cl. 260—397.6 **13 Claims**

Anthelmintically useful mono- or di-isothiocyano substituted diphenyl ethers, sulfides, sulfoxides and sulfones, the molecule of which must contain either a dialkylamino, or, preferably, one nitro group and which optionally are further substituted by alkyl, alkoxy or chlorine are described; such compounds when applied in anthelmintically effective dosage, are unexpectedly well tolerated by the organism of warm-blooded animals, in contrast to other structurally closely related isothiocyano diphenyl ethers, which are too toxic to be satisfactory anthelmintic agents.

3,697,556
PREPARATION OF 7α-METHYL STEROIDS

Robert Boucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel UCLAF, Paris, France

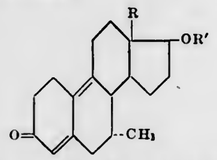
Filed July 27, 1970, Ser. No. 58,668

Claims priority, application France, July 28, 1969, 6925702

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.45 **6 Claims**

A novel process for the preparation of 7α-methyl-$\Delta^{4,9}$-gonadienes of the formula



I

wherein R is alkyl of one to four carbon atoms and R′ is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of one to 18 carbon atoms and an organic ether radical, a novel process for preparing the corresponding $\Delta^{4,9,11}$-gonatrienes and novel intermediates produced by the said processes.

3,697,557
PROCESS FOR THE ISOLATION OF ORGANIC HYDRAZO REACTIVE KETONES

Heinz K. Jahnke, Kalamazoo, and Heinz F. MaYer, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 8, 1971, Ser. No. 113,582

Int. Cl. C07c *167/40, 167/42*

U.S. Cl. 260—397.45 **8 Claims**

This invention relates to the isolation of organic hydrazo-reactive ketones from a liquid environment containing them by reaction with an insoluble solid material containing available acylhydrazide groups, and includes the subsequent recovery of the ketone from the resulting hydrazone complex and regeneration of the acyl-hydrazide groups; the process being particularly adaptable to the separation of minor quantities of hydrazo-reactive steroid ketones from admixture with other steroids.

3,697,558
PREPARATION OF 17ALPHA-ETHYNYLESTRIOL

Nicholas J. Bach, and Eugene Farkas, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed March 24, 1971, Ser. No. 127,771

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.5 **2 Claims**

An improved process for preparing 17α-ethynylestriol utilizing a novel isomer separation process

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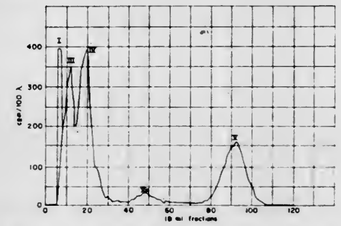
3,697,559
1,25-DIHYDROXYCHOLECALCIFEROL

Hector F. De Luca, Madison; Heinrich K. Schnoes, Waunakee, and Michael F. Holick, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 25, 1971, Ser. No. 118,881

Int. Cl. C07c *171/08*

U.S. Cl. 260—397.2 **1 Claim**



1,25-Dihydroxycholecalciferol. The compound is characterized by antirachitic activity (vitamin D-like activity) and by its high activity in promoting intestinal calcium absorption indicating a more rapid onset of antirachitic activity.

3,697,560
NOVEL COMPOSITION

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed March 29, 1971, Ser. No. 129,216

Int. Cl. C08h *3/00, 9/02*

U.S. Cl. 260—399 **15 Claims**

This substituted aliphatic unsaturated esters and derivatives, prepared by the reaction of halide precursor with lower alkylthiol in the presence of base which are useful for the control of insects.

3,697,561
NOVEL SULFUR CONTAINING DI AND TRI UNSATURATED ALIPHATIC CARBONYL COMPOUNDS

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed April 5, 1971, Ser. No. 131,455

Int. Cl. C08h *3/00, 9/02*

U.S. Cl. 260—399 **13 Claims**

Novel sulfur containing di- and tri-unsaturated aliphatic carbonyl compounds prepared by ylid reaction or phosphonate carbanion reaction which are useful for the control of insects.

3,697,562
NOVEL FLUOROCARBON DIAMIDES

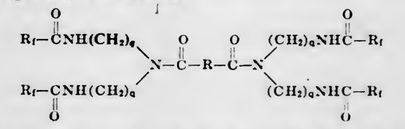
Wilhelmus M. Beyleveld, Whippany; Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,373

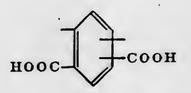
Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **10 Claims**

Novel fluorocarbon diamides useful as oil- and water- repellent agents have the formula



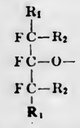
wherein R is a covalent bond, an alkyl diradical of one to 12 carbon atoms, an alkylene diradical of two to 12 carbon atoms, a phenyl diradical having from zero to four chlorine substituents, or a dicarboxy phenyl diradical having the formula



q is an integer from 1 to 6; and R_f is a radical having the formula

$$Y(CF_2)_s(CH_2)_t$$

wherein s is an integer from 1 to 16, t is an integer not greater than s from 0 to 8, with the sum of s plus t being from 1 to 20; and Y is selected from the group consisting of F_3C— and radicals having the formula



wherein R_1 and R_2 are fluorine or perfluoroalkyl groups having from one to nine carbon atoms, with not more than three of the R_1 and R_2 groups being perfluoroalkyl groups.

3,697,563
(3,4,5-TRIMETHOXY-BENZAMIDO)-ALKANOIC ACIDS FOR PROPHYLAXIS AND TREATMENT OF CARDIAC DISORDERS

Aldo Garzia, Lodi, Italy, assignor to Istituto Chemioterapico Italiano S.p.A.

Continuation-in-part of Ser. No. 840,841, July 10, 1969. This application June 29, 1970, Ser. No. 50,949

Int. Cl. C09f *7/00*

U.S. Cl. 260—404 **5 Claims**

(3,4,5-Trimethoxy-benzamido)-alkanoic acids and their pharmaceutically-acceptable salts for propyhylaxis and treatment of cardiac disorders.

3,697,564
FLUOROCARBON ACIDS AND DERIVATIVES

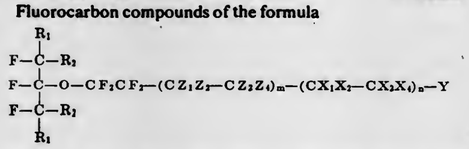
Louis Gene Anello, Basking Ridge; Richard Francis Sweeney, Randolph Township, Morris County, both of N.J., and Morton Herbert Litt, Cleveland, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 633,359, April 25, 1967, Pat. No. 3,514,487. This application April 12, 1968, Ser. No. 721,115

Int. Cl. C07c *59/22*

U.S. Cl. 260—408 **17 Claims**

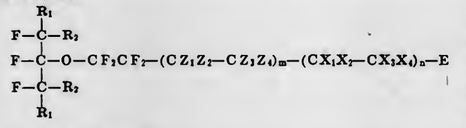
Fluorocarbon compounds of the formula



wherein R_1 and R_2 are F, fluoroalkyl or fluoroalkylene groups forming a cycloaliphatic structure, wherein $-(CZ_1Z_2-CZ_3Z_4)-$ and $-(CX_1X_2-CX_3X_4)-$ are bifunctional groups wherein Z_1-Z_4 and X_1-X_4 are H, F, or Cl, and wherein Y is —CN or



wherein Q represents F, Cl, hydroxy, alkoxy, amino or substituted amino groups are prepared from polyfluorohalides of the formula



wherein E is a halogen.

Carboxylic acids of the present invention and their amides are oil and stain repellent agents. Their salts, esters, halides and nitriles are surfactants and/or intermediates for the preparation of oil and stain repellent agents.

3,697,565
TETRAALKYL SUBSTITUTED UNSATURATED ACIDS AND ESTERS HAVING A TERMINAL QUATERNARY ALKYL GROUP USEFUL FOR INSECT CONTROL

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Feb. 2, 1970, Ser. No. 7,987

Int. Cl. C07c *57/02, 69/52*; A01n *9/24*

U.S. Cl. 260—408 **15 Claims**

Aliphatic esters having terminal quaternary alkyl group and di-unsaturation in the backbone prepared by alkylation of allylic acetate useful for insect control.

3,697,566
NOVEL ORGANO-TIN COMPOUNDS

Atsuo Sasse, Tokyo; Masuo Yukutomi, Fuchu-shi; Hirotoshi Shinkawa, Musashino-shi; Tuneo Moriya, Otsu-shi, and Keisuke Homma, Itami-shi, all of Japan, assignors to Kyodo Chemical Company Limited and Sumitoma Bakelite Company Limited, Tokyo, Japan

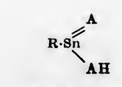
Filed Nov. 24, 1969, Ser. No. 879,592

Claims priority, application Japan, Nov. 30, 1968, 43/87293; Nov. 30, 1968, 43/87294; Nov. 30, 1968, 43/87295

Int. Cl. C07f *7/22*

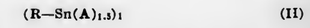
U.S. Cl. 260—429.7 **2 Claims**

An organo-tin compound is prepared by reacting a compound having the following general formula:



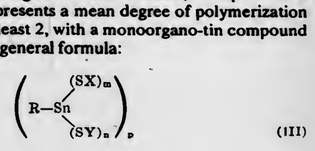
(I)

or



(II)

wherein R represents an alkyl group, alkenyl group or aralkyl group having one to eighteen carbon atoms, A represents a sulfur atom and *l* represents a mean degree of polymerization of any number of at least 2, with a monoorgano-tin compound having the following general formula:

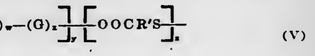


(III)

wherein R has the same meaning as defined above, SX represents a group of mercaptan residue, or a group of the following general formula:

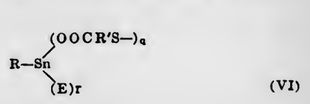
$$-SR'COOR'' \qquad [IV]$$

(wherein R′ represents an alkylene group, cycloalkylene group, alkenylene group and phenylene group having one to eight carbon atoms, R″ represents a hydrogen atom or an alkyl group, cycloalkyl group, alkenyl group or aralkyl group), SY represents a group of said SX or a group of the following general formula:



(V)

(wherein R′ has the same meaning as defined above, G represents an oxygen atom, sulfur atom, carbon atom or a methylidyne group, *w* represents an integer of 1 to 4, *x* represents an integer of 0 or 1, *y* represents an integer of 1 to 8 and *z* represents an integer of 2 to 4) or a group of the following general formula:



(VI)

(wherein R has the same meaning as defined above, E represents a group of said SX or a group of the general formula [V], *q* represents an integer of 1 to 3 and *r* represents an integer of 1 or 2), *m* and *n* represents integers, where $m+n=3$, and *p* represents a mean degree of polymerization of any number of at least 1, or compounds having the general formula:

$$HSY \qquad [VII]$$

wherein SY has the same meaning as defined above, by heating to a temperature of not more than 300° C., or by reacting a compound having the following general formula:

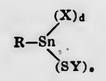
$$R{\cdot}Sn(X)_3 \qquad [VIII]$$

with compound having the general formula:

$$MSY \qquad [IX]$$

$$MSR'COOM \qquad [X]$$

wherein X represents a halogen atom, M represents an alkali metal, and SY and R′ have the same meanings as defined above, at a temperature of not more than 100° C., and further reacting the resulting compound having the following general formula:



(XI)

wherein R, X and SY have the same meanings as defined above, and *d* and *e* represent integers of 1 or 2, with at least one of caustic alkalis and alkali metal sulfides at a temperature of not more than 100° C.

The organo-tin compound is very excellent as stabilizers for plastic owing to its non-toxicity.

3,697,567
REMOVAL OF DISSOLVED ORGANIC LEAD FROM AQUEOUS ALKYLLEAD PROCESS EFFLUENTS

Earl Richard Taylor, Jr., Antioch, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 24, 1971, Ser. No. 127,844

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **7 Claims**

Process of removing dissolved organic lead from an aqueous effluent produced in the manufacture of alkyllead compounds by contacting a metal more electropositive than lead but essentially non-reactive with water with the effluent until the dissolved organic lead is converted to an insoluble lead-containing product, leaving a reduced dissolved organic lead content in the effluent.

3,697,568
IMINOXYORGANOSILANES

Jean Boissieras; Louis Ceyzeriat, and Guy Poy, all of Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Nov. 12, 1970, Ser. No. 89,149

Claims priority, application France, Nov. 12, 1969, 6938761

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **14 Claims**

Silanes $R-Si\,Y_a\,Q_{3-a}$ where R is unsubstituted or halo, alkoxy or nitrile substituted hydrocarbon radical, one of Y and Q is $-ON{=}CR'R''$ and the other is $O(DO)_nR'''$, $a=1$ a number from 0.1 to 2.9, where R′ is a hydrocarbon radical, R″ is H or C_{1-5} alkyl, or R′ and R″ together are divalent hydrocarbon radicals, R‴ is C_{1-4} aliphatic hydrocarbon radical, D is C_{1-6} alkylene radical and $n=0$, 1, 2 or 3; are prepared by reacting $RSiE_aQ_{3-a}$ with YH where E is halogen or acyloxy. They may be used particularly as cross-linking agents for polydiorganosiloxanes having reactive terminal groups on the chain to give elastomer forming compositions which are storage stable in the absence of water and which cure to form elastomers in the presence of water at about 20° C.

3,697,569
METHOD OF PRODUCING 1,3-BIS (HYDROXYARYL) TET RAORGANOSILOXANES

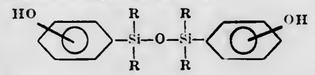
Vladimir Florovich Mironov, ulitsa Gubkina, 4 kv. 13; Nikolai Semenovich Fedotov, Sosinskaya ulitsa, 6 kv. 7, and Vadim Lvovich Kozlikov, ulitsa Palekhskaya, 118a, kv. 7, all of Moscow, U.S.S.R.

Filed Feb. 4, 1971, Ser. No. 112,787

Int. Cl. C07f *7/08*

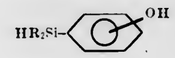
U.S. Cl. 260—448.2 B **5 Claims**

A method of producing 1,3 bis-(hydroxyaryl) tetraorganodisiloxanes of the general formula



where R is alkyl,

consisting in that a diorganohydrosilyl halophenol ester is reacted with magnesium in an organic solvent medium. Then the solvent is distilled off, the reaction mixture is heated to a temperature of 150°–180°C, is treated with a 10–15 percent solution of a mineral acid, thus isolating diorganohydroxilyl-substituted phenols of the general formula



where R is alkyl.

The obtained compounds of the above-mentioned general formula are subjected to hydrolysis in the presence of a catalyst such as powdered copper, powdered nickel, powdered iron, an organic or inorganic base, hydroxide or alcoholate of alkali metals, or are subjected to alcoholysis in the presence of the above-said catalysts followed by hydrolysis. After that condensation of the diorganohydroxysilylphenols is effected under a vacuum at a temperature of 35°–60°C and a residual pressure of 1–2 mm Hg.

The 1,3 bis-(hydroxyaryl) tetraorganodisiloxanes are used for synthesis of polymers having a high terminal stability.

3,697,570
METHOD OF PREPARING ORGANIC ISOCYANATES IN THE PRESENCE OF MOLECULAR SIEVES

Edward J. Thompson, Watertown, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed July 30, 1969, Ser. No. 846,241

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PH **4 Claims**

An improved process is disclosed for the phosgenation of aliphatic and aromatic amines to obtain the corresponding organic isocyanates. The improvement comprises carrying out the known phosgenation procedure in the presence of crystalline zeolitic molecular sieves. The organic isocyanate products of the improved process show lighter coloration and improved color stability in comparison to isocyanates obtained by the prior known phosgenation processes.

3,697,571
N-POLYHALOVINYLTHIOFORMAMIDES

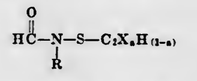
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 810,368, March 25, 1969, abandoned, and a continuation-in-part of Ser. No. 748,642, June 30, 1968, abandoned. This application April 30, 1970, Ser. No. 33,878

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R **5 Claims**

N-polyhalovinylthioformamides of the formula:



wherein R is hydrogen or alkyl of one to four carbon atoms, X is halogen of atomic number 17 to 35 and *a* is 2 or 3. These formamides are fungicidal, algicidal and nematocidal.

3,697,572
N-ARYL-N'ALKYL-N'ARYLTHIO UREAS AS HERBICIDES

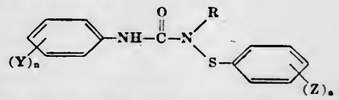
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 709,896, Mar. 4, 1968, abandoned, and a continuation-in-part of Ser. No. 3,238, Jan. 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 709,896,. This application May 28, 1970, Ser. No. 41,603

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R **9 Claims**

Ureas of the formula:



where R is alkyl of one to four carbon atoms, Y is halogen of atomic number 9 to 35, i.e., F, Cl and Br, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms or trifluoromethyl, with the proviso that when Y is alkyl or

alkoxy, Y is in position 2, 4 or 6 of the nucleus, *n* is 0 or an integer in the range of 1 and 3 inclusive with the proviso that when *n* is 2 or 3 at least one Y is halogen, 8 is halogen of atomic number 9 to 35 or alkyl of one to about four carbon atoms and *a* is 0, an integer in the range of 1 and 5 inclusive when Z is halogen, or 1 when Z is alkyl. These ureas are herbicidal.

3,697,573

LINEAR ALKYLPHENOL SULFATE-SULFONATE PHOSPHATE-FREE DETERGENT ACTIVES

Mitchell Danzik, Pinole, and Ralph House, El Sobrante, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 5, 1970, Ser. No. 34,885

Int. Cl. C07c *141/00*

U.S. Cl. 260—457 **4 Claims**

Heavy duty detergent active materials capable of heavy duty washing performance in the absence of phosphate builders are provided, the materials comprising alkylphenol sulfate-sulfonate compounds in which the alkyl groups are linear of 16–24 carbon atoms,.

3,697,574

BORON DERIVATIVES OF HIGH MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 502,368, Oct. 22, 1965, Pat. No. 3,539,633. This application April 14, 1969, Ser. No. 816,079

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **6 Claims**

High molecular weight Mannich condensation products of (1) high molecular weight alkyl-substituted hydroxyaromatic compounds whose alkyl substituent has upward from 40 to 20,000 carbon atoms, (2) an amine which contains an



group

and (3) an aldehyde in the respective reactant molar ratio of 1 : 0.1–10 : 1.0–10 condensed with a boron compound are novel dispersant-detergent lubricant oil addition agents. Solutions of those addition agents in lubricant oil are novel and unique compositions affording anti-sludge and varnish deposition and corrosion inhibition.

3,697,575

BORIC ACID ESTERS OF 2-VINYLTHIOETHANOL

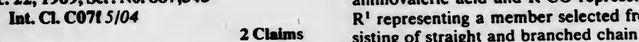
Herbert Naarmann, Ludwigshafen, and Heinrich Hartmann, Limburgerhof, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 22, 1969, Ser. No. 887,345

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **2 Claims**

Boric esters of the formula



where R represents an alkyl radical, optionally substituted, and *n* is equal to 1, 2 or 3. The products are used as flameproofing agents for plastics materials and resins.

3,697,576

PURIFICATION OF NITRILES

Rene Joseph Allirot, Huningue; Claude Darcas, and Raymond Jobert, both of St. Avold, Moselle, all of France, assignors to Ugine Kuhlmann, Paris, France

Filed Dec. 24, 1969, Ser. No. 888,022

Int. Cl. C07c *121/32*, *121/00*

U.S. Cl. 260—465.3 **8 Claims**

Procedure for the removal of nitrogeneous bases such as oxazole from partially purified nitrile compositions obtained by vapor phase catalytic reaction between ethylenic hydrocarbons, ammonia and oxygen in which the nitrogeneous base is removed by adsorption on alumina, decolorizing clays, or silica.

3,697,577

DERIVATIVES OF N(N-ACYL AMINO ACYL) AMINOACETONITRILE

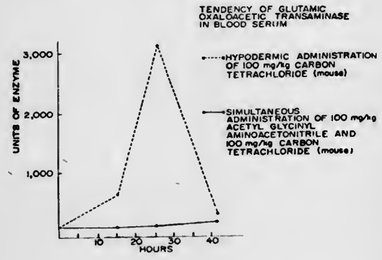
Tsutomu Irikura; Keigo Nishino; Seigo Suzue; Keichi Ushiyama, all of Tokyo, and Hirotaka Shinada, Saitama-ken, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1969, Ser. No. 828,508

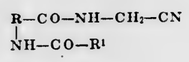
Claims priority, application Japan, April 22, 1964, 39/22575

Int. Cl. C07c *121/44*, *103/30*

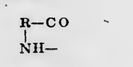
U.S. Cl. 260—465.4 **15 Claims**



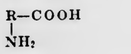
N-(N-acylaminoacyl)-aminoacetonitriles of the formula



in which



is the radical of



representing an amino acid selected from the group consisting of glycine, α-alanine, β-alanine, α-aminoisobutyric acid, valine, methionine, lysine, aspartic acid, and δ-aminovaleric acid and R¹CO represents an acyl radical, R¹ representing a member selected from the group consisting of straight and branched chain alkyl radicals having from one to four carbon atoms.

3,697,578

PROCESS FOR PREPARING 3-PENTENE NITRILE

Pietro Pasquino, Vercelli; Luigi Benzoni, Novara; Giuseppe Carnisio, Galliate, and Luigi Colombo, Arona, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Dec. 16, 1970, Ser. No. 98,908

Claims priority, application Italy, Dec. 17, 1969, 25901 A/69

Int. Cl. C07c *121/30*

U.S. Cl. 260—465.9 **3 Claims**

3-pentene-nitrile is prepared by isomerization of 2-methyl-3-butene-nitrile, using a nickel complex as catalyst.

3,697,579

METHOD OF ESTERIFYING A POLYCARBOXYLIC ACID WITH A GLYCOL

Laszlo J. Balint, Chester; Stanley D. Lazarus, Petersburg, and William N. Russell, Colonial Heights, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 812,350, April 1, 1969, abandoned. This application Sept. 18, 1969, Ser. No. 859,054. The portion of the term of this patent subsequent to Sept. 5, 1989, has been disclaimed.

Int. Cl. C07c *69/82*

U.S. Cl. 260—468 R **9 Claims**

The esterification of a polycarboxylic acid with a polyol is described under conditions of direct esterification and wherein the reacting mass is a flowable, uniform dispersion of (1) a paste of the said polycarboxylic acid and the said polyol, and (2) at least 3 parts by weight per part paste of a partially esterified product of said polycarboxylic acid with said polyol.

3,697,580

PRODUCTION OF BUTEN-2-OL-4 COMPOUNDS

Hermann Overwien, Ludwigshafen, and Herbert Mueller, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine Germany

Filed Jan. 9, 1970, Ser. No. 1,889

Claims priority, application Germany, Jan. 15, 1969, P 19 01 709.5

Int. Cl. C07c *43/14*, *47/26*, *67/00*

U.S. Cl. 260—468 R **7 Claims**

Production of buten-2-ol-4 compounds by isomerization of buten-1-ol-4 compounds in the presence of palladium or a compound thereof and hydrogen. The products are solvents or starting materials for the production of solvents, dyes, surface coatings and pest control agents.

3,697,581

5-CYCLOALKYLIDENE DIBENZOCYCLOHEPTENE DERIVATIVES

Leslie G. Humber, Dollard Des Ormeaux, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,571

Int. Cl. C07c *69/14*, *69/16*, *39/12*

U.S. Cl. 260—479 R **4 Claims**

There are disclosed new derivatives of 5-cyclohexylidene-5H-dibenzo[a,d]cycloheptene which are substituted at either position 2 or at both positions 2 and 8 with hydroxyl, lower acyloxy, or an aminoethoxy radical, such as, diethylaminoethoxy, dimethylaminoethoxy, pyrrolidinoethoxy, piperidinoethoxy or morpholinoethoxy, as well as the acid addition salts with pharmaceutically acceptable acids of those derivatives containing the aminoethoxy radicals. The derivatives are useful as antigonadotrophic agents substantially free from estrogenic effects, and methods for their preparation and use are given.

3,697,582

CINNAMYL CARBAMATES

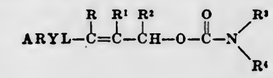
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed April 8, 1968, Ser. No. 719,700

Int. Cl. C07c *25/06*

U.S. Cl. 260—482 C **21 Claims**

Compounds correspond to the formula



wherein ARYL is phenyl, substituted phenyl, naphthyl and substituted naphthyl in which said substituents are halogen, lower alkoxy, lower alkyl, or when ARYL is substituted phenyl the substituent is also 3,4-oriented-methylenedioxy;

R and R¹ are independently hydrogen, lower alkyl, chlorine or bromine; R² is hydrogen, lower alkyl, or phenyl; and R³ and R⁴ are independently hydrogen, alkyl, lower alkenyl, carbethoxymethyl, phenyl and substituted phenyl in which said substituents are selected from the group halogen, lower alkoxy, lower alkyl and nitro, provided that only one of R³ or R⁴ is phenyl or substituted phenyl. The above-defined compounds are effective herbicides. Representative compounds are: cinnamyl-N-methylcarbamate; 2-chlorocinnamyl-N-methylcarbamate; cinnamyl-N-allylcarbamate; cinnamyl carbamate; o-bromocinnamyl-N-methyl carbamate.

3,697,583

PROCESS FOR PRODUCING ACRYLIC ACID ESTERS

Theodor Volker, and Klaus Hering, both of Fribourg, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Basel, Switzerland

Filed March 30, 1970, Ser. No. 29,334

Claims priority, application Switzerland, March 31, 1969, 4825/69

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **7 Claims**

A process for producing acrylic acid esters by reacting maleic acid anhydride with an alcohol component consisting of at least one aliphatic alcohol having one to four carbon atoms to give the corresponding maleic acid half ester, and decarboxylating the half ester in the presence of a copper compound, especially cupric oxide, and of a compound containing a tertiary nitrogen atom in a ring of the pyridine type, is carried out in advantageous manner when the molar ratio (X) of the alcohol component to maleic acid anhydride is governed by the equation

$$x = 98/m - M$$

wherein *m* is a number from 92 to 106, and *M* is the molecular weight of the alcohol forming the alcohol component, or if the alcohol component consists of at least two alcohols, M is the arithmetic mean of the molecular weights of the alcohols, corresponding to the molar ratio of the alcohols.

3,697,584

PYROLYSIS OF TRIS(2-CARBOXYETHYL)-ISOCYANURATE

Edwin D. Little, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 16, 1969, Ser. No. 885,649

Int. Cl. C07c *57/04*, *69/54*

U.S. Cl. 260—486 R **11 Claims**

Tris(2-carboxyethyl)isocyanurate and esters, amides, anhydrides and acid halides thereof undergo pyrolysis to afford cyanuric acid and acrylic acid or the corresponding ester, amide, anhydride or acid halide thereof. The process provides an in situ source of acrylate derivatives.

3,697,585

POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,607

Int. Cl. C07c *69/14*, *69/16*

U.S. Cl. 260—488 B **2 Claims**

Photochromic 1,3,6,8-tetra(lower)alkyl-15,16-dimethyl-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes and 1,3,6,8-tetra(lower)alkyl-15,16-methylene-15,16-

dihydropyrenes substituted in one or both of the 2- and 7-positions benzoyl, alkanoyl, alkanoyloxy, cyano, nitro, alkyl, α-hydroxy-alkyl, α-acyloxyalkyl, α-isonitrosoalkyl, or acylamido groups are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-acetamido-7-nitro-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,697,586

PRODUCTION OF VINYL ACETATE FROM ETHYLENE USING NOVEL LIQUID CATALYST COMPOSITIONS

John D. Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 795,039, Jan. 29, 1969. This application Jan. 19, 1971, Ser. No. 107,840

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **2 Claims**

A cyclic method for producing vinyl acetate wherein a novel catalyst composition containing acetic acid, up to 20 weight percent water, a palladium compound catalyst, and salts to provide: copper, chromic (+3) and potassium cations, and acetate and chloride anions is reacted with ethylene in a first stage to produce vinyl acetate and form cuprous copper which is reoxidized to the cupric state by reacting the catalyst composition with molecular oxygen in a second stage before the catalyst composition is recycled for re-use in the first stage.

3,697,587

PROCESS AND COMPOUNDS

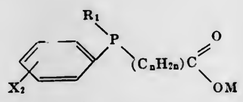
Hill M. Priestley, North Bergen, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 579,211, Sept. 14, 1966, Pat. No. 3,467,717, which is a continuation-in-part of Ser. No. 329,386, Dec. 10, 1963, Pat. No. 3,331,878. This application June 30, 1969, Ser. No. 837,863

Int. Cl. C07c *63/00*

U.S. Cl. 260—501.19 **11 Claims**

A group of novel alkali metal and ammonium soaps formed from intermediate phosphine oxides is disclosed having the generic formula:



wherein R_1 is an acyclic aliphatic hydrocarbon radical having from eight to 18 carbon atoms, n is an integer from 0 to 2, X_2 is a member of the group consisting of H and alkyl having one to 14 carbon atoms, and M is a water-solubilizing cation.

3,697,588

CYCLOHEXENYL ACETIC ACID COMPOUNDS

Michel Vincent, Bagneux; Georges Remond, Paris, and Jean-Claude Poignant, Wissous, all of France, assignors to Societe en nom collectif Science Union et Cie. Societe Francaise de Recherche Medicale-Suresnes

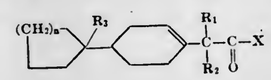
Filed Nov. 3, 1969, Ser. No. 873,659

Claims priority, application Great Britain, Nov. 13, 1968, 53,864/68

Int. Cl. C07c *61/28*, *103/19*, *83/08*

U.S. Cl. 260—514 R **3 Claims**

Cyclohexenyl acetic acid compounds of the formula



wherein

R_1, R_2 and R_3 are hydrogen or lower alkyl;

n is 1 to 4; and

X is hydroxyl, amino, alkylamino or hydroxylamino.

These compounds possess analgesic and antiinflammatory properties.

3,697,589

N-(4-CARBOXY-BENZYLIDENE)AMINES

Raphael Menasse, and Karl Gatzi, both of Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 708,807, Feb. 28, 1968, which is a division of Ser. No. 512,811, Dec. 9, 1965, abandoned. This application Oct. 12, 1970, Ser. No. 80,147

Int. Cl. C07c *101/42*

U.S. Cl. 260—518 R **2 Claims**

N-benzylidene alkylamines in which the alkyl group has from eight to 18 carbon atoms, and in which the phenyl moiety is optionally substituted, are fungicidal agents. Compositions containing these compounds are fungicides and methods for combatting fungi use these compounds.

3,697,590

PHENYLACETIC ACIDS AND THEIR SALTS

Jacques R. Boissier, Paris, and Roger Ratouis, Saint-Cloud, both of France, assignors to Societe anonyme dite: Roussel-UCLAF, Paris, France

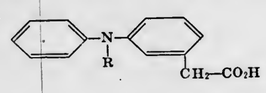
Filed July 28, 1969, Ser. No. 848,141

Claims priority, application France, July 30, 1968, 68161159; Oct. 24, 1968, 68171217

Int. Cl. C07c *101/44*

U.S. Cl. 260—518 R **3 Claims**

Phenylacetic acid derivatives having the formula:

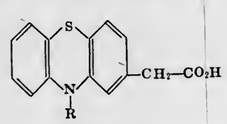


(1)

where R represents an hydrogen or a methyl radical.

Compounds of formula (1) and their metallic and amine salts are very useful substances in human therapeutics, namely as analgesic, antipyretic and antiinflamatory medicines.

Compounds of formula (1) are prepared by reacting a 2-phenothiazinylacetic acid of formula:



(2)

with a desulfurizing reducing agent.

3,697,591

TURBULENT FLOW LEACHING

John Nasser, New Canaan, Conn., assignor to Mobil Oil Corporation

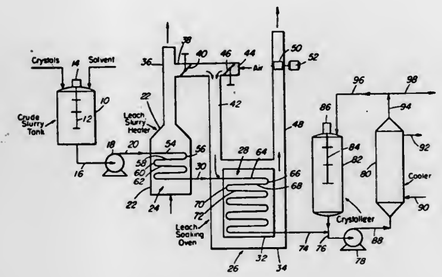
Filed Sept. 1, 1966, Ser. No. 576,764

Int. Cl. C07c *63/26*

U.S. Cl. 260—525 **10 Claims**

Rapid and efficient preheating and leaching of a suspension of an impure solid material in a liquid solvent capable of dissolving free or released impurities and only a portion of the desired product at high temperatures, as exemplified by a suspension in acetic acid at 400°–580° F. of crude terephthalic acid contaminated with p-carboxybenzaldehyde and p-toluic acid, while maintaining turbulent flow in pipes to prevent the settling or plating of solid deposits therein. Disposing the pip-

ing horizontally or at an angle less than the angle of repose of the solid material permits the leaching system to be shut down



and started up without plugging and without cleaning the piping.

3,697,592

POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, Pat. No. 3,476,747. This application Oct. 16, 1970, Ser. No. 81,581

Int. Cl. C07c *103/34*

U.S. Cl. 260—562 R **1 Claim**

Photochromic 1,3,6,8-tetra(lower)alkyl-15,16-dimethyl-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes and 1,3,6,8-tetra(lower)alkyl-15,16-methylene-15,16-dihydropyrenes substituted in one or both of the 2- and 7-positions benzoyl, alkanoyl, alkanoyloxy, cyano, nitro, alkyl, α-hydroxy-alkyl, α-acyloxyalkyl, α-isonitrosoalkyl, or acylamido groups are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-acetamido-7-nitro-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,697,593

2-AMINOMETHYL-2-ADAMANTANOL

Gilbert H. Berezin, West Chester, Pa., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 846,620, July 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 758,631, Sept. 9, 1968, abandoned. This application Feb. 9, 1971, Ser. No. 114,087

Int. Cl. C07c *87/40*

U.S. Cl. 260—563 P **1 Claim**

2-Aminomethyl-2-adamantanol, useful as an intermediate in the preparation of antiviral 4-amino- and 4-amino-methyl-tricyclo[4.3.1.1^{3,8} undecanes, can be prepared from 2-methylene adamantane by reaction with m-chloroperbenzoic acid to provide spiro[oxirane-2,2′-tricyclo(3.3.1.1^{3,7})]-decane, followed by reaction of the latter compound with ammonia. It can also be prepared by reacting adamantanone with hydrocyanic acid and reducing the resulting adamantane cyanohydrin with lithium aluminum hydride, or by reacting adamantanone with nitromethane and reducing the resulting 2-nitromethyl-2-adamantanol with hydrogen.

3,697,594

CERTAIN SUBSTITUTED CYCLOHEXYL AMINES

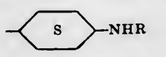
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,304, April 20, 1967, which is a continuation-in-part of Ser. Nos. 574,499, Aug. 8, 1966, Ser. No. 574,276, Aug. 18, 1966. This application May 17, 1968, Ser. No. 730,198

Int. Cl. C07c *87/34*, *87/40*

U.S. Cl. 260—563 R **10 Claims**

The invention relates to cis cyclohexyl derivations of the formula R_3CH_2



wherein R is hydrogen, methyl or ethyl and R_3 is alkyl (C_3 to C_6), Cycloalkyl (C_4 to C_9), bicycloalkyl (C_7 to C_{10}) or tricycloalkyl (C_{10} to C_{11}). These compounds are used as intermediates in preparing N-acylcyclohexylamines, having utility as animal repellants.

3,697,595

CONJUGATED NITRO AMINES

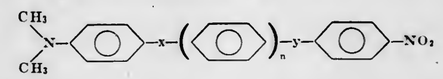
Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,401

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R **4 Claims**

Conjugated nitro amines having the formula:



wherein

x is N N, N CH, CH CH—CH N, or CH CH,

y is CH CH, CH N, N CH—CH CH, or NH and

n is 0, 1 or 2

have been prepared and found useful as dichroic photoconductors.

3,697,596

PRODUCTION OF ARYL-α-OXIMINOALKYLKETONES

Alfons Dorlars, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 5, 1968, Ser. No. 750,250

Int. Cl. C07c *131/00*

U.S. Cl. 260—465 E **9 Claims**

Aromatic-alkyl ketones are reacted with from 0.1 to 50 mol percent of an alkyl nitrite to form the corresponding aryl-α-oximinoketone which is then extracted from the reaction mixture and recovered. Consumed ketone can then be replenished and again reacted with alkyl nitrite.

3,697,597

PROCESS FOR THE PREPARATION OF α-OXIMINOALKYL KETONES

Alfons Dorlars, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 15, 1969, Ser. No. 857,970

Claims priority, application Germany, Sept. 21, 1968, P 17 93 468.8The portion of the term of this patent subsequent to Dec. 29, 1987, has been disclaimed.

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 A **9 Claims**

α-Oximino ketones, for example, oximinodipropyl ketone, are prepared by reacting a ketone in an inert organic solvent immiscible with water in the presence of a hydrogen halide with an amount of alkyl nitrite that is insufficient for complete

nitrosation followed by extracting the ketone formed with an aqueous alkali solution, removing the alkaline extract formed and isolating the α-oximino ketone. The ketones formed are useful as intermediates in the synthesis of pharmaceutical compounds, dyes, analytical reagents, plant protection agents, and optical brighteners.

3,697,598

CONTINUOUS PROCESS FOR PREPARING MONOALKANOLAMINES FROM AMMONIA AND ALKYLENE OXIDES

Bengt J. G. Weibull, Alfredshem; Leif Urban Folke Thorsell, Ornskoldsvik, and Sven-Olof Lindstrom, Domsjoverken, all of Sweden, assignors to Mo och Aktiebolag, Ornskoldsvik, Sweden

Filed Aug. 20, 1968, Ser. No. 754,045
Int. Cl. C07c *89/02*
U.S. Cl. 260—584 **9 Claims**

A continuous process is provided for preparing monoalkanolamines from ammonia and alkylene oxides using a cation exchange resin as a catalyst, recovering and recycling ammonia, which is used in considerable excess. High yields of the monoalkanolamines, exceeding 65 percent and even 90 percent, are obtainable.

3,697,599

PROCESS FOR PREPARING 2-HYDROXY-4-ALKOXYBENZOPHENONE

Theodore E. Dalbey, Monroeville, Pa., assignor to Pennsylvania Industrial Chemical Corporation

Filed June 24, 1968, Ser. No. 739,138
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **10 Claims**

A process for preparing 2-hydroxy-4-alkoxybenzophenone by alkylating 2,4 dihydroxybenzophenone with an alkyl halide in an aqueous solution of an alkali metal hydroxide in the presence of a surfactant.

3,697,600

PREPARATION OF A KETONE AND AN ALDEHYDE, BY CARBONYLATION OF AN OLEFIN IN THE PRESENCE OF A SECONDARY ALCOHOL

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 10, 1969, Ser. No. 865,490
Int. Cl. C07c *45/00*
U.S. Cl. 260—593 R **10 Claims**

The invention comprises a preparation of a ketone and an aldehyde by contacting a hydrocarbon olefin, carbon monoxide and a secondary alcohol with a liquid reaction medium and in the presence of a Group VIII noble metal, preferably under basic conditions. A typical reaction comprises contacting ethylene, carbon monoxide and isopropyl alcohol with a reaction medium comprising rhodium trichloride to produce acetone and propionaldehyde.

3,697,601

PROCESS FOR PREPARING 4-ARYLTHIO-2,6-DIALKYLPHENOLS

Tamotsu Fujisawa, and Takakazu Kojima, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Oct. 30, 1970, Ser. No. 85,724
Claims priority, application Japan, Nov. 12, 1969, 44/90074
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **5 Claims**

A new process for the production of 4-arylthio-2,6-dialkylphenols is described. 2,6-Dialkylphenol reacts with an aromatic disulfide in the presence of an alkali hydroxide or alkali metal in a solvent under heating. The process yields 4-arylthio-2,6-dialkylphenols, which are useful economically as an antioxidant in a high yield.

3,697,602

PROCESS FOR THE PRODUCTION OF LOWER ALIPHATIC MERCAPTANS

Gerd Schreyer, Grossauheim, and Wolfgang Weigert, Offenbach, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed July 2, 1969, Ser. No. 838,398
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 R **11 Claims**

Lower alkyl mercaptans prepared from alkanols and hydrogen sulfide are obtained in pure form by separating the gaseous mixture of hydrogen sulfide, alkanol, alkyl mercaptan, dialkyl sulfide, water, dialkyl either and inert gases at a pressure up to 10 atm. (gauge) and a temperature of 10° to 140° C. into volatile and non-volatile portions, the volatiles washed countercurrently to remove entrained alkyl mercaptan and after separating of the volatile hydrogen sulfide and ethers from the mercaptan the mercaptan is further separated from the other non-volatiles as a substantially pure product.

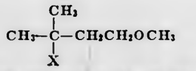
3,697,603

NOVEL PROCESS FOR PREPARING A HALOETHER

John O. Turner, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 22, 1971, Ser. No. 127,042
Int. Cl. C07c *43/00*
U.S. Cl. 260—614 A **4 Claims**

The haloether, 3-halo-3-methylbutyl methyl ether, of the formula



can be prepared when methylal is reacted with isobutylene in the presence of BX_3, wherein X is chloro, bromo or iodo. This haloether can be converted to isoprene by known pyrolysis methods.

3,697,604

POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,608
Int. Cl. C07c *35/22*; G03f *5/00*; F21v *9/00*
U.S. Cl. 260—618 F **1 Claim**

Photochromic 1,3,6,8-tetra(lower)alkyl-15,16-dimethyl-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes and 1,3,6,8-tetra(lower)alkyl-15,16-methylene-15,16-dihydropyrenes substituted in one or both of the 2- and 7-positions benzoyl, alkanoyl, alkanoyloxy, cyano, nitro, alkyl, α-hydroxyalkyl, α-acyloxyalkyl, α-isonitrosoalkyl, or acylamido groups are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-acetamido-7-nitro-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,697,605

PROCESS FOR PRODUCING ALCOHOLS

Masami Watanabe, Tokyo; Keishi Namikawa, Ageo; Kotaro Yasuda, and Motoyoshi Takagi, both of Toda, all of Japan, assignors to Nippon Mining Co., Ltd.

Filed April 19, 1968, Ser. No. 722,575
Claims priority, application Japan, April 22, 1967, 42/25419
Int. Cl. C07c *33/00, 29/00*
U.S. Cl. 260—618 H **1 Claim**

A process for the reduction of esters of aromatic carboxylic acids with hydrogen in the presence of a copper-containing catalyst to the corresponding aromatic alchols is provided wherein the copper-containing catalyst is composed of copper oxide and oxides or carbonates or oxide-carbonate mixtures of one or more alkaline earth metals selected from the group consisting of magnesium, calcium, strontium and barium, the copper being present in an amount of 0.01 to 3 atoms per atom of alkali metal. Reduction is effected at a temperature above 80° C. and at a pressure higher than 60 kg./cm.². If desired, chromium is added to the catalyst in an amount of at least about 0.01 atom per atom of copper contained in the catalyst.

3,697,606

PARA-PHENYLPHENOL PREPARATION

Joachim E. Freudewald, Morris Township, and Frederic M. Konrad, Basking Ridge, both of N.J., assignors to Union Carbide Corporation

Continuation-in-part of Ser. No. 581,153, Sept. 22, 1966, abandoned. This application March 20, 1968, Ser. No. 714,410
Int. Cl. C07c *39/12*
U.S. Cl. 260—620 **9 Claims**

The process of preparing para-phenylphenol by heating para-hexenylphenol in the liquid phase in the presence of a stoichiometric excess of a hydrogen acceptor, and a palladium, nickel or platinum catalyst.

3,697,607

BROMINATED ADDUCTS OF ACYCLIC TRIENES

Carlos G. Cardenas, Jacksonville, Fla., and Donnie G. Brady, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 2, 1970, Ser. No. 416
Int. Cl. C07c *17/04, 23/08*
U.S. Cl. 260—648 C **9 Claims**

Novel brominated adducts of acyclic trienes with halocyclopentadienes and with substituted halocyclopentadienes are disclosed. Methods of preparing said novel compounds are also disclosed.

3,697,608

DECHLORINATION PROCESS

Harold Edward Bellis, North Tonawanda, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1968, Ser. No. 764,642
Int. Cl. C07c *21/18*
U.S. Cl. 260—653.5 **11 Claims**

A dechlorination process which comprises contacting halogenated hydrocarbons with a melt comprising iron chloride and/or copper chloride, and alkali metal chloride(s). This process utilizes a reduced melt, i.e., a melt containing ferrous and/or cuprous chlorides, to dechlorinate; various process parameters are controlled to provide desired product selectivity. In addition, the dechlorination process may be carried out simultaneously with chlorination or dehydrochlorination reactions.

3,697,609

METHOD OF PRODUCING 2-CHLOROBUTADIENE-1,3

Ichiro Fukuoka; Shoji Kimura; Takehiko Nishimura, all of Tokyo, and Satoshi Takahashi, Hatano, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1968, Ser. No. 727,145
Claims priority, application Japan, May 19, 1967, 42/31470; April 11, 1968, 43/23710
Int. Cl. C07c *21/20*
U.S. Cl. 260—655 **12 Claims**

Production of chloroprene by treating 3,4-dichlorobutene-1 with an anion exchange resin to effect dehydrochlorination of 3,4-dichlorobutene-1. Furthermore, chloroprene can be produced by treating a mixture of 3,4-dichlorobutene-1 and 1,4-dichlorobutene-2 with an anion exchange resin, whereby 3,4-dichlorobutene-1 is dehydrochlorinated preferentially.

3,697,610

PRODUCTION OF CARBON TETRACHLORIDE

James O. Blackwood, Hawthorn, and Brian D. Cullis, Blackburn, both of Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Filed April 22, 1970, Ser. No. 30,992
Int. Cl. C07c *19/06*
U.S. Cl. 260—664 **6 Claims**

Carbon tetrachloride is produced by the direct reaction of chlorine and activated carbon at temperatures above 500° C and pressures above 5 atmospheres absolute. No catalyst is used. Activity of the carbon is enhanced by mixing air with the chlorine or by alternate treatment of the carbon with air and chlorine.

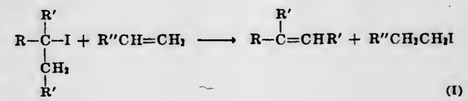
3,697,611

OLEFIN-ALKYL IODIDE EXCHANGE

Eugene F. Magoon, Walnut Creek, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 72,162
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 XA **6 Claims**

Higher olefins are prepared by an exchange reaction between lower olefins and higher organic iodides according to equation I:



(I)

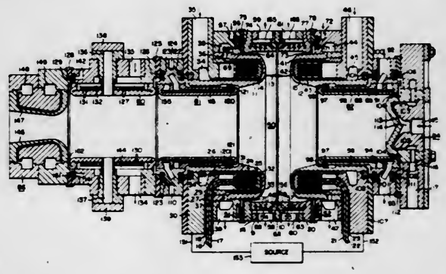
in the presence of a noble metal catalyst. For example, octene, cyclohexene and decene are produced by an exchange reaction between the corresponding iodides and ethylene in the presence of platinum on various supports, chloroplatinic acid, tris(triphenylphosphine)platinum or bis(triphenylphosphine)ruthenium tricarbonyl.

3,697,612

PRODUCTION OF ACETYLENE WITH AN ARC HEATER

Daniel A. Maniero, Pittsburgh, and Charles B. Wolf, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 527,787, Feb. 16, 1966, Pat. No. 3,522,015. This application Oct. 24, 1969, Ser. No. 870,472
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 R **3 Claims**



In the processes, an electric arc is produced in a confined area between two annular electrodes and caused by magnetic

field generated forces exerted thereon to describe a generally axially extending annular path as it moves substantially continuously around and between the electrodes. Process gas is admitted into the confined area through a substantially circumferential path radially external to the electrodes from which the process gas passes in a generally radial direction through the gap between electrodes and through the annular path described by arc movement, is pyrolized, and moves downstream toward an exhaust nozzle separated from the arc zone by elongated fluid-cooled heat shields and so distant from the arc zone that, according to one process, process gas pyrolized at a predetermined temperature has a mass flow rate such that the gas is cooled to a temperature at which the desired recombination product is present in substantial proportion when it reaches the nozzle. In other processes, quenching gas different from the process gas is added to the pyrolized process gas at one or more axial positions along the path of movement of the pyrolized process gas. In other methods, additional process gas is added to the pyrolized process gas at one or more axially spaced positions along the length of the confined area.

3,697,613
DISMUTATION OF OLEFINS

Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed April 28, 1969, Ser. No. 819,945
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **25 Claims**

Isobutylene and a second C_3 –C_{30} monoolefin can be reacted (dismutation) over an alumina supported catalyst of the oxide of molybdenum, tungsten or rhenium modified with fluoride ion in the form of a soluble salt in a weight ratio of fluoride ion to metal oxide in the range of 0.065:1 to 0.20:1 to produce different olefinic product than the starting olefins. For example, isobutylene is reacted with 2-butene over a MoO_3, NaF (F^-:MoO_3 ratio 0.175:1) at 150° C. to give 30 percent conversion of isobutylene aNd 15 percent selectivity to 2-methyl-2-butene which is the immediate precursor of isoprene (widely used in the preparation of synthetic rubber).

3,697,614
CATALYTIC OXIDATIVE DEHYDROGENATION OF PARAFFINS

Edward S. J. Tomezsko, Media, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed March 16, 1971, Ser. No. 124,979
Int. Cl. C07c *5/18*
U.S. Cl. 260—683.3 **7 Claims**

Method for the oxidative dehydrogenation of paraffins to produce olefins by contacting the paraffins with molecular oxygen in the presence of molten alkali metal hydroxides, aluminum, and a soluble transition metal oxyanion included in the molten alkali metal hydroxide.

3,697,615
HYDROGENATION OF OLEFIN HYDROCARBONS USING RHODIUM OR IRIDIUM HALIDE COMPLEXES WITH METAL HALIDES

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 8, 1971, Ser. No. 113,614
Int. Cl. C07c *5/02*, *11/00*
U.S. Cl. 260—683.9 **10 Claims**

Olefin hydrocarbons are hydrogenated by contacting the feed olefin hydrocarbon with a catalyst which is an admixture of a rhodium or an iridium halide complex and an aluminum or boron halide.

3,697,616
SELECTIVE ISOMERIZATION OF 1-OLEFINS TO 2-OLEFINS

John M. McDonough, 8004 South Menard, Oak Lawn, Ill., and Linsley S. Gray, Jr., 3948 Forest Avenue, Downers Grove, Ill.

Filed March 1, 1971, Ser. No. 119,917
Int. Cl. C07c *5/24*
U.S. Cl. 260—683.2 **12 Claims**

A process for the selective isomerization of 1-olefins to 2-olefins comprising the contacting of a 1-olefin with a sodium coated, calcium metal aluminosilicate molecular sieve catalyst at temperatures of about the freezing point of the 1-olefin being isomerized to about 150° C.

3,697,617
OLIGOMERIZATION PROCESS

Jin Sun Yoo, South Holland, and Ronald L. Milam, Hazel Crest, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,911
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **16 Claims**

A catalyst composition for the polymerization, including oligomerization and dimerization, of olefins is provided by combining (A) a nickel source, (B) a chloro-containing electron donor ligand, and (C) a Lewis acid-reducing agent, in molar ratios of (B) to (A) of about 0.5 to 15:1 and (C) to (A) of about 3 to 40:1. Preferred catalyst components are nickel acetylacetonate, chlorodiphenylphosphine and ethylaluminum sesquichloride. These catalyst compositions are supported on an acidic-silica base carrier.

3,697,618
PRESSURE-SENSITIVE ADHESIVE

Valentine J. Grunewalder, Cranford, and Earl A. Koeble, Martinsville, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 623,569, March 16, 1967, abandoned. This application Dec. 30, 1969, Ser. No. 889,292
Int. Cl. C08f *15/40*
U.S. Cl. 260—78.5 R **10 Claims**

Acrylic pressure-sensitive adhesives consisting essentially of a normally tacky interpolymer of one or more alkyl acrylates of four to 14 carbon atoms in the alkyl group, at least one vinyl ester of a saturated monocarboxylic acid, and a small amount of alpha, beta-ethylenically unsaturated dicarboxylic acid or anhydride, the interpolymer having a Williams plasticity number between about 1.8 and about 3. These adhesives are especially adapted for use on flexible non-fibrous backings, particularly vinyl sheets and films, and when used in this manner have the advantage of preventing shrinking of the backing upon aging.

3,697,619
A COATING COMPOSITION OF A COPOLYMER OF METHYL METHACRYLATE WITH THE POLYMERIZABLE ADDITION REACTION PRODUCT OF AN α,β-ETHYLENICALLY UNSATURATED ACID AND AN EPOXY COMPOUND

Nobuyoshi Nagata, 177 Gakuen-Daiwacho-4-chome, Nara-shi, and Ryuzo Mizuguchi, 1736 Mashita-Shimokama Mishimacho, Osaka, both of Japan

Continuation-in-part of Ser. No. 653,321, July 14, 1967, abandoned. This application Dec. 18, 1969, Ser. No. 886,419
Int. Cl. C09d *3/80*
U.S. Cl. 260—836 **7 Claims**

A liquid coating composition is formed by copolymerizing without gelation, 50–95 parts by weight of a methyl methacrylate lacquer-giving monomer component and 5–50 parts by weight of a polymerizable addition reaction product obtained by the addition reaction of an α,β-ethylenically unsaturated

acid and an epoxy compound. In those instances where a polyepoxy compound (e.g., diepoxide) is used, the addition reaction is controlled to the extent that a sufficient amount of monoester and an insufficient amount of diester are formed so that substantially no gelatin occurs during copolymerization and/or formation of the coating composition. Films are formed from the coating composition which exhibit excellent durability, impact resistance, shrink resistance, and gasoline resistance.

3,697,620
VULCANIZABLE ELASTOMER COMPOSITION CONTAINING TRIARYLPHOSPHINE AND TRIALLYLCYANURATE

Nicholas Peter Ermidis, West New York, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 22, 1970, Ser. No. 31,011
Int. Cl. C08f *15/18*, *15/26*
U.S. Cl. 260—836 **9 Claims**

A vulcanizable composition having improved processing safety, as well as an improved resistance to heat aging, is provided which comprises an acrylic elastomer having active halogen or epoxy groups and a triarylphosphine and triallylcyanurate.

3,697,621
CHEMICALLY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 49,207, June 23, 1970, Pat. No. 3,662,023, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application June 25, 1971, Ser. No. 156,967
Int. Cl. C08d *1/00*; C08f *1/16*; C08c *11/54*
U.S. Cl. 260—858 **14 Claims**

The invention disclosed is for a new chemically curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The chemically curable liquid polymer composition upon curing in the presence of a chemical free radical generating reagent forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,697,622
CHEMICALLY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 49,207, June 23, 1970, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application June 25, 1971, Ser. No. 156,977
Int. Cl. C08d *1/00*; C08f *1/16*; C08c *11/54*
U.S. Cl. 260—858 **14 Claims**

The invention disclosed is for a new chemically curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The chemically curable liquid polymer composition upon curing in the presence of a chemical free radical generating reagent forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,697,623
N-ARYL-SUBSTITUTED DIALKANOLAMINO POLYURETHANES

Erich Eimers, Krefeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 735,511, June 10, 1968, abandoned. This application Sept. 25, 1970, Ser. No. 75,715
Claims priority, application Germany, July 4, 1967, F 52853
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 R **5 Claims**

Molding compositions may be prepared from a solution of an unsaturated polyester prepared from an ethylenically unsaturated dicarboxylic acid and diol, in a copolymerizable monomer exemplified by styrene, vinyl toluene and alkyl acrylates. The solution also contains 0.1 to 5.0 percent weight of an N-aryl-substituted diaklanolamino polyurethane prepared from the reaction product of an N-aryl substituted dialkanolamine, a diisocyanate, and one of a monoisocyanate, a monothioalcohol, or monoamine.

3,697,624
DIISOCYANATE COUPLING OF OXYMETHYLENE POLYMER AND POLYBUTYLENE TEREPHTHALATE

David M. Braunstein, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,816
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 **16 Claims**

Disclosed herein is a modified oxymethylene polymer having an improved balance of physical properties such as tensile strength, tensile modulus, flexural strength and impact strength. The modified oxymethylene polymer is prepared by the coupling reaction of an oxymethylene polymer and polybutylene terephthalate with an isocyanate or isothiocyanate.

3,697,625
FLAME-RETARDANT POLYESTERS AND THERMOSETTING COMPOSITIONS BASED THEREON

Percy L. Smith, Dunbar, and Lowell R. Comstock, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 715,977, March 26, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 92,238
Int. Cl. C08f *21/00*, *21/02*
U.S. Cl. 260—869 **19 Claims**

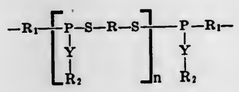
This invention relates to brominated polyesters, based on diols and as co-reactants a brominated maleic acid, a brominated tetrahydrophthalic acid, anhydrides or brominated monomeric esters of the anhydrides thereof, which are substantially free of dibromosuccinate and dibromohexahydrophthalate groups, contain bromine end groups and possess excellent flame-retardant properties, excellent thermal stability, excellent resistivity to ultraviolet light and can be used as flame-retardant plasticizers and when containing unsaturated groups, derived from non-halogenated unsaturated polycarboxylic acids, can be used in molding applications to form aesthetically attractive thermoset articles characterized by excellent chemical, physical and electrical properties.

3,697,626
N-PHOSPHORYLAMINOETHYL PHOSPHATE
Perttu V. Laakso, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Aug. 15, 1969, Ser. No. 850,636
Int. Cl. C07f 9/08, 9/22
U.S. Cl. 260—926 1 Claim

N-phosphorylaminoethyl phosphate is made from phosphoric acid and 2-aminoethanol. It is useful as a therapeutic agent for producing high absorption and retention of phosphate and calcium with extremely low renal calcinosis.

3,697,627
POLYMERCAPTO POLYPHOSPHONITES
Kenneth Rattenbury, and Millard S. Larrison, both of Morgantown, W. Va., assignors to Weston Chemical Corporation, New York, N.Y., by said Rattenbury
Filed July 22, 1969, Ser. No. 879,143
Int. Cl. C07f 9/08, 9/16, 9/32
U.S. Cl. 260—928 9 Claims

Compounds are prepared of the formula



where n is an integer of 1 to 10, Y is oxygen or sulfur, R_1 and R_2 are alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl or cycloalkyl and R is a divalent aromatic, aliphatic or cycloaliphatic group.

The compounds are useful as stabilizers.

3,697,628
BENZYLATION OF TRIARYL PHOSPHATES
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,780
Int. Cl. C07f 9/08, 9/12
U.S. Cl. 260—968 6 Claims

Benzylation of triaryl phosphates is accomplished by reacting a triaryl phosphate with a benzyl halide in the presence of a Lewis acid.

3,697,629
METHOD AND PRODUCT OF MAKING MULTIFOCAL CONTACT LENSES AND LENS BLANKS
Leonard Bronstein, 7457 East Vista Drive, Scottsdale, Ariz.
Filed Feb. 26, 1970, Ser. No. 14,269
Int. Cl. B29d 11/00
U.S. Cl. 264—1 4 Claims

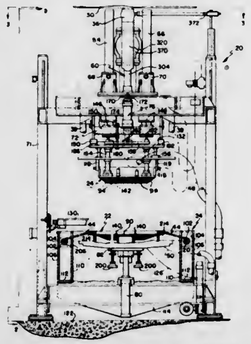


This specification discloses a method of making a contact lens blank including the steps of grinding a circular substrate to form a curved surface on a face thereof, forming a plastic mold with a curved surface complemental to that of the substrate and a pair of through passages opening onto its curved surface and of a desired cross-section, inserting a segment of a plastic material having one index of refraction different to that of said substrate and having a cross-section corresponding to that of said passage in each of said passages, clamping said mold to said substrate, bonding said segments to the curved surface of the substrate by heat and fusion, removing said mold from the substrate and segments, and restoring its original shape to the substrate by applying thereto a plastic having an index of refraction different from that of the substrate and segments. Methods having alternative steps are also disclosed.

3,697,630
BONDING OR REPAIRING PROCESS
Stanley Y. Yoshino, Monterey Park, Calif., assignor to Granted to National Aeronautics & Space Administration under the provisions of 42 U.S.C. 2457(d)
Filed Aug. 23, 1967, Ser. No. 662,763
Int. Cl. B05b 3/00
U.S. Cl. 264—28 7 Claims

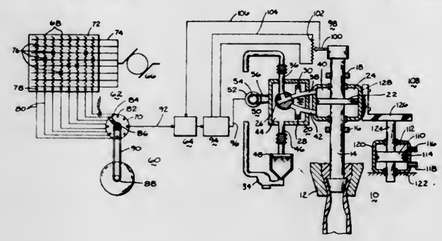
A process for bonding a resinous body in a cavity is described including the steps of outgassing and freezing a body of normally liquid, uncured resinous material to form a void free body and fitting the frozen body into a cavity. Thereafter the frozen resinous material is thawed and the liquid conforms to the shape of the cavity. The resinous material is then cured in the cavity to provide a good bond to the walls thereof.

3,697,631
METHOD AND APPARATUS FOR FORMING A MEMBER FROM AN EXCESS SLURRY OF REFRACTORY MATERIAL
Walter M. Charman, Jr., Shaker Heights; Robert R. Hayes, Euclid; George J. Middaugh, Jr., Chesterland, and John M. Wetzig, III, Chagrin Falls, all of Ohio, assignors to Oglebay Norton Company, Cleveland, Ohio
Filed Nov. 10, 1969, Ser. No. 875,276
Int. Cl. B22c 15/22; D21j 3/00
U.S. Cl. 264—37 31 Claims



An improved machine or apparatus for forming member from a slurry of refractory material includes a pair of mold sections which cooperate to form a cavity. A flexible diaphragm extends around the mold sections and is movable to an inwardly and downwardly sloping position to form a trough connected in fluid communication with the mold cavity. The mold cavity is flooded by filling the trough with the slurry of refractory material. Water is then drawn from the slurry in the mold cavity to form a wet-cake of refractory material. The water content of this wet-cake of refractory material is at least partially controlled with an adjustable timer which regulates the length of time for which water is drawn from the mold cavity. After sufficient refractory material has been deposited in the mold cavity to form a wet-cake having the shape of the member to be formed, the diaphragm is moved to an outwardly and downwardly sloping position to enable excess slurry to flow away from the mold sections and into a receptacle. The excess slurry is pumped from this receptacle to a main mixing or batch tank where it is mixed with a relatively large quantity of the slurry. Therefore, when this excess slurry is subsequently reused, it will have a water content or consistency corresponding to that of the main batch of slurry.

3,697,632
BLOW MOLDING
Arnold J. Tenner, West Haven, Conn., assignor to Monsanto Company, Saint Louis, Mo.
Filed June 26, 1969, Ser. No. 851,521
Int. Cl. B29c 17/07; B29f 3/01
U.S. Cl. 264—40 6 Claims



This invention relates to method and means for controlling the material distribution of a plastic parison during extrusion by a control system used to vary the opening of the extrusion outlet.

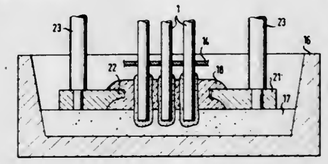
3,697,633
STRUCTURAL CORE
Howard M. Edgar, 14802 Newport Avenue Apt 3B, Tustin, Calif.
Continuation-in-part of Ser. No. 600,897, Dec. 12, 1966, abandoned. This application July 21, 1970, Ser. No. 56,832
Int. Cl. B29d 27/04; B29h 7/20; B32b 31/18
U.S. Cl. 264—45 12 Claims

A structural core is formed by filling a rigid frame with an expanded synthetic polymer composition which may include fillers and which is adhesively secured to the frame. The resultant foam filled frame is then sliced to form panel cores. Finished panels are made by laminating panel faces to one or both sides of the core, or by painting, or otherwise treating the panel core. In one embodiment, the frame may be built up of a plurality of frame members with removable spacers to permit sawing of the foamed material without sawing the frame. The cores and panels thus constructed are useful in doors, walls, floors, roofs, etc. in buildings and in furniture and other structures outside the building industry. Reinforcing, electrical conductors, plumbing, etc. may also be built into the cores.

3,697,634
ALIGNMENT AND ORIENTATION OF WHISKERS AND FIBERS
Karl P. Staudhammer, and Vernon H. Reineking, both of Gardena, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Dec. 24, 1969, Ser. No. 887,914
Int. Cl. B29j 1/00
U.S. Cl. 264—109 3 Claims

Alignment of fibers or whiskers such as β-SiC and α-A_2O_3 is accomplished by suspending unoriented whiskers into an ethylene glycol solution and adding several drops of amyl acetate to the solution near the center to produce a rolling action at the interface due to the motion of the solutions as they mix with each other. The unoriented whiskers are caught up in the rolling interface and are aligned into a thread.

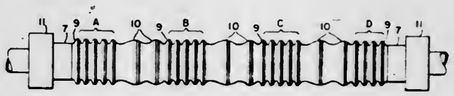
3,697,635
PROCESS FOR THE MANUFACTURE OF CAPILLARY EXCHANGERS
Hans Joachim Dietzsch, Villars-sur-Ollon, and Otto Dietzsch, Stein am Rhein, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Continuation-in-part of Ser. No. 831,174, June 6, 1969. This application April 16, 1971, Ser. No. 134,804
Claims priority, application Switzerland, June 8, 1968, 8632/68; Australia, May 27, 1969, A 5012/69
Int. Cl. B32b 3/26, 31/12
U.S. Cl. 264—135 9 Claims



A process for the manufacture of capillary exchangers in which the capillaries are arranged side by side in spaced relationship to each other, is described and comprises the steps of

a. coating the end zones of a number of capillaries produced in the above-described manner and still containing their auxiliary cores, with reinforcing mantles of a material capable of superficially dissolving the wall of the capillary during its application;
b. arranging these capillaries in a bundle leaving spaces between them for the flow of a liquid or gaseous medium therethrough;
c. pouring between the reinforcing mantles at one end of the bundle a layer of a hardenable material capable of adhering sealingly to the said mantles, whereby the ends of the capillaries at the level of their adjacent reinforcing mantles are embedded in a transverse wall formed by said material after hardening, and
d. removing the auxiliary cores from the capillaries before or after step (c).

3,697,636
PROCESS AND APPARATUS FOR MANUFACTURING FIBERS OR YARNS FROM MOLECULARLY ORIENTABLE ORGANIC POLYMERIC FILMS
Wladyslaw H. Skoroszewski, Manchester, and Dennis S. Stones, Bolton, both of England, assignors to Shell Oil Company, New York, N.Y.
Filed June 22, 1970, Ser. No. 48,232
Claims priority, application Great Britain, June 26, 1969, 32,364/69
Int. Cl. B29d 7/20
U.S. Cl. 264—147 9 Claims

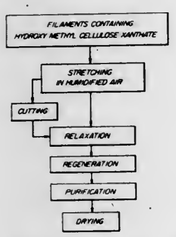


An improved process for the production of fibers or yarns of molecularly orientable organic polymer in which a polymer web is grooved by a rigid profiling element, the resulting profiled web being subsequently stretched and split into individual fibers, characterized that the profiling element forms an edge bead in the web of width sufficient to prevent a groove formed in the profiled web from running into an edge as a result of any lateral movement of said web.

3,697,637
METHOD FOR PRODUCING HIGHLY CRIMPED REGENERATED CELLULOSE FIBERS BY STEAM STRETCHING

Atsushi Kawai; Takehiro Katsuyama; Migaku Suzuki, and Hisao Takimoto, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,669
Claims priority, application Japan, June 24, 1969, 44/49832; June 24, 1969, 44/49833
Int. Cl. D01f 3/28
U.S. Cl. 264—168 **12 Claims**



Highly crimped regenerated fibers can be obtained by stretching filaments containing the reaction product of cellulose xanthate and formaldehyde in a humidified atmosphere having a relative humidity of more than 50 % and kept at a temperature of 40° to 130° C., relaxing said filaments while in a state of regeneration degree of less than 89 % in a liquid having a swelling action on said filaments and maintained at a temperature of 30° to 90° C. and then subjecting the filaments to regeneration treatment to complete regeneration.

3,697,638
ANTIGENS

Hans John Hansen, Allendale, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 110,288, Jan. 27, 1971, which is a continuation-in-part of Ser. No. 42,526, June 1, 1970. This application April 12, 1971, Ser. No. 133,404
Int. Cl. A61k 27/04
U.S. Cl. 424—1 **20 Claims**

Antigens associated with carcinomas and adenocarcinomas as well as methods for isolating, identifying and detecting them are disclosed.

3,697,639
SEROLOGICAL TEST FOR THE DETECTION OF HEPATITIS

James F. McCuller, East Northport, L.I., N.Y., assignor to Leslie I. Lukash, Rockville Center; George Shearer, Levittown and Joseph L. Scalise, Seaford, N.Y., part interest to each

Filed Dec. 8, 1969, Ser. No. 883,261
Int. Cl. A23j 1/06; C07g 7/00; G01n 33/16
U.S. Cl. 424—12 **10 Claims**

A diagnostic test procedure for infectious and serum hepatitis involves the cryogenic fractionation of human blood serum followed by careful separation of the bottom fraction of cryoprecipitate. A selected glycine-saline processing reagent having a particular concentration and pH is added to the fraction after separation thereof and the resultant mixture is incubated to provide a processed serum for both preliminary and confirmatory testing. In the preliminary test procedure equal portions of the processed serum and a special immunological diagnostic reagent are mixed on a glass slide. A positive reaction occurs within 1 minute as evidenced by the presence of a visible colloidal aggregate. The confirmatory test procedure utilizes a similar though more refined and discriminatory technique employing more precisely measured amounts of the processed serum and diagnostic reagent followed by intermixing and macroscopic reading of the sedimentation rate within the mixture. The immunological diagnostic reagent is a latex suspension in a saline buffer solution. The suspension contains polystyrene particles coated with a globulin fraction.

3,697,640
RUMEN STABLE MEDICAMENT AND/OR NUTRIENT COMPOSITIONS

Peter M. Grant, Kingsport, Tenn.; Brazelton Fulkerson, and John W. Mench, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 758,874, Sept. 10, 1968. This application Oct. 27, 1970, Ser. No. 84,295
Int. Cl. A61k 9/00
U.S. Cl. 424—35 **24 Claims**

Materials such as medicaments and nutrients that decompose when they are fed orally to ruminants because of their instability in the in vivo rumen environment can be protected from the ruminant environment by effectively coating such materials with special nitrogen-containing cellulosic materials having the ability to resist being degraded in the rumen, but also having the additional ability to dissolve in the in vivo abomasal fluid.

3,697,641
NONHYGROSCOPIC NON-SUGARBASE NONCARIOGENIC-VITAMIN C RELEASABLE BASE MATERIAL FOR USE IN THE PREPARATION OF SUCKABLE TABLETS, LOZENGES AND CHOCOLATE

Gerhard W. Ahrens, 1781 East 15th Street, Brooklyn, N.Y.

Filed Jan. 2, 1970, Ser. No. 468
Int. Cl. A61j 3/06; A61k 15/12
U.S. Cl. 424—38 **10 Claims**

This invention relates to novel nonhygroscopic non-sugarbase and noncariogenic Vitamin C releasable base materials of suitable structural soundness for use in the preparation of and incorporation in suckable tablets, lozenges and chocolate, alone or in conjunction with suitable other desired additions such as flavoring-, medical-, antimicrobial-, sweetening-, coloring agents and the like, and including agents generally employed in the art of tablet, lozenge, and chocolate making, and vitamins, and specifically relates to compositions of the novel base material that may be formed by compounding suitably selected solid glycerides of the self-emulsifying type with calcium ascorbate dihydrate as a noncariogenic-Vitamin C or l-ascorbic acid releasable constituent therein, alone or in admixture with dibasic magnesium phosphate capable of conferring upon products prepared with said base material, including tablets, lozenges, and chocolate, anti-cariogenic properties as well.

The invention relates also to the use of those selected solid glycerides of the self-emulsifying type as being useful for compounding with calcium ascorbate dihydrate, alone or in conjunction with dibasic magnesium phosphate and other desired ingredients, which are derived from at least one of the group including edible fats; oils; and edible fat-forming fatty acids and the preferred forms of the glycerides selected for forming the base material of the invention as a constituent therein are glycerol stearate; glycerol palmitate and mixtures of glycerol stearates with glycerol palmitates which contain in their respective compositions each at least about thirty parts by weight percent mono-ester groups.

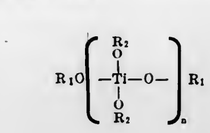
3,697,642
METHOD OF PROTECTING THE SKIN FROM ULTRAVIOLET RADIATION WITH TITANIC ACID AND ESTERS OF TITANIC ACID

Edward J. Madigan, Denver, Colo., assignor to Cosmetics & Pharmaceuticals, Inc., Denver, Colo.

Filed March 3, 1969, Ser. No. 803,951
Int. Cl. A61l 23/00
U.S. Cl. 424—59 **3 Claims**

An effective ultra-violet absorber composition and process for controlling sunburn by applying to the skin a composition

which comprises a hydrated, substantially transparent gel represented by the formula:



wherein:

a. R_1 and R_2 are independently selected from the group consisting of hydrogen, short chain alkyl, and ligands capable of chelate formation, and

b. *n* is any integer in a dermatologically acceptable carrier, the gel being employed in an amount effective to protect the skin and other surfaces from the harmful effects of the burning rays of the sun.

3,697,643
COSMETIC PREPARATIONS

Thomas H. Shepherd, Hoepwell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949, and a continuation-in-part of Ser. No. 650,259, June 30, 1967, abandoned, and a continuation-in-part of Ser. No. 654,044, July 5, 1967, and a continuation-in-part of Ser. No. 743,626, July 10, 1968, Pat. No. 3,574,822. This application Jan. 15, 1970, Ser. No. 98,464
Int. Cl. A61k 7/02
U.S. Cl. 424—63 **5 Claims**

Mascara is prepared by adding a hydrophilic acrylate or methacrylate polymer to the selected cosmetic preparations.

3,697,644
COSMETIC COMPOSITION

Donald David Laiderman, Deerfield, Ill., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 18, 1966, Ser. No. 587,387
Int. Cl. A61k 7/06
U.S. Cl. 424—70 **5 Claims**

An aqueous cosmetic composition adapted to be coated on the skin or hair and to deposit a thin film of water-insoluble cosmetic material comprising an aqueous medium having a protective colloid, and dispersed therein a solution of said water-insoluble cosmetic material in an organic solvent, which solvent is selected from the class of volatile water-insoluble solvents and solvents soluble in water at room temperature only to a limited extent.

3,697,645
PURIFICATION OF ANTIBODIES

Eugene P. Meier, Edgewood; David E. Lenz, Bel Air, and Ludwig A. Sternberger, Lutherville, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed April 28, 1971, Ser. No. 138,354
Int. Cl. A61k 27/00
U.S. Cl. 424—85 **11 Claims**

Recovering the entire spectrum of all heterogeneous antibodies against a specific antigen or ligand by a process of adding an antigen to an immune serum forming a precipitate which is dissociated by a combination of addition of excess hapten and a non-specific dissociating compound and separating the dissociated heterogeneous antibodies from the antigen, hapten and dissociating compounds added.

3,697,646
ANTIBIOTIC SUBSTANCE FROM A THERMOPHILIC ACTINOMYCETES

Carolina Coronelli, and Renato Craveri, both of Milan, Italy, assignor to Lepetit S.p.A.—Gruppo per la Ricerca Scientifica e la Produzione Chimica, Farmaceutica, Milan, Italy

Continuation-in-part of Ser. No. 454,718, May 10, 1965, abandoned, and a continuation of Ser. No. 736,662, June 13, 1968, abandoned. This application April 2, 1969, Ser. No. 815,253
Claims priority, application Great Britain, May 22, 1964, 21,259/64
Int. Cl. A61k 21/00
U.S. Cl. 424—117 **3 Claims**

A new polypeptidic sulfur containing antibiotic, named thermothiocin is obtained by cultivating under submerged conditions with aeration a strain to thermophilic Actinomyces named *Thermoactinopolyspora coremialis* in aqueous nutrient medium containing assimilable sources of carbon, nitrogen and sulfur at a temperature of 35° to 60° C and at a pH between 5 and 10.5 The antibiotic is active both in vitro and in vivo against Gram-positive bacteria.

3,697,647
FEED CONTAINING ENDURACIDIN

Toshiro Matsuoka, Suita; Keinosuke Takeda; Minoru Goto, both of Kyoto, and Akira Miayake, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Jan. 25, 1968, Ser. No. 700,385
Claims priority, application Japan, Jan. 25, 1967, 42/4408
Int. Cl. A61k 21/00
U.S. Cl. 424—18 **9 Claims**

Enduracidin is a valuable additive for feedstuff and/or drinking water for livestock. It excels, for instance, aureomycin as such additive in its action as growth enhancing agent.

3,697,648
ANTIBIOTIC SF-767-A AND SF767-L SUBSTANCES, AND PROCESS FOR PRODUCING SAME CULTURING A CERTAIN STREPTOMYCES MICROSPOREUS

Takashi Shomura; Norio Ezaki, both of Yokohama-shi; Takashi Tsuruoka; Tomizo Niwa, both of Kawasaki-shi; Eiichi Akita, Tokyo, and Taro Nilda, Yokohama-shi, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed May 15, 1969, Ser. No. 824,885
Claims priority, application Japan, May 24, 1968, 43/34716; June 28, 1968, 43/44682
Int. Cl. A61k 21/00
U.S. Cl. 424—118 **7 Claims**

This invention relates to new antibiotic substances having a broad antibacterial spectrum and called SF-767-A substance and SF-767-L substance, respectively and a method of producing them by culturing a micro-organism *Streptomyces microsporeus* identified as ATCC No. 21384.

3,697,649
PROCESS FOR THE PRODUCTION OF ANTIBIOTIC W847-A FROM RELATED ANTIBIOTICS

Hans Reimann, Wayne, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed May 6, 1968, Ser. No. 726,738
Int. Cl. A61k 21/00
U.S. Cl. 424—120 **8 Claims**

Antibiotic W847 Complex or components thereof are converted into one discrete substance, Antibiotic W847-A, by controlled alkaline hydrolysis.

3,697,650
ANTIBIOTIC SL 3364

Annemarie Closse, Binningen, and Eugen Harri, Therwil, both of Switzerland, assignors to Sandoz Ltd. (a/k/a Sandoz AG), Basel, Switzerland

Filed March 11, 1970, Ser. No. 18,533
Claims priority, application Switzerland, March 18, 1969, 4020/69; March 31, 1969, 4827/69
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 3 Claims

The invention concerns the new antibiotic SL 3364 having the following characteristics: crystals having the composition of C = 69.6 %, H = 5.7 % and O = 24.2 %, a melting point of 169°–171 C, a specific rotation of $[\alpha]_d^{20} = -388°$ (c = 0.06 in chloroform) and showing characteristic ultraviolet and infrared spectrums.

The antibiotic possesses a fungistatic effect and furthermore exhibits a cytostatic effect on mostocytoma p 815 in vitro.

3,697,651
SALMONELLACIDE COMPOSITION-CONTAINING PROPIONIC ACETIC AND BUTYRIC OR PHOSPHORIC ACIDS

Mahmood H. Khan, Chicago, and Myron M. Katamay, Oak Forest, both of Ill., assignors to Fats and Proteins Research Foundation, Inc., Des Plaines, Ill.

Filed April 18, 1969, Ser. No. 817,558
Int. Cl. A01n *11/00, 13/00*
U.S. Cl. 424—128 2 Claims

Salmonellacides for use in animal by-product meal materials comprise propionic acid alone and in combination with such complementary acid materials as acetic, butyric, citric, lactic and phosphoric acids.

3,697,652
N-ACETYLGLUCOSAMINE FOR TREATING DEGENERATIVE AFFLICTIONS OF THE JOINTS

Luigi Rovati; Sergio Mascherpa, and Pierluigi Casula, all of Valosa, Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

Filed Aug. 19, 1969, Ser. No. 851,446
Claims priority, application Germany, Aug. 22, 1968, P 17 92 346.5
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 7 Claims

Pharmaceutical preparations for the treatment of degenerative afflications of the joints, with such preparations containing as the active ingredient one or more N-acyl compounds of aminocarbohydrates.

3,697,653
A METHOD OF TREATING OSTEOARTHRITIC JOINTS WITH POLYSILOXANES

Milne Joseph Ongley, 13 Willis Street, Wellington, New Zealand

Filed July 11, 1969, Ser. No. 841,151
Int. Cl. A61k *27/00*
U.S. Cl. 424—184 4 Claims

Joints are treated for osteoarthritis and other conditions in both animals and human beings by injection of pure polysiloxane fluid (such as dimethylpolysiloxane, methylphenylpolysiloxane and fluoromethylpolysiloxane).

3,697,654
METHOD OF TREATING HYPERCHLORHYDRIA AND/OR ASSOCIATED CONDITIONS

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison, Limited, St. Laurent, Quebec, Canada

Division of Ser. No. 866,396, Oct. 14, 1969, which is a continuation-in-part of Ser. No. 826,657, May 21, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 201,175
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 3 Claims

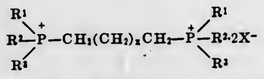
A method for preventing the secretion of excessive amounts of hydrochloric acid in the stomach of humans suffering from hyperchlorhydria and/or associated conditions, by administering an effective amount of N,3,3-trimethyl-1-phenyl-1-indanpropylamine.

3,697,655
GERMICIDAL DETERGENT COMPOSITIONS IN CONTROLLING DANDRUFF

Herman Berenson, Trenton; Robert Alden Stonier, Glen Rock, and Eugene Everett Wiese, Wyckoff, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 783,123, Dec. 11, 1968, abandoned. This application Oct. 28, 1969, Ser. No. 871,960
Int. Cl. A61k *27/00*
U.S. Cl. 424—204 6 Claims

Compositions, generally useful for germicidal detergent applications, comprising a mixture of (a) an amphoteric surfactant such as N-coco β-amino propionic acid or a fatty (coco) amido alkyl betaine and (b) an organophosphorus salt of the formula:



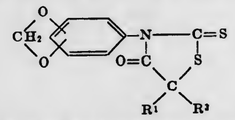
wherein R^1, R^2 and R^3 independently are alkyl (C_1—C_{12}), phenyl, or hydroxyalkyl (C_1—C_4); x is 6–14 and X is an anion. Compound (b) is also useful, in aqueous or alcoholic solution, or with other cosmetically acceptable ingredients, in the control of dandruff.

3,697,656
INSECTICIDAL METHOD USING 3-METHYLENEDIOXY-PHENYL SUBSTITUTED RHODANINES

Joseph Patrick Brown, Llangollen, Wales, assignor to Monsanto Chemicals Limited, London, England

Division of Ser. No. 586,053, Oct. 12, 1966, abandoned. This application Oct. 22, 1969, Ser. No. 870,731
Int. Cl. A01n *9/12*
U.S. Cl. 424—270 3 Claims

An insecticidal method comprising contacting insects with an insecticidally effective amount of a compound having the formula

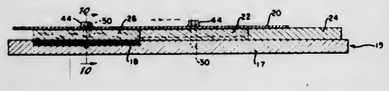


where R′ is alkyl of not more than eight carbon atoms and R^2 is selected from the group consisting of hydrogen and alkyl of not more than eight carbon atoms.

3,697,657
METHOD FOR MAKING MULTIPLE IMAGE ELECTROTYPE MOLDS

Laurence J. Kisker, Lancaster, and William G. Mathewson, Tonawanda, both of N.Y., assignors to J. W. Clement Company, Depew, N.Y.

Division of Ser. No. 718,712, April 4, 1968, Pat. No. 3,593,376. This application May 27, 1970, Ser. No. 48,701
Int. Cl. B29c *3/00*
U.S. Cl. 264—293 1 Claim

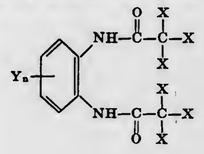


A method and apparatus for preparing multi-image matrices for printing plates from photo-engravings or the like in the black-white and multi-color printing industries; featuring use of a thermoplastic mold sheet impressed successively at adjacent areas thereof against a single engraving, to produce a multi-image mold. The apparatus includes mold register guide forming means functioning automatically to precisely register the mold sheet as it is shifted from one impression operation to another. Also, the apparatus features means for insulating each previously made image impression against resoftening and/or deformation incidental to subsequent processing of the mold sheet in the mold press.

3,697,658
PROCESS FOR THE CONTROL OF PESTS WITH N,N′-BIS(HALOACETYL)-4,5-SUBSTITUTED-O-PHENYLENE DIAMINES, assignor to Edmund J. Rumanowski, Dover, N.J. and Tenneco Chemicals, Inc.

Division of Ser. No. 677,853, Oct. 25, 1967, Pat. No. 3,557,211. This application Sept. 23, 1970, Ser. No. 74,936
Int. Cl. A01n *9/20, 9/24*
U.S. Cl. 424—324 7 Claims

Compounds having the structural formula



wherein each X represents hydrogen, chlorine, or fluorine; each Y represents halogen, lower alkyl, lower alkoxy, cyano, trifluoromethyl, or nitro; and n represents an integer in the range of zero to four are useful in the control of the growth of fungi, insects, and mites. Illustrative of these compounds are N,N′-bis(trichloroacetyl)-4,5-dichloro-o-phenylene diamine, N,N′-bis(chloroacetyl)-4,5-dichloro-o-phenylene diamine, and N,N′-bis(trifluoroacetyl)-3,4,5-tribromo-o-phenylene diamine.

3,697,659
AMINE CONTAINING ANIMAL FEED COMPOSITIONS

Gino J. Marco, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. Nos. 504,997, Oct. 24, 1965, abandoned, and Ser. No. 583,080, Sept. 29, 1966, abandoned. This application Oct. 28, 1968, Ser. No. 771,331
Int. Cl. A61k *27/00*; A23k *1/16*
U.S. Cl. 424—325 15 Claims

Animal feed compositions comprising certain amino compounds are useful for stimulating the growth of animals and improving feed efficiency.

ELECTRICAL

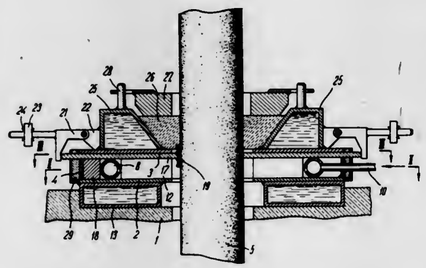
3,697,660
DEVICE FOR SEALING GAP BETWEEN ELECTRODE AND LINING OF ELECTRIC ARC FURNACE

Jury Fedorovich Frolov, prospekt K. Marxa, 8/2, kv. 70; Ivan Petrovich Nechaev, ulitsa Sibiryakov-Guardeitsev, 22, kv. 35; Anany Maximovich Basalaev, ulitsa Rimskogo-Korsakova, 7/1, kv. 5; Jury Dmitrievich Bedarev, ulitsa Pamirskaya, 100/1, kv. 4, and Viktor Valerjanovich Golikov, ulitsa Novogodnyaya, 20, kv. 54, all of Novosibirsk, U.S.S.R.

Filed March 16, 1970, Ser. No. 19,839

Int. Cl. H05b 7/12

U.S. Cl. 13—17 **13 Claims**



A sealing device for the gap between an electrode and a lining of an electric furnace comprises a chamber through which the electrode passes. This chamber is supplied with an inert gas under pressure from the holes of at least two curved headers which form a ring around the electrode. Installed between the headers and the part of the chamber through which the electrode passes are vanes which form identical acute angles with a respective radius drawn from the center of the chamber to the base of each vane, for creating a circular flow of the inert gas around the electrode. As a result, a gas flow is created near the electrode, preventing escape of gases from the furnace into the atmosphere.

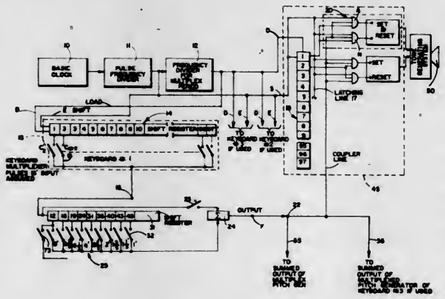
3,697,661
MULTIPLEXED PITCH GENERATOR SYSTEM FOR USE IN A KEYBOARD MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation

Filed Oct. 4, 1971, Ser. No. 186,360

Int. Cl. G10h 1/00

U.S. Cl. 84—1.01 **21 Claims**



The present invention is a multiplexed pitch generator system for use in a keyboard musical instrument to activate the voice controls of the instrument in accordance with key depressions. In the preferred embodiment of the invention there is provided a means for stepping pulses into a plurality of time slots in a cyclic manner. A plurality of keys are provided with each time slot corresponding to one particular key, and each key corresponding to a particular note. Pitch means are provided for receiving the time division multiplex signal with the gated pulses and for shifting the time slot position of selected pulses to a desired time slot location so as to simulate another note. Comparing means are used to compare the time slot position of the pulses from the pitch means with the time division multiplex signal to determine the final time slot position of a pulse. Latching means corresponding in number to the number of time slot positions are connected to the comparing means with each individual latching means being activated by a pulse occurring only in its associated time slot. The latching means, in turn, activates the voice controls of the keyboard musical instrument to sound the note or pitch associated with the pulses' final time slot location.

In a second embodiment of the invention which is used on a multiple keyboard instrument, each keyboard has one multiplexed pitch generator system associated therewith and, in addition, the output signal from the pitch generating means of one or more keyboards are connectable to the outputs from the other multiplexed pitch generators such that the musician can play a key on one keyboard and have it sound as if played from another keyboard.

3,697,662
KEYING SYSTEM CAPABLE OF PRODUCING PIANO-TONE EFFECTS FOR USE IN ELECTRONIC MUSICAL INSTRUMENTS

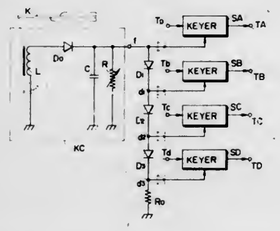
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 16, 1970, Ser. No. 98,653

Claims priority, application Japan, Dec. 18, 1969, 44/120259; Dec. 18, 1969, 44/120260; Dec. 18, 1969, 44/101840; Dec. 18, 1969, 44/101841; Dec. 18, 1969, 44/101842

Int. Cl. G10h 1/06

U.S. Cl. 84—1.13 **12 Claims**



In a keyboard electronic musical instrument, a keying system is described which includes, per key and associated therewith, a percussive pulse generating circuit for generating a percussive pulse having a peak amplitude responsive to the key depressing speed, a divider circuit consisting of serially connected diodes or resistors which are supplied with the percussive pulse and in response thereto deliver percussive pulses of successively different amplitudes from a highest to a lowest. A plurality of tone keyers are also provided for respectively keying tone signals of different frequencies, which keyers are respectively controlled by the different amplitude percussive pulses delivered from the divider circuit, wherein the higher amplitude pulse controls the lower frequency keyer, etc. Thus, when a key is struck, a composite percussive sound is

produced which includes a plurality of different frequency tones, wherein the higher frequency signals decays faster than the lower frequency signals. Thus the sounding effects of a piano are better simulated.

3,697,663
PITCH SUSTAINING MEANS FOR A KEY-OPERATED MONOPHONIC INSTRUMENT

Rene Farley, and David O. Rocheleau, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Sept. 23, 1971, Ser. No. 183,097

Int. Cl. G10h 3/00

U.S. Cl. 84—1.13 **3 Claims**

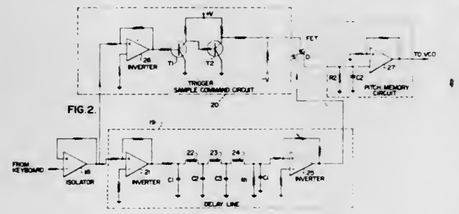


FIG. 2

A pitch sustaining circuit having a sample command circuit and a delay line in parallel which have their inputs connected to the keyboard contact input, a field effect transistor having its source connected to the delay line output, its gate connected to the output of the sample command circuit, and a pitch memory circuit having its input connected to the drain of the field effect transistor and its output connected to a voltage controlled oscillator.

3,697,664
ELECTRONIC MUSICAL INSTRUMENT HAVING AUTOMATIC BASS TONE SELECTOR

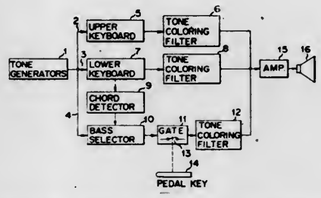
Ryu Hiyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed March 3, 1971, Ser. No. 120,651

Claims priority, application Japan, Dec. 10, 1969, 44/116848; Dec. 10, 1969, 44/116849

Int. Cl. G10h 3/06

U.S. Cl. 84—1.17 **3 Claims**



In an electronic musical instrument comprising an upper keyboard for a melody performance, a lower keyboard for a chord performance and a pedal keyboard for a bass performance there are provided a chord detector for detecting the type of a chord played on the lower keyboard upon depression of the keys thereof; a bass selector responsive to outputs from the chord detector for selectively coupling out from the tone generators bass tone signals corresponding to a note included in the chords played on the lower keyboard; and a gate circuit supplied with the bass tone signals from the bass selector and so designed as to be enabled by operation of one of the keys of the pedal keyboard. The pedal keyboard comprises only one or two keys for controlling one gate circuit supplied with one bass tone signal corresponding to the root note, or two gate circuits supplied respectively with one bass tone signal corresponding to the root note and fifth note included in the chord played on the lower keyboard.

3,697,665
POWER LINE SYSTEM AND METHOD FOR THE TRANSMISSION OF ELECTRIC ENERGY OVER LOW TEMPERATURE ELECTRIC CONDUCTORS

Conrad Doose, and Wolfgang Sassin, both of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Dec. 15, 1970, Ser. No. 98,231

Claims priority, application Germany, Dec. 15, 1969, P 19 62 745.3

Int. Cl. H01b 7/34

U.S. Cl. 174—15 C **6 Claims**



In a power line system for transmitting electric energy over electric conductors cooled by a coolant flowing in conduits associated with the conductors which, in turn, are surrounded by a radiation shield cooled by a coolant flowing in conduits associated with the radiation shield; the flow rate of the coolant through any cross-sectional area laid across all the first-named conduits, as well as the flow rate of the coolant through any cross-sectional area laid across all the second-named conduits is unequalized. Further, the power line system includes refrigeration machines to set to the optimal operating temperatures the coolant associated with the conductors and the coolant associated with the radiation shield.

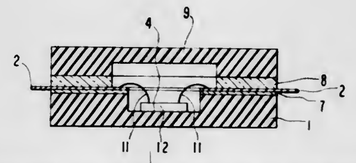
3,697,666
ENCLOSURE FOR INCAPSULATING ELECTRONIC COMPONENTS

Wilbur T. Wakley, and Michael T. Leeds, both of San Diego, Calif., assignors to Diacon, Inc., San Diego, Calif.

Filed Sept. 24, 1971, Ser. No. 183,470

Int. Cl. H05k 5/00

U.S. Cl. 174—52 S **4 Claims**



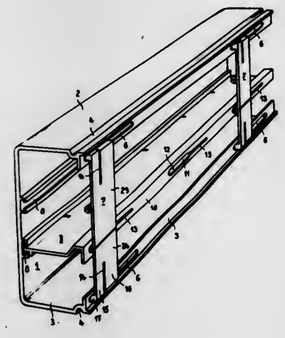
An enclosure for encapsulating an electronic component including a substrate and a conductive lead frame attached to the substrate and embedded in a composite glass layer, the layer having two portions. The lower portion is a substantially devitrified glass and the upper portion is a substantially non-devitrified glass. The lead frame has surfaces exposed for electrical contact both within and without the perimeter of the substrate, the intermediate part of the lead frame between the exposed portions being embedded in the composite glass layer.

3,697,667

INSTALLATION CHANNEL

Gottfried Pollak, Waldfischbach-Burgalben, and Peter Kolb, Pirmasens, both of Germany, assignors to Firm Tehalit Kunststoffwerk G.m.b.H, Heltersberg/Pfalz, Germany

Filed June 29, 1971, Ser. No. 157,976
Int. Cl. H01b 7/00; F16l 55/00
U.S. Cl. 174—68 C 2 Claims



Installation channel to be mounted on building walls which is of rectangular cross-section and has an open side opposite the mounting wall which can be closed by a cover, where spacing bars are provided for subdividing the channel into a plurality of electrically separated chambers. Means defining grooves are opposite the open side of the channel on the mounting wall for supporting the spacing bars, the side walls of the channel as well as the separating bars have free edges with elongated slots for cooperation clamps to be mounted therein. Clamps having ends to be introduced in the slots at the free edges of the channel side walls are provided with an angularly offset portion of rectangular cross-section and an angularly offset area portion of arrow-shaped cross-section on one side with an undercut, which portions are separated from one another by a longitudinal slot, the portion of rectangular cross-section has an inner edge which registers with the undercut portion of the area that is of arrow-shaped cross-section on one side, and the portion of rectangular cross-section is of a width corresponding to the width of the slots in the free edges of the side walls of the channel and projects beyond the portion of arrow-shaped cross-section on one side by an amount corresponding to the depth of the undercut.

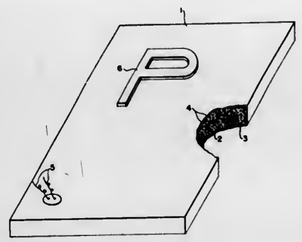
3,697,668

SELF-DESTRUCTIBLE MOLDED ARTICLES

Hugh W. Campbell, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 715,605, March 25, 1968, abandoned. This application Dec. 13, 1968, Ser. No. 786,817
Int. Cl. H05k 1/00
U.S. Cl. 174—68.5 10 Claims

This disclosure is directed to on-command, self-destructible, fibrous-reinforced molded structures, e.g., printed circuit assemblies, comprising a plastic-fibrous matrix containing encapsulated material capable of rapid yet non-explosive combustion, e.g., incendiary or pyrotechnic material. The major surfaces (faces) of said structures can be provided with an electroconductive portion(s), or conductive face, e.g., metallic, materials (facing sheets) can be secured thereto. One of the facing sheets can constitute or contain a printed circuit. All of the incendiary material must be encapsulated to render it inactive at ambient conditions until the desired time for ignition and achieve other advantages. Moreover, the structures can be provided with an igniter(s) to communicate with at least a portion of the encapsulated incendiary composition. A



predominant portion of the molded structure is incendiary material and the burning temperature can be controlled in a satisfactory manner by controlling the concentration of incendiary, esp. fuel.

3,697,669

INSULATING PIERCING ELECTRICAL CONNECTOR

Francis A. O'Loughlin, Scotch Plains, and Philip J. Herb, Somerville, both of N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Sept. 30, 1970, Ser. No. 76,940
Int. Cl. H02g 15/08
U.S. Cl. 174—84 C 14 Claims



An electrical connector for connecting insulating wire to a round post consists of two parts, an outer powdered metal sleeve and a split insert. The insert is blanked with teeth or serrations along one edge, and is formed to the inside diameter of the outer sleeve. An insulated wire is inserted into the connector in the area provided by the split in the insert, and the connector and wire are placed over the round post and the connector is circumferentially compressed. Compression of the connector forces the serrated edge of the insert against the wire, piercing the insulation and securing the wire and the connector to the post. Electrical contact from the wire to the post is made through the insert.

3,697,670

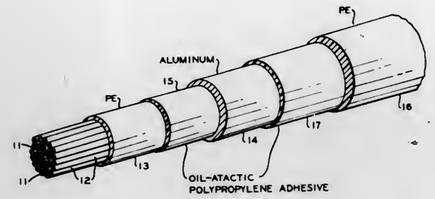
ELECTRICAL CABLE HAVING SHEATH LAYERS BONDED WITH ADHESIVE

Bill Mitacek, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 2, 1971, Ser. No. 204,023
Int. Cl. H01b 7/18
U.S. Cl. 174—107 7 Claims

In an electrical cable having at least one polyolefin sheath layer and an aluminum sheath layer, the polyolefin layer is

bonded to the aluminum layer with an adhesive material of 50



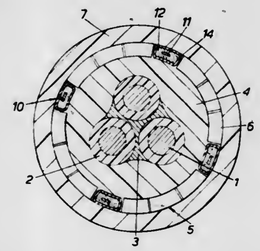
to 90 weight percent amorphous polypropylene and 50 to 10 weight percent mineral lubricating oil.

3,697,671

ELECTRIC CABLES

Herbert William Mansfield Parker, Zebbug, England, assignor to Pyrotenax Limited, Durham, England

Filed March 3, 1971, Ser. No. 120,618
Claims priority, application Great Britain, Feb. 27, 1970, 9,688/70
Int. Cl. H01b 7/32
U.S. Cl. 174—115 12 Claims



An electric power or communication cable has at least one core comprising an insulated conductor of aluminum or an aluminum-based alloy of high conductivity, a plastics sheath and, incorporated in the cable, a mineral insulated cable of a cross-section that is small in comparison with the overall cross-section of the cable. The mineral insulated cable has a sheath of aluminum or an aluminum-based alloy, is located outside the cable core or cores, and is adapted to indicate when the sheath of the mineral insulated cable has corroded to a sufficient extent to permit ingress of moisture therethrough. The mineral insulated cable may be embedded in the plastics sheath or it may replace one or more elements of a concentric neutral conductor of aluminum or an aluminum-based alloy.

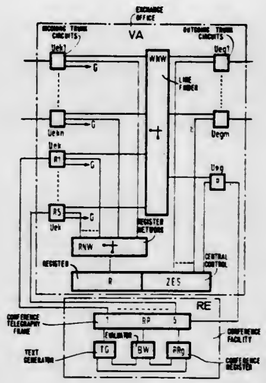
3,697,672

METHOD FOR THE ESTABLISHMENT OF CONFERENCE TELEGRAPHY CONNECTIONS IN CENTRALLY CONTROLLED TELEGRAPHY DIAL EXCHANGE INSTALLATIONS

Hans Reisch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 18, 1969, Ser. No. 850,979
Claims priority, application Germany, Aug. 21, 1968, P 17 62 761.1
Int. Cl. H04l 11/00
U.S. Cl. 178—3 4 Claims

In centrally controlled telegraphy dial exchange installations provided with a facility for making conference connections, the conference telegraphy system is connected to the trunk seized by the calling subscriber over an outgoing trunk, whereupon information necessary to establish the confefence connection is registered. Then the conference telegraphy system seizes a number of incoming trunks corresponding to



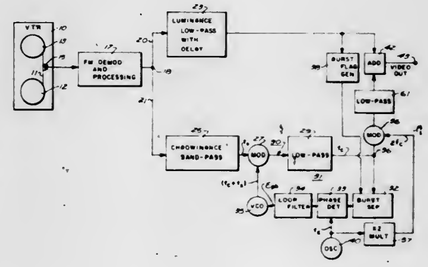
the number of subscribers to take part in the conferenice call, and the establishment of and accounting for the conference call proceed over the central control means of the exchange, in the manner of individual connections.

3,697,673

APPARATUS FOR CORRECTING ANGULAR ERRORS IN COLOR VIDEO SIGNALS

Bert H. Dann, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,284
Int. Cl. H04n 5/78
U.S. Cl. 178—5.4 CD 18 Claims

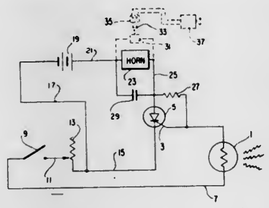


Apparatus for correcting effects of angular errors in a color video signal accompanied by a reference signal processes such color video signal and reference signal to dispose modulation components of the color video signal about a substantially stable carrier while substantially retaining phase and amplitude interrelationships of these modulation components. The processed reference signal is separated from the processed color video signal and an error signal indicative of angular errors in the processed color video signal is derived from the separated processed reference signal. The above mentioned processing is controlled in response to the latter error signal to correct effects of said angular errors.

3,697,674
INTERMITTENT PROBLEM ALARM FOR ELECTRONIC EQUIPMENT BASED ON A CRT IMAGE

Doyle W. Brewington, Omaha, Nebr., assignor to V. F. Ward, Omaha, Nebr.

Filed Sept. 4, 1970, Ser. No. 69,652
Int. Cl. H04n *5/58, 9/16*
U.S. Cl. 178—5.4 TE **23 Claims**

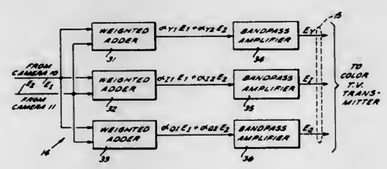


A device for testing for the presence of intermittent problems in electronic equipment having a cathode ray tube image. The device includes a cadmium sulfide cell placed adjacent the screen of a cathode ray tube for an indefinite period of time. Upon the occurrence of a deviation from the set standard an alarm will be actuated.

3,697,675
STEREOSCOPIC TELEVISION SYSTEM

Terry D. Beard, 619 Hampshire Road, Westlake Village, Calif., and Eric R. Garen, 1636 3/4 Franklin Avenue, Santa Monica, Calif.

Filed Dec. 23, 1970, Ser. No. 100,930
Int. Cl. H04n *9/54*
U.S. Cl. 178—6.5 **14 Claims**



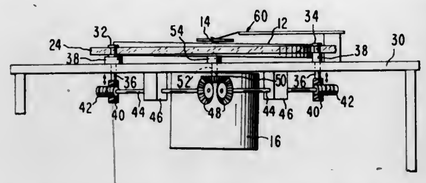
A method and apparatus for broadcasting stereoscopic images via a conventional color television system. A pair of monochrome TV cameras are situated to view the same scene from two separated positions. Stereoplex interface circuitry disclosed herein converts outputs from these cameras to luminance and chrominance signals which are supplied to a color television transmitter. A composite color signal is broadcast which produces on a color TV receiver two spaced images, each of a different color. When viewed through glasses having image-colored lenses, a three-dimensional scene is perceived. On a black and white receiver, only a single image is produced.

3,697,676
HEAD-TO-TAPE ALIGNMENT APPARATUS AND METHOD

Arthur I. Protas, Brooklyn, N.Y., assignor to Cartridge Television, Inc., New York, N.Y.

Continuation of Ser. No. 789,110, Jan. 2, 1969, abandoned. This application June 8, 1971, Ser. No. 151,148
Int. Cl. G11b *15/60, 17/00;* **H04n** *5/78*
U.S. Cl. 178—6.6 P **3 Claims**

Apparatus for bringing a number of oblique signal record tracks on a moving magnetic tape into registry with a number of recording heads of a rotating head tape transport system. In one embodiment, a pair of shiftable tape guides are used to shift the tape relative to and generally axially of the circular paths of the rotating heads. In another embodiment, a means is provided for shifting the heads axially of their circular paths and relative to the tape guides. In either case, the circular



paths of the heads are brought into coincidence with the tape record tracks. To render such circular paths and the record tracks parallel, one of the tape guides can be shifted relative to the other tape guide or the mounting means for the heads can be tilted with respect to the tape.

3,697,677
FACSIMILE COPYING PROCESS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

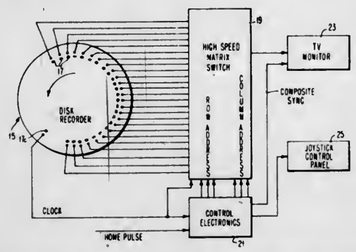
Continuation-in-part of Ser. No. 776,811, Nov. 18, 1968, abandoned. This application May 5, 1969, Ser. No. 822,015
Int. Cl. H04n *5/76;* **B41m** *5/10*
U.S. Cl. 178—6.6 R **8 Claims**

An improved facsimile duplicating process of the type employing a pressure-sensitive transfer sheet and a receptive copy sheet. An original is scanned and signals are transmitted to a stylus to actuate it against the transfer sheet to form duplicate images on the copy sheet corresponding to those on the original sheet. The improvement arises from the use of a squeeze-out type transfer sheet which exudes liquid ink and an absorbent copy sheet.

3,697,678
METHOD AND SYSTEM FOR SELECTIVE DISPLAY OF IMAGES FROM A VIDEO BUFFER

James Garman Belleson, Pacifica, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,735
Int. Cl. H04n *5/22, 5/78, 7/08*
U.S. Cl. 178—6.6 DD **12 Claims**

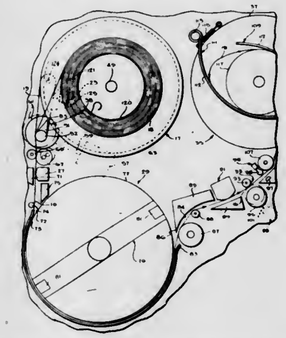


A system for selectively displaying discrete small portions of a large picture on a television monitor, with adjustable controlling means for continuously varying the boundaries of any one of the small portions being displayed. A cyclic disc buffer is provided for the reproduction of video signals. First and second images, each comprising a series of information and vertical retrace lines, are recorded as separate video frames on first and second tracks of a buffer disc so that the first information line of the second image corresponds in time to the first retrace line of the first image. The buffer includes first and second transducers associated respectively with the first and second tracks of the disc. The transducers are connected through a high speed matrix switch to a standard television monitor. The switch forms part of the adjustable controlling means and is adapted to alternatively connect the first and second transducers to the television monitor for directly switching the image output of the television monitor between the last information line of the first image and the first information line of the second image.

3,697,679
AUTOMATIC THREADING VIDEO RECORDER

Richard Allen Hathaway, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed July 1, 1970, Ser. No. 51,447
Int. Cl. G03b *1/58;* **G11b** *15/66;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **13 Claims**

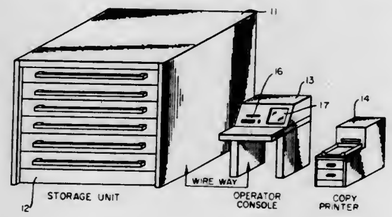


A video tape is automatically threaded from a supply means such as a tape cartridge or cassette about a video scanner and past appropriate sound, control track and erase heads to a take up means. Preferably, a stripping means is effective to strip a leader from a tape cartridge having coiled video tape therein and feed the leader to the take up means. The video tape attached to the leader is preferably threaded at operational speed and with operational tension by a tape capstan and pressure roller means which is automatically disabled when the video tape is threaded.

3,697,680
STORAGE AND RETRIEVAL SYSTEM

Wayne D. Austin, Cupertino, Calif., assignor to Varian Adco, Palo Alto, Calif.

Filed Feb. 2, 1970, Ser. No. 7,884
Int. Cl. B65g *1/06*
U.S. Cl. 178—6.8 **23 Claims**

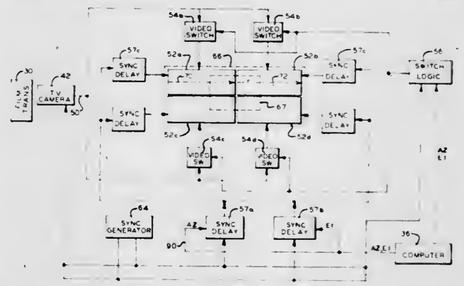


Documents or information in the form of microfilm or other permanent form are mounted on rectangular frames or carriers which are edge coded by notching. A plurality of carriers are stored in one or more elongated storage bins with the bins arranged side-by-side. An electromechanical carriage is adapted to move to a selected bin and then to move over the selected bin to store or retrieve carriers. During retrieval, the coded edges are scanned and an electrical control starts a retrieval cycle to retrieve the carrier having the desired document. The carrier is transported to a display location where the document or information is read and made available for use as a display, hard copy, or video signal. The electrical control includes a memory which remembers the bin location of each carrier whereby the bin containing the desired carrier is selected and scanned to locate the desired carrier. In refiling, the bin from which the carriers were removed is selected and the carriers are filed sequentially in open locations.

3,697,681
PLACEMENT OF IMAGE ON MATRIX DISPLAY

Reginald F. H. McCoy, Highland Park, Ill., assignor to The Singer Company, New York, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,729
Int. Cl. H04n *3/16;* **H01j** *29/89*
U.S. Cl. 178—6.8 **2 Claims**
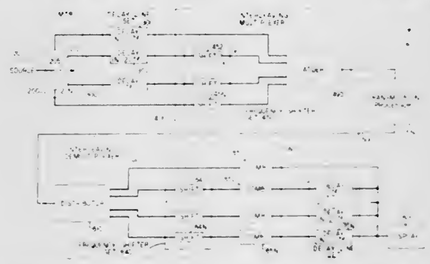


Apparatus which will provide, to a visual display comprising a plurality of scanned raster devices such as television monitors arranged to form a continuous display, a means of placing a high resolution image, which may be larger than the size of one device or monitor but smaller than the size of the total display, in a controlled position on one or more of the monitors in a manner such that the image will appear to be continuous from one monitor to another.

3,697,682
VIDEO SIGNAL PROCESSING

Anthony David Berg, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 11, 1971, Ser. No. 152,168
Int. Cl. H04n *7/12, 7/06*
U.S. Cl. 178—6.8 **9 Claims**



A television picture is scanned such that each frame of the resultant video signal comprises a succession of N interlaced

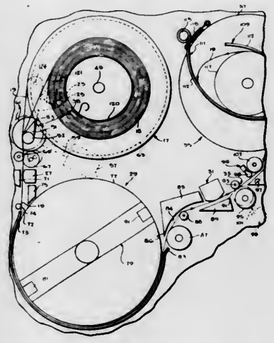
first retrace line of the first image. The buffer includes first and second transducers associated respectively with the first and second tracks of the disc. The transducers are connected through a high speed matrix switch to a standard television monitor. The switch forms part of the adjustable controlling means and is adapted to alternatively connect the first and second transducers to the television monitor for directly switching the image output of the television monitor between the last information line of the first image and the first information line of the second image.

3,697,679

AUTOMATIC THREADING VIDEO RECORDER

Richard Allen Hathaway, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed July 1, 1970, Ser. No. 51,447
Int. Cl. G03b 1/58; G11b 15/66; H04n 5/78
U.S. Cl. 178—6.6 A **13 Claims**



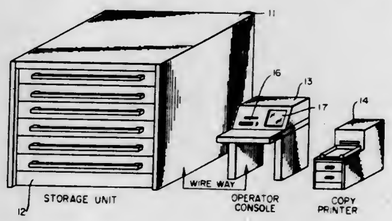
A video tape is automatically threaded from a supply means such as a tape cartridge or cassette about a video scanner and past appropriate sound, control track and erase heads to a take up means. Preferably, a stripping means is effective to strip a leader from a tape cartridge having coiled video tape therein and feed the leader to the take up means. The video tape attached to the leader is preferably threaded at operational speed and with operational tension by a tape capstan and pressure roller means which is automatically disabled when the video tape is threaded.

3,697,680

STORAGE AND RETRIEVAL SYSTEM

Wayne D. Anstin, Cupertino, Calif., assignor to Varian Adco, Palo Alto, Calif.

Filed Feb. 2, 1970, Ser. No. 7,884
Int. Cl. B65g 1/06
U.S. Cl. 178—6.8 **23 Claims**



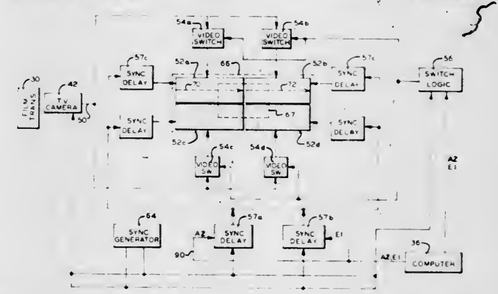
Documents or information in the form of microfilm or other permanent form are mounted on rectangular frames or carriers which are edge coded by notching. A plurality of carriers are stored in one or more elongated storage bins with the bins arranged side-by-side. An electromechanical carriage is adapted to move to a selected bin and then to move over the selected bin to store or retrieve carriers. During retrieval, the coded edges are scanned and an electrical control starts a retrieval cycle to retrieve the carrier having the desired document. The carrier is transported to a display location where the document or information is read and made available for use as a display, hard copy, or video signal. The electrical control includes a memory which remembers the bin location of each carrier whereby the bin containing the desired carrier is selected and scanned to locate the desired carrier. In refiling, the bin from which the carriers were removed is selected and the carriers are filed sequentially in open locations.

3,697,681

PLACEMENT OF IMAGE ON MATRIX DISPLAY

Reginald F. H. McCoy, Highland Park, Ill., assignor to The Singer Company, New York, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,729
Int. Cl. H04n 3/16; H01j 29/89
U.S. Cl. 178—6.8 **2 Claims**



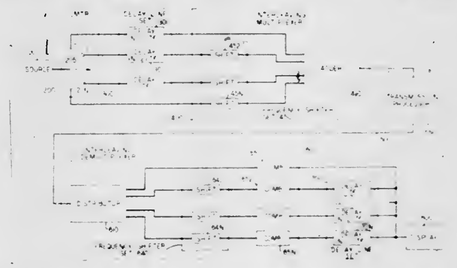
Apparatus which will provide, to a visual display comprising a plurality of scanned raster devices such as television monitors arranged to form a continuous display, a means of placing a high resolution image, which may be larger than the size of one device or monitor but smaller than the size of the total display, in a controlled position on one or more of the monitors in a manner such that the image will appear to be continuous from one monitor to another.

3,697,682

VIDEO SIGNAL PROCESSING

Anthony David Berg, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 11, 1971, Ser. No. 152,168
Int. Cl. H04n 7/12, 7/06
U.S. Cl. 178—6.8 **9 Claims**



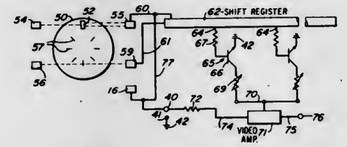
A television picture is scanned such that each frame of the resultant video signal comprises a succession of N interlaced

fields. Each field is then delayed by a time equal to the field scan time multiplied by the factor (N-1), where I represents its ordinal place in the succession. The fields, which thus coexist in time, are then interleaved in the frequency domain. The video signal is thereby compressed by a factor of N on a frame-by-frame basis, and additional data can be time multiplexed between the compressed frames. Alternatively, the bandwidth of the signal can be reduced by stretching the time-compressed frames.

3,697,683
FACSIMILE SCAN LINE RESPONSE EQUALIZATION SYSTEM

Percival T. Gates, Jr., Weston, Mass., and Albert H. Libbey, Moultonboro, N.H., assignors to EG & G, Inc., Bedford, Mass.

Filed Dec. 7, 1970, Ser. No. 95,664
Int. Cl. H04n 1/40
U.S. Cl. 178—7.1 **8 Claims**

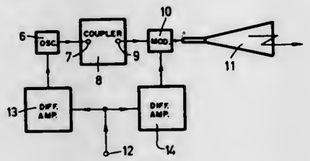


The facsimile scan line response equalization system described includes a source of facsimile scan line video signals inherently having a non-uniform response along each scan line. Means are provided to produce a scan line start signal and a scan line end reset signal. These signals may be utilized to produce a plurality of signals while a line is being scanned. Each of the plurality of signals is individually controlled. The scan line video signals and the plurality of signals are applied to a video signal amplifier in which the scan line video signals are controlled in accordance with the individually controlled plurality of signals.

3,697,684
TELEVISION TRANSMITTER WITH THE SYNCHRONIZATION SIGNAL APPLIED TO THE OSCILLATOR AND THE LUMINANCE SIGNAL APPLIED TO A MODULATOR

Paul Lesartre, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,522
Claims priority, application France, Oct. 31, 1968, 68172256
Int. Cl. H04n 5/40
U.S. Cl. 178—7.2 **6 Claims**

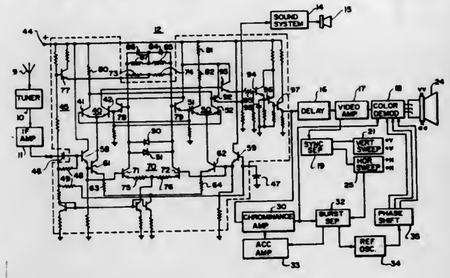


A television transmitter for positive modulation television signals has a Gunn oscillator which is switched off by the synchronization signals coming from a synchronization separator. An isolator couples the oscillator to a Gunn effect modulator to which the luminance signal is applied from a difference amplifier. Therefore, the inability of the modulator to produce zero output during the sync pulses is overcome.

3,697,685
SYNCHRONOUS AM DETECTOR

Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed April 13, 1970, Ser. No. 27,668
Int. Cl. H04n 5/44; H03d 1/22
U.S. Cl. 178—7.3 R **10 Claims**

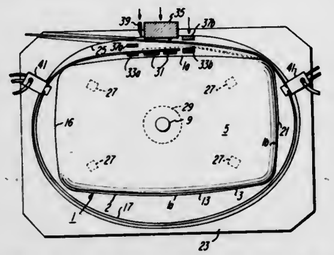


A combined final IF amplifier and detector stage for a television receiver includes an integrated circuit having first and second transistor differential amplifier detector stages, the common-connected emitters of each stage of which are coupled with the collector of a different one of the transistors of a third differential amplifier stage to which the input signals are supplied. Switching of the first and second differential amplifier stages at the video carrier frequency is effected under control of a fourth differential amplifier which is driven into limiting by the input signal. To prevent intermodulation between the chroma and sound subcarrier sidebands from producing an objectionable beat signal in the output of the first and second differential amplifiers, a frequency selective circuit is connected across the outputs of the fourth differential amplifier. This frequency selective circuit peaks at the video carrier frequency and includes a notch at the chroma subcarrier frequency.

3,697,686
CATHODE RAY TUBE IMPLOSION PROTECTION SYSTEM AND METHOD

Arnis Hildebrants, Jonesboro, Ind., assignor to RCA Corporation

Filed Oct. 27, 1970, Ser. No. 84,413
Int. Cl. H01j 27/06
U.S. Cl. 178—7.82 **3 Claims**

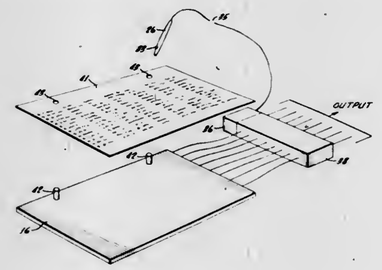


A glass cathode ray tube envelope is provided with implosion-protection means by wrapping the peripheral portion of the envelope adjacent to the faceplate with a piece of fabric impregnated with an uncured thermosetting bonding material (e.g., B-stage epoxy resin), positioning a first steel band around the tape, heating about two-thirds of the band to 200°–250° c., contacting the tape with the band while hot, to bond the tape to the glass envelope and band along about two-thirds of the periphery of the envelope, and tensioning and permanently mounting the band on the envelope by welding the ends together under tension while still hot so that, on cooling, the band tension is increased to a large value, e.g., 1,500 pounds, and then mounting a second steel band on the first band in the same manner as the first band but with the band joint on the opposite side of the envelope, to bond the tape to the envelope and first band along the remaining portion of the periphery thereof.

3,697,687
ENCODING DEVICE

Harry T. Larson, 18521 Embury Drive, and Richard T. Loewe, 12882 Olympic Way, both of Santa Ana, Calif.

Filed Dec. 16, 1970, Ser. No. 98,551
Int. Cl. H04n 1/00
U.S. Cl. 178—18 **35 Claims**



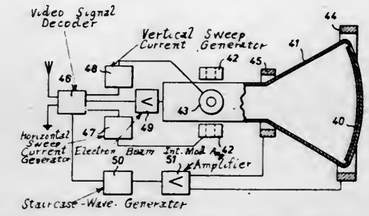
A device for digitally encoding the position of a selected point location, the device comprising a foundation member having at each of a plurality of point locations a unique combination of conductive members, not necessarily exposed representing a code combination of the elements of a code system, such as a binary code. At least one probe in the form of an electrode is arranged to be brought into registry and proximity but not into actual contact with the conductive members at an assigned one or any of a plurality of the point locations of the combination of members. All of the conductive members that pertain to the same element level of the code are connected together and to a register or other utilization device. Following the positioning of the probe it is energized to impress an electrostatic charge on those of the conductive members with which it is in registry. The utilization devices respond to these charges, and thus a discrete code combination is generated.

3,697,688
DEVICE FOR PRODUCING MULTI-COLOR TELEVISION IMAGES BY MAGNETIC FIELD CONTROL OF A PARTICULAR LUMINESCENT SCREEN

Georg Busch, Zurich, and Peter Wachter, Zollikerberg, both of Switzerland, assignors to Verein zur Forderung der Festkorperphysik an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

Filed Aug. 12, 1970, Ser. No. 63,044
Claims priority, application Switzerland, Jan. 21, 1966, 993/66
Int. Cl. H04n 9/22
U.S. Cl. 178—5.4 R **8 Claims**

A device for the production of multi-colored TV images by a temporal sequence of monochromatic images corresponding to various color records of the original image to be transmitted in which a picture screen is made of a substance capable of luminescence forming the picture screen, a magnetic chemical compound with a magnetic field influencing the substance and

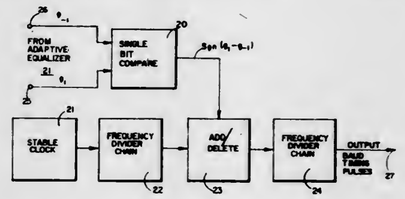


means for the step-by-step change of the magnetic field in dependence on color control information contained in the TV signals.

3,697,689
FINE TIMING RECOVERY SYSTEM

Earl D. Gibson, Hunting Beach, Calif., assignor to North American Rockwell Corporation

Filed Dec. 23, 1970, Ser. No. 100,990
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R **17 Claims**



The present receiver timing system utilizes the difference signal between two tap gain adjustments of an automatic adaptive equalizer as a timing control signal. A stable clock and frequency divider chain in the receiver generate a train of timing pulses. The timing control signal derived from the equalizer taps drives and ADD-DELETE circuit, which is placed in the frequency divided chain, to lock the generated timing pulse train to the received signal.

3,697,690
DUAL-MODE PHASE-LOCKED LOOP WITH DEAD ZONE PHASE DETECTOR

Marvin Robert Aaron, Fair Haven, Monmouth County; Warren Gail Hammett, Middletown, Monmouth County, and James Francis Oberst, Howell Twp., Monmouth County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1971, Ser. No. 157,961
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 R **4 Claims**



A timing circuit generates the timing signal used in the regeneration of a pulse code modulation signal which contains

a timing burst between each word. This is accomplished by synchronizing a voltage-controlled oscillator (VCO) to the timing burst with a dual-mode phase-locked loop. One loop contains a phase detector with a dead zone, which compares the VCO output with a burst detector signal. This phase detector produces an error signal only until the frequencies of the two signals are the same and their phases are within a prescribed range of each other. The other loop contains a gated phase detector which compares the VCO output to the timing burst and produces a second error signal which is combined with the first to control the VCO.

3,697,691

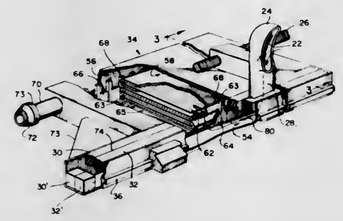
ELECTRO-SENSITIVE PRINTING RESIN CONTROL SYSTEM

Eric A. von Hippel, Weston, Mass., assignor to Graphic Sciences, Inc., Danbury, Conn.

Continuation of Ser. No. 747,001, July 23, 1968, abandoned. This application May 3, 1971, Ser. No. 139,890

Int. Cl. H04l 15/24

U.S. Cl. 178—94 **13 Claims**



A vacuum nozzle traveling over the surface of a document on which a reproduction is being made by a pyrographic stylus removes from the document waste particles produced during the reproduction process and transmits them through a rigid conduit to a filter unit located adjacent the document. The filter unit has a pair of deformable resilient foam slabs positioned in side-by-side abutting relationship on one of its walls to form an extended air-tight seal through which the coupling conduit enters the filter unit. As the nozzle moves over the surface of the document, the conduit moves along the length of the filter unit and the foam slabs continuously deform and reform snugly around the conduit as it moves to thereby maintain the vacuum within the filter unit.

3,697,692

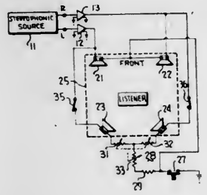
TWO-CHANNEL, FOUR-COMPONENT STEREOPHONIC SYSTEM

David Hafler, Merion Station, Pa., assignor to Dynaco Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 35,018, May 6, 1970. This application June 10, 1971, Ser. No. 151,790

Int. Cl. H04r 5/00

U.S. Cl. 179—1 G **20 Claims**



A two-channel stereo signal including left and right channel responses (L and R, respectively), deriving from only two amplifiers, is fed to four speakers located approximately at the corners of a quadriliateral area, and are positioned to face toward the interior of the area. The network drives the speakers with four different signals so that sound from the speakers appears to a listener positioned interiorly of the area to come from the four sides of the area, rather than from the four corners. In one embodiment, speakers in the left and right front corners respond to $(L+R/2$ and $(R+(L/2)$, respectively, while in a second embodiment these speakers respectively respond to (L) and (R), respectively. Speakers in the left and right rear corners (directed toward the listener's back) respond to signals proportional to $L-(R/2)$ and $R-(L/2)$, respectively.

3,697,693

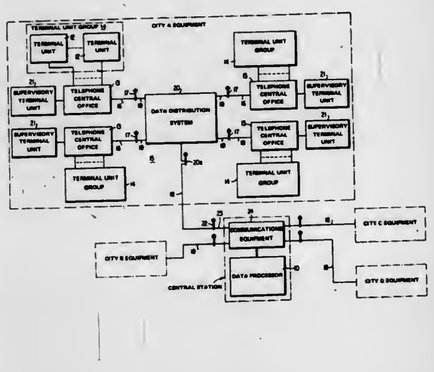
SYSTEM FOR MAINTAINING THE STATUS OF CREDIT ACCOUNTS

Raymond J. Deschenes, and Robert N. MacDonald, both of Atlanta, Ga., assignors to Data Card Corporation, Minneapolis, Minn.

Filed March 11, 1970, Ser. No. 18,665

Int. Cl. H04m 11/06

U.S. Cl. 179—2 DP **19 Claims**



A system is disclosed for maintaining an up-to-date record of credit accounts, and for determining the status of an account prior to completion of a credit transaction to be billed to that account. Upon completion of each credit transaction the system automatically enters information pertinent to the transaction into the appropriate account record maintained at a central data processor station. This continual updating of each credit account as transactions occur makes the current status of any account available immediately upon inquiry by an authorized user of the system. Remote terminal units advantageously located at specified points of sale in each authorized user's facility are utilized to transmit inquiries regarding the status of credit accounts, and to receive replies authorizing or rejecting the transaction for which the inquiry was made.

The system includes a multiplicity of the terminal units, a plurality of supervisory data units each associated with a group of the terminal units, a central data processor station with special purposes or general purpose computers implemented or programmed to manipulate stored data on command from the remote terminal units or from the supervisory data units, and a network for communication between the central data processor station and the remote terminal units and supervisory data units.

3,697,694

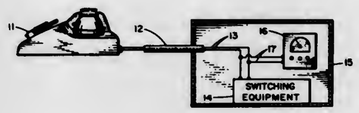
TELEPHONE SYSTEM INCLUDING ATMOSPHERIC PRESSURE TELEMETERING MEANS

Norvel P. Tyler, 714 Roland Drive, Norfolk, Va.

Continuation-in-part of Ser. No. 61,871, Aug. 7, 1970, abandoned. This application Oct. 5, 1971, Ser. No. 186,703

Int. Cl. H04m 11/00

U.S. Cl. 179—2 R **4 Claims**



A telephone system including certain telephones equipped with a handset transmitter component responsive to barometric pressure variations in the ambient atmosphere to proportionately vary the electrical resistance of the carbon pile interconnected with the diaphragm thereof. These telephones are grouped at predetermined positions throughout the area covered by the telephone system. Conventional equipment is utilized at the central exchange of the telephone system to determine as simultaneously as possible the atmospheric pressure established basic electrical resistance of one of these certain telephones currently in use located at or near each of such predetermined positions, from which the atmospheric pressure at each of such predetermined positions may be established, to provide data useable by meteorologists.

3,697,695

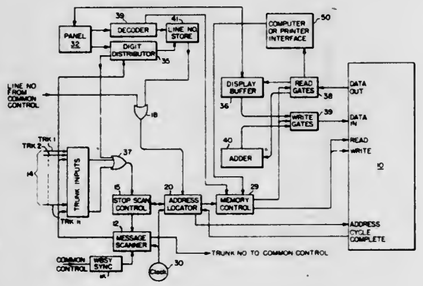
CALL METERING FOR TELEPHONE EXCHANGE

Uwe A. Pommerening, 251 Raphael Drive, and Stanley L. Russell, 649 Beverly Drive, both of Webster, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,388

Int. Cl. H04m 15/38, 15/10

U.S. Cl. 179—7 MM **4 Claims**



A call metering system for a telephone exchange having a computer type memory in which each line to be metered is assigned a separate address. A scanner scans the lines at high speed, and stops when it reaches a marked line. The address to be charged is fed to one input of a comparator, and when this is done, another high speed scanner scans the memory. It stops when the comparator produces an identity signal indicating that the memory scanner is at the address assigned to the line to be charged. The number stored at that address in the memory is then fed to an adder, increased by one and re-inserted at the same address. The memory may be queried from a manually operated control station or automatically by a computer or printer.

3,697,696

METHOD FOR THE SIGNAL EXCHANGE IN TELECOMMUNICATION, PARTICULARLY TELEPHONE EXCHANGES EMPLOYING TIME-DIVISION MULTIPLEXING

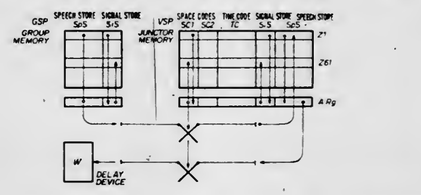
Willi Verstegen, Kornwestheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed March 31, 1970, Ser. No. 24,117

Claims priority, application Germany, April 1, 1969, P 19 16 792.1

Int. Cl. H04j 3/06

U.S. Cl. 179—15 BS **7 Claims**



In a PCM-switching center the signals are exchanged between the highways in those time slots in which an exchange of speech is not necessary, i.e. in which synchronizing or signalling is effected on the highways. Thus the expenditure for the exchange of signals using lumped channel-bound signalling remains relatively low. Through-signalling is accomplished by simple means.

3,697,697

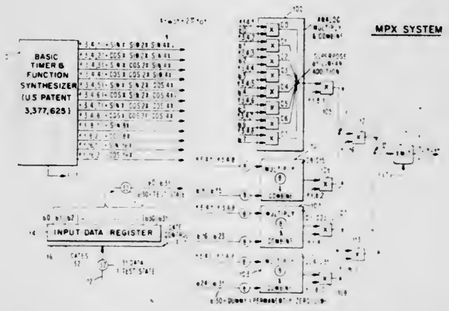
COMMUNICATION BY SMOOTH HIGH ORDER COMPOSITES OF TRIGONOMETRIC PRODUCT FUNCTIONS

Leo M. Audretsch, Jr., and Matthew Elsner, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,656

Int. Cl. H04j 1/08

U.S. Cl. 179—15 BC **9 Claims**



Member functions of certain disjoint sets of harmonically related trigonometric product functions (the term "disjoint" is used herein to describe sets which have no common member functions and relatively distinct class properties K) are combined for transmission by simultaneously selecting plural subsets of a first one of the sets, in fundamental half-periods, and superposing the members of each subset by linear addition to form subset composites. These are individually multiplied ("up-converted") by members of other sets and superposed in groups. Such cascaded multiplications and superpositions are continued convergently to provide at one central terminal a comprehensive high order composite transmission waveform which has smooth outline and contains, in a highly distin-

guishable form, all of the binary intelligence utilized in the initial selections of subsets of the first set. At receiving apparatus the composite transmission waveform is decomposed (down-converted) in divergently cascaded stages of multiplications by locally synthesized functions. Plural sets of higher order product waveforms, issuing from the last stages of such multiplication in parallel, are separately integrated over fundamental half-period intervals. The integrand functions correspond to distinct sums of products of pairs of high order trigonometric product functions having identical class and order. The terms of any sum all have distinct binary coefficients. The product functions form an orthogonal set with associated order and class properties respectively relating to sums and maxima of respective order and class properties of the disjoint sets containing the transmission components. Each integrand sum representation contains a unique term in which the paired product functions are identical and all other terms have unmatched functions. The function in the matching term is different for each integrand. Hence with appropriate timing of integration sampling and resetting functions a unique set of binary state pulse functions, which correspond to the binary coefficients of the matching terms of respective integrands, is sampled at outputs of respective integration stages. Normally these pulse functions correspond identically to the binary selection pulses utilized in the pre-transmission subset selections.

3,697,698
PARI-MUTUEL OFF-TRACK BETTING SYSTEM

Robert A. Oswald, P.O. Box 458, Gardnerville, Nev., and James R. Bull, 1940 Covina Drive, Sparks, Nev., assignors to said Oswald, by said Bull

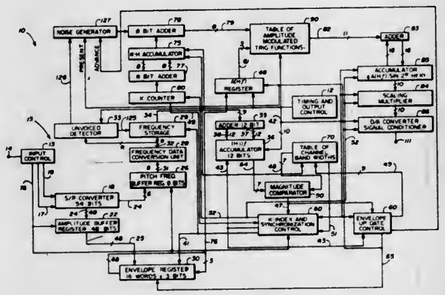
Continuation of Ser. No. 829,964, June 3, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 165,843
Int. Cl. H01j 3/00
U.S. Cl. 179—15 A **3 Claims**

An off-track betting system in which a plurality of ticket issuing machines at off-track locations permit selection and entry of input data comprising a proposed bet transaction and provide parallel output signals corresponding to the input data. The parallel output signals are encoded and sequentially gated in groups corresponding to respective ticket issuing machines. Each group of parallel output signals is thereafter multiplexed to provide a serial signal for transmission over a telephone line or radio link to a central pari-mutuel totalizer or computer at another location where multiplex decoders and logic gates process the signal for input to the totalizer or computer. Upon acceptance of a bet transaction by the totalizer, a return signal actuates the ticket issue machine to issue an appropriate ticket.

3,697,699
DIGITAL SPEECH SIGNAL SYNTHESIZER

Norman P. Gluth, and Richard A. Houghton, both of Dallas, Tex., assignors to LTV Electrosystems, Inc., Dallas, Tex.

Filed Oct. 22, 1969, Ser. No. 870,012
Int. Cl. G10l 1/10
U.S. Cl. 179—1 SA **47 Claims**



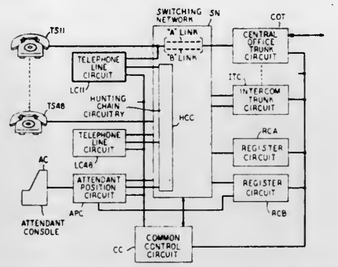
Disclosed is an electrical-signal synthesizer for converting digitally coded information associated with at least one electrical signal, whose frequency, amplitude or phase may vary, to analog signals whose frequency, amplitude or phase varies in substantially the same manner as that of the at least one electrical signal. More specifically, the synthesizer is operative to convert a digital signal representative of a first analog signal, such as a voice signal, having varying parameters, such as frequency or amplitude, into an analog output signal which varies in substantially the same manner as the first signal, and where the digital signal is composed of consecutive frames of words, and one word of each frame is representative of a fundamental frequency associated with the first signal at an instant of time, and successive words in the respective frame are representative of the energy associated with at least one of a plurality of successive bands or spectrum segments of the first signal to be reproduced, at the given instant in time, each of the successive bands bearing a predetermined frequency relationship and wherein the synthesis of the output signal is accomplished by generating from the word representative of the fundamental frequency in each respective frame, a stream of digital words representative of the frequency and each of its harmonics at each instant of time and producing therefrom a second stream of digital words which is indicative of the frequency components of the original sound and modulating the second stream with amplitude data corresponding to discrete periods of time and adding the respective digital signals so produced for a discrete period of time and converting the same to an analog signal which is representative of the original voice signal.

3,697,700
LINE HUNTING CIRCUITRY FOR COMMON CONTROL COMMUNICATIONS SWITCHING SYSTEM

William Wallace Greason, III, Longmont, and David William Weiner, Boulder, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,315
Int. Cl. H04q 3/22
U.S. Cl. 179—18 AB **8 Claims**

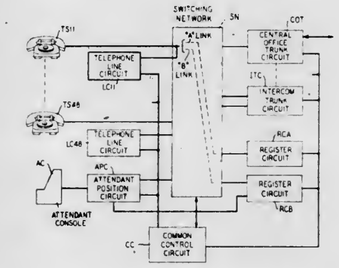
A telephone system suitable for use as a private branch exchange with 40 station and attendant lines or less is disclosed. It comprises a crossbar switching network that establishes call connections for station lines, registers and trunks under common control. PBX line hunting circuitry is integrated into the electromechanical switching network with electronic hunting gate arrangements in a group of station line circuits.



3,697,701
IMPROVED SCANNABLE LINE CIRCUIT FOR COMMON CONTROL TELEPHONE SYSTEM

William Wallace Greason, III, Longmont, and David William Weiner, Boulder, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,314
Int. Cl. H04q 3/22
U.S. Cl. 179—18 FA **7 Claims**



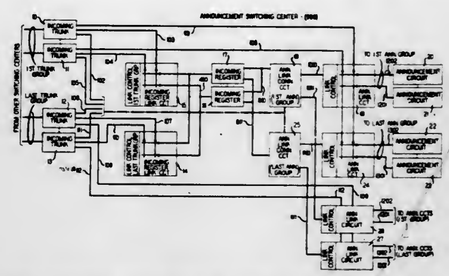
A telephone system suitable for use as a private branch exchange with 40 lines or less comprises a switching network that establishes call connections for station line circuits, registers and trunks under common control. Each line circuit comprises amplifier and gate control facilities which cooperate in the control of the switching network. The gate facilities include an address gate and a zener diode controlled gate which initially are scanned for detecting a service request and are rescanned on a callback operation to identify the calling line following a dialing operation.

3,697,702
SELECTABLY CONTROLLABLE ANNOUNCEMENT SYSTEM

John J. Buonsante, Harrison, N.Y.; Lambert Freericks, Hasbrouck Heights, N.J.; Howard J. Haarmann, Floral Park, N.Y., and John C. Sieglinger, Short Hills, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,500
Int. Cl. H04m 3/42
U.S. Cl. 179—18 B **26 Claims**

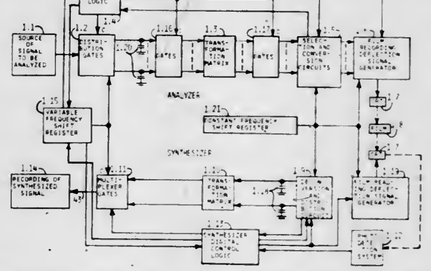
A central office switching center which is accessible by interoffice trunks from any of a number of other central office switching centers is arranged to return selected announcements to calling subscribers. An incoming register at the announcement central office is connected to an activated interoffice trunk and is arranged to receive the directory number uniquely associated with a called announcement. The incoming register is further arranged to establish an exclusive connection between the activated trunk and the called announcement circuit and to thereupon become disassociated from the connection.



3,697,703
SIGNAL PROCESSING UTILIZING BASIC FUNCTIONS

Melville Clark, Jr., Cochituate, and David A. Luce, Natick, both of Mass., assignors to Melville Clark Associates, Cochituate, Mass.

Continuation-in-part of Ser. No. 733,470, May 31, 1968. This application Aug. 15, 1969, Ser. No. 857,271
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA **53 Claims**



The present invention relates to the analysis and synthesis of complex time-varying signals over a wide range of frequencies and amplitudes in terms of selectable sets of expansion functions.

Analysis consists of gating a time-sampled representation of the input signal stored on capacitors, into resistor matrices, which compute other desired representations. Use of the Fourier series representation in the analysis produces Fourier phazor components, which are converted to resultant vector amplitudes and phases by carrier generation through modulation by the phazors of 90°-out-of-phase, very high frequency, reference oscillators. Synchronous carrier demodulation gives resultant Fourier amplitudes. Carrier phase, relative to one of the reference oscillators, being equal to the Fourier phase, is determined by time (between zero crossings)-to-voltage conversion. Analyzer tuning may be external, voltage-controlled, or phase-controlled. When tuning is phase controlled, phase computing circuits lock the analyzer frequency to that of the input signal. The analysis bandwidth may be absolute- or voltage-controlled fractional, the latter being achieved by a variable-duty-cycle time-sampling-filter method. Frequency-

tracking-system control of the voltage for controlled fractional bandwidth gives the ability to analyze with narrow bandwidth while providing wide band frequency tracking. A slowly varying phase-time derivative, when present for an appropriate length of time, is used to test for input signal coherence. The test result is used to control frequency tracking to prevent erratic tuning during attempted frequency tracking of incoherent signals.

Relative phase values over a range greater than the normal range of 2π radians are made possible by sensing the traversals of the phase cut.

For synthesis, control signals are generated and applied to a transformation matrix which, via multiplexing of the matrix outputs gives the sequential representation of a signal. Curves used to derive control signals, on film are read at high speed using a flying spot scanner. Spot intensity differentiation with zero crossing detection gives extremely high accuracy independent of spot intensity. Fourier log or linear amplitude and phase curve values are serially converted to phazor components synchronously with scanning by gated excitation and gated dissipation of high Q LC resonant circuits. Appropriate final stage gating and filtering of the time-sample representation eliminates system transients and objectionable frequency components due to the quantization of the output signal.

3,697,704

CIRCUITS FOR PRIVATE AUTOMATIC TELEPHONE EXCHANGE SYSTEMS

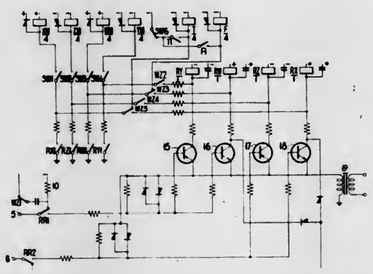
Michael Lawrence Jacobs, Earls Barton, England, assignor to The General Electric Company Limited, London, England

Filed Oct. 1, 1970, Ser. No. 77,096

Claims priority, application Great Britain, Oct. 2, 1969, 48,561/69

Int. Cl. H04q 1/38

U.S. Cl. 179—86 **9 Claims**



A detector circuit for use in a private exchange using push-button controlled "leg-signalling," the circuit comprising four transistors different ones or combinations of which become conducting in response to currents resulting from the application of an alternating voltage to different combinations of terminations applied to the line wires by operation of respective pushbuttons at the extension. The combinations of terminations serve to indicate the digit values of the respective push-buttons for the purpose of signalling to the exchange equipment the number of an extension to be called.

3,697,705

ELECTROMAGNETIC TRANSDUCER RECORDING HEAD HAVING A LAMINATED CORE SECTION AND TAPERED GAP

Norman I. Holt, Pasedena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed July 24, 1969, Ser. No. 844,315

Int. Cl. G11b 5/16, 5/24

U.S. Cl. 179—100.2 C **5 Claims**

An electromagnetic transducer head is provided which exhibits a wide band recording response characteristic, and which comprises a plurality of separate magnetic head structures operating over different, overlapping frequency bands, and formed into an integral assembly. Each separate head structure of the assembly includes a magnetic core, and each core is provided with a gap. The cores are positioned adjacent one another so that the gaps are aligned to define a common



gap, and the recording medium is drawn across the common gap. The common gap is tapered, with the gap width of each aligned gap section being different from its adjacent section. Separate windings are wound about the cores, each having different numbers of turns so as to cover overlapping frequency ranges.

3,697,706

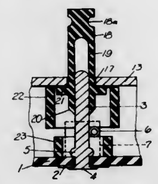
PUSH TYPE ELECTRIC SWITCH WITH CONTACT POST, MOVABLE COIL SPRING CONTACT AND INTERPOSED NON CONDUCTIVE PLUNGER

Leslie Huggard, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 23, 1971, Ser. No. 155,752

Int. Cl. H01h 9/26, 27/04

U.S. Cl. 200—5 R **13 Claims**



A push-pull type electric switch for single or matrix switching applications comprising a fixed contact in the form of an elongated pin, and at least one movable contact biased to a closed position against the fixed contact. An insulative plunger is slidably mounted on the fixed contact and is axially movable thereon between a depressed position wherein it shifts the movable contact away from the fixed contact to an open position, and a retracted position wherein it permits the movable contact to assume its biased closed position against the fixed contact.

3,697,707

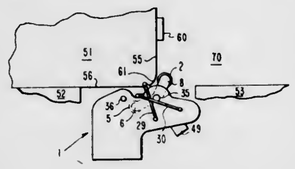
CARD POSITION SENSING APPARATUS

Kenneth Barnett Williams, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,678

Int. Cl. H01h 29/02

U.S. Cl. 200—46 **14 Claims**



A card position sensing apparatus for sensing the position of a record card on a card deck relative to a read/write head. The apparatus has a first follower and shunting member actuatable by the leading edge of a forwardly moving record card, and a second follower and shunting member actuatable by the leading edge of a rearwardly moving record card. Cooperating members are connected to the first and second followers for tripping the first follower to bias it against the edge of the card when the second follower is actuated and for tripping the second follower to bias it against the edge of the card when the first follower is actuated. The apparatus also has switches operable by the first and second shunting members for providing signals indicative of the position of a forwardly and rearwardly moving record card relative to the read/write head for beginning and ending a read/write operation and for activating the drive mechanism which drives the record card in the forward and rearward direction. The structural cooperation of the first and second followers which are spring biased is such that actuation and positioning of one will effect tripping of the other, providing very accurate sensing of the position of the card.

3,697,708

HOPPER MATERIAL SUPPLY INDICATOR

John I. Beresic, 2900 West Lincoln, Phoenix, Ariz.

Filed June 11, 1971, Ser. No. 152,278

Int. Cl. H01n 9/16

U.S. Cl. 200—61.21 **8 Claims**



A supply indicator for measuring the level of granular material stored in a bin, tank, silo or the like wherein a series of vertically spaced sensing limit switches are placed in and arranged to extend outwardly of a longitudinal slot in a tubular metallic housing. The housing is arranged within and longitudinally of the bin, tank, silo or the like and employs a flexible cylindrical sleeve tightly fitted over the housing which is capable of actuating indicating devices in a continuous fashion to note the changes in the level of the material in the hopper.

3,697,709

BYPASS AND ISOLATION SWITCH

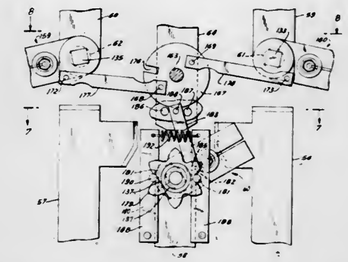
Dominik M. Witkor, Cranford, N.J., assignor to Automatic Switch Company

Filed Dec. 20, 1971, Ser. No. 209,514

Int. Cl. H01h 31/00

U.S. Cl. 200—48 R **11 Claims**

A switch including three conductors for connection, respectively, to a normal power source, an emergency power source, and a load, as well as three conductors for connection to an automatic transfer switch. An isolating switch contact is located between each power source conductor and one of the transfer switch conductors, and a bypass contact is located between the load conductor and the third transfer switch conductor. Manually operable control means are provided for opening and closing the isolating switch contacts, and for positioning the bypass contact so that it engages either its respective transfer switch conductor or one of the power source conductors. An interlock forming part of the control means prevents opening of the isolating switch contacts unless the bypass contact is engaging one of the power source conductors. The interlock also prevents disengagement of the bypass contact from either power source conductor unless the isolating contacts are closed. The control means also includes means defining only a limited number of stable positions of the bypass contact.



3,697,710

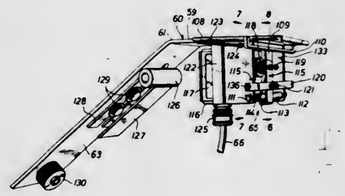
TRIGGER ASSEMBLY FOR ARTICLE CONVEYING MACHINE

Earl K. Jarrett, Corpus Christi, Tex., assignor to Clayton Specialties, Inc., Corpus Christi, Tex.

Division of Ser. No. 771,744, Oct. 30, 1968, Pat. No. 3,604,366. This application May 10, 1971, Ser. No. 141,501

Int. Cl. H01h 3/16

U.S. Cl. 200—61.41 **13 Claims**



In one exemplar form, a machine for conveying substantially flat articles such as pans containing bakery product dough pieces and for suitably manipulating the flat articles for any suitable purposes includes a trigger assembly for actuating the article manipulating means. The trigger assembly is readily adapted to be engaged by articles being moved by the conveying mechanism of the machine for achieving such manipulation and is also adapted for suitable movement responsive to particular positioning of the articles on the conveyor so that the trigger assembly does not interfere with efficient operation of the conveyor mechanism.

3,697,711

SNAP ACTION SWITCH

Elton E. Tetrick, Draper, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

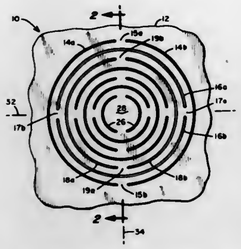
Filed June 29, 1971, Ser. No. 157,907

Int. Cl. H01h 13/48

U.S. Cl. 200—67 DB **1 Claim**

An electromechanical switch that includes an electrically conductive sheet having a spring-like pattern of apertures

therethrough, a printed circuit electrical conductor and an apertured insulating spacer therebetween for permitting the



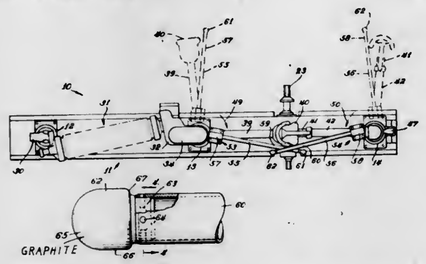
center portion of the pattern to make electrical contact therewith when the pattern is forced out of the plane of the conductive sheet by an actuatable plunger.

3,697,712

HIGH VOLTAGE SWITCH WITH PREINSERTION RESISTOR CONNECTED IN THE CIRCUIT THROUGH GRAPHITE CORONA BALLS

Leonard V. Chabala, Maywood, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,550
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R **5 Claims**



Conducting arms connected in parallel with the switch blades of a center break disconnecting switch through pre-insertion resistors have graphite corona balls at their distal ends to provide arcing surfaces that are unimpaired when impinged by arcs and relatively light weight to minimize inertia.

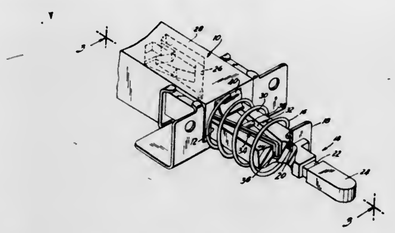
3,697,713

ALTERNATE ACTION MECHANISM WITH DRIVING MEMBER MOVABLE OUT OF ENGAGEMENT WITH LATCHING CHANNEL IN UNLATCHED POSITION

Masao Ohkita, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1971, Ser. No. 191,327
Claims priority, application Japan, March 27, 1971, 46/18269
Int. Cl. H01h *13/56*
U.S. Cl. 200—153 J **16 Claims**

A pushbutton switch of the type actuated by a push-push motion of a control member is provided with a compact miniaturized structure having means to facilitate smooth operation with a minimum of frictional resistance and at the same time to provide a sharp and reliable switching action. The switch body is provided with a generally heart-shaped channel adapted to receive the upstanding end of a driving member which in turn is carried by a push rod slidable into and out of the switch body between its two operative positions. The channel is stepped to provide positive snap action switching and means are provided to impart a seesaw motion to the driving member, thereby to move the upstanding end thereof into positive camming engagement with the stepped upper surface of the channel, yet to maintain that upstanding end spaced from the upper surface of the channel over a substantial portion of its operating path.



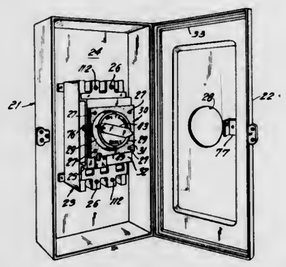
Means are provided on the switch body for engaging the driving member first on one side and then at the other side of the pivotal support projection thereby to bias the upstanding end of the driving member into and out of engagement with the stepped channel surface as the push rod is moved between its two operative positions.

3,697,714

ROTARY HANDLE OPERATOR WITH REVERSIBLE COVER LATCH

Carl E. Gryctoko, Haddon Heights; Albert Strobel, Cherry Hill, both of N.J., and Kenneth D. Ball, Warminster, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 28, 1971, Ser. No. 166,718
Int. Cl. H01h *3/10*
U.S. Cl. 200—172 A **10 Claims**



A handle mechanism for operating a molded case circuit breaker secured to the rear wall of an enclosure is mounted separate from the enclosure cover and extends through a cover opening to be operable from outside the enclosure when the cover is closed. The mechanism is constructed so as to be readily adapted for use with enclosure covers that are hinged at either side of the enclosure.

3,697,715

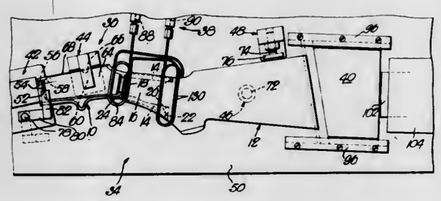
METHOD OF, AND APPARATUS FOR, BURN-FITTING WOODEN GUN STOCKS TO METAL RECEIVERS

Stephen J. Morris, North Haven, and James M. O'Keefe, Cheshire, both of Conn., assignors to The Marlin Firearms Co., North Haven, Conn.

Filed June 4, 1971, Ser. No. 149,904
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.43 **10 Claims**

Method of, and apparatus for, fully seating on a receiver end the ends of tangs on a wooden gun stock, of which the stock tangs are partially interprojected with receiver tangs on

the receiver end, and have excess wood interfering with their full interprojection with the receiver tangs, with the partially interprojected receiver and stock being placed in a holding fixture, and only part of the held receiver therein, including its



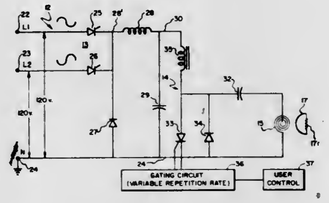
end, being subjected to high-frequency induction heating to stock-burning temperature, whereupon the stock is driven into full interprojection with the held receiver to the extent of a complete burn-fit of the stock tang ends with the receiver end.

3,697,716

INDUCTION COOKING POWER CONVERTER WITH IMPROVED COIL POSITION

William P. Kornrumpf, Schenectady, N.Y., assignor to General Electric Company

Filed Nov. 19, 1971, Ser. No. 200,530
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **11 Claims**



In a solid state cooking appliance for inductively heating a cooking utensil, the static power converter has a d-c power supply energized by a single phase, three-wire source than enables the use of the distribution system neutral as a continuously grounded d-c terminal. The induction heating coil in an inverter operated at ultrasonic frequencies is positioned in the circuit with the outer turn connected directly to the grounded neutral. Capacitively coupled leakage current in the utensil is reduced.

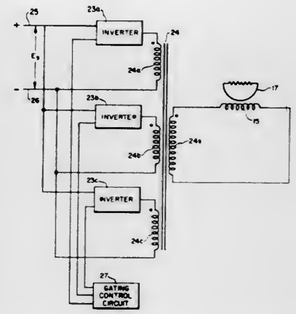
3,697,717

INDUCTION COOKING APPLIANCE WITH MULTICYLINDER POWER CIRCUITS

William P. Kornrumpf, and John D. Harnden, Jr., both of Schenectady, N.Y., assignors to General Electric Company

Filed Nov. 19, 1971, Ser. No. 200,528
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **11 Claims**

In a smooth-top cooking appliance for inductively heating cooking utensils, the individual outputs of a plurality of lower power rated solid state inverters are coupled by a transformer into a common secondary winding that supplies ultrasonic frequency power to the induction heating coil. The output



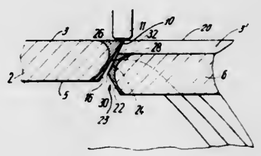
power of the multicylinder inverter is controlled to obtain a wide range of heating levels. One embodiment is used to synthesize a continuous sinusoidal output waveform.

3,697,718

METHOD FOR MANUFACTURING WELDED PIPES OR TUBES WITH HELICAL SEAM

Dieter Von Hollen, and Heinz Holder, both of Dusseldorf-Rath, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 12, 1971, Ser. No. 115,020
Claims priority, application Germany, Feb. 13, 1970, P 20 07 668.0
Int. Cl. B23k *1/16*
U.S. Cl. 219—62 **4 Claims**



Pipes are made from helically wrapped strips, having one edge uniformly bevelled, the other one roof shaped with h-f heating of the two edges, where one roof side faces the uniform bevel surface. This joint is pressure welded, and the resulting groove is filled by subsequent fusion welding without requiring removal of any burr from the groove.

3,697,719

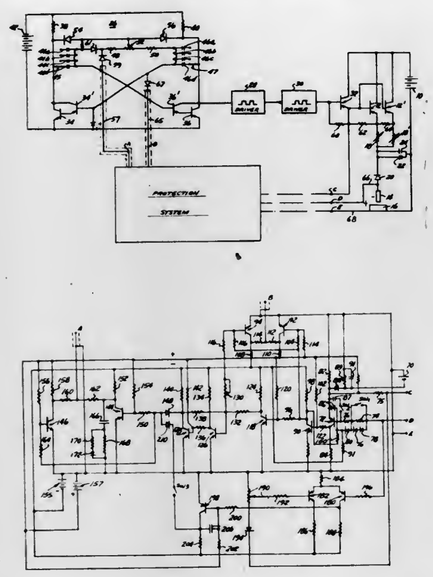
PULSE NARROWING AND CUT-OFF PROTECTION SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Dalton R. Verner, Orchard Lake, and Ronald L. Syria, Utica, both of Mich., assignors to Elox Inc., Davidson, N.C.

Filed March 10, 1971, Ser. No. 122,936
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 S **23 Claims**

A protection circuit is provided which senses and responds to gap short circuit condition during machining pulse on-time. Responsive to such condition, a machining current cut-off function is exercised by a complementary pair of electronic

switches which operate with positive action to control pulser operation by decreasing the "on" time of the pulser and decreasing off-time. An additional means is provided for ap-

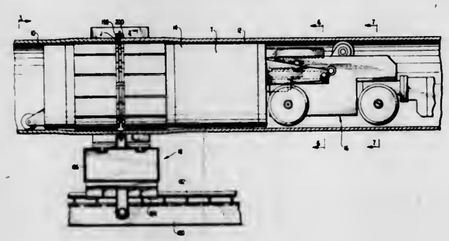


propriate limiting machining current by sensing gap open circuit condition during pulse on-time and correspondingly, through the operation of a complementary pair of electronic switches, increasing the "off" time of the pulser.

3,697,720
PIPE WELDING APPARATUS AND METHODS THEREFOR

John Christopher, Redwood City, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed Jan. 21, 1971, Ser. No. 108,383
Int. Cl. H05b 5/00; B23k 9/02; B21j 13/08
U.S. Cl. 219—8.5 **30 Claims**

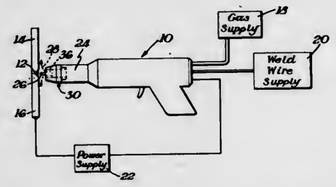


The pipe welding apparatus includes a longitudinally movable welding station, a longitudinally movable nest housing a traveller including a pipe aligner and expander and a traction assembly. A pair of pipe sections are butted one to the other and the welding station is displaced into alignment with the joint. The nest is moved to an end of a pipe section remote from the joint and the traveller moves from the nest through the pipe section to the joint. The pipe aligner and expander has a plurality of circumferentially arranged shoes which move radially outwardly to enlarge the butting end portions of the pipe sections and to draw the pipe sections axially toward one another when welding. The welding station includes an induction welder. Upon completion of the welding, the traveller returns to the nest.

3,697,721
PYROLYTIC GRAPHITE NOZZLES AND GUIDE TUBES FOR WELDING TORCHES

William A. Robba, Shoreham, and George A. Klasson, Port Washington, both of N.Y., assignors to Air Products and Chemicals, Inc., Allentown, Pa. and Pfizer, Inc., New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,040
Int. Cl. B23k 9/00
U.S. Cl. 219—136 **6 Claims**

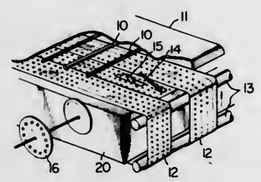


The removable nozzle for a gas-shielded welding torch is surfaced with pyrolytic graphite to prolong nozzle life and to render the inner surface thereof less adherent to weld splatter thereby facilitating cleaning. The pyrolytic graphite is oriented with a–b planes concentric with the nozzle axis. The surfacing may be accomplished by securing an insert of appropriately oriented pyrolytic graphite within the exit end of the nozzle. A removable wire guide tube having an outer surface of oriented pyrolytic graphite is also optionally provided.

3,697,722
HEATING DEVICE FOR COPYING MACHINES

Masayoshi Furuichi, and Takaaki Konuma, both of Tokyo-to, Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed June 29, 1971, Ser. No. 157,990
Claims priority, application Japan, June 30, 1970, 45/57066
Int. Cl. H05b 3/00
U.S. Cl. 219—216 **4 Claims**

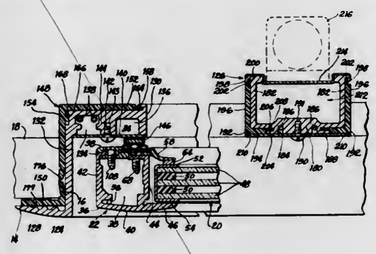


In a heating device for a copying machine comprising a conveyor for continuously conveying a copying paper and an electric heater for heating the copying paper a rotatable body is arranged to be rotated by the movement of the copying paper and means responsive to the rotation of the rotatable body for deenergizes the electric heater when the speed of the copying paper decreases to a value less than a predetermined value.

3,697,723
MULLION CONSTRUCTION FOR REFRIGERATOR DOOR FRAME

Robert J. Winsler, Elkton, Ky., and Fred A. Richter, Chicago, Ill., assignors to Ardco, Inc., Chicago, Ill.

Continuation of Ser. No. 5,392, Jan. 2, 1970, abandoned, which is a division of Ser. No. 611,020, Jan. 23, 1967, Pat. No. 3,499,245. This application Dec. 24, 1970, Ser. No. 101,384
Int. Cl. H05b 1/00
U.S. Cl. 219—218 **5 Claims**

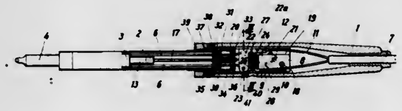


A mounting frame for a refrigerator door is disclosed, having a channel-shaped mullion with a front wall and a pair of side walls. Two angle-shaped insulating cover strips are mounted on the mullion. Each cover strip has a side leg covering one of the side walls thereof, and a front leg covering the adjacent portion of the front wall. A lip is provided on each side wall to retain the corresponding side leg. The front wall is formed with a pair of lips to retain the front legs. A cover plate, made of magnetic stainless steel or the like, is secured to the front wall so as to cover the front legs. The cover plate serves as an armature for a magnetic gasket on the door.

3,697,724
ELECTRIC SOLDERING IRON WITH ADJUSTABLE THERMOSTATIC TEMPERATURE CONTROL

Friedrich Hombrecher, Wertheim/Main, Germany, assignor to Ersa Ernst Sachs K.G., Wertheim/Main, Germany

Filed May 26, 1970, Ser. No. 40,532
Claims priority, application Germany, June 11, 1969, P 19 29 938.8
Int. Cl. H05b 1/02; B23k 3/04; H01h 37/46
U.S. Cl. 219—241 **10 Claims**

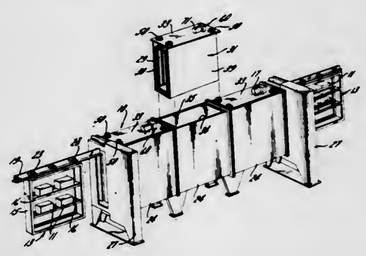


An electric soldering iron has a hollow handle connected to an outer tube in which there is a heating element operatively associated with a soldering tip and including a heating core fixed at the front end of the outer tube. A rod having a very low coefficient of thermal expansion is secured to the inner end of the heating core and extends into the hollow handle. A microswitch is oscillatably mounted in a unit in the hollow handle, and a pivotally mounted angle lever is also oscillatably mounted in the hollow handle and has a longer arm cooperable with the plunger of the microswitch. The shorter arm of this angle lever is engaged by the rod. The temperature setting of the soldering iron may be changed by adjustment of a screw, accessible from the exterior of the handle, and operative both on the microswitch and on the lever. The longer arm of the lever carries an abutment which is engageable with the microswitch at a point spaced substantially from the oscillating axis of the microswitch. In an alternative embodiment, adjustment of the temperature setting is effected by relative rotation of a handle element threaded onto the handle and cooperable with a temperature setting scale.

3,697,725
HEATING APPARATUS WITH REMOVABLE HEATING ELEMENTS AND SHIELDS

Irvin P. Bielefeldt, Loves Park, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed May 6, 1971, Ser. No. 140,661
Int. Cl. F27b 9/06
U.S. Cl. 219—388 **5 Claims**

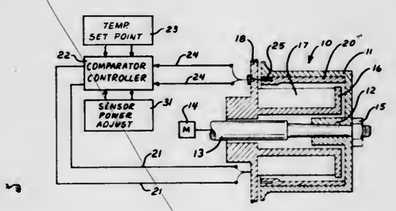


The heating elements and heat shields of a vacuum furnace are constructed as a unitary cartridge which may be removed easily from the outer vessel of the furnace to facilitate servicing of the heating elements and the heat shields and to reduce the down time of the furnace. A drive mechanism for advancing workpiece carriers through the furnace also is incorporated into the removable cartridge.

3,697,726
HEATED ROLL TEMPERATURE MEASUREMENT COMPENSATOR ASSEMBLY

Robert L. Geronime, Rosemount, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sept. 17, 1971, Ser. No. 181,435
Int. Cl. H05b 1/02
U.S. Cl. 219—469 **8 Claims**



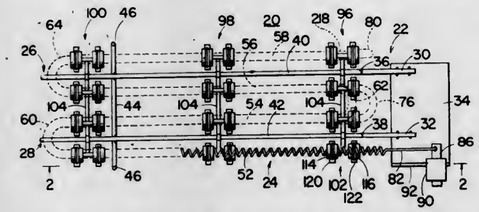
A temperature measurement and control device for rotating heated rolls, such as those used in the fiber processing industry. The temperature sensor is stationarily mounted and positioned in a slot at one end of a rotating roll, and the sensor is used for controlling power to a heater utilized with the roll. The sensor thus is used to control the temperature of the roll surface. At high roll speeds the thermal coupling between the sensor and the roll is adequate, but at lower speeds that are encountered during the slowing down and stopping of the rolls,

the thermal coupling between the roll surfaces and the sensor reduces in efficiency and the sensor conducts a large proportion of heat to its mounting structure. The present device utilizes passing a current through the sensor to self-heat the sensor to compensate for this decrease in thermal coupling and resultant stem conduction error.

3,697,727
OPEN COIL ELECTRIC HEATER

Charles E. Neuman, Delphos, Ohio, and Leland R. Shank, Angola, Ind., assignors to Ohio Decorative Products, Inc., Spencerville, Ohio

Filed July 2, 1970, Ser. No. 51,971
Int. Cl. H05b 3/06
U.S. Cl. 219—532 **10 Claims**

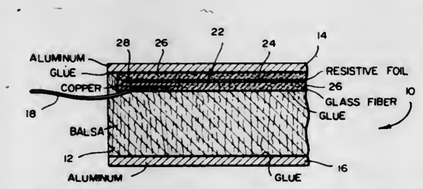


An electric heater for use in a heating appliance, such as a clothes dryer, including a frame member and a heating element supported by and spaced from the frame member. Spool insulators respectively are positioned to surround the heating element and yoke members are connected to the frame and respectively are adapted to receive and retain the spool insulators in snap-in relationship thereby supporting the heating element sections on the frame member. The heater is assembled by threading the spool insulators onto the heating element, arranging the insulators on the heating element in a desired pattern with the insulators respectively aligned with the yoke members of the frame member, and applying force to the insulators to cause the yoke members resiliently to receive and retain the insulator spools. The apparatus for assembling the heater comprises a member respectively having grooves therein for holding the heating element and the spool insulators in a position which allows the frame to be disposed over the assembly member with the yoke members aligned with the spool insulators. A compressive force may then be applied between the member and the frame thereby causing the spool insulators to be resiliently received and retained by the yoke members of the frame.

3,697,728
HEATING DEVICES

George H. Stirzenbecher, Starnberg, Germany, assignor to Air Plastic Service GmbH, Munich, Germany

Filed Dec. 4, 1969, Ser. No. 882,060
Claims priority, application Germany, Dec. 13, 1968, G 68 11 245.8; Dec. 13, 1968, G 68 11 246.9
Int. Cl. H05b 3/18
U.S. Cl. 219—548 **1 Claim**

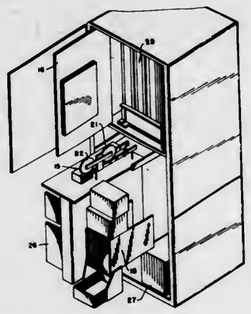


An airplane heating device. The device constitutes a light weight panel which generates heat uniformly over a broad area through the use of a heating foil composed of a flexible substrate coated or impregnated with a resistive material such as carbon particles in a resinous matrix. The foil is, in turn, embedded in a resinous-impregnated electrically nonconductive flexible substrate to form a sheet. The sheet is disposed on a light weight stiff panel of a material such as balsa or rigid foam to form a subassembly that is sandwiched between thin protective covers such as metal or plastic sheets. The heating panel can be used as a wall or floor heating plate in an airplane or as a component of a container-type airplane heating device such as a portable hotplate stove.

3,697,729
DISPENSING SYSTEM AND SECURITY CARD FOR USE THEREWITH

John David Edwards, 21 Heathhurst Road, Sanderstead, Surrey; Leonard Perkins, 3 Amhurst Gdws., Ealing, London W13; John Henry Donald, 34 Chamberley Avenue, London SW20; Peter Lee Chappell, 24 Doodcrest K I, Surrey, all of England; Sean Benjamin Newcombe, 73, Lynnmouth Crescent, Rumney, Cardiff, Wales, and Malcolm David Roe, 22 Elmhurst Avenue, Surrey, England

Filed Sept. 1, 1970, Ser. No. 68,650
Claims priority, application Great Britain, Sept. 9, 1969, 44,452/69
Int. Cl. G06k 7/10; G07f 1/06, 11/00
U.S. Cl. 235—61.7 B **21 Claims**



Apparatus for dispensing items desired by the user in response to the introduction of a valid security card and additional predetermined information. The apparatus includes means for reading data from the security card, keyboard means for introducing additional information and electronic logic for determining the validity of the card and the validity of the predetermined information. A security card is provided including a first area to record the number of uses of said card and a second area to record the date of the last use. The apparatus includes logic to prevent dispensing and to retain the card if the card has been used more than a predetermined number of times or more than once within a predetermined time interval.

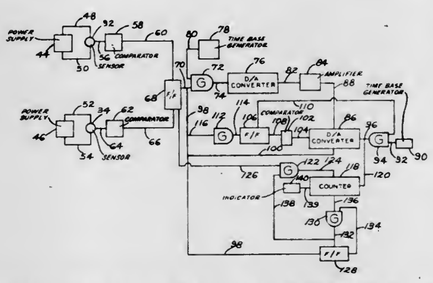
3,697,730
APPARATUS TO PRODUCE DATA COUNT SIGNALS

Peter Joseph Clack; James David Wiswell, and Anton Hubert Clemens, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 26, 1971, Ser. No. 119,263
Int. Cl. G06m 3/08
U.S. Cl. 235—92 MT **5 Claims**

Apparatus to produce data count signals in a form equivalent to $C/n \pm C'$, wherein n is a variable and C and C' are constants is described comprising a source of an initiating signal, a source of a terminating signal, a first time-base generator, a first gated digital/analog convertor, an amplifier, a second time-base generator, a gated counter and a circuit

component for adding or subtracting a desired number of pulses to the gated counter. The two signal sources, the first time-base generator, and the first convertor are connected so that the pulses accumulated in the first convertor between the initiating signal and the terminating signal are directly proportional to n. The amplifier is connected between the first and second convertors so as to apply an amplified reference signal to the second convertor which is directly proportional to n.

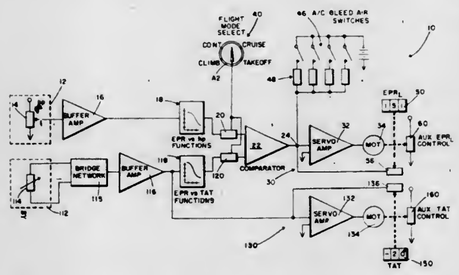


The two signal sources, the second time-base generator, the second convertor, the counter and the comparator are connected so as to produce an output signal in the counter directly proportional to C/n. The component for adding or subtracting pulses is connected to the counter so that the counter output is directly proportional to $C/n \pm C'$. This apparatus is especially useful to measure specific gravity of liquids by the falling drop method.

3,697,731
METHOD AND APPARATUS FOR DETERMINING MAXIMUM ALLOWABLE JET ENGINE PRESSURE RATIOS

James L. Kempema, Grandville, and Ralph W. Foard, Grand Rapids, both of Mich., assignors to Lear Siegler, Inc.

Filed Feb. 17, 1969, Ser. No. 799,810
Int. Cl. G06g 7/70; G01l 5/13
U.S. Cl. 235—150.2 **9 Claims**

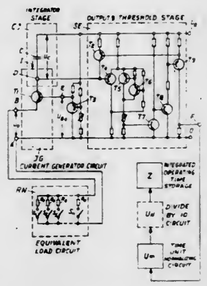


An instrument comprised of inputs for receiving signals proportional to aircraft pressure altitude and compressor inlet temperature, which are coupled to function generators that produce outputs respectively representative of maximum engine pressure ratio at such altitude and at such temperature conditions, comparator means for receiving the functions so generated and selecting the one representative of the lowest allowable engine pressure ratio at such conditions, and a servo drive for a visual readout display of maximum engine pressure ratio. The instrument also includes system inputs for modifying the result to be displayed, in accordance with different flight modes of the aircraft, and also in accordance with compressor bleed air tapped from the engine for use in auxiliary aircraft systems.

3,697,732
MULTIPLE OPERATING HEAD MACHINES, PARTICULARLY MULTIPLE SPINDLE TEXTILE SPOOLING MACHINES WITH SUPERVISORY OPERATING TIME INDICATOR

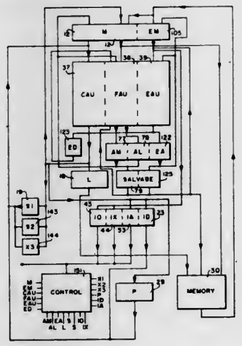
Walter Duss, Bach, Switzerland, assignor to Siegfried Peyer, Bach, Switzerland

Filed Jan. 11, 1971, Ser. No. 105,303
Claims priority, application Switzerland, Jan. 14, 1970, 479/70
Int. Cl. G06f 15/46
U.S. Cl. 235—151.3 **8 Claims**



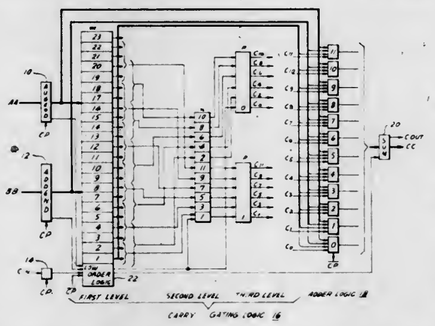
numbers already stored in the corrector circuit to produce a proper signal on a readout device associated therewith.

3,697,734
DIGITAL COMPUTER UTILIZING A PLURALITY OF PARALLEL ASYNCHRONOUS ARITHMETIC UNITS
William C. Booth, Reisterstown, Md., and Leslie T. Kyser, Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.
Filed July 28, 1970, Ser. No. 58,970
Int. Cl. G06f 7/48
U.S. Cl. 235—164 **18 Claims**



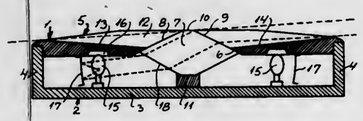
A digital computer in which the overall speed of operation is increased above that of other present-day computers. This increase in the speed of operation is achieved by (a) the utilization of flow-through devices in the arithmetic units, and (b) dividing the arithmetic units into several parts to handle the arithmetic modifications of control words, arithmetic modifications of fractions, and arithmetic modifications of exponents simultaneously. The control functions of this computer are clock-controlled, but the memory may be any random access or sequential memory. The logical design of the overall system is arranged to accomplish the desired objects of high speed.

3,697,735
HIGH-SPEED PARALLEL BINARY ADDER
Lawrence G. Hanson, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed July 22, 1969, Ser. No. 843,524
Int. Cl. G06f 7/385, 7/38
U.S. Cl. 235—175 **6 Claims**



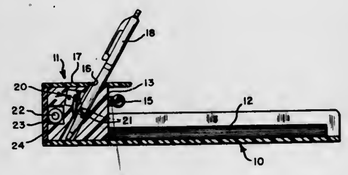
There is described a parallel adder for operands of 48 bits in which the carry information is generated simultaneously for all orders. The carry logic, consisting entirely of AND gates, is arranged in three levels. The adder consists of independent subadders of four orders each. The carry logic and subadders combine to form a maximum of four cascaded gate levels for generating the sum of any order of bits. Duplicate true and false logic is used at all levels. The second and third levels of the carry logic are arranged in an interleaved configuration to limit fanning.

3,697,736
AIRFIELD INSET RUNWAY LIGHT
Erik Frederiksen, Birkerod, Denmark, assignor to Laur. Knudsen, Nordisk Elektricitets Selskab, Copenhagen, Denmark
Filed Nov. 24, 1970, Ser. No. 92,353
Claims priority, application Denmark, Nov. 26, 1969, 6269/69
Int. Cl. B64f 1/20
U.S. Cl. 240—1.2 **5 Claims**



In an airfield inset runway light a prism of substantially rhombic cross section is mounted in a housing with the major axis of the rhomb in substantially horizontal position and the prism is illuminated from two sides below the major axis in order to radiate rays from the upper surfaces of the prism so that the radiated rays form a small angle with the horizontal direction.

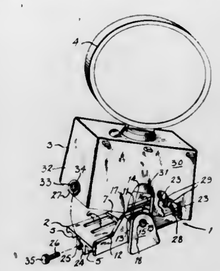
3,697,737
NOTE PAD HOLDER WITH NIGHT LIGHT
Henry S. Levkoff, 1 Carlton Road, Great Neck, N.Y.
Filed Aug. 10, 1970, Ser. No. 62,571
Int. Cl. F21v 33/00
U.S. Cl. 240—6.4 B **1 Claim**



A holder for a memo pad is provided with a night light which is operable by removing from a receptacle in the holder a pen or pencil for writing on the pad.

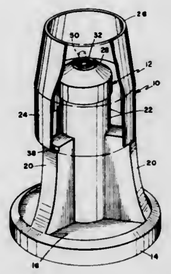
3,697,738
WARNING LIGHT HOUSING
Wilton K. Decker, Port Washington, Wis., and Valere F. Van De Velde, 601 South Illinois, Villa Park, Ill., assignors to said Van De Velde, by said Decker
Filed March 2, 1971, Ser. No. 120,243
Int. Cl. F21l 3/00
U.S. Cl. 240—10.6 **6 Claims**

A housing for an electric warning light comprising a base functioning as a platform to support batteries, a casing enclosing a region above the base, and a lens and lamp assembly atop the casing. The casing attaches to the base by a pivoted connection, which allows for speedy separation of the two members, and the base is a cantilevered member with an upstanding pier at one side from which the housing is supported by a through bolt protruding from the pier. A relatively thin shroud



extends upward from the margin of the side of the base at which the pier is positioned, and a channel on the outboard side of the pier complements an arcuate notch in a side of the casing to form a wind and water repellant union of the base and casing at the point where the housing is mounted.

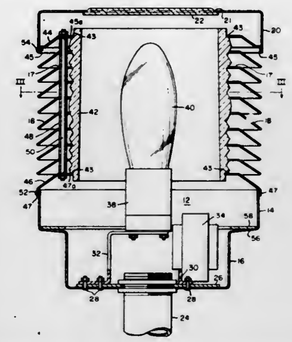
3,697,739
FUEL BURNING TABLE LAMP
David M. Novak, 17464 Ivy, Fontana, Calif., and Roberty E. Brown, P.O. Box 393, Elsinore, Calif.
Filed July 8, 1971, Ser. No. 160,689
Int. Cl. F21l 19/00
U.S. Cl. 240—17 **3 Claims**



A fuel burning table lamp naving an upright, central, cylindrical sleeve resembling a candle that is supported with radial legs on a heavy base. A fuel container for fuel burning lamp unit fits in the upper part of the cylindrical sleeve and is shielded by a reflector element positioned on the top of the legs to show the bottom portion of the cylindrical sleeve. The cylindrical sleeve resembles a candle even though the light is provided by a normal wick immersed in the fuel container. The base is weighted to make it difficult to turn over or to carry away. The fuel unit is easily replaceable.

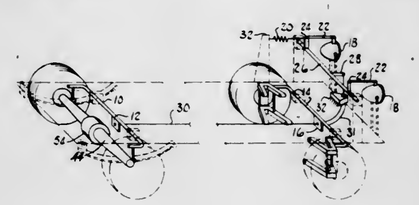
3,697,740
AREA LIGHTING LUMINAIRE
Charles P. Breed, Alexandria, Va., and Melvin R. Anderson, Avon Lake, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 10, 1969, Ser. No. 883,965
Int. Cl. F21v 11/02, 13/04
U.S. Cl. 240—46.37 **1 Claim**

An area lighting luminaire which includes a base having a lamp socket and lamp mounted thereon and extending above the base. The lamp and lamp socket are surrounded by a light distributing housing which includes a cylindrical fresnel lens surrounded by a plurality of stacked annular louvers spaced one from the other and extending radially and downwardly to



shield the lens and lamp from view at viewing angles of horizontal and above. A cover member closes off the top of the light distributing housing and may include a central lens portion for the vertical release of light.

3,697,741
MECHANICAL HEADLAMP ADJUSTING MEANS
Gideon Petrus Schoeman Yssel, P. O. Noordburg, Potchefstroom, Transvaal, Republic of South Africa
Filed May 26, 1970, Ser. No. 40,605
Claims priority, application South Africa, May 29, 1969, 69/3851
Int. Cl. B60q 1/00
U.S. Cl. 240—7.1 **10 Claims**

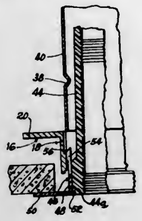


Mechanical arrangements for automatically raising or lowering of light beams emitted by vehicle headlamps responsive to uneven sag of the vehicle body at the front and at the rear, the arrangements providing flexible connections extending between parts associated with and movable relative to sprung and unsprung vehicle members and adapted to control the operation of a light beam adjusting mechanism in or against a direction of applied resilient biassing. The flexible connections being of a kind for leading along tortuous paths as may be required on different vehicles.

3,697,742
TRIM RING FOR ARCHITECTURAL LIGHT INCLUDING MEANS FOR STEPPED ROTATIONAL AND AXIAL ADJUSTMENT
Mitchell Bobrick, Beverly Hills, Calif., assignor to Air King Corporation
Filed Sept. 4, 1970, Ser. No. 69,547
Int. Cl. F21v 21/22
U.S. Cl. 240—78 HA **5 Claims**

A recessed lighting fixture is provided in which the trim ring has a number of substantially vertical hanger members which

cooperate with stepped shoulders carried by the lower portion of the main cylindrical frame of the fixture to provide selective

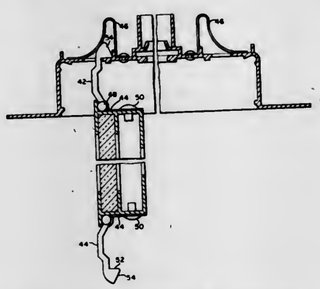


axial height adjustment of the trim ring with respect to the frame.

3,697,743
HINGE AND LATCH MECHANISM FOR FLUORESCENT LUMINAIRE

William R. Eargle, Vicksburg, Miss., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,614
Int. Cl. F21v 17/00
U.S. Cl. 240—147 9 Claims



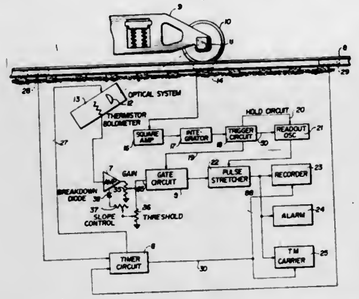
In a recessed fluorescent luminaire an improved combination hinge and latch mechanism which includes a plurality of inverted L-shaped latch members with raised curved cam portions on the upper ends thereof rotatably secured to the frame of the light-transmitting luminaire door or closure. The luminaire housing includes laterally extending flanges on the side walls adjacent the bottom or open end having apertures therethrough at locations complementary to the locations of the latch members on the door. Curved leaf springs overlie the apertures and are constructed and arranged to cooperate with the curved cam portion of the latch member to releasably retain the latch members in a latched position. When the latches on one side of the luminaire are released the latches on the opposite side serve as hinges through their rotatable connection to the door frame.

3,697,744
HOT BOX DETECTOR OPERABLE WITH DIVERSE TYPE BEARING ASSEMBLIES

Roland A. Howell, 3814 Woodbrook Drive, Chattanooga, Tenn.

Filed April 29, 1970, Ser. No. 32,909
Int. Cl. B61k 9/06; B61l 3/06
U.S. Cl. 246—169 D 7 Claims

An electronic hot box detector provides for giving alarm signals in response to overheated bearings of moving railroad cars. Special electronic control circuits avoid either errors of omission of a reading when a bearing heated above a predetermined temperature is presented or false alarms from other heated bodies in the train. Nevertheless, the detector senses overheated bearings of different types that present diverse temperature ranges. Thus precisely controlled electronic gates

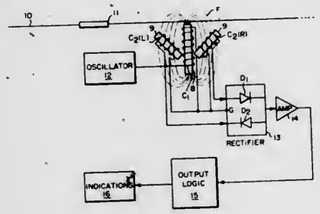


are used to sense thermal samples which are processed through amplifier circuits providing non-linear amplification characteristics to establish a readable range encompassing the desired thermal variations of both roller bearing and friction bearing assemblies.

3,697,745
FLUX NULLED WHEEL DETECTOR

Norman A. Bolton, Scottsville, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 18, 1970, Ser. No. 38,085
Int. Cl. B61l 13/04
U.S. Cl. 246—249 9 Claims



An apparatus for detecting the presence of a ferro-magnetic vehicle wheel has been provided. A primary coil energized with an alternating current input signal produces a magnetic field in the vicinity of the rail on which the wheel is moving. A secondary coil responsive to the field is aligned in the primary field such that a null or zero signal exists at the output of the secondary in the absence of a vehicle wheel. The presence of a wheel in the primary field disturbs that field sufficiently to produce an output in the secondary coil, thus providing indication of wheel presence.

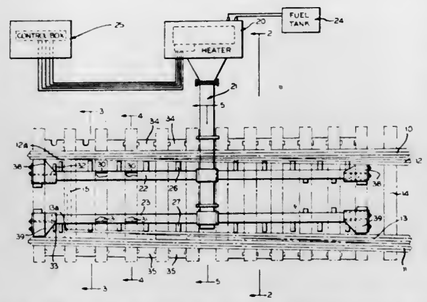
3,697,746
RAILROAD SWITCH HEATER

Gordon I. Patterson, Dollard Des Ormeaux, and Dugald J. Telfer, Chomedy, Quebec, both of Canada, assignors to Vapor Corporation, Chicago, Ill.

Filed May 26, 1971, Ser. No. 147,085
Int. Cl. E01b 7/24
U.S. Cl. 246—428 5 Claims

A heater for a railroad track switch using forced hot air to heat the area between the moving and fixed rails to maintain the area free of ice and snow, and to heat the side plates and maintain them free of ice and snow, including duct work and

distribution outlets for distributing hot air evenly over the entire switch length in the areas where the elimination of snow

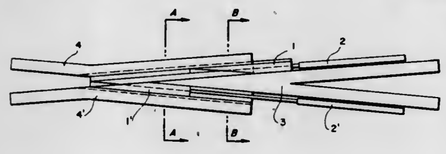


and ice will permit the movable rails to operate freely and easily.

3,697,747
FROG

Curt Edeling, Essen-Rellinghausen, and Joseph Eisenmann, Munich, both of Germany, assignors to Elektro-Thermit GmbH, Berlin, Germany

Filed June 29, 1970, Ser. No. 50,660
Claims priority, application Germany, July 2, 1969, P 19 33 451.1
Int. Cl. E01b 7/10
U.S. Cl. 246—468 5 Claims

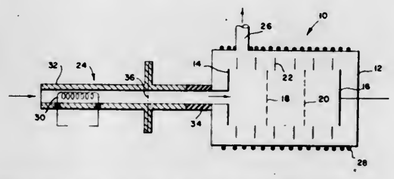


This invention relates to an improved frog including movable wedge means for closing the gap between the frog point and the wing rail.

3,697,748
PLASMA CHROMATOGRAPH WITH INTERNALLY HEATED INLET SYSTEM

Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Continuation-in-part of Ser. No. 779,096, Nov. 26, 1968. This application Oct. 6, 1969, Ser. No. 864,046
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—41.9 TF 8 Claims

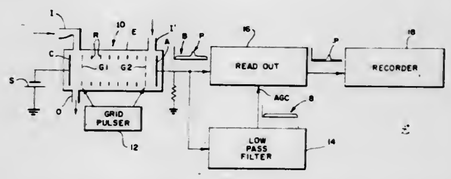


Response time of drift-cell apparatus for measuring trace gases is improved by heating the drift cell walls and/or the sample inlet to reduce the accumulation of sample substances. Heated filters and electrode structures with tortuous gas paths are also disclosed.

3,697,749
APPARATUS AND METHODS FOR ENHANCING THE DETECTION OF SMALL-SOURCE PLUMES FROM MOVING AIRCRAFT

Roger F. Wernlund, Lake Worth, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Sept. 30, 1970, Ser. No. 76,797
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 D 19 Claims

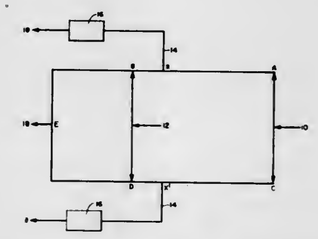


Detection of small-source plumes, as by an airborne instrument, wherein ions formed from the molecules of a gaseous sample and collected by the airborne instrument are segregated in a drift field, and signals produced in response to the detection of the segregated ions are separated into short-duration plume signal components and long-duration background components. The short-duration components are indicated with enhanced resolution.

3,697,750
METHOD FOR THE DETECTION OF CHANGE IN DENSITY OF A CARRIER GAS AND APPARATUS THEREFOR

Orville F. Folmer, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 1, 1971, Ser. No. 111,514
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 D 4 Claims



An improved method and apparatus for the detection of minute changes in density of a carrier gas. The improvement comprises the use of outlet tubes for tapping off of small samples of reference gas and measuring the change in flow rate of the reference gas through the outlet tubes.

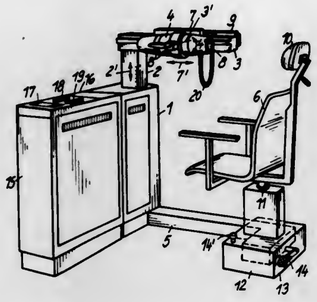
3,697,751
APPARATUS FOR RADIATION DIAGNOSIS

Edgar Tschunt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 21, 1969, Ser. No. 826,589
Claims priority, application Germany, May 29, 1968, P 17 64 389.9
Int. Cl. G01j 39/18; G01t 1/20
U.S. Cl. 250—50 9 Claims

An apparatus for radiation diagnosis having a radiation detector movably mounted on a support arm which is connected to a stand mounted in the housing of the apparatus. The ap-

paratus has an elongate support member secured to a lower end region of the housing below the support arm, which

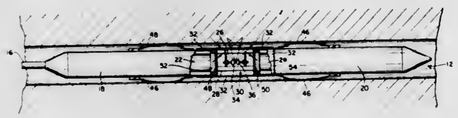


member is adapted to carry a chair for accommodating a patient.

3,697,752
PROBE FOR LOCATING SPECIFIC ELEMENTS IN A BOREHOLE

Ira Lon Morgan, and John R. Rhodes, both of Austin, Tex., assignors to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed April 1, 1969, Ser. No. 811,995
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R **6 Claims**



A borehole logging system which is able to identify specific elements by means of X-ray fluorescent analysis. The logging probe comprises a pair of symmetrical source and shield assemblies symmetrically mounted between two scintillation detectors. The detector outputs are fed into a field-effect transistor differential count rate circuit. The detectors are equipped with a pair of balanced filters whose K absorption edges fall on either side of an energy band that includes a characteristic radiation energy of the specific element under investigation.

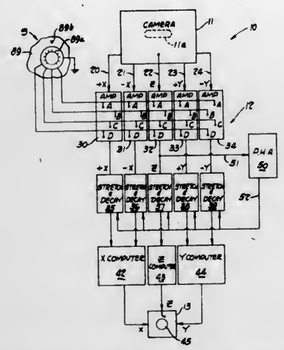
3,697,753
SCINTILLATION CAMERA HAVING A VARIABLE GAIN PLURAL AMPLIFIER SYSTEM

Ronald J. Martone, Cheshire, and Peter G. Mueller, Guilford, both of Conn., assignors to Picker Corporation, White Plains, N.Y.

Filed June 18, 1969, Ser. No. 834,346
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 S **11 Claims**

A scintillation camera system is disclosed having a scintillator camera which produces electrical signals corresponding to scintillation intensity and location on a scintillator. The system has circuitry for processing these signals including a plurality of signal amplifiers which individually amplify the intensity and location signals. The gain of these signal amplifiers is adjustable by a remote switch which alters the condition of gain control circuitry associated with the signal amplifiers.

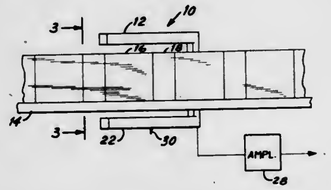
The disclosed signal amplifiers further include a control circuit which stabilizes the direct current (D.C.) output of the amplifiers at a particular level with respect to a reference voltage and yet permits output pulses to be produced without altering the output pulse amplitudes.



3,697,754
CONTAINER FILL WEIGHT MONITORING SYSTEM

Milton Maxwell, Livingston, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed April 17, 1969, Ser. No. 817,067
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 **5 Claims**



An apparatus for monitoring the mass or weight of consecutive individual containers moving on a conveyor unit including radiation means spaced from a conveyor unit for subjecting filled containers to a field of nuclear radiation. Suitable detection means detect the amount of radiation not absorbed by the filled containers and correlate this with the fill weight which is then translated to an electrical signal and fed to suitable recording means.

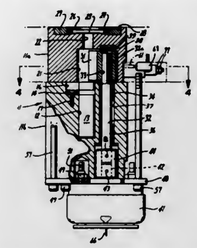
3,697,755
ENCLOSURE WITH RADIATION SOURCE HAVING FAIL SAFE SHUTTER

Mathew G. Boissevain, Los Altos Hills, and Robert C. Hill, Santa Clara, both of Calif., assignors to Measurex Corporation, Santa Clara, Calif.

Filed Jan. 17, 1969, Ser. No. 792,088
Int. Cl. G21h 5/00; G21f 5/02
U.S. Cl. 250—106 S **7 Claims**

Enclosure with radiation source having fail-safe shutter means comprising a body having a cavity formed therein with the radiation source disposed in the cavity. The body is provided with a passage through which radiation can pass. Shutter means is carried by the body and is movable between open and closed positions with respect to the passage. Means is provided for yieldably urging the shutter means towards a closed position and solenoid operated means is provided for moving the shutter means to an open position against the force of the yieldable means. Temperature responsive means independent

of the solenoid operated means is provided for moving the shutter means to a closed position when a predetermined tem-

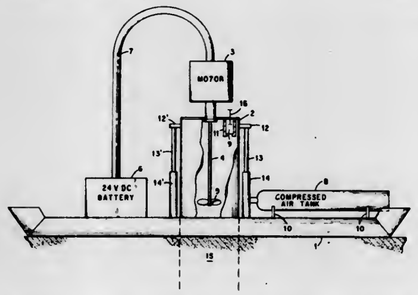


perature is reached even though the solenoid operated means remains energized.

3,697,756
DEVICE FOR INSERTING TAGGED SAND INTO OCEAN FLOOR

Elick H. Acree, Lenoir City; Hugh R. Brashear, Jr., Concord, and Forrest N. Case, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed July 7, 1971, Ser. No. 160,390
Int. Cl. G21h 5/02
U.S. Cl. 250—106 T **4 Claims**

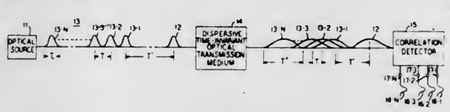


A device is provided for introducing an identifiable radioisotope tag into the ocean bottom in such a manner that a radiation material balance can be observed as the sand transport process occurs. The device comprises a cylinder having a motor-operated stirrer for admixing sand and a quantity of isotope tagged sand, the cylinder being mounted on a sled in such a manner that it can be depressed vertically by means of a hydraulic ram into the ocean bottom.

3,697,757
ARRANGEMENTS FOR DETECTING DISTORTED OPTICAL PULSES USING A CORRELATION TECHNIQUE

Julian Stone, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 8, 1971, Ser. No. 113,547
Int. Cl. H04b 9/100
U.S. Cl. 250—199 **11 Claims**

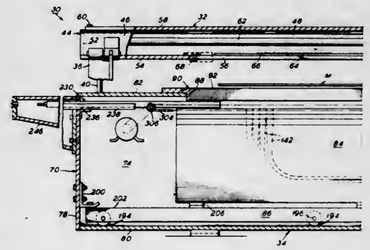


This application describes various arrangements for resolving a train of overlapping optical pulses. In each, a pilot pulse is used in conjunction with an information pulse train, to form a spatial pattern of cross-correlation functions of the information pulses. By selecting the time delay between adjacent pulses to be greater than the reciprocal of the pulse bandwidth, the correlation functions forming the aforesaid pattern are spatially resolvable. Thus, detection of each of the pulses of the train is realized by recording the peak of its corresponding correlation function.

3,697,758
PINHOLE DETECTOR WITH INTERNAL LIGHT SHIELD ASSEMBLY

Melvin J. Binks, 410 West Russell, Barrington, Ill.

Filed April 13, 1971, Ser. No. 133,511
Int. Cl. G01n 21/32; G05b 1/00; H01j 3/14
U.S. Cl. 250—202 **24 Claims**

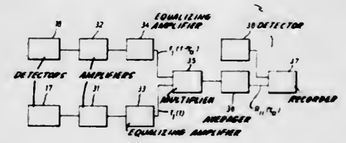


A light source is directed toward an elongated aperture in a scanner housing. A light-sensitive optical system within the housing generates a signal in response to light passing through a hole in a strip moving across the aperture. A light guide in the aperture consists of a louver-like array of light transmitting elements or channels. The light guide transmits only light received in a direction parallel to a plane which is substantially vertical and substantially parallel to the line of movement of the strip. A concealed, elongated edge light shield is supported within the housing, between the light guide and the pinhole-detecting, light-sensitive, optical system. An auxiliary light-sensitive element is carried by the inner end portion of the edge light shield in position to receive light passing through to the light guide at the edge of the strip. A drive motor and control automatically move the edge light shield along the aperture inside the scanner housing in response to a signal from the auxiliary light-sensitive element; this maintains the light-sensitive element vertically aligned with the edge of the strip, and prevents the transmission of light into the housing through that portion of the light guide beyond the edge of the strip.

3,697,759
METHOD OF TESTING A STRIP MATERIAL AND APPARATUS THEREFOR UTILIZING AUTOCORRELATION

Etienne Marie De Cock, Hamme, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed July 28, 1971, Ser. No. 166,661
Int. Cl. H01j 39/12; G01n 21/32
U.S. Cl. 250—209 **4 Claims**



A method of testing a moving strip of material, wherein the density of the strip is measured at two successive places, the

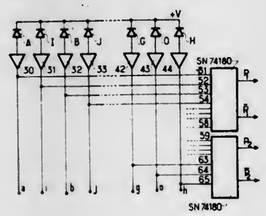
instant measurement signal obtained at the first place is multiplied by a factor which is proportional to the instant value of the measurement signal at the second place, and the average value of the resultant product signal is determined.

3,697,760

OPTICAL-ELECTRICAL MOVEMENT DETECTOR UTILIZING STAGGERED ROWS OF PHOTODETECTORS AND LOGIC FOR DETERMINING THE LOCATION OF A LUMINOUS SPOT

Jean-Pierre Biet, Saulx-Les-Chartreux; Quang Tan Nguyen, Fontenay-Aux-Roses; Gerard Peres, Roussigny-Limours, and Gerard Ripoche, Massy, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Aug. 17, 1971, Ser. No. 172,532
Int. Cl. H01j *39/12*
U.S. Cl. 250—209 **5 Claims**



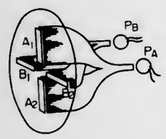
An optical-electrical detecting device comprising a series of staggered photo-sensitive diodes are appropriately connected to electronic circuits for providing a signal corresponding to the position of a relatively small luminous spot. The photodiodes are arranged in two rows and are separated by baffle reflectors for providing a signal through logic gates to an integrated parity control circuit for defining the position of the luminous spot.

3,697,761

METHOD AND MICROSCOPE FOR DETECTING THE POSITION OF A WORKPIECE

Shin-ichi Kamachi, Tokyo, Japan, assignor to Olympus Optical Co. Ltd.

Continuation-in-part of Ser. No. 16,689, March 5, 1970. This application March 18, 1971, Ser. No. 125,800
Int. Cl. H01j *39/12*
U.S. Cl. 250—222 R **5 Claims**



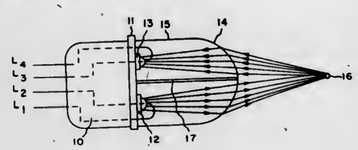
A photoelectric microscope for detecting the position of the edge portion of a workpiece. The microscope includes an apertured mask having four symmetrically disposed, orthogonal slits in the image plane of the microscope. A pair of photoelectric cells sense the amount of light passing through corresponding pairs of slots. Sum and difference amplifiers connect the outputs of the photoelectric cells to logic circuitry so that the position, orientation and direction of workpiece travel may be uniquely determined.

3,697,762

PHOTO ELECTRIC SWITCHING DEVICE

Stewart Kendall Kurtz, Yorktown Heights, N.Y., assignor to North American Philips Corporation

Filed Dec. 14, 1970, Ser. No. 97,549
Int. Cl. H01j *5/02, 39/12*
U.S. Cl. 250—239 **8 Claims**



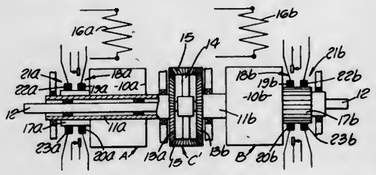
A photo electric switching device having a light emitting diode and light-sensing element arranged in side-by-side relation. A light reflecting element is arranged so that when it is passed into the path of radiant energy eminating from the light emitting diode, a large portion of the light beam will be reflected to the light-sensing element so as to initiate an "on" or an "off" function. A lens element may be arranged in the path of the light beam so as to increase the degree of resolution and the elements can be arranged on a flatpack with other electronic circuitry in a convenient switching unit.

3,697,763

ADJUSTABLE SPEED ELECTRIC POWER MEANS AND SYSTEM

Robert D. Middlebrook, 265 South Berkeley Avenue, Pasadena, Calif.

Continuation of Ser. No. 844,853, July 25, 1969, abandoned. This application June 25, 1971, Ser. No. 157,018
Int. Cl. B60l *11/12*
U.S. Cl. 290—17 **14 Claims**



Electrical power means and system in which at least two D.C. dynamo-electric machines are electrically connected and mechanically drivingly connected through differential gearing with a common output shaft to provide an electro-mechanical loop configuration. Each of the machines has one or more sets of commutator brushes, and at least one of the machines is provided with a movable set of commutator brushes which are electrically connected with brushes of the other machine. Relative angular adjustment of the brush sets of the machines produces smooth concomitant changes in the speed of the output shaft in one direction from zero to a maximum. The continuously connected electrical connections between the machines enable automatic dynamic braking and regeneration without the necessity of switching operations.

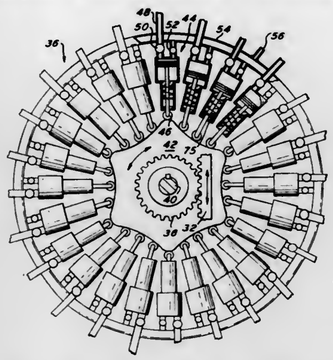
3,697,764

METHOD AND APPARATUS FOR GENERATING ELECTRICITY

Ralph T. Stanziola, and George A. Shuster, both of Philadelphia, Pa., assignors to S & S Research & Development Corp., Levittown, Pa.

Filed March 29, 1971, Ser. No. 128,668
Int. Cl. F03b *13/12*
U.S. Cl. 290—42 **16 Claims**

Motion of waves is converted into energy in the form of compressed air which is stored in large containers. Compressed air flowing from the containers is utilized to drive turbine-generators to generate electricity. The turbine-generators are selectively driven by stored energy which may be controlled. Generation of electricity may be varied to meet the demand regardless of the tides or the state of the waves.

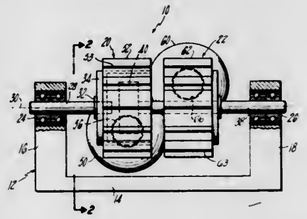


3,697,765

FLUID DRIVEN ELECTRICAL POWER APPARATUS

Eugene P. Carini, 800 28th Avenue, Vero Beach, Fla.

Filed Dec. 7, 1970, Ser. No. 95,462
Int. Cl. F03d *9/00*
U.S. Cl. 290—54 **2 Claims**



A fluid driven electrical power producing apparatus in which a field assembly is rotated in one direction by first fluid drive device and the armature assembly is driven in the opposite direction by a second fluid drive device.

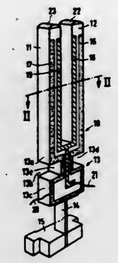
3,697,766

PIEZOELECTRIC OSCILLATOR IN THE FORM OF A TUNING FORK

Wolfgang Ganter, Schramberg-Sulgen; Friedrich Assmus, Schramberg, and Manfred Sonntag, Schramberg-Sulgen, all of Germany, assignors to Gebrueder Junghans G.m.b.H., Schramberg/Wuerttemberg, Germany

Filed Feb. 12, 1971, Ser. No. 114,880
Claims priority, application Germany, Feb. 27, 1970, P 20 09 379.2
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 **3 Claims**

A piezoelectric oscillator in the form of a tuning fork having two arms and being particularly useful as a time standard for timekeeping devices. The arms of the tuning fork which oscillate during operation of the device are decoupled or isolated from a carrier upon which the fork is mounted by two decoupling elements. The tuning fork is provided with electrodes carried by selected surfaces of the arms thereof in various symmetrical arrangements, including axial and central symmetry. One of the decoupling elements is disposed intermediate the arms of the tuning fork and the position at which the electrical connections are made to the electrodes so that the mass of the electrodes does not affect the oscillation of the arms. The piezoelectric oscillator is thus extremely frequency stable, efficient, and relatively uninfluenced by external factors.

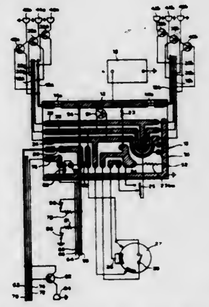


3,697,767

ELECTRIC ENERGY DISTRIBUTION SYSTEMS

Leonardo Floravanti, Moncalieri, Italy, assignor to Carrozzeria Pininfarina Societa per Azioni via Lesna, Grugliasco (Turin), Italy

Filed Jan. 27, 1971, Ser. No. 110,201
Claims priority, application Italy, Feb. 12, 1970, 67459 A/70
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 R **9 Claims**



An power distribution system for distributing electrical power; from a source of supply to selected loads. The distribution system includes a composite cable having a power lead and a plurality of control leads with electrically operated switches associated with each load whereby an appropriate signal on a control lead triggers the switch which then connects the appropriate load to the power lead. The composite cable has a thin plastics sheath which can be pierced by the electrical pin-shaped terminals of the transistors forming the switches, and the invention also provides a template which unambiguously locates the transistors.

3,697,768

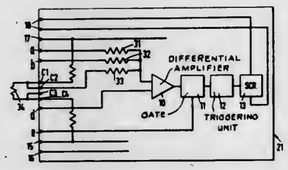
CONTROL SYSTEMS

James Stewart Johnston, Sussex, England, assignor to Rosemount Engineering Company, Limited, Bognor Regis, Sussex, England

Filed Feb. 10, 1971, Ser. No. 114,294
Int. Cl. H02j *1/00*
U.S. Cl. 307—31 **20 Claims**

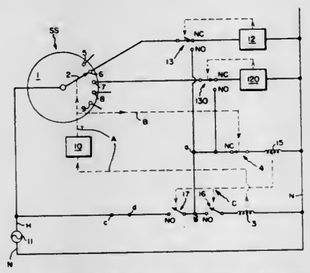
A multi-point control system suitable for applications where a large number of processes, typically in excess of 100, are all

required to be stabilized at the same operating conditions. The control system comprises on-off controllers fed with a common set-point signal. The controllers being adapted to function as time-proportional controllers by the perturbation of either the set-point signal or the process parameter signal by a periodic waveform. Other signals may be combined with the



perturbing signal to provide, for example, compensation for a fluctuating power supply, or for environmental conditions affecting the deviations at the inputs of controllers. Such a system has economical advantages and by slight modifications to the controllers, the system can be used for differing applications.

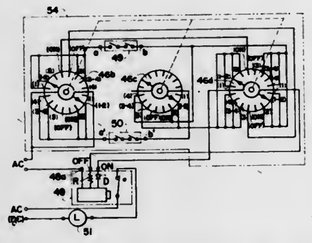
3,697,769
STEPPING SWITCH SYSTEM
Michael Lawrence Schneier, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed July 26, 1971, Ser. No. 165,503
Int. Cl. H01h *63/16*
U.S. Cl. 307—41 **7 Claims**



A stepping switch has loads connected to its fixed contacts via limit switches. The loads are energized sequentially as the movable contact of the stepping switch is stepped from fixed contact to fixed contact, dwelling on each fixed contact until the corresponding limit switch is actuated to produce an electrical pulse. Such pulse energizes a stretcher relay coil which both establishes a circuit which independently of the limit switches and the stepping switch contacts, keeps it energized and energizes the step coil of the stepping switch. The stretcher relay coil is energized through a normally-closed snap switch which opens temporarily at the end of a step, and de-energizes the stretcher relay coil which, in turn opens the aforesaid circuit, whereby to de-energize both the step coil and itself.

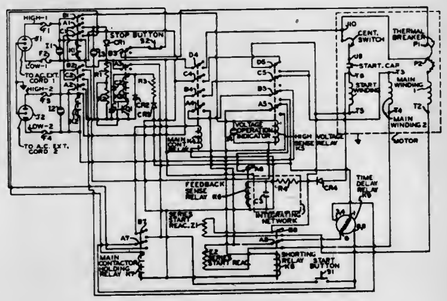
3,697,770
RECORDING CLOCK AND ELECTRICAL SYSTEM
Kingo Murata, and Katsutoshi Shinohara, both of Tokyo, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo, Japan
Filed March 31, 1971, Ser. No. 129,698
Claims priority, application Japan, April 20, 1970, 45/37549
Int. Cl. H01h *7/08, 43/10, 33/59*
U.S. Cl. 307—141.4 **4 Claims**

A multiplex action timer device interlocked with a clock mechanism comprising two pairs of time-setting mechanism arranged so that two pairs of micro-switches are closed at the pre-set time, relay means for controlling make and break of a power switch of a load circuit in accordance with an ON-signal and an OFF-signal, and a control circuit whose connection is switched so as to apply the ON-signal and the OFF-signal to said relay means upon closure of the respective pairs of micro-switches, said timer device being operative so that



the power switch of the load circuit is actuated in such a way that its connection is changed — in accordance with the pre-set time — to assume one of the following modes of switching action, namely, from ON to OFF; from OFF to ON; from OFF to ON and then to OFF again and thereafter repeating this cycle; and from ON to OFF and then to ON again and thereafter repeating this cycle.

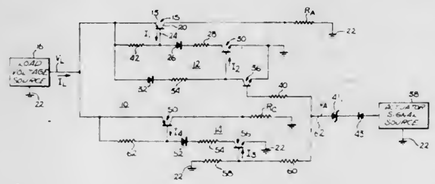
3,697,771
CARPET CLEANING APPARATUS WITH ELECTRICAL POWER CONDITIONING MEANS
James G. Colt, Belmont, Mass., assignor to Carpetech Corp., Everett, Middlesex, Mass.
Filed June 21, 1971, Ser. No. 154,889
Int. Cl. H02j
U.S. Cl. 307—154 **39 Claims**



There is disclosed apparatus for cleaning carpets, upholstery and the like utilizing a motor driven separate reservoir system for supplying a cleaning solution to a cleaning head, a separate motor driven vacuum pick-up system for storing cleaning solution picked up via the cleaning head, and a power control system for safely and dependably supplying from two separately fused convenience electrical outlets, electrical current to the power consuming devices including the drive motors of the apparatus, one of which devices may have power demand characteristics in excess of that suppliable from one or both outlets. Typically, the reservoir system may include means to continuously heat the cleaning solution in the reservoir and a fluid pump driven by an electric drive motor and the vacuum system may include a vacuum pump which is driven by a second electric drive motor. The power control system which is not limited to use with carpet cleaning apparatus comprises means to provide a predetermined orienta-

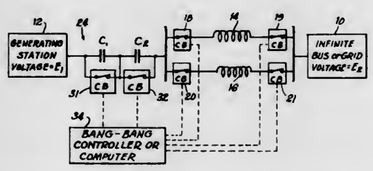
tion of the connections to the convenience outlets, means to determine the level of voltage produced by the combination of the orientated connections, and means for providing the desired voltage to the power consuming device with current limiting and protection features where required.

3,697,772
SOLID STATE RELAY
Ralph Stuart Gibbs, 5938 Corbin Avenue, Tarzana, Calif.
Continuation-in-part of Ser. No. 855,957, Sept. 8, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,284
Int. Cl. H03k *17/64*
U.S. Cl. 307—244 **25 Claims**



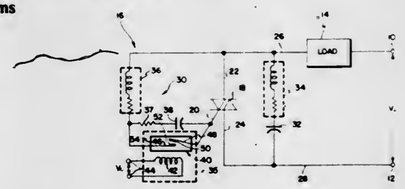
Solid state switching devices for selectively switching current signals between various load circuits. Normally open and normally closed transistorized switching sections incorporate non-inductive driver stages adapted for high speed operation with excellent isolation between the load circuits and the control or driver circuits. The switching sections are readily combinable to form configurations which are functionally analogous to conventional electromechanical relays and no external voltages are required except normal type control voltages and the voltages which are to be switched to the various load circuits. The switching devices may be constructed to operate in either the "make before break" or "break before make" mode of operation.

3,697,773
METHOD AND APPARATUS FOR NON-OSCILLATORY REMOVAL OF TRANSIENTS IN MINIMUM TIME BY BANG-BANG CONTROL OF REACTANCE IN A POWER SYSTEM
Daniel K. Reitan, Madison, Wis., and Ramarao Nagavarapu, Warangal, India, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of Ser. No. 848,463, Aug. 8, 1969, abandoned. This application Jan. 11, 1971, Ser. No. 105,353The portion of the term of this patent subsequent to Feb. 9, 1987, has been disclaimed.
Int. Cl. H02h *1/04*
U.S. Cl. 307—93 **32 Claims**



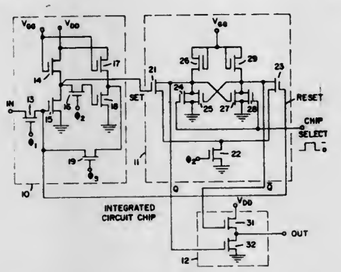
In a power transmission system involving parallel tie-lines extending between a generating station and a large power grid, transients are removed, upon the opening of one tie-line, by inserting two capacitors in series with the system for a first time interval. The capacitors produce a first capacitive reactance of a sufficiently high value to provide a negative power transmission characteristic so that there is a reverse flow of power between the grid and the generating station. In this way the inertia of the generators at the generating station is accelerated toward an increased power angle in accordance with the decreased power transmission characteristic due to the opening of the one tie-line. After the first time interval, one of the capacitors is short-circuited so as to reduce the capacitive reactance to a second lower value. In this way a positive power transmission characteristic is produced of a greater magnitude than the characteristic in the absence of capacitive reactance. Thus, the inertia of the generators at the generating station is decelerated. After a second time interval, both capacitors are short-circuited to remove all capacitive reactance from the circuit. The time intervals are such as to attain the increased power angle (which is the steady state operating angle under post-fault conditions) which equalizes the energies representing acceleration and deceleration so as to obviate any oscillations. Instead of using the high value of capacitive reactance during the first time interval, an inductive reactance may be employed, which provides a reduced power transmission characteristic so that acceleration of the generating station is produced. The invention is also applicable to other transitions in which it is desirable to prevent oscillation of the power angle of the generating system. When the second tie-line is brought back into service, the power angle may be reduced without oscillation, by switching in a relatively low value of capacitive reactance for a first time interval, so as to increase the power transmission characteristic. During a second time interval, the power transmission characteristic is reduced or reversed by switching in an inductive reactance or a high value of capacitive reactance. If the electrical load on the generating station increases abruptly, the power angle can be increased the necessary amount without oscillation by switching in a high value of capacitive reactance, or an inductive reactance, for a first time interval, following which a lower value of capacitive reactance is switched in for a second time interval. Likewise, an abrupt decrease in load can be accommodated by switching in a relatively low value of capacitive reactance for a first time interval, following which a higher value of capacitive reactance, or an inductive reactance, is switched in for a second interval. In each case, maximum acceleration is followed by maximum deceleration, or vice versa, to bring about the transition in minimum time, without oscillation.

3,697,774
THYRISTOR CIRCUITS FOR APPLYING A VOLTAGE TO A LOAD
Joseph E. Pascente, Norridge, Ill., assignor to Grigsby-Barton, Inc., Rolling Meadows, Ill.
Division of Ser. No. 108,269, Jan. 21, 1971, abandoned. This application Aug. 20, 1971, Ser. No. 173,571
Int. Cl. H01h *9/30*
U.S. Cl. 307—136 **21 Claims**



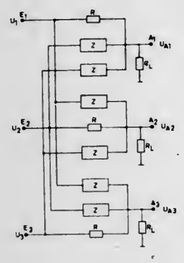
Thyristor circuits are disclosed for applying a voltage to a load wherein substantial improvements are provided with respect to increasing the operating life of switch contacts employed therein. A reduction in the amount of radio frequency interference generated in such circuits upon circuit switching may also be obtained. Such improvements are provided by the appropriate use of one or more inductors in the circuits, which may be employed together with certain other circuit components.

3,697,775
THREE STATE OUTPUT LOGIC CIRCUIT WITH BISTABLE INPUTS
James F. Kane, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed April 21, 1971, Ser. No. 136,031
Int. Cl. H03k *19/08, 17/18*
U.S. Cl. 307—209 6 Claims



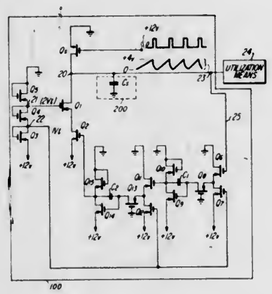
A three output state logic circuit includes the last cell of a shift register, which is a flip-flop, coupled to an RS type flip-flop which drives a push-pull output circuit. The output circuit is placed in a high impedance or floating logic state by grounding the output terminals of the RS flip-flop. The effect of this grounding is, however, isolated from the last cell of the shift register so that it maintains its stored binary information.

3,697,776
PLURAL CHANNEL SYSTEM WHEREIN THE INPUT SIGNALS ARE UNALTERED IF WITHIN STANDARD LIMITS, BUT ARE AVERAGED, IF OUTSIDE LIMITS
Edgar Matejka, Singen/Hohentwiel, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany
Filed Dec. 15, 1970, Ser. No. 98,364
Claims priority, application Germany, Dec. 17, 1969, P 19 63 130.2; Nov. 10, 1970, P 20 55 084.9
Int. Cl. G06f *11/08*; G08b *29/00*; H03k *5/08*
U.S. Cl. 307—219 11 Claims



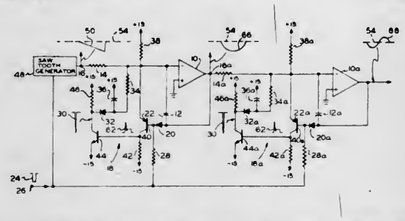
A control apparatus has redundant input signals from which an output signal is produced. In part it comprises three inputs to which the respective input signals are applied and three outputs. There are three resistors of known value with each connecting a respective input and a respective output. There are six resistance devices each connecting a respective input with one of the remaining outputs between which there is not one of the resistors. The resistance devices comprise a voltage sensitive double-pole whose resistance substantially equals said known value below a selected threshold voltage but which becomes very great above said threshold voltage. The threshold voltage is selected to be sufficiently greater than the normal input voltage to represent a malfunction situation.

3,697,777
SIGNAL GENERATING CIRCUIT INCLUDING A PAIR OF CASCADE CONNECTED FIELD EFFECT TRANSISTORS
William James Donoghue, Somerset, N.J., assignor to RCA Corporation
Filed May 17, 1971, Ser. No. 143,859
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 6 Claims



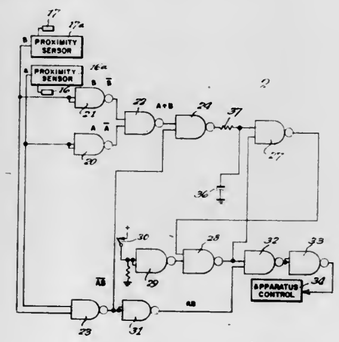
A signal generating circuit including a constant current source comprising cascoded field effect transistors. The first transistor is biased into saturation and the second transistor is biased in the linear resistive region of operation. Degenerative feedback is provided between the output of the first transistor and the control electrode of the second transistor. When an energy storage device and a switch are added, the circuit provides a constant amplitude ramp waveform.

3,697,778
INTEGRATING CIRCUIT
Ronald A. Olson, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed March 17, 1971, Ser. No. 125,183
Int. Cl. G06g *7/18*
U.S. Cl. 307—229 7 Claims



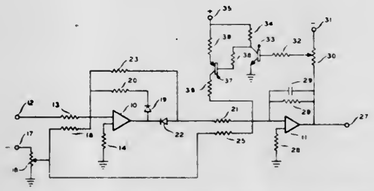
An operational amplifier integrating circuit, which has a substantially constant voltage at the input of its amplifier and a pair of normally cut off diodes connected back to back in series between the input and output of such amplifier, integrates each waveform of a series of repeated waveforms. A control pulse applied between these diodes terminates the integration at the end of each waveform and integration starts again at the end of the control pulse. Each control pulse turns on one of the diodes to clamp the control pulse voltage at the amplifier output voltage plus the drop across such diode. The second diode is the emitter-base junction of a transistor having its emitter connected to the input of the amplifier. If the output voltage of the amplifier has a polarity with respect to the amplifier input voltage which is the same as that of the control pulse, the second diode also turns on and the integrating capacitor rapidly discharges through the emitter-base junction of the transistor to produce an output pulse at the collector of the transistor which varies with the difference between the input and output voltages of the amplifier at the end of the integration. A further circuit utilizes this pulse to deliver to the input of the amplifier during the next integration a substantially constant current which causes the output voltage of the amplifier at the end of such integration to be the same as its input voltage.

3,697,779
FUNCTION CONTROL
Gordon E. Gee, Homewood, Ill., assignor to Electro Corporation
Filed July 18, 1969, Ser. No. 842,847
Int. Cl. H03k *19/32*
U.S. Cl. 307—235 7 Claims



A control circuit which responds to plural characteristics of an apparatus. When synchronism of the characteristics is lost for a period of time, a signal is given to turn the apparatus off.

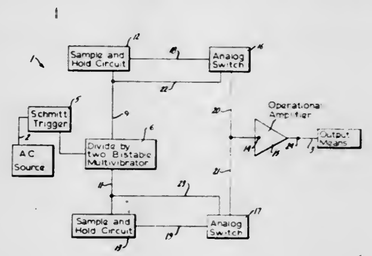
3,697,780
LIMIT CONTROL
Richard W. Michael, and Hl W. Staten, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed April 12, 1971, Ser. No. 133,030
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 8 Claims



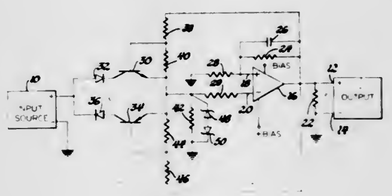
A circuit is disclosed which provides an output signal which is representative of an input signal as long as the input signal is above a lower limit and below an upper limit. The output signal does not fall below the lower limit nor rise above the upper limit. This circuit includes a pair of operational amplifiers and sources of reference potentials representative of the respective limits.

3,697,781
FREQUENCY TO VOLTAGE CONVERTER
Michael B. McLean, Franksville, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Nov. 12, 1970, Ser. No. 88,849
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 8 Claims

A sample-and-hold circuit samples an incoming alternating signal to provide a voltage proportional to input frequency of a sinusoidal signal. A Schmitt trigger circuit and a divide-by-two multivibrator convert the sinusoidal input signal into two square wave signals separated in phase by 180° and each corresponding to the previous full cycle of the input to provide sampling signals to a pair of sample-and-hold circuits. Each sample-and-hold circuit samples the opposite half cycle or period of a corresponding square wave. Transistor means are connected to the corresponding timing circuit to discharge a voltage storage means prior to sampling in response to the start of the sampling half period. Each sample-and-hold circuit includes a transistor selectively charging the voltage storage means from a constant voltage source during the sampling half period to produce a voltage level related to the input frequency which voltage level is held during the non-sampling half period. Analog switches are connected to the circuits and alternately connect each circuit to an output amplifier to apply the hold voltage during the non-sampling half period.



3,697,782
TWO-STATE ZERO-CROSSING DETECTOR
Michael F. Matouka, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 20, 1971, Ser. No. 182,003
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 3 Claims

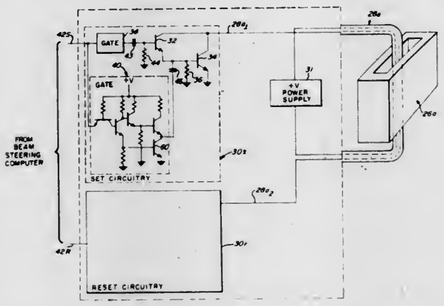


A comparator having two output states and two input connections is used to develop an indication of the polarity of an alternating voltage. The comparator output is coupled with one of two inputs of the comparator. Two voltage controlled switches including opposite conductivity type transistors and oppositely poled diodes are connected such that the voltage being sensed is applied to the second input to the comparator when it changes polarity, thereby changing the state of the comparator output. Control of the switches in accordance with the comparator output and the sensed voltage provides a disconnect feature whereby the detector draws power from the sensed voltage only during switching intervals; no power is drawn after a change in polarity by the sensed voltage until it again reverses its polarity.

3,697,783
TRANSISTOR SWITCHING CIRCUITRY

Ronald W. Seager, Hamilton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed April 29, 1971, Ser. No. 138,551
Int. Cl. H03k 17/60
U.S. Cl. 307—300 4 Claims

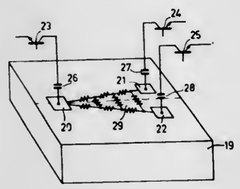


Transistor switching circuitry, such circuitry including an input transistor and an output transistor coupled one to the other in a "Darlington" configuration is shown. The input transistor is coupled to a control signal source through a first gating arrangement and the output transistor is coupled to the control signal source through a second gating arrangement and a voltage storage element. The output transistor is driven "on" in response to a turning "on" signal from both the input transistor and the second gating arrangement. During the time the output transistor is "on," a voltage is stored by the voltage storage element, the level of such stored voltage approaching the voltage level of a voltage supply. When an "off" control signal is transmitted, the voltage storage element is coupled between the base-emitter electrodes of the output transistor, thereby rapidly to deplete the number of minority carriers in the output transistor and render it more quickly responsive to the "off" control signal.

3,697,784
SEMICONDUCTOR INTEGRATED CIRCUITS

Kenneth William Moulding, Horley, England, assignor to U.S. Philips Corporation

Filed Feb. 4, 1971, Ser. No. 112,623
Claims priority, application Great Britain, Feb. 6, 1970, 5,808/70
Int. Cl. H01l 19/00
U.S. Cl. 307—303 10 Claims

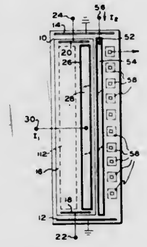


An integrated circuit eliminates the feedback effect of spurious signals between a push-pull transistor pair in separate islands and a third transistor in a third island by locating the third transistor island at a null point of the electric field pattern in the substrate corresponding to a spurious signal originating from the push-pull transistors.

3,697,785
SOLID STATE SCANNING DEVICE

Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Park Beaverton, Oreg.

Continuation of Ser. No. 737,237, June 14, 1968, abandoned, Continuation of Ser. No. 700,885, Jan. 26, 1968, Pat. No. 3,524,998. This application Feb. 8, 1971, Ser. No. 113,632
Int. Cl. H01l 19/04
U.S. Cl. 307—303 19 Claims

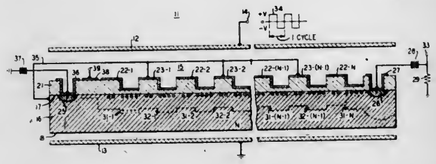


A solid state scanning device comprises a planar or integrated circuit transistor having an elongated base disposed between an elongated emitter and an elongated collector. End terminals of the collector are connected to predetermined potential points, while an input is applied to end terminals of the base for bringing about sheet current distribution injection into the collector. As a result, a parabolic voltage distribution is produced along the collector. The current injection profile can be "tilted" by applying a finite difference in voltage to the base end terminals which will cause controlled movement of the collector voltage distribution for selection of plural output means or the like.

3,697,786
CAPACITIVELY DRIVEN CHARGE TRANSFER DEVICES

George Elwood Smith, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 29, 1971, Ser. No. 128,999
Int. Cl. H01l 11/14
U.S. Cl. 307—304 12 Claims



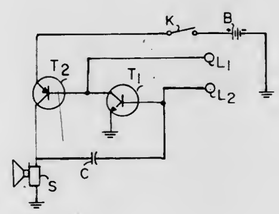
This application describes arrangements for capacitively driving a charge transfer device. In particular, a charge transfer device is disposed between the plates of a capacitor and is adapted such that the desired unidirectionality of transfer of charge therethrough is achieved in response to application of an alternating potential to the capacitor.

3,697,787
SUPERSENSITIVE ENERGIZING CIRCUIT

Seymour J. Posner, Brooklyn, N.Y., assignor to Friedman and Goodman, Brooklyn, N.Y., a part interest

Filed April 16, 1971, Ser. No. 134,637
Int. Cl. H03k 17/00
U.S. Cl. 307—308 13 Claims

A supersensitive energizing circuit comprising an impulse-generator for generating an impulse sensible by a responsive sensory organ of a human being. An open-circuit arrangement is electrically coupled with the impulse-generator for permitting communicaTing the latter with an external power supply. A circuit-closure system is provided for closing the open-circuit arrangement thereby communicating the impulse-generator with the external power supply. The circuit-closure system is stationary and responsive for closing the open-circuit arrangement upon contact with skin of a human being. The supersensitive energizing circuit is generally



mounted in an electrically conductive housing. The circuit-closure system includes one terminal which is insulated from the housing and exposed for contact with skin of a human being. The circuit-closure system furthermore includes another terminal which is electrically coupled with the housing and thus when the housing is held in a hand of a human being the housing itself and the terminal which is insulated from the housing acts to close the open-circuit arrangement thereby supplying the impulse-generator with power.

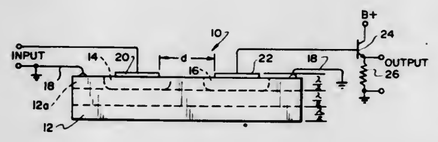
ERRATUM

For Class 310—8; see: Patent No. 3,697,766

3,697,788
PIEZOELECTRIC RESONATING DEVICE

Norman W. Parker, Wheaton, and Hugo W. Schafft, Des Plaines, both of Ill., assignors to Motorola Inc., Franklin Park, Ill.

Filed Sept. 30, 1970, Ser. No. 76,872
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 17 Claims



A piezoelectric resonating device forming a bandpass filter element which has a wider bandpass frequency than conventional crystal filters. A body of material has a plurality of principal areas of resonance formed therein to form at least one cooperable pair of such areas and the signal coupling between the principal areas of resonance of a given pair is selected so that all unwanted frequencies, including inharmonic and harmonic overtones, outside a given bandwidth are rejected.

3,697,789
MECHANICAL OSCILLATOR

Yoshiaki Kato, Higashimurayama, and Hideki Ohuye, Urawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed June 21, 1971, Ser. No. 155,195
Claims priority, application Japan, Sept. 9, 1970, 45/79093; June 23, 1970, 45/61921
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 10 Claims

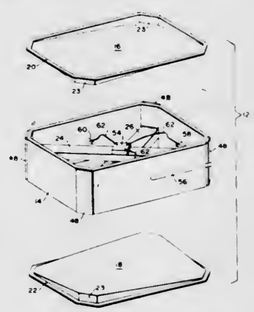


An improved vibrating element and a novel construction of an oscillator unit employing the vibrating element. The vibrating element is formed into a shape such that its vibrating part is divided into at least two prings with a slit therebetween. The width of the slit is uniform along the greater extent of said vibrating part from the open end thereof and is then gradually reduced substantially at a constant rate towards its closed end to thereby improve the shock resisting property of the vibrating element.

3,697,790
TRANSDUCERS HAVING PIEZOELECTRIC STRUTS

William T. Flint, and George C. Tibbetts, both of Tibbetts Industries, Inc., Colcord Avenue, Camden, Maine

Filed Dec. 2, 1970, Ser. No. 94,232
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 33 Claims



A transducer of electromechanical or electroacoustic type comprising a piezoelectric strut supported by a frame on a diagonal thereof. The frame is subjected to face shear stress by deflections of a generally saddle shaped diaphragm termed a "diabow," inducing longitudinal stresses in the piezoelectric strut. The strut has electrodes for connection with an electrical circuit.

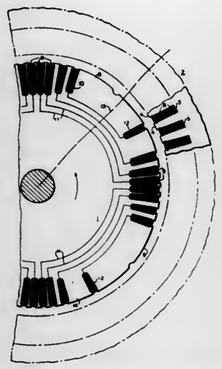
3,697,791
ROTOR FOR DYNAMOELECTRIC MACHINES

Lee A. Kilgore, Export, and Nabeel A. Demerdash, East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1971, Ser. No. 173,005
Int. Cl. H02k 39/00
U.S. Cl. 310—111 3 Claims

A rotor, especially for large turbine generators, which is adapted to reduce excess stator copper losses due to radial

fluxes cutting the stator conductor strands. The rotor is of asymmetrical construction with a wide tooth on the trailing



side of each pole face to reduce saturation effects in the stator teeth and thus minimize the radial flux and resulting copper losses in the stator.

3,697,792

ELECTRIC MOTOR ARMATURE WITH STRESS RELIEVED, RESILIENT COMMUTATOR LEAD CONNECTIONS

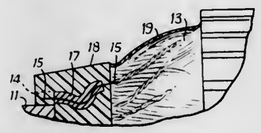
Albert Norman Roue, Bedford, England, assignor to Kango Electric Hammers Limited, London, England

Filed Jan. 25, 1971, Ser. No. 109,504

Claims priority, application Great Britain, Feb. 2, 1970, 4,956/70

Int. Cl. H02k *13/04*

U.S. Cl. 310—234 **4 Claims**



An armature for an electric motor has commutator segments, an armature coil structure consisting of coils having end portion which lead to the commutator segments and each of which has a looped part adjacent the associated commutator segment, and sleeves of yieldable resilient material snugly surrounding the looped parts. A moulded rigid mass of resinous material extends locally only in the region of the commutator and encapsulates the sleeves parts of the coil end portions and the connections of the end portions to the commutator segments. The yieldable nature of the sleeves permits a degree of relative movement of the looped parts within the moulded mass. A thin layer trickle coating of an electrically insulating material encases the parts of the coil structure not encapsulated in said mass.

3,697,793

ION BEAM DEFLECTION SYSTEM

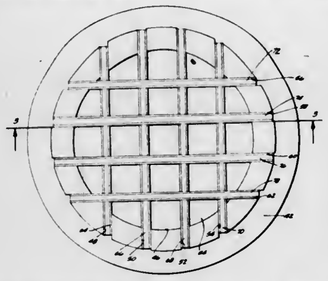
Harry J. King, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 9, 1970, Ser. No. 9,765

Int. Cl. F03h *5/00*

U.S. Cl. 313—63 **9 Claims**

A single electrode has an insulated face upstream in the direction of the ion beam so that a charge builds up thereon to serve as a screen electrode. The electrode defines openings, and these openings have electrode metal on the sides thereof. The electrode metal serves as an accelerator electrode, when an accelerator voltage is applied thereto. When electrodes on different sides of the openings have different voltages applied thereto, they serve to deflect the ions so that they no longer form a beam symmetric about the arcs. The electrode is formed by producing bars which consist of two electrodes



separated by electrically-insulative, glass-filled refractory, and with one edge of the bars optionally carrying an insulative nose thereon. These bars are assembled in egg crate configuration to define a plurality of electrode openings.

3,697,794

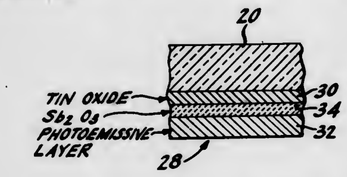
PHOTOCATHODE COMPRISING LAYERS OF TIN OXIDE, ANTIMONY OXIDE, AND ANTIMONY

Richard G. Stoudenheimer, Lancaster, and Rodger P. Dourte, Manheim, both of Pa., assignors to RCA Corporation

Continuation of Ser. No. 622,293, March 10, 1967, Pat. No. 3,436,164. This application March 19, 1969, Ser. No. 863,724

Int. Cl. H01j *39/06, 39/00*

U.S. Cl. 313—94 **5 Claims**



In a photocathode comprising a substrate of tin oxide having thereon a photoemissive coating including antimony, a layer of antimony oxide is interposed between the tin oxide substrate and the photoemissive coating.

3,697,795

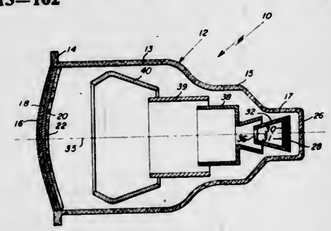
IMAGE INTENSIFIER TUBE HAVING A MULTI-RADIUS PHOTOCATHODE

Martin Braun, Stamford, Conn.; Stanley S. Grossel, and Barry M. Singer, both of New York, N.Y., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Nov. 20, 1970, Ser. No. 91,431

Int. Cl. H01j *39/00, 31/50*

U.S. Cl. 313—102 **9 Claims**



An image intensifier tube including a multi-radius photocathode having less curvature adjacent its periphery than in the central portion thereof.

3,697,796

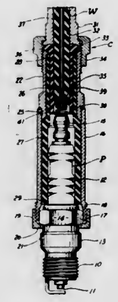
SPARK PLUG SHIELDING

Russell G. Livingston, 6044 Rod Avenue, Woodland Hills, Calif.

Filed July 27, 1970, Ser. No. 58,592

Int. Cl. H01t *13/06*

U.S. Cl. 313—134 **8 Claims**



Shielding for spark plugs of internal combustion engines to prevent radio frequency interference and explosion, the shielding having a body surrounding the spark plug and engaged with the wrench portion of the spark plug and having a wrench portion to enable installation and removal of the spark plug, the body having at one end a threaded end piece securing the plug in place and being threaded at the other end to accommodate a spark plug connector terminal. Internally, the spark plug is encircled by an insulating sleeve, and a seal is provided to prevent entry of explosive gas into the body.

3,697,797

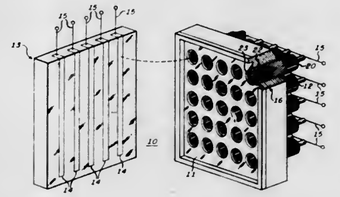
PROCESS FOR MANUFACTURING COLD CATHODE GAS DISCHARGE DEVICES AND THE PRODUCT THEREOF

Paul J. Freyheit, Framingham Center, and Claude D. Lustig, Lexington, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 25, 1971, Ser. No. 109,271

Int. Cl. H01j *1/94, 9/18, 17/48*

U.S. Cl. 313—217 **9 Claims**



The invention comprises a process of manufacturing cold cathode gas discharge devices. A unitary metal electrode structure is inserted through a glass support, the metal and glass having the same coefficient of thermal expansion. The support and electrode structure are heated in the presence of oxygen to effect a seal therebetween. The gas discharge device is completed without removing the oxide coating formed on the electrode surfaces of the structure during the heating step. The resulting gas discharge device, which may be used for display purposes, has a stable oxide coating on electrodes thereof that attenuates display distorting reflections.

3,697,798

ROTATING X-RAY TARGET

Rudolf Machenschalk, and Herbert Wagner, both of Reutte, Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Filed March 24, 1971, Ser. No. 127,507

Claims priority, application Austria, March 25, 1970, 2792/70

Int. Cl. H01j *35/10, 1/05, 1/38*

U.S. Cl. 313—330 **11 Claims**



This invention relates to a rotating X-ray target made up of three metallic components, i.e., a molybdenum body, a focal track of an alloy of tungsten with one or more metal additives and a component present in the surface not exposed to electrons comprising tungsten alone or a tungsten alloy having a lesser amount of the additive metals.

3,697,799

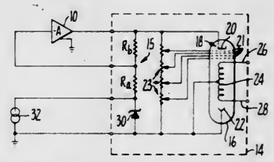
TRAVELING-WAVE TUBE PACKAGE WITH INTEGRAL VOLTAGE REGULATION CIRCUIT FOR REMOTE POWER SUPPLY

John W. Caldwell, Palo Alto, and Edward M. Smith, San Jose, both of Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 13, 1970, Ser. No. 2,589

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **10 Claims**



A circuit is provided in a traveling-wave tube package which eliminates the need of manually setting the power supply voltage to match the proper operating voltage of the tube. The circuit utilized within the traveling-wave tube package forms a part of the power supply, the remainder of which is provided externally of the traveling-wave tube package. By selecting the proper circuit components, the traveling-wave tube package can be connected without adjustment to a power supply and still operates at the desired voltage.

3,697,800

HIGH VOLTAGE HOLD DOWN CIRCUIT

John Joseph McArdle, Indianapolis, and Robert Louis Rauck, Greenfield, both of Ind., assignors to RCA Corporation

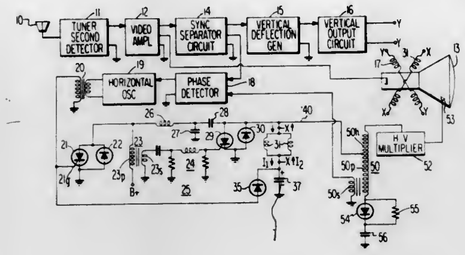
Filed May 11, 1970, Ser. No. 36,046

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 R **3 Claims**

In a horizontal deflection circuit utilizing a voltage multiplier to develop the kinescope ultor voltage, a switching diode is coupled from the S-shaping capacitor in series with the deflection winding to a control element of a horizontal deflection output device to prevent the ultor voltage from increasing to an excessive level in the event the damper diode becomes open circuited. During normal operation, the voltage on the capacitor will reverse bias the switching diode, if however, the damper diode circuit opens, the capacitor voltage will cause

the switching diode to conduct to clamp the control element of the output device to the capacitor voltage which prevents



the horizontal output stage from developing excessive ultor voltage.

3,697,801

CIRCUIT ARRANGEMENT FOR PRODUCING A LINE-FREQUENCY SAWTOOTH-CURRENT HAVING A FIELD-FREQUENCY-VARYING AMPLITUDE IN A TELEVISION DISPLAY DEVICE

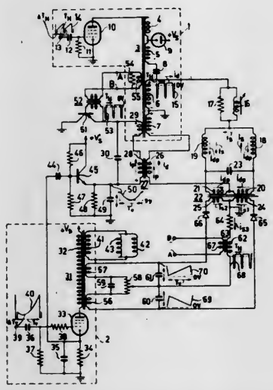
Hannspeter Eulenberg, Bauweg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1969, Ser. No. 832,957

Claims priority, application Netherlands, July 11, 1968, 6809798

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **13 Claims**



A TV deflection circuit for producing a line frequency sawtooth current whose amplitude varies at the field frequency said variation being approximately parabolic to provide East - West raster correction for any pincushion distortion and approximately sawtooth shaped to provide color correction in the case of a color TV tube. The circuit includes a modulator having an electronic switch controlled by a line frequency signal. During the forward stroke of the constant amplitude sawtooth current supplied by a line deflection current generator to the line deflection coil, the switch connects a field deflection current generator to a resonant circuit including the parallel combination of a capacitor and an inductor. The inductor comprises either the line or field deflection coils, or both. The resonant circuit has a resonant period that is approximately twice the flyback time of the line frequency deflection current.

3,697,802

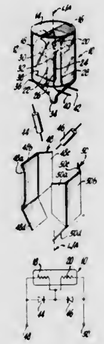
TWO-TERMINAL, TWO-COLOR INDICATOR LAMP ASSEMBLY

Nickolas P. Demas, Cranford, N.J., assignor to Wagner Electric Corporation

Filed Oct. 12, 1970, Ser. No. 79,737

Int. Cl. H01j *13/46*

U.S. Cl. 315—65 **6 Claims**



A two-terminal, two-color indicator lamp assembly comprising two separately energizable filaments positioned behind different-colored portions of the lamp envelope along the line of sight. The lamp envelope is mechanically connected to a pair of terminals to form a telephone slide base, and a pair of diodes is interconnected between said terminals and said filaments to enable energization of one filament only when the polarity of the first terminal is positive with respect to the polarity of the second terminal, and to enable energization of the other filament only when the polarity of said second terminal is positive with respect to the first terminal.

3,697,803

ROAD VEHICLE LIGHTING SYSTEM HAVING LIGHT REFLECTION MINIMIZING FINS

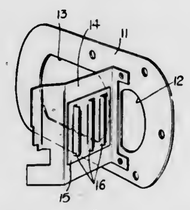
Harris Vernon Hicks, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 14, 1970, Ser. No. 97,965

Claims priority, application Great Britain, Dec. 17, 1969, 61,436/69

Int. Cl. B60q *1/02*

U.S. Cl. 315—82 **5 Claims**



A lighting system for a road vehicle includes a casing housing a light receiver. The light receiver has associated therewith a lens which is supported by the casing, and which directs light from in front of the vehicle equipped with the system, into the receiver. The casing includes a vertical wall which extends parallel to the optical axis of the receiver, and in order to minimize the risk of reflection of light from the wall into the receiver the wall is provided with a plurality of vertical fins which extend towards the optical axis of the receiver. The fins also extend forwardly towards the lens.

3,697,804

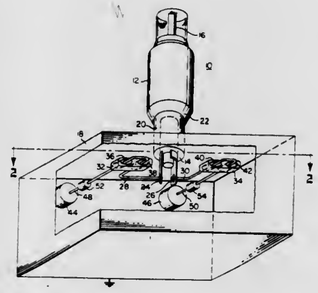
MICROWAVE GENERATING APPARATUS INCLUDING SPURIOUS SIGNAL SUPPRESSION MEANS

Harold C. Anderson, New Brighton, and David F. Graff, Minneapolis, both of Minn., assignors to Litton Systems, Inc.

Filed Oct. 12, 1970, Ser. No. 79,764

Int. Cl. H05b *39/00*

U.S. Cl. 315—105 **5 Claims**



A microwave generating apparatus is disclosed which includes suppression means for preventing high frequency signals from being propagated out of the apparatus through its cathode terminals to be radiated away from the apparatus. The suppression means includes a shield member and a non-saturating ferrite member positioned around each of the cathode heater leads of the apparatus within the shield member. The ferrite member comprises an elongated ferrite body having at least two apertures extending therethrough, with the lead element traversing both of these apertures in opposing directions.

3,697,805

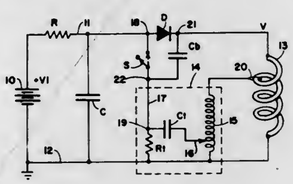
GAS DISCHARGE LAMP FIRING CIRCUIT

Henry N. Switsen, 11319 Van Owen St., North Hollywood, Calif.

Filed May 28, 1969, Ser. No. 828,605

Int. Cl. H05b *41/32*

U.S. Cl. 315—241 P **3 Claims**



A voltage boosting means is provided in a stroboscopic lamp firing circuit for momentarily substantially increasing the available voltage for firing the lamp at the precise point in time that the normal striking means is operated to ready the lamp for firing. The momentary substantial increase in voltage for firing the lamp is provided by a capacitor which is charged to or partly to the normal firing voltage prior to initiation of the striking means for the lamp. A switch means utilized to initiate the striking means also serves to apply a voltage to one side of the capacitor to thereby momentarily substantially increase the voltage on the other side of the capacitor relative to ground. Since the boosted voltage occurs precisely upon operation of the switch means which operation also operates the striking means, the substantially increased voltage is provided at the proper time for assuring firing of the lamp.

3,697,806

ION GENERATOR

William C. Herbert, Jr., Mill Neck, N.Y., assignor to Herbert Products, Inc., Westbury, N.Y.

Filed April 22, 1971, Ser. No. 136,340

Int. Cl. H05f *3/06*

U.S. Cl. 317—2 F **7 Claims**



An ion generator having an electrical cable for producing a corona field for capacitors having emitter electrodes discharging ions toward a grounded shield that protects the electrodes from accidental touching and discharge and causes the ions to assume an enlarging path of ion discharge.

3,697,807

BIPOLAR CIRCUIT DEVICE

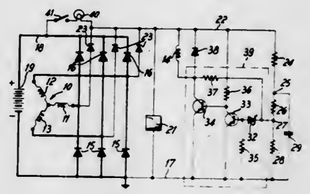
Klaus H. Christ, Stuttgart-Durriewang, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 19, 1969, Ser. No. 886,624

Claims priority, application Germany, Jan. 10, 1969, P 19 01 075.4

Int. Cl. H02h *3/20*

U.S. Cl. 317—16 **12 Claims**

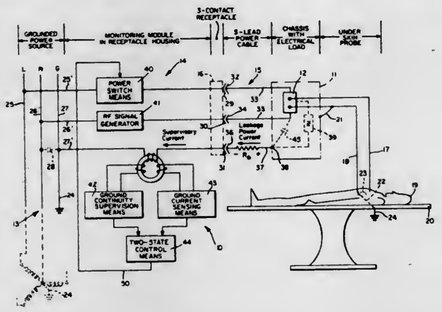


A protective arrangement in which a bipolar circuit device is connected across the terminals of a voltage source with voltage monitored through a voltage regulator connected to the source. The bipolar device contains two transistors of opposite conductivity type interconnected so as to exhibit low internal resistance when the output voltage from the source lies within predetermined operating limits. When the output voltage from the source exceeds a predetermined limit, due to failure of the voltage regulator, for example, the internal resistance of the bipolar device drops sharply and substantially short-circuits the terminals of the generator. The change in resistance is made permanent through destruction of the transistors as a result of heat dissipation.

3,697,808
SYSTEM FOR MONITORING CHASSIS POTENTIAL AND GROUND CONTINUITY

Joo Chan Lee, Lindenhurst, Ill., assignor to The Safety Company, St. Charles, Ill.

Filed Nov. 23, 1970, Ser. No. 91,617
Int. Cl. H02h 1/02
U.S. Cl. 317—18 A 23 Claims

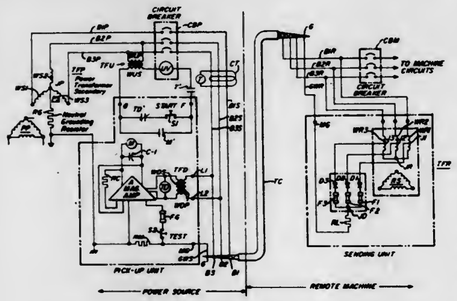


A monitoring system controls the application of power from a grounded power source to an electrical load in a chassis connected to the source by the line, neutral and ground leads of a power cable. Control is exerted by monitoring the level of leakage power current flowing in the ground lead of the cable and disconnecting the power source from the line lead of the cable when the level is such that a 5 millivolt drop would occur across the ground lead. This maintains the chassis at a potential of no more than 5 millivolts with respect to ground. An RF signal injected into the neutral lead of the cable causes RF current to flow in the ground lead by reason of the capacitive coupling between the load and the chassis when continuity exists between the chassis and the source ground. The RF current is monitored in order to disconnect the power source when such current drops below a predetermined level indicating that an inadequate or insufficient connection exists between the chassis and ground, situations that interfere with properly monitoring the level of leakage power current through the ground lead.

3,697,809
GROUND WIRE MONITORING SYSTEM WITH FAIL-SAFE POWER DISCONNECT

William R. Self, 1205 West First Street, Oil City, Pa.

Filed Nov. 23, 1970, Ser. No. 91,669
Int. Cl. H02h 1/02
U.S. Cl. 317—18 C 11 Claims

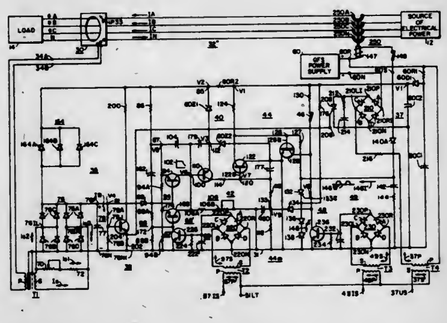


A system for monitoring the continuity of a ground wire between a remote machine, such as a mining machine, and a power source supplying polyphase power to the machine via a plurality of conductors wherein a DC signal is provided at the machine in response to the purchase power. The DC signal is applied to the ground wire for transmission to the power source, with the receipt of the DC signal at the power source being indicative of continuity of the ground wire and the absence of the DC signal being indicative of non-continuity, such latter indication being employable to disconnect the power from the remote machine.

3,697,810
ELECTRICAL APPARATUS INCLUDING INTERLOCKING CIRCUIT FOR GROUND FAULT SENSOR

John I. Wilson, and Wardell Gary, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1971, Ser. No. 176,115
Int. Cl. H02h 1/02, 7/26
U.S. Cl. 317—18 D 14 Claims



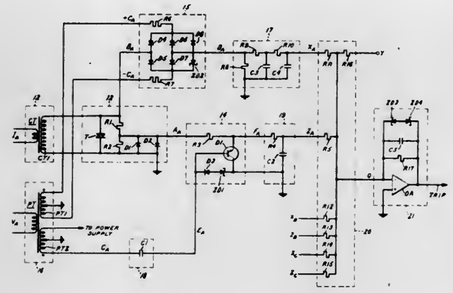
A ground fault sensor circuit adapted to provide output signals and receive input signals as part of an overall ground fault detection system including a plurality of such ground fault sensor or detector circuits, associated circuit interrupters and current monitors. The sensors are adapted to be electrically interlocked so any or all of them may be completely disabled from actuating an associated circuit breaker or may actuate a circuit breaker instantaneously depending upon the presence or absence of an input signal or may provide an output signal to actuate other ground fault sensors or give indications of predetermined operating conditions.

3,697,811
STATIC NETWORK PROTECTIVE RELAY

David W. Little, Lansdowne, Pa., assignor to General Electric Company

Filed Sept. 10, 1971, Ser. No. 179,500
Int. Cl. H02h 3/36
U.S. Cl. 317—27 R 11 Claims

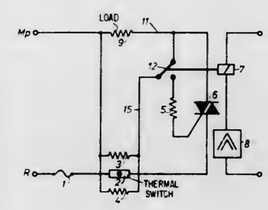
A static protective relay comprises a power directional unit for controlling a circuit breaker which couples a primary feeder or a source of supply of a 3-phase power distribution system to an alternating current secondary network through a network transformer. The power directional unit senses reverse power flow above a preselected threshold level from the network to the network transformer to energize a tripping coil of the circuit breaker. Included in the power directional unit is a voltage deriving circuit producing a voltage proportional to the system current through the circuit breaker, a modulator which modulates the voltage by a voltage proportional to the system voltage at the circuit breaker to obtain an output proportional to real power flow through the circuit breaker, and a detector which energizes the tripping coil upon the presence of a reverse power flow signal from the modulator. The power directional unit also includes a source of variable bias comprising circuitry for providing a bias signal which varies both in magnitude and in phase and is a function of the phase angle of the phase current. The variable bias is supplied as an input to the detector to provide a power directional unit exhibiting improved sensitivity to highly capacitive phase currents.



3,697,812
AUTOMATIC SAFETY SWITCH FOR ELECTRIC CURRENT LOAD

Karl Hehl, Siedlung 183, D 7291 Lossburg, Germany

Filed April 8, 1971, Ser. No. 132,508
Claims priority, application Germany, April 11, 1970, P 20 17 422.5
Int. Cl. H02h 7/00
U.S. Cl. 317—33 SC 12 Claims

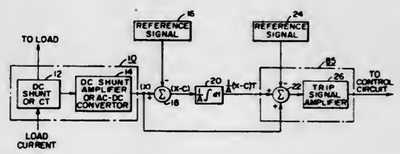


An automatic safety circuit for monitoring the power switching means controlling the main current circuit to an electric power load to automatically cut off the current in the event of a malfunction of the power switching means which causes it to continue to remain in its closed condition. The auxiliary switching circuit includes a switching arrangement for selectively disrupting the main current circuit, and an auxiliary switch controlled by the same member or circuit which controls the main power switching means for establishing a current path between the switching arrangement and a point in the main current circuit between the load and the main power switching means whenever the main current to the load is to be switched off.

3,697,813
TRIPPING CIRCUIT FOR STATIC SWITCHES

David A. Fox, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 15, 1971, Ser. No. 124,309
Int. Cl. H01h 47/18
U.S. Cl. 317—36 TD 3 Claims

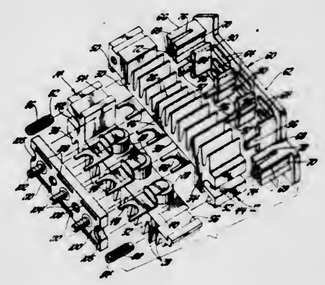


A D.C. trip circuit is provided for power system wiring protection during faults and overloads, which circuit closely approximates the characteristics of previously used thermal circuit breakers, particularly the trip time. Solid state components are used to develop a signal whose magnitude depends on simple circuit functions yet is effective to produce a trip signal wherever its magnitude is equal to or greater than zero. The trip time is close to that resulting from an I^2T (load current squared times trip time) value while requiring simpler, and hence more reliable, components to determine.

3,697,814
BRIDGE RECTIFIER HEAT SINK ASSEMBLY

Willard A. Christman, and Billy R. Jones, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 21, 1971, Ser. No. 154,900
Int. Cl. H01l 1/12
U.S. Cl. 317—100 4 Claims

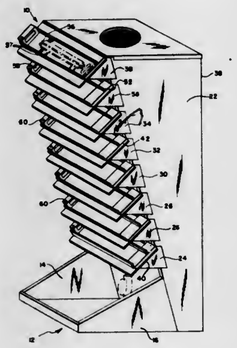


A bridge rectifier assembly and method for manufacture includes a pair of heat sinks in mating relationship for forming a center opening wherein two groups of oppositely poled semiconductor diodes are mounted on mutually facing interior walls of the pair of heat sinks. An insulating plate extends across one end of the pair of heat sinks to cover one end of the center opening. The inner side of the insulating plate includes an integral set of spacer blocks and stud fasteners. Opposing slots formed in the interior walls receive the stud fasteners to attach the pair of heat sinks together and to the insulating plate. This positions the spacer blocks within the center opening and between the diodes. A terminal board covers the center opening at the opposite end of a pair of heat sinks and is held in place by the free ends of the spacer blocks. Input terminals carried by the terminal board are connected to the diodes to complete the assembly.

3,697,815
COOLING HOOD FOR SUPPORTING PRINTED CIRCUIT BOARDS DURING BURN-IN

John Grant, Contoocook, and Miner R. Longley, Pembroke, both of N.H., assignors to Aerotronic Associates, Inc., Contoocook, N.H.

Filed Aug. 23, 1971, Ser. No. 173,891
Int. Cl. H05k 7/20
U.S. Cl. 317—100 5 Claims

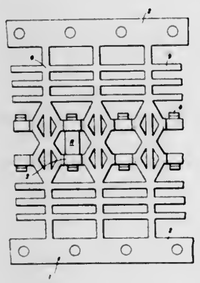


Apparatus for burn-in of printed circuit boards, particularly a hood with electrical connections, supporting the printed circuit boards or trays in superposed, staggered relationship, and angularly disposed from the horizontal, so that the semi-conductors under test are exposed outwardly in ambient air and the power-dissipating load resistors are exposed inwardly. Heat shields below the individual boards reduces thermal interaction between trays. The heat from the load resistors rises vertically with entrained air through the top of the hood. Since the boards are staggered, and angularly disposed, fresh ambient air is enhancingly entrained at each level with the result that each board is thermally isolated from the other.

3,697,816
ELECTRIC NETWORK AND METHOD OF MAKING SAME

Helmut Dull, Westerland/Sylt, Germany, assignor to Bernhard Beyschlag Apparatebau GmbH, Westerland/Sylt, Germany

Filed July 6, 1970, Ser. No. 52,356
Claims priority, application Germany, July 5, 1969, P 19 34 238.2
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CC 18 Claims

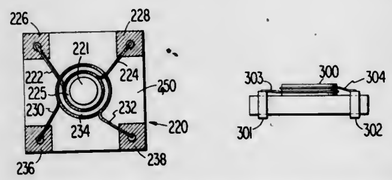


An electrical network has a carrier-free, self-supporting grid system prefabricated in one piece of an electrically conductive material. The grid system defines a plurality of electrically conductive paths. A predetermined number of various electrical components are mounted on the grid system in predetermined locations, and predetermined ones of the defined conductive paths are severed. The self-supporting grid system may be constructed as a continuous tape and cut to the desired size; and the predetermined paths may be severed by stamping or cutting.

3,697,817
MOUNTING ATTACHMENT FOR A MODULAR SUBSTRATE

James McIntire Yongue, Indianapolis, Ind., assignor to RCA Corporation

Filed Jan. 25, 1971, Ser. No. 109,158
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CC 7 Claims

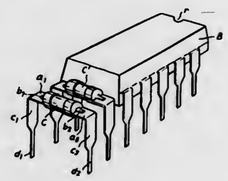


An intermediate structure is used to mount such inductive elements as coils and transformers to a significantly larger module substrate. The intermediate substrate is provided with a metalization around its edges to afford an electrical connection between the leads of the inductive element—secured at the top of the intermediary—and the module substrate—to which the metallization at the bottom of the intermediary is electrically connected. The package so formed facilitates the construction of a ceramic circuit far more simply than if the inductive element were itself secured directly to a modular substrate of ceramic material.

3,697,818
ENCAPSULATED CORDWOOD TYPE ELECTRONIC OR ELECTRICAL COMPONENT ASSEMBLY

Rene A. Boursin, Suresnes, France, assignor to Sovcor Electronique, Le Vesinet, France

Filed Jan. 25, 1971, Ser. No. 109,267
Claims priority, application France, Jan. 23, 1970, 7002443
Int. Cl. H05k 1/18
U.S. Cl. 317—101 CW 7 Claims

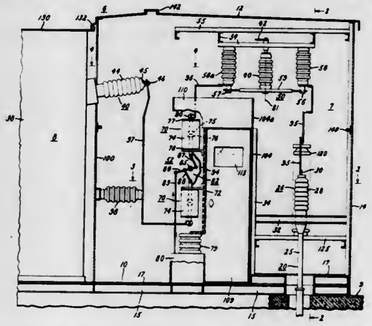


A planar sheet of conductive material is cut or etched by any suitable means to define two parallel rows of parallel contact strips each of which is formed at its outermost end as a connector pin suitable for insertion into a printed circuit board. The innermost ends of each row define opposed contact tabs to which the opposed contact pins of an electronic component may be secured by soldering. One or more selected tabs in a row may be joined to each other by a connecting strip extending lengthwise along the row and selected tabs and/or connecting strips may be bent perpendicular to the planar sheet to define additional planes of contact attachment points parallel to the planar sheet to enable electronic components to be arranged in one or more parallel planes for connected between selected contact tabs in each row of contact strips. The connected components may then be encapsulated in a plastic material. The connector pin ends of each contact strip are then electrically separated from each other and bent into two planar rows perpendicular to the planar sheet for insertion into a suitable printed circuit plug board.

3,697,819
ELECTRIC POWER DISTRIBUTION SUBSTATION

Charles D. Eichelberger, Ridley Park, and Frank L. Musselman, Wayne, both of Pa., assignors to General Electric Company

Filed Oct. 21, 1971, Ser. No. 191,238
Int. Cl. H02b 1/18; H01h 31/00
U.S. Cl. 317—103 9 Claims

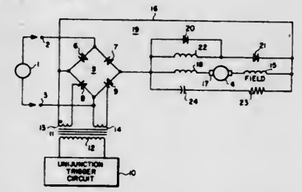


An incoming line compartment for an electric power distribution substation. The compartment comprises a metal housing containing incoming line equipment for connecting a high voltage line to the terminals of a transformer, for disconnecting it therefrom, and for providing certain fault protection and surge protection. The incoming line equipment comprises the following devices: high voltage cables entering the compartment from underground, an isolating switch suspended from a base near the roof of the metal housing, a vacuum switch, and means connecting these devices in series with each other and with the terminals of the transformer. The vacuum switch is horizontally spaced from the cables, and an inspection aisle extends between the vacuum switch and the cables beneath a horizontally movable blade of the isolating switch. This arrangement is especially compact and lends itself to being enclosed by a housing of relatively small size that leaves space for the necessary electrical clearances.

3,697,820
TRANSIENT SUPPRESSION CIRCUIT FOR D. C. MOTOR DRIVE SYSTEM

Robert J. Ehret, Los Altos, Calif., assignor to Beckman Instruments, Inc.

Filed Jan. 27, 1971, Ser. No. 110,011
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 B 4 Claims

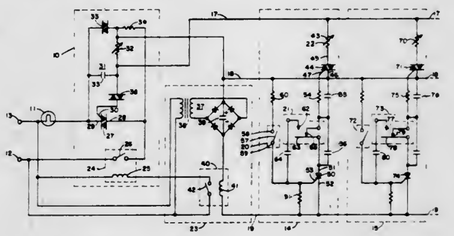


A control circuit for a d.c. system including a transient suppression network connected in parallel with an inductive load and comprising a plurality of series connected, like poled, unidirectional current conducting elements, such as diodes, and an inductive impedance connected in parallel with at least one of the unidirectional current conductive elements.

3,697,821
LIGHT DIMMING SYSTEM HAVING MULTIPLE CONTROL UNITS

James C. Johnson, Arlington, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed July 30, 1971, Ser. No. 167,712
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 B 12 Claims

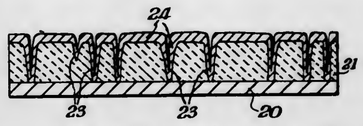


A plurality of separate remote control units are provided for individually and independently controlling the operation of a common lamp dimmer unit. Each remote control unit is capable of turning on and off the lamp dimmer unit and of controlling the brightness of the lamp or lamps independently of the previous setting or condition of any of the other remote control units. The various remote control units are connected in parallel with one another and with the remainder of the system by a three-wire conductor system.

3,697,822
ELECTROLYTIC CAPACITOR HAVING AN ELECTRODE WITH A METALLIZED CRACKED OXIDE SURFACE

Robert S. Alwitt, Williamstown, Mass., and Robert W. Santway, Bennington, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed July 21, 1971, Ser. No. 164,792
Int. Cl. H01g 9/04
U.S. Cl. 317—230 19 Claims



An aluminum surface is treated with hot water to produce a hydrous aluminum oxide film. The film is then heated treated so as to crack the oxide film. A thin film of aluminum is then deposited over this skeletal structure, and the resulting thin film contacts the original aluminum surface through the cracks in the oxide film. A high surface area electrode that is economical to manufacture is obtained in this fashion.

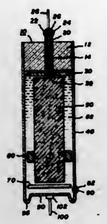
3,697,823
METAL-TO-GLASS-TO-METAL HERMETIC SEAL

Edward Max Correll, Columbia, S.C., assignor to General Electric Company

Continuation-in-part of Ser. No. 889,004, Dec. 29, 1969, Pat. No. 3,624,460. This application Nov. 3, 1971, Ser. No. 195,295
Int. Cl. H01g 9/10
U.S. Cl. 317—230 7 Claims

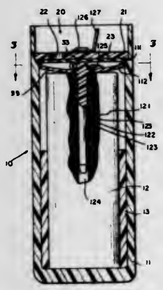
A hermetic metal-to-glass-to-metal seal for a sealed casing is disclosed comprising an outer metal member and an inner

metal member, one of which is a film-forming metal. The



inner member extends through an acid-resistant glass member which is sealed to both metal members.

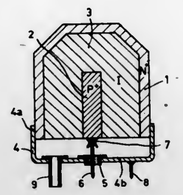
3,697,824
CAPACITOR HAVING AN ANCHORING SPIKE
John B. Greskamp, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Nov. 4, 1971, Ser. No. 195,738
Int. Cl. H01g 9/06
U.S. Cl. 317—230 **12 Claims**



An electrolytic capacitor is described having an anchoring spike between the capacitor body and the capacitor seal which stabalizes the capacitor body from movement with respect to the capacitor container and also provides adequate space for gas expansion in the device. A thermally conductive medium such as tar or asphalt material is preferably used in the bottom of the container to provide additional anti-vibration stabalization and thermal conductivity for removing heat from the capacitor body out through the capacitor container.

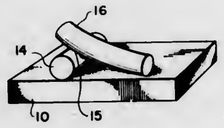
3,697,825
RADIATION DETECTOR
Johannes Meuleman, and Michel Aussant, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 26, 1971, Ser. No. 109,782
Claims priority, application France, Jan. 26, 1970, 7002618; Dec. 4, 1970, 7043724
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R **7 Claims**

A method of connecting a semiconductor crystal of a radiation detector to a support, for example, a Ge-Li detector, in which the support is constructed with a connection part the shape of which is adapted to a circumferential connection surface which is present on a side face or in a cavity of the crystal. Prior to the connection, the connection part of the support is brought to a temperature which differs from the operating temperature of the radiation detector, after which the support and the crystal are slid one into the other until the connection part of the support is located opposite to the connection surface of the crystal. The support is then brought to the operat-



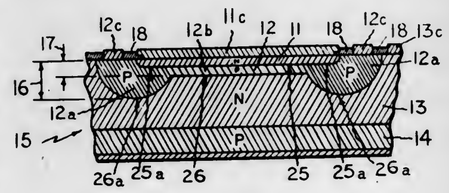
ing temperature of the detector and the crystal is connected to the support in a clamping manner.

3,697,826
JOSEPHSON JUNCTION HAVING AN INTERMEDIATE LAYER OF A HARD SUPERCONDUCTING MATERIAL
Masao Mitani; Katzuzo Aihara; Mitsuhiro Kudo; Nobuhiro Hara, all of Tokyo-to; Fujio Irie, and Kaoru Yamafuji, both of Fukuoka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 29, 1970, Ser. No. 102,370
Claims priority, application Japan, Dec. 29, 1969, 44/105294
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R **8 Claims**



Superconducting element using the Josephson effect formed by first and second layers of a soft superconducting material having a third layer of a hard superconducting material interposed therebetween, the third layer having a lower critical magnetic field which is smaller than the critical magnetic fields of said first and second layers.

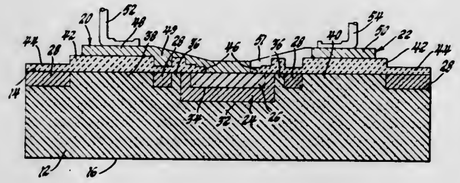
3,697,827
STRUCTURE AND FORMATION OF SEMICONDUCTORS WITH TRANSVERSE CONDUCTIVITY GRADIENTS
Edward Simon, Manchester, Mass., assignor to Unitrode Corporation, Watertown, Mass.
Continuation-in-part of Ser. No. 626,900, March 29, 1967, abandoned. This application Feb. 9, 1971, Ser. No. 113,932
Int. Cl. H01l 5/00
U.S. Cl. 317—235 **11 Claims**



An electrical semiconductor device in which the impurity concentration of a conduction region of independently controlled depth is graded in a direction parallel to an associated

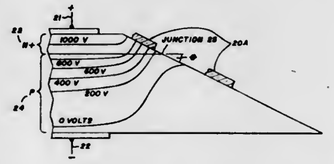
junction to provide varying areas of conduction across the junction with varying total junction current. The effect on junction performance by the transverse impurity gradients in the conduction region counteracts detrimental effects of current crowding and provides other improved device operating characteristics.

3,697,828
GEOMETRY FOR A PNP SILICON TRANSISTOR WITH OVERLAY CONTACTS
James A. Oakes, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 846,378, July 31, 1969, abandoned. This application Dec. 3, 1970, Ser. No. 94,854
Int. Cl. H01l 5/06
U.S. Cl. 317—235 R **8 Claims**



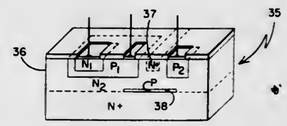
A semiconductor device having an expanded guard ring overlying substantially the entire surface of a region except for at least one island therein. A relatively thin protective coating overlies the guard ring and a relatively thick protective coating overlies the island. A terminal connector contact for a wire-bonded or flip-chip device formed on the relatively thick island portion of the protective coating, which is more suitable for withstanding bonding pressure. One form of this device includes a PNP transistor having an expanded P+ guard ring overlying a substantial portion of the collector surface noncontiguously closely surrounding the base region of the transistor. Islands of original P-type material having a relatively thick oxide coating thereon are left within the expanded P+ guard ring to support wire-bonding or flip-chip contact pads.

3,697,829
SEMICONDUCTOR DEVICES WITH IMPROVED VOLTAGE BREAKDOWN CHARACTERISTICS
Gerald C. Huth, Malvern, Pa., and Robert L. Davies, Auburn, N.Y., assignors to General Electric Company
Division of Ser. No. 255,037, Jan. 30, 1963, Pat. No. 3,491,272. This application Dec. 30, 1968, Ser. No. 812,502
Int. Cl. H01l 11/00
U.S. Cl. 317—235 R **10 Claims**



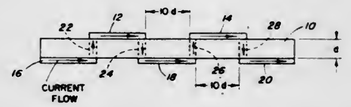
To improve the reverse voltage breakdown characteristics of a semiconductor body having a junction therein formed by zones of dissimilar resistivities the periphery of the body adjacent the junction is beveled. With a positive bevel (lowest cross section zone having the highest resistivity) the reverse voltage breakdown characteristics improve progressively as the angle between the junction and the beveled periphery decreases. With a negative bevel (highest cross section zone having the highest resistivity) the reverse voltage breakdown characteristics are typically optimal in the range of from 4° to 9°. With a dielectric coating on the beveled periphery the angle range may be extended to from 1° to 25°. With two-junction bodies, for example semiconductor rectifiers and controlled rectifiers, having a higher resistivity N or P central zone between P or N zones, respectively, of lower resistivity, a combination of positive and negative bevels may be employed with like or dissimilar bevel angles at each junction.

3,697,830
SEMICONDUCTOR SWITCHING DEVICE
Brian Dale, West Peabody, Mass., assignor to GTE Sylvania Incorporated
Filed Aug. 10, 1964, Ser. No. 388,575
Int. Cl. H01l 9/12, 11/10
U.S. Cl. 317—235 R **2 Claims**



Semiconductor switching device having four zones of semiconductor material of alternating conductivity type with surface areas in a common surface. An ohmic gate connection to the one of the intermediate zones which is the gate at its surface area is located intermediate the ohmic connections to the terminal zones. Current flow from one terminal zone toward the other terminal zone adjacent the surface of the device while the device is "on" may be withdrawn at the gate connection before it reaches the vicinity of the other terminal zone in order to turn the device "off." The turn-off characteristics of the device are thereby improved.

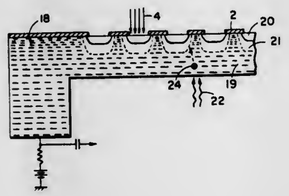
3,697,831
SERIES ELECTRICAL, PARALLEL THERMAL GUNN DEVICES
Wallace E. Anderson, Beltsville; Albert D. Krall, Rockville, and Albert M. Syeles, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 28, 1970, Ser. No. 101,566
Int. Cl. H01l 5/02
U.S. Cl. 317—235 R **8 Claims**



A plurality of Gunn devices are electrically connected in series and thermally connected in parallel and include a layer of active semiconductive material, a first plurality of electrical contacts disposed along one side of the active semiconductive material and a second plurality of electrical contacts disposed along another side of the active semiconductive material. The electrical contacts disposed along one side of the semiconductive layer overlap corresponding electrical contacts disposed along the other side of the active semiconductive layer to form a plurality of Gunn devices in the active semiconductive layer defined by the overlapping areas of the electrical contacts. In one embodiment of the invention, the electrical contacts on one side of the semiconductive layer alternate with the electrical contacts on the other side of the semiconductive layer such that the end portions of the respective contacts disposed along

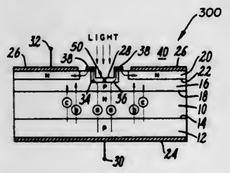
opposite sides of the semiconductive material overlap. In an alternate embodiment of the invention, the electrical contacts disposed along one side of semiconductive layer are connected by microstrip transmission lines located on heat sink such that the plurality of Gunn devices are locked in phase.

3,697,832
PLURAL PHOTO-DIODE TARGET ARRAY
Masafumi Hanaoka, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1971, Ser. No. 108,301
Claims priority, application Japan, Jan. 23, 1970, 45/6645
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R 1 Claim



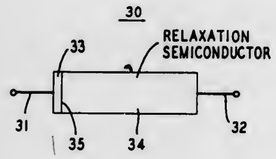
A plural photo-diode array, used as a target for silicon visicon image transmitting apparatus, employs a substrate having an impurity concentration profile which decreases about one substrate surface. The diodes are formed by diffused areas at that substrate surface comprising an impurity of opposite conductivity types.

3,697,833
LIGHT ACTIVATED THYRISTOR
Josuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1971, Ser. No. 116,358
Claims priority, application Japan, Feb. 20, 1970, 45/14600
Int. Cl. H01l *15/00, 9/12*
U.S. Cl. 317—235 R 6 Claims



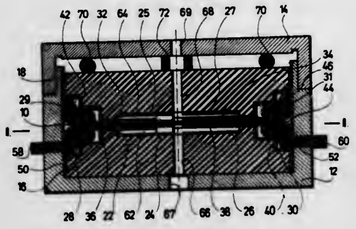
The disclosed thyristor includes an annular N emitter layer disposed on a P base layer to encircle the central portion of the latter. Another N emitter layer is disposed on the exposed surface of the central base portion to form an auxiliary thyristor around which a main thyristor is formed. The auxiliary thyristor responds to light falling upon its emitter layer to be fired. A current flowing through the fired thyristor flows into the annular emitter layer through a gate electrode bridging the auxiliary emitter layer and P base layer to fire the main thyristor.

3,697,834
RELAXATION SEMICONDUCTOR DEVICES
Horace Craig Casey, Jr., and Willy Werner van Roosbroeck, both of Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 27, 1971, Ser. No. 110,140
Int. Cl. H01l *3/20, 5/00*
U.S. Cl. 317—237 8 Claims



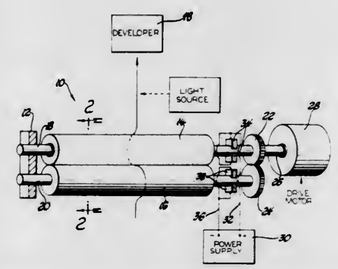
A class of semiconductor devices depend for their operation on the use of material in which dielectric relaxation time exceeds diffusion-length lifetime. Devices which may have two or more electrodes may perform a variety of functions, some of which are based on negative resistance characteristics. Such functions include switching, memory, amplification, oscillation, etc.

3,697,835
CAPACITIVE PRESSURE TRANSDUCER
Gyula Satori, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary
Filed May 24, 1971, Ser. No. 145,087
Claims priority, application Hungary, May 25, 1970, 1227
Int. Cl. H01g *7/00*
U.S. Cl. 317—246 2 Claims



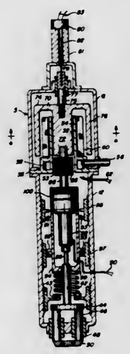
Known capacitive pressure transducers comprise a wheatstone bridge connection in each branch of which there is a capacitance. Two of them are variable while the two others are arranged on a diaphragm in a casing. The chamber of the casing is subdivided by the diaphragm into a pair of compartments and each compartment is arranged for being connected to a system the pressure of which is to be measured. Such arrangement requires considerable space and is intricate to manipulate. Moreover, its output signals are of low level due to only one pair of capacitances being variable. This invention employs four variable capacitances distributed in the individual branches of a Wheatstone bridge connection for which purpose four electrodes are supported on opposite sides of the diaphragm. Further four electrodes are arranged within the casing opposite to the electrodes on the diaphragm. Thus, four variable capacitances are formed which are connected to form a wheatstone bridge connection. Deflections of the diaphragms caused by such pressure entail variations of the bridge capacitances and, thereby output voltage signals of increased strength on the bridge terminals.

3,697,836
CERAMIC ELECTRICAL RESISTOR ROLL FOR COPYING MACHINE
James R. Moss; Richard F. Roe; Lawrence E. Coubrough, all of Golden, and Robert W. Buck, Wheatridge, all of Colo., assignors to Coors Porcelain Company, Golden, Colo.
Filed June 3, 1970, Ser. No. 43,083
Int. Cl. G03g *15/02*; H01b *1/06*; C04b *33/26*
U.S. Cl. 317—262 A 6 Claims



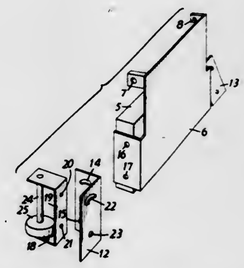
An electrostatic copying assembly including a pair of adjacent, parallel and oppositely driven rolls, one of which has a radially outer portion of fired silicate clay base ceramic material which is doped with iron oxide and a radially inner portion of conductive material to form part of the charging circuit.

3,697,837
ELECTROMAGNETIC FORCE SYSTEM FOR INTEGRATED CIRCUIT FABRICATION
Charles Wayne Umbaugh, Phoenix, Ariz., assignor to General Electric Company
Filed Oct. 5, 1970, Ser. No. 78,039
Int. Cl. H02k *33/14*
U.S. Cl. 318—128 6 Claims



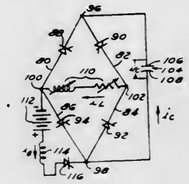
A feedback controlled spacial-force mechanism is used with a variety of tools for integrated circuit fabrication. The mechanism utilizes a force producing element having a force which may be held constant over a practical range of displacement.

3,697,838
SPEED CONTROL SYSTEM FOR A LINEAR INDUCTION MOTOR
John D. New, Denham, Bucks, England, assignor to The Harefield Rubber Company Limited, Harefield, England
Filed June 5, 1970, Ser. No. 43,795
Claims priority, application Great Britain, June 6, 1969, 28,721/69
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 11 Claims



A linear induction motor particularly applicable for actuating a sliding door and having a speed control system comprising means for varying the air gap between the primary and secondary members during relative linear movement between the members.

3,697,839
BRIDGE CIRCUIT CONTROLLER AND PROCESS FOR SUPPLYING ELECTRICAL ENERGY TO A VARIABLE RELUCTANCE MOTOR
Lewis E. Unnewehr, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed March 8, 1971, Ser. No. 121,654
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 11 Claims



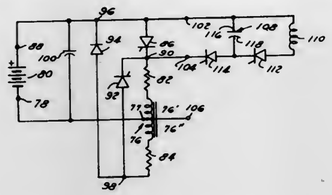
Described is a control circuit for the application of direct current electrical energy to the winding of a variable reluctance motor. Brushless operation of a variable reluctance motor, and torque and speed control thereof, may be achieved with controller circuitry including a four-arm electrical bridge, each of the four bridge arms including a solid state switching device. A capacitor is connected to the bridge and may be connected across one pair of opposed terminals of the bridge, and the motor winding is connected between the other pair of opposed terminals of the bridge. The energy source is connected to the bridge. At least one other solid state switching device is provided, this having one of its terminals connected to the energy source and another connected to the bridge.

3,697,840

CONTROLLER FOR VARIABLE RELUCTANCE MOTOR

Wolf H. Koch, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 8, 1971, Ser. No. 121,656
Int. Cl. H02k 29/00
U.S. Cl. 318—138 28 Claims



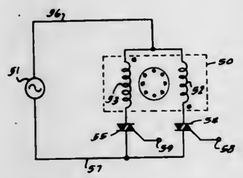
Described is a control circuit for the application of direct current electrical energy to the winding of a variable reluctance motor. Brushless operation of the variable reluctance motor is achieved with a primary solid state switching device connected in series with the motor winding and with a secondary solid state switching device connected in parallel with the motor winding. Commutation means for the primary solid state switching device are provided and a rectifier returns energy from the winding to the direct current source. Several possible circuit configurations for the commutation means are described. The control circuit may be used to provide rapid rise of motor winding ampere-turns, maintenance thereof at a high level, and rapid decline thereof with efficient return of magnetic energy to the DC source.

3,697,841

INDUCTION MOTOR STRUCTURE AND REVERSING CIRCUIT THEREFOR

Arne M. Nystuen, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed April 16, 1971, Ser. No. 134,579
Int. Cl. H02p 1/42
U.S. Cl. 318—207 A 13 Claims



An induction motor having a squirrel cage rotor is provided with an additional stator winding which when energized in proper sequence with the original stator winding causes a rapid reversal of the motor. The additional stator winding may be located on the same axis as the original stator winding or may be spaced 90 electrical degrees from the original winding.

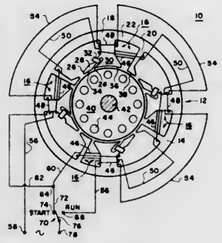
3,697,842

HIGH STARTING TORQUE ECCENTRIC WINDING SHADED POLE MOTOR

Wayne J. Morrill, 3448 S. Washington Road, Fort Wayne, Ind.

Filed May 20, 1971, Ser. No. 145,401
Int. Cl. H02p 1/44
U.S. Cl. 318—221 R 8 Claims

A single phase, shaded pole, alternating current induction motor which includes a stator core member having at least one pair of pole piece assemblies. Each pole piece assembly comprises first and second portions, the first portion having a shading coil thereon on the side thereof remote from the second portion which forms shaded and unshaded sections of the first pole piece portion. A first coil embraces each pole piece assembly and a second coil embraces the first portion only of each pole piece assembly. The first coils are connected in series to form a first winding and the second coils are also connected in series to form a second winding, the first and second windings being connected in series. A speed-responsive switch is provided having first and second positions, the



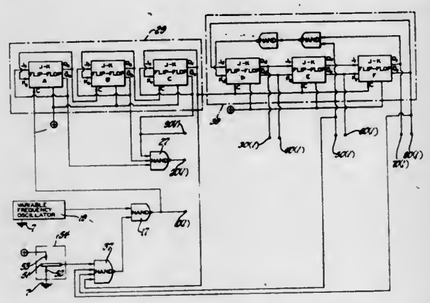
switch in its first position coupling the first winding for energization across a single phase, alternating current source for starting the motor. The switch is actuated to its second position in response to a predetermined motor speed in which both the first and second windings are serially coupled for energization across the source. The coils on each of the pole pieces are arranged so that upon energization of both the windings the unshaded pole piece sections respectively have greater magnetomotive force therein than the second pole piece portions.

3,697,843

THREE-PHASE INVERTER CONTROL CIRCUIT

Joseph A. Riess, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1971, Ser. No. 203,225
Int. Cl. H02p 5/40
U.S. Cl. 318—227 10 Claims



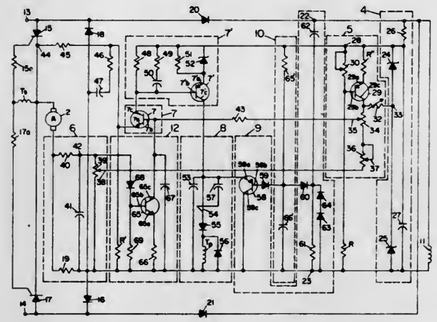
A three-stage counter circuit, responsive to the output signals of a variable frequency oscillator, produces three series of logic level signals and three series of complementary logic level signals, the repetition rate of each signal series being one-half the repetition rate of the series of the next highest repetition rate. A three-stage shift register circuit, responsive to the series of logic level signals of the lowest repetition rate, produces a repeating series of six electrical timing signals. An inverter silicon controlled rectifier NAND gate corresponding to each inverter silicon controlled rectifier produces a series of inverter silicon controlled rectifier trigger signals in response to the output signals of the variable frequency oscillator and the electrical timing signal during which the corresponding silicon controlled rectifier to be conductive and an extinguishing silicon controlled rectifier NAND gate corresponding to each extinguishing silicon controlled rectifier produces an extinguishing silicon controlled rectifier trigger signal in response to the series of complementary logic level signals of the lowest repetition rate and two of the electrical timing signals. The inverter silicon controlled rectifier trigger signals and the extinguishing silicon controlled rectifier trigger signal produced by each NAND gate are amplified by a respective silicon controlled rectifier trigger signal amplifier circuit and are applied across the inverter silicon controlled rectifiers and the extinguishing silicon controlled rectifiers of a three-phase inverter circuit in the proper sequence to provide for the cyclical energization of the phase windings of a three-phase alternating current motor from a direct current supply potential source.

3,697,844

FULL WAVE DC MOTOR CONTROL

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company

Filed July 28, 1970, Ser. No. 58,773
Int. Cl. H02p 5/06, 7/00
U.S. Cl. 318—331 8 Claims



A motor control circuit for use with a direct current motor. The control circuit includes means for generating and comparing a signal representative of the actual speed of the motor and a reference signal which has a component thereof indicative of the IR voltage of the armature and which further takes into account the field weakening effect of direct current motors to provide complete IR compensation over the entire range of motor speeds.

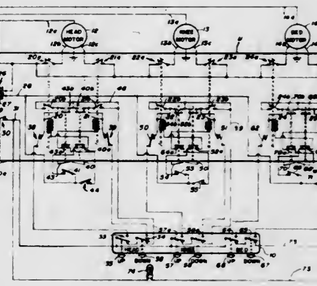
3,697,845

CIRCUIT FOR A DIRECT CURRENT ELECTRIC MOTOR WHICH IS CONTROLLED BY THYRISTORS BOTH WHILE RUNNING AND WHILE BEING BRAKED

Jacques Soffer, Sceaux, and Robert Lhommelet, Bois d'Arcy, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Sept. 29, 1970, Ser. No. 76,563
Int. Cl. H02p 5/16
U.S. Cl. 318—341 3 Claims

A circuit for a direct current motor of which the armature is fed, during the driving action of the motor, through the intermediary of a driving thyristor provided with a thyristor extinguishing means, the armature being connected during braking of the motor, through a series connected load resistance and a braking thyristor provided with means for extinguishing the braking thyristor, the extinguishing means comprising a switching inductance and a switching condenser, and a circuit connected in anti-parallel of an extinguishing thyristor and a diode for recharging the switching condenser; the switching condenser has a first terminal connected to a terminal of the motor which is common to the driving thyristor and the braking thyristor, and a second terminal common to the anti-parallel circuit of the means for extinguishing the driving thyristor and to that for extinguishing the braking thyristor, the circuits being so connected that such one switching condenser serves both thyristor extinguishing means.



3,697,846

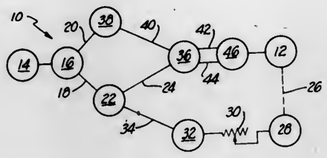
CONTROL SYSTEM FOR HOSPITAL BED

Floyd F. Mueller, Two Rivers, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 11, 1971, Ser. No. 114,590
Int. Cl. H02p 3/00
U.S. Cl. 318—544 12 Claims

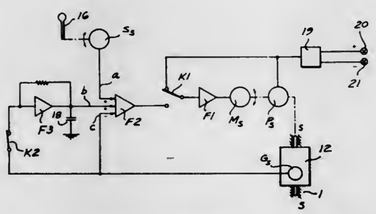
A control system for a hospital bed includes circuitry for selectively energizing an electrical motor for each function desired to be performed. There is a control panel at the footboard of the bed for use by a nurse or other attendant and a pendant for use by the occupant of the bed. There is a forward and reverse position for each motor, and the circuit connections permit independent control at the footboard panel which may be interrupted by action taken at the pendant. Control of functions at the pendant are of the momentary contact type, and it ceases when the occupant releases a switch. Adjustment of the bed at the footboard, however, continues until a limit position is reached or the occupant intervenes or the nurse actuates a stop or cancel switch. The pendant has priority of control, but the nurse may actuate a switch which locks out control by the occupant yet permits the occupant to maintain ability to interrupt control at the footboard. A level sensitive switch is used to place the bed in a predetermined incline to achieve a Trendelenburg position.

3,697,847
SERVOMOTOR CONTROL
Henry V. Rygiol, 3146 Purer Road, Escondido, Calif.
Filed Jan. 27, 1971, Ser. No. 110,020
Int. Cl. G05b 1/01
U.S. Cl. 318—608 6 Claims



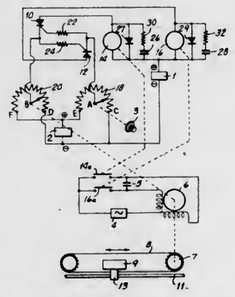
A control system in which an electric motor is operated in either of two directions in order to accomplish a function may be constructed so as to utilize a reference means which supplies a current having pulses at an initial frequency. A splitter means is used to split the reference current into separate currents, each having pulses with related frequencies. The first of these separate currents is supplied to a shifter means together with a control current having pulses at a control frequency which corresponds to a function to be accomplished by the operation of the motor. This shifter means produces an output having pulses at a variable frequency corresponding to when pulses of the first of the separate currents are in synchronism with pulses of the control current. The frequency pulses of the shifter means are compared in the comparison means with the frequency of pulses from within said second separate current to determine if the frequency of one is greater than the other. The motor is connected to the comparison means so as to be operated in either of the noted directions, depending upon which of the frequencies compared is greater.

3,697,848
TARGET TRACKING SIGHT
Jan Lennart Borjeson, Kalskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Feb. 26, 1971, Ser. No. 119,208
Claims priority, application Sweden, March 6, 1970, 3047/70
Int. Cl. B64c 17/02
U.S. Cl. 318—649 5 Claims



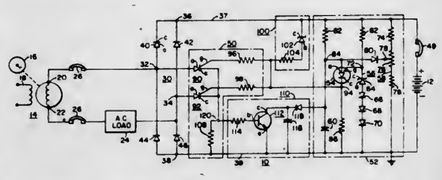
The invention relates to a sighting device, in particular an optical sighting device, for target tracking purposes. The sight comprises a sight casing, which is manually movable by a sight operator in azimuth as well as in elevation, and optical sighting means mounted in said sight casing and having a line of sight which can be deviated in azimuth as well as in elevation relative to the sight casing under the control of the sight operator and which is gyro-stabilized so as to be independent of any movements of the sight casing. During the target catching phase and the rough-aiming of the sight line on the target, however, the gyro-stabilization of the sight line can be suspended and the sight line be locked in a predetermined fixed position relative to the sight casing so as to be movable in space only by rotation of the sight casing. Special features of the sight guarantee that, when said locking of the sight line relative to the sight casing is released and the gyro-stabilization of the sight line is reestablished, the sight line will automatically continue to move in substantially the same direction and with substantially the same angular velocity relative to space as immediately before the transition from a sight line stationarily locked relative to the sight casing to a gyro-stabilized sight line which the sight operator can deviate relative to the sight casing and which is independent of the motions of the sight casing.

3,697,849
ON-OFF SERVOMECHANISM CONTROLLED BY A WHEATSTONE BRIDGE
Michio Uchida, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Jan. 15, 1971, Ser. No. 106,845
Claims priority, application Japan, Jan. 24, 1970, 45/6490
Int. Cl. G05b 11/14
U.S. Cl. 318—674 4 Claims



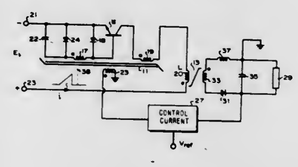
A pair of semiconductive switching elements connected in back-to-back relation with each other are energized by a first DC source connected to a bridge circuit including at least two adjustable-slider resistors in such a way that both of the switching elements are turned off when the bridge circuit is balanced while one of the switching elements is turned on when the bridge circuit is unbalanced. The semiconductive switching elements are connected to relays such that when one switching element is turned on, an object to be controlled is controlled through the relay and the bridge circuit is balanced.

3,697,850
BATTERY CHARGER CONNECTED IN SERIES WITH AN ALTERNATING CURRENT LOAD CIRCUIT VIA A RECTIFIER
Theodore M. Heinrich, Murrysville, Pa.; Robert L. Martin, Excelsior, Minn., and David J. Steele, Harlow, England, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1970, Ser. No. 103,100
Int. Cl. H02j 7/10
U.S. Cl. 320—39 6 Claims



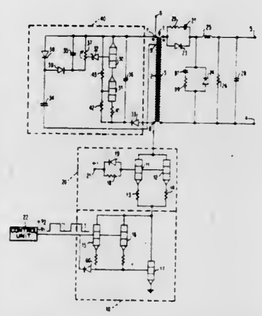
A battery charger which receives energy for replenishing and maintaining a charge on a battery, from an alternating current source which may vary in voltage and frequency. The battery charger connects the battery in series with the alternating current source and its alternating current load via a rectifier, with the load current being shunted away from the battery when the charging current requirements of the battery are satisfied.

3,697,851
REGULATING CONVERTER CIRCUIT
Robert E. Mast, Woodland Park, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 14, 1970, Ser. No. 97,842
Int. Cl. H02m 3/32; G05f
U.S. Cl. 321—2 2 Claims



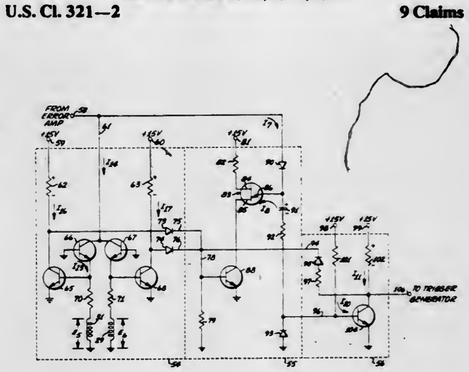
An improved high-efficiency D.C.-to-D.C. converter circuit uses a single transistor to provide both D.C. level conversion and output regulation. A control winding on a saturable core inductor alters the recycle time of the converter to control the level of magnetic flux in an output transformer per cycle of operation.

3,697,852
TRANSISTOR SWITCHING REGULATOR
Clarence G. Gerbitz, Red Hook, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed April 30, 1971, Ser. No. 139,076
Int. Cl. H02m 3/32; H03k 17/60
U.S. Cl. 321—2 10 Claims



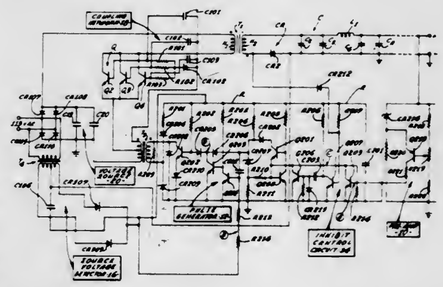
A transistor switching regulator for a power supply including a DC source, a transformer primary, a switching transistor, and a control transistor operated in switching mode connected in series. The switching transistor and control transistor aRe connected in series relationship. The switching transistor has a DC bias connected to its base so that switching is driven into or near saturation when the control transistor is turned on and driven in its open-emitter cut off condition when the control transistor is cut off. The switceing transistor can accept voltage surges induced at turn-off in the transformer primary up to its collector-base breakdown characteristic (BV_{cbo}).

3,697,853
PULSE GENERATOR FOR USE WITH A SWITCHING REGULATOR
John R. Nowell, Phoenix, and Luther L. Genuit, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 22, 1971, Ser. No. 214,500
Int. Cl. H02m 1/08, 1/18, 3/32
U.S. Cl. 321—2 9 Claims



A rate generator and a recovery disable circuit receive an input current and deliver pulses having a frequency which is proportional to the value of the current received. The recovery disable circuit prevents the rate generator from delivering pulses during the time the silicon controlled rectifiers and output diodes of the switching regulator are conducting. The rate generator includes an oscillator which develops pulses and a pulse amplifier which amplifies the pulses and prevent noise signals from decreasing the width of the pulses.

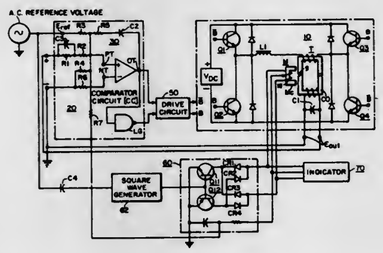
3,697,854
REGULATED DC-DC POWER SUPPLY
James K. Berger, Sherman Oaks, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Continuation of Ser. No. 58,042, July 24, 1970, abandoned.
This application Jan. 27, 1972, Ser. No. 221,272
Int. Cl. H02m 3/32; H03k 3/30
U.S. Cl. 321—2 4 Claims



An improved direct-current power supply is provided for converting alternating-current power or direct-current power

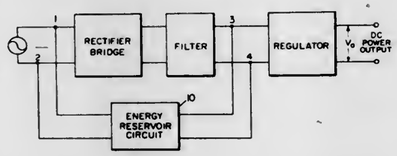
into direct-current power, and which has particular utility in energizing electronic equipment such as computers, data processors, and the like. The power supply of the invention is a regulated fly-back type in which electric energy from an appropriate source is alternately stored in an electromagnetic device, such as a transformer, and then released into a load. The improved power supply of the invention includes control circuitry which causes a constant amount of energy to be stored during each cycle independently of source voltage, and which enables the power supply to exhibit highly favorable regulation characteristics through a wide range of loads.

3,697,855
HYSTERESIS-LOOP CONTROL FOR A POWER TRANSFORMER
Andress Kernick, Lima, and Glenn W. Ernsberger, Worthington, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 26, 1970, Ser. No. 83,957
Int. Cl. H02m 7/42; G05f
U.S. Cl. 321—9 A **2 Claims**



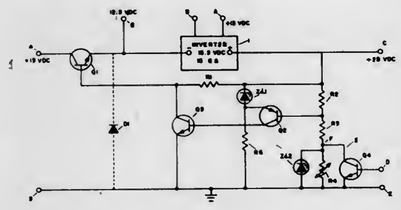
This invention relates to the use of a magnetic sensing device for monitoring the magnetic flux condition in the core of an inverter output transformer as a means for developing an inverter control feedback signal indicative of an unbalance in the magnetic flux between alternate half cycles of an inverter AC output voltage waveform developed across the output transformer.

3,697,856
VOLTAGE REGULATING CIRCUIT
Kwang-ta Huang, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 14, 1970, Ser. No. 97,861
Int. Cl. H02m 1/14, 7/12
U.S. Cl. 321—10 **3 Claims**



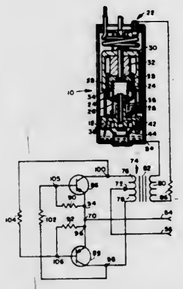
An arrangement for desensitizing dc power supplies to momentary ac power interruptions by incorporating therein an energy-storage network which is charged rapidly to its peak capacity, and then remains on "stand-by" status until an ac power loss occurs. It then supplements the output of the conventional capacitor to maintain steady dc power for a longer period of time than would be otherwise possible.

3,697,857
POWER SUPPLY AND CONTROL CIRCUIT
Mahmound El-Banna, Montreal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Filed April 15, 1971, Ser. No. 134,234
Claims priority, application Canada, May 7, 1970, 082190
Int. Cl. H02m ; H04b 1/04
U.S. Cl. 321—20 **3 Claims**



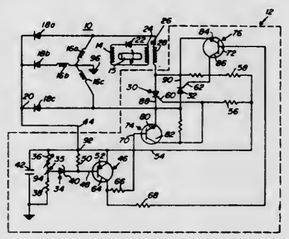
A power supply and control circuit for providing a high voltage DC output from a low voltage DC source, i.e., a DC battery, especially useful for solid state transmitters. The source is connected across the input and a second source is connected between one terminal of the first source and a corresponding terminal of the input, the second source being in series aiding relationship to the first source. A transistor is serially connected between the first source and the second source, and a diode is connected across the first source with one electrode between the transistor and the second source and the other electrode at the second terminal of the first source. The diode provides short circuit protection.

3,697,858
LINEAR SOLENOID AND INVERTER
Robert R. Wells, Anaheim, Calif., assignor to Staco-Switch, Inc.
Filed Oct. 29, 1971, Ser. No. 193,931
Int. Cl. H02m 7/48
U.S. Cl. 321—18 **9 Claims**



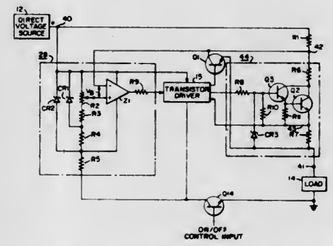
A resistive coupled transistored inverter for use with a solenoid providing a resistor-coupled feedback oscillator effect in an improved form wherein the improvement comprises a governing or control circuit in combination therewith. The governing or control circuit comprises a transistor and an appropriate voltage divider within the entire circuit to govern the periodicity of current oscillations in a uniform manner with respect to the back EMF and mechanical oscillations in the solenoid. The circuit is particularly accurate because it responds to the mechanical oscillations within the solenoid for purposes of matching the electrical current oscillation of the inverter with the natural mechanical oscillations of the moving elements of the solenoid.

3,697,859
VOLTAGE REGULATOR CIRCUIT FOR A BRUSHLESS ALTERNATOR
Raymond E. Nordbrock, Villa Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed May 21, 1971, Ser. No. 145,673
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **8 Claims**



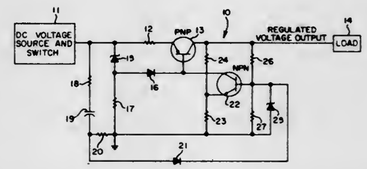
A voltage regulator circuit for a brushless alternator includes voltage responsive circuitry having a zener diode. When the alternator output voltage drops sufficiently, a first transistor, normally in a state of conduction, is turned off to in turn, through a pair of transistors connected thereto, gate on a pair of oppositely poled silicon controlled rectifiers. The silicon controlled rectifiers, which are connected in series with the stationary primary winding of a rotary transformer mounted on the alternator shaft, pass a.c. current to the primary winding. The current flow in the transformer primary induces a current flow in the secondary which is rectified to excite the alternator field. Upon the voltage output of the alternator rising sufficiently to break down the zener diode of the voltage responsive circuitry, the first transistor and the transistors connected thereto are turned on, to gate off the silicon controlled rectifiers, thereby preventing further excitation of the field.

3,697,860
DC STATIC SWITCH CIRCUIT WITH A MAIN SWITCH DEVICE AND A POWER SHARING CIRCUIT PORTION
Donal E. Baker, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed March 15, 1971, Ser. No. 124,232
Int. Cl. G05f 1/58
U.S. Cl. 323—9 **5 Claims**



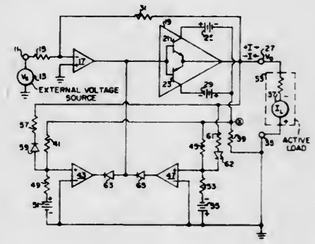
A static switch circuit is provided with a power sharing circuit portion operable to dissipate power in resistive dissipation elements so the required dissipation is shared with the main power transistor in the circuit. The result is a circuit with improved current limiting capability and one that permits use of relatively small and inexpensive transistors. The circuit also includes an improved current limiting controller for the switch.

3,697,861
SHORT CIRCUIT PROTECTED VOLTAGE REGULATOR
Melvin A. Frazier, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.
Filed April 29, 1971, Ser. No. 138,550
Int. Cl. G05f 1/58
U.S. Cl. 323—9 **9 Claims**



A series voltage regulator providing both short circuit and overload protection having a transistor in series with a preceding resistor in a direct path from dc input to dc regulated voltage output. The transistor is a series control element part of current limiting circuit subject to control with voltage drop variation through the preceding resistor. The voltage regulator also has automatic self-starting circuitry coupled through to a regulator bias circuit subject to being decoupled when the bias circuit connected to regulated dc output is sustaining operational bias in the regulator during normal operation after regulated dc voltage is developed at the regulator output.

3,697,862
POWER SUPPLY HAVING MEANS FOR LIMITING LOAD CURRENTS WITH BOTH ACTIVE AND PASSIVE LOADS
Robert L. Taylor, Green Brook, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 15, 1971, Ser. No. 153,340
Int. Cl. G05f 1/58
U.S. Cl. 323—9 **4 Claims**

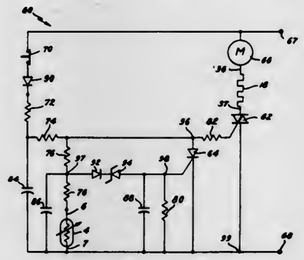


A voltage regulated power amplifier has a bipolar output voltage capability and will drive either a passive or active load. First and second amplifier circuits respond respectively to positive and negative load currents of predetermined magnitudes to limit current at the output terminal of the power amplifier.

3,697,863
OVERCURRENT PROTECTION SYSTEM AND SENSOR USED THEREWITH
Olive H. Kilner, Warwick, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 4, 1971, Ser. No. 103,406
Int. Cl. G05f 1/44; H02p 5/40
U.S. Cl. 323—20 **9 Claims**

An overcurrent sensor adapted to cooperate with a controller to control the power to a load is shown. In the embodiment illustrated, the controller is an electrical switching means to which the overcurrent sensor furnishes a passive

signal in the form of circuit resistance to cause the controller to operate to decrease or increase electrical power to the load circuit at desired current values. The overcurrent sensor comprises a PTC (Positive Temperature Coefficient) thermistor or an NTC (Negative Temperature Coefficient) thermistor mounted in heat transfer relation, through a layer of electrical insulation, with a first heater which is electrically connected in series with an electrical load, and a heat sink member



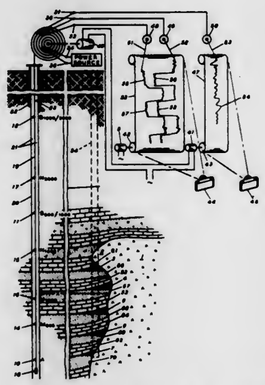
mounted in heat transfer relation through a layer of electrical insulation with the series heater to provide means for changing the transient response time of the thermistor to the series heater current. A second heater is optionally mounted in shunt relation to the first heater to provide a means of increasing the steady state current at which the controller operates, above that obtained solely with the first heater while maintaining approximately unchanged the transient response time of the thermistor assembly for corresponding overload currents.

3,697,864

METHOD OF DETECTING GEOLOGICALLY ANOMALOUS BODIES LATERAL TO A BOREHOLE BY COMPARING ELECTRICAL RESISTIVITY MEASUREMENTS MADE USING SHORT-RANGE MEASURING MEANS AND A LONG-SPACED ELECTRODE ARRAY

Richard J. Runge, Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 16, 1970, Ser. No. 89,675
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 **6 Claims**



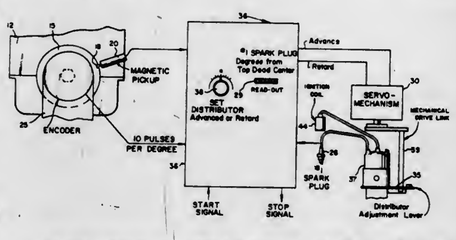
An improved method of detecting geologically anomalous bodies lateral to a borehole and determining the distance thereto utilizes a long-spaced electrode array with a current source and a current sink electrode located within the borehole. A short-spaced electrode array or other short-range electrical resistivity measuring means such as an induction log is used to obtain resistivity values for the formation surrounding the borehole. A long-spaced electrode array comprising two potential measuring electrodes, M and N, and two current electrodes, A and B, positioned within the borehole, is utilized to make resistivity measurements of the formation surrounding the borehole, said measurements reflecting the presence of electrically resistive geologically anomalous bodies located at lateral distances from the borehole up to a distance on the order of twice the spacing between the source or sink electrode and the closest potential measuring electrode. The electrodes of the long-spaced array are positioned so that B lies within the borehole and above N, N is positioned above M, M is positioned above A, and the BN distance is approximately equal to the AM distance. The short-range resistivity values are then compared with the resistivity measurements from the long-spaced electrode array, significant differences therebetween indicating the presence of an electrically resistive anomaly lateral to the borehole and the magnitude of said differences indicating the distance from the borehole to said anomaly.

3,697,865

METHOD AND APPARATUS FOR TESTING ENGINES

Richard L. Smith, Garden City, and Dennis F. Sauerbrey, Southfield, both of Mich., assignors to Scans Associates, Inc., Livonia, Mich.

Continuation of Ser. No. 862,604, Sept. 2, 1969. This application Dec. 15, 1970, Ser. No. 98,475
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **3 Claims**



This application discloses a system or installation for testing automobile engines on a production basis to check or reveal the timing angle of each engine and to adjust said angle automatically in the process of the test to a predetermined standard or value. The application discloses further the instrumentation of a single test stand, adapted to perform such function, the manner in which a plurality of individual stands are combined with a conveyor automatically serving such stands to deliver the test engines to individual stands for tests, in the process of which tests a number of test operations are automatically performed in a predetermined sequence with the tested engines returned to the conveyor for delivery to the unloading stations. The application discloses further the manner in which a computer is combined with individual stands and with the conveyor to control the sequence of operations in individual stands and in the entire system to perform the predetermined tests as a part of production operations in an automobile plant.

3,697,866

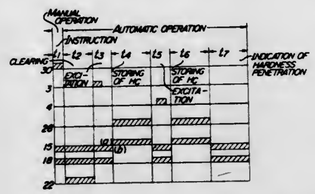
AUTOMATIC NON-DESTRUCTIVE CASE DEPTH MEASURING INSTRUMENT

Kimio Kanda, Hitachi, and Kunio Ono, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 19, 1970, Ser. No. 90,997
Claims priority, application Japan, Nov. 21, 1969, 44/92954
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 R **10 Claims**

A testing instrument for automatically non-destructively determining the hardened depth in accordance with the coer-

cive force of a steel by periodically impressing a D.C. magnetic field externally on the steel by energizing an electromagnet from a D.C. source, measuring the magnetic flux density of said D.C. magnetic field by means of a Hall element while varying the magnetomotive force of said field, integrating the



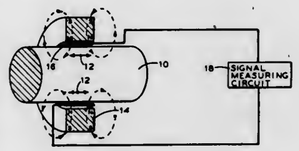
measured value of magnetic flux density, applying the integrated value to the electromagnet alternately with connection of the D.C. source to the electromagnet and reading the value of the magnetomotive force to said field at the point when the magnetic flux density has reached zero or a prescribed value.

3,697,867

VIBRATION SENSOR UTILIZING EDDY CURRENTS INDUCED IN MEMBER VIBRATING IN THE FIELD OF A MAGNET

Claus Kleesattel, Forest Hills, N.Y., assignor to Cavitron Corporation, Long Island City, N.Y.

Filed June 19, 1969, Ser. No. 834,720
Int. Cl. G01r *33/00*
U.S. Cl. 324—40 **19 Claims**



Eddy current devices are used to measure the amplitude and/or direction of various components of a vibrating body as a result of an acoustic signal applied thereto. These devices are also used to measure the power transmitted by said acoustic signal to a load which is coupled to the vibrating body.

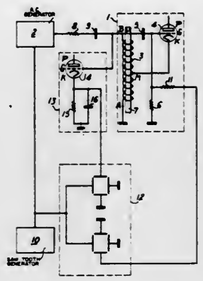
3,697,868

FREQUENCY CONTROLLED HARTLEY OSCILLATOR CIRCUIT FOR NON-DESTRUCTIVE EDDY CURRENT TESTING OF AN ELECTRICALLY CONDUCTIVE MATERIAL

Jean-Claude Carossi, Manosque; Jean-Pierre Dufayet, Aix-en-Provence, and Roger Dujardin, Gambois, all of France

Continuation-in-part of Ser. No. 815,715, April 14, 1969, abandoned. This application Nov. 13, 1969, Ser. No. 876,257
Claims priority, application France, Oct. 17, 1968, 170227
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **4 Claims**

A method of non-destructive eddy-current testing of the characteristics of electrically conductive parts wherein the part to be inspected is introduced inside an induction winding connected at an intermediate point to the electrode which serves as cathode of an active electronic device, said winding being intended to serve both as a coil for generating an alternating magnetic field which produces eddy currents within said part and as a coil for detecting the field induced by said currents, and wherein an alternating-current voltage is applied to said active device and a given type of defect exhibited by said part is detected by studying the resultant changes accord-



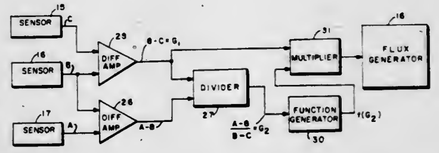
ing to the frequency of said alternating-current voltage in the voltage collected at the electrode which serves as a grid of the active device and/or in the terminal voltage of said winding.

3,697,869

SYSTEM FOR GENERATING COMPENSATING SIGNALS FOR MAGNETIC EFFECTS OF AIRCRAFT ON MAD SYSTEM

Myron M. Greenberg, Warminster, Pa., and Steven A. Macintyre, Reston, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 23, 1970, Ser. No. 74,573
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **4 Claims**



A compensation system for neutralizing an aircraft's magnetic effects on a magnetic anomaly detector system by generating compensating magnetic signals to neutralize the aircraft's magnetic effects on the detector system. Three sets of flux gate sensors or three total field sensors generate electrical signals of a magnitude indicative of a sensed magnetic field. The electrical signals are operated upon to provide compensating signals equal and opposite to an aircraft's magnetic effects on a magnetic anomaly detector.

3,697,870

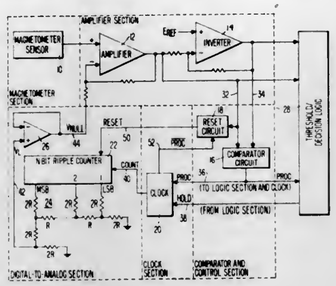
DIGITALLY NULLED MAGNETIC DETECTION SYSTEM

Leonard C. Brenner, Falls Church, Va., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 24, 1971, Ser. No. 183,566
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **8 Claims**

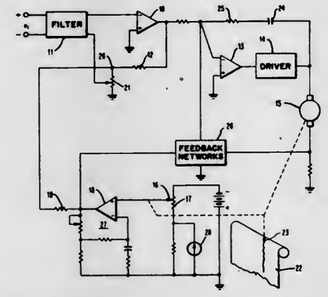
Digital ambient nulling techniques are applied to a magnetometer sensor to provide high sensitivity magnetic detection with minimum circuit and system complexity. The system performs an automatic cancellation of the comparatively large steady-state earth's magnetic field to permit the sensing of

very small magnitude, very low frequency signal information. Such cancellation of the earth's field effects is accomplished



by means of an electronically controlled incremental null voltage.

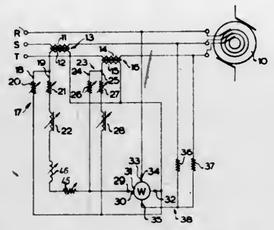
3,697,871
SINGLE ELEMENT ADJUSTMENT FOR SPAN AND GAIN
Samuel J. MacMullan, Newtown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed March 19, 1970, Ser. No. 20,880
Int. Cl. G01r 17/06, 15/08
U.S. Cl. 324—99 R **9 Claims**



In an adjustable span null balance system the input signal is applied to an amplifier. A first feedback voltage related to the output of the amplifier is summed with a second feedback voltage related to the output of the system. The summed voltages are applied to a single adjustable resistance connected to the input to the amplifier. A change in this adjustable resistance changes both the span of the system and the gain of the amplifier without changing the sensitivity of the system.

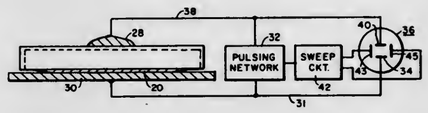
3,697,872
CIRCUIT FOR MEASURING THE POWER CONSUMPTION OF THREE PHASE LOADS
Jurgen Schulz, Plochingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 28, 1971, Ser. No. 110,417
Claims priority, application Germany, Feb. 3, 1970, P 20 04 685.9
Int. Cl. G01r 7/00, 21/00
U.S. Cl. 324—142 **13 Claims**

Two of the three phases are connected in series with the primary of a respective current transformer, the secondary of each transformer being connected to a respective current divider that separates the secondary current into an in-phase component and into an out of phase component, the in-phase component of one current divider and the out of phase component of the other current divider being connected to one end of the current path of a watt meter, the other end being connected to the out of phase component of the one current



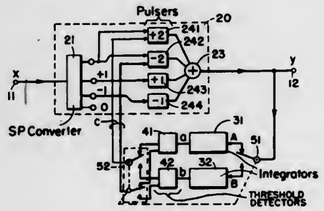
divider and the in-phase component of the other current divider. The voltage path of the watt meter is connected across the load.

3,697,873
METHOD FOR DETERMINING EXCESS CARRIER LIFETIME IN SEMICONDUCTOR DEVICES
Robert G. Mazur, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 28, 1969, Ser. No. 828,621
Int. Cl. G01r 31/22; B23k 21/00
U.S. Cl. 324—158 D **1 Claim**



Described is a method for excess carrier lifetime testing of semiconductor materials by the use of ultrasonically soldered contacts in obtaining open-circuit voltage decay measurements. The method is particularly adapted for use in in-line production testing of semiconductor wafers and does not require the use of high temperatures to bond contacts to the wafer being tested.

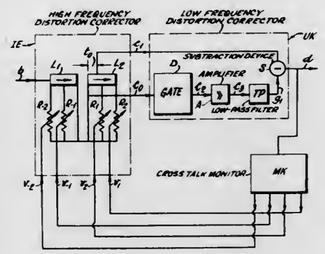
3,697,874
MULTILEVEL CODE CONVERSION SYSTEM
Hisashi Kaneko, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 693,499, Dec. 12, 1967, Pat. No. 3,560,856. This application June 6, 1969, Ser. No. 831,143
Claims priority, application Japan, June 14, 1968, 43/41251; June 14, 1968, 43/41250
Int. Cl. H04l 3/00
U.S. Cl. 325—38 A **8 Claims**



A PCM code conversion and transmission system in which a code signal representative of an information signal is trans-

mitted in the form of a train of multilevel pulses spaced by a clock pulse interval. A plurality of groups of pulses are extracted from the train at a predetermined interval equal to an integral multiple of the clock pulse interval, the groups having a time lag of one clock pulse interval from one group to another, and each group independently integrated. Means are provided for inverting the polarity of at least one level of the multilevel pulses in response to the time integration in each group to cancel the DC component and eliminate select frequency spectrum components.

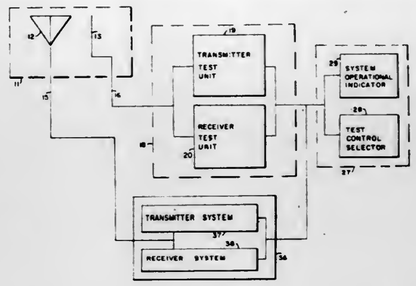
3,697,875
LOW FREQUENCY DISTORTION CORRECTION IN ELECTRIC SIGNALING SYSTEMS
Gustav Guanella, Zurich, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro- Holding AG, Glarus, Switzerland
Filed Aug. 21, 1970, Ser. No. 66,017
Claims priority, application Switzerland, Aug. 29, 1969, 13121/69
Int. Cl. H04l 25/06
U.S. Cl. 325—65 **14 Claims**



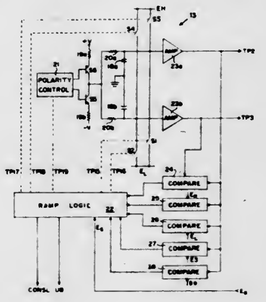
In pulse signal transmission, the low-frequency signal components weakened or suppressed by a distorting transmission channel are transmitted in the form of equi-spaced auxiliary pulses intercalated between successive groups of equal numbers of signal pulses. The distorted auxiliary pulses, which may have a zero, constant or quantized amplitude, are segregated at the receiver from the composite receiving signal and the segregated pulses converted by means of a low-pass filter into a subfrequency correcting signal which is applied to the composite signal in proper time phase and amplitude, to restore the original undistorted pulse signal. Where a continuous signal pulse series is transmitted having a constant pulse spacing distance throughout, special time compression and expansion means serve to compress successive groups of the pulses, to provide spacing intervals for the intercalation of the auxiliary pulses at the transmitter, on the one hand, and to restore the original continuous signal pulse series at the receiver, on the other hand.

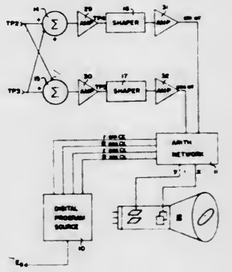
3,697,876
ANTENNA SELF-TEST SYSTEMS
Robert Robbins, Hudson; Arthur R. Whitty, Hollis, and Louis J. Kachavos, Derry, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Oct. 17, 1969, Ser. No. 867,245
Int. Cl. H04b 1/16, 1/04
U.S. Cl. 325—67 **4 Claims**

An antenna system is provided, in which a small test probe positioned in the antenna cavity is coupled to a system self-test unit. A signal, designed to exercise the primary functions of the system under evaluation is transmitted between the antenna and the test probe and then conducted to the actual system or the self-test unit for processing. This signal activates the appropriate system which is then evaluated for actual performance.



3,697,877
METHODS AND APPARATUS FOR GENERATING ELECTRICAL WAVEFORMS AND QUADRATUREPHASE TRAPEZOIDAL AND/OR SINUSOIDAL WAVEFORMS
James P. Godfrey, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 8, 1971, Ser. No. 113,481
Int. Cl. H03b 19/00; H03k 5/08
U.S. Cl. 328—13 **14 Claims**





Conic generator apparatus controlled by a digital program source for tracing conic or eliptical patterns on a cathode ray tube CRT screen. The conic generator responds to a stop signal from the program source to simultaneously produce during a conic trace interval one cycle of a sine and a cosine wave. This is done by first producing a pair of quadrature

phased trapezoidal waveforms. Next, the quadrature phased trapezoidal waveforms are converted to a pair of quadrature phased triangular waveforms which are then shaped to produce the sine and cosine waves. The quadrature phased trapezoidal waveforms are produced by controlling the linear charge and discharge of a pair of capacitors between high and low clamping limits.

3,697,878

METHOD AND APPARATUS FOR OBTAINING FREQUENCY MARKER PIPS ON THE WOBBULATED GENERATORS

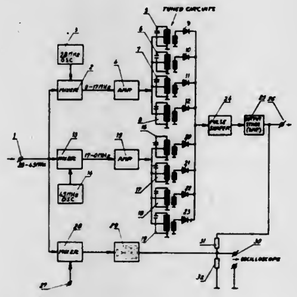
Gheorghe Georgescu, Bucharest, Romania, assignor to Uzinele Electronica, Bucharest, Romania

Filed Oct. 27, 1970, Ser. No. 84,342

Claims priority, application Romania, Oct. 30, 1969, 61407

Int. Cl. H03b *21/00*

U.S. Cl. 328—17 **5 Claims**



A signal wobbulating in a certain range is mixed with a pair of fixed-frequency signals having frequencies corresponding to the upper and lower limits of the range. A pair of independent intermediate-frequency outputs are produced which are each fed to at least two tuned circuits associated with detection diode and pickup coils. The outputs of these diodes are combined and serve as frequency-marking pips in the range of the wobbulating radio-frequency signal.

3,697,879

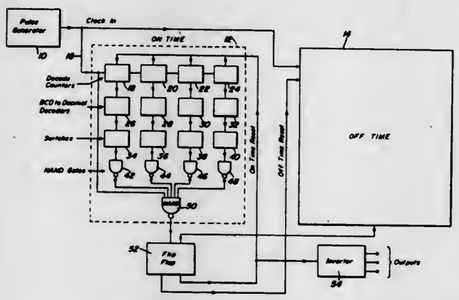
ON-OFF PULSE TIME CONTROL

Jack D. Holliday, Commack, N.Y., assignor to Eltee Pulsitron

Filed Aug. 31, 1971, Ser. No. 176,538

Int. Cl. H03k *1/00, 3/04*

U.S. Cl. 328—61 **15 Claims**



An on-off pulse time control comprising a pulse generator providing a source of time base pulses to on and off timer circuits each of which includes a set of counters for producing a time signal upon completion of a pre-selected time interval. The output of each counter is connected to an inverter gate which provides a logical true signal to a synchronization gate associated with each timer. The outputs of the synchronization gates are applied to a flip flop circuit which resets one timer and simultaneously sets the other timer to initiate its time interval, thus providing a continuous on-off timed cycle.

3,697,880

CIRCUIT FOR SWITCHING BETWEEN TWO UNIDIRECTIONAL VOLTAGES

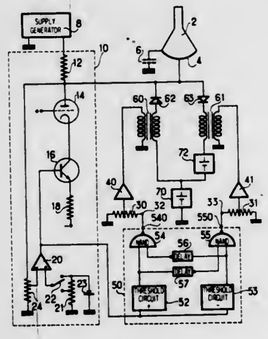
Gerard Melchior, Paris, and Dusan Sinobad, Orsay, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Nov. 23, 1970, Ser. No. 92,115

Claims priority, application France, Nov. 21, 1969, 6940153; April 21, 1970, 7014467

Int. Cl. H04b *1/04*

U.S. Cl. 328—123 **8 Claims**



An apparatus for switching between high and low dc beam acceleration voltages in a dichromatic cathode-ray tube. The acceleration voltage is applied to the screen of the tube which because it is conductive has a capacitance with respect to ground. The apparatus comprises a switchable voltage generator for switching between the high and low voltages, a charging path for charging the capacitance of the screen of the cathode ray tube, and a discharging path for discharging the capacitance of the screen. The apparatus also includes a control circuit for controlling conduction through said charging and discharging paths. The provision of the charging and discharging paths enables rapid switching of the beam acceleration voltage and thereby the color of the tube with the disadvantages of a voltage generator with a low output impedance.

3,697,881

PHASE DETECTION SYSTEM FOR AT LEAST ONE DIGITAL PHASE-MODULATED WAVE

Yukio Nakagome; Kazuo Kawai, both of Tokyo; Hidetaka Yanagidaira, Ohmiya; Sotokichi Shintani, and Hisakichi Michishita, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

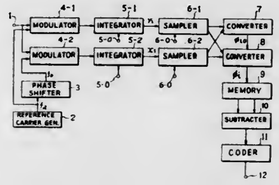
Filed July 9, 1970, Ser. No. 53,527

Claims priority, application Japan, July 10, 1969, 44/54094; Sept. 12, 1969, 44/72462

Int. Cl. H04l *27/22*

U.S. Cl. 329—104 **6 Claims**

A phase detection system for at least one digital phase-modulated wave, in which two products of a phase-modulated digital signal and two reference carrier waves each having the same frequency as the phase-modulated digital signal and a phase difference 90° therebetween are at first produced, so that a converted value which is a function of a phase difference between the phase-modulated digital signal and one of the reference carrier waves is found by integrating respectively the two products or by passing the two products in respective low-pass filters. The phase detection of the phase-modulated wave is performed by comparing the converted value with a reference phase. Compensation means may be further provided to compensate phase error in the converted value.



3,697,882

AMPLIFIER CIRCUIT

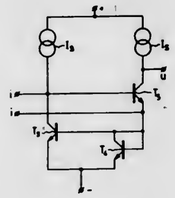
Rudy Johan Van Den Plassche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,378

Claims priority, application Netherlands, Oct. 13, 1969, 6915477

Int. Cl. H03f *3/26*

U.S. Cl. 330—15 **5 Claims**



An amplifier for converting a push-pull signal into a single-ended signal, using a transistor configuration having two input terminals, so that a loss-free conversion is obtained and at the same time both large common-mode signals and large output signals are permissible.

3,697,883

AUTOMATIC GAIN CONTROL CIRCUIT

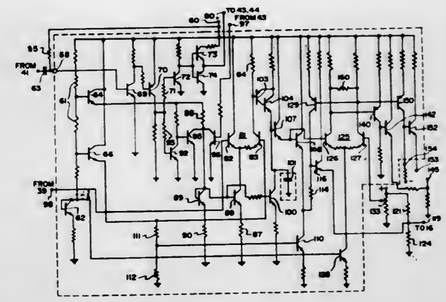
Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 10, 1970, Ser. No. 71,125

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 **12 Claims**

A gated sample and hold IF/RF integrated AGC circuit for a television receiver employs a combination of the synchronizing pulse and a flyback pulse for gating a peak detected video signal during the sync pulse interval to obtain the AGC voltage. A differential amplifier provides RF delay for the RF AGC, with negative feedback from the differential amplifier to the input of the IF AGC amplifier being employed to hold the IF AGC amplifier output constant during a transition period when the RF gain control is varied. Before and after this transition, the IF gain control follows the AGC voltage provided by the gated AGC input circuit.



3,697,884

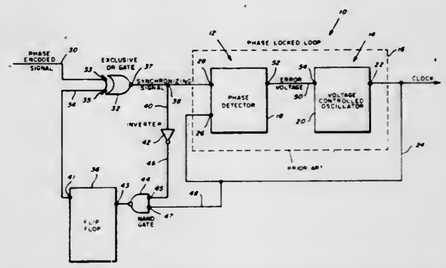
SYNCHRONIZING A PHASE-LOCKED-LOOP FROM PHASE ENCODED SIGNALS

Larry W. Fort, Broken Arrow, and Connie T. Marshall, Muskogee, both of Okla., assignors to Telex Computer Products, Inc., Tulsa, Okla.

Filed July 16, 1971, Ser. No. 163,208

Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **3 Claims**



In this invention a voltage controlled oscillator provides an output signal which is a clock signal. This is synchronized with the incoming phase-encoded (PE) signal through a phase detector in a phase-locked-loop (PLL). To synchronize the clock signal to the PE signal both signals must be negative-going and positive-going at the same time. This invention corrects the PE signal to a synchronizing signal, by use of an inverting element, whenever the PE signal and clock are not changing in the same direction. A NAND gate connected to the synchronizing signal and the clock senses differences and controls a flip-flop, which inverts the PE signal.

3,697,885

AUTOMATIC FREQUENCY CONTROL CIRCUITS

Jack Avins, Princeton, and Jack Craft, Somerville, both of N.J., assignors to RCA Corporation

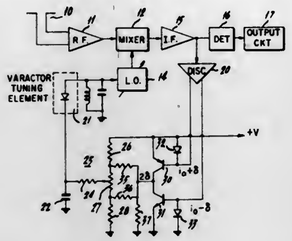
Filed Dec. 4, 1970, Ser. No. 95,082

Int. Cl. H03b *3/04*

U.S. Cl. 331—8 **7 Claims**

A circuit used in an automatic frequency control (AFC) scheme employs a voltage divider having a variable arm cou-

pled to a varactor diode to vary the reactance of the diode to enable tuning of a receiver. An AFC error signal is converted

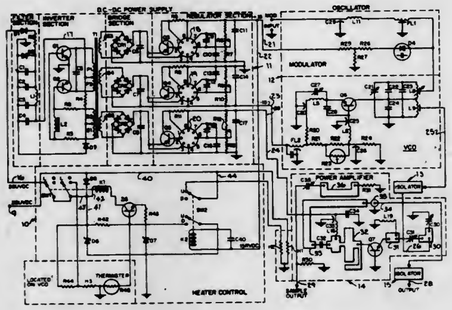


into a current and injected into the divider to equalize the loop gain of the AFC system over the tuning range of the receiver.

3,697,886
SOLID STATE RADIO FREQUENCY VOLTAGE CONTROLLED OSCILLATOR, POWER AMPLIFIER AND DIRECT CURRENT POWER SUPPLY

James B. Conn; J. Richard Delbauve, and Hugh Lilienkamp, all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of tthe Navy

Filed Nov. 8, 1971, Ser. No. 196,286
Int. Cl. H03b *1/00*
U.S. Cl. 331—69 **5 Claims**



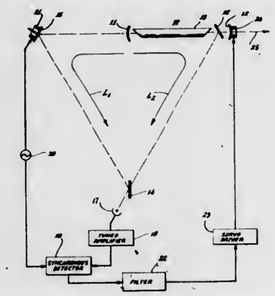
A combination radio frequency (RF) voltage-controlled oscillator (VCO), RF power amplifier, and direct current (DC) to DC converter power supply all comprised of solid state circuits which generate an RF which is stable in frequency and power over a wide operating temperature range, and which generates DC voltages for use both within the combination and externally to the combination. The VCO has a modulation frequency response of DC to 2 megahertz (MHz) and modulation sensitivity of 1 to 2 MHz per volt D. C.

3,697,887
LASER FREQUENCY STABILIZATION SYSTEM AND METHOD

Paul H. Lee, Goleta, Calif., and Michael L. Skolnick, Norwalk, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 23, 1968, Ser. No. 786,178
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **2 Claims**

A method of stabilizing the operating frequency of a laser which includes comparing by means of interference the relative phase of two beams of radiant energy from the laser, one of which is a reference while the other passes through the active lasing material. The optical path traversed by the reference beam is adjusted to produce a selected condition at the point of interference when the laser is oscillating at a frequency which corresponds exactly to an anomaly in the dispersion of the lasing material. Thereafter, the laser frequency is stabilized by adjusting its operating frequency to maintain this condition. Preferably, the comparison is made by varying the reference phase about the selected value. Apparatus for performing this method includes means defining

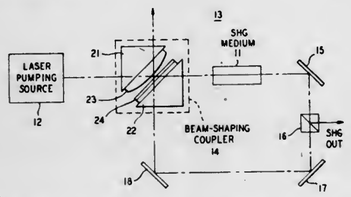


two substantially equal optical paths for radiation emitted by the laser, one of which extends through the active material of the laser. The two paths are terminated at the same point so that interference occurs and the apparatus includes means for detecting the output from the point of interference. Finally, means are provided for controlling the laser frequency to maintain a predetermined interference condition.

3,697,888
EVANESCENT WAVE COUPLING TECHNIQUE FOR BEAM SHAPING

Hans Guenter Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 1, 1971, Ser. No. 148,739
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **8 Claims**



There is disclosed a coherent optical oscillator in which evanescent wave coupling between two surfaces, at least one of which is curved, provides beam shaping and improved overall conversion efficiency. In general, bicylindrical curvature is provided, for example, by appropriately oriented cylindrical curvatures of the two surfaces. There are specifically disclosed a second-harmonic generator having improved conversion efficiency and a thin-film laser having improved output characteristics.

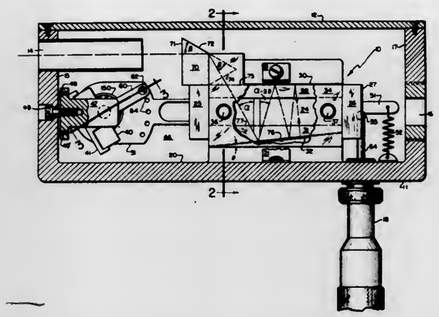
3,697,889
TUNABLE LASER

Clarence Forbes Dewey, Jr., Belmont, Mass., assignor to Xenon Corporation, Medford, Mass.

Filed Feb. 17, 1970, Ser. No. 12,098
Int. Cl. H01s *3/08*; F16h *27/02*
U.S. Cl. 331—94.5 **7 Claims**

A LASER having at one end of the optical cavity a frequency selective reflector that varies the frequency of the light

reflected back into the cavity by rotation. The selective reflector is supported on a first set of bearings and a tuning adjustor for rotating the reflector is supported on a separate bearing. A

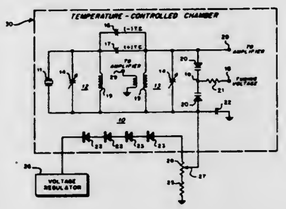


flexible coupling element connects the adjustor and reflector for positive rotational positioning with essentially no load coupled along other axes.

3,697,890
WIDE DEVIATION VOLTAGE CONTROLLED CRYSTAL OSCILLATOR WITH TEMPERATURE COMPENSATION

Daniel J. Healey, III, and Michael M. Driscoll, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1969, Ser. No. 831,486
Int. Cl. H03b *5/32*
U.S. Cl. 331—116 **8 Claims**



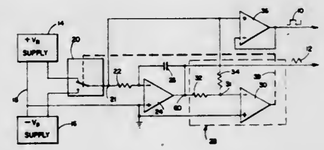
A wide deviation voltage controlled oscillator having a tunable crystal filter utilizing a negative temperature coefficient coupling capacitance to produce a linear frequency change with any temperature change and a correcting diode controlled tuning voltage which is also a linear function of temperature to compensate for the linear frequency change and to automatically maintain frequency stability over a wide range of ambient temperatures.

3,697,891
BIDIRECTIONAL WAVEFORM GENERATOR WITH SWITCHABLE INPUT

Ross A. Shade, Santa Ana, and William H. Terbrack, Newport Beach, both of Calif., assignors to J. D. Wrather, Jr.

Filed Dec. 31, 1970, Ser. No. 103,106
Int. Cl. H03c *3/08*
U.S. Cl. 332—9 T **12 Claims**

A reactive impedance connected to the input of a feedback amplifier is alternately charged through a switch from a positive and negative voltage reference source. A resistive summing network compares the output of the amplifier with the output of the switch and provides a feedback to toggle the switch back and forth between the two voltage sources. The outputs of both the amplifier and the switch cyclically change polarity to provide a bidirectional output waveform having a period that varies in accordance with variations of one or more of the impedances connected to the amplifier input or output. Either linear or non-linear variation of the period of either of the bidirectional outputs may be obtained by varying one of the resistors of the summing network or some combination of the several impedances of amplifier and summing network. Further, the period of the fluctuating bidirectional output from either the switch or amplifier may be made to undergo a change that is proportional to an analog input signal by providing a third resistive summing network input that is a linear function of an analog input to be modulated upon the output.

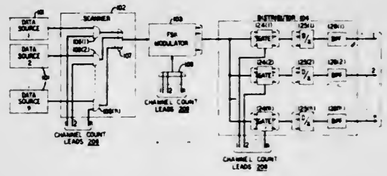


The circuits described are useful in a wide variety of systems and provide a number of different functions. They are particularly useful as time modulators in systems such as those described in a copending application for Data Handling System Employing Time Modulation, Ser. No. 861,785 filed Sept. 29, 1969, by J. P. LaBarber, Ross A. Shade, and William H. Terbrack, and assigned to the assignee of the present application.

3,697,892
DIGITAL FREQUENCY-SHIFT MODULATOR USING A READ-ONLY-MEMORY

Thomas R. Lawrence, Leonardo, and Burton R. Saltzberg, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 19, 1971, Ser. No. 116,998
Int. Cl. H04l *27/12*
U.S. Cl. 332—9 R **8 Claims**

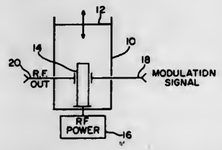


FSK signals in a digital sense are obtained from a memory comprising a table of forty numbers, representing amplitudes of points in one cycle of a sine wave, the points being separated by equal phase angles. A processor reads out, at a fixed rate, the numbers corresponding to each tenth or each eleventh point in accordance with the condition of an incoming binary signal, whereby the output numbers represent a frequency-shift wave. Digital circuitry is used and the modulator may be time shared by a plurality of data sources.

3,697,893
MICROWAVE MODULATOR HAVING INPUT MODULATION SIGNAL PROBE WITH ADJUSTABLE ELECTRICAL CHARACTERISTICS

James L. Faustlin, Plano, and Eliseo Saenz, Garland, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed May 17, 1971, Ser. No. 144,030
Int. Cl. H03c 3/20
U.S. Cl. 332—16 R 6 Claims

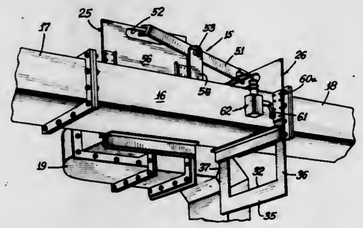


A microwave resonant cavity modulator including an input modulation signal probe with means for adjusting the electrical characteristics of said probe for improving modulation sensitivity and linearity over a relatively wide frequency range.

3,697,894
WAVEGUIDE POWER SWITCH HAVING ALTERNATELY CLOSED SHORTING PLATES

Ray M. Johnson, 118 Verde Mesa, Danville, Calif.

Filed Jan. 29, 1971, Ser. No. 103,361
Int. Cl. H01p 1/10
U.S. Cl. 333—7 7 Claims



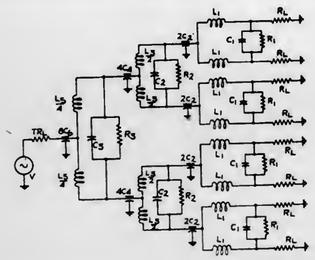
An input waveguide and two output waveguides are arranged in an H-plane tee. A power switch determines into which one of the output ports the power will flow. Each of the guides is a rectangular waveguide excited in the TE_{10} mode. The switch includes first and second end plates, each including a shorting tongue adapted to extend through a transverse slot in the broadwall of one of the output waveguides to form a shorting plate. The end plates are mechanically interconnected so that when one plate is in a closed position, the other plate is withdrawn to an open position which permits the passage of power. A capacitor screw or stub is located in one of the output waveguides to compensate for impedance mismatch. Limit switches are arranged to prevent the transmission of power to the input waveguide unless the end plates are in an operative position.

3,697,895
IMPEDANCE TRANSFORMING BINARY HYBRID TREES

Alfred B. Beck, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Aug. 3, 1970, Ser. No. 60,324
Int. Cl. H03h 7/38, 7/48; H01p 5/12
U.S. Cl. 333—8 5 Claims

Electrical power dividing or combining, and impedance transforming, binary tree circuits for an optimized output or input port isolation or an optimized VSWR across a predetermined frequency band, or a desired compromise between them, having cascaded tiers of multi-port hybrid circuits with each hybrid circuit having a bridging impedance connected across its arrayed ports. The circuits are derived from an even-mode synthesis of a prototype circuit having equal-ripple input reflection coefficient response across the predetermined

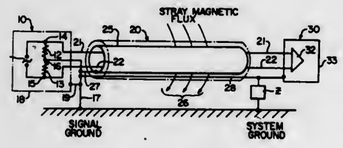


frequency band, the bridging impedance values for the arrayed ports of each hybrid circuit being determined in accordance with the desired relationship between VSWR and port isolation by an even and odd-mode analysis of each hybrid circuit.

3,697,896
SIGNAL TRANSMISSION SYSTEM

Miklos Sarkozi, Monroeville; Andras I. Szabo, Export, and Perry J. Hite, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,621
Int. Cl. H04b 3/28
U.S. Cl. 333—12 9 Claims



A signal transmission system comprising a means for eliminating or substantially reducing noise in a circuit including a transmission line for transmitting signals from a signal source for example a transducer to a utilization circuit, wherein the transducer has a predetermined ground and the transmission line comprises a pair of insulated signal conductors surrounded by a conductive shield with an insulated, shield-current relief conductor extending longitudinally along the signal conductors and parallel thereto outside of the shield and closely adjacent thereto. The shield relief conductor is grounded at one end to the transducer ground and means are provided at the other end for providing a connection to ground either through an intentional actual impedance or a stray impedance at the signal utilization circuit. This impedance may be of various types inherent in the utilization circuit or adapted to suit the utilization circuit.

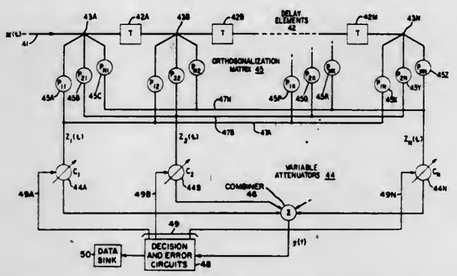
3,697,897
FAST START-UP SYSTEM FOR AUTOMATIC TRANSVERSAL EQUALIZERS

Robert Wu-lin Chang, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 13, 1971, Ser. No. 143,021
Int. Cl. H04b 3/04
U.S. Cl. 333—18 3 Claims

Method and apparatus for rapid initial setting in synchronous data transmission systems of transversal equal-

izer tap coefficients employ a resistive matrix between all delay-line taps and each attenuator to make attenuator input signals mutually orthogonal. The values of the resistive matrix elements are predetermined in accordance with the amplitude

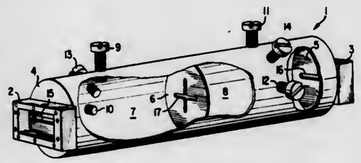


characteristics of the distorting transmission medium and the type of signal processing employed. The effect is to reduce the settling or convergence time for initial equalizer adjustment to two or three signaling intervals even in partial-response signaling systems.

3,697,898
PLURAL CAVITY BANDPASS WAVEGUIDE FILTER

Bruno L. Blachier, Rockville, and Andre R. Champeau, Bethesda, both of Md., assignors to Communications Satellite Corporation

Filed May 8, 1970, Ser. No. 35,869
Int. Cl. H01p 1/16, 7/06; H03h 13/00
U.S. Cl. 333—21 A 14 Claims

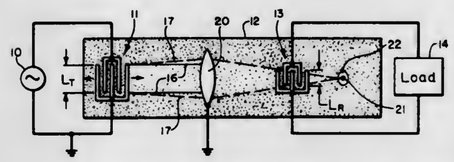


A waveguide filter having two cascaded double-tuned cavities which are resonant in two independent orthogonal modes and provide a bandpass response. An elliptic function is obtained from the bandpass microwave filter structure by using a direct-coupling iris which selectively couples identical resonant modes between adjacent cavities.

3,697,899
ACOUSTIC SURFACE WAVE TRANSMISSION DEVICE

Fleming Dias, Palo Alto, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed April 5, 1971, Ser. No. 131,192
Int. Cl. H03h 7/30
U.S. Cl. 333—30 11 Claims

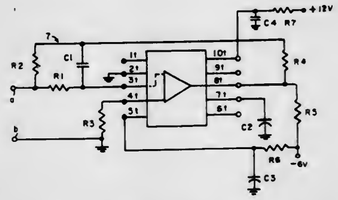


A surface wave integratable filter includes input and output transducers spaced apart on an acoustic wave propagating medium. The input transducer launches acoustic surface waves along a path in which the wavefronts diverge. Disposed on the medium between the input and output transducers is an acoustic lens formed of a material that exhibits an acoustical refractive index greater than one. The lens acts to change the width of the acoustic wavefront and thereby enables appropriate selection of the physical size of the output transducer so as to obtain desired input and output impedances while securing increased efficiency of interaction at the output transducer.

3,697,900
ADMITTANCE INVERSION CIRCUITS

Fred H. Irons, Allentown, Pa., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Filed Dec. 10, 1970, Ser. No. 96,716
Int. Cl. H01p 1/22
U.S. Cl. 333—80 23 Claims



Electronic circuits containing an admittance element produce at a pair of input terminals an equivalent impedance having an admittance term inversely related to the admittance element. The circuits are suitable for miniaturization techniques, and permit electronically simulated inductances of large values to be created with capacitive elements.

The admittance inverting circuits are of two kinds: one produces an equivalent impedance which appears as a resistance paralleling said inverted admittance; the other has an equivalent impedance which appears as a resistance in series with said inverted admittance. Both circuits have the admittance element connected in circuit with first and second resistances and with isolating amplifier means causing one of the parameters of current or voltage in one of said resistances to appear at the circuit's input terminals. In the circuit having a parallel equivalent impedance, the first resistance is in series with the admittance element, and these two are paralleled by said second resistance. An operational amplifier has the admittance element connected between input and output, so that the circuit's input terminals see the voltage developed across the first resistance. In the circuit producing a series equivalent impedance, the admittance element is paralleled by the second resistance, and the two are in series with the first resistance. Two or more emitter follower amplifiers are connected to cause the current through the second resistance to be the current through the input terminals.

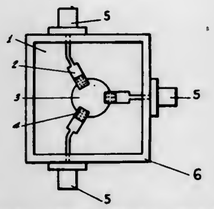
3,697,901
MICROSTRIP CIRCUITS WHEREIN NON-MAGNETIC INSULATING SUBSTRATE AND MAGNETIC INSERT HAVE SAME CRYSTALLINE STRUCTURE

Bernard Chiron; Andre Deschamps, and Louis Duffau, all of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Dec. 7, 1970, Ser. No. 95,679
Int. Cl. H01p 3/08, 1/32
U.S. Cl. 333—84 M 3 Claims

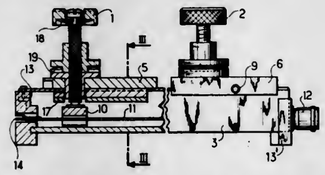
Microwave integrated circuits are designed as microstrip patterns on insulating non magnetic substrates with the same crystalline structure as magnetic materials operating in the

same frequency band. At X band, solid solutions of ferrites with titanates are described and a garnet-like non magnetic



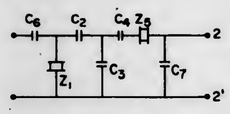
material is preferred at L band. Magnetic parts are set into the substrate.

3,697,902
SLOTTED MICROSTRIP LINE FOR IMPEDANCE MATCHING HAVING TWO STOPS TO PREVENT OHMIC CONTACT BETWEEN THE MOVABLE REACTIVE ELEMENT AND THE CENTER STRIP
Guy Louvel, Antony, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed April 14, 1971, Ser. No. 133,937
Int. Cl. H01p 3/08, 5/08
U.S. Cl. 333—84 M **5 Claims**



Reactor for cancelling the reactances of a circuit by adding to it a conjugate reactance, involving at least one trolley that can be moved along a microstrip and supporting a probe whose penetration can be adjusted by a screw. One of the ends of the microstrip is terminated by a plug specially adapted to receive a transistor electrode.

3,697,903
EQUAL-RESONATOR PIEZOELECTRIC LADDER FILTERS
Franz L. Sauerland, Shaker Heights, Ohio, assignor to Clevite Corporation
Filed May 17, 1968, Ser. No. 730,002
Int. Cl. H03h 7/08
U.S. Cl. 333—72 **10 Claims**



Piezoelectric ladder filters with the following characteristics are described:

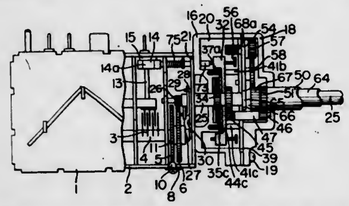
a. The filter selectivity may be changed without changing the resonators and without requiring the frequencies of peak insertion loss to be changed. This type of filter will be referred to as "equal-resonator filter."

b. Except for the restrictions on the series resonant frequency of the shunt resonators and the anti-resonant frequency of the series resonators, the remaining resonator parameters are largely, within a range that will be explained, independent of the filter selectivity. This permits use of predetermined resonators for the design of filters with different selectivity characteristics. It includes filters where all the series resonators and all shunt resonators, respectively, are equal, as well as filters in which all the resonators are identical with each other. The latter type will be called "identical resonator" filters.

ERRATUM

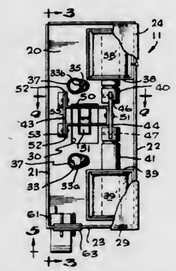
For Class 333—31 A; see:
Patent No. 3,698,008

3,697,904
UHF TUNER
Etsuzo Mohri, Osaka; Toshio Hayakawa, Kadoma, and Akira Nishikawa, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 8, 1970, Ser. No. 70,160
Claims priority, application Japan, Sept. 20, 1969, 44/74813; Sept. 20, 1969, 44/74814; Sept. 20, 1969, 44/89831; Sept. 20, 1969, 44/898321
Int. Cl. H03j 5/02
U.S. Cl. 334—51 **3 Claims**



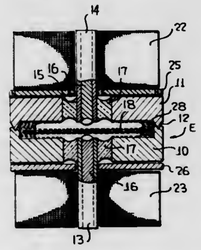
A UHF tuner comprising a main channel switch-over shaft, a fine adjustment sleeve slidably and telescopically overlapping the main switch-over and not normally coupled to a fine adjustment mechanism, and a fine adjustment drum accommodated in a housing and slidably mounted on the main switch-over shaft, the fine adjustment drum being provided with a plurality of fine adjustment screws adjacent to the periphery thereof, wherein the rotation of the main switch-over shaft causes the rotation of the fine adjustment drum at a reduced speed through a gear arrangement including a sun gear integrally provided on the main switch-over shaft, planet gears rotatably carried by the fine adjustment drum and an internal gear of the housing. When the fine adjustment sleeve is axially moved, it is coupled with the fine adjustment mechanism through one of the fine adjustment screws and a coupling member associated with said fine adjustment mechanism, thereby enabling fine adjustment by turning the fine adjustment sleeve.

3,697,905
REMOTELY CONTROLLED WALL SWITCH OPERATING MEANS
Jerry Athans, Jr., 6834 Mammoth Avenue, Van Nuys, Calif.
Filed March 9, 1970, Ser. No. 17,627
Int. Cl. H01h 9/00
U.S. Cl. 335—1 **8 Claims**



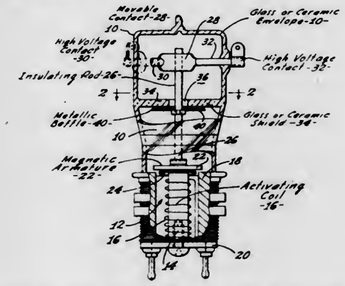
A casing adapted to detachably mount on a wall switch over the cover plate and receive the switch lever having electromagnetic means for operating the switch lever and switch means at a remote point for controlling the electromagnetic means.

3,697,906
MERCURY SWITCH
Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension, Inc., Princeton, N.J.
Continuation-in-part of Ser. Nos. 66,534, Aug. 24, 1970, and Ser. No. 71,294, Sept. 11, 1970. This application April 19, 1970, Ser. No. 134,959
Int. Cl. H01h 1/08
U.S. Cl. 335—58 **20 Claims**



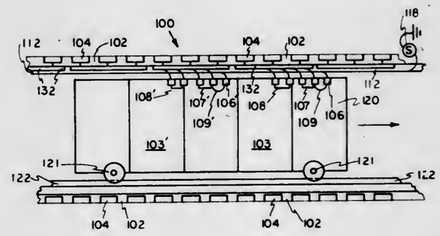
An attitude insensitive mercury relay including a hermetically sealed non-magnetic enclosure composed of a header and header cap, welded together in a high pressure hydrogen atmosphere, including one or more stationary contacts extending insulatedly into the enclosure and a magnetic diaphragm as armature, in the form of a single planar tight spiral having physically separated turns. In one form of the device, the interior of the enclosure and the diaphragm may be mercury wettable, excluding only an insulating feedthrough button as provided for a stationary contact, and also excluding a portion of the face of the contact which is intended to sustain impact by the armature, the mercury wettable portion of that face being indented with respect to the impact area, and the quantity of mercury in the enclosure being sufficient, but only sufficient, to sustain a thin layer of mercury on the mercury wettable surfaces. In other forms the enclosure may be non-metallic, e.g., ceramic, provided with mercury wettable screen surfaces or fabricated of non-mercury wettable material, e.g., magnetic material.

3,697,907
VACUUM RELAY
Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.
Filed Dec. 31, 1970, Ser. No. 103,153
Int. Cl. H01h 9/32
U.S. Cl. 335—201 **2 Claims**



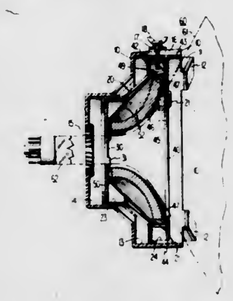
An improved high voltage vacuum relay is provided which includes internal shielding means which serves to prevent ionic discharge within the relay from the high voltage contacts thereof to its grounded magnetic actuating circuit, and which also serves to strengthen the bulb and to make the unit less susceptible to breakage.

3,697,908
FERROMAGNETIC MATERIAL IN A MAGNETIC FIELD AS A PROPULSION SYSTEM
Phillip E. Highsmith, 388 Lake Forest Drive, Spartanburg, S.C.
Filed Dec. 22, 1969, Ser. No. 887,088
Int. Cl. H01f 7/00
U.S. Cl. 335—209 **12 Claims**



A method and apparatus are disclosed for propelling a ferromagnetic containing vehicle along a predetermined path. A current carrying coil is provided around at least a portion of the predetermined path of travel of the vehicle. A magnetic field is created within the coil which produces a magnetic force on the ferromagnetic material containing vehicle passing therethrough. By continuously moving the magnetic field along the length of the coil, the vehicle responds in movement to the direction of movement of the magnetic field.

3,697,909
DEFLECTION YOKE MOUNT
Edward Walter Christensen, II, Indianapolis, and Ronald Dale EuDaly, Southport, both of Ind., assignors to RCA Corporation
Filed Jan. 15, 1971, Ser. No. 106,778
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **7 Claims**

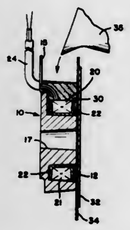


A mount for holding a deflection yoke in operating position in relation to a kinescope. An outer housing fixedly mounted on the kinescope provides bearing surfaces for an inner housing which is adapted to being positioned axially and rotatably within. The inner housing contains a holding member into which a yoke is fixedly mounted and which member snaps into the inner housing.

3,697,910
MAGNET ASSEMBLY FOR ELECTRIC BRAKES

Richard G. Tachabrun, Dayton, and Carlos P. Afanador, Centerville, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio

Continuation of Ser. No. 881,413, Dec. 2, 1969, abandoned.
This application Sept. 7, 1971, Ser. No. 178,397
Int. Cl. H01f 7/00
U.S. Cl. 335—296 4 Claims

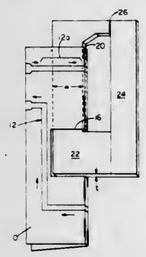


A magnet assembly for an electric brake employs a potting compound for retaining the electric coil within the magnet, which compound also forms a portion of the friction face of the magnet.

3,697,911
COIL FORM

William A. Strauss, Jr., Darling Hill Road, Mason, N.H.

Filed Jan. 20, 1971, Ser. No. 108,028
Int. Cl. H01f 27/28
U.S. Cl. 336—84 17 Claims



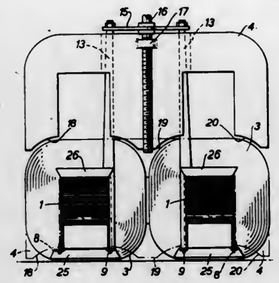
Configurations of conductor loops forming electromagnetic coil forms. A substrate carrying a conductor loop has a center opening through which a core protrudes, and while the core remains against the substrate, it passes over and under portions of the coil producing coupling. Also featured is a conductor loop folded upon itself suitable for receiving a core that passes over and under folded portions of one side of the loop to produce coupling. Provisions of multiple coils, convenient terminals and tuning are described.

3,697,912
WELDING TRANSFORMERS

Arne Solli, Frednesoia, Porsgrunn, Norway

Filed Sept. 12, 1969, Ser. No. 870,364
Int. Cl. H01f 21/06
U.S. Cl. 336—133 8 Claims

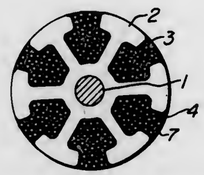
The present invention relates to a welding transformer, of the kind in which each of the coils of the primary and secondary circuits is divided into two parts extending parallel to a magnetic shunt member and so arranged on the two transformer legs that the two coil parts of the primary coil are located on the one side of the shunt member and the two coil parts of the secondary coil on the other side, and wherein the amperage is controlled by means of the substantially M-shaped shunt member, which is displaceably arranged between the primary circuit and the secondary circuit.



3,697,913
LOADING-AND BURNING-PROOF ELECTROMAGNETIC COIL

Takeshi Imai; Tamotsu Matsubara, and Osamo Takenaka, all of Kariya, Japan, assignors to Nippon Denso Company Limited, Kariya-shi, Japan

Continuation-in-part of Ser. No. 783,762, Dec. 13, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,438
Int. Cl. H01f 27/30
U.S. Cl. 336—205 5 Claims

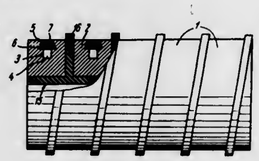


A loading- and burning-proof electromagnetic coil used, for example, as rotor and stator windings in which coil of high resistive wire is allowed to cohere with a cohering mixture of an epoxy resin having a molecular weight of above 800 and a curing agent therefor other than acid anhydride type curing agent.

3,697,914
MULTITURN INDUCTOR FOR MAGNETIC-PULSE TREATMENT OF TUBULAR MEMBERS

Konstantin Konstantinovich Khrenov, and Vyacheslav Andreevich Chudakov, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarki imeni E.O. Patona, Akademii Nauk USSR, Kiev, U.S.S.R.

Filed July 14, 1971, Ser. No. 162,422
Int. Cl. H01f 27/08
U.S. Cl. 336—62 4 Claims

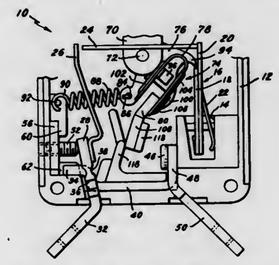


In the turns of a multiturn inductor for magnetic pulse treatment of tubular members inductor there is provided a channel having along its entire length a narrow passage for passing a coolant and a wide portion for placing therein a metal band. Laid on the band is a layer of an elastic sealing material having adhesive properties.

3,697,915
CIRCUIT BREAKER HAVING MEANS FOR INCREASING CURRENT CARRYING CAPACITY

Theodore Brassard, Berkley, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1970, Ser. No. 83,913
Int. Cl. H01h 71/16, 73/30
U.S. Cl. 337—74 12 Claims

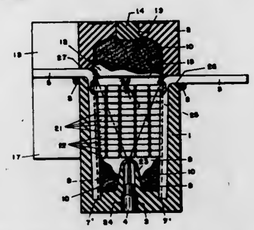


A miniature, trip-free, ambient compensated circuit breaker has improved calibration means and is particularly adapted for high current ratings. A bell crank latch, rotatably carried by manual actuating means, is normally engaged with an ambient-compensated catch for holding stationary and movable contacts in engagement to close a circuit. Current-responsive means is adapted to release the latch from the catch to open the circuit in response to an overload in the circuit. The movable contacts are mounted on a bridge member which in turn is attached to one leg of a U-shaped spring element with the other leg securely attached to the bell crank. In one embodiment, the current responsive means is calibrated by dual adjusting screws and in a second embodiment by a single adjusting screw.

3,697,916
ELECTRIC LOW-VOLTAGE FUSE

Richard A. Belcher, Hampton Falls, and Frederick J. Kozacka, South Hampton, both of N.H., assignors to The Chase-Shawmut Company, Newburyport, Mass.

Filed Aug. 24, 1971, Ser. No. 174,455
Int. Cl. H01h 85/08, 85/12, 85/60
U.S. Cl. 337—161 18 Claims

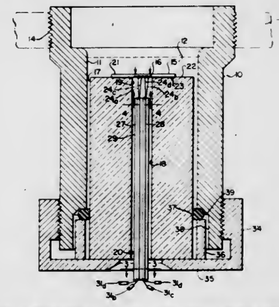


A low-voltage fuse, and in particular a low-voltage fuse of the polyphase variety, has a specific array of fusible current-carrying means arranged between juxtaposed surfaces of a pair of spaced terminal bars. These surfaces are provided with grooves extending in a direction longitudinally of said pair of terminal bars. The aforementioned array of current-carrying means is formed by a plurality of stampings of silver or copper, each including a pair of spaced terminal strips and each further including a plurality of terminal-strip-interconnecting fusible elements in ribbon form. The length of each of said fusible elements of said plurality of stampings exceeds the spacing between said pair of terminal bars. The aforementioned stampings are inserted with the terminal strips thereof into the grooves of said pair of terminal bars in such a way that all constituent fusible elements of each of said plurality of stampings are out of registry with any of the constituent fusible elements of any other of said plurality of stampings. The constituent fusible elements of said stampings are further bent alternately in opposite directions away from the median plane of said pair of terminal bars, thus assuming a substantially C-shaped configuration.

3,697,917
SEMICONDUCTOR STRAIN GAGE PRESSURE TRANSDUCER

Edward D. Orth, Boxford, Mass., and Alexander J. Yerman, Scotia, N.Y., assignors to General Electric Company

Filed Aug. 2, 1971, Ser. No. 168,278
Int. Cl. G01l 1/22
U.S. Cl. 338—2 6 Claims

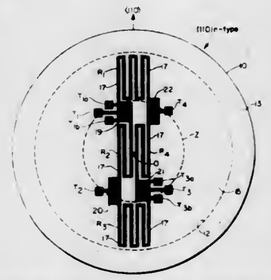


In a pressure transducer of the type utilizing a silicon strain gage diaphragm as a pressure sensor, the diaphragm is bonded to a tubular glass support by an anodic bonding process. Thermally induced stresses and resulting measurement errors are avoided by matching the expansion coefficients of the silicon diaphragm and the glass support. To withstand high operating pressures, the glass diaphragm support is mounted and sealed in the transducer housing so that it is subjected only to compressive forces under operating conditions.

3,697,918
SILICON DIAPHRAGM PRESSURE SENSOR HAVING IMPROVED CONFIGURATION OF INTEGRAL STRAIN GAGE ELEMENTS

Edward D. Orth, Boxford, Mass., and Alexander J. Yerman, Scotia, N.Y., assignors to General Electric Company

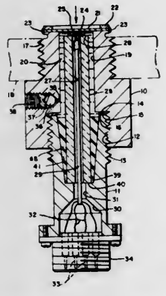
Filed Aug. 3, 1971, Ser. No. 168,548
Int. Cl. G01l 1/22
U.S. Cl. 338—3 6 Claims



A monocrystalline silicon diaphragm pressure sensor has integral strain gage elements in the form of series-connected

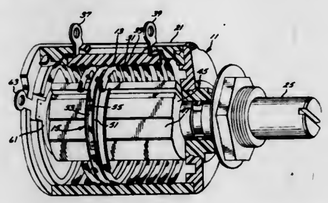
elongated strips arranged parallel to a preselected crystal axis. The configuration results in uniform penetration of the dopant so that the elements are better matched thermally when connected in a Wheatstone bridge type of measuring circuit.

3,697,919
SEMICONDUCTOR PRESSURE TRANSDUCER STRUCTURE
Edward D. Orth, Boxford, and Alvan A. Kessel, Wakefield, both of Mass., assignors to General Electric Company
Filed Aug. 3, 1971, Ser. No. 168,549
Int. Cl. H01c *13/00*
U.S. Cl. 338—42 **6 Claims**



The pressure-sensitive diaphragm assembly is mounted in and sealed to the transducer housing by a wedge-shaped seal which is continuously forced into a wedging and sealing position by pressure of fluid in the transducer housing.

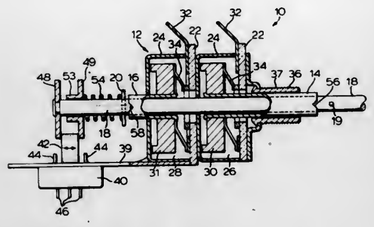
3,697,920
NOISE-FREE ELECTRICAL RESISTOR
Frederick O. Kemp, 701 Echo Street, Anaheim, Calif.
Filed March 11, 1971, Ser. No. 123,230
Int. Cl. H01c *3/00*
U.S. Cl. 338—121 **5 Claims**



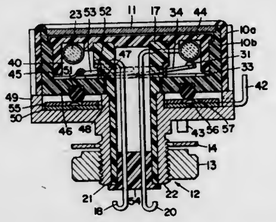
A noise-free electrical device such as a potentiometer which includes a frame having an electrical resistance element mounted thereon. A contact is mounted from the frame for movement relative to the resistance element and an aluminum silicate compound is disposed on the resistance element for reducing the electrical noise between such contact and the resistance element when the contact is moved relative to the resistance element.

3,697,921
DUAL CONTROL MECHANISM
Peter T. Urwin, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Oct. 21, 1971, Ser. No. 191,407
Int. Cl. H01c *5/04*
U.S. Cl. 338—131 **6 Claims**

An electrical control device is disclosed, in which a push-pull rotatable shaft can be moved longitudinally between two positions, in each of which it engages a different potentiometer control sleeve, so that two potentiometers can be alternatively adjusted by a single shaft. Biasing means are provided to discourage inadvertent adjustment of one of the potentiometers.



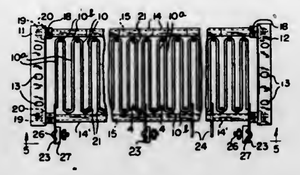
3,697,922
POTENTIOMETER
Peter George Henry Hammond, Chesterfield, England, assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Nov. 15, 1971, Ser. No. 198,804
Int. Cl. H01c *5/02*
U.S. Cl. 338—163 **8 Claims**



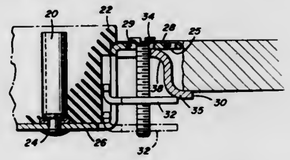
This invention relates to a rotary, manually adjustable, compact potentiometer suitable for panel mounting and which requires a minimum of behind-panel space. The potentiometer comprises a central mounting assembly including a resistor supporting disc and a manually rotatable hollow knob rotatably mounted around the disc so as to form an enclosed resistor chamber. The central mounting assembly further comprising a flange spaced from the disc, an internal flange in the hollow knob trapped between the disc and the central mounting assembly flange, and an arcuate resistance element mounted in the resistor chamber on the disc. A resilient arm is driven by the knob in the resistor chamber and has a movable contact bearing on the resistance element. Electrical conductors extend through the central mounting assembly to the movable contact and resistance element.

3,697,923
RIBBON RESISTOR WITH SUPPORTING MEANS
Milton W. Griffes, Madison, Ohio, assignor to Harvey Hubbell Incorporated, Madison, Ohio
Filed Sept. 13, 1971, Ser. No. 179,975
Int. Cl. H01c *3/00*
U.S. Cl. 338—280 **8 Claims**

A continuous ribbon strip of stainless steel is fan-folded to provide a plurality of equally spaced, parallel uniform linear lengths connected by U-shape folds, and the sole support for the resistor comprises short projections loosely received in openings located along the apices of the U-shape folds with the supporting mechanism including end plates, bolts, supporting insulators and pin projections, providing floating support of the resistor element for free expansion and contraction. Air flow through the folds for effective convective cooling or forced ventilation is substantially unrestricted by the supporting elements.

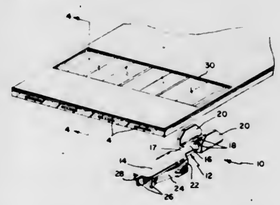


3,697,924
GROUNDING ELECTRICAL DEVICE AND BOX
Michael J. Oliver, 19741 N.W. 7th Court, Miami, Fla.
Filed Nov. 12, 1970, Ser. No. 88,863
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **3 Claims**



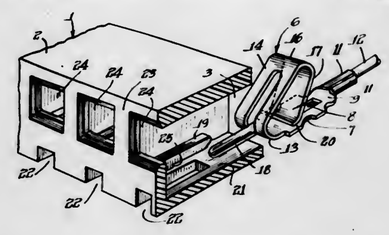
A grounding type electrical receptacle which utilizes a positive clamping arrangement between the strap of the receptacle and the grounded metal box to which it is attached by means of a screw-tightened grounding wedge. The box opening in which the receptacle fits has arcuate ends with no protruding ears so that the receptacle can be adjusted to proper vertical or horizontal alignment.

3,697,925
TERMINATION MEANS FOR FLAT CABLE
Homer Ernst Henschen, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 22, 1970, Ser. No. 57,244
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 F **16 Claims**



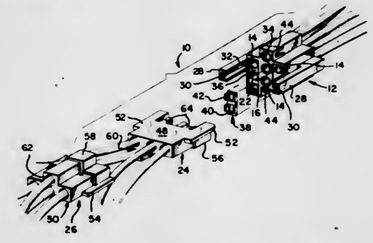
Flat conductor cable has connecting means on one end comprising contact terminals disposed against one side of the cable with their forward ends in alignment with the end of the cable and with their axes parallel to the conductors. Each terminal is crimped, at its rearward end, through the cable and into electrical engagement with a conductor so that the surface of the cable supports the terminals. Cable end is contained in U-shaped housing having openings in its web to permit entry of complementary terminals. Where cable is shielded on one side, terminals are positioned on the unshielded side and shielding is removed on shielded side from the zone containing the crimped connections.

3,697,926
PLURAL CIRCUIT BOARD CONNECTING ARRANGEMENT AND TERMINAL THEREFOR
Kerry M. Krafthefer, Downers Grove, Ill., assignor to Molex Products Company, Downers Grove, Ill.
Filed July 23, 1970, Ser. No. 57,689
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 L **12 Claims**



An electrical connector has a series of terminals each of which has a tongue that projects through the connector for connection to a printed circuit board. Another structure, such as a printed circuit board, switch, wafer, etc., has conductors that project through the first-mentioned circuit board and into said connector for connection with said terminals. The terminals are of the oval-shaped type that impose spring pressure on the conductors.

3,697,927
ELECTRICAL CONNECTORS AND HOUSINGS THEREFORE
John Philip Kunkle, Harrisburg, and James Raymond Kunkle, Enola, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 28, 1970, Ser. No. 84,702
Int. Cl. H01r *31/08, 13/64*
U.S. Cl. 339—19 **6 Claims**

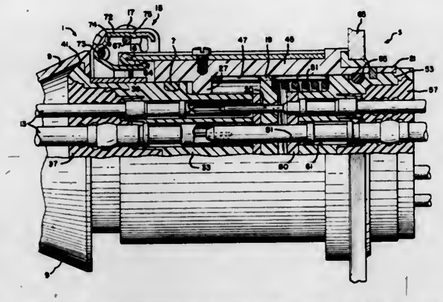


Disclosed is a multipart dielectric housing for holding electrical terminals. One half of the housing comprises two or more pieces which mate either singlely or jointly with the other half of the housing. The terminals disclosed include cylindrical stabilizing rings located in the wire barrel portion and designed to stabilize the terminal in a cavity of the housing disclosed.

3,697,928
ELECTRICAL CONNECTOR
Kemper Martel Hammell, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 27, 1970, Ser. No. 15,167
Int. Cl. H01r *13/54, 13/62*
U.S. Cl. 339—45 M **4 Claims**

The disclosure relates to an electrical connector which comprises mateable housing parts having latching means to latch the housing parts together when they are mated together

in a polarized manner. The latching means is provided with means to maintain the latching means in a positively latched position to maintain housing part latched and a loaded spring



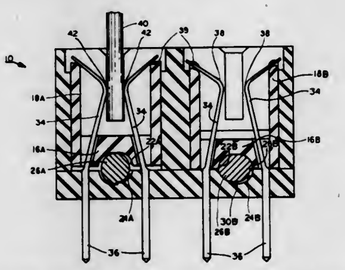
to disengage the members when unlatched. Integral contact retention means are provided in the housing parts to retain the electrical contacts within the housing parts.

3,697,929

CONTROLLED INSERTION FORCE RECEPTACLE FOR FLAT CIRCUIT BEARING ELEMENTS

Joseph E. Konewko, Hillside, and Carl Occhipinti, Melrose Park, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 18, 1971, Ser. No. 107,103
Int. Cl. H01r 13/54
U.S. Cl. 339—75 MP 6 Claims



A receptacle which applies a small controlled force, for example zero force, to flat circuit bearing elements during element insertion and withdrawal. The receptacle includes a frame having an element receiving slot. A slide is positioned in the frame under the slot and is raised by rotating a cam shaft. The slide has projecting fingers which engage the ends of contact fingers to move a point midway along each contact finger further into the element receiving slot thus causing the contact finger to apply increased pressure to an element position in the slot.

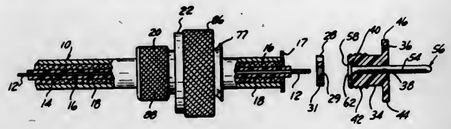
3,697,930

SOLDERLESS COAXIAL CONNECTORS

James W. Shirey, Lakeland, Mich., assignor to John Schroeder, Howell, Mich., a part interest

Continuation-in-part of Ser. No. 769,773, Aug. 28, 1968, Pat. No. 3,573,712. This application July 23, 1970, Ser. No. 57,728
Int. Cl. H01r 13/54
U.S. Cl. 339—89 C 8 Claims

Solderless prong and coaxial cable splice connectors for coaxial shielded cables, having a hollow body member provided with a prong or, alternately, with a connecting member contacting the stripped end of the cable inner conductor bent in form of a loop disposed in a transverse plane. The prong, or the connecting member, is electrically insulated from the remaining of the body member which is electrically connected to the outer tubular braided conductor of the cable having its



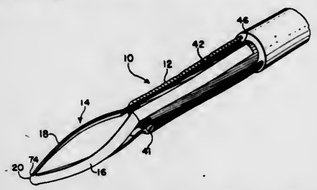
end clamped between a dielectric washer having preferably inner threads for gripping the outer surface of the inner insulation of the coaxial cable and a shoulder portion of the hollow body member.

3,697,931

ELECTRICAL PLUG CONTACT

Kurt Joseph Achten, Granada Hill, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 4, 1971, Ser. No. 103,464
Int. Cl. H01r 11/20, 13/06
U.S. Cl. 339—95 R 16 Claims



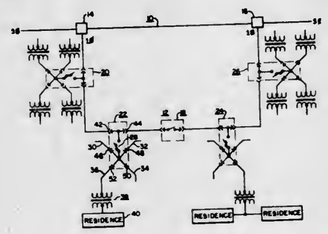
A plug connector element having a plurality of contact arms which are configured to permit the longitudinal edges thereof to abut upon total compression of the plug connector, such as when associated within a complimentary socket element, thus providing a relatively stable connection. The plug connector element is further provided with a sleeve or ferrule portion which is connected to the contact arms as well as to an associated conductor wire in such a manner as to assure penetrating engagement with the conductor wire while maintaining continuous contact between the contact arms and the conductor wire.

3,697,932

ELECTRICAL CONNECTOR

August I. Keto, Sharon, and James R. Farley, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 29, 1971, Ser. No. 128,729
Int. Cl. H01r 13/68
U.S. Cl. 339—111 14 Claims



An electrical connector for connecting a plurality of electrical load circuits to an electrical distribution loop via a removable element, such as a current limiting fuse. The connector includes a housing formed of an insulating resin system, includ-

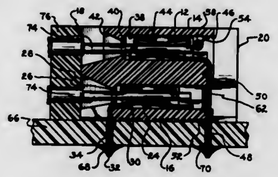
ing a chamber in which the removable element is disposed. First and second spaced contacts are carried by the housing which cooperate with first and second spaced electrodes carried by the removable element, to interconnect the first and second spaced contacts via the removable element. The housing defines first and second integral, tubular outward projections in which contacts are disposed which are connected to the first contact, and a plurality of additional integral, tubular outward projections in which contacts are disposed which are connected to the second contact. The first and second tubular projections are adapted to removably receive and electrically interconnect first and second electrical cables, respectively, in the electrical distribution loop, and the plurality of additional tubular projections are adapted to removably receive electrical cables connected to load circuits. Arc extinguishing members are carried by the housing and by the removable member, to make the assembly and disassembly of the connector loadmake and load-break at the contact connected to the electrical distribution loop.

3,697,933

CONNECTOR BLOCK

Richard W. Black, Manchester, and Robert F. Evans, Harrisburg, both of Pa., assignors to Berg Electronics, Inc., New Cumberland, Pa.

Filed April 5, 1971, Ser. No. 131,349
Int. Cl. H01r 23/24; H05k 1/12
U.S. Cl. 339—192 R 7 Claims



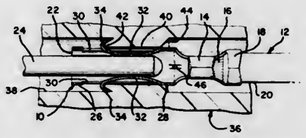
A two row connector block for mounting on a circuit board with two rows of female terminals extending parallel to the circuit board and with a contact tail of each terminal in electrical connection with the circuit board. The terminal cavities in different rows are located one above the other. An insulating spacer is provided to prevent accidental short circuit connections from occurring when contact pins are inserted into the terminals in the row immediately adjacent the circuit board.

3,697,934

ELECTRICAL CONNECTOR

Roydon William Merry, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 802,807, Feb. 27, 1969, abandoned. This application Oct. 12, 1970, Ser. No. 80,180
Int. Cl. H01r 9/08, 11/22
U.S. Cl. 339—217 S 7 Claims



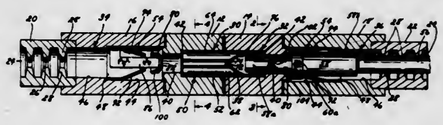
An electrical connector comprising an insulating housing and a contact receptacle disposed within a cavity in the housing. The contact receptacle is provided with a pair of contact arms having hook-like portions at the free ends thereof for retaining the contact receptacle within the housing cavity and for increasing the available contact force between the receptacle and a male pin member.

3,697,935

TERMINAL JUNCTION

William B. Drapkin, Centereach, N.Y., assignor to Kulka Electric Corp., Mount Vernon, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,179
Int. Cl. H01r 9/08
U.S. Cl. 339—217 S 9 Claims



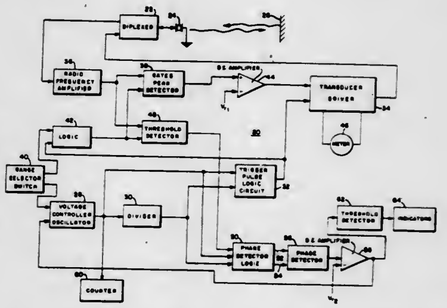
A terminal junction being provided with a housing of rigid dielectric material enclosing flexible triangularly shaped female sockets. A male pin-type connector having a radial shoulder portion is inserted in a respective female socket making electrical contact therewith while end-play movement of the connector is prevented by a spring tang and tab assembly bearing against the front and rear surfaces of the radial shoulder portion when the connector fully engages the socket.

3,697,936

SOUND VELOCIMETER

Ellis M. Zacharias, Jr., Ridgewood, and Uldis Cirulis, Midland Park, both of N.J., assignors to Nusonics, Inc., Paramus, N.J.

Filed Feb. 27, 1970, Ser. No. 15,003
Int. Cl. G01s 9/66
U.S. Cl. 340—3 E 7 Claims



A sound velocimeter for measuring the velocity of sound in a fluid wherein the oscillator frequency is adjusted depending upon the relative position in time of the received signal with respect to the transmitted signal.

3,697,937

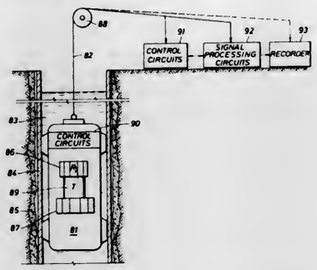
ACOUSTIC REFLECTION COEFFICIENT LOGGING

John D. Ingram, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

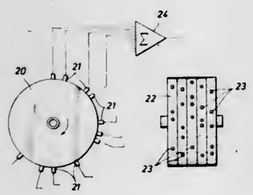
Filed July 9, 1969, Ser. No. 840,179
Int. Cl. G01v 1/22
U.S. Cl. 340—15.5 A 25 Claims

An illustrative embodiment of the present invention includes method and apparatus for performing acoustic reflection coefficient logging in a well borehole. An acoustic well logging tool having at least a pair of biradially mounted receivers disposed in a zero spacing configuration and each comprising a plurality of arcuate segments disposed in a one-to-one relationship with each other is moved through the well bore. The electrical outputs of corresponding receiver segment pairs are processed to extract their relative amplitude and phase at a plurality of frequencies over the acoustic spec-

trum. The amplitude and phase data are used to compute the acoustic reflection coefficient exactly at the said plurality of frequencies over the acoustic spectrum thereby providing a frequency spectrum of acoustic reflection coefficients as measured at each of the paired biradially mounted receiver segments at each borehole depth. Such acoustic reflection coefficient spectra may be utilized, among other things, for evaluating cement conditions in the well bore.



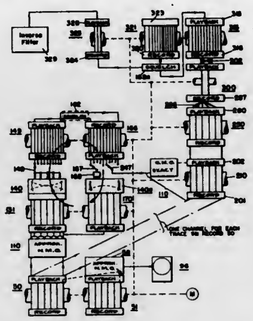
3,697,938
SEISMIC PROSPECTING WITH RANDOM INJECTED SIGNAL
Mehmet Turhan Taner, Houston, Tex., assignor to Seismic Computing Corp., Houston, Tex.
Filed Nov. 7, 1969, Ser. No. 874,867
Int. Cl. G01v 1/22
U.S. Cl. 340—15.5 TA **9 Claims**



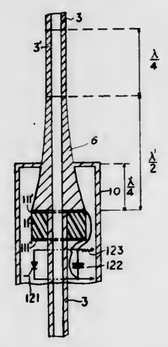
A method of seismic prospecting using an injected seismic signal which includes a series of impulses spaced in time from one another by time intervals of a random nature. The time spacing is substantially non-repetitive and exhibits no ascending, descending or harmonic patterns.

3,697,939
CORRECTIONS FOR SEISMIC DATA OBTAINED FROM EXPANDING-SPREAD
Albert W. Musgrave, Dallas, Tex., assignor to Mobil Oil Corporation
Continuation of Ser. No. 496,735, Sept. 30, 1965, abandoned, which is a continuation of Ser. No. 95,111, March 13, 1961, abandoned. This application Dec. 28, 1970, Ser. No. 101,776
Int. Cl. G01v 1/24
U.S. Cl. 340—15.5 TD **48 Claims**

Seismic signals from detectors forming split spreads are utilized to correct for weathering, elevation, and the like signals from detectors forming an expanded spread. The signals of the seismic section delineated by the expanded spread have applied thereto time changes under the control of a hyperbolic generator. There are generated as a result of the sweeping across the section and lengthwise thereof of the seismic signals the generation of functions utilized to provide normal moveout corrections of greater precision or accuracy than heretofore. With the normal moveout corrections of greater accuracy applied to the signals of the seismic section, additional corrections are made for dip and thereafter for delineation of the velocity characteristics of the earth along the stratigraphic column. There is included provision not only for identification of primary reflections and multiples but also for the elimination of multiples from the signals of the seismic section. The foregoing operations are carried out in an automatic system which may be either of the analog or digital type.



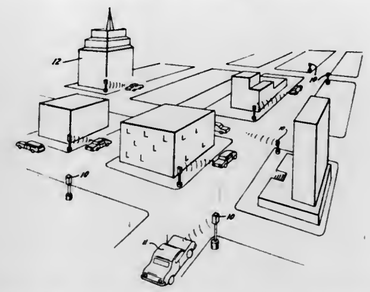
3,697,940
SIGNALLING SYSTEM FOR BORE LOGGING
Bohdan Jiri Berka, 1363 First Avenue, New York, N.Y.
Continuation-in-part of Ser. No. 530,246, Feb. 15, 1966, abandoned. This application Aug. 23, 1968, Ser. No. 755,524
Int. Cl. G01v 1/40
U.S. Cl. 340—18 R **5 Claims**



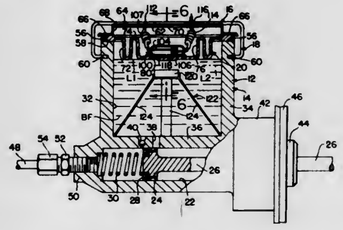
A borehole telemetering apparatus comprises a protective casing coaxially mounted to the drill pipe. The casing includes a magnetostrictive or electrostrictive acoustic transducer which is in acoustic contact with the drill pipe, a silicon controlled rectifier and power supply for controlling the activation of the transducer. The transducer is coupled to the drill pipe preferably by means of an acoustic transformer and the lengths of individual drill pipes are adjusted to the transducer frequency.

3,697,941
VEHICLE LOCATION SYSTEM AND METHOD
David L. Christ, Bethesda, Md., assignor to Devenco Incorporated
Filed July 1, 1971, Ser. No. 158,748
Int. Cl. G08g 1/12
U.S. Cl. 340—23 **22 Claims**

Traffic lights in a prescribed area are modulated so that the energy, e.g., visible light, emitted by each light carries a predetermined code different from the modulating code of every other traffic light. Vehicles moving about the prescribed area carry means for sensing the modulated energy emitted by each traffic light, and for transmitting to a remote location a signal incorporating the modulation code. At the remote location, the signal is received and converted into a visual display indicating the location corresponding to the received code.



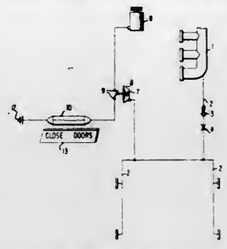
3,697,942
EARLY WARNING BRAKE FAULT DEVICE AND SYSTEM
Loren P. Hocking, East Detroit, and Louis B. Lotti, St. Clair Shores, both of Mich., assignors to Benjamin W. Colman, Huntington Woods, Mich., a part interest
Filed Aug. 19, 1971, Ser. No. 172,990
Int. Cl. B60t 17/22
U.S. Cl. 340—52 C **21 Claims**



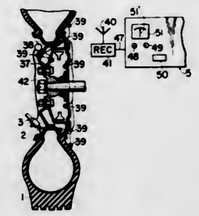
An early warning system in a motor vehicle having a hydraulic brake system to signal potential brake failure due to a loss of brake fluid from the brake system, or to excessive wear of lining on the brake shoes or disc pads at the wheels. The loss is measured as a volume loss of brake fluid, by a magnetically actuated reed switch structure responsive to a control magnet positioned in the brake fluid reservoir at a position below the reed switch to close the same when the brake fluid has reached a predetermined lower level.

3,697,943
INSTALLATION FOR INDICATING THE CLOSING CONDITION OF VEHICLE DOORS, ESPECIALLY OF MOTOR VEHICLE DOORS
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 11, 1969, Ser. No. 884,129
Claims priority, application Germany, Dec. 12, 1968, P 18 14 233.1
Int. Cl. B60q 1/00
U.S. Cl. 340—52 D **12 Claims**

An installation for indicating the closing condition of vehicle doors, especially of motor vehicle doors, in which lines are provided that are connected to a vacuum source and terminate within the area of the doors; the lines are in communication with the atmosphere in case a door is not completely closed but are closed with respect to the atmosphere in case all doors are completely closed; a warning device is provided which in turn is actuated by the pressure in the lines.



3,697,944
VEHICLE TIRE PRESSURE INDICATING AND SIGNALLING DEVICE
Jisaku Murano, 206, Motohongo-cho, Hachiohji-shi, Japan
Filed Dec. 9, 1969, Ser. No. 883,514
Claims priority, application Japan, Dec. 13, 1968, 43/91431
Int. Cl. B60c 23/04
U.S. Cl. 340—58 **3 Claims**

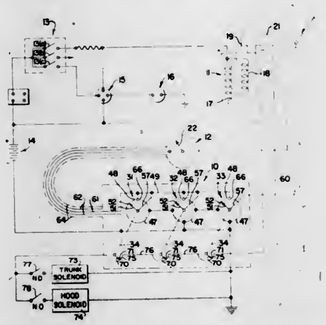


A tire pressure indicating and signaling device includes a pair of interconnected cylindrical elements, one of which is designed to be screwed directly on to the valve stem of a pneumatic tire and to mount a tire valve communicating with the chamber in this element. The other element encloses variable resistance means and electric contact means which are operative responsive to the pressure in the chamber of the valve stem mounted cylindrical element. The variable resistance means may comprise an iron powder element, a carbon element, or a pressure-sensitive transistor. A signal transmitter is connected to the variable resistance and to the contact means and may be mounted either directly on the tire or adjacent the tire on a fixed portion of the vehicle, such as an axle. When the transmitter is mounted on the tire, it transmits a radio signal to a receiver in the operator'compartment, and this receiver is connected to indicating and alarm means. When the transmitter is mounted on the fixed part of the vehicle, it is connected by conductors to the alarm and indicating means in the driver's compartment.

3,697,945
LOCK SWITCH AND SECURITY SYSTEM FOR MOTOR VEHICLE ELECTRICAL CIRCUITS
James D. Comber, 2335 South Overlook Drive, Cleveland Heights, Ohio
Filed Jan. 20, 1971, Ser. No. 107,987
Int. Cl. B60r 25/04
U.S. Cl. 340—64 **7 Claims**

A combination type lock switch and security system for a motor vehicle electrical circuit such as the primary ignition circuit. The system utilizes a plurality of switch units mounted in a sealed casing and having control elements that may be ad-

justed to different positions relative to a control panel on one face of the casing. The movable contact of each switch unit has one circuit "unlocking" or enabling position and in all other positions it grounds or "locks" the circuit by engaging a

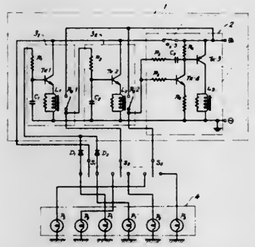


grounded stationary contact. The system also contemplates the use of a tamper proof conductor between the lock switch casing and another circuit component such as a distributor for the vehicle motor.

3,697,946
SEQUENTIAL FLASH TYPE DIRECTIONAL SIGNAL DEVICE FOR AUTOMOBILES

Kenichi Nishioka, Tajimi-shi, Japan, assignor to Imasen Electric Industrial Co., Ltd., Aichi-ken, Japan

Filed Oct. 28, 1969, Ser. No. 871,834
Claims priority, application Japan, Nov. 14, 1968, 43/83492; Feb. 4, 1969, 44/10084
Int. Cl. B60q *1/38*
U.S. Cl. 340—82 **3 Claims**



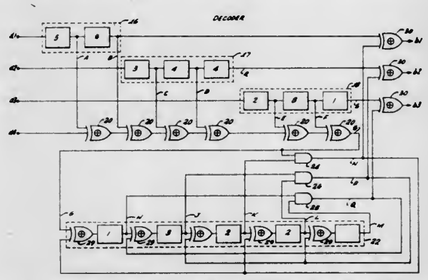
A sequential flash type directional signal device for automobiles, comprising a pair of series of lamps for indicating the direction of a turn to right or left respectively which are so arranged as to be flashed sequentially one after another in either direction, the control system permitting the flashing of lamps by means of simple delay circuits in combination with switching circuits, and the use of such circuits as a hazard warning circuit.

3,697,947
CHARACTER CORRECTING CODING SYSTEM AND METHOD FOR DERIVING THE SAME

James R. Macy, Newport Beach, Calif., assignor to American Data Systems, Inc., Canoga Park, Calif.

Filed Nov. 16, 1970, Ser. No. 89,871
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **7 Claims**

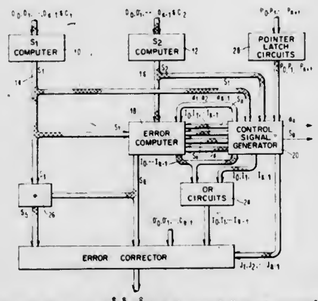
Apparatus and method for utilizing and deriving a self-orthogonal, convolutional character correcting coding system. In an encoder, a parity check bit stream is generated from a modulo-2 summation of two different prior information bits from each of three information bit streams and all four bit streams are transmitted simultaneously. In a receiving decoder, the same modulo-2 summation of prior received information bits is modulo-2 summed with a currently received parity check bit to form a syndrome bit stream. Particular syndrome bits along the stream are combined to form three correction bit streams for correcting erroneous bits in each of the three information bit streams. A method for determining code operators, specifying which information bits are to be combined, is described as being suitable for machine implementation and a computer program suitable for implementing the method is disclosed.



3,697,948
APPARATUS FOR CORRECTING TWO GROUPS OF MULTIPLE ERRORS

Douglas C. Bossen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,490
Int. Cl. G06f *11/00*
U.S. Cl. 340—146.1 AL **12 Claims**



Apparatus including a decoder adapted for recovering the data from a received message corresponding to the sent message but which may be in error wherein the blocks of data consist of k bytes of data (D_0, D_1, D_2,...D_{k-1}) each of b bits. The sent message comprises the k bytes of data plus two check bytes C_1 and C_2, each of b bits. The decoder is effective in recovering the data without error when not more than two of the bytes are in error no matter how many bits may be in error in the two bytes. Pointers are required which indicate the two bytes containing errors. In the absence of the pointers or in the presence of a single false pointer, the decoder is effective in recovering the data without error when not more than a single byte is in error no matter how many bits may be in error in the single byte. The message is encoded by computing the check bytes according to the relationship:

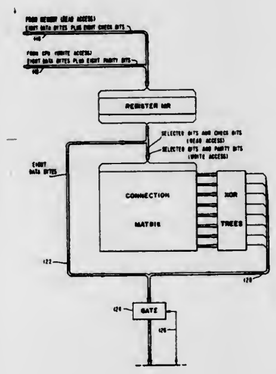
$$C_1 = ID_0 \quad ID_1 \quad \ldots \quad ID_{k-1}$$
$$C_2 = ID_0 \quad T D_1 \quad T^2 D_2 \quad \ldots \quad T^{k-1} D_{k-1}$$

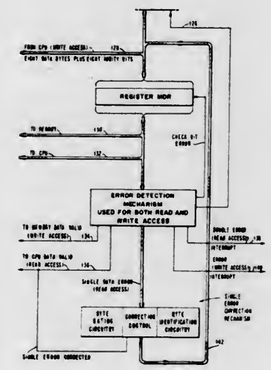
wherein I is the identity element and T, T^2,...,T^{k-1} are distinct non-zero elements of Galois Field (2^b) wherein the indicated multiplication and addition are the Galois Field defined operations, and wherein b is an integer > 1 and k is an integer $2 < k < 2^b$.

3,697,949
ERROR CORRECTION SYSTEM FOR USE WITH A ROTATIONAL SINGLE-ERROR CORRECTION, DOUBLE-ERROR DETECTION HAMMING CODE

William C. Carter, Ridgefield, Conn.; Keith A. Duke, Wappinger Falls, and Donald C. Jessep, Jr., Poundridge, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,262
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **14 Claims**



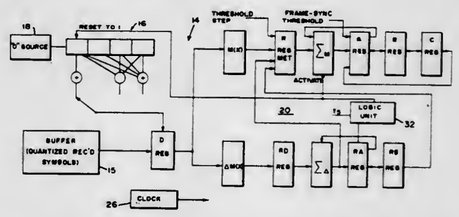


The present invention relates to a highly-efficient system for performing single-error correction when utilized with a memory system including a memory equipped with error-detection circuitry for use with rotationally-encoded, single-error correction, double-error detection Hamming coded data wherein said memory system circuitry includes means for developing syndrome bits, the patterns of which indicate faulty operation. Hardware is included for first identifying the specific byte which contains the error and still further hardware is provided to locate the particular bit which is erroneous. By efficient use of the rotational characteristic of the present coding scheme, correction is made only when necessary and only that hardware necessary to correct a single byte is provided in the correction circuitry.

3,697,950
VERSATILE ARITHMETIC UNIT FOR HIGH SPEED SEQUENTIAL DECODER

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Warren A. Lushbaugh, 5139 Princess Anne Road, La Canada, Calif., and James W. Lyland, 2211 East Washington Street, Pasadena, Calif.

Filed Feb. 22, 1971, Ser. No. 117,575
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **11 Claims**

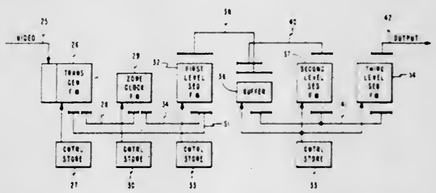


An arithmetic unit for a decoder for data encoded by convolution encoding. The arithmetic unit includes two channels, a main metric channel and a delta metric channel. In the main metric channel a metric is computed for a received symbol branch with respect to check bits from an encoder replica which is fed with a data bit, assumed to be a zero. The delta metric channel computes a delta metric for the same branch. At the end of the computations the sign of the computed delta metric is used to control the changing of the data bit to a one and the adding of the computed delta metric to the metric in the main metric channel.

3,697,951
PATTERN RECOGNITION BY MULTIPLE ASSOCIATIVE TRANSFORMATIONS

Gerald E. Bartholomew; Donald J. Kostuch, both of Rochester, Minn.; Thomas E. Robinson, North Baddesley, England, and William S. Rohland, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

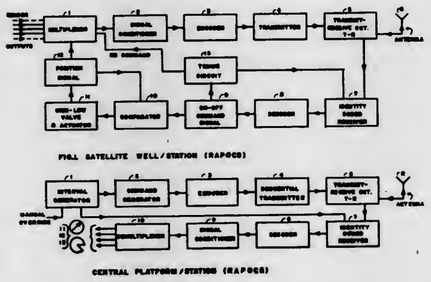
Filed May 25, 1971, Ser. No. 146,763
Claims priority, application Great Britain, May 29, 1970, 25,963/70
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 Q **15 Claims**



An input pattern is assigned to one of a plurality of categories by serial associative transformations of an input data string to an output code. Substrings of the data string derived from the pattern are applied as serial search arguments to an associative store containing transformation codes for particular bit sequences. The transformation codes are then used as

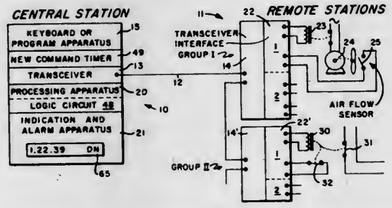
search arguments for an associative store containing tables for producing a second code from particular sequences of the transformation codes. Additional code levels operate similarly to output a pattern-category code. Stored control keys further control the associative-store operations. A zone-clock associative store detects significant transform-code configurations, and records how much of each pattern has been processed.

3,697,952
REMOTE ACTUATED POLLUTION AND OIL FLOW CONTROL SYSTEM
Harbhajan Singh Hayre, 10 Legend Lane, Houston, Tex.
Filed June 8, 1970, Ser. No. 44,075
Int. Cl. H04q 7/00
U.S. Cl. 340—147 R **5 Claims**



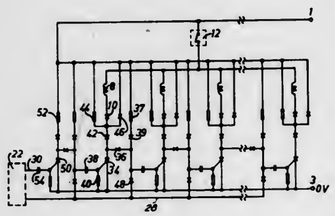
The position of a high-low valve on oil wells is remotely controlled and monitored from a distant control station in order to either shut the said valve or other associated valves and controls in case of severe environmental oil pollution/emergency conditions, or to open it during otherwise inaccessible periods or to remote control it at all times in order to conserve manpower. Such cases cover possibilities of oil leakage at a well, and failure of the usually provided shutoff valves at the well head.

3,697,953
SYSTEM FOR MONITORING ABNORMAL SYSTEM OPERATIONS IN A SYSTEM HAVING A CENTRAL STATION AND A PLURALITY OF REMOTE STATIONS
Frank H. W. Schoenwitz, Schaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 28, 1970, Ser. No. 101,563
Int. Cl. H04q 9/00
U.S. Cl. 340—163 R **5 Claims**



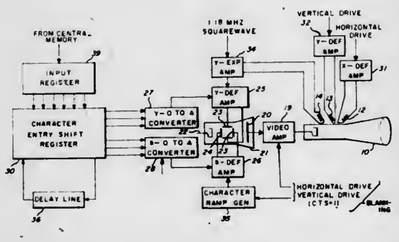
A system for alarming abnormal operations in a system having a central station and a plurality of remote stations connected by a transmission channel wherein operation of remote equipment is accomplished by sending messages to and from the central station. A logic circuit means is connected to receive outputs of system variables which are used in a prearranged manner to provide an alarm output when the reported condition status doesn't agree with the command intent. To minimize alarm annunciations not all abnormal system conditions will be alarmed, provided the reported status agrees with the command intent. The variables are; the type of commands sent from the central station, how much time has elapsed since the command has been sent, whether the command had actuated equipment at the remote station, whether the operating condition at the remote station had changed status as a result of a change in the equipment, and the present status of the operating condition at the remote station.

3,697,954
MATRIX WITH INDUCTIVE ELEMENTS
Sven-Erik Maxe, Jakobsberg, Sweden, assignor to Svenska Dataregister AB, Solnar, Sweden
Filed Nov. 9, 1970, Ser. No. 87,724
Claims priority, application Sweden, Nov. 19, 1969, 15580/69
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R **6 Claims**



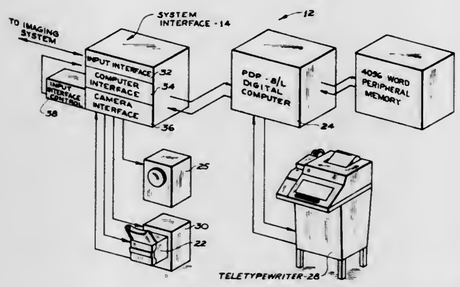
A matrix of inductive elements selectively actuated by drive circuitry utilizing thyristers. The drive circuitry is a chain of thyristers having the anode of each thyrister diode coupled to the gate circuit of the succeeding thyrister for insuring proper thyrister sequencing.

3,697,955
VISUAL DISPLAY SYSTEM
Joseph E. Bryden, and Derek Chambers, both of Framingham, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed March 13, 1970, Ser. No. 19,190
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **34 Claims**



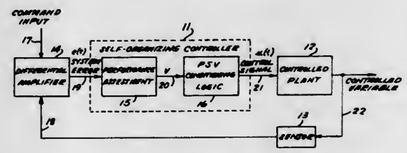
A cathode ray display system in which characters are generated by a monoscope and in which the character address information for the entire raster of a cathode ray tube display is stored in a dynamic memory which is continuously read and regenerated by character entry and read-out logic which controls the monoscope scanning to supply the proper characters to the cathode ray tube as it scans in a raster.

3,697,956
COMPUTER SYSTEM AND COLOR ADAPTER FOR IMAGING DETECTORS AND METHOD OF OPERATION
Samuel C. Goldman, Branford, and Lance M. Albrecht, Wallingford, both of Conn., assignors to Picker Corporation
Filed June 19, 1970, Ser. No. 49,999
Int. Cl. G01d 9/42; G06f 3/14
U.S. Cl. 340—172.5 **31 Claims**



A computer and color adapter system for an imaging detector, such as a Gamma ray imaging camera, for providing a visual presentation of the detected image. The signals developed by the imaging detector, in response to radiation stimuli, are applied to a digital computer when the signals are stored, and modified if desired. The stored signals may then be translated into visual form by applying them to an oscilloscope, or other similar read-out device. A color camera system, including a color filter disc, may by utilized in conjunction with the oscilloscope and the computer in order to provide a multi-colored photograph representative of the detected image.

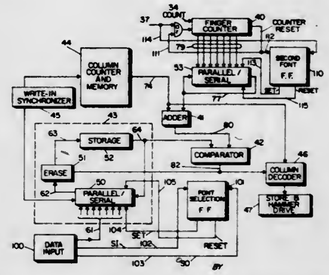
3,697,957
SELF-ORGANIZING CONTROL
Roger L. Barron, Burke, Va., assignor to Adaptronics, Inc., McLean, Va.
Division of Ser. No. 565,162, July 14, 1966, Pat. No. 3,460,096, Continuation-in-part of Ser. No. 535,551, March 18, 1966. This application Dec. 23, 1968, Ser. No. 785,958
Int. Cl. G06f 15/18; G05b 13/00
U.S. Cl. 340—172.5 **26 Claims**



BLOCK DIAGRAM - TYPICAL SELF-ORGANIZING CONTROL SYSTEM FOR SINGLE VARIABLE

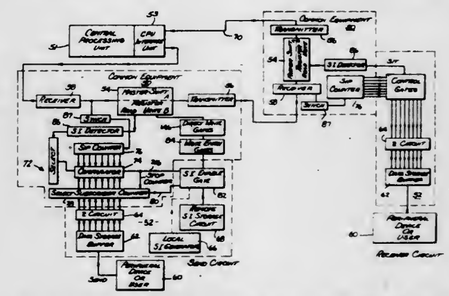
This disclosure relates to a self-organizing control system requiring minimum information storage capable of control of a plant by combining statistical decision theory to determine the true instantaneous plant performance, prediction theory to determine the performance trend, and rapid trial generation to ascertain what must be done to improve the performance trend. This is provided by on-line sampling and changing of system operation. The disclosure also includes performance assessment units and a probability state variable unit as subcombinations for carrying out the control operation.

3,697,958
FONT SELECTING SYSTEM
John J. Larew, Waynesboro, Va., assignor to General Electric Company
Filed Dec. 23, 1969, Ser. No. 887,537
Int. Cl. G06c 11/06
U.S. Cl. 340—172.5 **22 Claims**



Characters to be printed by a multiple font printing apparatus are represented by discrete numbers, and the printable characters on the apparatus are represented by corresponding numbers. There is a particular indication associated with each font and this indication is added to the printable character number. In order to print characters from particular fonts, means are provided for modifying the input data representing the desired character with said particular indication.

3,697,959
DATA PROCESSING SYSTEM EMPLOYING DISTRIBUTED-CONTROL MULTIPLEXING
Carl N. Abramson, Somerville, and Mark T. Nadir, Warren, both of N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.
Filed Dec. 31, 1970, Ser. No. 103,191
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **23 Claims**



An electrical computer system having a plurality of members including a central processing unit, peripheral devices, and user devices. Communications between the many members is carried out by a technique whereby the members operate off of a common reference, or synch, which enables the members to identify distinct periods (P) as well as discrete consecutive subperiods (SIP) located within a data portion of the periods (P). The SIP identification is accomplished by numbering and counting the SIP to determine the position where it appears in its period (P). The subperiods of SIPs are individually assigned with data meanings (words, commands, letters, numbers, symbols or data of any kind) known to the members of the system. Data is exchanged by inserting, into selected subperiods, signals (SI) identifying the sending

and/or receiving members so that the receiving member may, in response to such signals, derive the data meanings simply by correlating the so-selected subperiods with their assigned data meanings. In this manner, each of the members is individually responsive to data and commands sent to them and participate as a working group with each other and with the central processing unit to perform given programs.

3,697,960

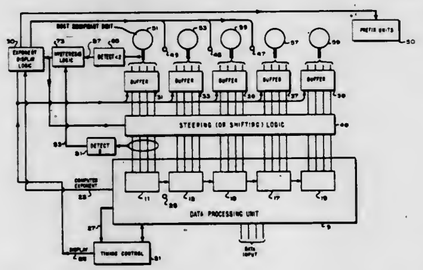
AUTOMATIC MULTIRANGE DISPLAY APPARATUS AND CONTROL THEREFOR

Gary B. Gordon, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 799,717, Feb. 17, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,795

Int. Cl. G06f 3/14

U.S. Cl. 340—172.5 **4 Claims**



Digital data which is arithmetically processed in "floating point" computation is displayed using mantissa and exponent notation. Automatic ranging according to the exponent provides a display which assures optimum resolution, and hysteresis control over the automatic ranging eliminates undesirable range changing on display data which varies only slightly beyond a range limit.

3,697,961

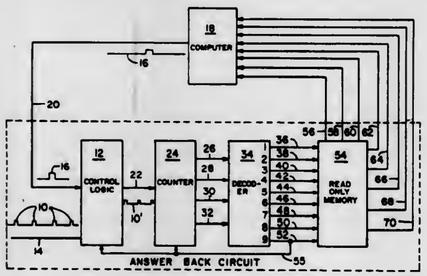
DIGITAL ANSWERBACK CIRCUIT

Howard F. Banks, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed May 17, 1971, Ser. No. 144,062

Int. Cl. G08b 11/00; G06f 1/04

U.S. Cl. 340—172.5 **20 Claims**



A digital answerback circuit for providing a computer with information identifying a remote terminal is disclosed. A signal received from the computer initiates operation of the answerback circuit. This signal enables an electronic counter to count clock pulses and produce a binary output which corresponds to the number of clock pulses counted. An electronic decoder then decodes the binary output and produces an output signal on a specific and separate line for each clock pulse received. Each decoder output signal is applied to a separate and specific input of a read only memory which results in a code, preprogrammed for the specific input and contained in the read only memory, being sent back to the computer. These preprogrammed codes contain the necessary identification information and may further contain any other information useful or necessary to the computer.

3,697,962

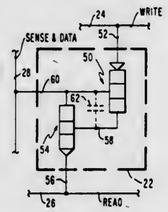
TWO DEVICE MONOLITHIC BIPOLAR MEMORY ARRAY

William F. Beausoleil; Irving T. Ho, both of Poughkeepsie; Teh-Sen Jen, Fishkill, and W. David Pricer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 92,961

Int. Cl. G11c 11/40

U.S. Cl. 340—173 R **19 Claims**



This specification discloses a stored charged storage cell for implementation in monolithic memories. The storage cells are fabricated in an array form and are connected to accessing means for reading and writing information into and out of the array. An integrated circuit diffused common sensing line is connected to either selected rows or columns for reading and writing. These sensing lines are connected to a switchable current source. The cell itself clamps the output voltage swing and thus reduces power dissipation. The storage cells each comprise a pair of semiconductor elements for storing digital information on an associated parasitic capacitor. The pair of semiconductor devices are interconnected and operated in an AC mode so as to eliminate direct current paths and thus further prevent unnecessary power dissipation.

3,697,963

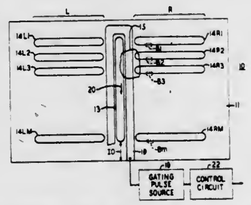
SINGLE WALL DOMAIN MEMORY ORGANIZATION

Donald Eugene Kish, North Plainfield, and James Lanson Smith, Bedminster, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 29, 1971, Ser. No. 128,889

Int. Cl. G11c 21/00, 11/14

U.S. Cl. 340—174 TF **9 Claims**



The transfer of single wall domains between propagation channels defined in "field access" arrangements by magnetically soft elements adjacent a layer in which the domains can be moved is achieved by a hybrid arrangement of magnetically soft guide elements and a conductor which effects lateral displacement of domains in pairs between fixed positions defined by the guide elements consistent with positions which are part of the channels involved in the transfer.

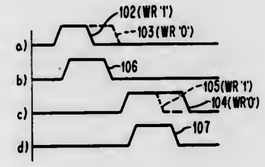
3,697,964

ASSOCIATIVE AND RANDOM ACCESS DEVICE

Woo F. Chow, Berkley Heights, N.J., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 867,435, Oct. 16, 1969, Pat. No. 3,582,915, which is a continuation of Ser. No. 503,363, Oct. 23, 1965, abandoned. This application Sept. 30, 1970, Ser. No. 76,860

U.S. Cl. 340—174 PC **4 Claims**



There is disclosed herein an arrangement for recording a data bit and complementary data bit by utilizing the same bit current pulse. The rise time of the bit current pulse is utilized to record the data bit and the fall time of the pulse is used to record the complementary data bit.

3,697,965

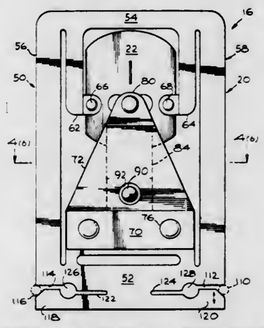
MAGNETIC DISC HEAD ASSEMBLY

Clarence Huetten, Woodland Hills, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 10, 1970, Ser. No. 53,828

Int. Cl. G11b 5/60

U.S. Cl. 340—174.1 E **10 Claims**



A magnetic head assembly suitable for use in high density magnetic disc data storage systems. The head assembly includes a pad adapted to fly close to the disc surface on an air bearing having a thickness on the order to 100 microinches. The pad is carried by a spring gimbal which exhibits rotary compliance about perpendicular longitudinal and lateral axes to permit the pad to follow the disc terrain. The spring gimbal comprises an open substantially rectangular frame formed of thin spring stock. The gimbal frame is cantilevered about one of its short sides from a positioner arm mounted for radial movement with respect to a disc surface. The pad is carried by a pair of reverse cantilevered arms forming part of the gimbal frame and extending perpendicularly from the free short side thereof. A pivot bearing is provided to resiliently bear against the pad to urge it toward the disc surface only when the pad is intended to be in flying position.

3,697,966

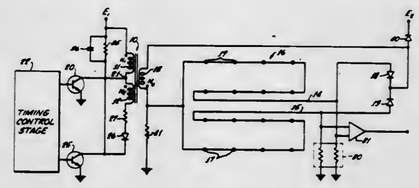
CURRENT DRIVER SYSTEM FOR A CORE MEMORY

George H. Wells, Santa Ana, and Perry B. Persons, Irvine, both of Calif., assignors to Technology Marketing Incorporated, Santa Ana, Calif.

Filed March 25, 1971, Ser. No. 128,030

Int. Cl. G11c 5/02, 11/06

U.S. Cl. 340—174 TB **14 Claims**



A system for supplying a current to a core memory stack having substantial inductance including a transformer having a selectively variable primary/secondary turns ratio. The variable turns ratio permits the current buildup time interval in the core state to be minimized while reducing the power required to drive the stack.

3,697,967

MAGNETIC THIN FILM MEMORY

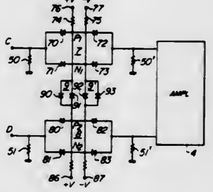
Noriyuki Homma, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed April 12, 1971, Ser. No. 133,124

Claims priority, application Japan, April 13, 1970, 45/30840; Aug. 5, 1970, 45/68468

Int. Cl. G11c 11/14, 5/02

U.S. Cl. 340—174 CA **4 Claims**



A magnetic thin film memory of the type in which one data line is commonly used as a sense line and a digit line, comprising a limiter including a diode bridge at a terminating point of a data line, thereby eliminating digit noises of large amplitude and enabling the use of regular read signal (i.e., "1" or "0") directly as the input for a sense amplifier.

3,697,968

DUAL PURPOSE MOMENTUM WHEELS FOR SPACECRAFT WITH MAGNETIC RECORDING

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, Narsingh Deo, 122 Huribut Street, Pasadena, Calif.

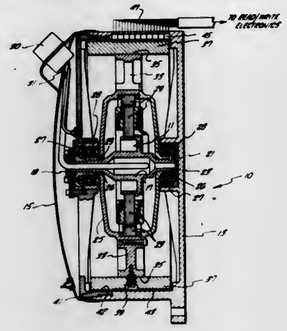
Filed April 16, 1971, Ser. No. 134,571

Int. Cl. G11b 5/82

U.S. Cl. 340—174.1 R **10 Claims**

A dual purpose momentum wheel apparatus is disclosed in which a conventional momentum wheel, normally utilized for altitude stabilization of spacecraft, has been modified to function as a memory system for the storage of scientific data. The momentum wheel apparatus comprises a rotary motor mounted within a hermetically sealed drum. A momentum

wheel is mounted on the motor and is adapted to rotate adjacent the interior surface of the drum. The outer periphery of the momentum wheel is coated with a magnetic material,

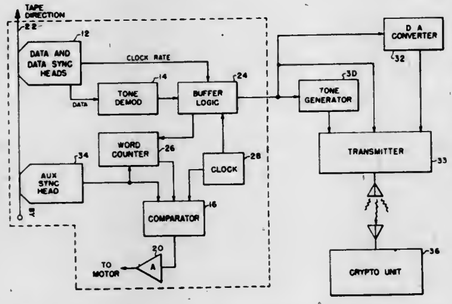


while a plurality of read-write heads are adjustably mounted on the interior of the drum in close proximity to the magnetic periphery of the momentum wheel.

3,697,969
MAGNETIC TAPE WITH PLURAL CLOCKS

Eugene R. Crippa, El Cajon, and Ray B. Lowry, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 29, 1971, Ser. No. 202,815
Int. Cl. G11b *5/44, 27/10*
U.S. Cl. 340—174.1 A **3 Claims**



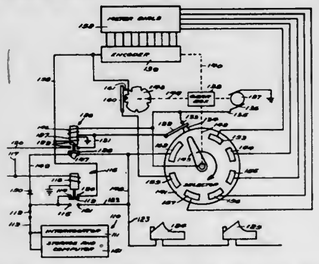
Tape recorder apparatus compatible in communications systems with cryptographic units which are generally adversely affected by excessive tape jitter and speed variations. Long term, gross tape speed control is provided by a high-compliance, low-mass drive system which follows inversely synchronization (sync) data recorded on the tape. Data tones are demodulated and clocked into an input register at the recorded sync rate. By means of fine dump control, while the input register is accumulating, an outputting register precisely clocks out bits at a rate acceptable to the interface units. The registers are alternately switched from accumulate to dump function.

3,697,970
ELECTRICAL METER READING SYSTEM

William W. Jaxheimer, 139 Wall Street, Kingston, N.Y.

Filed June 17, 1970, Ser. No. 46,857
Int. Cl. G08c *15/06*
U.S. Cl. 340—183 **15 Claims**

A telemetering system for sequentially interrogating a plurality of meters and successively transmitting the data thereon to a remote station for suitable processing, such as the sequential reading of meters indicating the consumption of electrical energy, gas, water, and similar meters, and transmitting the readings by encoded electrical signals to a central station or other location where the readings may be recorded and stored for future processing or may be fed directly to a suitable computer for computation, recording, and billing for the service rendered. An encoder provides electrical pulses corresponding to the reading on each meter dial and the dial readings are sequentially encoded and transmitted to the processing station. After all dials of a meter have been read, a coded pulsed identification is transmitted indicating the meter just read. When there is only one meter at a reader location, the reading and information encoding is followed by a transfer signal sent from the meter just completed to the next meter location in

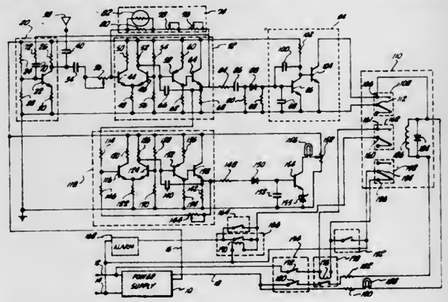


the sequence to energize the reader at this latter meter location. Should this latter meter location be out of operation, the transfer signal is transmitted to the next sequential meter reader until an operative meter is reached. The interrogating, encoding, and transmitting, as previously explained, is then repeated until the entire sequence of meters has been read. When there is a plurality of meters at one location, only one master encoder and one master meter and dial selector are required for all meters at that location, provided the master units are built to read and transmit the number of meters thus grouped together. If the master unit is built to handle more meters than those in the group, provision is made to transmit the transfer signal when all meters in the group have been read, thus avoiding needless waiting for completion of a reading cycle longer than that required for the actual meters in the group.

3,697,971
ALARM SYSTEM

Siegfried Domin, 22053 Independencia Street, Woodland Hills, Calif., and Roy Nembhard, 1710 South Orange Drive, Los Angeles, Calif.

Filed Dec. 30, 1970, Ser. No. 102,818
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 C **13 Claims**

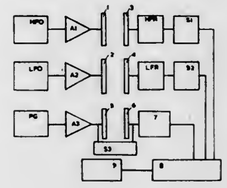


A capacitive alarm system for detecting the presence of an intruder, including an oscillator, a level sensitive switch driven by the oscillator, an alarm controlled by the switch, and an antenna coupled to the oscillator. Changes in capacitance in the proximity of the antenna vary the level of the oscillator output and, in the presence of an intruder, trigger the switch and alarm. A negative feed-back network, including a light-sensitive variable resistor, is connected to the oscillator. The output of the oscillator also drives a lamp that illuminates the light-sensitive variable resistor. Slowly varying changes in capacitance, due to variations in temperature and humidity, vary the level of the oscillator output and the intensity of the light from the lamp. The variation in intensity of illumination from the lamp directly varies the resistance of the light-sensitive variable resistor so as to maintain the level of the oscillator output constant. The long-time constant of the lamp and the light-sensitive variable resistor circuit prevents compensation for the rapid variations in capacitance associated with the appearance of an intruder.

3,697,972
METAL DETECTION AND ALARM SYSTEMS

Yull Brown, 182 Auburn Road, Auburn, New South Wales, Australia

Filed June 22, 1970, Ser. No. 47,974
Claims priority, application Australia, June 26, 1969, 57077/69; June 26, 1969, 57078/69; July 11, 1969, 57800/69; Aug. 6, 1969, 59123/69; Dec. 22, 1969, 65563/69; Jan. 12, 1970, PA 0058
Int. Cl. G08b *13/14*
U.S. Cl. 340—258 R **14 Claims**

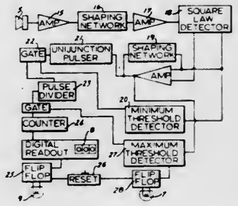


A metal detection alarm system detects the presence of an article of a particular metal in a given region by measuring the disturbance of two oscillating electromagnetic fields, one oscillating at from 5 to 20 kHz., the other at from 16 Hz. to 5 kHz., and also of the disturbance of a magnetic field established by D.C. pulses produced at a rate of 0 to 16 pulses per second. Receivers tuned to respond to the electromagnetic and magnetic fields established in the region produce a different response when a metal is present, the change in responses depending upon different parameters of the metal article. The outputs from the receivers are compared with the transmitted signals or in a logic circuit with standard signals and if at least two of the receiver outputs indicate the presence of the particular metal, an alarm is actuated. Applied to revolving doors, apparatus to prevent a person carrying a firearm into a bank or other building, or from entering an aircraft, is obtained. The system can also be used in conjunction with conventional non-revolving doors or with windows. A temperature controller utilizing the change of resistance with temperature of a thermistor is also described. The thermistor is located in the base circuit of a transistor which, in turn, is in a control circuit which determines the length of pulses applied to the gates of two thyristors or silicon controlled rectifiers. The time of switching the thyristors or S.C.R.s and length of pulse controls the supply of power to a heater.

3,697,973
SOUND HAZARD INTEGRATOR

Alan F. Stevens, Oak Creek, and Arnold A. Bergson, Milwaukee, both of Wis., assignors to Quest Electronics Corporation, Milwaukee, Wis.

Filed March 19, 1970, Ser. No. 21,153
Int. Cl. G08b *13/00*
U.S. Cl. 340—261 **15 Claims**

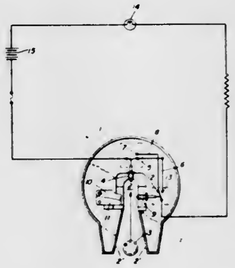


A cumulative sound exposure instrument has an alarm indicator responsive to a selected maximum instantaneous loudness level and has a second indicator which is responsive to a selected value of accumulated exposure. A register provides a continuous reading of the amount of exposure. The instrument integrates a function over time to give a reading that accumulates faster for higher loudness levels. The elements that accomplish these functions include a sound pickup system which applies a signal to a frequency compensating shaping system for shaping the signal output in accordance with an ear's response. An amplitude responsive shaping network receives the signal and applies an output to a pulser in accordance with the function which will be integrated. The pulser output is proportional to the voltage of the input and drives a counter to accumulate an exposure reading. Minimum and maximum threshold detectors control the pulser output so that the counter is driven only when the loudness level lies between two preset limits.

3,697,974
LATCHING WARNING DEVICE FOR FIFTH WHEEL ASSEMBLIES

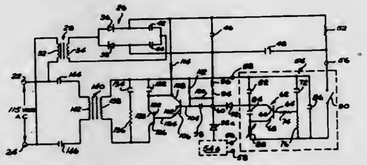
Julian Taylor Harris, and Thomas Adkins Turner, both of Columbus, Ga., assignors to Fountain City Safety Corporation, Washington, D.C.

Filed Oct. 26, 1970, Ser. No. 83,738
Int. Cl. G08b *23/00*; B62d *53/10*
U.S. Cl. 340—275 **6 Claims**



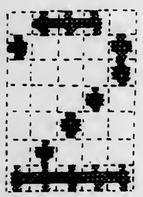
A safety system is provided for fifth wheel assemblies or other trailer connecting devices which includes several switches connected to warning devices which are actuated to warn the operator of improper coupling conditions.

3,697,975
REMOTELY CONTROLLED SWITCHING SYSTEM
Karl Bernstein, Woodland Hills, and E. Richard Walter, Los Angeles, both of Calif., assignors to Safety Signaling, Inc.
Filed Aug. 6, 1969, Ser. No. 856,234
Int. Cl. H04m 11/04
U.S. Cl. 340—310 12 Claims



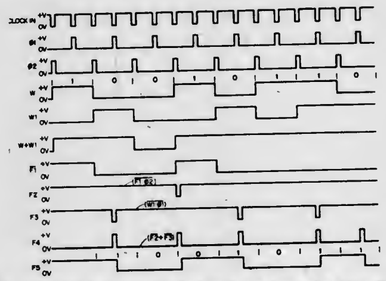
A remotely controlled switching system comprising a transmitter having a power source including the charge on a capacitor thereby to provide a limited duration output signal. As the charge on the capacitor decays, the frequency of the transmitter output signal increases a predetermined amount. The receiver associated with the transmitter includes a tuned circuit which may include a piezo-electric crystal. As the transmitter signal frequency increases due to the discharge of the power supply capacitor, the signal frequency passes through the series resonant frequency as well as the parallel resonant frequency of the crystal. Thus, the receiver need not be fine tuned to a particular frequency to receive the output of a particular oscillator. Moreover, the receiver contains a circuit which prevents stray or transient signals from prematurely triggering its output circuit. The receiver output circuit includes means responsive to limited duration signals which means retains its status until definitely changed.

3,697,976
ELECTRONIC CHARACTER GENERATING
Roger Wakefield Fenton, Essex, England, assignor to The Marconi Company Limited, London, England
Filed Sept. 10, 1970, Ser. No. 71,138
Claims priority, application Great Britain, Sept. 12, 1969, 45,048/69
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 6 Claims



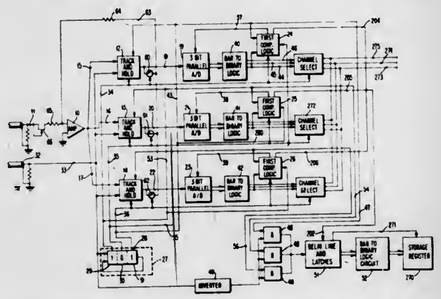
In an electronic character generating apparatus a display cathode ray tube is subjected to deflection in accordance with a television type raster. Some of the signals from a conventional character generating device which are applied to the tube during fixed time durations of successive television line periods so as to produce a character-simulating pattern of rectangular dots, are modified as to their time durations so that the dots of the pattern are modified in shape so as to be non-rectangular or cruciform.

3,697,977
TWO PHASE ENCODER SYSTEM FOR THREE FREQUENCY MODULATION
George H. Sollman, Cambridge, and Samuel J. Dixon, Holliston, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed July 6, 1970, Ser. No. 52,328
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 15 Claims



A multiphase encoder translates the bits of a Non-Return-to-Zero digital signal into a three frequency self-clocking having a data transition at the center of a binary ONE bit and a data transition between successive binary ZERO bits.

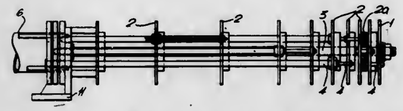
3,697,978
ANALOG-TO-DIGITAL CONVERTER
Robert S. Prill, West Paterson, N.J., assignor to The Singer Company, New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,709
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 14 Claims



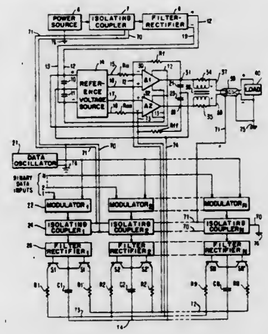
An analog signal is held in a capacitor so that the most significant bits of the signal are obtained by parallel conversion and the least significant bits are obtained by a ramp discharge of the capacitor. The converter can convert analog signals having a frequency of 30 MHz by using three channels with each channel having one of the holding capacitors.

3,697,979
DIGITAL ACTUATORS
Wellesley Ashe Kealy, Lymm, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Jan. 18, 1971, Ser. No. 107,041
Claims priority, application Great Britain, Jan. 20, 1970, 2,783/70
Int. Cl. G08c 5/00
U.S. Cl. 340—347 DA 5 Claims

A digital actuator wherein a mechanical displacement of an output member is related to the digital input of a number of input members which are preferably an array of linked binary units. Loading means are provided urging the input members and the output member to a datum limiting position. An auxiliary transducer is also provided which can override the loading means and effect displacement of all the members to a second position in which each individual input member may receive a signal serving to retain it there when the auxiliary transducer ceases to override the loading means.

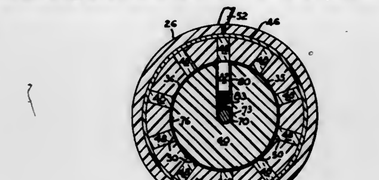


3,697,980
ISOLATED DIGITAL-TO-ANALOG CONVERTER
Stavros Boinodiris, Boca Raton, and George A. Hellwarth, Deerfield Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1971, Ser. No. 158,236
Int. Cl. H03k 13/04
U.S. Cl. 340—347 DA 10 Claims



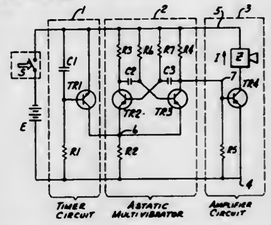
A digital-to-analog converter employing a pair of operational amplifiers connected in a balanced differential configuration to supply an analog output to a two-terminal load. The data and power inputs are isolated from the converter by isolation couplers. Each bit of binary data is sensed at the summing junction of each amplifier by means of a pair of balanced resistors which are switched in accordance with the binary signal. Each set of balanced resistors so sensed is in parallel with the other sets between the summing junctions. The balanced differential configuration enables either terminal at the two-terminal load to be at ground reference potential without deteriorating the common-mode rejection capability of the circuit, thereby eliminating the effect of voltages existing between the ground reference at the load and the ground reference at the binary and power input terminals of the converter.

3,697,981
MONITORING ATTACHMENT FOR SELF-SERVICE GASOLINE PUMPS
Chester M. Harkins, 1124 West 11th Avenue, Spokane, Wash., and Delue M. Harkins, 335 Thain, Lewiston, Idaho
Filed Feb. 8, 1971, Ser. No. 113,375
Int. Cl. G08c 1/00
U.S. Cl. 340—359 9 Claims



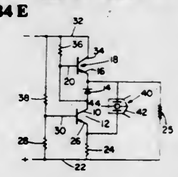
A monitoring attachment for mounting on self-service gasoline pumps to generate pulses correlated to the amount of gasoline dispensed from the self-service pump. The pulses are transmitted to a remote station as input to a slave register. The monitoring attachment is constructed in a manner to prevent the ignition of gasoline fumes that may be emitted from the pump.

3,697,982
TONE CONTROL SIGNAL CIRCUIT HAVING TONE PULSES FOLLOWED BY CONTINUOUS TONE
Katsumi Kawaki, and Masashi Usui, both of Kawasaki, Japan, assignors to Tokyo Tokei Seizo Kaisha, Ltd., Kawasaki-shi, Kanagawa-ken, Japan
Filed Dec. 3, 1970, Ser. No. 94,825
Claims priority, application Japan, June 10, 1970, 45/49514
Int. Cl. G08b 3/00; G10k 7/00
U.S. Cl. 340—384 E 4 Claims



A control signal generator circuit for an annunciator such as an electric tone in the form of a buzzer or bell consisting of three principle circuits: a timer circuit; a multivibrator; and an amplifier circuit. These circuits are connected across a single power supply. The multivibrator provides the function of producing a series of pulses to the amplifier circuit for causing the annunciator to operate on an intermittent basis. The timer circuit provides the function of converting the operation of the annunciator from producing an intermittent audio signal to a continuous audio signal after a predetermined period of time.

3,697,983
ALERTING DEVICES, OSCILLATORS AND FLIP FLOPS
Bronson M. Potter, Greenville, N.H., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Continuation of Ser. No. 809,539, March 24, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,640
Int. Cl. G08b 3/00
U.S. Cl. 340—384 E 11 Claims



Sonic alerting devices of the type controlled by natural frequency of the transducer have efficient drives and can omit capacitors by employing two transistors connected in series

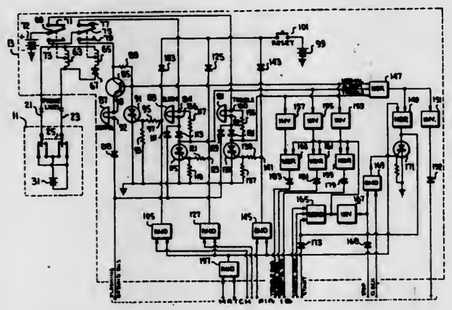
configuration with transducer operation in the series resonant mode. In asymmetrical Circuits a first transistor in its energized state controls a second transistor through a potential drop device, the second transistor may conduct slightly in its de-energized state and serve as a circuit impedance for the first, and the second transistor is connected back to the first through the transducer by which the first transistor is de-energized and the second transistor changes to its energized state. A general class of multivibrators using the asymmetrical circuit is also represented by bistable flip flops and free running multivibrators. Transistors of all the same NPN or PNP syntax and omission of resistors in the power stage enable compact integrated circuits to be formed on single semiconductor chips.

3,697,984

COMPUTER-ALARM INTERFACE SYSTEM

Roger F. Atkinson; Richard H. Parr, Jr., and Edward A. Weil, all of Nashville, Tenn., assignors to Clendenin Inventors Limited Partnership, Silver Spring, Md.

Filed May 23, 1969, Ser. No. 827,216
Int. Cl. G08b 25/00, 29/00
U.S. Cl. 340—408 **18 Claims**



A computer-alarm interface system interconnects conventional leased telephone line, polarity reversal alarms at multiple protected premises to a digital computer. The system, installed to function with a time-sharing computer equipped for communications, notifies police for other appropriate authorities of the nature and location of an alarm, trouble or tamper condition. Each protected premises is associated with a respective module at a central station which registers normal, alarm, or telephone line trouble conditions at the premises, and optionally provides tamper protection. The modules are continuously monitored for changes in conditions at their associated protected premises and transmit coded information pertaining to the nature and location of these changes to the computer. The latter provides a written record of this information at the office of the appropriate authority and also checks the alarm system to assure that the information received by the computer is correct.

A tamper-protection circuit employed with or without the computer includes a code tone or pulse transponder located at the protected premises and selectively triggered by an interrogation code tone or pulse from the module. Failure to receive the specified code tone or pulse over the telephone lines when triggered from the module location signifies tampering at the protected premises.

Another feature of the system is the provision of circuitry at the module location which permits condition indicators or lamps to have two active states: in one state the condition is indicated as not having been reported to the authorities; in the second state the condition is indicated as persisting but having been reported.

ERRATA

For Classes 340—15 thru 340—324; see:
Patent Nos. 3,698,009 thru 3,698,012

ERRATUM

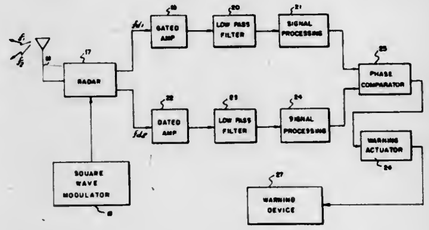
For Class 343—7.5; see:
Patent No. 3,698,013

3,697,985

REAR END WARNING SYSTEM FOR AUTOMOBILES

William R. Faris, Berkley, and William P. Harokopus, Royal Oak, both of Mich., assignors to The Bendix Corporation

Filed Sept. 23, 1970, Ser. No. 74,755
Int. Cl. G01s 9/00
U.S. Cl. 343—5 PD **10 Claims**



The invention is directed to a system which provides an audible or visual indication to a motor vehicle operator when another vehicle approaches the rear end of his vehicle in an adjacent lane or when a potentially interferring object is located behind the vehicle when backing up. The system covers the blind spots which are present on the right and left sides of the vehicle because of the inherent inadequacies of rearview mirrors and also the invisible area at the rear of the vehicle.

A range measuring doppler radar system has its antenna positioned to cover the area which lies on the two sides and behind a vehicle and which normally is within the well known blind spot. The radar system is squarewave modulated to sequentially produce two frequencies F_1 and F_2. Reflected signals from a moving target produce two doppler signals fd_1 and fd_2. The comparison of the relevant phases of the two doppler frequencies gives range information. The leading and lagging relationship of the doppler signals is indicative of whether the target is closing or opening with respect to the radar carrying base vehicle. The system is, therefore, readily made responsive to closing targets or slowly opening targets falling within a dangerously close range as the vehicle proceeds along a roadway. Fixed objects such as poles and signs along the road are also prevented from giving a warning signal by the phase information.

When the vehicle is backing up, objects or persons present behind the vehicle are detected and a warning given.

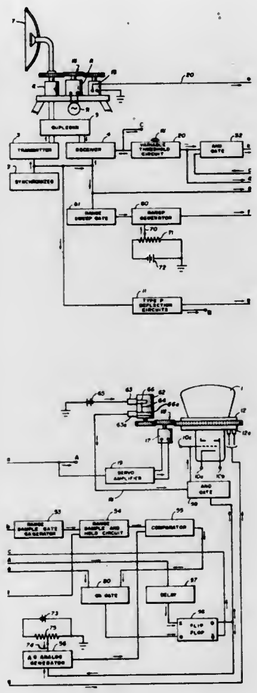
3,697,986

COLLISION AVOIDANCE SYSTEM

Kenneth G. Colby, Barboursville, Va., assignor to Sperry Rand Corporation

Filed Oct. 23, 1970, Ser. No. 83,396
Int. Cl. G01s 9/02
U.S. Cl. 343—5 R **11 Claims**

A collision warning and collision avoidance radar navigation system employs a modified tau-proximity collision warning criterion to derive an improved presentation on a storage type of radar plan position cathode ray indicator. An intruding target is labelled dangerous if the ratio of intruder closing range to his range rate is seen to be less than a predetermined value by the observation of the relative positions of synthesized radial lines or trails generated on the display for each target echo.



3,697,987

COLLISION AVOIDANCE SYSTEM

Richard J. Arthur, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Nov. 12, 1970, Ser. No. 88,783
Int. Cl. G01s 7/22
U.S. Cl. 343—5 EM **15 Claims**



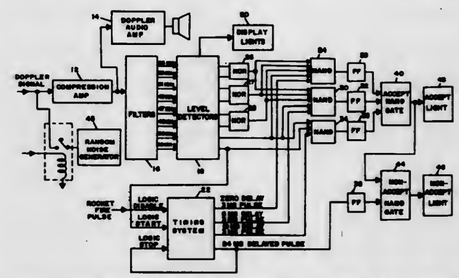
A collision warning and collision avoidance radar navigation system employs the tau collision warning criterion to derive an improved presentation on a radar plan position or other cathode ray indicator. An intruding target is labelled dangerous if the ratio of intruder closing range to his range rate is seen to be less than a predetermined value by the observation of the relative position of a synthesized bearing marker generated on the display for each target echo.

3,697,988

MUNITION BURST DETECTION SYSTEM AND METHOD

Arnold Klausner, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 20, 1971, Ser. No. 107,911
Int. Cl. G01s 9/00
U.S. Cl. 343—5 R **9 Claims**



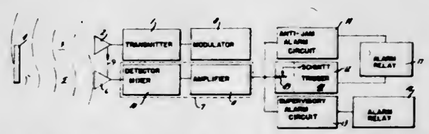
A munition burst detection system comprising: a Doppler or frequency shift detector; N frequency filters, said detector means comprising the input to said filters; N signal level detectors, said filters each respectively connected individually to one of said detectors; a pulse generating circuit providing (N−X)/2 sampling pulses, where X equals the number of fundamental burst frequency components, and X (N−2), said pulses occurring within the period of said munition burst; a burst detector, said burst detector means initiating the operation of said pulse generating circuit; (N−X)/2 NOR gates, the input to each successive NOR gate comprising the output of respective successive adjacent groups of two level detectors; (N−X)/2 NAND gates, the inputs of each respective NAND gate, except the last of said NAND gates, comprising (1) the outputs of each of said NOR gates, (2) the output of the second lowest frequency level detector, and (3) the sampling pulse corresponding in respective time sequence to the respective NAND gate into which each respective sampling pulse flows; and the input of the last of said NAND gates, constituting the output of the X lowest level detectors and the last occurring sampling pulse from said pulse generating circuit; (N−X)/2 flip-flops each respectively connected individually to one of said NAND gates; and an ACCEPT NAND gate, the inputs of said gate comprising the outputs of said flip-flops, said gate registering positively upon the detection of the proper Doppler frequencies in the munition burst.

3,697,989

INTRUSION DETECTION APPARATUS HAVING SUPERVISORY CONTROL MEANS

James R. Bailey, Milwaukee, Wis.; Paul I. Corbell, Dallas, Tex., and Lawrence B. Korta, Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed March 10, 1969, Ser. No. 805,591
Int. Cl. G01s 9/42
U.S. Cl. 343—5 PD **14 Claims**



The illustrated detection apparatus includes a radio frequency transmitter and a receiver having an amplifier which has a constant gain portion and a following roll-off

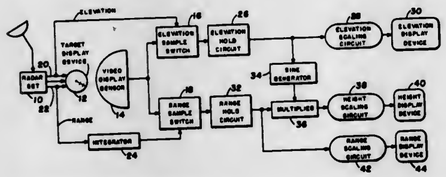
above the highest motion Doppler frequency signal to be detected. The transmitter is a Clapp oscillator. A free running multi-vibrator is coupled into a voltage regulator of the bias supply of the Clapp oscillator to superimpose a supervisory signal which falls within the roll-off portion.

3,697,990

METHOD AND APPARATUS FOR PRODUCING TARGET RANGE, HEIGHT, AND ELEVATION VOLTAGES FROM A PPI DISPLAY

George F. Emch, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 27, 1970, Ser. No. 32,246
Int. Cl. G01s 7/64, 9/02
U.S. Cl. 343—6 R 24 Claims



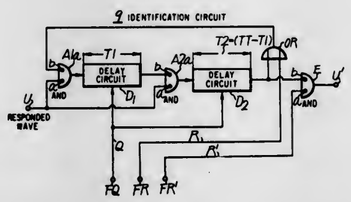
A method and apparatus for producing target elevation, range, and height information. The video display of a target display device is sensed by a video display sensor and applied to first and second sample and hold circuits. The output of the first sample and hold circuit is a signal indicative of target elevation. The output of the second sample and hold circuit is a signal indicative of target range. The output of the first sample and hold circuit is also fed into a sine generator, the output of which when multiplied with the output of the second sample and hold circuit is a signal indicative of target height.

3,697,991

SECONDARY RADAR RECEPTION SYSTEM

Takashi Ohyama, Tokyo; Akira Kawashige, Yokohama, and Takeo Miyashita, Saitama, all of Japan, assignors to Kabushikikaisha Tokyo Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Filed March 9, 1970, Ser. No. 17,739
Claims priority, application Japan, March 11, 1969, 44/18199; March 11, 1969, 44/29552
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC 5 Claims



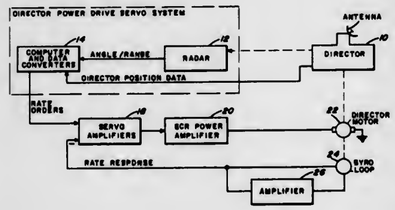
A secondary radar reception system having a primary radar, a secondary radar receiver receiving a response wave transmitted from a secondary radar in response to a radar signal from the primary radar, and a synchronization control circuit interposed between the primary radar and the secondary radar receiver, the secondary radar receiver having an identification circuit which has a multiple delay circuit consisting of at least two separate multiple delay circuits with at least one multiplier circuit being interposed therebetween, a first input terminal of the multiplier circuit being supplied with the output of a first separate multiple delay circuit, a second input terminal being supplied with the response wave from the secondary radar and an output terminal being connected to the input side of a second separate multiple delay circuit.

3,697,992

SERVO COMPENSATION FOR INERTIA CHANGE

James A. Kleptz, and George H. Bissell, both of Dalton, Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 9, 1970, Ser. No. 53,361
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED 6 Claims



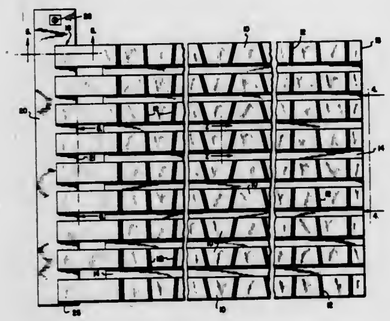
An improvement in the servo drive system as used in a missile director during the elevation function to compensate for changes in inertia. The secant potentiomenter and its associated circuitry is amended to compensate for inertia change as well as changes in elevation angle.

3,697,993

AIRBORNE PULSE DOPPLER RADAR SYSTEM

William S. Jones, Baltimore, and Philip S. Hacker, Silver Spring, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1969, Ser. No. 857,891
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 11 Claims



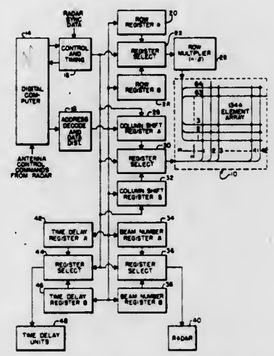
An airborne pulse doppler radar system whose sidelobe clutter amplitude is minimized by providing an antenna whose main beam subtends a small angle and whose radiated energy is concentrated in the main beam and the first few sidelobes and by providing a main beam band rejection filter whose rejection band is closely matched to the antenna main beam clutter frequency band.

3,697,994

AUTOMATIC BEAM STEERING TECHNIQUE FOR CYLINDRICAL-ARRAY RADAR ANTENNAS

Stephen A. O'Daniel, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 19, 1971, Ser. No. 163,850
Int. Cl. H01q 3/26
U.S. Cl. 343—16 R 3 Claims



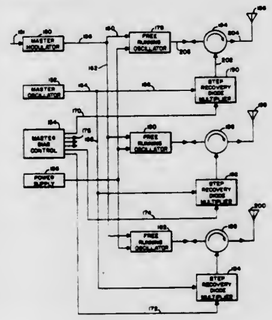
A digital computer system and technique for automatically steering the pencil beam of a 3-D cylindrical array radar antenna. The beam is steered in both elevation and azimuth by selectively energizing binary phase shifters associated with each radiating element of the array. A digital computer is used to store phase values corresponding to a selectively predetermined number of beam positions and functions in response to beam control information from the associated radar to output appropriate phase values to the radiating elements whereby agile steering of the array beam and/or random beam positioning can be obtained.

3,697,995

INCREASED POWER ELECTRONICALLY SCANNING INTEGRATED ANTENNA SYSTEM

Peter H. Kafitz, La Jolla, Calif., assignor to The Ryan Aeronautical Co., San Diego, Calif.

Filed Nov. 20, 1967, Ser. No. 684,263
Int. Cl. H01g 3/26; H03b 19/00
U.S. Cl. 343—100 SA 2 Claims



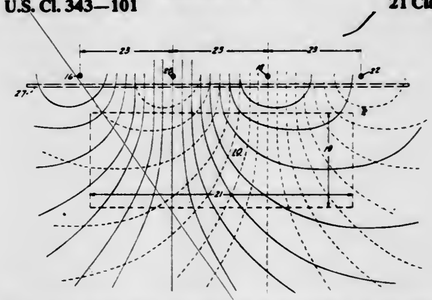
This invention concerns an electronically scanning integrated antenna system that has free running oscillators for providing large power output to each antenna and utilizes frequency multipliers, preferably step recovery diode multipliers, for controlling the frequency and phase of the free running oscillators outputs independently of the means for providing modulated intelligence to the radiated beam.

3,697,996

ELECTROMAGNETIC FIELD PRODUCING APPARATUS AND METHOD FOR SEQUENTIALLY PRODUCING A PLURALITY OF FIELDS

James T. Elder, Shoreview Village, and Donald A. Wright, Woodbury Village, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 840,973, July 11, 1969, Pat. No. 3,665,449. This application Dec. 17, 1969, Ser. No. 885,874
Int. Cl. G01s 1/02
U.S. Cl. 343—101 21 Claims



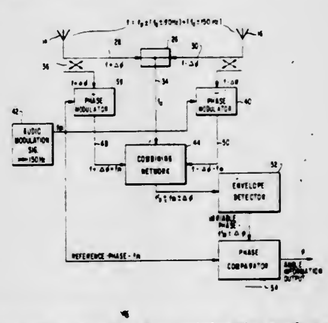
An apparatus and method for sequentially producing in a zone a plurality of electromagnetic fields. The lines of each field are produced to be generally curved and to have a direction at substantially every point in the zone substantially different from the direction of at least one other electromagnetic field line at that point. The apparatus comprises a plurality of field producing means each of which is responsive to applied electrical energy to produce an electromagnetic field. Means are provided for sequentially applying energy to the field producing means.

3,697,997

INTERFEROMETER AND ANGLE ENCODING NAVIGATION SYSTEM

Herbert W. Cooper, Hyattsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

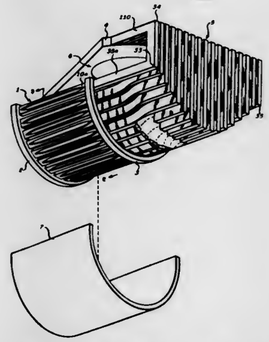
Filed Oct. 13, 1970, Ser. No. 80,391
Int. Cl. G01s 1/18, 1/16
U.S. Cl. 343—108 R 10 Claims



A receiver system for determining the angle and direction between the longitudinal axis of a vehicle such as an aircraft and the direction of propagation from a source of radiation such as a VHF localizer navigation system. The receiver utilizes a pair of antennas having a mutual spacing determined by

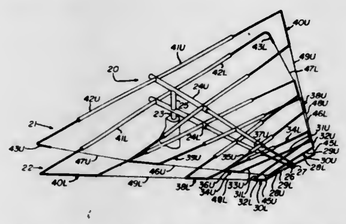
the desired accuracy and permitted ambiguities, mounted in the forward section of the aircraft such that one antenna is located on each side of the forward section of the aircraft. The antennas define a baseline therebetween which is substantially perpendicular to the longitudinal axis of the aircraft. The system permits the measurement of the direction of arrival of electromagnetic energy from the localizer system with respect to the baseline of the two antennas by converting the difference in RF phase of the signal respectively received by the pair of antennas to a difference in audio phase from a reference frequency generated by and in the receiver itself.

3,697,998
MULTIPLE BEAM ARRAY ANTENNA
Arthur H. Schaufelberger, Crystal Beach, Fla., assignor to Sperry Rand Corporation
Filed Oct. 5, 1970, Ser. No. 77,774
Int. Cl. H01q 19/06
U.S. Cl. 343—754 **5 Claims**



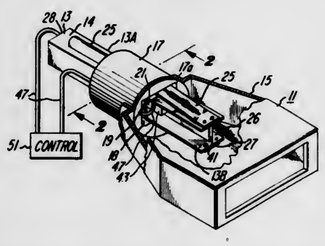
A high frequency energy array antenna conforming to the contour of a craft comprises a plurality of antenna array elements for providing partial collimation of multiple or scanned radiation or reception patterns. The antenna array cooperatively and selectively operates in energy exchanging relation with a geodesic energy distribution system for further collimation of the multiple or scanning radiation or reception patterns.

3,697,999
ROTATABLE BI-PLANAR SERIES-FED LOG-PERIODIC HF ANTENNA
Terry S. Cory, and Roger A. Markley, both of Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed June 14, 1971, Ser. No. 152,767
Int. Cl. H01q 11/10
U.S. Cl. 343—763 **9 Claims**



A unidirectional broadband horizontally polarized HF biplanar rotatable log-periodic antenna with the radiating element to boom structure of each of the planar antenna half structures substantially the same and flipped 180° one from the other. The bi-planar antenna is series fed through the lower boom acting as an infinite balun with the center conductor connected across to the forward end of the upper boom. The two half structures are relatively closely spaced with a dielectric insulator providing mutual structural support between the upper and lower booms of the half structures, and a vertical conductive material mast joins the structural booms both electrically and mechanically. The radiating elements are relatively fat truncated triangular teeth in a foreshortened log-periodic antenna employing a relatively large α angle of approximately 75°, a τ ratio of approximately 0.5, and an array angle of Ψ of less than approximately 10°.

3,698,000
FLEXIBLE AND SLIDABLE WAVEGUIDE FEED SYSTEM FOR A RADIATING HORN ANTENNA
Norman Richard Landry, Willingboro; Robert Jean Mason, Medford; William Hugh Schaedla, Medford Lakes, and Willard Thomas Patton, Moorestown, all of N.J., assignors to RCA Corporation
Filed May 6, 1971, Ser. No. 140,887
Int. Cl. H01q 1/20, 13/02
U.S. Cl. 343—772 **6 Claims**

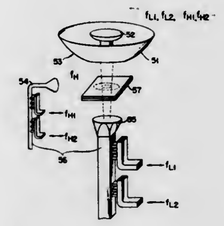


A radiating waveguide horn is provided having a hollow tubular portion and significantly broader radiating portion. The hollow tubular portion is adapted to coaxially receive therein a closely spaced rectangular waveguide feed structure. The waveguide feed structure is dimensioned to pass easily within the hollow tubular portion leaving a gap between the waveguide feed structure and the inner surface of the hollow tubular portion of the waveguide horn. A pair of elongated curved metal strips are fixed to one end of the waveguide feed structure with the metal strips generally extending along the length of said structure. The metal strips are configured and arranged relative to opposite walls of the waveguide feed structure so that the strips make flexible contact with the inner surface of the hollow tubular portion of said horn.

3,698,001
FREQUENCY GROUP SEPARATION FILTER DEVICE USING LAMINATED DIELECTRIC SLAB-SHAPED ELEMENTS
Masaki Koyama, Saitama-ken; Sadakuni Shimada, and Masahiro Karikomi, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Nov. 5, 1970, Ser. No. 87,278
Claims priority, application Japan, Nov. 11, 1969, 44/89764; June 11, 1970, 45/49997
Int. Cl. H01q 15/02
U.S. Cl. 343—909 **13 Claims**

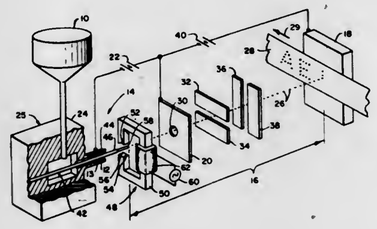
A frequency group separation filer device using slab-shaped dielectric elements, preferably disposed in a beam-forming region defined between an antenna and feeder, the filter being so designed as to separate in reception the composed beams of high and low frequency groups respectively comprised of

frequency components within a frequency region higher than or included in the microwave region into the individual original high and low frequency groups, and conversely in transmission to compose the separate beams of such high and low frequency groups. The branching filter comprises an assembly of a plurality of laminated plate dielectric elements each having a thickness equal to substantially one-fourth the wavelength of the central frequency of at least the aforesaid



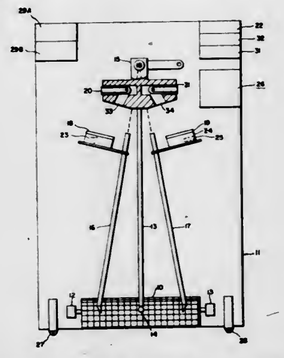
high frequency group and as a whole possessing at least two different dielectric constants. The filter further includes at least one further dielectric element having a thickness of about one-fourth the wavelength of the substantially central frequency of the low frequency groups disposed at at least one of the forward and rear sides of the assembly of laminated dielectric elements.

3,698,002
DROPLET SYNCHRONIZATION FOR ELECTROSTATIC PRINTING
Sherman P. Appel, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Aug. 18, 1971, Ser. No. 172,793
Int. Cl. G01d 15/18
U.S. Cl. 346—1 **10 Claims**



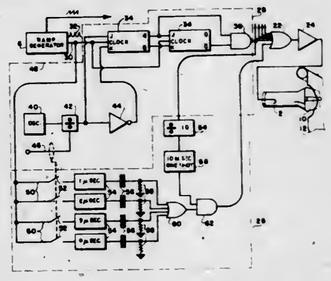
A wire is disposed concentrically within the nozzle of a printer to define a channel for ink which issues from the nozzle along a downstream projecting end portion of the wire. An electromagnet is arranged to oscillate the wire for imparting a synchronous disturbance to ink flowing about said end portion, whereby ink droplets may be generated at a uniform frequency in a stream moving across a span in which the droplets are deflected for printingly impinging a carrier spaced downstream from the nozzle.

3,698,003
RECORDER ALARM SYSTEM
Martin J. Sharki, and Charles J. Mazoch, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 28, 1970, Ser. No. 76,141
Int. Cl. G01d 13/26
U.S. Cl. 346—17 **9 Claims**



A recorder alarm system includes a light source mounted on the pen arm. Photovoltaic cells are mounted on adjustable set arms. Heaters maintain the photovoltaic cells at a constant temperature. The intensity of the eight source may be varied by adjustment of a potentiometer.

3,698,004
RECORDER WITH TIME LINE GENERATOR AND INTERVAL ENCODER
Peter R. Lone, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 31, 1971, Ser. No. 176,585
Int. Cl. G01d 9/00
U.S. Cl. 346—23 **9 Claims**

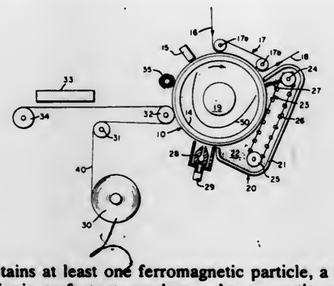


There is disclosed herein a coding system for indicating the periodicity of generated time lines on a CRT/chart recorder. Code marks are generated by selectively unblanking the beam of the CRT whereby to generate the code marks. The encoding means is correlated with means for selecting the periodicity of the time lines.

3,698,005
DRY MAGNETIC COPYING PROCESS
George Raymond Nacci, Wilmington, Del., and Richard Charles Toole, Kennett Square, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 15, 1970, Ser. No. 37,706
Int. Cl. G01d 15/12; H01v 3/04
U.S. Cl. 346—74 MT **14 Claims**

The use of a recording member comprising a transparent support, a stratum of magnetic material and a thin coating of

polysilicic acid, in combination with a dry toner powder, preferably one comprising a plurality of toner particles each of



which contains at least one ferromagnetic particle, a binder and a cationic surfactant, renders a dry magnetic copying process feasible.

3,698,006

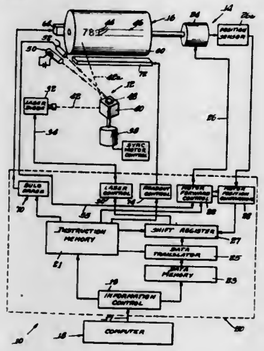
HIGH SPEED PRINTER OF MULTIPLE COPIES FOR OUTPUT INFORMATION

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 754,607, Aug. 28, 1968, abandoned, and a continuation-in-part of Ser. No. 791,441, Jan. 15, 1969, Pat. No. 3,531,441. This application May 29, 1969, Ser. No. 828,859

Int. Cl. G03g 15/00; H01n 1/24; H04n 1/30

U.S. Cl. 46—74 ES **3 Claims**



A method and apparatus for high speed printout of multiple copies wherein a film or layer of memory semiconductor material is scanned by energy beam means to permanently store therein the information to be reproduced. The film is capable of having discrete portions thereof reversibly altered between a high resistance blocking condition and a low resistance conducting condition, the film normally being in one condition. The film of semiconductor material forms an information storage surface on a rotating drum, and energy pulses are synchronized with and applied to selected portions of the semiconductor material on the drum surface for altering the film at said select portions thereof from said one normal condition to the other condition to store the information in the material forming the film. Computer means are provided to convert bits of data input information into energy pulses and to synchronize these pulses wit predeterminable topographic sites on the semiconductor film surface where the pulses impinge and alter the condition of the surface to permanently store the information. The retrieval of the stored information is non-destructive to the stored information and high speed print-out of multiple copies is possible without further need of the computer means.

3,698,007

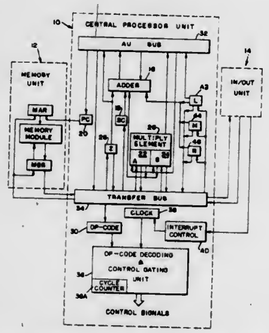
CENTRAL PROCESSOR UNIT HAVING SIMULATIVE INTERPRETATION CAPABILITY

Ronald D. Malcolm, Marlborough; William J. Phelan, North Reading, and Thomas L. Sangiolo, Hudson, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 662,699, Aug. 23, 1967. This application Nov. 30, 1970, Ser. No. 93,901

Int. Cl. G05b 19/18

U.S. Cl. 444—1 **6 Claims**



An electronic digital computer provides real time simulation of the operation of a different digital computer with a minimal amount of special interpretive software. The central processor of the simulating computer develops and stores in one register the memory address of the operands processed by the program being interpreted. In another register, the simulating processor develops and stores the memory address of an interpretive subroutine for each instruction of the program being interpreted. The simulating computer in addition operates a third central processor register as an effective program counter during execution of simulative interpretation. A fourth register is used to supply the memory sector portion of the memory addresses developed above. Each of the four registers is directly accessible by other elements of the central processor.

3,698,008

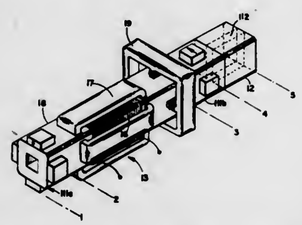
LATCHABLE, POLARIZATION-AGILE RECIPROCAL PHASE SHIFTER

Roger G. Roberts, Placentia, and Jerry A. Algeo, Buena Park, both of Calif., assignors to North American Rockwell Corporation

Filed April 22, 1971, Ser. No. 136,459

Int. Cl. H01p 1/18

U.S. Cl. 333—31 A **9 Claims**



A latchable ferrite phase shifter useful in microwave phase-scanned antenna arrays and having reciprocal phase-shift properties. An axial arrangement of selectably magnetizable magnetization means in cooperation with the latchable ferrite allows use of a single longitudinal ferrite rod and fewer magnetization elements, as to demonstrate lower insertion losses and lower manufacturing costs, as well as latchable reciprocal phase shift properties.

3,698,009

PROCESS FOR MEASURING THE SAMPLED AMPLITUDE OF A SEISMIC SIGNAL

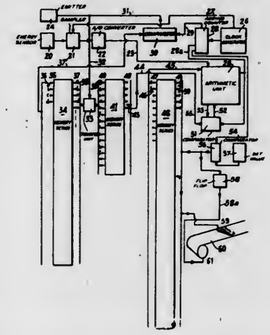
Maurice Barbier, Ousse, France, assignor to Societe National des Petroles D'Aquitaine Tour Aquitaine, Paris, France

Filed Oct. 21, 1970, Ser. No. 82,708

Claims priority, application France, Nov. 28, 1969, 6941157

Int. Cl. G01v 1/28

U.S. Cl. 340—15.5 CP **10 Claims**



A process for measuring the sampled amplitude of a seismic signal received by a sensing device after the said signal has travelled through a continuous medium, in which the content of an adding counter for each basic unit of time is compared in turn with the contents of each of a first series of memories, containing, in digital form, the instants of emission of a sequence of energy impulses, in which the sampled digital value of the signal supplied by the sensor is received in another series of memories, the elements of which are identified in relation to the time, and in which each sample is given a number of addresses determined by the instant of sampling and the various instants of prior emissions preceding the instant of sampling, with a period shorter than the maximum time taken for the mechanical waves to travel through the ground.

3,698,010

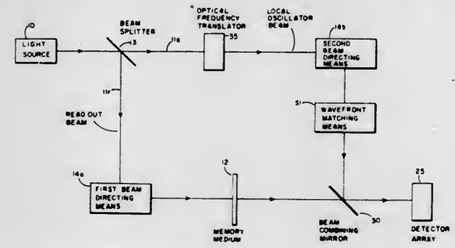
HETERODYNE READOUT HOLOGRAPHIC MEMORY

Tzuo-Chang Lee, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 20, 1971, Ser. No. 181,803

Int. Cl. G11c 11/02; G02b 27/00

U.S. Cl. 340—174 YC **18 Claims**



A holographic optical memory utilizes an optical heterodyne technique to significantly increase the signal-to-noise ratio during the readout stage of operation. A light source provides a coherent light beam which is split into a readout beam and a local oscillator beam. The readout beam is directed to one of the holograms stored in the memory medium and a portion of the read out beam is diffracted by the hologram to form a reconstructed image of the bit pattern stored in the hologram at the reconstructed image plane. The local oscillator beam is superimposed with the diffracted portion of the readout beam. An optical frequency translator is positioned in either the readout beam or the local oscillator beam to cause the beams to have different optical frequencies. Therefore, when the two beams are superimposed, a beat frequency signal is produced. An array of detectors is positioned at the reconstructed image plane to receive the superimposed beams. Each detector of the array is positioned to receive the light representing one bit of the bit pattern and to provide an output signal indicative of the intensity of the beat frequency signal received.

3,698,011

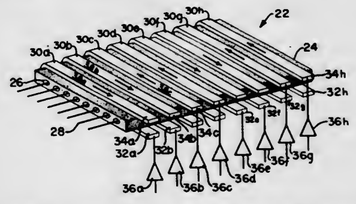
POLARITY PHASING OF STRAP LINE FOR HIGHER BIT PACKING DENSITY OF PLATED WIRE

Anthony M. Apicella, Jr., Massillon, and John T. Franks, Jr., Tallmadge, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed April 12, 1971, Ser. No. 132,947

Int. Cl. G11c 7/02, 11/04, 11/14

U.S. Cl. 340—174 DC **2 Claims**



A system for connecting the strap drivers to their respective straps of a plated wire memory array which substantially reduces the effects of the fields induced by current flow through the straps on adjacent memory elements. Adjacent pairs of strap lines are connected to their respective drivers at their opposite ends. Within each pair the strap lines are connected at the same end to their respective drivers.

3,698,012

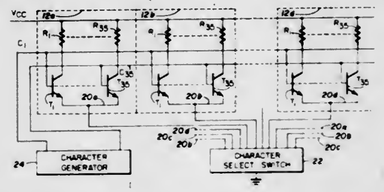
MULTI-CHARACTER ELECTRONIC DISPLAY

Clifford H. Ensminger, and Edward M. Ruggiero, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,261

Int. Cl. G08b 5/36

U.S. Cl. 340—324 R **6 Claims**



Disclosed are multiple character electronic display devices utilizing plurality of character matrices, each of which includes plurality of thermally isolated semiconductor mesas which are heated by current passed through a resistance. The

current in each mesa is controlled by a transistor formed therein, and such transistors may have a common collector voltage and a common emitter voltage supply lead which may be individually closed by a switch to enable a desired character. The bases of the transistors of corresponding mesas in all of the character matrices may be connected to common control lines so that all character matrices may be controlled by the same character generator.

A particular diffusion pattern for the individual elements of the matrices is also disclosed which utilizes an extended collector transistor having a longitudinally extending, double diffused tunnel to provide cross connections from the control lines to the base contacts of the elements of an array.

3,698,013

CIRCUIT ARRANGEMENT FOR AN ELECTRONIC DISTANCE MEASURING DEVICE FOR DRAWING THE FREQUENCY OF A MEASURING OSCILLATOR TOWARDS A SET POINT FREQUENCY WHICH IS HIGHER OR LOWER, RESPECTIVELY, BY A CERTAIN PREDETERMINED VALUE

Marcel Hossmann, Zurich, and Alfred Barh, Turgi, both of Switzerland, assignors to Albiswerk Zurich AG, Zurich, Switzerland

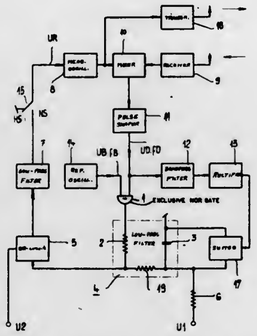
Filed June 28, 1971, Ser. No. 157,378

Claims priority, application Switzerland, July 10, 1970, 10474/70

Int. Cl. H03b *3/04*

U.S. Cl. 343—7.5 **1 Claim**

A circuit arrangement for an electronic distance measuring device for drawing the frequency of a measuring oscillator towards a set point frequency which is higher or lower, respectively, by a certain predetermined amount or value than the frequency of a similar measuring oscillator at the counter station. From the measuring waves of both measuring oscillators there is produced at such circuit arrangement, by mixing, a differential signal. The circuitry of the invention also contains



a discriminator circuit which compares the frequency of the differential signal with a reference frequency corresponding to the aforesaid predetermined amount and upon deviation of this differential signal from the reference frequency there is produced an error voltage for drawing or shifting the frequency of such measuring oscillator.

DESIGNS

OCTOBER 10, 1972

224,901

BUCKLE

Lorenzo Scaretti, 9 Piazza Madama, Rome, Italy

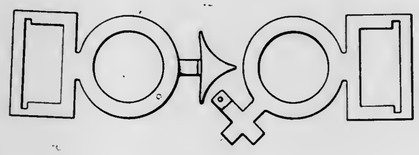
Filed July 27, 1970, Ser. No. 24,144

Claims priority, application Italy May 22, 1970

Term of patent 14 years

Int. Cl. D2— *07*

U.S. Cl. D2—420



224,902

ARTICLE HOLDER

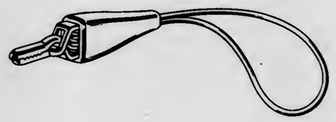
Robert E. Rickard, Newcastle, Calif. (220 Main St., #4, Nevada City, Calif. 95959)

Filed Jan. 4, 1971, Ser. No. 103,935

Term of patent 14 years

Int. Cl. D8— *05*

U.S. Cl. D8—71



224,903

HACKSAW FRAME

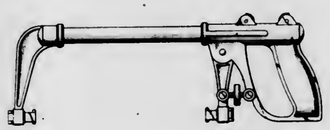
Raymond C. Dreier, 3450 N. Lake Shore Drive, Chicago, Ill. 60657

Filed Jan. 11, 1971, Ser. No. 105,781

Term of patent 14 years

Int. Cl. D8— *03*

U.S. Cl. D8—96



224,904

WALL BRACE

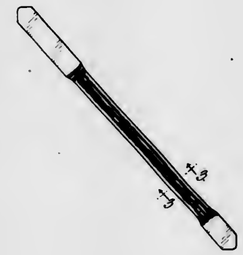
Manuel J. Davis, Santa Cruz, and Carl A. Nelson, Glendale, Calif., assignors to M-J Metal Products, Inc.

Filed June 25, 1970, Ser. No. 23,664

Term of patent 14 years

Int. Cl. D8— *08*

U.S. Cl. D8—228



224,905

BOTTLE

Patrick Paul Edouard Brassart, 44 Rue la Boetie, Paris, France

Filed June 4, 1971, Ser. No. 150,248

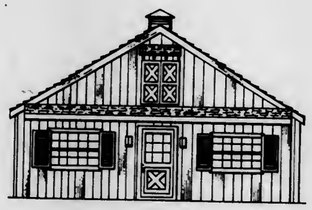
Term of patent 14 years

Int. Cl. D9— *01*

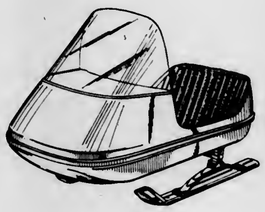
U.S. Cl. D9—40



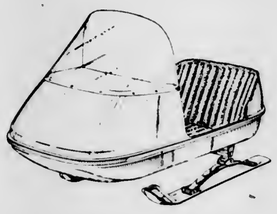
224,906
RESTAURANT BUILDING
E. Wallace Barr, Jr., Bowling Green, Ky., assignor to Kentucky Rib-Eye, Inc., Bowling Green, Ky.
Filed Mar. 10, 1971, Ser. No. 123,119
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,907
SNOWMOBILE SLEIGH
Yves Anselme Lapointe, Valcourt, Quebec, and Anthony D. MacKeen, Drummondville, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Nov. 2, 1970, Ser. No. 25,779
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



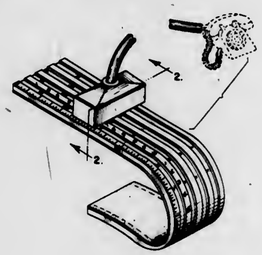
224,908
SNOWMOBILE SLEIGH
Anthony D. MacKeen, Drummondville, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Nov. 2, 1970, Ser. No. 25,770
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—27



224,909
COMBINED AMPLIFIER AND SPEAKER UNIT
Stephen R. Krause, Baltimore, Md., assignor of a fractional part interest to Edward Stringer, Randallstown, Md.
Filed Oct. 16, 1970, Ser. No. 25,522
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



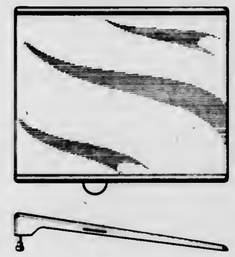
224,910
COMBINED ADHESIVE MAGNETIC-ELECTRIC TAPE, RULER AND ACOUSTIC COUPLING
St. Barth Alaska, 3811 S. Scoville Ave., Berwyn, Ill. 60402
Filed Oct. 22, 1970, Ser. No. 26,728
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



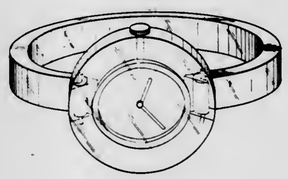
224,911
DESK TELEPHONE
George Perkins, Laguna Beach, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.
Filed Aug. 23, 1971, Ser. No. 174,283
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,912
ADJUSTABLE RAMP
Arthur R. Bennett, 4019 SW. 12th St., Plantation, Fla. 33314
Filed Nov. 5, 1970, Ser. No. 25,835
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D41—1



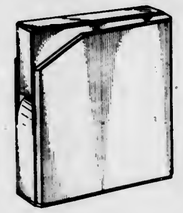
224,913
COMBINED WRISTWATCH AND STRAP
Carlo Maroni, 24 Via Rodolfo Benini, Rome, Italy
Filed Aug. 4, 1971, Ser. No. 169,162
Claims priority, application Italy Feb. 4, 1971
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



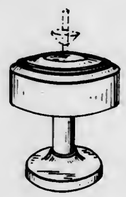
224,914
JEWELRY PENDANT
Andrew Mitchell David, 107 Wythe Crescent Drive, Hampton, Va. 23361
Filed Oct. 8, 1970, Ser. No. 25,275
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16



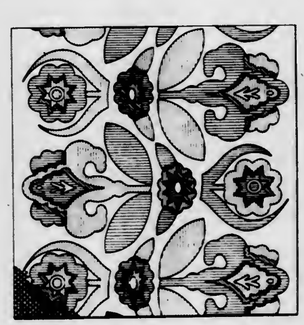
224,915
CIGARETTE LIGHTER
Kenjiro Goto, 28–13, 5-chome, Sakurajosui, Setagaya-ku, Tokyo, Japan
Filed May 24, 1971, Ser. No. 146,601
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



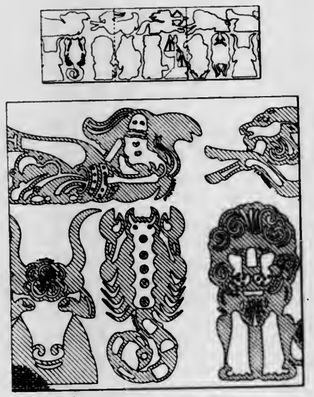
224,916
TIRE INFLATION APPARATUS
Robert W. Houston, Cincinnati, Ohio, assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Sept. 21, 1970, Ser. No. 25,088
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13



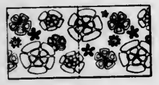
224,917
PAPER TOWELING
Ronald L. Rae, Berkley, Mich., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Dec. 21, 1970, Ser. No. 26,573
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2

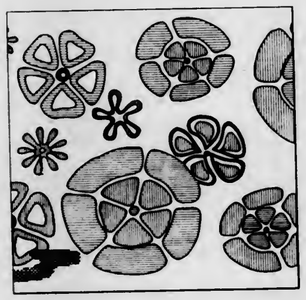


224,918
PAPER TOWELING
Ronald L. Rae, Berkley, Mich., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Dec. 21, 1970, Ser. No. 26,574
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2

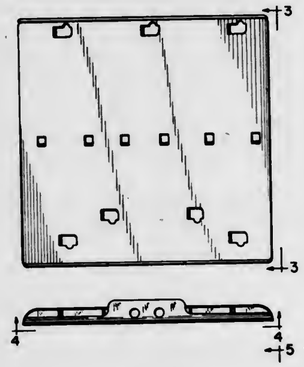


224,919
PAPER TOWELING
Eugene L. Rohde, East De Pere, Wis., assignor to Fort Howard Paper Company
Filed Mar. 18, 1971, Ser. No. 125,911
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2

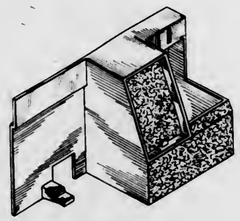




224,920
BROILER REFLECTOR OR THE LIKE
Richard D. Reagan, Addison, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,793
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D81—10



224,921
INSERT FOR AN ELECTRIC SHAVER CARRYING CASE
John F. Daniels, Bridgeport, and Robert A. Mockovak, Newtown, Conn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 30, 1970, Ser. No. 26,700
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



224,922
GEAR SHIFT HOUSING FOR A BICYCLE
Hans-Jurgen Lannoch, Hochstetten, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Feb. 19, 1971, Ser. No. 117,221
Claims priority, application Germany Nov. 27, 1970
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaron, Marvin Robert; Hammett, Warren Gail; and Oberst, James Francis, to Bell Telephone Laboratories, Incorporated. Dual-mode phase-locked loop with dead zone phase detector. 3,697,690, Cl. 178-69.50r.
AB Karlshamns Oljefabriker: *See—*
Riiner, Ulo, 3,697,294.
Abbott Laboratories: *See—*
Kurath, Paul; and Egan, Richard Stephan, 3,697,547.
Abramson, Carl N.; and Nadir, Mark T., to Adaptive Technology, Inc. Data processing system employing distributed-control multiplexing. 3,697,959, Cl. 340-172.500.
Abromavage, John C.: *See—*
Sweeten, Orlin L.; and Abromavage, John C., 3,696,805.
Access Equipment Limited: *See—*
Pearce, Douglas Henry, 3,697,032.
Achten, Kort Joseph, to Illinois Tool Works Inc. Electrical plug contact. 3,697,931, Cl. 339-95.00r.
Acker, Jacob, & Sohne oHG: *See—*
Acker, Josef; Hofmann, Albert; and Fruhholz, Georg, 3,696,845.
Acker, Josef; Hofmann, Albert; and Fruhholz, Georg, to Acker, Jacob, & Sohne oHG. Curtain. 3,696,845, Cl. 139-383.
Ackermann, Hans; and Beffa, Fabio, to Ciba-Geigy AG. Water-soluble disazo pyrazole dyestuffs containing fiber-reactive substituents. 3,697,500, Cl. 260-154.000.
Acree, Elick H.; Brashear, Hugh R., Jr.; and Case, Forrest N., to United States of America, Atomic Energy Commission. Device for inserting tagged sand into ocean floor. 3,697,756, Cl. 250-106.00t.
Adachi, Shoichi: *See—*
Iwai, Tadashi; Yamashina, Hisao; Takagi, Tetitsu; and Adachi, Shoichi, 3,697,386.
Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Keying system capable of producing piano-tone effects for use in electronic musical instruments. 3,697,662, Cl. 84-1.130.
Adams, James E.; and Leder, Lewis B., to Xerox Corporation. Tuning method for plural layer liquid crystal filters. 3,697,152, Cl. 350-158.000.
Adams, John O., IV. Device facilitating use of dental floss. 3,696,821, Cl. 132-91.000.
Adams, Ladd M., to Balon Corporation. Method and apparatus for finishing spherical surfaces. 3,696,695, Cl. 82-16.000.
Adams, Lloyd M.; and Hoelscher, Robert L., to Cubic Corporation. Film transport deck unit. 3,697,017, Cl. 242-189.000.
Adams, Richard C.: *See—*
Javarcy, William E., Jr.; and Adams, Richard C., 3,697,359.
Adaptive Technology, Inc.: *See—*
Abramson, Carl N.; and Nadir, Mark T., 3,697,959.
Adaptronics, Inc.: *See—*
Barron, Roger L., 3,697,957.
Addressograph-Multigraph Corporation: *See—*
Booth, Thomas A., 3,697,177.
Advanced Management Engineering & Research Co.: *See—*
Sweeten, Orlin L.; and Abromavage, John C., 3,696,805.
AEG-Elotherm GmbH: *See—*
Seulen, Gerhard; and Von Starck, Axel, 3,696,858.
Aerojet-General Corporation: *See—*
Lucas, James M.; Suder, Jack K.; and Vander Wall, Eugene M., 3,696,616.
Aerojet-General Corporation, mesne: *See—*
Tidball, Robert A., 3,697,385.
Aerotronic Associates, Inc.: *See—*
Grant, John; and Longley, Miner R., 3,697,815.
Afanador, Carlos P.: *See—*
Ischahrun, Richard G.; and Afanador, Carlos P., 3,697,910.
Agfa-Gevaert Aktiengesellschaft: *See—*
Ehgartner, Gabriele; and Wilsch, Herbert, 3,697,018.
Riester, Oskar; and Hase, Mario, 3,697,282.
Wagner, Karl, 3,696,721.
Agfa-Gevaert N.V.: *See—*
De Cock, Etienne Mario, 3,697,759.
Agnew, Frank R.: *See—*
Goldstein, Robert P.; and Agnew, Frank R., 3,697,227.
Ahrens, Gerhard W. Nonhygroscopic non-sugarbase noncariogenic-vitamin C releasable base material for use in the preparation of suckable tablets, lozenges and chocolate. 3,697,641, Cl. 424-38.000.
Aihara, Katzuzo: *See—*
Mitani, Masao; Aihara, Katzuzo; Kudo, Mitsuhiro; Hara, Nobuhiro; Irie, Fujio; and Yamafuji, Kaoru, 3,697,826.
Air King Corporation: *See—*
Bobrick, Mitchell, 3,697,742.
Air Plastic Service GmbH: *See—*
Stirzenbecher, George H., 3,697,728.
Air Products and Chemicals, Inc.: *See—*
Longswoth, Ralph C., 3,696,627.
Ness, Leif A.; and Thomas, Edmund P., 3,696,637.
Robba, William A.; and Klasson, George A., 3,697,721.
Airco, Inc.: *See—*
Bryant, Gerald T.; Linhardt, Hans D.; and Nichols, Kenneth E., 3,696,975.
Aisin Seiki Kabushiki Kaisha: *See—*
Kitano, Shin; and Momose, Yutaka, 3,696,897.
Sawada, Oshio, 3,696,769.
Akao, Mutsuo: *See—*
Tatsuta, Sumitaka; Ueno, Wataru; Tajima, Tatsuya; and Akao, Mutsuo, 3,697,305.
Akita, Eiichi: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Eiichi; and Niida, Taro, 3,697,648.
Aktiebolaget Bofors: *See—*
Borjeson, Jan Lennart, 3,697,848.
Aktiebolaget Celleco: *See—*
Jakobsson, Karl Folke Olof; and Forsner, Bo Ake, 3,696,927.
Aktiebolaget Karlstads Mekaniska Werkstad: *See—*
Ordqvst, Olof Albert, 3,697,207.
Akustische u.Kino-Gerate Gesellschaft m.b.H.: *See—*
Fidi, Werner, 3,697,059.
Albert, Dorothy S.: *See—*
Haines, Paul G.; and Albert, Harry Elmer, 3,697,470.
Albert, Harry Elmer: *See—*
Haines, Paul G.; and Albert, Harry Elmer, 3,697,470.
Albiswerk Zurich AG: *See—*
Hossmann, Marcell; and Barh, Alfred, 3,698,013.
Albrecht, Lance M.: *See—*
Goldman, Samuel C.; and Albrecht, Lance M., 3,697,956.
Albright, Penrose Lucas, to Zero Manufacturing Company. Teat cup assembly. 3,696,790, Cl. 119-14.470.
Alco Standard Corporation: *See—*
Bielefeldt, Irvin P., 3,697,725.
Aleckner, John F., Jr., to Union Carbide Corporation. Coated ethylene-polar monomer copolymer substrate. 3,697,311, Cl. 117-72.000.
Alexander, James M., to Stillwell-Gerard Construction Co. Post implanting method and vehicular apparatus therefor. 3,696,625, Cl. 61-53.500.
Algeo, Jerry A.: *See—*
Roberts, Roger G.; and Algeo, Jerry A., 3,698,008.
Alleman, Ronald D. Skip frame visual display device. 3,696,537, Cl. 40-78.070.
Allen, Michael George: *See—*
Rambosek, George M.; Allen, Michael George; and Van Dyke Tiers, George, 3,697,485.
Alliance Manufacturing Company, Inc.: *See—*
Deming, Andrew Frank; and Lucas, Clyde M., 3,696,680.
Allied Chemical Corporation: *See—*
Anello, Louis Gene; Sweeney, Richard Francis; and Litt, Morton Herbert, 3,697,564.
Balint, Laszlo J.; Lazarus, Stanley D.; and Russell, William N., 3,697,579.
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,697,562.
Bhuta, Mahendra; and Sacks, William, 3,697,368.
Little, Edwin D., 3,697,584.
Wells, Rodney L.; Ulmer, Harry E.; and Mason, Paul J., 3,697,249.
Allied Research Products, Inc.: *See—*
Duchene, Joseph R., 3,697,392.
Allied Tube & Conduit Corporation: *See—*
Krengel, Theodore H.; Ostrowski, Arthur E.; and Raymond, Anthony J., 3,696,503.
Allirot, Rene Joseph; Darcas, Claude; and Jobert, Raymond, to Ugine Kuhlmann. Purification of nitriles. 3,697,576, Cl. 260-465.300.
Allmanna Svenska Elecktriska Aktiebolaget: *See—*
Suvanto, Antti; and van Santen, Aart, 3,697,375.
Allred, G. Allen: *See—*
Nielson, Jay P.; and Allred, G. Allen, 3,697,112.
Alps Electric Co., Ltd.: *See—*
Ohkita, Masao, 3,697,713.
Alsberg, Henry, to Richardson, Company, The. Non-crazing, biaxially oriented styrene-methyl methacrylate copolymer sheets. 3,697,494, Cl. 260-86.700.
Alton Box Board Company: *See—*
Reisman, Abraham J.; and Wilkinson, Thomas B., III, 3,697,365.
Aluminium Company of America: *See—*
Howle, Clement Roger, 3,697,393.
Aluminum Company of America: *See—*

Hunsicker, Harold Y., 3,697,260.

Alwitt, Robert S.; and Santway, Robert W., to Sprague Electric Company. Electrolytic capacitor having an electrode with a metallized cracked oxide surface. 3,697,822, Cl. 317-230.000.

Amada Company Limited: *See—*
Hamada, Teruma, 3,696,658.

Amano, Hideo: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Amberg, Ralph G.: *See—*
Amberg, Stephen W.; and Amberg, Ralph G., 3,697,369.

Amberg, Stephen W.; and Amberg, Ralph G., to Owens-Illinois, Inc., mesne. Plastic lined receptacle or the like. 3,697,369, Cl. 161-250.000.

Ambrose, Henry B. Fish alarm and circuit continuity tester. 3,696,546, Cl. 42-17.000.

Ambrose, Jere B., to Northern Fibre Produs Company. Decorative seat welt. 3,696,771, Cl. 112-417.000.

Amchem Products, Inc.: *See—*
Kuehner, Mark A., 3,697,332.

American Air Filter Company, Inc.: *See—*
Engleman, Donald E., 3,696,592.

American Aluminum Company: *See—*
Farley, Holt A., 3,697,045.

American Aniline Products, Inc.: *See—*
Genta, Guido R., 3,697,554.

American Cyanamid Company: *See—*
Berenson, Herman; Stonier, Robert Alden; and Wiese, Eugene Everett, 3,697,655.
Brouchu, Rene Robert; and Taylor, Lytton, 3,697,353.
Ermidis, Nicholas Peter, 3,697,620.
Giambalvo, Vito Albert; and Ruby, Philip Randolph, 3,697,464.
Maulding, Donald Roy, 3,697,432.
Nagy, Daniel Elmer, 3,697,370.
Nakajima, Akira; and Suzuki, Hiroshi, 3,697,218.
Pang, Michael, 3,697,400.

American Data Systems, Inc.: *See—*
Macy, James R., 3,697,947.

American Digital Corporation: *See—*
Bagland, Evan L., III; and Wagner, Robert L., 3,696,739.

American Home Products Corporation: *See—*
Buzby, George C., Jr.; Greenspan, George; and Buhle, Emmett L., 3,697,379.
Humber, Leslie G., 3,697,581.
Jacobs, Donald R., 3,697,033.

American Hospital Supply Corporation: *See—*
Mueller, Floyd F., 3,697,846.

American Poly-Plastics Laboratories, Inc.: *See—*
Palombo, Albert M., 3,697,457.

American Seating Company: *See—*
Barecki, Chester J.; and Schneider, Kenneth O., 3,697,130.

American Standard Inc.: *See—*
Parkison, Richard G., 3,697,002.

American Store Equipment Corporation: *See—*
Schulte, Donald W., 3,697,147.

American Telephone and Telegraph Company: *See—*
Buonsante, John J.; Freericks, Lambert; Haarmann, Howard J.; and Sieglinger, John C., 3,697,702.

American Velcro, Inc.: *See—*
Perina, Joseph; and Hlavaty, Albert E., 3,696,472.

American Waagner Biso Company, Inc.: *See—*
Kemmetmueller, Roland, 3,697,381.

Amerock Corporation: *See—*
Livingston, Richard D., 3,697,140.

Amerola Products Corporation: *See—*
Merola, Anthony, 3,697,069.

Ametek, Inc.: *See—*
Harland, Philip W., 3,696,687.

Amos, Homer C.: *See—*
Strickland, Edward T.; and Amos, Homer C., 3,697,241.

AMP Incorporated: *See—*
Hammell, Kemper Martel, 3,697,928.
Henschen, Homer Ernst, 3,697,925.
Jacobs, Wayne John; Fritz, Robert William; and Peiffer, Howard Richard, 3,697,389.
Kunkle, John Philip; and Kunkle, James Raymond, 3,697,927.
Roydon, William Merry, 3,697,934.

Ampex Corporation: *See—*
Hathaway, Richard Allen, 3,697,679.
Van Heeckeren, Jacob; Rodal, David R.; and Markevitch, Bob V., 3,697,149.

Amundsen, Paul D.; and Liautaud, John N., to Fendall Company. Protective faceshield. 3,696,442, Cl. 2-8.000.

Anchor Hocking Corporation: *See—*
Shonebarger, Francis J., 3,697,242.

Anders, Dietmar, to Berstorff, Hermann, Maschinenbau GmbH. Extruder worms for extruding synthetic resins. 3,696,913, Cl. 198-213.000.

Anderson, Aldin R.; Jennings, John D.; and Killerby, Walter E., to Western Electric Company, Incorporated. Apparatus for producing a sealed article. 3,696,986, Cl. 228-3.000.

Anderson, Charles M.; and Ratcliff, Edward H., Jr., to Stamler, W. R., Corporation. Variable-stroke car shifting apparatus. 3,696,754, Cl. 104-162.000.

Anderson, Gene A., to Dow Chemical Company, The. Soil sampling device. 3,696,873, Cl. 175-20.000.

Anderson, Harold C.; and Graff, David F., to Litton Systems, Inc. Microwave generating apparatus including spurious signal suppression means. 3,697,804, Cl. 315-105.000.

Anderson, John E. Fluid actuated toy track system with constant flow valve. 3,697,071, Cl. 273-86.00d.

Anderson, Melvin R.: *See—*
Breed, Charles P.; and Anderson, Melvin R., 3,697,740.

Anderson, Wallace E.; Krall, Albert D.; and Syeles, Albert M., to United States of America, Navy, Series electrical, parallel thermal gunn device. 3,697,831, Cl. 317-235.00r.

Anderson, William J.: *See—*
Taylor, Larry H.; Porter, William D.; Anderson, William J.; and Cancer, Ralph A., 3,697,007.

Anding, Fred H. Hoof maintenance stand. 3,696,869, Cl. 168-44.000.

Andraschek, Hans-Joachim; and Zentner, Erich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic moulding compositions and shaped articles on the basis of polyvinyl chloride. 3,697,349, Cl. 156-219.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Installation for indicating the closing condition of vehicle doors, especially of motor vehicle doors. 3,697,943, Cl. 340-520.000.

Andrews, Timothy Douglas; Short, Glynn David; and Thomas, Ieuan, to Imperial Chemical Industries Limited. Radiation sensitive materials containing bipyridilium salt of a strong acid. 3,697,528, Cl. 260-294.900.

Andris, Fred A. Automatic volumetric chemical mixer. 3,697,052, Cl. 259-8.000.

Andrus, Paul G., to Xerox Corporation. Development apparatus. 3,696,785, Cl. 118-637.000.

Anello, Louis Gene; Sweeney, Richard Francis; and Litt, Morton Herbert, to Allied Chemical Corporation. Fluorocarbon acids and derivatives. 3,697,564, Cl. 260-408.000.

Anstin, Wayne D., to Varian Adco. Storage and retrieval system. 3,697,680, Cl. 178-6.800.

Anthony, Russell W., to Lear Siegler, Inc. Expanding arbor. 3,697,092, Cl. 279-2.000.

Antonov, Vladimir Alexandrovich: *See—*
Stebakov, Emelyan Semenovich; Leontiev, Alexandr Ivanovich; Simpura, Petr Mikhailovich; Kozlov, Ivan Ivanovich; Glotov, Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich, 3,697,038.

Aoki, Hidekatsu: *See—*
Terai, Akio; Kawamura, Eiji; Fukumoto, Hisashi; and Aoki, Hidekatsu, 3,696,879.

Apicella, Anthony M., Jr.; and Franks, John T., Jr., to Goodyear Aerospace Corporation. Polarity phasing of strap line for higher bit packing density of plated wire. 3,698,011, Cl. 340-174.0dc.

Appel, Sherman P., to Teletype Corporation. Droplet synchronization for electrostatic printing. 3,698,002, Cl. 346-1.000.

Aquaslide 'n' Dive Corporation: *See—*
Meyer, Carl R., 3,697,067.

Ardco, Inc.: *See—*
Winsler, Robert J.; and Richter, Fred A., 3,697,723.

Arganbright, Robert P., to Petro-Tex Chemical Corporation. Dismutation of olefins. 3,697,613, Cl. 260-683.00d.

Argoudelis, Alexander D.; Coats, John H.; and Pyke, Thomas R., to Upjohn Company, The. Lincomycin production. 3,697,380, Cl. 195-80.00r.

Armbruster, Jean-Claude: *See—*
Croissant, Pierre Michel Rene; Armbruster, Jean-Claude; and Chaumeau, Andree, 3,697,327.

Armour and Company: *See—*
Foltz, Thomas R.; Hegarty, Gerald R.; Hopkins, Ervin W.; and Wilcox, Joseph C., 3,696,662.
Rogers, Alan B.; and Sebring, Michael, 3,697,283.

Armstrong Cork Company: *See—*
Schluter, Wolfram, 3,696,571.

Armstrong, Gary E., to Metalines, Inc. Expansion joint cover. 3,696,575, Cl. 52-287.000.

Armstrong, Gilbert. Article delivery system. 3,696,890, Cl. 186-1.000.

Armstrong, James C. Speaker cabinet enclosure and method of tuning thereof. 3,696,886, Cl. 181-31.00b.

Arsenius, Torsten Henry, to SKF Industrial Trading and Development Company N.V. Hydraulic fluid throttling device. 3,696,841, Cl. 138-42.000.

Artama, Arvi. Furnace for heating and bending glass plates fo windshields and the like. 3,697,243, Cl. 65-273.000.

Arthur, Ralph P.: *See—*
Chadha, Rajendra N.; Arthur, Ralph P.; and Schweiker, George C., 3,697,489.

Arthur, Richard J., to Sperry Rand Corporation. Collision avoidance system. 3,697,987, Cl. 343-5.0em.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fujimuto, Yoshihisa; Kimura, Yoshio; Terasaki, Iwao; and Kitago, Takanobu, 3,697,230.

Asai, Shojiro; Hiran, Motohisa; and Maruyama, Eiichi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,697,338, Cl. 148-188.000.

Asakawa, Kazuo; and Narita, Kaoru, to Japan Gas-Chemical Company, Inc. Method of producing trioxan. 3,697,546, Cl. 260-340.

Ashland Oil, Inc.: *See—*
Carpenter, David B.; and Thompson, Edward A., 3,697,414.

Assmus, Friedrich: *See—*
Ganter, Wolfgang; Assmus, Friedrich; and Sonntag, Manfred, 3,697,766.

Association de l'Ecole Catholique d'Arts et Metiers de Lyon: *See—*
Bousquet, Gilles; and Rambert , Andre, 3,696,446.

Athans, Jerry, Jr. Remotely controlled wall switch operating means. 3,697,905, Cl. 335-1.000.

Atkinson, Louis D.: *See—*
Bjornsen, Bjorn G.; and Atkinson, Louis D., 3,696,828.

Atkinson, Roger F.; Parr, Richard H., Jr; and Weil, Edward A., to Clendenin Investors Limited Partnership. Computer-alarm interface system, 3,697,984, Cl. 340-408.000.

Atlantic Richfield Company: *See—*
Tomczsko, Edward S. J., 3,697,614.
Yoo, Jin Sun; and Milam, Ronald L., 3,697,617.
Young, David W.; and Dieter, Jerry A., 3,697,250.

Atlas Copco Aktiebolag: *See—*
Jonsson, Nils Gunnar, 3,696,872.
Stenbacka, Johan Runar, 3,696,871.

Atwood Vacuum Machine Company: *See—*
Marx, Thomas O., 3,697,105.

Auberge Corporation: *See—*
De Van, William T.; and Van Dyck, Ken, 3,696,969.

Audac Corporation: *See—*
Kuehnle, Manfred R.; and Jochimsen, Dieter, 3,697,176.

Audretsch, Leo M., Jr.; and Elsner, Matthew, to International Business Machines Corporation. Communication by smooth high order composites of trigonometric product functions. 3,697,697, Cl. 179-15.0bc.

Aussant, Michel: *See—*
Meulcman, Johannes; and Aussant, Michel, 3,697,825.

Autechaud, Denis; and Grisard, Jean-Claude, to Societe de Fabrication d'Instruments de Mesure (SFIM). Method and apparatus for aircraft guidance. 3,697,022, Cl. 244-17.130.

Automated Building Components, Inc.: *See—*
Jureit, John Calvin, 3,696,572.

Automatic Control Systems, Inc.: *See—*
Weaver, Paul J., 3,697,040.

Automatic Switch Company: *See—*
Witkor, Dominik M., 3,697,709.

Avco Corporation: *See—*
Lucas, Joseph G.; and Zuryk, John, 3,697,401.
Webb, George, 3,696,544.

Avery Products Corporation: *See—*
Moore, John R.; Noack, William L.; and Roser, Robert A., 3,696,967.

Avins, Jack; and Craft, Jack, to RCA Corporation. Automatic frequency control circuits. 3,697,885, Cl. 331-8.000.

Ayad, Kamal Naguib: *See—*
Long, Frank; and Ayad, Kamal Naguib, 3,697,251.

Ayerst, McKenna and Harrison, Ltd.: *See—*
Lippmann, Wilbur, 3,697,654.

B&J Machinery Co., Inc.: *See—*
Cobble, James T., 3,697,013.

Bach, Hartwig C.; and Hinderer, Helmuth E., to Monsanto Company. Polyamides from pseudo-conjugated azo-aromatic diamines. 3,697,478, Cl. 260-47.0cz.

Bach, Nicholas J.; and Farkas, Eugene, to Lilly, Eli, and Company. Preparation of 17 alpha-ethynylestriol. 3,697,558, Cl. 260-397.500.

Bachmann, Gerhard: *See—*
Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, 3,697,461.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Dehnert, Johannes, 3,697,501.
Naarmann, Herbert; and Hartmann, Heinrich, 3,697,575.
Overwien, Hermann; and Mueller, Herbert, 3,697,580.
Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, 3,697,522.
Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, 3,697,461.

Bagland, Evan L., III; and Wagner, Robert L., to American Digital Corporation. Striking apparatus for rotating wheel printer. 3,696,739, Cl. 101-93.00c.

Bailey, James R.; Corbell, Paul I.; and Korta, Lawrence B., to Johnson Service Company. Intrusion detection apparatus having supervisory control means. 3,697,989, Cl. 343-5.0pd.

Baillard, Marcel, to Societe Nationale Industrielle Aerospatiale. Tools for plugging in and unplugging subsystems carried on slideways. 3,696,492, Cl. 29-203.00h.

Baker, Donal E., to Westinghouse Electric Corporation. DC static switch circuit with a main switch device and a power sharing circuit portion. 3,697,860, Cl. 323-9.000.

Baker Drapery Corporation: *See—*
Baker, George H., Sr., 3,697,035.

Baker, George H., Sr., to Baker Drapery Corporation. Drapery support. 3,697,035, Cl. 248-260.000.

Baker, Joseph W. Ball valve. 3,697,043, Cl. 251-315.000.

Balda-Werke Photographische Gerate und Kunststoff R. Gruter Kommanditgesellschaft: *See—*
Lange, Karl Heinz, 3,696,725.

Baldwin, D. H., Company: *See—*
Huggard, Leslie, 3,697,706.

Baldwin, Wiley M.; Fuchs, Edward O.; and Sharp, Donald J., said Baldwin and said Sharp assors. to Western Electric Company, Incorporated and said Fuchs and said Swisher assors. to Bell Telephone Laboratories, Incorporated. Scrap tantalum reclamation proces. 3,697,255, Cl. 75-.5ah.

Bales, Joseph H.; Prodger, Brian S.; and Ruppel, Kurt, to Mattel, Inc. Toy hill-climbing system. 3,696,555, Cl. 46-202.000.

Balicki, Stanley C. Cable-type lock assembly. 3,696,647, Cl. 70-49.000.

Balint, Laszlo J.; Lazarus, Stanley D.; and Russell, William N., to Allied Chemical Corporation. Method of esterifying a polycarboxylic acid with a glycol. 3,697,579, Cl. 260-468.00r.

Ball, Kenneth D.: *See—*
Gryctko, Carl E.; Strobel, Albert; and Ball, Kenneth D., 3,697,714.

Ballard, Edward C., to Du Pont de Nemours, E. I.,and Company. Ethylene/methyl methacrylate hot tack barrier coatings. 3,697,468, Cl. 260-28.5av.

Bally Manufacturing Corporation: *See—*
Tojza, Roman A.; and De Simone, Frank C., 3,696,905.

Balmer, Donald F.: *See—*
Kranyik, Robert Donald; Vegliante, Donald E.; and Balmer, Donald F., 3,696,524.

Balon Corporation: *See—*
Adams, Ladd M., 3,696,695.

Balzers Patent-und Beteiligungs-Aktiengesellschaft: *See—*
Zycha, Harald, 3,697,153.

Ban, Itsuki. Tape player utilizing plurality of endless magnetic tape cartridges. 3,697,083, Cl. 274-4.00f.

Ban, Itsuki. Programmed track selecting apparatus. 3,697,084, Cl. 274-4.00f.

Ban, Itsuki. Tape cartridge positioning apparatus. 3,697,085, Cl. 274-4.00b.

Banks, Howard F., to Corning Glass Works. Digital answerback circuit. 3,697,961, Cl. 340-172.500.

Bannister, Brian, to Upjohn Company, The. Lincomycin isothivuronium salts and process for preparing same. 3,697,503, Cl. 260-210.00r.

Baranowski, Karl F.; and Barrio, Alexander, Jr., to Omark Industries, Inc. Process for forming a saw chain cutter link. 3,696,692, Cl. 76-112.000.

Barber-Colman Company: *See—*
Olson, Raymond E.; and Yonc, Harold R., 3,696,602.
Townsend, Franklin L., 3,696,477.

Barbier, Maurice, to Societe Nationale des Petroles d'Aquitaine Tour Aquitaine. Process for measuring the sampled amplitude of a seismic signal. 3,698,009, Cl. 340-155.0cp.

Barecki, Chester J.; and Schneider, Kenneth O., to American Seating Company. Connector assembly for chairs. 3,697,130, Cl. 297-248.000.

Bareis, Alfred: *See—*
Bergmann, Ewald; and Bareis, Alfred, 3,696,983.

Barenyi, Bela: *See—*
Wilfert, Karl; and Barenyi, Bela, 3,697,097.

Barh, Alfred: *See—*
Hossmann, Marcell; and Barh, Alfred, 3,698,013.

Barnett, Robert D.: *See—*
Fowler, John H.; and Barnett, Robert D., 3,696,831.

Barrio, Alexander, Jr.: *See—*
Baranowski, Karl F.; and Barrio, Alexander, Jr., 3,696,692.

Barron, Roger L., to Adaptronics, Inc. Self-organizing control. 3,697,957, Cl. 340-172.500.

Bartholomew, Gerald E.; Kostuch, Donald J.; Robinson, Thomas E.; and Rohland, William S., to International Business Machines Corporation. Pattern recognition by multiple associative transformations. 3,697,951, Cl. 340-146.30q.

Basalaev, Anany Maximovich: *See—*
Frolov, Jury Fedorovich; Nechaev, Ivan Petrovich; Basalaev, Anany Maximovich; Bedarev, Jury Dmitrievich; and Golikov, Viktor Valerjanovich, 3,697,660.

BASF Wyandotte Corporation: *See—*
Damusis, Adolfas, 3,697,483.

Batchelder, Charles F.; and Rubico, Jerome A., to Batchelder, Rubico, Inc. Process for locked shoe construction. 3,696,455, Cl. 12-145.000.

Batchelder, Rubico, Inc.: *See—*
Batchelder, Charles F.; and Rubico, Jerome A., 3,696,455.

Batzill, Wolfgang: *See—*
Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, 3,697,461.

Baude, John, to Isotopes, Inc., mesne. Purge control for fuel cell. 3,697,325, Cl. 136-86.00b.

Bauer, Leo, to Sperry Rand Corporation. Power transmission. 3,696,836, Cl. 137-625.250.

Baughman, James R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,696,833.

Baumer, Wilhelm: *See—*
Schmitt, Dieter; Stein, Alfred; and Baumer, Wilhelm, 3,697,225.

Bayne, John; King, Ian Robert; and Morey, John Richard, to Laporte Industries Limited. Vapour phase oxidation of benzene to maleic anhydride using an aluminum phosphate supported catalyst. 3,697,550, Cl. 260-346.800.

Beach, Kenneth M., Jr.: *See—*
Maksymiak, John; Beach, Kenneth M., Jr.; and Smith, James W., 3,697,169.

Beam, Norman: *See—*
Beasley, Silas V.; and Beam, Norman, 3,696,734.

Beard, Terry D.; and Garen, Eric R. Stereoscopic television system. 3,697,675, Cl. 178-6.500.

Beasley, Silas V.; and Beam, Norman, to McGraw-Edison Company. Commercial waffle baker. 3,696,734, Cl. 99-331.000.

Beatrice Foods Company: *See—*
Gore, William C.; and Shapiro, Eugene B., 3,696,639.

Beausoleil, William F.; Ho, Irving T.; Jen, Teh-Sen; and Pricer, W. David, to International Business Machines Corporation. Two device monolithic bipolar memory array. 3,697,962, Cl. 340-173.00r.

Beaver, David J.: *See—*
Stoffel, Paul J.; and Beaver, David J., 3,697,252.

Bechler, Andre. Bar feed for automatic lathe. 3,696,696, Cl. 82-.50.

Beck, Alfred B., to TRW Inc. Impedance transforming binary hybrid trees. 3,697,895, Cl. 333-8.000.

Beck, Dr., & Co., GmbH: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 3,697,471.

Beck, Hans-Joachim: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 3,697,471.

Beckman Instruments, Inc.: *See—*
Ehret, Robert J., 3,697,820.

Bedarev, Jury Dmitrievich: *See—*
Frolov, Jury Fedorovich; Nechaev, Ivan Petrovich; Basalaev, Anany Maximovich; Bedarev, Jury Dmitrievich; and Golikov, Viktor Valerjanovich, 3,697,660.

Beech-Nut, Inc.: *See—*
Hoffman, Louis S.; and Spruyt, Harry, 3,696,940.

Beeley, Michael G.; and Thompson, Richard D., to McGraw-Edison Company. Steam air garment finisher. 3,696,523, Cl. 34-216.000.

Beerbower, Alan: *See—*
Garabrant, Arthur R.; Beerbower, Alan; and Wilson, James A., 3,696,661.

Beeskow, Bruno, to Daimler-Benz Aktiengesellschaft. Intermediate support for the universal joint shaft of motor vehicles. 3,697,144, Cl. 308-15.000.

Beffa, Fabio: *See—*
Ackermann, Hans; and Beffa, Fabio, 3,697,500.

Behnke, Kenneth P.: *See—*
Mackal, Henry H.; and Behnke, Kenneth P., 3,696,494.

Belcher, Richard A.; and Kozacka, Frederick J., to Chase-Shawmut Company, The. Electric low-voltage fuse. 3,697,916, Cl. 337-161.000.

Bell & Howell Company: *See—*
Dann, Bert H., 3,697,673.
Hartmann, Rudolf, 3,696,724.
Mateja, Eugene V., 3,697,158.

Bell, AlanEngland, to Foster Wheeler Corporation. Steam boilers. 3,696,793, Cl. 122-4.00d.

Bell Telephone Laboratories, Incorporated: *See—*
Aaron, Marvin Robert; Hammett, Warren Gail; and Oberst, James Francis, 3,697,690.
Baldwin, Wiley M.; Fuchs, Edward O.; and Sharp, Donald J. (said Fuchs and said Swisher assors. to), 3,697,255.
Berg, Anthony David, 3,697,682.
Casey, Horace Craig, Jr.; and van Roosbroeck, Willy Werner, 3,697,834.
Chang, Robert Wu-Lin, 3,697,897.
Danielmeyer, Hans Guenter, 3,697,888.
Greason, William Wallace, III; and Weiner, David William, 3,697,700.
Greason, William Wallace, III; and Weiner, David William, 3,697,701.
Jacisin, Joseph Michael; and Tropello, Sam Duane, 3,697,089.
Kish, Donald Eugene; and Smith, James Lanson, 3,697,963.
Lawrence, Thomas R.; and Saltzberg, Burton R., 3,697,892.
Leifer, Noel Arthur; and Ott, Henry Walter, 3,697,016.
Smith, George Elwood, 3,697,786.
Stone, Julian, 3,697,757.

Belleson, James Garman, to International Business Machines Corporation. Method and system for selective display of images from a video buffer. 3,697,678, Cl. 178-6.6dd.

Bellis, Harold Edward, to Du Pont de Nemours, E. I., and Company. Electroless gold plating bath and process. 3,697,296, Cl. 106-1.000.

Bellis, Harold Edward, to Du Pont de Nemours, E. I., and Company. Dechlorination process. 3,697,608, Cl. 260-653.500.

Bendix Corporation, The: *See—*
Elliott, Delbert R.; and Lewis, William T., 3,697,139.
Faris, William R.; and Harokopus, William P., 3,697,985.

Benenati, Salvatore: *See—*
Kanbar, Maurice S.; and Benenati, Salvatore, 3,697,036.

Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., to United States of America, Agriculture. Fire resistant organic products and method for production. 3,697,316, Cl. 117-136.000.

Benjamin, John Stanwood, to International Nickel Company, Inc., The. Stainless steels by powder metallurgy. 3,696,486, Cl. 29-182.500.

Bennett, John D., to Sun Oil Company (Delaware). Bucket wheel ice cutter. 3,696,624, Cl. 61-46.000.

Bennett, Raymond G.; and Luedi, Mark, to Novo Industrial Corporation-United Air Cleaner Division. Air cleaner with improved unloading apparatus. 3,696,591, Cl. 55-337.000.

Benson, Marshall, to Xerox Corporation. Xerographic development apparatus. 3,696,784, Cl. 118-637.000.

Benzoni, Luigi: *See—*
Pasquino, Pietro; Benzoni, Luigi; Carnisio, Giuseppe; and Colombo, Luigi, 3,697,578.

Berardi, Michael P. Electrical musical stringed instruments. 3,696,700, Cl. 84-291.000.

Berenson, Herman; Stonier, Robert Alden; and Wiese, Eugene Everett, to American Cyanamid Company. Germicidal detergent compositions in controlling dandruff. 3,697,655, Cl. 424-204.000.

Beresic, John I. Hopper material supply indicator. 3,697,708, Cl. 200-61.210.

Berezin, Gilbert H., to Du Pont de Nemours, E. I., and Company. 2-Aminomethyl-2-adamantanol. 3,697,593, Cl. 260-563.00p.

Berg, Anthony David, to Bell Telephone Laboratories, Incorporated. Video signal processing. 3,697,682, Cl. 178-6.800.

Berg, Arthur A.; and Klimek, Boleslaw, to Berg Manufacturing Company, The, mesne. Roll diaphragm brake. 3,696,711, Cl. 92-48.000.

Berg Electronics, Inc.: *See—*
Black, Richard W.; and Evans, Robert F., 3,697,933.

Berg Manufacturing Company, The, mesne: *See—*
Berg, Arthur A.; and Klimek, Boleslaw, 3,696,711.

Berg, Rudolph G.: *See—*
Tate, Bryce E.; and Berg, Rudolph G., 3,697,453.

Berger, James K., to Pioneer Magnetics, Inc. Regulated DC-DC power supply. 3,697,854, Cl. 321-2.000.

Berglund, Harold A.; and Thomas, David F., to Waterous Company. Ice cream pump. 3,697,197, Cl. 417-360.000.

Bergmann, Ewald; and Bareis, Alfred, to Schuler, L., GmbH. Roll feed for strip-or-band-shaped work-pieces, especially at quick-motion presses. 3,696,983, Cl. 226-141.000.

Bergson, Arnold A.: *See—*
Stevens, Alan F.; and Bergson, Arnold A., 3,697,973.

Beringer, Monique: *See—*
Buchmann, Paul; and Beringer, Monique, 3,696,816.

Berka, Bohdan Jiri. Signalling system for bore logging. 3,697,940, Cl. 340-18.00r.

Berkey/Colortran, Inc.: *See—*
Glickman, Richard B.; and Hartz, George R., 3,697,031.

Berman, Paul A., to Westinghouse Electric Corporation. Fuel pump system for gas turbines. 3,696,612, Cl. 60-39.140.

Bernatschek, Adolf Oswald. Braking shuttle box. 3,696,844, Cl. 139-186.000.

Bernewasser, Horst, to Kochs Adler AG. Apparatus for trimming and clipping the edges of textile fabric cuts. 3,696,765, Cl. 112-121.120.

Bernhard Beyschlag Apparatebau G.m.b.H.: *See—*
Dull, Helmut, 3,697,816.

Bernold, Jean P.; and Pfeiffer, Hans Walter. Prefabricated reinforced concrete plate shaped construction element. 3,696,577, Cl. 52-583.000.

Bernstein, Karl; and Walter, E. Richard, to Safety Signaling, Inc., mesne. Remotely controlled switching system. 3,697,975, Cl. 340-310.000.

Berry, Clyde A., to Pilot Research Corporation. Panty hose. 3,696,444, Cl. 2-224.00r.

Berry, Thomas F.: *See—*
Tarshis, Lemuel A.; Walker, James L.; and Berry, Thomas F., 3,696,500.

Berry, Thomas G., to Fairchild Hiller Corporation. Collapsible, extendible double tubular structure. 3,696,568, Cl. 52-108.000.

Berstorff, Hermann, Maschinenbau GmbH: *See—*
Anders, Dietmar, 3,696,913.

Besser Company: *See—*
Bobolts, Leroy F., 3,696,945.

Beta Instrument Company Limited: *See—*
Kyriakis, John; and Tole, Walter Roland, 3,697,335.

Bethlehem Steel Corporation: *See—*
Miller, Francis G., 3,696,923.
Murray, Robert H., 3,697,134.

Bettinardi, Edward Robert, to Johns-Manville Corporation. Catalytic oxidation unit comprising a fluid permeable body of fibrous admixture. 3,697,447, Cl. 252-458.000.

Betts, Anson G. Recovery of sulphur dioxide (SO_2) from gas streams and precipitation of aluminum fluorine product. 3,697,248, Cl. 71-38.00.

Betz Laboratories, Inc.: *See—*
Lieberman, Hillel, 3,697,438.
Lieberman, Hillel; Duharte-Francia, Carlos A.; and Henderson, John W., 3,697,439.
Lieberman, Hillel, 3,697,442.

Beverett, James H. Automatic dripolator, single compartment. 3,696,733, Cl. 99-307.000.

Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Novel fluorocarbon diamides. 3,697,562, Cl. 260-404.500.

Bhagat, Gopal C.; and Randall, John M., to Xerox Corporation. Automatic duplexing apparatus. 3,697,170, Cl. 355-17.000.

Bhaskaran Nair, Padinjarai-Madom Narayanan Nair. Device for holding down the rail to the sleeper in a railway track. 3,696,998, Cl. 238-349.000.

Bhuta, Mahendra; and Sacks, William, to Allied Chemical Corporation. Polyamide-polyethylene composite films. 3,697,368, Cl. 161-227.000.

Bialous, Charles A.; Campbell, Allen J.; and Liberti, Frank N., to General Electric Company. Chromanyl terminated polycarbonate. 3,697,481, Cl. 260-47.0xa.

Bickel, Hans: *See—*
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, 3,697,515.

Bielefeldt, Irvin P., to Alco Standard Corporation. Heating apparatus with removable heating elements and shields. 3,697,725, Cl. 219-388.000.

Biet, Jean: *See—*
Leblond, Jean; and Biet, Jean, 3,696,949.

Biet, Jean-Pierre; Nguyen, Quang Tan; Peres, Gerard; and Ripoche, Gerard, to Compagnie Generale d'Electricite. Optical-electrical movement detector utilizing staggered rows photo detectors and logic for determining the location of a luminous spot. 3,697,76, Cl. 250-209.000.

Bilhorn, John M., to ESB Incorporated. Duplex electrode construction using continuous metal carrier strip coated on one side with conductive adhesive. 3,697,328, Cl. 136-175.000.

Binks, Melvin J. Pinhole detector with internal light shield assembly. 3,697,758, Cl. 250-202.000.

Bishop, Irving N.; Mosher, Richard G.; and Simko, Aladar O., to Ford Motor Company. Combustion process for engine of spark ignition, fuel injection type. 3,696,798, Cl. 123-32.0st.

Bissell, George H.: *See—*
Kleptz, James A.; and Bissell, George H., 3,697,992.

Bitko, Sheldon S., to Fifth Dimension, Inc. Mercury switch. 3,697,906, Cl. 335-58.000.

Bixler, William L.; and Voss, Harold C., to Gates Rubber Company, The. Belt measuring device. 3,696,511, Cl. 33-125.00r.

Bjornsen, Bjorn G.; and Atkinson, Louis D., to Johnson Service Company. Common supply for opposing jet fluidic device. 3,696,828, Cl. 137-81.500.

Blachier, Bruno L.; and Champeau, Andre R., to Communications Satellite Corporation. Plural cavity bandpass waveguide filter. 3,697,898, Cl. 333-21.00a.

Black, Richard W.; and Evans, Robert F., to Berg Electronics, Inc. Connector block. 3,697,933, Cl. 339-192.00r.

Black, William Raymond, to Borden Company, The. Urea-aldehyde resin adhesive process. 3,697,355, Cl. 156-319.000.

Blackwood, James O.; and Cullis, Brian D., to Commonwealth Scientific and Industrial Research Organization. Production of carbon tetrachloride. 3,697,610, Cl. 260-664.000.

Blaisdell, Donald Stapf; and Klaas, Ruth Elizabeth Barry. Method and apparatus for treatment of aqueous liquor. 3,697,420, Cl. 210-42.000.

Blaschke, Franz: *See—*
Schade, Gerhard; and Blaschke, Franz, 3,697,480.

Bleeker, Stephen, to Honeywell Inc. Circular tray support and indexing apparatus. 3,697,161, Cl. 353-117.000.

Bleiche AG: *See—*
Stritzko, Vilem, 3,697,314.

Block Engineering, Inc.: *See—*
Hirschfeld, Tomas; and Matsu, Noboru, 3,697,226.

Blomgren, Oscar C., Jr., to Inter-Probe, Inc. Electrostatic fuel filter. 3,697,411, Cl. 204-302.000.

Blumcraft of Pittsburgh, Pa.: *See—*
Horgan, William J., Jr., 3,696,648.

Blumenberg, Horst H.; and Francillon, Francis W., to Kentucky Electronics Inc. Assembly jig for miniature electrostatically deflected cathode ray tubes. 3,696,491, Cl. 29-203.00j.

Blumenkamp, Manfred. Textile article dyeing apparatus. 3,696,644, Cl. 68-15.000.

Blundell, Ian: *See—*
Harris, Albert Edward; and Blundell, Ian, 3,697,278.

Bobard, Emile. Removable positionable vehicle control center. 3,696,880, Cl. 180-77.00r.

Bobolts, Leroy F., to Besser Company. Block cubing apparatus. 3,696,945, Cl. 214-6.00g.

Bobrick, Mitchell, to Air King Corporation. Trim ring for architectural light including means for stepped rotational and axial adjustment. 3,697,742, Cl. 240-78.0ha.

Bodem, Johann: *See—*
Schedler, Wolfgang; and Bodem, Johann, 3,696,707.

Bodenheimer, Bert A., to Sea-Land Service, Inc. Bulk cargo handling system and method. 3,696,952, Cl. 214-314.000.

Bodenseewerk Geratetechnik GmbH: *See—*
Matejka, Edgar, 3,697,776.

Boen Bruk: *See—*
Olsen, Leif Thorvald, 3,697,361.

Boertje, Arie Leendert; and Philpott, Peter John, to Lever Brothers Company. Apparatus for frying food pieces. 3,696,735, Cl. 99-404.000.

Bohn, Karl A. Band iron stock working tool with a twist device thereon. 3,696,654, Cl. 72-299.000.

Boinodiris, Stavros; and Hellwarth, George A., to International Business Machines Corporation. Isolated digital-to-analog converter. 3,697,980, Cl. 340-347.0da.

Boisen, Christian K. F., deceased (by Boisen, Karen V.; administratrix), to Steiner Company Lausanne S.A. Paper towel dispenser. 3,697,146, Cl. 312-39.000.

Boisen, Karen V.: *See—*
Boisen, Christian K. F., 3,697,146.

Boissevain, Mathew G.; and Hill, Robert C., to Measurex Corporation. Enclosure with radiation source having fail safe shutter. 3,697,755, Cl. 250-106.00s.

Boissier, Jacques R.; and Ratouis, Roger, to Societe Anonyme dite: Roussel-UCLAF. Phenylacetic acids and their salts. 3,697,590, Cl. 260-518.00r.

Boissieras, Jean; Ceyzeriat, Louis; and Poy, Guy, to Rhone-Poulenc S.A. Iminoxyorganosilanes. 3,697,568, Cl. 260-448.80r.

Bolton, Norman A., to General Signal Corporation. Flux nulled wheel detector. 3,697,745, Cl. 246-249.000.

Bonagura, Ronald: *See—*
Lysle, Gordon; and Bonagura, Ronald, 3,696,722.

Bonazzi, Pericle. Press for rebuilding of tires. 3,697,206, Cl. 425-20.000.

Bonilla, Charles F., 90% to Haskett, Barry F. and 10% to Martin, Joan Hixon. Purification of impure solid NaCl by counter-current contact with molten NaCl. 3,697,234, Cl. 23-312.0ah.

Bonner, Charles W., Jr.; and Houck, Curtis T., to Cardwell Machine Company, The. Tobacco threshing machine. 3,696,817, Cl. 131-145.000.

Boocock, David: *See—*
Newman, Michael; and Boocock, David, 3,696,757.

Boocock, David G. B.; and Ullman, Edwin F., to Synvar Associates. 2,4,5-Substituted N-oxy and hydroxyimidazoles. 3,697,538, Cl. 260-309.000.

Boogert, Lucas W. P.: *See—*
Fehres, Hans; and Boogert, Lucas W. P., 3,696,962.

Booth, Llewellyn Delphin, to Dow Chemical Company, The. Process for polymerizing episulfides. 3,697,488, Cl. 260-79.700.

Booth, Thomas A., to Addressograph-Multigraph Corporation. Illuminating system for a copying machine. 3,697,177, Cl. 355-67.000.

Booth, William C.; and Kyser, Leslie T., to Singer Company, The, mesne. Digital computer utilizing a plurality of parallel asynchronous arithmetic units. 3,697,734, Cl. 235-164.000.

Borden Company, The: *See—*
Black, William Raymond, 3,697,355.

Borden Inc.: *See—*
Erekson, Arthur B.; and Lane, Lamcolm S., 3,696,847.

Borg-Warner Corporation: *See—*
Chadha, Rajendra N.; Arthur, Ralph P.; and Schweiker, George C., 3,697,489.
Geils, Alfred E.; Raymond, William J.; Roberts, Richard W.; and Shreck, Peter K., 3,697,162.

Borjeson, Jan Lennart, to Aktiebolaget Bofors. Target tracking sight. 3,697,848, Cl. 318-649.000.

Boro, William B., to Fairchild Industries, Inc. Hand tool for reaching remote locations. 3,696,694, Cl. 81-57.260.

Borschevsky, Igor Konstantinovich: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Bosch, Robert, G.m.b.H.: *See—*
Christ, Klaus H., 3,697,807.
Schjlz, Jurgen, 3,697,872.

Bossen, Douglas C., to International Business Machines Corporation. Apparatus for correcting two groups of multiple errors. 3,697,948, Cl. 340-146.1al.

Bosshardt, Rolf: *See—*
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, 3,697,515.

Bosten, Donald R.; and Rusnak, Michael, to Rockwell Manufacturing Company. Impact wrench. 3,696,693, Cl. 81-52.30.

Boucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, to Roussel-UCLAF. Preparation of 7α-methyl steroids. 3,697,556, Cl. 260-397.450.

Bourg, Michel, to Frankel-Industries. Conveyor system. 3,696,752, Cl. 104-148.

Boursin, Rene A., to Sovcor Electronique. Encapsulated cardwood type electronic or electrical component assembly. 3,697,818, Cl. 317/101/0cw.

Bousquet, Gilles; and Rambert, Andre, to Association de l'Ecole Catholique d'Arts et Metiers de Lyon. Total knee prosthesis. 3,696,446, Cl. 3-7.000.

Boustany, Kamel; and Coran, Aubert Yaucher, to Monsanto Company. Discontinuous cellulose reinforced elastomer. 3,697,364, Cl. 161-59.000.

Boyd, David M.; and Gerhold, Clarence G., to Universal Oil Products Company. Control system for an engine system. 3,696,618, Cl. 60-276.000.

Brady, Donnie G.: *See—*
Cardenas, Carlos G.; and Brady, Donnie G., 3,697,607.

Brady, Jack C.; and Fewel, Kenneth J., to United States of America, Navy, mesne. Acceleration sensitive shock absorber valve. 3,696,894, Cl. 188-275.000.

Braithwaite, David G., to Nalco Chemical Company. Catalyst coating method. 3,697,446, Cl. 252-455.00z.

Brake, Cecil Clifford, to Scovill Manufacturing Company. Air line lubricator. 3,696,889, Cl. 184-55.00a.

Brake, Loren D., to Du Pont De Nemours, E. I., and Company. Alkali moderation of supported ruthenium catalysts. 3,697,449, Cl. 252-474.000.

Brand, Wilhelmus K.: *See—*
Van Nassau, Petrus J. M.; Brand, Wilhelmus K.; and Kaasenbrood, Petrus J. C., 3,697,521.

Brandell, John R., to Brandell Products Corporation. Golf putting practice device. 3,697,079, Cl. 273-179.00a.

Brandell Products Corporation: *See—*
Brandell, John R., 3,697,079.

Brandenberger, Fred L. Combination portable fire escape and wardrobe support. 3,696,888, Cl. 182-35.000.

Branson Instruments, Incorporated: *See—*
Obeda, Edward G., 3,697,357.

Brashear, Hugh R., Jr.: *See—*
Acree, Elick H.; Brashear, Hugh R., Jr.; and Case, Forrest N., 3,697,756.

Brassard, Theodore, to Texas Instruments, Incorporated. Circuit breaker having means for increasing current carrying capacity. 3,697,915, Cl. 337-74.000.

Braun Aktiengesellschaft: *See—*
Messinger, Werner, 3,696,508.

Braun, Martin; Grossel, Stanley S.; and Singer, Barry M., to Machlett Laboratories, Incorporated, The. Image intensifier tube having a multi-radius photocathode. 3,697,795, Cl. 313-102.000.

Braunstein, David M., to Celase Corporation. Diisocyanate coupling of oxymethylene polymer and polybutylene terephthalate. 3,697,624, Cl. 260-860.000.

Braverman, Leslie, to Solo Products Corporation. Hanger bracket for merchandise. 3,696,937, Cl. 211-54.000.

Breed, Charles P.; and Anderson, Melvin R., to Westinghouse Electric Corporation. Area lighting luminaire. 3,697,740, Cl. 240-46.370.

Breidenstein, Kenneth R., to Kraftco Corporation. Method of making cottage cheese. 3,697,293, Cl. 99-116.000.

Brejcha, Robert J.; and Corbett, William H., to Everpure, Inc. Test plug for filter assembly. 3,696,669, Cl. 73-168.000.

Brenneisen, Paul: *See—*
Paltauf, Fritz; Margot, Alfred; and Brenneisen, Paul, 3,697,555.

Brenneke, Arthur M., to TRW Inc. Plastics filled piston ring. 3,697,090, Cl. 277-157.000.

Brenner, Leonard C., to Burroughs Corporation. Digitally nulled magnetic detection system. 3,697,870, Cl. 324-43.00r.

Bressickello, Tony J. Humidified and refrigerated showcase. 3,696,630, Cl. 62-188.000.

Brewington, Doyle W., to Ward, V. F., mesne. Intermittent problem alarm for electronic equipment based on a CRT image. 3,697,674, Cl. 178-5.45e.

Bridgestone Tire Company Limited: *See—*
Watanabe, Tetsuo; Oikawa, Akira; and Masayoshi, Kuroda, 3,696,854.

Brimhall, Ray S.; deceased (by Walker Bank and Trust Co.; administrator). Method of processing oil shale. 3,697,412, Cl. 208-11.000.

Brinkman, Dale U. Operably aligned and clamped earth boring machine. 3,696,874, Cl. 175-122.000.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improve color properties by treating the polyvinyl ester with ozone. 3,697,495, Cl. 260-91.3pv.

Bristol-Myers Company: *See—*
Jensen, Erik Kjaer, 3,696,819.

British Domestic Appliances Limited: *See—*
Nethersell, Barry Herbert, 3,696,903.

British Petroleum Company Limited, The: *See—*
Byford, Derek Clark; and Silver, Howard Bernard, 3,697,427.

British Railways Board: *See—*
Newman, Michael; and Boocock, David, 3,696,757.

Brokke, Mervin E., to Stauffer Chemical Company. Composition of matter. 3,697,536, Cl. 260-302.00r.

Bronstein, Leonard. Method and product of making multifocal contact lenses and lens blanks. 3,697,629, Cl. 264-1.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Torii, Masaru, 3,696,768.

Brouchu, Rene Robert; and Taylor, Lytton, to American Cyanamid Company. Process for bonding two solid articles together in which a catalyzed unsaturated polyester resin is used in combination with a promoted unsaturated polyester resin. 3,697,353, Cl. 156310.000.

Brown, Dwight C. Dual purpose nesting pallets. 3,696,761, Cl. 108-53.000.

Brown, Fred A., III; and Le Mere, Roger, to Cluett, Peabody & Co., Inc. Stay fusing machine. 3,697,354, Cl. 156-380.000.

Brown, George T., Jr.; and Clark, Donald B., to National Cash Register Company, The. Pressure-sensitive record material. 3,697,323, Cl. 117-234.000.

Brown International Corporation: *See—*
Rickard, Donn J., 3,696,584.

Brown, Joseph Patrick, to Monsanto Chemicals Limited. Insecticidal method using 3-methylenedioxy-phenyl substituted rhodanials. 3,697,656, Cl. 424-270.000.

Brown, Melancthon S., to Chevron Research Company. N-Polyhalovinylthioformamides. 3,697,571, Cl. 260-453.00r.

Brown, Melancthon S., to Chevron Research Company. N-aryl-N'alkyl-N'arylthio ureas as herbicides. 3,697,572, Cl. 260-453.00r.

Brown, Perry H.; Tremblay, Maurice H.; and Surprenant, Norman F., to Brunswick Corporation. Metal flocking. 3,697,238, Cl. 29-191.200.

Brown, Roberty E.: *See—*
Novak, David M.; and Brown, Roberty E., 3,697,739.

Brown, Roger S.: *See—*
Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,603.
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,600.

Brown, Walter, to Subsea Equipment Associates Limited. Undersea riser structure. 3,696,864, Cl. 166-.500.

Brown, Yull. Metal detection and alarm systems. 3,697,972, Cl. 340-258.00r.

Browning, Gordon D.: *See—*
Day, Alan M.; and Browning, Gordon D., 3,697,289.

Browning, William C.; and Chesser, Billy G., to Milchem Incorporated. Composition and process for cross-linking modified carbohydrates with chrome sulfate and lignin. 3,697,498, Cl. 260-124.00r.

Bruckner-Apparatebau Michelsladt GmbH: *See—*
Schuierer, Manfred, 3,696,643.

Bruhns, Robert. Purple martin bird house. 3,696,792, Cl. 119-23.000.

Brunswick Corporation: *See—*
Brown, Perry H.; Tremblay, Maurice H.; and Surprenant, Norman F., 3,697,238.

Bryant, Clifford F., 50% to White, Albert. Educational toy. 3,696,530, Cl. 35-28.000.

Bryant, Gerald T.; Linhardt, Hans D.; and Nichols, Kenneth E., to Airco, Inc. Submerged pump removal system. 3,696,975, Cl. 222-333.000.

Bryden, Joseph E.; and Chambers, Derek, to Raytheon Company. Visula display system. 3,697,955, Cl. 340-172.500.

Brzykcy, Jerome J. Combination sawhorse, scaffold support and table. 3,696,887, Cl. 182-28.000.

Bschorer, Konrad, to Friedrich Deckel Prazisions Mechanik und Maschinenbau. Hydraulic control valve having laterally and rotationally displaceable valve plate. 3,697,041, Cl. 251-3.000.

Buchmann, Paul; and Beringer, Monique, to Tamag Basel A.G. Stirrer-crusher mill for the continuous manufacture of a tobacco mash. 3,696,816, Cl. 131-133.00r.

Buck, Robert W.: *See—*
Moss, James R.; Roe, Richard R.; Coubrough, Lawrence E.; and Buck, Robert W., 3,697,836.

Bucourt, Robert; Nedelec, Lucien; Gasc, Jean-Claude; and Pierdet, Andre, to Roussel-UCLAF. Novel preparation of pregnanes. 3,697,510, Cl. 260-239.55r.

Bucourt, Robert; and Nedelec, Lucien, to Roussel-UCLAF. Novel process for producing 10-hydrocarbon-19-nor-steroids. 3,697,511, Cl. 260-239.55r.

Buczek, Carl J.: *See—*
Skolnick, Michael L.; and Buczek, Carl J., 3,697,151.

Bugaut, Andrec: *See—*
Kalopissis, Gregoire; Gascon, Jean; Bugaut, Andrec; Gallien, Jacqueline; and Gaston-Breton, Hubert, 3,697,215.

Buhle, Emmett L.: *See—*
Buzby, George C., Jr.; Greenspan, George; and Buhle, Emmett L., 3,697,379.

Bull, James R.: *See—*
Oswald, Robert A.; and Bull, James R., 3,697,698.

Bulman, E. O., Manufacturing Co., Inc., The: *See—*
Waltz, Edward, 3,696,980.

Bunker, James F.; Poland, James E.; Sayell, Emerson H.; and Schmidt, George V., to United States of America, Atomic Energy Commission. Radioisotope heat source system. 3,697,329, Cl. 136-202.000.

Bunker-Ramo Corporation: *See—*
Hammond, Peter George Henry, 3,697,922.

Bunker-Ramo Corporation, The: *See—*
Dinerstein, Samuel, 3,696,607.
Konewko, Joseph E.; and Occhipinti, Carl, 3,697,929.

Bunnell, Douglas E.; and Walker, Douglas J., to Whirlpool Corporation. Multiple compartment dispenser for a laundry appliance. 3,696,970, Cl. 222-145.000.

Buonsante, John J.; Freericks, Lambert; Haarmann, Howard J.; and Sieglinger, John C., to American Telephone and Telegraph Company. Selectably controllable announcement system. 3,697,702, Cl. 179-18.00b.

Burba, Christian; Drawett, Manfred; Voigt, Hartmut; and Griebsch, Eugen. Polyurethane foam. 3,697,458, Cl. 260-2.5aq.

Burges, Luther M.: *See—*
Synstad, Alvin R.; Burges, Luther M.; and Day, Paul P., 3,696,495.

Burgess, George A.: *See—*
Reckseit, Bernard S.; and Burgess, George A., 3,697,006.

Burk, Charles R., to Textron, Inc. Method and apparatus for finishing an antifriction-bearing raceway. 3,696,483, Cl. 29-90.000.

Burkard, Edward A.: *See—*
Harlock, George H.; and Burkard, Edward A., 3,697,366.

Burkhardt, Gottfried, to Diehl. Calculating mechanism for ten keys-four species-calculating machines. 3,696,994, Cl. 235-60.00r.

Burroughs Corporation: *See—*
Brenner, Leonard C., 3,697,870.
Hanson, Lawrence G., 3,697,735.
Hunter, James R.; Dinerman, Bernard B.; Mann, Abe; and Schroeder, Franklin T., 3,696,946.

Burroughs Wellcome Co.: *See—*

Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,697,512.

Burtin, James D., to Detroit Tool and Engineering Company. Rivet bucking assembly and method. 3,696,501, Cl. 29-509.000.

Busch, Georg; and Wachter, Peter, to Verein zur Forderung der Festkorperphysik an der Edgenossischen Technischen Hochschule. Device for producing multi-color television images by magnetic field control of a particular luminescent screen. 3,697,688, Cl. 1785.40r.

Busch, Walter; Kramer, Heinz; Lind, Erwin; and Messner, Dieter, to Kalle Aktiengesellschaft. Process for coating the surface of a material. 3,697,303, Cl. 117-37.0le.

Buss A.G.: *See—*
Munch, Hans Joachim, 3,697,387.

Butler, James L. Rotary engine. 3,697,203, Cl. 418-173.000.

Butler, Kenneth, to Pfizer Inc. Crystalline alkali metal salts of α-carboxybenzylpenicillin and process therefor. 3,697,506, Cl. 260-239.100.

Butter, Karl, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method and arrangement for installing measuring feelers. 3,696,676, Cl. 73-343.00r.

Butter, Karl; and Wittich, Willibald, to Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Apparatus for partial electroplating including an electroplating head. 3,697,405, Cl. 204-275.000.

Buzby, George C., Jr.; Greenspan, George; and Buhle, Emmett L., to American Home Products Corporation. Asymmetric reduction of seco-steroids. 3,697,379, Cl. 195-51.00r.

Byford, Derek Clark; and Silver, Howard Bernard, to British Petroleum Company Limited, The. Lubricants having improved anti-wear and anti-corrosion properties. 3,697,427, Cl. 252-49.900.

C & M Manufacturing Company, Inc., mesne: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,696,954.

Cadiou, Jean, to Ste'An Automobiles Citroen. Arrangement for securing a container to a vehicle. 3,697,093, Cl. 280-5.00a.

Cahill, Richard H.: *See—*
Sullivan, Charles I.; and Cahill, Richard H., 3,697,466.

Caldwell, John W.; and Smith, Edward M., to Teledyne, Inc. Traveling-wave tube package with integral voltage regulation circuit for remote power supply. 3,697,799, Cl. 315-3.500.

California Institute of Technology: *See—*
Holt, Norman I., 3,697,705.

Calvi, Salvatore J.: *See—*
Morriston, Douglas I.; and Calvi, Salvatore J., 3,697,165.

Campbell, Allen J.: *See—*
Bialous, Charles A.; Campbell, Allen J.; and Liberti, Frank N., 3,697,481.

Campbell, Erwin A., to Moore, Lee C., Corporation. Pipe handling apparatus. 3,696,944, Cl. 214-2.500.

Campbell, Hugh W., to National Cash Register Company, The. Self-destructible molded articles. 3,697,668, Cl. 174-68.500.

Campbell, Milford A. Work feeding track for T-shaped parts. 3,696,904, Cl. 198-43.00r.

Canadian Marcons Company: *See—*
El-Banna, Mahmound, 3,697,857.

Canadian Patents and Development Limited: *See—*
Farley, Rene; and Rocheleau, David O., 3,697,663.
Richards, Harold R., 3,697,219.

Cancer, Ralph A.: *See—*
Taylor, Larry H.; Porter, William D.; Anderson, William J.; and Cancer, Ralph A., 3,697,007.

Canfield, Alan R.: *See—*
Desjardins, Stanley P.; Canfield, Alan R.; and Wilson, Jonathan W., 3,696,999.

Canon Kabushiki Kaisha: *See—*
Ihara, Takashi; Matsuo, Takehiko; and Ohhara, Katsunobu, 3,697,302.

Canon Kabushik Kaisha: *See—*
Tanikoshi, Kinji, 3,696,719.

Captocap Limited: *See—*
Van Baarn, Paul S., 3,696,957.

Cardenas, Carlos G.; and Brady, Donnie G., to Phillips Petroleum Company. Brominated adducts of acyclic trienes. 3,697,607, Cl. 260-648.00c.

Cardwell Machine Company, The: *See—*
Bonner, Charles W., Jr.; and Houck, Curtis T., 3,696,817.

Carfora, Joseph. Lavatory-water closet combination. 3,696,448, Cl. 4-3.000.

Carini, Eugene P. Fluid driven electrical power apparatus. 3,697,765, Cl. 290-54.000.

Carlile, Alfred E.: *See—*
Reynolds, Rolfe E.; and Carlile, Alfred E., 3,696,470.

Carlin, Ralph E.; and Rigg, Ralph R., to General Motors Corporation. Defrost water drain trap. 3,696,632, Cl. 62-285.000.

Carmet Company: *See—*
Schnellamm, Oscar; and Stier, Henry Willy, 3,696,561.

Carnisio, Giuseppe: *See—*
Pasquino, Pietro; Benzoni, Luigi; Carnisio, Giuseppe; and Colombo, Luigi, 3,697,578.

Carossi, Jean-Claude; Dufayet, Jean-Pierre; and Dujardin, Roger. Frequency controlled Hartley oscillator circuit for non-destructive eddy current testing of an electrically conductive material. 3,697,868, Cl. 324-40.000.

Carpenter, David B.; and Thompson, Edward A., to Ashland Oil, Inc. Method for producing naphthalene. 3,697,414, Cl. 208-85.000.

Carpetech Corporation: *See—*
Colt, James G., 3,697,771.

Carroll, Ronald Frank, to National Research Development Corporation. Lifting device. 3,697,116, Cl. 294-103.000.

Carrozzeria Pininfarina Societa per Azioni: *See—*
Fioravanti, Leonardo, 3,697,767.

Carson, Don B.; and Hennemuth, William R., to Universal Oil Products Company. Fluid contacting method for fluid-solid contacting chambers. 3,697,416, Cl. 208-146.000.

Carter, James L., to Esso Research and Engineering Company. High surface area nickel catalyst. 3,697,445, Cl. 252-452.000.

Carter, William C.; Duke, Keith A.; and Jessep, Donald C., Jr., to International Business Machines Corporation. Error correction system for use with a rotational single-error correction, double-error detection hamming code. 3,697,949, Cl. 340-146.1al.

Cartmell, James V.: *See—*
Churchill, Donald; Cartmell, James V.; and Miller, Robert E., 3,697,297.

Cartridge Television, Inc.: *See—*
Protas, Arthur I., 3,697,676.

Case, Forrest N.: *See—*
Acree, Elick H.; Brashear, Hugh R., Jr.; and Case, Forrest N., 3,697,756.

Casey, Horace Craig, Jr.; and van Roosbroeck, Willy Werner, to Bell Telephone Laboratories, Incorporated. Relaxation semiconductor devices. 3,697,834, Cl. 317-237.000.

Cash, George O., Jr.: *See—*
Joyner, Frederick B.; Cash, George O., Jr.; and Meyer, Max F., Jr., 3,697,465.

Casula, Pierluigi: *See—*
Rovati, Luigi; Mascherpa, Sergio; and Casula, Pierluigi, 3,697,652.

Caudle, James William: *See—*
Loos, Edwin; and Caudle, James William, 3,697,101.

Cauquis, Roger Daniel. Fishing lure. 3,696,547, Cl. 43-42.390.

Cavanna, Cesar E.: *See—*
Eifel, Paul J.; and Cavanna, Cesar E., 3,696,959.

Cavitron Corporation: *See—*
Kleesattel, Claus, 3,697,867.

Cawood Wharton & Company Limited: *See—*
Cooper, Cyril Walker, 3,697,055.

CCI Aerospace Corporation: *See—*
Johnson, Allan M.; and Gilman, Richard F., 3,697,410.
Johnson, Allan M., 3,697,418.

Celanese Corporation: *See—*
Champ, Antony E.; and Hendry, Charles Malcolm, 3,697,492.

Celase Corporation: *See—*
Braunstein, David M., 3,697,624.

Centenary Central, Inc.: *See—*
Sauer, Louis E.; and Miller, Orville C., 3,696,480.

Ceyzeriat, Louis: *See—*
Boissieras, Jean; Ceyzeriat, Louis; and Poy, Guy, 3,697,568.

CF & I Engineers, Inc.: *See—*
Steele, Clarence R.; Price, Frank B.; and Marshall, John M., 3,697,324.

Chabala, Leonard V.; and Evans, David M., to S&C Electric Company. Breather for operating mechanism housing for high voltage switches and the like. 3,696,729, Cl. 98-1.000.

Chabala, Leonard V., to S & C Electric Company. High voltage switch with preinsertion resistor connected in the circuit through graphite corona balls. 3,697,712, Cl. 200-146.00r.

Chadha, Rajendra N.; Arthur, Ralph P.; and Schweiker, George C., to Shingleton, Carroll R. and Borg-Warner Corporation. High temperature nitrile elastomer. 3,697,489, Cl. 260-80.700.

Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Ohlasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, to Gosudarstvenny Sojuzny Institut Po Proektirovanijuagresgatov Staleliicinogo i Prokatnogo Proizvodstva Dlya Chernou Metallurgii. Oxygen toyere of a stee-melting mill. 3,697,058, Cl. 266-34.001.

Chamberlain, Terrance L.; Sears, Richard P.; and Fletcher, Ivan H., Jr., to Coin Sales Corporation. Method for making sandwich laminations in one pass. 3,697,360, Cl. 156-551.000.

Chambers, Derek: *See—*
Bryden, Joseph E.; and Chambers, Derek, 3,697,955.

Chambers, Earl L.: *See—*
Plasket, Chesteen S., 3,696,556.

Champ, Antony E.; and Hendry, Charles Malcolm, to Celanese Corporation. Acrylonitrile polymerization. 3,697,492, Cl. 260-85.5es.

Champeau, Andre R.: *See—*
Blachier, Bruno L.; and Champeau, Andre R., 3,697,898.

Chandler Evans Inc.: *See—*
Thompson, Raymond V., 3,697,020.

Chang, Robert Wu-Lin, to Bell Telephone Laboratories, Incorporated. Fast start-up system for automatic transversal equalizers. 3,697,897, Cl. 333-18.000.

Chapman, Ronald W., to Shell Oil Company. End-of-tubing locator. 3,696,865, Cl. 166-64.

Chappell, Peter Lee: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, 3,697,729.

Charhonnier, Georges R. Control and measure instrument for underwater diving. 3,696,610, Cl. 58-145.00r.

Charman, Walter M., Jr.; Hayes, Robert R.; Middaugh, George J., Jr.; and Wetzig, John M., III, to Oglebay Norton Company. Method and apparatus for forming a member from an excess slurry of refractory material. 3,697,631, Cl. 264-37.000.

Chase-Shawmut Company, The: *See—*
Belcher, Richard A.; and Kozacka, Frederick J., 3,697,916.

Chatard, Michel; Grolet, Pierre; and Reynard, Remi, to Institut Francais Du Petrole des Carburants et Lubrifiants Rueil Malmaison. Device for gripping elongated members. 3,697,114, Cl. 294-86.260.

Chaumeau, Andree: *See—*
Croissant, Pierre Michel Rene; Armbruster, Jean-Claude; and Chaumeau, Andree, 3,697,327.

Chemical Construction Corporation: *See—*
Shah, Indravadan S., 3,696,929.

Chen, James Ling, to Squibb, E. R., & Sons, Inc. Periodontal bandage and backing therefor. 3,696,811, Cl. 128-156.000.

Chermensky, Dmitry Pavlovich: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Chesser, Billy G.: *See—*
Browning, William C.; and Chesser, Billy G., 3,697,498.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,697,571.
Brown, Melancthon S., 3,697,572.
Danzik, Mitchell; and House, Ralph, 3,697,573.
Lowe, Warren, 3,697,426.
Runge, Richard J., 3,697,864.

Chiron, Bernard; Deschamps, Andre; and Duffau, Louis, to Societe Lignes Telegraphiques et Telephoniques. Microstrip circuits wherein non-magnetic insulating substrate and magnetic insert have same crystalline structure. 3,697,901, Cl. 333-84.00m.

Chisholm, Douglas S., to Dow Chemical Company, The. Extrusion die. 3,697,211, Cl. 18-12.0dm.

Chow, Ho; and Chow, Junlin Wong. Key case. 3,696,649, Cl. 70-456.00r.

Chow, Junlin Wong: *See—*
Chow, Ho; and Chow, Junlin Wong, 3,696,649.

Chow, Woo F., to Sperry Rand Corporation. Associative and random access device. 3,697,964, Cl. 340-174.0pc.

Christ, David, to Devenco Incorporated. Vehicle location system and method. 3,697,941, Cl. 340-23.000.

Christ, Klaus H., to Bosch, Robert, G.m.b.H. Bipolar circuit device. 3,697,807, Cl. 317-16.

Christensen, Edward Walter, II; and Eu Daly, Ronald Dale, to RCA Corporation. Deflection yoke mount. 3,697,909, Cl. 335-210.000.

Christensen, Henry Marinus. Method of making iron dextran-preparations. 3,697,502, Cl. 260-209.00d.

Christensen Jay Arthur; and Compton, Theron Frank, said Christensen assor. to said Compton, Theron Frank. Fishing reel. 3,697,011, Cl. 242-84.100.

Christman, Willard A.; and Jones, Billy R., to General Motors Corporation. Bridge rectifier heat sink assembly. 3,697,814, Cl. 317-100.000.

Christopher, John, to Santa Fe International Corporation. Pipe welding apparatus and methods therefor. 3,697,720, Cl. 219-8.500.

Chrysler Corporation: *See—*
Pace, John G., 3,696,620.

Chudakov, Vyacheslav Andreevich: *See—*
Khrenov, Konstantin Konstantinovich; and Chudakov, Vyacheslav Andreevich, 3,697,914.

Churchill, Donald; Cartmell, James V.; and Miller, Robert E., to National Cash Register Company, The. Gelatin-gum arabic capsules containing cholesteric liquid crystal material and dispersions of the capsules. 3,697,297, Cl. 106-131.000.

Ciba Geigy Corporation: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,585.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,592.

Ciba-Geigy AG: *See—*
Ackermann, Hans; and Beffa, Fabio, 3,697,500.
Dietzsch, Hans Joachim; and Dietzsch, Otto, 3,697,635.
Kundt, Edmund; Klaiber, Max; Leitz, Wilfried; and Vom Rath, Herbert, 3,696,955.
Porret, Daniel; and Habermeier, Juergen, 3,697,539.
Pugin, Andre, 3,697,526.
Siegrist, Adolf Emil, 3,697,513.
Winter, Roland A. E., 3,697,520.

Ciba-Geigy Corporation: *See—*
Denss, Rolf; Clauson-Kaas, Niels; and Ostermayer, Franz, 3,697,460.
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, 3,697,515.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,604.
Paltauf, Fritz; Margot, Alfred; and Brenneisen, Paul, 3,697,555.
Rousselot, Felix, 3,696,972.

Cigala & Bertinetti S.a.s.: *See—*
Lampredi, Aurelio, 3,696,685.

Cincinnati Mine Machinery Co.: *See—*
Krekeler, Claude B., 3,697,137.

Cines, Martin R., to Phillips Petroleum Company. Recovery of diluent in arylene sulfide polymer production. 3,697,487, Cl. 260-79.100.

Ciriack, Gunther: *See—*
Eckert, Georg; and Ciriack, Gunther, 3,697,321.

Cirulis, Uldis: *See—*
Zacharias, Ellis M., Jr.; and Cirulis, Uldis, 3,697,936.

Citizen Watch Co., Ltd.: *See—*
Kato, Yoshiaki; and Ohuye, Hideki, 3,697,789.

Clack, Peter Joseph; Wiswell, James David; and Clemens, Anton Hubert, to Miles Laboratories, Inc. Apparatus to produce data count signals. 3,697,730, Cl. 235-92.0mt.

Claeys, Ronald, to Wheelabrator-Frye Inc. Method for deflashing ceramic materials. 3,696,565, Cl. 51-320.000.

Clark, Donald B.: *See—*
Brown, George T., Jr.; and Clark, Donald B., 3,697,323.

Clark, Harold E., to Xerox Corporation. Continuous imaging apparatus. 3,697,160, Cl. 355-3.000.

Clark, Melville, Jr.; and Luce, David A., to Melville Clark Associates. Signal processing utilizing basic functions. 3,697,703, Cl. 179-1.0sa.

Clark-Reliance Corporation: *See—*
Goellner, Allan R., 3,696,829.

Clauson-Kaas, Niels: *See—*
Denss, Rolf; Clauson-Kaas, Niels; and Ostermayer, Franz, 3,697,460.

Clayton Specialties, Inc.: *See—*
Jarrett, Earl K., 3,697,710.

Cleary, Alan. Touch detecting teaching machine. 3,696,525, Cl. 35-9.00b.

Clecak, Nicholas J.; and Cox, Robert J., to International Business Machines Corporation. Conjugated nitro amines. 3,697,595, Cl. 260-566.00r.

Clemens, Anton Hubert: *See—*
Clack, Peter Joseph; Wiswell, James David; and Clemens, Anton Hubert, 3,697,730.

Clement, J. W., Company: *See—*
Kisker, Laurence J.; and Mathewson, William G., 3,697,657.

Clendenin Investors Limited Partnership: *See—*
Atkinson, Roger F.; Parr, Richard H., Jr; and Weil, Edward A., 3,697,984.

Clevite Corporation: *See—*
Sauerland, Franz L., 3,697,903.

Clorox Company, The: *See—*
Maddox, Lodric L., 3,697,217.
Summerfelt, Vernon E., 3,697,431.

Close, Arthur L., Jr. Barbecue grill. 3,696,800, Cl. 126-25.00a.

Closse, Annemarie; and Harri, Eugen, to Sandoz Ltd., a/k/a Sandoz AG. Antibiotic SL3364. 3,697,650, Cl. 424-122.000.

Cluett, Peabody & Co., Inc.: *See—*
Brown, Fred A., III; and Le Mere, Roger, 3,697,354.

Coats, John H.: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Pyke, Thomas R., 3,697,380.

Cobble, James T., to B&J Machinery Co., Inc. Yarn beam rack. 3,697,013, Cl. 242-129.800.

Cohen, Martin J., to Franklin Gno Corporation. Plasma chromatograph with internally heated inlet system. 3,697,748, Cl. 250-41.9tf.

Coin Sales Corporation: *See—*
Chamberlain, Terrance L.; Sears, Richard P.; and Fletcher, Ivan H., Jr., 3,697,360.

Colby, Kenneth G., to Sperry Rand Corporation. Collision avoidance system. 3,697,986, Cl. 343-5.00r.

Colgate, Stirling A.; Kempton, Marvin L.; Hanson, Merle E.; Munson, William O.; and Nicholson, Dallas E., to United States of America, Navy, mesne. Rod warhead. 3,696,750, Cl. 102-67.000.

Colgate-Palmolive Company: *See—*
Douglas, Livingston C., 3,696,915.
Maxwell, Milton, 3,697,754.
Miles, Gilbert De Wayne, 3,696,919.
Olson, Frank Wesley, Jr.; and Roberts, Karl Hutcheson, 3,697,452.
Sundby, Bjorn; and Wixon, Harold Eugene, 3,697,423.

Collins Radio Company: *See—*
Cory, Terry S.; and Markley, Roger A., 3,697,999.
Faustlin, James L.; and Saenz, Eliseo, 3,697,893.
Frazier, Melvin A., 3,697,861.

Collis, Ronald T. H., to Stanford Research Institute. Method and system for detecting clear air turbulence. 3,696,670, Cl. 73-170.00r.

Colman, Benjamin W.: *See—*
Hocking, Loren P.; and Lotti, Louis B., 3,697,942.

Colombo, Luigi: *See—*
Pasquino, Pietro; Benzoni, Luigi; Carnisio, Giuseppe; and Colombo, Luigi, 3,697,578.

Colombo, Piero. Method and apparatus for the continous casting of flat blooms or the like. 3,696,860, Cl. 164-73.000.

Colt Industries Operating Corporation, mesne: *See—*
Kennedy, Ralph C.; and Torning, Ralph R., 3,696,543.

Colt, James G., to Carpetech Corporation. Carpet cleaning apparatus with electrical power conditioning means. 3,697,771, Cl. 307-154.000.

Colton, Frank B.; Mikulec, Richard A.; and Nicholson, Robert T., to Searle, G. D., & Co. N-(3-Oxopregna-4, 17(20)-dien-21-yl) quaternary salts and 19-nor derivatives corresponding. 3,697,509, Cl. 260-239.500.

Columbia Broadcasting System, Inc.: *See—*
Zilius, Tadas, 3,696,549.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
Newman, Douglas A., 3,697,677.

Colwell, Lester V., to Hammond Machinery Builders, Inc. Electrochemical grinding apparatus. 3,697,403, Cl. 204-218.000.

Comber, James D. Lock switch and security system for motor vehicle electrical circuits. 3,697,945, Cl. 340-64.000.

Combridge Thermionic Corporation: *See—*
Irons, Fred H., 3,697,900.

Combustion Engineering, Inc.: *See—*
Frey, Donald J.; and Opp, Warren P., 3,697,229.
Liebig, Preston D.; and Hurlbut, William B., Sr., 3,696,589.

Combustion Power Company, Inc.: *See—*
Smith, Richard D.; and Furlong, Dale A., 3,696,795.

Commercial Affiliates, Inc.: *See—*
Mildon, James R., 3,696,476.

Commercial Solvents Corporation: *See—*
Hodge, Edward B., 3,697,548.

Commissariat a l'Energie Atomique: *See—*
Gauthron, Maurice, 3,697,377.

Commonwealth Scientific and Industrial Research Organization: *See—*
Blackwood, James O.; and Cullis, Brian D., 3,697,610.

Communications Satellite Corporation: *See—*
Blachier, Bruno L.; and Champeau, Andre R., 3,697,898.

Compagnie Francaise des Petroles, Societe Anonyme: *See—*
Cortes, Abel C., 3,696,875.

Compagnie Generale d'Electricite: *See—*
Biet, Jean-Pierre; Nguyen, Quang Tan; Peres, Gerard; and Ripoche, Gerard, 3,697,760.
Melchior, Gerard; and Sinobad, Dusan, 3,697,880.

Compagnie Industrelle des Telecommunication: *See—*
Louvel, Guy, 3,697,902.

Compton, Theron Frank: *See—*
Christensen Jay Arthur; and Compton, Theron Frank, 3,697,011.

Compupop, Inc.: *See—*
Day, Alan M.; and Browning, Gordon D., 3,697,289.

Comstock, Lowell R.: *See—*
Smith, Percy L.; and Comstock, Lowell R., 3,697,625.

Condeco Automation, Inc.: *See—*
Whitfield, Homer G., 3,696,824.

Conn, James B.; Delbauve, J. Richard; and Lilienkamp, Hugh, to United States of America, Navy. Solid state radio frequency voltage controlled oscillator, power amplifier and direct current power supply. 3,697,886, Cl. 331-69.000.

Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. Anthracyclidine-acetic acid derivatives. 3,697,552, Cl. 260-351.000.

Consan Pacific Incorporated: *See—*
Saurenman, Donald G.; and Smith, Harold W., 3,696,791.

Continental Can Company, Inc.: *See—*
Holk, Albert J., Jr., 3,696,961.
Kochevar, John W., 3,696,989.

Continental Oil Company: *See—*
Folmer, Orville F., Jr., 3,697,750.
Young, Gary Clifford; and Kleinpeter, Joseph A., 3,696,587.

Cooper, Cecil D. Artificial rumen stimulator. 3,696,787, Cl. 119-1.000.

Cooper, Cyril Walker; deceased (by Knight, Edgar; executor), to Cawood Wharton & Company Limited. Heat treatment of bodies of combustible material. 3,697,055, Cl. 263-8.00r.

Cooper, Herbert W., to Westinghouse Electric Corporation. Interferometer and angle encoding navigation system. 3,697,997, Cl. 343-108.00r.

Cooper, Lloyd R., to Heppenstall Company. Production of large steel ingots with consumable vacuum arc hot tops. 3,696,859, Cl. 164-52.000.

Coors Porcelain Company: *See—*
Maytag, John Hardy, 3,696,657.

Coors Porceln Company: *See—*
Moss, James R.; Roe, Richard R.; Coubrough, Lawrence E.; and Buck, Robert W., 3,697,836.

Cope, Geoffrey Wilton, to Dresser Industries, Inc. Automatic coupling system for freight cars. 3,696,941, Cl. 213-76.000.

Coppinger, Eugene A.; and Johnson, Benjamin M., to United States of America, Atomic Energy Commission. Production of uranium and plutonium carbides and nitrides. 3,697,436, Cl. 252-301.10r.

Coran, Aubert Yaucher: *See—*
Boustany, Kamel; and Coran, Aubert Yaucher, 3,697,364.

Corbell, Paul I.: *See—*
Bailey, James R.; Corbell, Paul I.; and Korta, Lawrence B., 3,697,989.

Corbett, William H.: *See—*
Brejcha, Robert J.; and Corbett, William H., 3,696,669.

Corder, Joe B. Extractor and pusher. 3,696,496, Cl. 29-260.000.

Corning Glass Works: *See—*
Banks, Howard F., 3,697,961.

Coronelli, Carolina; and Craveri, Renato. Antibiotic substance from a thermophilic actinomycetes. 3,697,646, Cl. 424-117.000.

Correll, Edward Max, to General Electric Company. Metal-to-glass-to-metal hermetic seal. 3,697,823, Cl. 317-230.000.

Cortes, Abel C., to Compagnie Francaise des Petroles, Societe Anonyme. Diamond-studded drilling tool. 3,696,875, Cl. 175-329.000.

Cory, Terry S.; and Markley, Roger A., to Collins Radio Company. Rotatable bi-planar series-fed log-periodic HF antenna. 3,697,999, Cl. 343-763.000.

Cosmetics & Pharmaceuticals, Inc.: *See—*
Madigan, Edward J., 3,697,642.

Cottell, Eric C. Hand-held air compressor and liquid spray device. 3,696,973, Cl. 222-193.000.

Cotton, Charles C.: *See—*
Palmer, Donald M.; Cotton, Charles C.; and Hodges, Willmer F., 3,696,599.

Coubrough, Lawrence E.: *See—*
Moss, James R.; Roe, Richard R.; Coubrough, Lawrence E.; and Buck, Robert W., 3,697,836.

Cox, Robert J.: *See—*
Clecak, Nicholas J.; and Cox, Robert J., 3,697,595.

Coyle, Roy M., Sr., 1/2 to Wrau, Norman J. Thermostatic expansion valve for refrigeration system. 3,696,628, Cl. 62-115.000.

Craft, Jack: *See—*
Avins, Jack; and Craft, Jack, 3,697,885.

Craig, Colin: *See—*
Ponsen, Catharinus M., 3,696,947.

Craig, Grantland A., to Paper Converting Machine Company, Inc. Garment-making method. 3,696,445, Cl. 2-243.000.

Craveri, Renato: *See—*
Coroncli, Carolina; and Craveri, Renato, 3,697,646.

Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. 5-Benzyl pyrimidines intermediates. 3,697,512, Cl. 260-240.00r.

Crippa, Eugene R.; and Lowry, Ray B., to United States of America, Navy. Magnetic tape with plural clocks. 3,697,969, Cl. 340-174.10a.

Croft Metals, Inc.: *See—*
Hallin, Peter R., 3,696,560.

Croissant, Pierre Michel Rene; Armbruster, Jean-Claude; and Chaumeau, Andree, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Electrolyte for dry batteries and dry cell batteries using such electrolyte. 3,697,327, Cl. 136-157.000.

Cross, David F. W.: *See—*
Oakes, Vincent; and Cross, David F. W., 3,697,463.

Cruse, William M. Fluid actuated stage control s-stem with fluid flow leadout signal. 3,697,047, Cl. 254-141.000.

Cryomedics, Inc.: *See—*
Wallach, Ronald M., 3,696,813.

Cubic Corporation: *See—*
Adams, Lloyd M.; and Hoelscher, Robert L., 3,697,017.

Cullis, Brian D.: *See—*
Blackwood, James O.; and Cullis, Brian D., 3,697,610.

Cuomo, Jerome J., to International Business Machines Corporation. Method of selective chemical vapor deposition. 3,697,342, Cl. 156-13.000.

Cuomo, Jerome J.; and Laff, Robert A., to International Business Machines Corporation. Method of selective chemical vapor deposition. 3,697,343, Cl. 156-13.000.

Cuplip, John A., II. Method of performing sequential non-mechanical and mechanical machining operations along a common centerline and mechanical. 3,696,504, Cl. 29-558.000.

Curtiss-Wright Corporation: *See—*
Gavrun, Michael I., 3,696,796.

Cziesla, Manfred J.: *See—*
Swedenberg, Clyde J.; and Cziesla, Manfred J., 3,697,340.

Da-Lite Screen Company, Inc.: *See—*
Poiter, Fred S., 3,696,856.

Dahl, Einar S., to Outboard Marine Corporation. Low-velocity discharge means for rotary mowers. 3,696,595, Cl. 56-16.900.

Daigle, Donald J.: *See—*
Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,697,316.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf, 3,697,943.
Beeskow, Bruno, 3,697,144.
Wilfert, Karl; and Barenyi, Bela, 3,697,097.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Yamabe, Shigeru; Shimizu, Masanao; and Yamamoto, Tadatsugu, 3,697,514.

Dairy Equipment Company: *See—*
Peters, Norman J., 3,696,950.

Daiwa Boseki Kabushiki Kaisha: *See—*
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, 3,696,605.

Dalbey, Theodore E., to Pennsylvania Industrial Chemical Corporation. Process for preparing 2-hydroxy-4-alkoxybenzophenone. 3,697,599, Cl. 260-591.000.

Dale, Brian, to GTE Sylvania Incorporated. Semiconductor switching device. 3,697,830, Cl. 317-235.

Damusis, Adolfas, to BASF Wyandotte Corporation. Sequential process of preparing polyurethane elastomers. 3,697,483, Cl. 260-75.0ne.

Danielmeyer, Hans Guenter, to Bell Telephone Laboratories, Incorporated. Evanescent wave coupling technique for beam shaping. 3,697,888, Cl. 331-94.500.

Daniels, Alexander, to U.S. Philips Corporation. Cryogenic refrigeration device. 3,696,626, Cl. 62-6.000.

Dann, Bert H., to Bell & Howell Company. Apparatus for correcting angular errors in color video signals. 3,697,673, Cl. 178-5.4cd.
Dannat, Heinz. Hair comb. 3,696,823, Cl. 132-122.
Dannels, Bobby F.; and Shepard, Alvin F., to Hooker Chemical Corporation. Aromatic polymers containing an element of the phosphorus family. 3,697,459, Cl. 260-17.200.
Dantele, Johann, to Fichtel & Sachs AG. Clutch disc with metallic friction facings. 3,696,902, Cl. 192-107.00c.
Danzik, Mitchell; and House, Ralph, to Chevron Research Company. Linear alkylphenol sulfate-sulfonate phosphate-free detergent actives. 3,697,573, Cl. 260-457.000.
Daproux, Jacques Roland, to Societe Industrielle Honeywell Bull. Apparatus for punching record cards or tapes. 3,696,993, Cl. 234-118.000.
Darcas, Claude: *See—*
Allirot, Rene Joseph; Darcas, Claude; and Jobert, Raymond, 3,697,576.
Darling, Alan Sydney, to Johnson, Matthey & Company Limited. Method of making a dispersion strengthened metal. 3,696,502, Cl. 29-527.700.
Dart Industries, Inc.: *See—*
Schuff, Richard William; and Harris, Edson Sheppard, Jr., 3,696,987.
Data Card Corporation, mesne: *See—*
Deschenes, Raymond J.; and MacDonald, Robert N., 3,697,693.
Data Packaging Corporation: *See—*
Lowry, Alan B.; Mathus, Gregory; Morello, Herbert; and Miller, Robert J., 3,697,014.
Davenport, Richard L.; and Niemiec, Gerald M., to Johnson, S. C., & Son, Inc. Stretch elastomer valve. 3,696,977, Cl. 222-561.000.
Davies, Robert G.: *See—*
La Cagnina, John M.; and Davies, Robert G., 3,697,407.
Davies, Robert L.: *See—*
Huth, Gerald C.; and Davies, Robert L., 3,697,829.
Davis, William E. Food chopper. 3,696,849, Cl. 146-146.
Davy and United Engineering Company Limited: *See—*
Harrison, Robert Henry, 3,696,651.
Jump, Peter Alexander Edward; and Keegan, Barclay, 3,697,261.
Day, Alan M.; and Browning, Gordon D., to Compupop, Inc. Automatic popcorn popping method. 3,697,289, Cl. 99-81.000.
Day, John J.; and Hirschman, Paul S., to Ocean Protein Corporation. Method and apparatus for hatching crustacea. 3,696,788, Cl. 119-2.000.
Day, John W., Jr., to Sealth Aero Marine Company. Bearing retainer. 3,697,145, Cl. 308-72.000.
Day, Paul P.: *See—*
Synstad, Alvin R.; Burges, Luther M.; and Day, Paul P., 3,696,495.
Dayton Steel Foundry Company, The: *See—*
Ischabrun, Richard G.; and Afanador, Carlos P., 3,697,910.
De Barros, Manuel Joaquim Monteiro, to Eurofina-Investimentos e Estudos Techicos e Financeiros, S.A.R.L. Method for the construction of brick walls. 3,696,576, Cl. 52-747.000.
De Cock, Etienne Marie, to Agfa-Gevaert N.V. Method of testing a strip material and apparatus therefor utilizing autocorrelation. 3,697,759, Cl. 250-209.000.
De Luca, Hector F.; Schnoes, Heinrich K.; and Holick, Michael F., to Wisconsin Alumni Research Foundation. 1,25-Dihydroxy cholecalciferol. 3,697,559, Cl. 260-397.200.
De Lucia, Victor E., to Torr Laboratories, Inc. Vacuum relay. 3,697,907, Cl. 335-201.
De Simone, Frank C.: *See—*
Tojza, Roman A.; and De Simone, Frank C., 3,696,905.
De Van, William T.; and Van Dyck, Ken, to Auberge Corporation. Beverage dispensing system. 3,696,969, Cl. 222-105.000.
Deakin, Alfred; deceased (by Deakin, Ida Mae; administratrix). Cap for oxygen and similar containers. 3,696,964, Cl. 220-85.
Deakin, Ida Mae: *See—*
Deakin, Alfred, 3,696,964.
Dean, Carl J., to Wright, Barry, Corporation. Reel sealing and storage apparatus. 3,696,935, Cl. 211-13.000.
Decker, Wilton K.; and Van De Velde, Valere F., said Decker assor. to said Van De Velde, Valere. Warning light housing. 3,697,738, Cl. 240-10.600.
Dega, Robert L.: *See—*
Reinhart, Henry F.; and Dega, Robert L., 3,697,202.
Dehnert, Johannes, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Basic indazole azo dye substituted by a sulfonamide. 3,697,501, Cl. 260-163.000.
DeHoff, Ronald Lee, to Vanderbilt, R. T., Company, Inc. Liquid curing agent for epoxy resins comprising a Mixture of an imidazold and an aniline-formaldehyde condensate. 3,697,462, Cl. 260-21.000.
Del Amo Enterprises, Inc.: *See—*
Harris, John L.; and Hellman, Robert W., 3,696,453.
Delbauve, J. Richard: *See—*
Conn, James B.; Delbauve, J. Richard; and Lilienkamp, Hugh, 3,697,886.
Demag Aktiengesellschaft: *See—*
Wiggershaus, Fred; and Donner, Klaus, 3,696,755.
Demas, Nickolas P., to Wagner Electric Corporation. Two-terminal, two-color indicator lamp assembly. 3,697,802, Cl. 315-65.000.
Demerdash, Nabeel A.: *See—*
Kilgore, Lee A.; and Demerdash, Nabeel A., 3,697,791.
Deming, Andrew Frank; and Lucas, Clyde M., to Alliance Manufacturing Company, Inc. Stepping motor. 3,696,680, Cl. 74-1.500.
Dempster Brothers, Inc.: *See—*
Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., 3,696,951.
Denki Kogaku Kogyo Kabushiki Kaisha: *See—*
Fukuoka, Ichiro; Kimura, Shoji; Nishimura, Takehiko; and Takahashi, Satoshi, 3,697,609.
Denss, Rolf; Clauson-Kaas, Niels; and Ostermayer, Franz, to Ciba-Geigy Corporation. Substituted esters of phenyl acetic acids. 3,697,460, Cl. 260-247.20b.
Deo, Narsingh: *See—*
United States of America, National Aeronautics and Space Administration, 3,697,968.
Deschamps, Andre: *See—*
Chiron, Bernard; Deschamps, Andre; and Duffau, Louis, 3,697,901.
Deschenes, Raymond J.; and MacDonald, Robert N., to Data Card Corporation, mesne. System for maintaining the status of credit accounts. 3,697,693, Cl. 179-2.0dp.
Desjardins, Stanley P.; Canfield, Alan R.; and Wilson, Jonathan W., to Thiokol Chemical Corporation. Movable thrust nozzle for rockets. 3,696,999, Cl. 239-265.350.
Deskey, Donald, mesne: *See—*
Heston, Russell G., Jr., 3,696,629.
Desmond, Matthew J. Restraining tape for mail packaging. 3,696,921, Cl. 206-73.000.
Dessureault, Jules. Snowmobile and road wheel units therefor. 3,696,877, Cl. 180-5.00r.
Detroit Tool and Engineering Company: *See—*
Burtin, James D., 3,696,501.
Deutsch, Ralph, to North American Rockwell Corporation. Multiplexed pitch generator system for use in a keyboard musical instrument. 3,697,661, Cl. 84-1.010.
Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
Schreyer, Gerd; and Weigert, Wolfgang, 3,697,602.
Devane, Harry M. Sound muting assembly for gas flow duct systems. 3,696,883, Cl. 181-36.00b.
Devenco Incorporated: *See—*
Christ, David, 3,697,941.
Dewey, Clarence Forbes, Jr., to Xenon Corporation. Tunable laser. 3,697,889, Cl. 331-94.500.
Dewhurst, Ernest James, to Somerville Industries Limited. Paperboard container. 3,696,990, Cl. 229-37.00r.
Di Laura, Arnold E.: *See—*
Di Laura, Arnold E.; and Pratt, Donald P. (said Pratt assor. to), 3,697,082.
Di Laura, Arnold E.; and Pratt, Donald P., said Pratt assor. to Di Laura, Arnold E. Golf tee. 3,697,082, Cl. 273-205.000.
Diacon, Inc.: *See—*
Wakley, Wilbur T.; and Leeds, Michael T., 3,697,666.
Diamond Shamrock Corporation: *See—*
Lichtman, Irwin A.; and Woodward, Fred E., 3,697,440.
Dias, Fleming, to Zenith Radio Corporation. Method of making a piezoelectric transducer. 3,696,479, Cl. 29-28.350.
Dick, A. B., Company: *See—*
Podhajny, Richard M., 3,697,264.
Dickman, John J., to Missouri Research Laboratories, Inc. Card feeder for instructional devices. 3,696,527, Cl. 35-9.00r.
Didry, Yves M. Demountable partition wall. 3,696,569, Cl. 52-122.000.
Diehl: *See—*
Burkhardt, Gottfried, 3,696,994.
Diener, James H., to General Motors Corporation. Energy absorbing bumper mount. 3,697,108, Cl. 293-89.000.
Dieter, Jerry A.: *See—*
Young, David W.; and Dieter, Jerry A., 3,697,250.
Dietrich, Richard. Building having a skeleton frame. 3,696,574, Cl. 52-236.000.
Dietzsch, Hans Joachim; and Dietzsch, Otto, to Ciba-Geigy AG. Process for the manufactu of capillary exchangers. 3,697,635, Cl. 264-135.000.
Dietzsch, Otto: *See—*
Dietzsch, Hans Joachim; and Dietzsch, Otto, 3,697,635.
Diez, Gerhard H.: *See—*
Niedner, Peter Klaus; and Diez, Gerhard H., 3,696,520.
Digital Information Devices, Inc.: *See—*
Lowry, Alan B.; Mathus, Gregory; Morello, Herbert; and Miller, Robert J., 3,697,014.
Dilday, Joseph T. Coated fertilized. 3,697,245, Cl. 71-28.000.
Dillon, Janus J.; and Snowden, Bryan T., to Food Equipment, Inc. Fowl foot remover system. 3,696,464, Cl. 17-11.000.
Dinerman, Bernard B.: *See—*
Hunter, James R.; Dinerman, Bernard B.; Mann, Abe; and Schroeder, Franklin T., 3,696,946.
Dinerstein, Samuel, to Bunker-Ramo Corporation, The. Center set for clocks. 3,696,607, Cl. 58-85.500.
Dinger, Edward H., to General Electric Company. Full wave DC motor control. 3,697,844, Cl. 318-331.000.
Dirks, Johan F.: *See—*
Uber, Jay J.; and Dirks, Johan F., 3,697,267.
Ditz-Crane: *See—*
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,696,570.
Diversified Manufacturing and Marketing Co., Inc.: *See—*
Pope, George F., 3,697,188.
Dixon, Samuel J.: *See—*
Sollman, George H.; and Dixon, Samuel J., 3,697,977.

Dixon, T. H., & Company Limited: *See—*
Preen, Robert, 3,696,777.
Dobinson, Frank; and Saunders, James H., to Monsanto Company. High molecular weight increase of polyamides with bis(imino-oxazolidines). 3,697,486, Cl. 260-78.0sc.
Domin, Siegfried; and Nembhard, Roy. Alarm system. 3,697,971, Cl. 340-258.00c.
Donahue, John A.: *See—*
Minden, Henry T.; and Donahue, John A., 3,697,330.
Donald, John Henry: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, 3,697,729.
Donaldson Company, Inc.: *See—*
Johnson, Lemoine L.; and Timmons, William P., 3,696,666.
Donaldson, Darrell J.: *See—*
Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,697,316.
Donner, Klaus: *See—*
Wiggershaus, Fred; and Donner, Klaus, 3,696,755.
Donofrio, Robert L.; and Rehkopf, Charles H., to GTE Sylvania Incorporated. Process of forming cathode ray tube screens to utilize the luminous efficiency of the phosphor material. 3,697,301, Cl. 117-33.50c.
Donoghue, William James, to RCA Corporation. Signal generating circuit including a pair of cascade connected field effect transistors. 3,697,777, Cl. 307-228.000.
Dooley, John F. Golf photography dart board game including scene changing means. 3,697,073, Cl. 273-95.00r.
Doose, Conrad; and Sassin, Wolfgang, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Power line system and method for the transmission of electric energy over low temperature electric conductors. 3,697,665, Cl. 174-15.00c.
Dorlars, Alfons, to Farbenfabriken Bayer Aktiengesellschaft. Production of aryl-α-oximinoalkylketones. 3,697,596, Cl. 260-465.00e.
Dorlars, Alfons, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of α-oximinoalkyl ketones. 3,697,597, Cl. 260-566.00a.
Dorn, Jerome. Steering mechanism for toy vehicles. 3,696,554, Cl. 46-201.000.
Dornier A.G.: *See—*
Kosziech, Karl-Heinz; and Teschner, Kurt, 3,697,024.
Douglas, Edward Curtis, to RCA Corporation. Method of projection printing photoresist masking layers, including elimination of spurious diffraction-associated patterns from the print. 3,697,178, Cl. 355-77.000.
Douglas, Livingston C., to Colgate-Palmolive Company. Blade dispenser. 3,696,915, Cl. 206-16.0bc.
Dourte, Rodger P.: *See—*
Stoudenheimer, Richard G.; and Dourte, Rodger P., 3,697,794.
Dow Chemical Company, The: *See—*
Anderson, Gene A., 3,696,873.
Booth, Llewellyn Delphin, 3,697,488.
Chisholm, Douglas S., 3,697,211.
Harmer, David E.; Jarema, John R.; and Leng, Douglas E., 3,697,351.
Parker, William L.; Johnson, Francis; and Martin, John, 3,697,542.
Scott, Henry H., 3,697,244.
Tomalia, Donald A.; and Ooha, Narayanlal D., 3,697,524.
Tomalia, Donald A., 3,697,537.
Wessling, Ritchie A.; and Settineri, William J., 3,697,398.
Ziegler, Earl E., 3,696,452.
Dow Corning Corporation: *See—*
Polmanteer, Keith E.; Willing, David N.; and Talcott, Thomas D., 3,697,473.
Drake, George L., Jr.: *See—*
Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,697,316.
Drapkin, William B., to Kulka Electric Corporated. Terminal junction. 3,697,935, Cl. 339-217.
Drawert, Manfred: *See—*
Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen, 3,697,458.
Drechsel, Erhart K.; Sardisco, John B.; and Stewart, James R., Jr., to Pennzoil United, Inc. Potassium phosphate manufacture. 3,697,246, Cl. 71-34.000.
Dresser Industries, Inc.: *See—*
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Dromsky, John A., to Texas Instruments, Incorporated. Method for making a composite tube. 3,696,499, Cl. 29-476.500.
Drowatzky, Karl B. Smoke tree. 3,696,939, Cl. 211-117.000.
Dryden, Julian R., to United States of America, Interior. Method for producing retorting channels in shale deposits. 3,696,866, Cl. 166-248.000.
Du Pont de Nemours, E. I., and Company: *See—*
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Ballard, Edward C., 3,697,468.
Dubois, Gerald, to Marcel Mingard. Timepiece having oscillating rotating indicator. 3,696,609, Cl. 58-125.00r.
Duchene, Joseph R., to Allied Research Products, Inc. Electrodeposition of nickel. 3,697,392, Cl. 204-49.000.
Dufayet, Jean-Pierre: *See—*
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Duncan, Alfred D., to Duncanlite Laboratory, Inc. Catcher and projector employed with a substantially non-resilient ball. 3,697,074, Cl. 273-96.
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Dunham, Tom David; Yeakley, Lester Marvin; and Nagy, Andrew, to International Nominees Bahamas Limited, mesne. Custom shoe construction system. 3,696,456, Cl. 12-146.00l.
Dunne, Owen F.; Hebert, William E.; Souza, Ronald; and Wargat, Edward, to Zalking Sewing Machine & Supply Co. Thread cutting attachment for a sewing machine. 3,696,770, Cl. 112-252.000.
Dupler, Raymond R. Body and head covering. 3,696,450, Cl. 5-334.000.
Durametallic Corporation: *See—*
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Durcam Research and Development Company Limited: *See—*
Temple, Stephen, 3,697,344.
Durham, Roger Owen. Personal armor. 3,696,439, Cl. 2-2.500.
Duss, Walter, to Peyer, Siegfried. Multiple operating head machines, particularly multiple spindle textile spooling machines with supervisory operating time indicator. 3,697,732, Cl. 235-151.300.
Dussourd, Jules L.; and Haugen, Ronald L., to Ingersoll-Rand Company. Gas drying apparatus and method. 3,696,588, Cl. 55-163.000.
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Dynamit Nobel Aktiengesellschaft: *See—*
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Schade, Gerhard; and Blaschke, Franz, 3,697,480.
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Grant, Peter M.; Fulkerson, Brazelton; and Mench, John W., 3,697,640.
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Edgar, Howard M. Structural core. 3,697,633, Cl. 264-45.000.
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David. Dispensing system and security card for use therewith. 3,697,729, Cl. 235-61.70b.
Edwards, Jones B. Neck-mounted lighter socket. 3,697,025, Cl. 248-27.000.
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Egan, Richard Stephan: *See—*
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Ehgartner, Gahriele; and Wilsch, Herbert, to Agfa-Gevaert Aktiengesellschaft. Reel and retaining means for motion picture film or the like. 3,697,018, Cl. 242-197.000.
Eholzer, Ulrich: *See—*
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Ehret, Robert J., to Beckman Instruments, Inc. Transient suppression circuit for D.C. motor drive system. 3,697,820, Cl. 317-148.50b.
Eichelberger, Charles D.; and Musselman, Frank L., to General Electric Company. Electric power distribution substation. 3,697,819, Cl. 317-103.000.
Eickmann, Karl. Multiple rotors and control means thereto in fluid handling devices with working chambers of radially variable volume. 3,697,201, Cl. 418-132.000.
Eifel, Paul J.; and Cavanna, Cesar E., to Lox Equipment Company. Cryogenic storage vessel constructed of dissimilar materials. 3,696,959, Cl. 220-15.000.
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Eisenberg, Bernard C., to Solbern Corporation. Machine and method for transferring predetermined amounts of material. 3,696,581, Cl. 53-35.000.
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Ekfeldt, Axel E.; and Wallberg, Eric W. Breech block with rim fire striker. 3,696,542, Cl. 42-16.000.
El-Banna, Mahmound, to Canadian Marcons Company. Power supply and control circuit. 3,697,857, Cl. 321-20.000.
Elco Corporation, mesne: *See—*
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Elder, James T.; and Wright, Donald A., to Minnesota Mining and Manufacturing Company. Electromagnetic field producing apparatus and method for sequentially producing a plurality of fields. 3,697,996, Cl. 343-101.000.
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Elliott, David Robert; and Greenway, John Michael, to Imperial Chemical Industries Limited. Treatment of yarns. 3,696,478, Cl. 28-12.100.
Elliott, Delbert R.; and Lewis, William T., to Bendix Corporation, The. Skid control system maximum cyclic limiter. 3,697,139, Cl. 303-21.00p.
Ellis, Peter H., to Rohr Corporation. Turbo-fan propulsion apparatus and operating method. 3,696,617, Cl. 60-229.000.
Elmore, Clifford L.; and Young, Richard C., to Teledyne Mid-American Corporation. Car retaining cushioned latch mechanism. 3,696,756, Cl. 104-251.000.
Elox Inc.: *See—*
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Emch, George F., to United States of America, Navy, mesne. Method and apparatus for producing target range height, and elevation voltages from a PPI display. 3,697,990, Cl. 343-6.00r.
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Engel, Lawrence J.; and Smith, Marvin F., Jr., to Esso Research and Engineering Company. Lubricant containing low ethylene content and high ethylene content ethylene-alpha-olefin copolymers. 3,697,429, Cl. 252-59.000.
Engelhardt, Edward L.; and Remy, David C., to Merck & Co., Inc. Thioxanthone-10,10-dioxides. 3,697,544, Cl. 260-328.000.
Engle, Isaiah B. Method of incinerating refuse. 3,697,256, Cl. 75-40.000.
Engle, Thomas H., to General Signal Corporation. Brake head-centering device for railway brake apparatus. 3,696,892, Cl. 188-212.000.
Engleman, Donald E., to American Air Filter Company, Inc. Tapered separator for pleated filter. 3,696,592, Cl. 55-500.000.
Ensminger, Clifford H.; and Ruggiero, Edward M., to Texas Instruments, Incorporated. Multi-character electronic display. 3,698,012, Cl. .
Entreprise de Recherches et D'Activities Petrolieres (ELF): *See—*
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Erekson, Arthur B.; and Lane, Lamcolm S., to Borden Inc. Apple slicer and celler. 3,696,847, Cl. 146-42.000.
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Erickson, Keith Duane. Car top carrier. 3,696,979, Cl. 244-42.10e.
Ermanco Incorporated: *See—*
Fleischauer, Fred J.; and Hammond, Theodore (said Hammond assor. to), 3,696,912.
Ermidis, Nicholas Peter, to American Cyanamid Company. Vulcanizable elastomer composition containing triarylphosphine and triallylcyanurate. 3,697,620, Cl. 260-836.
Ernisse, Paul J., to Eastman Kodak Company. Camera with metered film advance and double exposure prevention. 3,696,723, Cl. 95-31.0fm.
Ernsberger, Glenn W.: *See—*
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Eu Daly, Ronald Dale: *See—*
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Eurofina-Investimentos e Estudos Techicos e Financeiros, S.A.R.L.: *See—*
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Evans, Robert F.: *See—*
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Faber, Kurt H. A. E.; and Norgen, Lars E., to Sandvikens Jernverks AB. Boring bar insert. 3,697,187, Cl. 408-154.000.
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Faith, William T., Jr.; Steigerwalt, Ronald B.; and Robbins, Ernest A., to Rohm and Haas Company. Fish protein solubilization using alkaline bacterial protease. 3,697,285, Cl. 99-18.000.
Falke, Jay F. Tubing coupling. 3,697,102, Cl. 285-340.000.
Falkehag, Sten I., to Westvaco Corporation. Hexamethylene tetramine derivatives of alkalilignins. 3,697,497, Cl. 260-124.00a.
Fancher, Llewellyn W., to Stauffer Chemical Company. Cinnamyl carbamates. 3,697,582, Cl. 260-482.
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Faris, William R.; and Harokopus, William P., to Bendix Corporation, The. Rear end warning system for automobiles. 3,697,985, Cl. 343-5.0pd.
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Farley, Holt A., to American Aluminum Company. Adjustable winch for cargo tie-down. 3,697,045, Cl. 254-51.000.
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Farley, Rene; and Rocheleau, David O., to Canadian Patents and Development Limited. Pitch sustaining means for a key-operated monophonic instrument. 3,697,663, Cl. 84-1.130.
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Faustlin, James L.; and Saenz, Eliseo, to Collins Radio Company. Microwave modulator having input modulation signal probe with adjustable electrical characteristics. 3,697,893, Cl. 332-16.00r.
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, to Ciba-Geigy Corporation. Process for splitting the 7-N-acyl group from cephalosporin compounds. 3,697,515, Cl. 260-243.00c.
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Feinberg, Irving; Langdon, Jack L.; and Sitler, Carl L., to International Business Machines Corporation. Monolithic integrated structure including fabrication thereof. 3,697,318, Cl. 117-212.000.
Feldstein, Nathan, to RCA Corporation. Method of metallizing an electrically insulating surface. 3,697,319, Cl. 117-212.000.
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Fenton, Donald M., to Union Oil Company of California. Preparation of a ketone and an aldehyde by carbonylation of an olefin in the presence of a secondary alcohol. 3,697,600, Cl. 260-593.00r.
Fenton, Roger Wakfield, to Marconi Company Limited, The. Electronic character generating. 3,697,976, Cl. 340-324.00a.
Fernkopf, Forrest D.; and Wehmeier, Gilbert E. Film strip cartridge. 3,697,159, Cl. 352-128.000.
Fetter, John T.; and Olsson, Nils O., to International Harvester Company. Tilt wheel chain drive. 3,696,681, Cl. 74-13.000.
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Field, George Francis; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Irradiated products of 3H-1,4-benzodiazepine 4-oxides. 3,697,545, Cl. 260-333.000.
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Fitchen, Peter F. Stapler adapter for installing doors. 3,696,984, Cl. 227-110.000.
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Fleming, Dias, to Zenith Radio Corporation. Acoustic surface wave transmission device. 3,697,899, Cl. 333-30.000.
Fletcher, Ivan H., Jr.: *See—*
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Flint, William T.; and Tibbetts, George C. Transducers having piezoelectric struts. 3,697,790, Cl. 310-8.300.
Floreen, Stephen, to International Nickel Company, Inc., The. Highly corrosion resistant maraging stainless steel. 3,697,258, Cl. 75-128.00b.
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Fogle, Mark V.; and Horger, Georg, to National Cash Register Company, The. Encapsulation process by complex coacervation using inorganic polyphosphates and organic hydrophilic polymeric material. 3,697,437, Cl. 252-316.000.
Fogt, Thomas H., to General Motors Corporation. Ejecting receptacle for plastic ice tray. 3,696,635, Cl. 62-344.000.
Folmer, Orville F., Jr., to Continental Oil Company. Method for the detection of change in density of a carrier gas and apparatus therefor. 3,697,750, Cl. 250-43.50d.
Foltz, Thomas R.; Hegarty, Gerald R.; Hopkins, Ervin W.; and Wilcox, Joseph C., to Armour and Company. Sausage maturity measuring device. 3,696,662, Cl. 73-81.000.
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Fortier, Andre. Fluid devices for stabilizing the position of a moving element. 3,697,142, Cl. 308-5.000.
Foster, Vincent F.; and Schreitz, Robert A., to Inductosyn Corporation. Tensioning device for position measuring transformer. 3,696,667, Cl. 73-143.000.
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Morris, Horton H.; Olivier, James P.; and Prescott, Paul I., 3,697,474.
Morris, Horton H.; and Prescott, Paul I., 3,697,475.
Freericks, Lambert: *See—*
Buonsante, John J.; Freericks, Lambert, Haarmann, Howard J., and Sieglinger, John C., 3,697,702

Freimuth, John H.; and Hurlburt, Joseph C., to Sperry Rand Corporation. Stroking jack shaft for a belt drive. 3,696,594, Cl. 56-15.200.

Freudewald, Joachim E.; and Konrad, Frederic M., to Union Carbide Corporation. Para-phenylphenol preparation. 3,697,606, Cl. 260-620.000.

Frey, Donald J.; and Opp, Warren P., to Combustion Engineering, Inc. Automatic ignition system for flaring waste combustible gases. 3,697,229, Cl. 23-277.00c.

Freyheit, Paul J.; and Lustig, Claude D., to Sperry Rand Corporation. Process for manufacturing cold cathode gas discharge devices and the product thereof. 3,697,797, Cl. 313-217.000.

Friedman and Goodman: *See—*
Posner, Seymour J., 3,697,787.

Friedrich Deckel Prazisions Mechanik und Maschinenbau: *See—*
Bschorer, Konrad, 3,697,041.

Fritz, Robert William: *See—*
Jacobs, Wayne John; Fritz, Robert William; and Peiffer, Howard Richard, 3,697,389.

Fritzsche, Harold L., to General Electric Company. Apparatus for applying powered coating material to an article. 3,696,780, Cl. 118-69.000.

Frolov, Jury Fedorovich; Nechaev, Ivan Petrovich; Basalaev, Anany Maximovich; Bedarev, Jury Dmitrievich; and Golikov, Viktor Valerjanovich. Device for sealing gap between electrode and lining of electric arc furnace. 3,697,660, Cl. 13-17.

Fruhholz, Georg: *See—*
Acker, Josef; Hofmann, Albert; and Fruhholz, Georg, 3,696,845.

Fuchs, Edward O.: *See—*
Baldwin, Wiley M.; Fuchs, Edward O.; and Sharp, Donald J., 3,697,255.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Continuous material deformation process and apparatus therefor. 3,696,652, Cl. 72-60.000.

Fuji Photo Film Co., Ltd.: *See—*
Hayakawa, Yoshihide; and Noguchi, Yasuhiro, 3,697,273.
Hayakawa, Yoshihide; and Satomura, Masato, 3,697,275.
Kimura, Shiro; Sadao, Ishige; and Kobayashi, Teruo, 3,697,540.
Ono, Hisatake; Osada, Chiakai; Watarai, Syu; and Katsuyama, Harumi, 3,697,266.
Takenaka, Haruo; Okiyama, Toshiaki; and Hiratsuka, Nobuo, 3,697,450.
Tatsuta, Sumitaka; Ueno, Wataru; Tajima, Tatsuya; and Akao, Mutsuo, 3,697,305.

Fujimuto, Yoshihisa; Kimura, Yoshio; Terasaki, Iwao; and Kitago, Takanobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for polymerizing liquids to polymers. 3,697,230, Cl. 23-283.000.

Fujisawa, Tamotsu; and Kojima, Takakazu, to Sagami Chemical Research Center. Proce for preparing 4-arylthio-2,6-dialkylphenols. 3,697,601, Cl. 260-609.00f.

Fukumoto, Hisashi: *See—*
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Fukuoka, Ichiro; Kimura, Shoji; Nishimura, Takehiko; and Takahashi, Satoshi, to Denki Kogaku Kogyo Kabushiki Kaisha. Method of producing 2-chlorobutadiene-1,3. 3,697,609, Cl. 260-655.000.

Fulkerson, Brazelton: *See—*
Grant, Peter M.; Fulkerson, Brazelton; and Mench, John W., 3,697,640.

Furlong, Dale A.: *See—*
Smith, Richard D.; and Furlong, Dale A., 3,696,795.

Furnier- und Sperrholzwerk, J. F. Werz, Jr., K.G.: *See—*
Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, 3,697,208.

Furuichi, Masayoshi; and Konuma, Takaaki, to Katsurogawa Denki Kabushiki Kaisha. Heating device for copying machines. 3,697,722, Cl. 219-216.000.

Gallagher, John P.; Meyers, Robert M.; Sorg, Earl H.; and Willitts, Clark M., to Thiokol Chemical Corporation. Liquid polysulfide polymeric glass-to-metal sealant composition. 3,697,472, Cl. 260-33.80r.

Gallien, Jacqueline: *See—*
Kalopissis, Gregoire; Gascon, Jean; Bugaut, Andree; Gallien, Jacqueline; and Gaston-Breton, Hubert, 3,697,215.

Ganter, Wolfgang; Assmus, Friedrich; and Sonntag, Manfred, to Gebruder Junghans Gesellschaft mit beschrankter Haftung. Piezoelectric oscillator in the form of a tuning fork. 3,697,766, Cl. 310-8.200.

Garabrant, Arthur R.; Beerbower, Alan; and Wilson, James A., to Esso Research and Engineering Company. Method and apparatus for measuring the yield stress of non-Newtonian fluids. 3,696,661, Cl. 73-54.000.

Gardner-Denver Company: *See—*
Palauro, Dieter K.; and Mayer, James R., 3,697,113.

Garen, Eric R.: *See—*
Beard, Terry D.; and Garen, Eric R., 3,697,675.

Garnet Products Limited: *See—*
Waplington, Geld A. P., 3,696,776.

Garrett Corporation, The: *See—*
Schaffer, David J.; and Sutton, Trevor G., 3,696,895.

Garrett, William R., to Smith Industries, International, Inc. Drill pipe wear sleeve. 3,697,141, Cl. 308-4.00a.

Garwood, Moody Ray. Self-cleaning bird bath. 3,696,786, Cl. 119-1.000.

Gary, Wardell: *See—*
Wilson, John I.; and Gary, Wardell, 3,697,810.

Garzia, Aldo, to Istituto Chemioterapico Italiano S.p.A. (3,4,5-Trimethoxy-benzamido)-alkanoic acids for prophylaxis and treatment of cardiac disorders. 3,697,563, Cl. 260-404.000.

Gasc, Jean-Claude: *See—*
Boucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,697,556.
Bucourt, Robert; Nedelec, Lucien; Gasc, Jean-Claude; and Pierdet, Andre, 3,697,510.

Gascon, Jean: *See—*
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Gaston-Breton, Hubert: *See—*
Kalopissis, Gregoire; Gascon, Jean; Bugaut, Andree; Gallien, Jacqueline; and Gaston-Breton, Hubert, 3,697,215.

Gates, Percival T., Jr.; and Libbey, Albert H., to EG&G, Inc. Facsimile scan line response equalization system. 3,697,683, Cl. 178-7.100.

Gates Rubber Company, The: *See—*
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Gatzi, Karl: *See—*
Menasse, Raphael; and Gatzi, Karl, 3,697,589.

Gauck, Herbert M. Gas vapor device. 3,696,799, Cl. 123-136.000.

Gauthron, Maurice, to Commissariat a l'Energie Atomique. Vented nuclear fuel element. 3,697,377, Cl. 171-79.000.

Gavrun, Michael I., to Curtiss-Wright Corporation. Fuel combustion in a rotary piston internal combustion engine. 3,696,796, Cl. 123-8.010.

Gay Toys, Inc.: *See—*
Littleton, Arnold B., 3,696,440.
Littleton, Arnold B., 3,696,441.

Gaylord, John F., Jr., to Medical Specialties, Inc. Cervical callar having means for providing a plurality of different angular positions. 3,696,810, Cl. 128-75.000.

Gebruder Junghans Gesellschaft mit beschrankter Haftung: *See—*
Ganter, Wolfgang; Assmus, Friedrich; and Sonntag, Manfred, 3,697,766.

Gebruder Junghans G.m.b.H.: *See—*
Scholz, Gunther, 3,696,606.

Gee, Gordon E., to Electro Corporation. Function control. 3,697,779, Cl. 307-235.000.

Gehre, Kurt: *See—*
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Geigy Chemical Corporation: *See—*
Menasse, Raphael; and Gatzi, Karl, 3,697,589.

Geigy Chemical Corporation, mesne: *See—*
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Geils, Alfred E.; Raymond, William J.; Roberts, Richard W.; and Shreck, Peter K., to Borg-Warner Corporation. Audio-visual educational apparatus. 3,697,162, Cl. 353-120.000.

General Electric Company: *See—*
Bialous, Charles A.; Campbell, Allen J.; and Liberti, Frank N., 3,697,481.
Correll, Edward Max, 3,697,823.
Dinger, Edward H., 3,697,844.
Eichelberger, Charles D.; and Musselman, Frank L., 3,697,819.
Fritzsche, Harold L., 3,696,780.
Huth, Gerald C.; and Davies, Robert L., 3,697,829.
Johnson, Frederick R.; and Palmer, David R., 3,697,195.
Kornrumpf, William P., 3,697,716.
Kornrumpf, William P.; and Harnden, John D., Jr., 3,697,717.
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Lester, Frank Backus; Laurent, Robert Parker; and Titemore, Robert George, 3,696,704.
Little, David W., 3,697,811.
Mefford, Carl R.; Lass, James L.; Smith, Bart A.; Venier, Domic A.; and Trocki, Thomas, 3,697,376.
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Orth, Edward D.; and Yerman, Alexander J., 3,697,917.
Orth, Edward D.; and Yerman, Alexander J., 3,697,918.
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Fleischauer, Fred J.; and Hammond, Theodore (said Fleischauer assor. to), 3,696,912.

General Motors Corporation: *See—*
Carlin, Ralph E.; and Rigg, Ralph R., 3,696,632.
Christman, Willard A.; and Jones, Billy R., 3,697,814.
Diener, James H., 3,697,108.
Fogt, Thomas H., 3,696,635.
Koivunen, Erkki A., 3,696,893.
Matouka, Michael F., 3,697,782.
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General Signal Corporation: *See—*
Bolton, Norman A., 3,697,745.
Engle, Thomas H., 3,696,892.

General Telephone Company of California: *See—*
Kira, Hiroshi, 3,696,855.

Genisco Technology Corporation: *See—*

Godinez, Peter A., Jr., 3,696,758.

Genta, Guido R., to American Aniline Products, Inc. Formylaminothioaryloxyanthraquinones. 3,697,554, Cl. 260-377.000.

Gentellalli, Gerald F. Adjustable quiver. 3,696,978, Cl. 224-1.00b.

Genuit, Luther L.: *See—*
Nowell, John R.; and Genuit, Luther L., 3,697,853.

Georgescu, Gheorghe, to Uzinele Electronica Bucharest. Method and apparatus for obtaining frequency marker pips on the wobbulated generators. 3,697,878, Cl. 328-17.000.

Gerbitz, Clarence G., to International Business Machines Corporation. Transistor switching regulator. 3,697,852, Cl. 321-2.000.

Gerhold, Clarence G.: *See—*
Boyd, David M.; and Gerhold, Clarence G., 3,696,618.

Gernert, Brooke E.: *See—*
Straccia, William J.; Gernert, Brooke E ; and Sherer, Ronald B., 3,696,936.

Geronime, Robert L., to Rosemount Inc. Heated roll temperature measurement compensator assembly. 3,697,726, Cl. 219-469.000.

Giambalvo, Vito Albert; and Ruby, Philip Randolph, to American Cyanamid Company. Preparation of pigmentary beta-quinacridone. 3,697,464, Cl. 260-279.00r.

Gibbs, Ralph Stuart. Solid state relay. 3,697,772, Cl. 307-244.000.

Giberson, Dudley F., Jr. Gas burner for furnaces, kilns, and the like. 3,697,000, Cl. 239-407.

Gibson, Earl D., to North American Rockwell Corporation. Fine timing recovery system. 3,697,689, Cl. 178-69.50r.

Gibson, Franklin E.: *See—*
Swensen, Eugene L.; and Gibson, Franklin E., 3,696,578.

Gifford, Robert T., to Vernay Laboratories, Inc. Valve responsive to temperature changes over a limited range. 3,696,997, Cl. 236-102.000.

Gilbert, Barrie, to Tektronix, Inc. Solid state scanning device. 3,697,785, Cl. 307-303.000.

Gillette Company, The: *See—*
Laiderman, Donald David, 3,697,644.

Gilman, Richard F.: *See—*
Johnson, Allan M.; and Gilman, Richard F., 3,697,410.

Gilmour, A. Scott, to Technomedic Corporation. Methods and means for determining liquid level in a container. 3,696,675, Cl. 73-295.00.

Girard, Donald A. Tube clamp. 3,697,027, Cl. 248-68.0cb.

G.K.N. Birfield Transmissions Limited: *See—*
Smith, Henry Thomas; and Millward, Thomas Hughes, 3,696,638.

Glasow, Gunthard; Grosse, Klaus; Hykel, Knut; Schleifer, Werner; Karste, Eberhard; and Kliehe, Helmut, to Veb Wtz fur Bekleidungstechnik. Method of and apparatus for folding, sewing and conveying sheet materials. 3,696,766, Cl. 112-121.110.

Glass, Marvin, & Associates: *See—*
Licitis, Gunars, 3,697,086.

Glassburner, Thomas M., Jr. Training aid for sprinters. 3,697,065, Cl. 272-59.00r.

Glatt, Otto G. Traveling cylinder printer with selective indicia on endless bonds. 3,696,740, Cl. 101-111.000.

Glazo Laboratories Limited: *See—*
Shalley, Henry M., 3,697,378.

Glickman, Richard B.; and Hartz, George R., to Berkey/Colortran, Inc. Extensible leg structure for tripod or the like. 3,697,031, Cl. 248-171.000.

Glotov, Evgeny Borisovich: *See—*
Stebakov, Emelyan Semenovich; Leontiev, Alexandr Ivanovich; Simpura, Petr Mikhailovich; Kozlov, Ivan Ivanovich; Glotov, Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich, 3,697,038.

Gluck, Julius; and Lara, Raul, to Sperry Rand Corporation. Capacitive key. 3,696,908, Cl. 197-98.000.

Gluth, Norman P.; and Houghton, Richard A., to LTV Electrosystems, Inc. Digital speech signal synthesizer. 3,697,699, Cl. 179-1.0sa.

Gnecco, Arthur J.: *See—*
Peterson, Victor S.; and Gnecco, Arthur J., 3,696,679.

Godfrey, James P., to Sanders Associates, Inc. Methods and apparatus for generating electrical wave forms and guadraturephase trapezoidal and or simusoidal waveforms. 3,697,877, Cl. 328-13.000.

Godinez, Peter A., Jr., to Genisco Technology Corporation. Locomotive signaling and control system. 3,696,758, Cl. 105-61.000.

Godtfredsen, Wagn Ole: *See—*
Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, 3,697,507.

Goellner, Allan R., to Clark-Reliance Corporation. Automatic steam trap. 3,696,829, Cl. 137-183.000.

Goldman, Samuel C.; and Albrecht, Lance M., to Picker Corporation. Computer system and color adapter for imaging detectors and method of operation. 3,697,956, Cl. 340-172.500.

Goldstein, Robert P.; and Agnew, Frank R., to Westinghouse Electric Corporation. Chemical constituent sampler. 3,697,227, Cl. 23-253.0tp.

Golikov, Viktor Valerjanovich: *See—*
Frolov, Jury Fedorovich; Nechaev, Ivan Petrovich; Basalaev, Anany Maximovich; Bedarev, Jury Dmitrievich; and Golikov, Viktor Valerjanovich, 3,697,660.

Goodale, William B., to Ford Motor Company. Hydraulic steering system having auxiliary power source. 3,696,613, Cl. 60-52.00s.

Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,697,356.
Starmer, Philip H., 3,697,490.

Goodrich, Eugene A.; and Johnson, Robert H. Automatic balancer for rotating masses. 3,696,688, Cl. 74-573.000.

Goodrich, Lloyd D.: *See—*
Ross, Howard R.; Goodrich, Lloyd D.; and Mc Queen, Norman, 3,696,753.

Goodyear Aerospace Corporation: *See—*
Apicella, Anthony M., Jr.; and Franks, John T., Jr., 3,698,011.

Goodyear Tire & Rubber Company, The: *See—*
Hinks, William L.; and Hosterman, Harry L., 3,696,655.
Wilson, Joan L., 3,697,491.

Gordon, Gary B., to Hewlett-Packard Company. Automatic multirange display apparatus and control therefor. 3,697,960, Cl. 340-172.500.

Gordon, Richard O., to Hainischfeger Corporation. Vehicle steering system of the fluid power type and spring centered, spring modulated control cylinder therefor. 3,696,881, Cl. 180-79.20r.

Gore, William C.; and Shapiro, Eugene B., to Beatrice Foods Company. Clutch for use in the plumbing field. 3,696,639, Cl. 64-29.000.

Gossen, B., & Co. GmbH: *See—*
Pfaffenberger, Erwin; and Forsterlug, Hans, 3,697,179.

Gosudarstvenny Sojuzny Institut Po Proektirovanijuagresgatov ; Staleliieinogo i Prokatnogo Proizvodstva Dlya Chernou Metallurgii: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Goto, Minoru: *See—*
Matsuoka, Toshiro; Takeda, Keinosuke; Goto, Minoru; and Miyake, Akira, 3,697,647.

Gottschall, Gernot, to Morat, Franz, GmbH, Firma. Film-driving roller with device for stopping the drive mechanism if the film is overloaded. 3,696,982, Cl. 226-25.000.

Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,697,643.

GPE Controls, Inc.: *See—*
Reip, Raymond G., 3,696,837.

Grabill, Paul J., Jr.; and Suttkus, David J., to TRW Inc. Hydraulic hold-off for a mechanical feed-back system. 3,696,615, Cl. 60-54.60p.

Grace, W. R., & Co.: *See—*
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,395.
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,396.
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,397.
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,402.
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,621.
Kehr, Clifton L.; and Wszolek, Walter R., 3,697,622.
Merrill, Edward W.; and Pikarsky, Jacob M., 3,696,956.
Smith, Jean G.; and Fitch, Frederick T., 3,697,435.

Graff, David F.: *See—*
Anderson, Harold C.; and Graff, David F., 3,697,804.

Grant, John; and Longley, Miner R., to Aerotronic Associates, Inc. Cooling hood for supporting printed circuit boards during burn-in 3,697,815, Cl. 317-100.000.

Grant, Michael P.; and Freeh, Edward J., to Industrial Nucleonics Corporation. Grinding mill method and apparatus. 3,697,003, Cl. 241-24.000.

Grant, Peter M.; Fulkerson, Brazelton; and Mench, John W., to Eastman Kodak Company. Rumen stable medicament and/or nutrient compositions. 3,697,640, Cl. 424-35.000.

Grant, Roy Arthur, to Tasman Vaccine Laboratory Limited. Processes for the purification of waste effluent. 3,697,419, Cl. 210-27.000.

Graphic Sciences, Inc.: *See—*
Von Hippel, Eric A., 3,697,691.

Gray, Linsley S., Jr.: *See—*
McDonough, John M.; and Gray, Linsley S., Jr., 3,697,616.

Greason, William Wallace, III; and Weiner, David William, to Bell Telephone Laboratories, Incorporated. Line hunting circuitry for common control communications switching system. 3,697,700, Cl. 179-18.0ab.

Greason, William Wallace, III; and Weiner, David William, to Bell Telephone Laboratories, Incorporated. Scannable line circuit for common control telephone system. 3,697,701, Cl. 179-18.0fa.

Greenberg, Myron M.; Macintyre, Steven A.; and United States of America, Navy, to System for generating compensating signals for magnetic effects of aircraft on mad system. 3,697,869, Cl. 324-43.00r.

Greenfield, Stephen J.; Howard, Anthony; and Knapp, Lowell W., to Xerox Corporation. Document handling apparatus. 3,697,063, Cl. 271-4.000.

Greenspan, George: *See—*
Buzby, George C., Jr.; Greenspan, George; and Buhle, Emmett L., 3,697,379.

Greenway, John Michael: *See—*
Elliott, David Robert; and Greenway, John Michael, 3,696,478.

Gregory, John T.: *See—*
Hobson, Willis S.; Gregory, John T.; and Klienhaus, Clarence H., 3,697,388.

Greskamp, John B., to Mallory, P. R., & Co., Inc. Capacitor having an anchoring spike. 3,697,824, Cl. 317-230 000

Griebsch, Eugen: *See—*
Burba, Christian; Drawert, Manfred, Voigt, Hartmut; and Griebsch, Eugen, 3,697,458.

Grieg, Donald D.; and Schoengold, Herbert, to Electronic Research Associates, Inc. Decorative loudspeakers. 3,696,885, Cl. 181-31.00b.

Griffes, Milton W., to Hubbell, Harvey, Incorporated. Ribbon resistor with supporting means. 3,697,923, Cl. 338-280.000.

Grigsby-Barton, Inc.: *See—*
Pascente, Joseph E., 3,697,774.

Grisard, Jean-Claude: *See—*
Autechaud, Denis; and Grisard, Jean-Claude, 3,697,022.

Grolet, Pierre: *See—*
Chatard, Michel; Grolet, Pierre; and Reynard, Remi, 3,697,114.

Grosse, Klaus: *See—*
Glasow, Gunthard; Grosse, Klaus; Hykel, Knut; Schleifer, Werner; Karste, Eberhard; and Kliehe, Helmut, 3,696,766.

Grossel, Stanley S.: *See—*
Braun, Martin; Grossel, Stanley S.; and Singer, Barry M., 3,697,795.

Grun, Gustav. Method of treating powder or granulate substances. 3,697,286, Cl. 99-56.000.

Grunewalder, Valentine J.; and Koeble, Earl A., to National Starch and Chemical Corporation, mesne. Pressure-sensitive adhesive. 3,697,618, Cl. 260-78.50r.

Gruzaltsski, James A. Leg supporting device. 3,696,826, Cl. 135-45.000.

Gryctko, Carl E.; Strobel, Albert; and Ball, Kenneth D., to I-T-E Imperial Corporation. Rotary handle operator with reversible cover latch. 3,697,714, Cl. 200-172.00a.

GTE Sylvania Incorporated: *See—*
Dale, Brian, 3,697,830.
Donofrio, Robert L.; and Rehkopf, Charles H., 3,697,301.

Guanella, Gustav, to Patelhold Patentverwertungs- & Elektro-Holding AG. Low frequency distartion correction in electric signaling systems. 3,697,875, Cl. 325-65.000.

Gubitz, Franklyn W., to Sterling Drug Inc. Aromatic substituted amidines. 3,697,505, Cl. 260-239.00b.

Gudjonsson, Ellidi Norddahl. Automatic fishing reel. 3,696,545, Cl. 43-15.000.

Guignon, Helen G.: *See—*
Guignon, John E.; Guignon, Helen G.; and Guignon, John E., Jr., 3,696,825.

Guignon, John E.; Guignon, Helen G.; and Guignon, John E., Jr. Tank washer. 3,696,825, Cl. 134-167.00r.

Guignon, John E., Jr.: *See—*
Guignon, John E.; Guignon, Helen G.; and Guignon, John E., Jr., 3,696,825.

Gunther, Gregory M.; Lewis, J. Stephen; Nishiguchi, Masakatsu; Robson, George E.; Wagner, Raymond P.; and Yarbrough, William R., to Mattel, Inc. Retractable hair figure toy. 3,696,552, Cl. 46-135.000.

Gurney, John A.: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,585.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,592.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,604.

Gygrynuk, Walter. Mobile vehicle testing apparatus. 3,697,123, Cl. 296-24.000.

Haarmann, Howard J.: *See—*
Buonsante, John J.; Freericks, Lambert; Haarmann, Howard J.; and Sieglinger, John C., 3,697,702.

Haas, Herbert: *See—*
Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, 3,697,208.

Habermeier, Juergen: *See—*
Porret, Daniel; and Habermeier, Juergen, 3,697,539.

Hacker, Philip S.: *See—*
Jones, William S.; and Hacker, Philip S., 3,697,993.

Hadley, Floyd H. Boat handling apparatus. 3,697,096, Cl. 280-947.32.

Haentjens, Walter D. Truncated conical drag pump. 3,697,190, Cl. 415-73.000.

Hafler, David, to Dynaco Inc. Two-channel, four-component stereophonic system. 3,697,692, Cl. 179-1.00g.

Haines, Paul G.; and Albert, Harry Elmer; deceased (by Albert, Dorothy S.; executrix), to Pennwalt Corporation. N-Alkyl-N-aryl-hydroxylamines as shortstopping agents and popcorn polymer inhibitors. 3,697,470, Cl. 260-29.7.

Hainischfeger Corporation: *See—*
Gordon, Richard O., 3,696,881.

Halkey-Roberts Corporation: *See—*
Mackal, Henry H.; and Behnke, Kenneth P., 3,696,494.

Hall, Homer J.: *See—*
Spenadel, Lawrence; Hall, Homer J.; and Kirshenbaum, Isidor, 3,697,455.

Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Ciba Geigy Corporation. Polysubstituted dihydropyrenes. 3,697,585, Cl. 260-488.00b.

Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Ciba Geigy Corporation. Polysubstituted dihydropyrenes. 3,697,592, Cl. 260-562.00r.

Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Ciba-Geigy Corporation. Polysubstituted dihydropyrenes. 3,697,604, Cl. 260-618.00f.

Hallin, Peter R., to Croft Metals, Inc. Adjustable aligning apparatus for movable panels. 3,696,560, Cl. 49-425.000.

Hamada, Teruma, to Amada Company Limited. Jig apparatus for a bending press. 3,696,658, Cl. 72-481.000.

Hamaker, Ralph A.; and Zucker, Edwin, to Xerox Corporation. Optical projection apparatus. 3,697,167, Cl. 355-8.000.

Hamblin, Robert J. J., to Universal Oil Products Company. Simultaneous production of gasoline and LPG. 3,697,413, Cl. 208-59.000.

Hambrick, John Earl. Stand for christmas trees. 3,697,026, Cl. 248-46.000.

Hamilton, Stoddard C., III. Lock-up device for fluid unit. 3,696,896, Cl. 192-3.280.

Hammann, Ingeborg: *See—*
Schmidt, Karl-Julius; and Hammann, Ingeborg, 3,697,518.

Hammell, Kemper Martel, to AMP Incorporated. Electrical connector. 3,697,928, Cl. 339-45.000.

Hammett, Warren Gail: *See—*
Aaron, Marvin Robert; Hammett, Warren Gail; and Oberst, James Francis, 3,697,690.

Hammond Machinery Builders, Inc.: *See—*
Colwell, Lester V., 3,697,403.

Hammond, Peter George Henry, to Bunker-Ramo Corporation. Potentiometer. 3,697,922, Cl. 338-163.000.

Hammond, Theodore: *See—*
Fleischauer, Fred J.; and Hammond, Theodore, 3,696,912.

Hanaoka, Masafumi, to Nippon Electric Co., Ltd. Plural photo-diode target array. 3,697,832, Cl. 317-235.00r.

Hand, Richard Dewey. Portable paint roller cleaning apparatus. 3,696,457, Cl. 15-4.000.

Hanewinkel, Lorenz. Visual imformation apparatus. 3,696,539, Cl. 40-125.00r.

Hansch, Ferdinand: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 3,697,471.

Hansen, Hans John, to Hoffmannla Roche Inc. Antigens. 3,697,638, Cl. 424-1.000.

Hanson, Lawrence G., to Burroughs Corporation. High-speed parallel binary adder. 3,697,735, Cl. 235-175.000.

Hanson, Merle E.: *See—*
Colgate, Stirling A.; Kempton, Marvin L.; Hanson, Merle E.; Munson, William O.; and Nicholson, Dallas E., 3,696,750.

Hara, Nobuhiro: *See—*
Mitani, Masao; Aihara, Katzuzo; Kudo, Mitsuhiro; Hara, Nobuhiro; Irie, Fujio; and Yamafuji, Kaoru, 3,697,826.

Hardy, Edgar E.: *See—*
Parts, Leo P.; and Hardy, Edgar E., 3,696,742.

Harefield Rubber Company Limited, The: *See—*
New, John D., 3,697,838.

Harkins, Chester M.; and Harkins, Delue M. Monitoring attachment for self-service gasoline pumps. 3,697,981, Cl. 340-359.000.

Harkins, Delue M.: *See—*
Harkins, Chester M.; and Harkins, Delue M., 3,697,981.

Harland, Philip W., to Ametek, Inc. Plastic hairspring. 3,696,687, Cl. 74-431.000.

Harlock, George H.; and Burkard, Edward A., to National Gypsum Company. Lightweight gypsum panel. 3,697,366, Cl. 161-159.000.

Harmer, David E.; Jarema, John R.; and Leng, Douglas E., to Dow Chemical Company, The. Method of bonding hollow fibers to plastic resin supports by radiation grafting. 3,697,351, Cl. 156-272.

Harnden, John D., Jr.: *See—*
Kornrumpf, William P.; and Harnden, John D., Jr., 3,697,717.

Harokopus, William P.: *See—*
Faris, William R.; and Harokopus, William P., 3,697,985.

Harp, Richard D.; and Williams, Lyle G., to United States of America, Army. Biological door seal. 3,696,561, Cl. 49-483.000.

Harper, Foye H. Seafood sorter. 3,696,925, Cl. 209-109.000.

Harper, James E. Desensitizing non-ferrous lithographic printing plates with aqueous phosphate glass compositions. 3,696,746, Cl. 101-465.000.

Harri, Eugen: *See—*
Closse, Annemarie; and Harri, Eugen, 3,697,650.

Harris, Albert Edward; and Blundell, Ian, to Ilford Limited. Photographic material comprising a silver halide element with an overlayer of gelatin hardened with mucochloric acid. 3,697,278, Cl. 96-67.000.

Harris, Edson Sheppard, Jr.: *See—*
Schuff, Richard William; and Harris, Edson Sheppard, Jr., 3,696,987.

Harris, John L.; and Hellman, Robert W., to Del Amo Enterprises, Inc. Life saving equipment. 3,696,453, Cl. 9-14.000.

Harris, Julian Taylor; and Turner, Thomas Adkins, to Fountain City Safety Corporation. Latching warning device for fifth wheel assemblies. 3,697,974, Cl. 340-275.000.

Harrison, Robert Henry, to Davy and United Engineering Company Limited. Forging manipulator. 3,696,651, Cl. 72-22.000.

Hartmann, Heinrich: *See—*
Naarmann, Herbert; and Hartmann, Heinrich, 3,697,575.

Hartmann, Rudolf; and Zimmermann, Horst. Reciprocating piston machine with a rotary hydraulic displacer between pistons and machine shaft. 3,696,614, Cl. 60-54.50r.

Hartmann, Rudolf, to Bell & Howell Company. Dual beam rangefinder. 3,696,724, Cl. 95-44.00c.

Hartwell Corporation, The: *See—*
Poe, Lloyd Richard, 3,696,891.

Hartz, George R.: *See—*
Glickman, Richard B.; and Hartz, George R., 3,697,031.

Harvey, Samuel E.: *See—*
Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., 3,696,951.

Hase, Marie: *See—*
Riester, Oskar; and Hase, Marie, 3,697,282.

Hasenbank, Kenneth N.: *See—*
Thorud, Richard A.; Snegoski, James J.; and Hasenbank, Kenneth N., 3,696,593.

Hashimoto, Takeo: *See—*
Masuda, Tetuzo; Kurosawa, Kenjiro; Hashimoto, Takeo; and Izumi, Takahisa, 3,696,730.

Haskett, Barry F.: *See—*
Bonilla, Charles F., 3,697,234.

Haskon, Inc.: *See—*
Tiffin, James R.; and Trimble, David C., 3,697,126.

Hastalis, Christopher: *See—*
Levine, Sidney V.; and Hastalis, Christopher, 3,697,061.

Hastings Manufacturing Company: *See—*
Quinlan, William J.; and Huver, Lawrence L., 3,696,497.

Hastings, Martin R.; and Luckock, Glenn W., to PPG Industries, Inc. Air drying poly(vinylidene fluoride) coatings. 3,697,298, Cl. 117-2.00r.

Hatcher, Cecil W.; and Warner, Gene. Concrete pavement cutting machine. 3,697,135, Cl. 299-39.000.

Hathaway, Richard Allen, to Ampex Corporation. Automatic threading video recorder. 3,697,679, Cl. 178-6.60a.

Hatton, John H. Agricultural product and process. 3,696,559, Cl. 47-9.000.

Haugen, Ronald L.: *See—*
Dussourd, Jules L.; and Haugen, Ronald L., 3,696,588.

Haughney, Joseph P., to Sherwin-Williams Company, The. Aqueous dispersion of polycarboxylic acid resin with silica. 3,697,467, Cl. 260-29.6ta.

Hawkins, Benjamin K. Automatic bookmark. 3,697,100, Cl. 281-42.000.

Hayakawa, Toshio: *See—*
Mohri, Etsuzo; Hayakawa, Toshio; and Nishikawa, Akira, 3,697,904.

Hayakawa, Yoshihide; and Noguchi, Yasuhiro, to Fuji Photo Film Co., Ltd. Formation of photographic images. 3,697,273, Cl. 96-35.100.

Hayakawa, Yoshihide; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Process for polymerizing vinyl compounds. 3,697,275, Cl. 96-48.00r.

Hayes, Charles W., to United Aircraft Corporation. Hollow turbine blade. 3,697,192, Cl. 416-96.000.

Hayes, Robert R.: *See—*
Charman, Walter M., Jr.; Hayes, Robert R.; Middaugh, George J., Jr.; and Wetzig, John M.; III, 3,697,631.

Hayre, Harbhajan Singh. Remote actuated pollution and oil flow control system. 3,697,952, Cl. 340-147.00r.

Hays, Lance G.: *See—*
United States of America, National Aeronautics and Space Administration, 3,696,833.

Healey, Daniel J., III; and Driscoll, Michael M., to United States of America, Navy, mesne. Wide deviation voltage controlled crystal oscillator with temperature compensation. 3,697,890, Cl. 331-116.000.

Hebert, William E.: *See—*
Dunne, Owen F.; Hebert, William E.; Souza, Ronald; and Wargat, Edward, 3,696,770.

Heckler & Koch GmbH, Firma: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,696,706.

Hegarty, Gerald R.: *See—*
Foltz, Thomas R.; Hegarty, Gerald R.; Hopkins, Ervin W.; and Wilcox, Joseph C., 3,696,662.

Hehl, Karl. Automatic safety switch for electric current load. 3,697,812, Cl. 317-33.0sc.

Heine, Olaf; and Knisse, Gerhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Woven mat. 3,696,623, Cl. 61-38.000.

Heinrich, Theodore M.; Martin, Robert L.; and Steele, David J., to Westinghouse Electric Corporation. Battery charger connected in series with on alternating current load circuit vis a rectifers. 3,697,850, Cl. 320-39.000.

Hellman, Robert W.: *See—*
Harris, John L.; and Hellman, Robert W., 3,696,453.

Hellwarth, George A.: *See—*
Boinodiris, Stavros; and Hellwarth, George A., 3,697,980.

Henderson, John W.: *See—*
Lieberman, Hillel; Duharte-Francia, Carlos A.; and Henderson, John W., 3,697,439.

Hendry, Charles Malcolm: *See—*
Champ, Antony E.; and Hendry, Charles Malcolm, 3,697,492.

Heneghan, Leo F.: *See—*
Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., 3,697,322.

Hennemuth, William R.: *See—*
Carson, Don B.; and Hennemuth, William R., 3,697,416.

Henningsen, Erik; and Nielsen, Hans Borge, to Vald Henriksen A/S. Apparatus for liquid treatment of textile materials of string form. 3,696,645, Cl. 68-177.000.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Novel composition. 3,697,560, Cl. 260-399.000.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Novel sulfur containing di and tri unsaturated aliphatic carbonyl compounds. 3,697,561, Cl. 260-399.000.

Henry, Charles Frederick, to McCulloch Corporation. Centrifugal clutch. 3,696,901, Cl. 192-105.0ba.

Henschen, Homer Ernst, to AMP Incorporated. Termination means for flat cable. 3,697,925, Cl. 339-17.oof.

Heppenstall Company: *See—*
Cooper, Lloyd R., 3,696,859.

Heraeus, W. C., GmbH: *See—*
Seiz, Richard, 3,697,237.

Herb, Philip J.: *See—*
O'Loughlin, Francis A.; and Herb, Philip J., 3,697,669.

Herbert Products, Inc.: *See—*
Herbert, William C., Jr., 3,697,806.

Herbert, William C., Jr., to Herbert Products, Inc. Ion generator. 3,697,806, Cl. 317-2.00f.

Herbst, Richard, to Krauss-Maffei Aktiengesellschaft. Molding press. 3,697,212, Cl. 425-450.000.

Hercules Incorporated: *See—*
Lehmann, Leonard T., 3,697,347.
Rosher, Ronald; and Simmons, Ronald L., 3,697,341.
Thomson, J. Brent, 3,697,551.

Hering, Klaus: *See—*
Volker, Theodor; and Hering, Klaus, 3,697,583.

Herolzer, Ralph H., to Vanguard Industries, Inc. Device for handling baby chicks and the like. 3,696,966, Cl. 220-97.00f.

Herring, Carl R.; and Schneider, Fred J., to Western Electric Company, Incorporated. Methods of and apparatus for aligning and bonding workpieces. 3,696,985, Cl. 228-4.000.

Herrmann, Heinz, to Kalle Aktiengesellschaft. Material and process for the preparation of printing plates. 3,697,274, Cl. 96-36.300.

Hertel, Hasso; Gehre, Kurt; Lowenfeld, Rudolf; and Kosubek, Uwe, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the production of water-insoluble azo dyestuffs on textile material of cellulose or protein fibers. 3,697216, Cl. 8-46.000.

Heston, Russell G., Jr., to Deskey, Donald, mesne. Air conditioning system. 3,696,629, Cl. 62-129.000.

Hewlett-Packard Company: *See—*
Gordon, Gary B., 3,697,960.
Hiskes, Ronald, 3,697,320.
Mast, Robert E., 3,697,851.
Taylor, Robert L., 3,697,862.

Heymann, Frank J., to Westinghouse Electric Corporation. Erosion control in a steam turbine by moisture diversion. 3,697,191, Cl. 415-168.000.

Hi-Flux Corporation: *See—*
Krikorian, Garo H., 3,696,522.

Hickey, Harvey Edward: *See—*
McIntyre, Hal Byers; and Hickey, Harvey Edward, 3,696,514.

Hicks, Harris Vernon, to Lucas, Joseph, (Industries) Limited. Road vehicle lighting system having light reflection minimizing fins. 3,697,803, Cl. 315-82.000.

Higake, Sotomatsu: *See—*
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, 3,696,605.

Highsmith, Phillip E. Ferromagnetic material in a magnetic field as a propulsion system. 3,697,908, Cl. 335-209.000.

Hildebrants, Arnis, to RCA Corporation. Cathode ray tube implosion protection system and method. 3,697,686, Cl. 178-7.820.

Hill, Robert C.: *See—*
Boissevain, Mathew G.; and Hill, Robert C., 3,697,755.

Hillis, Donald A. Key holder. 3,696,650, Cl. 70-457.000.

Hinderer, Helmuth E.: *See—*
Bach, Hartwig C.; and Hinderer, Helmuth E., 3,697,478.

Hinks, William L.; and Hosterman, Harry L., to Goodyear Tire & Rubber Company, The. Apparatus for making blades. 3,696,655, Cl. 72-321.000.

Hinson, James L., to Three Way, Inc. Apparatus for separating pelletized lead or the like from granular compositions such as soil. 3,696,870, Cl. 171-17.000.

Hirako, Susumu: *See—*
Okada, Hitoshi; Imahori, Seiichi; and Hirako, Susumu, 3,697,525.

Hirao, Motohisa: *See—*
Asai, Shojiro; Hirao, Motohisa; and Maruyama, Eiichi, 3,697,338.

Hiratsuka, Nobuo: *See—*
Takenaka, Haruo; Okiyama, Toshiaki; and Hiratsuka, Nobuo, 3,697,450.

Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.

Hirschfeld, Tomas; and Matsu, Noboru, to Block Engineering, Inc. Hydrocarbon detector system. 3,697,226, Cl. 23-254.00r.

Hirschman, Paul S.: *See—*
Day, John J.; and Hirschman, Paul S., 3,696,788.

Hiskes, Ronald, to Hewlett-Packard Company. Method and flux for growing single crystals of garnet or orthoferrites. 3,697,320, Cl. 117-234.000.

Hitachi, Ltd.: *See—*
Asai, Shojiro; Hirao, Motohisa; and Maruyama, Eiichi, 3,697,338.
Homma, Noriyuki, 3,697,967.
Kanda, Kimio; and Ono, Kunio, 3,697,866.

Mitani, Masao; Aihara, Katzuzo; Kudo, Mitsuhiro; Hara, Nobuhiro; Irie, Fujio; and Yamafuji, Kaoru, 3,697,826.
Yamamoto, Masayuki; Toki, Hisashi; and Shibuya, Hideo, 3,697,334.

Hite, Perry J.: *See—*
Sarkozi, Miklos; Szabo, Andras I.; and Hite, Perry J., 3,697,896.

Hiyama, Ryu, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having automatic bass tone selector. 3,697,664, Cl. 84-1.170.

Hlavaty, Albert E.: *See—*
Perina, Joseph; and Hlavaty, Albert E., 3,696,472.

Ho, Irving T.: *See—*
Beausoleil, William F.; Ho, Irving T.; Jen, Teh-Sen; and Pricer, W. David, 3,697,962.

Hobson, Willis S.; Gregory, John T.; and Klienhaus, Clarence H., to Seymour Manufacturing Co. Process of reclaiming a liquid organic solvent from a foam contaminant. 3,697,388, Cl. 203-96.000.

Hochli, Beat: *See—*
Moser, Kurt; and Hochli, Beat, 3,696,664.

Hocking, Loren P.; and Lotti, Louis B., 10% to Colman, Benjamin W. Early warning brake fault device and system. 3,697,942, Cl. 340-52.00c.

Hodge, Edward B., to Commercial Solvents Corporation. Zearalenone reduction. 3,697,548, Cl. 260-343.20f.

Hodges, Willmer F.: *See—*
Palmer, Donald M.; Cotton, Charles C.; and Hodges, Willmer F., 3,696,599.

Hoefflеur, Albert. Welding paste for resistance welding copper parts. 3,697,333, Cl. 148-24.000.

Hoehn, Hans; and Schulze, Ernst, to Squibb, E. R., & Sons, Inc. Doethyl pheny sulfonylureas. 3,697,527, Cl. 260-294.80c.

Hoehn, Hans; and Schulze, Ernst, to Squibb, E. R., & Sons, Inc. 5-Methyldipyrazolo [3,4-b;3',4'-d]pyridin-3 (2H)-ones. 3,697,532, Cl. 260-295.50t.

Hoelscher, Robert L.: *See—*
Adams, Lloyd M.; and Hoelscher, Robert L., 3,697,017.

Hoffman, John T. Dispenser for reel of filament material. 3,696,697, Cl. 83-649.000.

Hoffman, Louis S.; and Spruyt, Harry, to Beech-Nut, Inc. Support structure. 3,696,940, Cl. 211-126.000.

Hoffmann, Hans: *See—*
Leontaritis, Lambis; Schon, Nikolaus; Hoffmann, Hans; and Sayed, Aziz El, 3,696,498.

Hoffmann, Wilhelm: *See—*
Krone, Heinz; and Hoffmann, Wilhelm, 3,696,992.

Hoffmann-La Roche Inc.: *See—*
Field, George Francis; and Sternbach, Leo Henryk, 3,697,545.
Pfiffner, Albert; and Schwieter, Ulrich, 3,697,543.

Hoffmannla Roche Inc.: *See—*
Hansen, Hans John, 3,697,638.

Hofmann, Albert: *See—*
Acker, Josef; Hofmann, Albert; and Fruhholz, Georg, 3,696,845.

Hogstrom, Edwin F.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schneider, Richard E.; and Rood, Alvin A., 3,697,313.

Holder, David A., Jr. Attachment for charcoal burning unit. 3,697,198, Cl. 417-411.000.

Holder, Heinz: *See—*
Von Hollen, Dieter; and Holder, Heinz, 3,697,718.

Holdham, Bertram Roy, to Polydesigns Limited. Foldable platform device. 3,696,762, Cl. 108-134.000.

Holick, Michael F.: *See—*
De Luca, Hector F.; Schnoes, Heinrich K.; and Holick, Michael F., 3,697,559.

Holk, Albert J., Jr., to Continental Can Company, Inc. Protective edge for easy opening container. 3,696,961, Cl. 220-54.000.

Holliday, Jack D., to Eltee Pulsitron. On-off pulse time control. 3,697,879, Cl. 328-61.000.

Holloway, Alta, Jr. Mobile kitchen. 3,696,803, Cl. 126-276.000.

Holm, Le Roy W., to Union Oil Company of California. Soluble oil composition. 3,697,424, Cl. 252-8.55d.

Holmes, Fred S. Method and apparatus for removing sand from wells. 3,697,194, Cl. 417-54.000.

Holt, Norman I., to California Institute of Technology. Electromagnetic transducer recording head having a laminated core section and tapered gap. 3,697,705, Cl. 179-100.20c.

Holzmann, Philipp, Aktiengesellschaft: *See—*
Zerna, Wolfgang; and Muhe, Ludwig, 3,696,573.

Hombrecher, Friedrich, to Sachs, Ersa Ernst, K.G. Electric soldering iron with adjustable thermostatic temperature control. 3,697,724, Cl. 219-241.000.

Homma, Keisuke: *See—*
Sassa, Atsuo; Yukutomi, Masuo; Shinkawa, Hirotoshi; Moriya, Tuneo; and Homma, Keisuke, 3,697,566.

Homma, Noriyuki, to Hitachi, Ltd. Magnetic thin film memory. 3,697,967, Cl. 340-174.0ca.

Honeywell Inc.: *See—*
Blecher, Stephen, 3,697,161.
Lee, Tzuo-Chang, 3,698,010.
Lone, Peter R., 3,698,004.
Malcolm, Ronald D.; Phelan, William J.; and Sangiolo, Thomas L., 3,698,007.
McConnell, Robert G., 3,696,782.
Schoenwitz, Frank H.W., 3,697,953.
Sollman, George H.; and Dixon, Samuel J., 3,697,977.

Honeywell Information Systems, Inc.: *See—*
Nowell, John R.; and Genuit, Luther L., 3,697,853.

Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, to Tokyo Shibaura Denki Kabushiki Kaiha. Apparatus for printing railway tickets and the like. 3,696,717, Cl. 95-4.500.

Hooker Chemical Corporation: *See—*
Dannels, Bobby F.; and Shepard, Alvin F., 3,697,459.
Miller, George T., 3,697,306.
Shatz, Malcolm H.; and Leon, Edward, 3,697,331.

Hoover Ball and Bearing Company: *See—*
Wolofski, Nicholas, 3,697,133.

Hope, Stephen F. Film processor. 3,696,728, Cl. 95-89.000.

Hopkins, Ervin W.: *See—*
Foltz, Thomas R.; Hegarty, Gerald R.; Hopkins, Ervin W.; and Wilcox, Joseph C., 3,696,662.

Horgan, William J., Jr., to Blumcraft of Pittsburgh, Pa. Panic lock for a door. 3,696,648, Cl. 70-92.000.

Horger, Georg: *See—*
Fogle, Mark V.; and Horger, Georg, 3,697,437.

Hori, Shojiro; and Maruta, Hisao, to Kashiwa Asechiren Kogyo Kabushiki Kaisha. Aerosol bomb filled with starting agent for diesel engine. 3,697,240, Cl. 44-52.00.

Horizons Incorporated: *See—*
Lewis, James M.; and Shirey, John E., 3,697,276.
Ramins, Lothar, 3,697,272.

Horizons Research Incorporated: *See—*
Perry, John E., 3,697,257.

Hornung, Gerhard, to Rieker, Justus, Dr., & Co. Ski boot. 3,696,534, Cl. 36-2.5al.

Hossmann, Marcell; and Barh, Alfred, to Albiswerk Zurich AG. Circuit arrangement for an electronic distance measuring device for drawing the frequency of a measuring oscillator towards a set point frequency which is higher or lower, respectively, by a cerain predetermined value. 3,698,013, Cl. 343-7.500.

Hosterman, Harry L.: *See—*
Hinks, William L.; and Hosterman, Harry L., 3,696,655.

Houck, Curtis T.: *See—*
Bonner, Charles W., Jr.; and Houck, Curtis T., 3,696,817.

Hough, William T. Vessel having an osmotic membrane as an enclosing part thereof. 3,696,931, Cl. 210-244.000.

Houghton, Richard A.: *See—*
Gluth, Norman P.; and Houghton, Richard A., 3,697,699.

House, Ralph: *See—*
Danzik, Mitchell; and House, Ralph, 3,697,573.

Hovis, Donald B.: *See—*
Kovalcik, John N.; and Hovis, Donald B., 3,697,223.

Howard, Anthony: *See—*
Greenfield, Stephen J.; Howard, Anthony; and Knapp, Lowell W., 3,697,063.

Howard, Frank S., to United States of America, National Aeronautics and Space Administration. Geysering inhibitor for vertical cryogenic transfer pipe. 3,697,021, Cl. 244-15.00b.

Howell, Peter T. Adjustable auxiliary handle for shopping cart. 3,697,095, Cl. 280-47.260.

Howell, Roland A. Hot box detector operable with diverse type bearing assemblies. 3,697,744, Cl. 246-169.00d.

Howle, Clement Roger, to Aluminium Company of America. Anodized continuously cast decorative plate with textured surface. 3,697,393, Cl. 204-58.000.

Hrabovsky, Joseph V. Combustible strip ammunition belt. 3,696,705, Cl. 89-35.

Huang, Kwang-Ta, to United States of America, Navy. Voltage regulating circuit. 3,697,856, Cl. 321-10.000.

Hubbard, Claudia M.: *See—*
Hubbard, Glenn O., 3,696,660.

Hubbard, Glenn O.; deceased (by Hubbard, Claudia M.; executrix). Locating holes in tubing. 3,696,660, Cl. 73-40.50r.

Hubbard, James R., to Philco-Ford Corporation. Laundry dryer. 3,696,521, Cl. 34-128.000.

Hubbell, Harvey, Incorporated: *See—*
Griffes, Milton W., 3,697,923.

Huetten, Clarence, to Sperry Rand Corporation, mesne. Magnetic disc head assembly. 3,697,965, Cl. 340-174.10e.

Huggard, Leslie, to Baldwin, D. H., Company. Push type electric switch with contact post, movable coil spring contact and interposed non conductive plunger. 3,697,706, Cl. 200-5.00r.

Hughes Aircraft Company: *See—*
King, Harry J., 3,697,793.
Steigleder, Charles J.; Smithey, Linual D.; and Ydon, Lloyd E., 3,696,671.

Hughes, William B., to Phillips Petroleum Company. Hydrogenation of olefin hydrocarbons using rhodium or iridium halide complexes with metal halides. 3,697,615, Cl. 260-683.900.

Huh, William: *See—*
Richard, Norman; Jean, Robert; Huh, William; and Patton, Willard Thomas, 3,698,000.

Humber, Leslie G., to American Home Products Corporation. 5-Cycloalkylidene dibenzocycloheptene derivatives. 3,697,581, Cl. 260-479.00r.

Hummer, Herbert B., to Durametallic Corporation. Floating bushing. 3,697,088, Cl. 277-9.000.

Hunsicker, Harold Y., to Aluminum Company of America. Aluminum conductor wire. 3,697,260, Cl. 75-139.000.

Hunsucker, Jerry H. Heat curable resins prepared from phenol, formaldehyde, dimethylolpropionic acid and an alkanolamine. 3,697,482, Cl. 260-58.000.

Hunt Electronics Company: *See—*
Johnson, James C., 3,697,821.

Hunter, James R.; Dinerman, Bernard B.; Mann, Abe; and Schroeder, Franklin T., to Burrougha Corporation. Conveyor system having a plurality of carrier position sensors. 3,696,946, Cl. 214-11.00r.

Hunziker, Fritz; and Schmutz, Jean, to Sandoz Ltd.; a/k/a Sandoz AG. 2-Substituted-11-(4-methyl-1-piperizinyl)-dibenzo [b,f]-1,4-oxazapin-(4-oxide). 3,697,523, Cl. 260-268.70r.

Hurlburt, Joseph C.: *See—*
Freimuth, John H.; and Hurlburt, Joseph C., 3,696,594.

Hurlbut, William B., Sr.: *See—*
Liebig, Preston D.; and Hurlbut, William B., Sr., 3,696,589.

Huth, Gerald C.; and Davies, Robert L., to General Electric Company. Semiconductor devices with improved voltage breakdown characteristics. 3,697,829, Cl. 317-235.00r.

Huver, Lawrence L.: *See—*
Quinlan, William J.; and Huver, Lawrence L., 3,696,497.

Hykel, Knut: *See—*
Glasow, Gunthard; Grosse, Klaus; Hykel, Knut; Schleifer, Werner; Karste, Eberhard; and Kliehe, Helmut, 3,696,766.

Hyvarinen, Kauko Juhani, to Niplex International Establishment. Cosmetic mirror. 3,697,156, Cl. 350-298.000.

I-T-E Imperial Corporation: *See—*
Gryctko, Carl E.; Strobel, Albert; and Ball, Kenneth D., 3,697,714.

Ibing, Gunther; and Neubold, Kurt, to Scholven-Chemie Aktiengesellschaft. Process for the manufacture of pyromellitic acid diimide. 3,697,541, Cl. 260-326.00c.

IBS Industrialized Building Systems, Incorporated: *See—*
Villaneu, Michel, 3,696,567.

Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, to Tokyo Shibaura Electric Co., Ltd. Piezoelectric materials. 3,697,430, Cl. 252-62.900.

Ihara, Takashi; Matsuo, Takehiko; and Ohhara, Katsunobu, to Canon Kabushiki Kaisha. Drum-photosensitive member and method for manufacturing thereof. 3,697,302, Cl. 117-34.000.

Iizuka, Noritoshi: *See—*
Narusawa, Shozo; and Iizuka, Noritoshi, 3,696,579.

Ikoma, Masanobu, to Shinetsu Chemical Company. Method for emulsion polymerization of organosiloxanes. 3,697,469, Cl. 260-29.2.

Ilex Optical Company, Inc.: *See—*
Lewis, Donald E., 3,696,726.

Ilford Limited: *See—*
Harris, Albert Edward; and Blundell, Ian, 3,697,278.

Illinois Tool Works Inc.: *See—*
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Imahori, Seiichi: *See—*
Okada, Hitoshi; Imahori, Seiichi; and Hirako, Susumu, 3,697,525.

Imai, Takeshi; Matsubara, Tamotsu; and Takenaka, Osamu, to Nippon Denso Company. Loading-and burning-proof electromagnetic coil. 3,697,913, Cl. 336-205.000.

Imai, Yoshio; Matsumura, Haruki; Yurugi, Shojiro; and Miyake, Akio, to Takeda Chemical Industries, Ltd. Oxadiazole dejivatives. 3,697,530, Cl. 260-295.00r.

Imasen Electric Industrial Co., Ltd.: *See—*
Nishioka, Kenichi, 3,697,946.

Imperial Chemical Industries Limited: *See—*
Andrews, Timothy Douglas; Short, Glynn David; and Thomas, Ieuan, 3,697,528.
Elliott, David Robert; and Greenway, John Michael, 3,696,478.
Waddan, Dhafir; and Williams, Derek, 3,697,534.

Imperial Chemical Industries of Australia and New Zealand Limited: *See—*
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Inaba, Shigeho: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.

Inductosyn Corporation: *See—*
Foster, Vincent F.; and Schreitz, Robert A., 3,696,667.

Industrial Nucleonics Corporation: *See—*
Grant, Michael P.; and Freeh, Edward J., 3,697,003.

Ingersoll-Rand Company: *See—*
Dussourd, Jules L.; and Haugen, Ronald L., 3,696,588.
Tibbott, David W., 3,697,189.

Ingram, John D., to Schlumberger Technology Corporation. Acoustic reflection coefficient logging. 3,697,937, Cl. 340-15.50a.

Inomata, Suekichi: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Institut de Recherche et de Diffusion Industrielle P.G.E. Wood: *See—*
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Institut Elektrosvarkiimeni E. O. Patona: *See—*
Khrenov, Konstantin Konstantinovich; and Chudakov, Vyacheslav Andreevich, 3,697,914.

Institut Francais Du Petrole des Carburants et Lubrifiants Rueil Malmaison: *See—*
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Instytut Wlokien Sztucgnych i Syntetsycgnych: *See—*
Paszke, Jan; Pstrocki, Henry; Ploszajski, Janusz; Lachman, Rudolf; Stanislaw, Lanay; and Wiszczor, Jan, 3,697,051.

Integrated Controls, Inc.: *See—*
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Inter-Probe, Inc.: *See—*
Blomgren, Oscar C., Jr., 3,697,411.

International Business Machines Corporation: *See—*
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Bartholomew, Gerald E.; Kostuch, Donald J.; Robinson, Thomas E.; and Rohland, William S., 3,697,951.
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International Nickel Company, Inc., The: *See—*
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International Nominees Bahamas Limited, mesne: *See—*
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International Paper Company: *See—*
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International Products, Inc.: *See—*
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International Standard Electric Corporation: *See—*
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International Telephone & Telegraph Corporation: *See—*
Kim, Sung Chul, 3,696,863.

International Telephone and Telegraph Corporation: *See—*
Lawford, Victor Nicholas, 3,696,659.

Interstab Limited, mesne: *See—*
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Iowa Manufacturing Company: *See—*
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Irie, Fujio: *See—*
Mitani, Masao; Aihara, Katzuzo; Kudo, Mitsuhiro; Hara, Nobuhiro; Irie, Fujio; and Yamafuji, Kaoru, 3,697,826.

Irie, Namio, to Nissan Motor Company, Limited. Hydraulic servo valve. 3,696,839, Cl. 137-625.610.

Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keichi; and Shinada, Hirotaka, to Kyorin Geiyaku Kabushiki Kaisha. Derivatives of N(N-acyl amino acyl) aminoacetonitrile. 3,697,577, Cl. 260-465.400.

Irizuki, Mamoru: *See—*
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Irons, Fred H., to Combridge Thermionic Corporation. Admittance inversion circuits. 3,697,900, Cl. 333-80.000.

Ischabrun, Richard G.; and Afanador, Carlos P., to Dayton Steel Foundry Company, The. Magnet assembly for electric brakes. 3,697,910, Cl. 335-296.000.

Ishikawajima Harima Jukogyo Kabushiki Kaisha: *See—*
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Ishizumi, Kikuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.

Isotopes, Inc., mesne: *See—*
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Istituto Chemioterapico Italiano S.p.A.: *See—*
Garzia, Aldo, 3,697,563.

Itokawa, Hideo, to Taiyo Kogyo Company Limited. Bonding and assembling process by a magnetic force. 3,697,352, Cl. 156-272.000.

IWA-Rechenschieberfabrik F. Riehle KG: *See—*
Riehle, Harald, 3,697,078.

Iwai, Tadashi; Yamashina, Hisao; Takagi, Tetitsu; and Adachi, Shoichi, to Ube Industries, Ltd. Method of isolating tetraoxane by azeotropic distillation and crystallization. 3,697,386, Cl. 203-48.000.

Iwata, Mitsuo, to Victor Company of Japan, Ltd. Automatic operating control for magnetic recording and reproducing apparatus. 3,697,015, Cl. 242-186.000.

Iwata, Tetuo: *See—*
Kojima, Mikiharu; and Iwata, Tetuo, 3,696,909.

Izumi, Takahisa: *See—*
Masuda, Tetuzo; Kurosawa, Kenjiro; Hashimoto, Takeo; and Izumi, Takahisa, 3,696,730.

Jacisin, Joseph Michael; and Tropello, Sam Duane, 1/2 each to Bell Telephone Laboratories, Incorporated and Western Electric Company, Incorporated. High-pressure packing gland. 3,697,089, Cl. 277-35.000.

Jackson, Richard R. Kite. 3,697,023, Cl. 244-153.00r.

Jacobs, Donald R., to American Home Products Corporation. Merchandising fixture. 3,697,033, Cl. 248-226.00a.

Jacobs, Michael Lawrence, to General Electric Company Limited, The. Circuits for private automatic telephone exchange systems. 3,697,704, Cl. 179-86.000.

Jacobs, Wayne John; Fritz, Robert William; and Peiffer, Howard Richard, to AMP Incorporated. Method of forming electrical contact materials. 3,697,389, Cl. 204-37.00r.

Jacobson, Wayne B., to Iowa Manufacturing Company. Linearized gate control system for multiple feeder and hopper arrangements. 3,696,976, Cl. 222-504.000.

Jaech, Merrell O., to Morton-Norwich Products, Inc. Article depositing machine improvement. 3,696,968, Cl. 221-265.000.

Jahnke, Heinz K.; and Meyer, Heinz F., to Upjohn Company, The. Process for the isolation of organic hydrazo reactive ketones. 3,697,557, Cl. 260-397.450.

Jakobsson, Karl Folke Olof; and Forsner, Bo Ake, to Aktiebolaget Celleco. Hydrocyclone. 3,696,927, Cl. 209-211.000.

Jammet, Jean Firmin, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Battery including pair of air-depolarized cells. 3,697,326, Cl. 136-86.00a.

Janu, George J., to Johnson Service Company. Flow control system employing a series reference resistor. 3,696,830, Cl. 137-209.000.

Japan Gas-Chemical Company, Inc.: *See—*
Asakawa, Kazuo; and Narita, Kaoru, 3,697,546.

Jarema, John R.: *See—*
Harmer, David E.; Jarema, John R.; and Leng, Douglas E., 3,697,351.

Jarrett, Earl K., to Clayton Specialties, Inc. Trigger assembly for article conveying machine. 3,697,710, Cl. 200-61.410.

Javarey, William E., Jr.; and Adams, Richard C., to Schjeldahl, G. T., Company. Method of attaching handles to film bags. 3,697,359, Cl. 156-518.000.

Jaxheimer, William W. Electrical meter reading. 3,697,970, Cl. 340-183.000.

Jaycox, Willardr., to Tampax Incorporated. Tampon applicator. 3,696,812, Cl. 128-263.000.

Jean, Robert: *See—*
Richard, Norman; Jean, Robert; Huh, William; and Patton, Willard Thomas, 3,698,000.

Jedlicka, Philip A., to Minnesota Mining and Manufacturing Company. Beam defining apparatus. 3,696,715, Cl. 95-1.00r.

Jen, Teh-Sen: *See—*
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Jennings, John D.: *See—*
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Jensen, Erik Kjaer, to Bristol-Myers Company. Heat storing hair roller. 3,696,819, Cl. 132-33.00r.

Jensen, Preben W. Rolling joint mechanisms. 3,696,683, Cl. 74-89.

Jessep, Donald C., Jr.: *See—*
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Jobert, Raymond: *See—*
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Jochimsen, Dieter: *See—*
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John, E. Roy; and Laupheimer, Robert. Method and system for brain wave analysis. 3,696,808, Cl. 128-2.10b.

Johne, Hans; Schumann, Gunter; and Reichenberger, Kurt, to Veb Druckmaschinenwerk Planeta. Apparatus for regulating a color dosing device in relation to a color doctor roller. 3,696,743, Cl. 101-365.000.

Johns-Manville Corporation: *See—*
Bettinardi, Edward Robert, 3,697,447.

Johnson, Allan M.; and Gilman, Richard F., to CCI Aerospace Corporation. Electrodialysis demineralization apparatus. 3,697,410, Cl. 204-301.000.

Johnson, Allan M., to CCI Aerospace Corporation. Method and apparatus for regenerating the dialyzing fluid for an artificial kidney. 3,697,418, Cl. 210-22.000.

Johnson, Benjamin M.: *See—*
Coppinger, Eugene A.; and Johnson, Benjamin M., 3,697,436.

Johnson, Francis: *See—*
Parker, William L.; Johnson, Francis; and Martin, John, 3,697,542.

Johnson, Frederick R.; and Palmer, David R., to General Electric Company. Means for restricting vapor backstreaming in a diffusion pump. 3,697,195, Cl. 417-154.000.

Johnson, Frithiof V., to United States of America, Navy. Optical viewing system. 3,697,154, Cl. 350-174.000.

Johnson, James C., to Hunt Electronics Company. Light dimming system having multiple control units. 3,697,821, Cl. 317-148.500.

Johnson, Joseph A., to Jomar Industries, Inc. Closure device for multiple injection blow molding machine. 3,697,210, Cl. 425-168.000.

Johnson, Lemoine L.; and Timmons, William P., to Donaldson Company, Inc. Dust leak detector for air cleaner systems. 3,696,666, Cl. 73-118.000.

Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., to Phillips Petroleum Company. Selective isomerization employing metal arsenide catalyst. 3,697,448, Cl. 252-464.000.

Johnson, Matthey & Company Limited: *See—*
Darling, Alan Sydney, 3,696,502.

Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Epoxy resin and graded acrylic rubber-urethane-acrylate paint and painting process. 3,697,312, Cl. 117-93.310.

Johnson, Ray M. Waveguide power switch having alternating close shorting plates. 3,697,894, Cl. 333-7.000.

Johnson, Robert E.: *See—*
Senter, Louis; and Johnson, Robert E., 3,696,689.

Johnson, Robert H.: *See—*
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Johnson, S. C., & Son, Inc.: *See—*
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Johnson Service Company: *See—*
Bailey, James R.; Corbell, Paul I.; and Korta, Lawrence B., 3,697,989.
Bjornsen, Bjorn G.; and Atkinson, Louis D., 3,696,828.
Janu, George J., 3,696,830.
McLean, Michael B., 3,697,781.

Johnston, James Stewart, to Rosemount Engineering Company Limited. Control systems. 3,697,768, Cl. 307-31.000.

Johnstone, Crichton Lockhart; and Paton, John Woodhouse. Automatic lifting tongs. 3,697,118, Cl. 294-110.00r.

Jomar Industries, Inc.: *See—*
Johnson, Joseph A., 3,697,210.

Jones, Arthur Llewelyn, to Scovill Manufacturing Company. Invisible-type slide fastener. 3,696,473, Cl. 24-205.100.

Jones, Billy R.: *See—*
Christman, Willard A.; and Jones, Billy R., 3,697,814.

Jones, Thomas M.; and Frazier, Alva W., to Tennessee Valley Authority. Elimination of magnesium gels in liquid and suspension fertilizers derived from wet acid. 3,697,247, Cl. 71-34.000.

Jones, William S.; and Hacker, Philip S., to Westinghouse Electric Corporation. Airborne pulse doppler radar system. 3,697,993, Cl. 343-7.700.

Jonsson, Nils Gunnar, to Atlas Copco Aktiebolag. Drill string joint breaking means. 3,696,872, Cl. 173-149.000.

Jordan, William E., to Xerox Corporation. Plug-in vacuum and circuit system for electrostatic printing machines. 3,697,163, Cl. 355-3.000.

Joyce, Glover C., to Warner & Swasey Company, The. Coolant nozzle. 3,696,564, Cl. 51-356.000.

Joyner, Frederick B.; Cash, George O., Jr.; and Meyer, Max F., Jr., to Eastman Kodak Company. Decoratable polyolefin plastics. 3,697,465, Cl. 260-27.00r.

Jullien, Yves: *See—*
Maurice, Guy; and Jullien, Yves, 3,696,832.

Jump, Peter Alexander Edward; and Keegan, Barclay, to Davy and United Engineering Company, Limited. Manufacture of cylindrical bodies from metal powder. 3,697,261, Cl. 75-208.00r.

Jureit, John Calvin, to Automated Building Components, Inc. Support for panels and the like. 3,696,572, Cl. 52-173.000.

Kaasenbrood, Petrus J. C.: *See—*
Van Nassau, Petrus J. M.; Brand, Wilhelmus K.; and Kaasenbrood, Petrus J. C., 3,697,521.

Kaasenbrood, Petrus J.C., to Stamicarbon N.V. Process for separating off melamine from a hot synthesis gas mixture which contains melamine vapour. 3,697,519, Cl. 260-249.70p.

Kabel- und Mettallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Martin, Helmut, 3,696,882.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Terai, Akio; Kawamura, Eiji; Fukumoto, Hisashi; and Aoki, Hidekatsu, 3,696,879.

Kabushiki Kaisha Koparu: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Suwa Seikosho: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, 3,696,605.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Nozaki, Choji; Kono, Kiichi; Sakai, Toshikiko; and Kamigaito, Osami, 3,696,604.

Kabushikikaisha Tokyo Seizosho (Tokyo Keiki Seizosho Co., Ltd.): *See—*
Ohyama, Takashi; Kawashige, Akira; and Miyashita, Takeo, 3,697,991.

Kachavos, Louis J.: *See—*
Robbins, Robert; Whitty, Arthur R.; and Kachavos, Louis J., 3,697,876.

Kafitz, Peter H., to Ryan Aeronautical Co., The. Increased power electronically scanning integrated antenna system. 3,697,995, Cl. 343-100.0sa.

Kaiser Aluminum & Chemical Corporation: *See—*
Ross, Richard J.; and Tjon, Harry X., 3,697,205.

Kalinsky, Harry. Wrist band and buckle therefor. 3,696,469, Cl. 24-71.00j.

Kalle Aktiengesellschaft: *See—*
Busch, Walter; Kramer, Heinz; Lind, Erwin; and Messner, Dieter, 3,697,303.
Herrmann, Heinz, 3,697,274.

Kallio, Oliver C. Snow displacing device with rototable blade casing. 3,696,535, Cl. 37-43.00c.

Kalopissis, Gregoire; Gascon, Jean; Bugaut, Andree; Gallien, Jacqueline; and Gaston-Breton, Hubert, to Societe Anonyme dite: L'Oreal. Dyeing hair with N-(ureidoalkyl)-and N-(thioureidoalkyl)-para-phenylene diamines. 3,697,215, Cl. 8-10.200.

Kamachi, Shin-Ichi, to Olympus Optical Co., Ltd. Method and microscope for detecting the position of a workpiece. 3,697,761, Cl. 250-222.000.

Kamigaito, Osami: *See—*
Nozaki, Choji; Kono, Kiichi; Sakai, Toshikiko; and Kamigaito, Osami, 3,696,604.

Kaminsky, Abraham R. Instrument for purifying sounds through sympathetic vibration. 3,696,698, Cl. 84-173.000.

Kamiyoshi, Masaya: *See—*
Kurihara, Osamu; Kuramoto, Naoya; Kamiyoshi, Masaya; and Yamaguchi, Takeshi, 3,697,310.

Kanbar, Maurice S.; and Benenati, Salvatore. Patty-forming device. 3,697,036, Cl. 249-74.000.

Kanda, Kimio; and Ono, Kunio, to Hitachi, Ltd. Automatic nondestructive case depth measuring instrument. 3,697,866, Cl. 324-34.00r.

Kane, James F., to Signetics Corporation. Three state output logic circuit with bistable inputs. 3,697,775, Cl. 307-209.000.

Kaneko, Hisashi, to Nippon Electric Company, Limited. Multilevel code conversion system. 3,697,874, Cl. 325-38.00a.

Kango Electric Hammers Limited: *See—*
Roje, Albert Norman, 3,697,792.

Karikomi, Masahiro: *See—*
Koyama, Masaki; Shimada, Sadakuni; and Karikomi, Masahiro, 3,698,001.

Karll, Robert E.: *See—*
Piasek, Edmund J.; and Karll, Robert E., 3,697,574.

Karste, Eberhard: *See—*
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Kartridg Pak Co., The: *See—*
Leonard, George E., 3,696,493.

Kashiwa Asechiren Kogyo Kabushiki Kaisha: *See—*
Hori, Shojiro; and Maruta, Hisao, 3,697,240.

Kasner, William. Calculator. 3,696,995, Cl. 235-139.00r.

Kassel, Aaron; and Kopelman, Donald F., to Technicon Instruments Corporation. Method and apparatus for the time sharing of multiple channel analysis means. 3,697,185, Cl. 356-181.000.

Katamay, Myron M.: *See—*
Khan, Mahmood H.; and Katamay, Myron M., 3,697,651.

Kato, Yoshiaki; and Ohuye, Hideki, to Citizen Watch Co., Ltd. Mechanical oscillator. 3,697,789, Cl. 310-9.500.

Katsurogawa Denki Kabushiki Kaisha: *See—*
Furuichi, Masayoshi; and Konuma, Takaaki, 3,697,722.

Katsuyama, Harumi: *See—*
Ono, Hisatake; Osada, Chiakai; Watarai, Syu; and Katsuyama, Harumi, 3,697,266.

Katsuyama, Takehiro: *See—*
Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Takimoto, Hisao, 3,697,637.

Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Takimoto, Hisao, to Mitsubishi Rayon Co., Ltd. Method for producing highly crimped regenerated cellulose fibers by steam stretching. 3,697,637, Cl. 264-168.000.

Kawai, Kazuo: *See—*
Nakagome, Yukio; Kawai, Kazuo; Yanagidaira, Hidetaka; Shintain, Sotokichi; and Michishita, Isakichi, 3,697,881.

Kawaki, Katsumi; and Usui, Masashi, to Tokyo Tokei Seizo Kaisha, Ltd. Tone control signal circuit having tone pulses followed by continuous tone. 3,697,982, Cl. 340-384.00e.

Kawamura, Eiji: *See—*
Terai, Akio; Kawamura, Eiji; Fukumoto, Hisashi; and Aoki, Hidekatsu, 3,696,879.

Kawase, Shinji; and Sumitomo, Norishige, to Precision Fukuhara Works, Ltd. Variable needle selecting means for knitting machines. 3,696,640, Cl. 66-40.000.

Kawashige, Akira: *See—*
Ohyama, Takashi; Kawashige, Akira; and Miyashita, Takeo, 3,697,991.

Kawashima, Toshihide: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Kealy, Wellesley Ashe, to United Kingdom Atomic Energy Authority. Digital actuators. 3,697,979, Cl. 340-347.0da.

Kearns, Michael I. Steam generating apparatus. 3,696,794, Cl. 122-235.00r.

Keegan, Barclay: *See—*
Jump, Peter Alexander Edward; and Keegan, Barclay, 3,697,261.

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Kemp, Frederick O. Noise-free electrical resistor. 3,697,920, Cl. 338-121.000.

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Khan, Mahmood H.; and Katamay, Myron M., to Fats and Proteins Research Foundation, Inc., mesne. Salmonellacide composition containing propionic acetic and butyric or phosphoric acids. 3,697,651, Cl. 424-128.000.

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Khrenov, Konstantin Konstantinovich; and Chudakov, Vyacheslav Andreevich, to Institut Elektrosvarkiimeni E. O. Patona. Multiturn inductor for magnetic-pulse treatment of tubular members. 3,697,914, Cl. 336-62.000.

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Kienberger, Charles A.: *See—*
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Kim, Sunyong P. Combination camper vehicle and boat. 3,696,953, Cl. 214-450.000.

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King, Harry J., to Hughes Aircraft Company. Ion beam deflection system. 3,697,793, Cl. 313-63.000.
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Kitchener, Charles J.; and Rumball, Paul G., to USM Corporation. Means for transferring successive flexible work pieces. 3,696,942, Cl. 214-1.0bb.
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Kllian, Henry R., to Walworth Company. Dual action butterfly valve. 3,697,042, Cl. 251-163.000.
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Knight, Sheldon; and McCarron, Kerwin Peter, to Quantic Industries, Inc. Optical apparatus using slitted marks for detecting rotary motion of object. 3,697,183, Cl. 356-114.000.
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Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain substituted cyclohexyl amines. 3,697,594, Cl. 260-563.00r.
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Kojima, Mikiharu; and Iwata, Tetuo, to Tokyo Shibaura Electric Co., Ltd. Driving mechanisms for moving stairways. 3,696,909, Cl. 198-16.000.
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Konewko, Joseph E.; and Occhipinti, Carl, to Bunker-Ramo Corporation, The. Controlled insertion force receptacle for flat circuit bearing elements. 3,697,929, Cl. 339-75.0mp.
Kongelka, Robert Michael, to Viewlex, Inc., mesne. Leak-proof fluid coupling. 3,696,899, Cl. 192-58.00b.
Kono, Kiichi: *See—*
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Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. Induction cooking appliance with multicylinder power circuits. 3,697,717, Cl. 2-10.490.
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Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., to United States of America, Agriculture. Electrostatic fiber collecting and yarn spinning apparatus. 3,696,603, Cl. 57-58.890.
Kough, John K.; Martin, Otis M.; and Miller, Silas N., to Ditz-Crane. Building panel enclosures for valley and hip structures. 3,696,570, Cl. 52-127.000.
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Kowalski, Leon. Camper unit lifting device. 3,697,044, Cl. 254-45.000.
Koyama, Masaki; Shimada, Sadakuni; and Karikomi, Masahiro, to Nippon Telegraph and Telephone Public Corporation. Frequency group separation filter device using laminated dielectric slab-shaped elements. 3,698,001, Cl. 343-909.000.
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Krikorian, Garo H., to Hi-Flux Corporation. Drier for paper webs. 3,696,522, Cl. 34-115.000.
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La Cagnina, John M.; and Davies, Robert G., to Xerox Corporation. Prevention of arcing in an electrode imaging system. 3,697,407, Cl. 204-300.
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Lagally, Paul, to United States of America, Navy. Bearings comprising polyolefins and an imine modified carbon black compound. 3,697,425, Cl. 252-12.000.
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Laiderman, Donald David, to Gillette Company, The. Cosmetic composition. 3,697,644, Cl. 424-70.000.
Lamorte, Michael F., to RCA Corporation. Method of making semiconductor devices. 3,697,336, Cl. 148-171.000.
Lampredi, Aurelio, to Fiat Societa per Azioni and Cigala & Bertinetti S.a.s. Toothed pulleys. 3,696,685, Cl. 74-230.300.
Lancaster, Robert W., to Panhandle Eastern Pipe Line Company. Dies for cutting electrical cable. 3,696,509, Cl. 30-90.600.
Landwehr, Gunter, to Kochs Adler AG. Intersectindevice for sewing machine. 3,696,767, Cl. 112-130.000.
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Larson, Clarence E.; and Schneider, Harold G., to Marietta-Martin Corporation. Lifting tongs. 3,697,117, Cl. 294-106.000.
Larson, Harry T.; and Loewe, Richard T. Encoding device. 3,697,687, Cl. 178-18.000.
Larson, Marlow W. Range finder and bow sight device 3,696,517, Cl. 33-265.000.
Lass, James L.: *See—*
Mefford, Carl R.; Lass, James L.; Smith, Bart A.; Venier, Domic A.; and Trocki, Thomas, 3,697,376.

Lattion, Andre, to Rieter Machine Works Ltd. Double apron drafting arrangement for spinning machines. 3,696,468, Cl. 19-55.000.

Lauck, Robert M., to Stauffer Chemical Company. Using salvage cheese in preparing pasteurized process cheese. 3,697,292, Cl. 99-115.000.

Lauffer, Fred E., to Owens-Illinois, Inc. Supporting pad for a pallet. 3,697,029, Cl. 248-188.800.

Laupheimer, Robert: *See—*
John, E. Roy; and Laupheimer, Robert, 3,696,808.

Laur Knudsen, Nordisk Elektricitets Selskab: *See—*
Frederiksen, Erik, 3,697,736.

Laurent, Robert Parker: *See—*
Lester, Frank Backus; Laurent, Robert Parker; and Titemore, Robert George, 3,696,704.

Lauria, Andrew Carmine; and Owens, Jeffrey Lynn, to Miles Laboratories, Inc. Cyanide removal from waste effluents. 3,697,421, Cl. 210-59.000.

Lawford, Victor Nicholas, to International Telephone and Telegraph Corporation. Instrument pressure calibration method and apparatus. 3,696,659, Cl. 73-4.00r.

Lawrence, Leslie: *See—*
Rotondo, Fortunato N.; Toledo, Emil; and Lawrence, Leslie, 3,696,846.

Lawrence, Thomas R.; and Saltzberg, Burton R., to Bell Telephone Laboratories, Incorporated. Digital frequency-shift modulator using a read-only-memory. 3,697,892, Cl. 332-9.00r.

Lazar, Joseph H. Method and apparatus for granulating wax. 3,697,004, Cl. 241-27.000.

Lazarus, Stanley D.: *See—*
Balint, Laszlo J.; Lazarus, Stanley D.; and Russell, William N., 3,697,579.

Le Mere, Roger: *See—*
Brown, Fred A., III; and Le Mere, Roger, 3,697,354.

Le Tarte, Frank M. Panel and frame assembly. 3,696,857, Cl. 160-371.000.

Lear Siegler, Inc.: *See—*
Anthony, Russell W., 3,697,092.
Kempema, James L.; and Foard, Ralph W., 3,697,731.
Tutt, Richard D., 3,696,731.

Learning Systems Corporation: *See—*
Kranyik, Robert Donald; Vegliante, Donald E.; and Balmer, Donald F., 3,696,524.

Leat, Andrew Francis Vincent, to Elliott Brothers (London) Limited. Vehicle direction sensing and steering systems using magnetic flux responsive means. 3,696,518, Cl. 33-357.000.

Leblond, Jean; and Biet, Jean, to Uniroyal Englebert France S.A. Load transfer apparatus. 3,696,949, Cl. 214-16.40a.

Leder, Lewis B.: *See—*
Adams, James E.; and Leder, Lewis B., 3,697,152.

Lee, Hong Man, to U. S. Plywood-Champion Papers Inc. Gas venting liquid retaining closure. 3,696,958, Cl. 215-56.000.

Lee, Joo Chan, to Safety Company, The. System for monitoring chassis potential and ground continuity. 3,697,808, Cl. 317-18.00a.

Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., to Merck & Co., Inc. Magnesium oxide coatings. 3,697,322, Cl. 117-234.000.

Lee, Paul H.; and Skolnick, Michael L., to Perkin-Elmer Corporation, The. Laser frequency stabilization system and method. 3,697,887, Cl. 331-94.500.

Lee, Tzuo-Chang, to Honeywell Inc. Heterodyne readout holographic memory. 3,698,010, Cl. 340-174.0yc.

Leeds & Northrup Company: *See—*
MacMullan, Samuel J., 3,697,871.

Leeds, Michael T.: *See—*
Wakley, Wilbur T.; and Leeds, Michael T., 3,697,666.

Lehmann, Leonard T., to Hercules Incorporated. Process of preparing air-pervious spot bonded nonwoven fabrics. 3,697,347, Cl. 156-81.000.

Lehmbeck, Donald R., to Xerox Corporation. Apparatus for evaluating the recording characteristics of a thermoplastic photoreceptor. 3,697,184, Cl. 356-175.000.

Leifer, Noel Arthur; and Ott, Henry Walter, to Bell Telephone Laboratories, Incorporated. Tape loading and unloading mechanism. 3,697,016, Cl. 242-189.000.

Leifheit, Gunter; and Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Cleaning apparatus. 3,696,458, Cl. 15-50.00c.

Leifheit International Gunter Leifheit KG: *See—*
Leifheit, Gunter; and Liebscher, Johannes, 3,696,458.

Leisure Products, Inc.: *See—*
Sarno, Richard L., 3,697,048.

Leitz, Wilfried: *See—*
Kundt, Edmund; Klaiber, Max; Leitz, Wilfried; and Vom Rath, Herbert, 3,696,955.

L'Electro-Refractoire: *See—*
Recasens, Joseph, 3,697,037.

Leng, Douglas E.: *See—*
Harmer, David E.; Jarema, John R.; and Leng, Douglas E., 3,697,351.

Lengnick, Gunther F.; and Pande, Kailash Chandra, to Stauffer-Wacker Silicone Corporation, mesne. Method for curing an organopolysiloxane using a organotin aminocarbamate. 3,697,477, Cl. 260-46.5.

Lenz, David E.: *See—*
Meier, Eugene P.; Lenz, David E.; and Sternberger, Ludwig A., 3,697,645.

Leon, Edward: *See—*
Shatz, Malcolm H.; and Leon, Edward, 3,697,331.

Leonard, George E., to Kartridg Pak Co., The. Aerosol valve assembly locating and setting apparatus. 3,696,493, Cl. 29-208.00b.

Leontaritis, Lambis; Schon, Nikolaus; Hoffmann, Hans; and Sayed, Aziz El, to Farbenfabriken Bayer Aktiengesellschaft. Pretreatment of metal sheets which are coated after a forming operation. 3,696,498, Cl. 29-424.000.

Leontiev, Alexandr Ivanovich: *See—*
Stebakov, Emelyan Semenovich; Leontiev, Alexandr Ivanovich; Simpura, Petr Mikhailovich; Kozlov, Ivan Ivanovich; Glotov, Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich, 3,697,038.

Lerner, Charlotte F., to Small World Importing Corporation. Christmas tree ornamentation package. 3,696,918, Cl. 206-45.310.

Lesare, Paul, to U.S. Philips Corporation. Television transmitter with the synchronization signal applied to the oscillation and the luminance signal applied to a modulator. 3,697,684, Cl. 178-7.200.

Lesher, George Y., to Sterling Drug Inc. N,N'-alkylene bis (pyridine-carboxamides). 3,697,531, Cl. 260-295.0am.

Lester, Frank Backus; Laurent, Robert Parker; and Titemore, Robert George, to General Electric Company. Ammunition bulk loader. 3,696,704, Cl. 89-34.000.

Letchworth, Herman R., to Seafoods Automation Corporation. Method and apparatus for positioning shrimp. 3,696,466, Cl. 17-91.000.

Leute, Richard K.; and Ullman, Edwin F., to Synvar Associates. 4,5-Dihydroimidazoline-3-oxide-1-oxyl. 3,697,535, Cl. 260-299.000.

Lever Brothers Company: *See—*
Boertje, Arie Leendert; and Philpott, Peter John, 3,696,735.
Priestley, Hill M., 3,697,587.
Tonsbeek, Christiaan Herman Theodoor, 3,697,291.
Van Den Ouweland, Godefridus Antonius Maria; and Peer, Henricus Gerardus, 3,697,295.

Levi, Elaine G. Tobacco pouch closure. 3,696,917, Cl. 206-41.00f.

Levine, Charles J.: *See—*
Teuscher, Leon A.; Trubisky, Michael P.; Palermiti, Frank M.; and Levine, Charles J., 3,697,265.

Levine, Sidney V.; and Hastalis, Christopher. Method and apparatus for making twelve-page booklets or signatures. 3,697,061, Cl. 270-5.000.

Levkoff, Henry S. Note pad holder with night light. 3,697,737, Cl. 240-6.40b.

Levy, Kenneth, to Singer Company, The. Film position and break detector. 3,696,981, Cl. 226-11.000.

Lewis, Donald E., to Ilex Optical Company, Inc. Shutter operating system. 3,696,726, Cl. 95-53.0ea.

Lewis, J. Stephen: *See—*
Gunther, Gregory M.; Lewis, J. Stephen; Nishiguchi, Masakatsu; Robson, George E.; Wagner, Raymond P.; and Yarbrough, William R., 3,696,552.

Lewis, J. Stephen; Sapkus, Jurgis; and Villasana, Armando P., to Mattel, Inc. Object-holding hands for dolls. 3,696,553, Cl. 46-116.000.

Lewis, James M.; and Shirey, John E., to Horizons Incorporated. Polyvinylcarbazole photographic systems. 3,697,276, Cl. 96-48.000.

Lewis, William T.: *See—*
Elliott, Delbert R.; and Lewis, William T., 3,697,139.

Lhommelet, Robert: *See—*
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Liautaud, John N.: *See—*
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Libbey, Albert H.: *See—*
Gates, Percival T., Jr.; and Libbey, Albert H., 3,697,683.

Liberman, Harvey W.: *See—*
Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., 3,696,951.

Liberti, Frank N.: *See—*
Bialous, Charles A.; Campbell, Allen J.; and Liberti, Frank N., 3,697,481.

Lichtman, Irwin A.; and Woodward, Fred E., to Diamond Shamrock Corporation. Defoamer compositions containing organic particles. 3,697,440, Cl. 252-321.000.

Licitis, Gunars, to Glass, Marvin, & Associates. Phonograph index means. 3,697,086, Cl. 274-17.000.

Lieberman, Hillel, to Betz Laboratories, Inc. Fine paper mill defoamer and its use. 3,697,438, Cl. 252-321.000.

Lieberman, Hillel; Duharte-Francia, Carlos A.; and Henderson, John W., to Betz Laboratories, Inc. Composition for controlling foaming in aqueous systems and its method of use. 3,697,439, Cl. 252-321.000.

Lieberman, Hillel, to Betz Laboratories, Inc. Compositions for controlling foam in aqueous systems and its method of use. 3,697,442, Cl. 252-321.000.

Liebig, Preston D.; and Hurlbut, William B., Sr., to Combustion Engineering Inc. Adjustable air pollution control scrubber bed. 3,696,589, Cl. 55-233.000.

Liebscher, Johannes: *See—*
Leifheit, Gunter; and Liebscher, Johannes, 3,696,458.

Lilienkamp, Hugh: *See—*
Conn, James B.; Delbauve, J. Richard; and Lilienkamp, Hugh, 3,697,886.

Lilly, Eli, and Company: *See—*
Bach, Nicholas J.; and Farkas, Eugene, 3,697,558.

Lind, Erwin: *See—*
Busch, Walter; Kramer, Heinz; Lind, Erwin; and Messner, Dieter, 3,697,303.

Lindsay, John. Wind sock. 3,696,672, Cl. 73-189.000.

Lindstrom, Sven-Olof: *See—*
Weibull, Bengt J. G.; Thorsell, Leif Urban Folke; and Lindstrom, Sven-Olof, 3,697,598.

Linhardt, Hans D.: *See—*
Bryant, Gerald T.; Linhardt, Hans D.; and Nichols, Kenneth E., 3,696,975.

Liotta, Alfonso L. Golf practicing device. 3,697,080, Cl. 273-186.00r.

Lippmann, Wilbur, to Ayerst, McKenna and Harrison, Ltd. Method of treating hyperchlorhydria and/or associated conditions. 3,697,654, Cl. 424-330.000.

Liskey Aluminum Inc.: *See—*
Swensen, Eugene L.; and Gibson, Franklin E., 3,696,578.

Litt, Morton Herbert: *See—*
Anello, Louis Gene; Sweeney, Richard Francis; and Litt, Morton Herbert, 3,697,564.

Little, Arthur D., Inc.: *See—*
Wenckus, Joseph F., 3,697,228.

Little, David W., to General Electric Company. Static network protective relay. 3,697,811, Cl. 317-27.00r.

Little, Edwin D., to Allied Chemical Corporation. Pyrolysis of tris (2-carboxyethyl)-isocyanurate. 3,697,584, Cl. 260-486.

Littleton, Arnold B., to Gay Toys, Inc. Baseball helmet. 3,696,440, Cl. 2-3.00a.

Littleton, Arnold B., to Gay Toys, Inc. Racing helmet. 3,696,441, Cl. 2-3.00a.

Litton Systems, Inc.: *See—*
Anderson, Harold C.; and Graff, David F., 3,697,804.

Livingston, Richard D., to Amerock Corporation. Drawer slide assembly for self-closing drawer. 3,697,140, Cl. 308-3.800.

Livingston, Russell G. Spark plug shielding. 3,697,796, Cl. 313-134.000.

LKB Produkter AB: *See—*
Svendsen, Per Just, 3,697,406.

Lloyd, Harold B.; and Stewart, Sterling E. Water therapy safety controls. 3,696,996, Cl. 236-92.000.

Lodrick, Lester B.; and Teno, Vincent N. Coin packer. 3,696,582, Cl. 53-59.000.

Loewe, Richard T.: *See—*
Larson, Harry T.; and Loewe, Richard T., 3,697,687.

Lohrke, James L., Jr., to Turbo Machine Company. Process and apparatus for producing yarn. 3,696,467, Cl. 19-.370.

Lone, Peter R., to Honeywell Inc. Recorder with time line generator and interval encoder. 3,698,004, Cl. 346-23.000.

Long, Frank; and Ayad, Kamal Naguib, to Monsanto Chemicals Limited. Pyridines and phytotoxic compositions. 3,697,251, Cl. 71-94.000.

Longley, Miner R.: *See—*
Grant, John; and Longley, Miner R., 3,697,815.

Longswoth, Ralph C., to Air Products and Chemicals, Inc. Liquid cryogen transfer system. 3,696,627, Cl. 62-51.000.

Lonza Ltd.: *See—*
Moser, Kurt; and Hochli, Beat, 3,696,664.
Volker, Theodor; and Hering, Klaus, 3,697,583.

Loos, Edwin; and Caudle, James William, to Saskatchewan Government Insurance Office, The. Production of documentary evidence. 3,697,101, Cl. 283-62.000.

Lopas, Kasimir, to Time, Incorporated. Method and apparatus for cutting thermoplastic coated members. 3,696,708, Cl. 90-11.00c.

Loscalzo, Nicholas R. Nut lock. 3,696,646, Cl. 70-1.500.

Lotti, Louis B.: *See—*
Hocking, Loren P.; and Lotti, Louis B., 3,697,942.

Louvel, Guy, to Compagnie Industrelle des Telecommunication. Slotted microstrip line for impedance matching having two stops to prevent ohmic contact between the movable reactive element and the center strip. 3,697,902, Cl. 333-84.00m.

Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, 3,697,507.

Lowe, Warren, to Chevron Research Company. Amines as antiwear additives in marine cylinder oils. 3,697,426, Cl. 252-42.700.

Lowenfeld, Rudolf: *See—*
Hertel, Hasso; Gehre, Kurt; Lowenfeld, Rudolf; and Kosubek, Uwe, 3,697,216.

Lowry, Alan B.; Mathus, Gregory; Morello, Herbert; and Miller, Robert J., 50% to Data Packaging Corporation and 50% to Digital Information Devices, Inc. Tape handling mechanism for computer. 3,697,014, Cl. 242-182.000.

Lowry, Ray B.: *See—*
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Lox Equipment Company: *See—*
Eifel, Paul J.; and Cavanna, Cesar E., 3,696,959.

Lozach, Gerard: *See—*
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LTV Electrosystems, Inc.: *See—*
Gluth, Norman P.; and Houghton, Richard A., 3,697,699.

Lubowitz, Hyman R.: *See—*
Vaughan, Robert W.; and Lubowitz, Hyman R., 3,697,345.

Lubowitz, Hyman R.; and Vaughan, Robert W., to TRW Inc. Boron reinforced polyimide composites. 3,697,308, Cl. 117-65.200.

Lubrizol Corporation, The: *See—*
Meinhardt, Norman A.; and Widmer, Robert, 3,697,428.

Lucas, Clyde M.: *See—*
Deming, Andrew Frank; and Lucas, Clyde M., 3,696,680.

Lucas, James M.; Suder, Jack K.; and Vander Wall, Eugene M., to Aerojet-General Corporation. Non-carbon forming monopropellant process using a lower alkylhydrazine and ammonia. 3,696,616, Cl. 60-218.

Lucas, Joseph, (Industries) Limited: *See—*
Hicks, Harris Vernon, 3,697,803.

Lucas, Joseph G.; and Zuryk, John, to Avco Corporation. Electrochemical milling process. 3,697,401, Cl. 204-143.00r.

Luce, David A.: *See—*
Clark, Melville, Jr.; and Luce, David A., 3,697,703.

Luckock, Glenn W.: *See—*
Hastings, Martin R.; and Luckock, Glenn W., 3,697,298.

Ludin, Ludwig, to Physikalisch-Technisches Entwichlungsburolaing. Demountable heat pump with hermetically sealed circuit. 3,696,634, Cl. 62-333.

Luedeman, Robert T., to Weston Instruments, Inc. Flow-line thermometer. 3,696,677, Cl. 73-343.00r.

Luedi, Mark: *See—*
Bennett, Raymond G.; and Luedi, Mark, 3,696,591.

Lukash, Leslie: *See—*
Mc Culler, James F., 3,697,639.

Lunden, Sidney L., to Moore-lem, Inc. Course formation apparatus. 3,696,911, Cl. 198-40.000.

Lundin, Andrew P.; and Milner, John D. Apparatus for comminuting articles. 3,697,005, Cl. 241-101.00m.

Lunn, Gerald K., to Motorola, Inc. Synchronous AM detector. 3,697,685, Cl. 178-7.30r.

Lushbaugh, Warren A.: *See—*
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Lustig, Claude D.: *See—*
Freyheit, Paul J.; and Lustig, Claude D., 3,697,797.

Lyland, James W.: *See—*
United States of America, National Aeronautics and Space Administration, 3,697,950.

Lynn, Charles C. High protein edible products and method of preparing same. 3,697,290, Cl. 99-86.000.

Lysle, Gordon; and Bonagura, Ronald, to Photosystems Corporation. Photographic recording and reproduction apparatus. 3,696,722, Cl. 95-18.00r.

M & T Chemicals Inc.: *See—*
Passal, Frank, 3,697,391.

Mabbutt, David Robert, to Rotadraw Limited. Drawing and teaching machine. 3,696,529, Cl. 35-26.000.

Mabuchi, Kenichi; and Tsuchimochi, Yoshihisa, to Mabuchi Motor Co., Ltd. Starting switch structure in a model plane. 3,696,558, Cl. 46-243.0av.

Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Kenichi; and Tsuchimochi, Yoshihisa, 3,696,558.

MacDonald, Robert N.: *See—*
Deschenes, Raymond J.; and MacDonald, Robert N., 3,697,693.

Mace, Nute. Flying toy. 3,696,822, Cl. 46-77.000.

Macek, Warren M.; and Wang, Chao Chen, to Sperry Rand Corporation. Ring laser having amplitude and phase controlled crossed-beam anti-locking feedback. 3,697,181, Cl. 356-106.0lr.

Machenschalk, Rudolf; and Wagner, Herbert, to Schwarzkopf Development Corporation. Rotating X-ray target. 3,697,798, Cl. 313-330.000.

Ma.hlett Laboratories, Incorporated, The: *See—*
Braun, Martin; Grossel, Stanley S.; and Singer, Barry M., 3,697,795.

Macintyre, Steven A.: *See—*
Greenberg, Myron M.; Macintyre, Steven A.; and United States of America, Navy, 3,697,869.

Mackal, Henry H.; and Behnke, Kenneth P., to Halkey-Roberts Corporation. Valve extractor. 3,696,494, Cl. 29-213.000.

Mackie, William L., to United States of America, Navy. Intumescent fillers for paints. 3,697,422, Cl. 252-8.100.

Maclin, Ernest, to Electro-Nucleonics. Mechanism for simultaneously metering and dispensing liquids. 3,696,971, Cl. 222-183.000.

MacMullan, Samuel J., to Leeds & Northrup Company. Single element adjustment for span and gain. 3,697,871, Cl. 324-99.00r.

MacMurray, Robert R. Plant growth regulation. 3,697,253, Cl. 71-97.

Macy, James R., to American Data Systems, Inc. Character correcting coding system and method for deriving the same. 3,697,947, Cl. 340-146.1aq.

Maddox, Lodric L., to Clorox Company, The. Bleaching and washing composition and process. 3,697,217, Cl. 8-111.000.

Madigan, Edward J., to Cosmetics & Pharmaceuticals, Inc. Method of protecting the skin from ultraviolet radiation with titanic acid and esters of titanic acid. 3,697,642, Cl. 424-59.000.

Magoon, Eugene F., to Shell Oil Company. Olefin-alkyl iodide exchange. 3,697,611, Cl. 260-677.0xa.

Mair, Winfried: *See—*
Sarten, Paula; and Mair, Winfried, 3,697,339.

Maksymiak, John; Beach, Kenneth M., Jr.; and Smith, James W., to Xerox Corporation. Electrostatic recording apparatus and method. 3,697,169, Cl. 355-14.000.

Malchenko, Thomas Vasilievich: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich, Zhelnov, Boris Stepanovich; Tarasov, Vasily

Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Malcolm, Ronald D.; Phelan, William J.; and Sangiolo, Thomas L., to Honeywell Inc. Central processor unit having simulative interpretation capability. 3,698,007, Cl. 444-1.000.

Mallory, P. R., & Co., Inc.: *See—*
Greskamp, John B., 3,697,824.
Potter, Bronson M., 3,697,983.

Mammino, Joseph, to Xerox Corporation. Method of cleaning residual liquid developer from electrophotographic plates. 3,697,263, Cl. 96-1.400.

Maniero, Daniel A.; and Wolf, Charles B., to Westinghouse Electric Corporation. Production of acetylene with an arc heater. 3,697,612, Cl. 260-679.00r.

Mann, Abe: *See—*
Hunter, James R.; Dinerman, Bernard B.; Mann, Abe; and Schroeder, Franklin T., 3,696,946.

Mannesmann Aktiengesellschaft: *See—*
Von Hollen, Dieter; and Holder, Heinz, 3,697,718.

Marcel Mingard: *See—*
Dubois, Gerald, 3,696,609.

Marco, Gino J., to Monsanto Company. Amine containing animal feed compositions. 3,697,659, Cl. 424-325.000.

Marconi Company Limited, The: *See—*
Fenton, Roger Wakfield, 3,697,976.

Margerum, Edwin O.: *See—*
Rowland-Hill, Edward W.; and Margerum, Edwin O., 3,696,815.

Margot, Alfred: *See—*
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Marietta-Martin Corporation: *See—*
Larson, Clarence E.; and Schneider, Harold G., 3,697,117.

Markart, Ernst, to Sud-Atlas-Werke G.m.b.H. Magnetic tape recorder particularly of the tape cassette type. 3,696,775, Cl. 116-67.00a.

Markevitch, Bob V.: *See—*
Van Heeckeren, Jacob; Rodal, David R.; and Markevitch, Bob V., 3,697,149.

Markley, Roger A.: *See—*
Cory, Terry S.; and Markley, Roger A., 3,697,999.

Marlin Firearms Co., The: *See—*
Morris, Stephen J.; and O'Keefe, James M., 3,697,715.

Marriott Corporation: *See—*
Mellon, Eugene P.; and Kisner, Lester A., 3,696,848.

Marshall, Connie T.: *See—*
Fort, Larry W.; and Marshall, Connie T., 3,697,884.

Marshall, John M.: *See—*
Steele, Clarence R.; Price, Frank B.; and Marshall, John M., 3,697,324.

Martin, Helmut, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method for guiding vehicles automatically along a predetermined path. 3,696,882, Cl. 180-98.000.

Martin, Joan Hixon: *See—*
Bonilla, Charles F., 3,697,234.

Martin, John: *See—*
Parker, William L.; Johnson, Francis; and Martin, John, 3,697,542.

Martin, Melvin M.: *See—*
Knight, Rodney W.; Martin, Melvin M.; and Martin, William R., 3,697,374.

Martin, Otis M.: *See—*
Kough, John K.; Martin, Otis M.; and Miller, Silas N., 3,696,570.

Martin, Paul W., to Republic Industries, Inc. Combined door checking and door hold open mechanism. 3,696,462, Cl. 16-49.0ho.

Martin, Robert L.: *See—*
Heinrich, Theodore M.; Martin, Robert L.; and Steele, David J., 3,697,850.

Martin, William R.: *See—*
Knight, Rodney W.; Martin, Melvin M.; and Martin, William R., 3,697,374.

Martinez, Jorge Sueiras. Panel assembly for furniture construction. 3,697,363, Cl. 161-44.000.

Marting, Paul G., to Wagner Electric Corporation. Control valve and system. 3,697,138, Cl. 303-6.00c.

Martone, Ronald J.; and Mueller, Peter G., to Picker Corporation. Scintillation camera having a variable gain plural amplifier system. 3,697,753, Cl. 250-71.50s.

Maruta, Hisao: *See—*
Hori, Shojiro; and Maruta, Hisao, 3,697,240.

Maruyama, Eiichi: *See—*
Asai, Shojiro; Hirao, Motohisa; and Maruyama, Eiichi, 3,697,338.

Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.

Marx, Thomas O., to Atwood Vacuum Machine Company. Latch for vehicle doors. 3,697,105, Cl. 292-216.000.

Maryanchik, Grigory Efimovich: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Masayoshi, Kuroda: *See—*
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Mascherpa, Sergio: *See—*
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Mason, Paul J.: *See—*
Wells, Rodney L.; Ulmer, Harry E.; and Mason, Paul J., 3,697,249.

Mast, Robert E., to Hewlett-Packard Company. Regulating converter circuit. 3,697,851, Cl. 321-2.000.

Mastercraft Furniture Corporation: *See—*
Van Sürksum, Edwin J., 3,697,132.

Masuda, Tetuzo; Kurosawa, Kenjiro; Hashimoto, Takeo; and Izumi, Takahisa, to Nissan Motor Company, Limited. Air cooling system of automotive engine. 3,696,730, Cl. 98-2.060.

Matas, Carlos, to Etablissements Pain-Bourgeas. Reciprocal drive mechanism. 3,696,682, Cl. 74-57.000.

Mateja, Eugene V., to Bell & Howell Company. Sound-on-film recording system. 3,697,158, Cl. 352-17.000.

Matejka, Edgar, to Bodenseewerk Geratetechnik GmbH. Plural channel system wherein the input signals are unaltered if within standard limits, but are averaged, if outside limits. 3,697,776, Cl. 307-219.000.

Mathewson, William G.: *See—*
Kisker, Laurence J.; and Mathewson, William G., 3,697,657.

Mathus, Gregory: *See—*
Lowry, Alan B.; Mathus, Gregory; Morello, Herbert; and Miller, Robert J., 3,697,014.

Matouka, Michael F., to General Motors Corporation. Two-state zero-crossing detector. 3,697,782, Cl. 307-235.000.

Matsu, Noboru: *See—*
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Matsubara, Tamotsu: *See—*
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Matsumura, Haruki: *See—*
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Matsuo, Takehiko: *See—*
Ihara, Takashi; Matsuo, Takehiko; and Ohhara, Katsunobu, 3,697,302.

Matsuoka, Toshiro; Takeda, Keinosuke; Goto, Minoru; and Miyake, Akira, to Takeda Chemical Industries, Ltd. Fd containing enduracidin. 3,697,647, Cl. 424-118.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Mohri, Etsuzo; Hayakawa, Toshio; and Nishikawa, Akira, 3,697,904.
Sasaki, Toshiharu; Miyano, Ryuzo; and Onishi, Masaru, 3,697,173.

Matsushita Kenko Kabushiki Kaisha: *See—*
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Gunther, Gregory M.; Lewis, J. Stephen; Nishiguchi, Masakatsu; Robson, George E.; Wagner, Raymond P.; and Yarbrough, William R., 3,696,552.
Lewis, J. Stephen; Sapkus, Jurgis; and Villasana, Armando P., 3,696,553.

Maulding, Donald Roy, to American Cyanamid Company. Chemiluminescent reaction of chlorinated glycolide with hydrogen peroxide in the presence of a fluorescer. 3,697,432, Cl. 252-188.000.

Maurice, Guy; and Jullien, Yves, to Societe pour l'Equipement des Industries Chimiques Speichim. Valve on a column for exchange between fluids. 3,696,832, Cl. 137-512.100.

Mausner, Marvin L.; and Wiesenfeld, Arnold, to Witco Chemical Corporation. Stable enzyme containing liquid detergent. 3,697,451, Cl. 252-545.000.

Maxe, Sven-Erik, to Svenska Dataregister AB. Matrix with inductive elements. 3,697,954, Cl. 340-166.00r.

Maxwell, Milton, to Colgate-Palmolive Company. Container fill weight monitoring system. 3,697,754, Cl. 250-83.300.

Maycock, William E, to Fiber Industries, Inc. Polyesters having increased whiteness. 3,697,479, Cl. 260-47.00c.

Mayer, James R.: *See—*
Palauro, Dieter K.; and Mayer, James R., 3,697,113.

Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., to United States of America, Agriculture. Apparatus for producing core yarn. 3,696,600, Cl. 57-5.000.

Maynard, Donald, mesne: *See—*
Plasket, Chesteen S., 3,696,556.

Maytag, John Hardy, to Coors Porcelain Company. Metal working crank and slide press mechanism. 3,696,657, Cl. 72-450.000.

Mazoch, Charles J.: *See—*
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Mazur, Robert G., to Westinghouse Electric Corporation. Method for determining excess carrier lifetime in semiconductor devices. 3,697,873, Cl. 324-158.00d.

Mc Ardle, John Joseph; and Rauck, Robert Louis, to RCA Corporation. High voltage hold down circuit. 3,697,800, Cl. 315-27.00r.

Mc Card, Henry W. Textile heating and cooling. 3,696,601, Cl. 57-34.0hs.

Mc Coy, Reginald F. H., to Singer Company, The, mesne. Placement of image on matrix display. 3,697,681, Cl. 178-6.800.

Mc Culler, James F., 7/20% to Lukash, Leslie, 3/20% to Shearer, George, and and 1/20% to Scalire, Joseph L. Serological test for the detection of hepatitis. 3,697,639, Cl. 424-12.000.

Mc Dougall, Julia P., to Tranly Walls and Mini Courts (Proprietary) Limited. Non-planar ball rebound wall. 3,697,068, Cl. 273-29.00a.

Mc Queen, Norman: *See—*
Ross, Howard R.; Goodrich, Lloyd D.; and Mc Queen, Norman, 3,696,753.

McAdow, Walter R., to Mobil Oil Corporation. Metallizing coating compositions. 3,697,070, Cl. 106-290.000.

McCarron, Kerwin Peter: *See—*
Knight, Sheldon; and McCarron, Kerwin Peter, 3,697,183.

McCawley, Frank X.; Wyche, Charlie; and Schlain, David, to United States of America, Interior. Electrodeposition of metallic boride coatings. 3,697,390, Cl. 204-39.000.

McConnell, Robert G., to Honeywell Inc. Electrostatic recorder. 3,696,782, Cl. 118-637.000.

McCormick, Harold E.: *See—*
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McCulloch Corporation: *See—*
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McCune, Ellsworth J., to Eastman Kodak Company. Automatic color subject failure correction with illuminant discrimination for photographic printers. 3,697,174, Cl. 355-38.000.

McDonough, John M.; and Gray, Linsley S., Jr. Selective isomerization of 1-olefins to 2-olefins. 3,697,616, Cl. 260-683.200.

McGraw-Edison Company: *See—*
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Beeley, Michael G.; and Thompson, Richard D., 3,696,523.

McIntyre, Hal Byers; and Hickey, Harvey Edward, to SW Industries, Inc. Device for determining finger hole positions in bowling balls. 3,696,514, Cl. 33-174.00f.

McKown, Ernest M. Leak sealing device. 3,696,447, Cl. 4-1.000.

McLean, Michael B., to Johnson Service Company. Frequency to voltage converter. 3,697,781, Cl. 307-235.000.

McNeil Laboratories, Inc.: *See—*
Plostnieks, Janis, 3,697,529.

McPhail, Kenneth Jack. Trinket or ring holder. 3,696,914, Cl. 206-1.00r.

McSwiggin, Joseph R., to Procter & Gamble Company, The. Vibration energy milling of ground coffee slurries: 3,697,288, Cl. 99-71.000.

Mead Johnson & Company: *See—*
Wu, Yao Hua; and Mueller, Arthur Jacob, 3,697,553.

Means, Jay C., to Nalco Chemical Company. Titration of excess chelating agent. 3,697,224, Cl. 23-230.000.

Measures Corporation: *See—*
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Medical Specialties, Inc.: *See—*
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Medipak Corporation Limited: *See—*
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Mefford, Carl R.; Lass, James L.; Smith, Bart A.; Venier, Domic A.; and Trocki, Thomas, to General Electric Company. Nuclear fuel assembly with flow channel restraining means. 3,697,376, Cl. 176-78.000.

Meier, Eugene P.; Lenz, David E.; and Sternberger, Ludwig A., to United States of America, Army. Purification of antibodies. 3,697,645, Cl. 424-85.000.

Meiji Seika Kaisha, Ltd.: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Eiichi; and Niida, Taro, 3,697,648.

Meinhardt, Norman A.; and Widmer, Robert, to Lubrizol Corporation, The. Additives for lubricants and fuels. 3,697,428, Cl. 252-56.00d.

Melchior, Gerard; and Sinobad, Dusan, to Compagnie Generale d'Electricite. Circuit for switching between two unidirectional voltages. 3,697,880, Cl. 328-123.000.

Mellon, Eugene P.; and Kisner, Lester A., to Marriott Corporation. Method and apparatus for removing skin from onions or like vegetables. 3,696,848, Cl. 146-83.000.

Melville Clark Associates: *See—*
Clark, Melville, Jr.; and Luce, David A., 3,697,703.

Menasse, Raphael; and Gatzi, Karl, to Geigy Chemical Corporation. N-(4-Carboxy-benzylidene) amines. 3,697,589, Cl. 260-518.00r.

Mench, John W.: *See—*
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Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., 3,697,322.

Merck Patent Gesellschaft mit Beschrankter Haftung: *See—*
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Merkle, Eberhardt, to Wilhelm Bleyle KG. Apparatus for the impaling of weft-knitted and warp-knitted goods on needles. 3,696,764, Cl. 112-25.000.

Mermelstein, Seymour, to Tyco Laboratories, Inc. Releasable buckle. 3,696,471, Cl. 24-193.000.

Merola, Anthony, to Amerola Products Corporation. Ball bat with eccentrically thickened walls. 3,697,069, Cl. 273-72.000.

Merrill, Edward W.; and Pikarsky, Jacob M., to Grace, W. R., & Co. Container closure gasket made from a novel plastisol composition. 3,696,956, Cl. 215-40.000.

Merten, Rudolf: *See—*
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Mertz, Henry A. Question game including mechanically indexed answer apparatus. 3,696,528, Cl. 35-9.00r.

Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung: *See—*
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Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Messinger, Werner, to Braun Aktiengesellschaft. Shearing system for dry shavers. 3,696,508, Cl. 30-43.000.

Messner, Dieter: *See—*
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Metalines, Inc.: *See—*
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Meuleman, Johannes; and Aussant, Michel, to U.S. Philips Corporation. Radiation detector. 3,697,825, Cl. 317-234.00r.

Meyer, Carl R., to Aquaslide 'n' Dive Corporation. Cantilever stand. 3,697,067, Cl. 272-66.000.

Meyer, Gunther, to Dynamit Nobel Aktiengesellschaft. Preparation of polyvinylchoride. 3,697,493, Cl. 260-85.50h.

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Michael, Richard W.; and Staten, Hi W., Jr., to Phillips Petroleum Company. Limit control. 3,697,780, Cl. 307-235.000.

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Middlebrook, Robert D. Adjustable speed electric power means and system. 3,697,763, Cl. 290-17.000.

Mikulec, Richard A.: *See—*
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Miles, Gilbert De Wayne, to Colgate-Palmolive Company. Double container with mixing means. 3,696,919, Cl. 206-47.00a.

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Clack, Peter Joseph; Wiswell, James David; and Clemens, Anton Hubert, 3,697,730.
Lauria, Andrew Carmine; and Owens, Jeffrey Lynn, 3,697,421.

Mille, Gaston M. Method and apparatus for cooling liquids. 3,696,636, Cl. 62-399.000.

Miller, Francis G., to Bethlehem Steel Corporation. Method for recovering fine coal and coal-containing particles in a coal recovery circuit. 3,696,923, Cl. 209-12.000.

Miller, George T., to Hooker Chemical Corporation. Bonding coatings, dyes and adhesives to substrates. 3,697,306, Cl. 117-47.00a.

Miller, Orville C.: *See—*
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Miller, Robert E.: *See—*
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Miller, Robert E., to Monsanto Company. Protein-triazine ruminant feed material. 3,697,284, Cl. 99-2.00r.

Miller, Robert J.: *See—*
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Miller, Silas N.: *See—*
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Milton, Kirby Mitchell, to Eastman Kodak Company. Fogged, direct-positive silver halide emulsions containing strong oxidizing agents. 3,697,281, Cl. 96-108.000.
Minden, Henry T.; and Donahue, John A., to Sperry Rand Corporation. Liquid epitaxy method and apparatus. 3,697,330, Cl. 148-1.500.
Mine, Keiji, to Mitsubishi Chemical Industries, Ltd. Self-adhesive and removable non-woven fabric an process for producing the same. 3,697,315, Cl. 117-122.00p.
Minister of State for Defence, the Government of the Commonwealth of Australia: *See—*
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Mironov, Vladimir Florovich; Fedotov, Nikolai Semenovich; and Kozlikov, Vadim Lvovich. Method of producing 1,3-bis (hydroxyaryl) tetraorganosiloxanes. 3,697,569, Cl. 260-448.20b.
Mirtensen, Hans. Set of toy blocks. 3,696,533, Cl. 35-70.000.
Missouri Research Laboratories, Inc.: *See—*
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Mitani, Masao; Aihara, Katzuzo; Kudo, Mitsuhiro; Hara, Nobuhiro; Irie, Fujio; and Yamafuji, Kaoru, to Hitachi, Ltd. Joesphson junction having an intermediate layer of a hard superconducting material. 3,697,826, Cl. 317-234.00r.
Mitori, Yukio: *See—*
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Moessinger, Albert E. External weft fed loom and a shuttle therefor. 3,696,843, Cl. 139-125.000.
Mohri, Etsuzo; Hayakawa, Toshio; and Nishikawa, Akira, to Matsushita Electric Industrial Co., Ltd. UHF tuner. 3,697,904, Cl. 334-51.000.
Moisdon, R. Francois. Vacuum pumping unit. 3,697,196, Cl. 417-211.000.
Mojelski, William, to Mo Clamp Co. Ltd. Sill clamp for automobiles. 3,696,653, Cl. 72-296.000.
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Moore, John R.; Noack, William L.; and Roser, Robert A., to Avery Products Corporation. Label dispensing system. 3,696,967, Cl. 221-73.000.
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Lunden, Sidney L., 3,696,911.
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Moratschek, Frank G. Machine for making batches of mortar. 3,697,054, Cl. 259-154.000.
More, Oskar Wilhelm, to Telefonaktiebolaget LM Ericsson. Arrangement for metallizing of parts of a body. 3,696,781, Cl. 118-425.000.
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Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Ringless spinning machine. 3,696,605, Cl. 57-58.950.
Morion, Jay. Composite offset printing plate. 3,696,745, Cl. 101-415.100.
Moriya, Tuneo: *See—*
Sassa, Atsuo; Yukutomi, Masuo; Shinkawa, Hirotoshi; Moriya, Tuneo; and Homma, Keisuke, 3,697,566.
Morrill, Wayne J. High starting torque eccentric winding shaded pole motor. 3,697,842, Cl. 318-221.00r.

Morris, Horton H.; Olivier, James P.; and Prescott, Paul I., to Freeport Sulphur Company. Organo-clay-polymer compositions. 3,697,474, Cl. 260m40.00r.
Morris, Horton H.; and Prescott, Paul I., to Freeport Sulphur Company. Inorganic-organo titanate polymeric film. 3,697,475, Cl. 260-41.00a.
Morris, Ross E., to United States of America, Navy. Method for salvage of sunken ships. 3,696,773, Cl. 114-54.000.
Morris, Stephen J.; and O'Keefe, James M., to Marlin Firearms Co., The. Method of, and apparatus for, burn-fitting wooden gun stocks to metal receivers. 3,697,715, Cl. 219-10.430.
Morriston, Douglas I.; and Calvi, Salvatore J., to Pitney-Bowes, Inc. Reciprocating document carriage for photocopier. 3,697,165, Cl. 355-8.000.
Morton-Norwich Products, Inc.: *See—*
Jaech, Merrell O., 3,696,968.
Morton-Norwich Products, Inc., mesne: *See—*
Winitz, Milton, 3,697,287.
Moser, Kurt; and Hochli, Beat, to Lonza Ltd. Torsional oscillator. 3,696,664, Cl. 73-99.000.
Mosher, Richard G.: *See—*
Bishop, Irving N.; Mosher, Richard G.; and Simko, Aladar O., 3,696,798.
Moss, James R.; Roe, Richard R.; Coubrough, Lawrence E.; and Buck, Robert W., to Coors Porceln Company. Ceramic electrical resistor roll for copying machine. 3,697,836, Cl. 317-262.00a.
Moss, Theron V. Mop swab and method of manufacture. 3,696,460, Cl. 15-229.00r.
Mossey, Paul W., to General Electric Company. Weighted optical temperature measurement of rotating turbomachinery. 3,696,678, Cl. 73-346.000.
Mostyn, William D., to Minister of State for Defence, the Government of the Commonwealth of Australia. Telescopic tube locking and unlocking system. 3,697,103, Cl. 287-58.0ct.
Motorola, Inc.: *See—*
Lunn, Gerald K., 3,697,685.
Nordbrock, Raymond E., 3,697,859.
Parker, Norman W.; and Schafft, Hugo W., 3,697,788.
Wilcox, Milton E., 3,697,883.
Moulding, Kenneth William, to U.S. Philips Corporation. Semiconductor integrated circuits. 3,697,784, Cl. 307-303.000.
Mrugala, Theodore A.; and Kruck, Henry, to Warner & Swasey Company, The, mesne. Loader for mounting grinding wheels. 3,696,487, Cl. 29-200.00d.
Mueller, Arthur Jacob: *See—*
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Mueller, Floyd F., to American Hospital Supply Corporation. Control system for hospital bed. 3,697,846, Cl. 318-544.
Mueller, Gerhart Hermann: *See—*
Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, 3,697,461.
Mueller, Herbert: *See—*
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Marlone, Ronald J.; and Mueller, Peter G., 3,697,753.
Muhe, Ludwig: *See—*
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Mulford, Charles T., to FMC Corporation. Fruit supporting apparatus. 3,696,943, Cl. 214-1.0bc.
Munch, Hans Joachim, to Buss A.G. Process and device for the purification of a mixture of organic substances of high molecular weight. 3,697,387, Cl. 203-72.000.
Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, to Furnier- und Sperrholzwerk, J. F. Werz, Jr., K.G. Apparatus for filling molds. 3,697,208, Cl 425-147.000.
Munson, William O.: *See—*
Colgate, Stirling A.; Kempton, Marvin L.; Hanson, Merle E.; Munson, William O.; and Nicholson, Dallas E., 3,696,750.
Murai, Tsuyoshi; and Toi, Tatsuo, to Kokusai Denki Kabushiki Kaisha. Vapor growth device. 3,696,779, Cl. 118-48.000.
Murano, Jisaku. Vehicle tire pressure indicating and signalling device. 3,697,944, Cl. 340-58.000.
Murata, Kingo; and Shinohara, Katsutoshi, to Kabushiki Kaisha Koparu. Recording clock and electrical system. 3,697,770, Cl. 307-141.400.
Murata, Takao: *See—*
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Murdoch, Kenneth E.; and Turner, Donald B., to Moore Dry Kiln Company of Oregon. Lumber bin sorter with guide sling and tiltable bin floor. 3,696,948, Cl. 214-16.00b.
Murray, Robert H., to Bethlehem Steel Corporation. Nodule collector. 3,697,134, Cl. 299-8.000.
Musgrave, Albert W., to Mobil Oil Corporation. Corrections for seismic data obtained from expanding-spread. 3,697,939, Cl. 340-15.5td.
Musiyachenko, Alexandr Stepanovich: *See—*
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Musselman, Frank L.: *See—*
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Myers, Herbert, to Mobil Oil Corporation. Polysulfurized olefins. 3,697,499, Cl. 260-139.000.
Naarmann, Herbert; and Hartmann, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Boric acid esters of 2-vinylthioethanol. 3,697,575, Cl. 260-462.00r.
Nacci, George Raymond; and Toole, Richard Charles, to Du Pont de Nemours, E. I., and Company. Dry magnetic copying process. 3,698,005, Cl. 346-74.
Nadir, Mark T.: *See—*
Abramson, Carl N.; and Nadir, Mark T., 3,697,959.
Nagata, Jiro: *See—*
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Nagata, Nobuyoshi; and Mizuguchi, Ryuzo. Coating composition of a copolymer of methyl methacrylate with the polymerizable addition reaction product of an α~β-ethylenically unsaturated acid and an epoxy compound. 3,697,619, Cl. 260-836.
Nagavarapu, Ramarao: *See—*
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Nagy, Andrew: *See—*
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Nagy, Daniel Elmer, to American Cyanamid Company. Method for manufacture of dry strength paper containing methylamine-epichlorohydrin polymer. 3,697,370, Cl. 162-164.000.
Nahon, Abraham S. Perpetual appointment reminder. 3,696,532, Cl. 35-62.000.
Nakagome, Yukio; Kawai, Kazuo; Yanagidaira, Hidetaka; Shintain, Sotokichi; and Michishita, Isakichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Phase detection system for at least one digital phase-modulated wave. 3,697,881, Cl. 329-104.000.
Nakajima, Akira; and Suzuki, Hiroshi, to American Cyanamid Company. Flame-proof fibers. 3,697,218, Cl. 8-115.500.
Nakamura, Nobutaka: *See—*
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Nakano, Hiroshi: *See—*
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Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Light activated thyristor. 3,697,833, Cl. 317-235.00r.
Nalco Chemical Company: *See—*
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Means, Jay C., 3,697,224.
Namikawa, Keishi: *See—*
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Nania, John J. Swingable guideways for propelling a rollable device. 3,697,075, Cl. 273-110.000.
Napper, Jack C. Child's liquid spill container. 3,696,965, Cl. 220-90.400.
Nara, Kizo; Sukekawa, Izumi; and Yamada, Yasuo, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Apparatus for carrying and straightening electrolytic anode plates to be installed in an electrolytic cell. 3,696,656, Cl. 72-420.000.
Narita, Kaoru: *See—*
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Narusawa, Shozo; and Iizuka, Noritoshi, to Yurin Tokushu Kogyo Co. Method of and device for preserving drugs for injection. 3,696,579, Cl. 53-21.00r.
Nasser, John, to Mobil Oil Corporation. Turbulent flow leaching. 3,697,591, Cl. 260-525.000.
Nast, Robert. Transparency holder. 3,696,538, Cl. 40-104.18.
National Cash Register Company, The: *See—*
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Campbell, Hugh W., 3,697,668.
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Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich, 3,697,038.
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Nederlandse Organisatie voor Toegepast- Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid Handel en Verkeer: *See—*
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Nederveld, Terrill L., to Packaging Corporation of America, Container construction. 3,696,988, Cl. 229-23.00r.
Nelson, Stanford C. Belt traction vehicle. 3,696,878, Cl. 180-9.460.
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Ness, Leif A.; and Thomas, Edmund P., to Air Products and Chemicals, Inc. Method and apparatus for producing refrigeration. 3,696,637, Cl. 62-402.000.
Nethersell, Barry Herbert, to British Domestic Appliances Limited. Washing or other machines. 3,696,903, Cl. 192-136.000.
Neubold, Kurt: *See—*
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New, John D., to Harefield Rubber Company Limited, The. Speed control system for a linear induction motor. 3,697,838, Cl. 318-135.000.
Newcombe, Sean Benjamin: *See—*
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NGK Insulators, Ltd.: *See—*
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Niedner, Peter Klaus; and Diez, Gerhard H., said Diez assor. to said Niedner, Peter Klaus. Process and device for the treatment of material. 3,696,520, Cl. 34-10.000.
Nielsen, Hans Borge: *See—*
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Nielson, Jay P.; and Allred, G. Allen, to Eaton Yale & Towne, Inc. Vacuum pick up head. 3,697,112, Cl. 294-65.000.
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Oakes, James A., to General Motors Corporation. Geometry for a PNP silicon transistor with overlay contacts. 3,697,828, Cl. 317-235.000.
Oakes, Vincent; and Cross, David F. W., to Interstab Limited, mesne. Vinyl chloride resins stabilized with metal compound-epoxy compound-phosphite combinations. 3,697,463, Cl. 260-23.0xa.
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Odhner, Oliver Randolph, to Pennwalt Corporation. Adaptor for angularly diverting visco-elastic melt flow. 3,696,840, Cl. 138-39.000.
Ogle, Pearl R., Jr., to United States of America, Atomic Energy Commission. Method of purifying uranium hexafluoride by reduction to lower uranium fluorides. 3,697,235, Cl. 23-346.000.
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Ohta, Wasaburo; and Soga, Setsuo, to Kabushiki Kaisha Ricoh. Electrostatic photography. 3,697,172, Cl. 355-17.000.
Ohta, Wasaburo, to Kabushiki Kaisha Ricoh. Electrostatic printing method. 3,697,268, Cl. 96-1.00r.
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Ohyama, Takashi; Kawashige, Akira; and Miyashita, Takeo, to Kabushikikaisha Tokyo Seizosho (Tokyo Keiki Seizosho Co., Ltd.). Secondary radar reception system. 3,697,991, Cl. 343-6.5lc.
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Okada, Hitoshi; Imahori, Seiichi; and Hirako, Susumu, to Mitsubishi Chemical Industries, Limited. Fluorescent naphthalimide derivatives. 3,697,525, Cl. 260-281.000.
Okamoto, Tadashi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.
O'Keefe, James M.: *See—*
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Olin Corporation: *See—*
Pitts, James J.; and Scott, Peter H., 3,697,456.
Shive, Richard A., 3,697,236.
Oliver, Michael J. Grounding electrical device and box. 3,697,924, Cl. 339-14.00r.
Olivetti, Ing., C., & C., S.p.A.: *See—*
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Olivier, James P.: *See—*
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O'Loughlin, Francis A.; and Herb, Philip J., to Thomas & Betts Corporation. Insulating piercing electrical connector. 3,697,669, Cl. 174-84.00c.
Olsen, Leif Thorvald, to Boen Bruk. Device for the continuous production of laminated wood of the parquet type. 3,697,361, Cl. 156-558.000.
Olson, Frank Wesley, Jr.; and Roberts, Karl Hutcheson, to Colgate-Palmolive Company. Shampoo. 3,697,452, Cl. 252-545.000.
Olson, Raymond E.; and Yone, Harold R., to Barber-Colman Company. Method and means for doffing a bobbin and forming a transfer tail. 3,696,602, Cl. 57-53.000.
Olson, Ronald A., to Tektronix, Inc. Integrating circuit. 3,697,778, Cl. 307-229.000.
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Ongley, Milne Joseph. Method of treating osteoarthritic joints with polysiloxanes. 3,697,653, Cl. 424-184.000.
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Ono, Hisatake; Osada, Chiakai; Watarai, Syu; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Organic photoconductive materials for electrophotography. 3,697,266, Cl. 96-1.500.
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Opp, Warren P.: *See—*
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Ordqvst, Olof Albert, to Aktiebolaget Karlstads Merkaniska Werkstad. Apparatus for production of casting moulds. 3,697,207, Cl. 425-63.000.
Ortega, Charlotte C. Birth announcement. 3,696,540, Cl. 40-126.
Ortelli, Aurelio, to Riva Calzoni S.p.A. Distributor for hydraulic motors. 3,696,710, Cl. 91-487.000.
Orth, Edward D.; and Yerman, Alexander J., to General Electric Company. Semiconductor strain gage pressure transducer. 3,697,917, Cl. 338-2.000.
Orth, Edward D.; and Yerman, Alexander J., to General Electric Company. Silicon diaphragm pressure sensor having improved configuration of integral strain gage elements. 3,697,918, Cl. 338-3.000.
Orth, Edward D.; and Kessel, Alvan A., to General Electric Company. Semiconductor pressure transducer structure. 3,697,919, Cl. 338-42.000.
Osada, Chiakai: *See—*
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Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. High speed printer of multiple copies for output information. 3,698,006, Cl. 346-74.0es.
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Palauro, Dieter K.; and Mayer, James R., to Gardner-Denver Company. Drill rod retrieving tool. 3,697,113, Cl. 294-86.240.

Palermiti, Frank M.: *See—*
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Palmer, Stanley D. Game apparatus board. 3,697,077, Cl. 273-135.00b.

Palombo, Albert M., to American Poly-Plastics Laboratories, Inc. Self-wetting foam product and method of making same. 3,697,457, Cl. 260-2.50f.

Paltauf, Fritz; Margot, Alfred; and Brenneisen, Paul, to Ciba-Geigy Corporation. Isothiocyano-diphenyl ethers, sulfides, sulfoxides and sulfones. 3,697,555, Cl. 260-397.600.

Pande, Kailash Chandra: *See—*
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Nystrand, Ernst Daniel, 3,697,010.

Paredes, Candelario, to Forney Engineering Company. Damper with double floating side rails. 3,696,804, Cl. 126-285.00r.

Park, James Millar. Golf board game. 3,697,072, Cl. 273-87.00h.

Park, John R. Towed folding camper having a low profile. 3,697,121, Cl. 296-23.00r.

Parker, Herbert William Mansfield, to Pyrotenax Limited. Electric cables. 3,697,671, Cl. 174-115.000.

Parker, Norman W.; and Schafft, Hugo W., to Motorola, Inc. Piezoelectric resonating device. 3,697,788, Cl. 310-9.500.

Parker, William L.; Johnson, Francis; and Martin, John, to Dow Chemical Company, The. Method of producing α-carboxylated 5-membered lactones. 3,697,542, Cl. 260-326.300.

Parkison, Richard G., to American Standard Inc. Flow control device. 3,697,002, Cl. 239-535.000.

Parr, Richard H., Jr: *See—*
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Parrent, Ottis L. Contact lens inserter. 3,697,109, Cl. 294-1.0ca.

Parris, Peter P., to Tridair Industries. Tie-down fitting. 3,696,759, Cl. 105-369.00a.

Parsons, Marshall F. Vertical kiln system and process. 3,697,057, Cl. 263-29.000.

Parts, Leo P.; and Hardy, Edgar E., to Monsanto Research Corporation. Method of making a stencil for screen-printing using a laser beam. 3,696,742, Cl. 101-128.400.

Pascente, Joseph E., to Grigsby-Barton, Inc. Thyristor circuits for applying a voltage to a load. 3,697,774, Cl. 307-136.000.

Pasieka, John F., to Polaroid Corporation. Identification card camera system capable of producing cards having different formats. 3,696,716, Cl. 95-11.100.

Pasquino, Pietro; Benzoni, Luigi; Carnisio, Giuseppe; and Colombo, Luigi, to Montecatini Edison S.p.A. Process for preparing 3-pentene nitrile. 3,697,578, Cl. 260-465.900.

Passal, Frank, to M & T Chemicals Inc. Electroplating processes and compositions. 3,697,391, Cl. 204-43.000.

Paszke, Jan; Pstrocki, Henry; Ploszajski, Janusz; Lachman, Rudolf; Stanislaw, Lansy; and Wiszczor, Jan, to Instytut Wlokien Sztucgnych i Syntetsycgnych. Process of heterogeneous mixing spinning solutions and other viscous liquids or masses and the device tereof. 3,697,051, Cl. 259-4.000.

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Pauliukonis, Richard S. Control valve. 3,696,835, Cl. 137-625.600.

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Peck, Alvin W., to Phillips Petroleum Company. Clarifying ammonium phosphate solutions using attapulgite and bentonite. 3,697,233, Cl. 23-293.00r.

Peer, Henricus Gerardus: *See—*
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Perina, Joseph; and Hlavaty, Albert E., to American Velcro, Inc. Closure assembly with slidable closure member. 3,696,472, Cl. 24-205.000.

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Peterson, Victor S.; and Gnecco, Arthur J. Thaw sensor. 3,696,679, Cl. 73-358.000.

Petit, George S.; and Kienberger, Charles A., to United States of America, Atomic Energy Commission. Method for preparing stable actinide peroxide sols. 3,697,441, Cl. 252-301.10s.

Petro-Tex Chemical Corporation: *See—*
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Peyroux, Marie Alexandre Jacques Louis. Device for golf training. 3,697,081, Cl. 273-199.00a.

Pfaffenberger, Erwin; and Forsterlug, Hans, to Gossen, B., & Co. GmbH. Light measuring device. 3,697,179, Cl. 356-73.000.

Pfarrwaller, Ervin, to Sulzer Brothers, Ltd. Device for coupling a weaving shaft with a reciprocating drive lifter. 3,696,842, Cl. 139-57.

Pfeiffer, Hans Walter: *See—*
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Physikalisch-Technisches Entwichlungsburolaing: *See—*
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Piasek, Edmund J.; and Karll, Robert E., to Standard Oil Company (Indiana). Boron derivatives of high molecular weight Mannich condensation products. 3,697,574, Cl. 260-462.00r.

Picard, Jean P.; Seals, William O.; and Pell, Lawrence W., to United States of America, Army. Means for improving burnout of consumable cartridge cases. 3,696,748, Cl. 102-38.000.

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Pickett, John E. P. Microscopy tissue receptacle method. 3,697,299, Cl. 117-3.000.

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Pittman, Phillip D.; and Peters, Michael L., to Endura Board International, Inc. Display sign. 3,696,541, Cl. 40-142.000.

Pitts, James J.; and Scott, Peter H., to Olin Corporation. Flame retardant polyurethane foam. 3,697,456, Cl. 260-2.5aj.

Pizzimenti, Roger Philip; and Satcher, James Ware, Jr. Motor vehicle all-weather forward view mirror. 3,697,157, Cl. 350-302.000.

Plasket, Chesteen S., 1/5 to Chambers, Earl L. and 1/5 to Maynard, Donald, mesne. Hoop rolling pusher. 3,696,556, Cl. 46-220.000.

Plostnieks, Janis, to McNeil Laboratories, Inc. Aralkyl penta- and hexamethylenimine and intermediates therefor. 3,697,529, Cl. 260-293.810.

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Podhajny, Richard M., to Dick, A. B., Company. Novel photoconductive carbazole polymers and photoconductive elements embodying same. 3,697,264, Cl. 96-15.000.

Poe, Lloyd Richard, to Hartwell Corporation, The. Energy absorbing device. 3,696,891, Cl. 188-1.00c.

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Pollman, Frederic W., to Sundstrand Corporation. Hydraulic servo device. 3,697,200, Cl. 418-61.000.

Polmanteer, Keith E.; Willing, David N.; and Talcott, Thomas D., to Dow Corning Corporation. Composition curable through Si-H and Si-CH=CH$_2$ with improved properties. 3,697,473, Cl. 260-37.0sb.

Polydesigns Limited: *See—*
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Pommerening, Owe A.; and Russell, Stanley L. Call metering for telephone exchange. 3,697,695, Cl. 179-7.0mm.

Ponsen, Catharinus M., 1/2 to Craig, Colin. Dock side cargo handling apparatus. 3,696,947, Cl. 214-14.

Pope, George F., to Diversified Manufacturing and Marketing Co., Inc. Apparatus for forming holes in and installing lines in structural members. 3,697,188, Cl. 408-230.000.

Poppe, Wassily; and Khelghatian, Habet M., to Standard Oil Company. Contact angle measurement of plastic surfaces. 3,696,665, Cl. 73-104.000.

Porret, Daniel; and Habermeier, Juergen, to Ciba-Geigy AG. Bis-(1-α-aminopropyl-hydantoinyl-3)-alkanes. 3,697,539, Cl. 260-309.500.

Porteous, Andrew, to National Research Development. Method of and apparatus for the multi-flash distillation of liquids. 3,697,382, Cl. 202-173.000.

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Posner, Seymour J., 25% Friedman and Goodman. Supersensitive energizing circuit. 3,697,787, Cl. 209-308.000.

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Potts, Robert L.; and Post, Wiley G. Trailer cushioning and stabilizing device. 3,697,099, Cl. 280-446.00b.

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Morris, Horton H.; and Prescott, Paul I., 3,697,475.

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Price, Frank B.: *See—*
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Prill, Robert S., to Singer Company, The, mesne. Analog-to-digital converter. 3,697,978, Cl. 340-347.0ad.

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Prins, Richard, Sr.; and Prins, Richard, Jr., to Wolverine Manufacturing Company, mesne. Poultry manure drier and sterilizer. 3,697,056, Cl. 263-8.00r.

Procter & Gamble Company, The: *See—*
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Prodger, Brian S.: *See—*
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Protas, Arthur I., to Cartridge Television, Inc. Head-to-tape alignment apparatus and method. 3,697,676, Cl. 178-6.60p.

Pstrocki, Henry: *See—*
Paszke, Jan; Pstrocki, Henry; Ploszajski, Janusz; Lachman, Rudolf; Stanislaw, Lansy; and Wiszczor, Jan, 3,697,051.

Pugin, Andre, to Ciba-Geigy AG. Crystalline perylenetetracarboxylic acid dibenzoylhydrazide. 3,697,526, Cl. 260-281.000.

Pulley, Monroe, Jr.: *See—*
Kucera, Alfred J.; and Pulley, Monroe, Jr., 3,696,459.

Pyke, Thomas R.: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Pyke, Thomas R., 3,697,380.

Pyrotenax Limited: *See—*
Parker, Herbert William Mansfield, 3,697,671.

Quantic Industries, Inc.: *See—*
Knight, Sheldon; and McCarron, Kerwin Peter, 3,697,183.

Quest Electronics Corporation: *See—*
Stevens, Alan F.; and Bergson, Arnold A., 3,697,973.

Quinlan, William J.; and Huver, Lawrence L., to Hastings Manufacturing Company. Method of making a backing strip for a windshield wiper blade. 3,696,497, Cl. 29-407.000.

Radune, Karl F., to Textron, Inc. Method and apparatus for making an antifriction bearing retainer. 3,696,485, Cl 29-148.40c.

Ragard, Phillip A., to Universal Instruments Corporation. Rotary positioner. 3,696,713, Cl. 92-121.000.

Rambert , Andre: *See—*
Bousquet, Gilles; and Rambert , Andre, 3,696,446.

Rambosek, George M.; Allen, Michael George; and Van Dyke Tiers, George, to Minnesota Mining and Manufacturing Company. Process for preparing polyisocyanurates and polyurethanes using organic orthoborate catalysts. 3,697,485, Cl. 260-77.5nc.

Ramins, Lothar, to Horizons Incorporated. Process for making non-silver free radical film images visible. 3,697,272, Cl. 96-27.00.

Ramsey Corporation: *See—*
Prasse, Herbert F.; and McCormick, Harold E., 3,697,091.

Randall, John M.: *See—*
Bhagat, Gopal C.; and Randall, John M., 3,697,170.

Randell, Donald R., to Geigy Chemical Corporation, mesne. Chemical compounds and compositions. 3,696,851, Cl. 252-51.5.

Rands, Steve A. Abrasive brush having bristles with fused abrasive globules. 3,696,563, Cl. 51-332.000.

Ratcliff, Edward H., Jr.: *See—*
Anderson, Charles M.; and Ratcliff, Edward H., Jr., 3,696,754.

Ratledge, Houston: *See—*
Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., 3,696,951.

Ratouis, Roger: *See—*
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Rattenbury, Kenneth; and Larrison, Millard S., said Rattenbury assor. to Weston Chemical Corporation. Polymercapto polyphosphonites. 3,697,627, Cl. 260-928.000.

Rauck, Robert Louis: *See—*
Mc Ardle, John Joseph; and Rauck, Robert Louis, 3,697,800.

Raymond, Anthony J.: *See—*
Krengel, Theodore H.; Ostrowski, Arthur E.; and Raymond, Anthony J., 3,696,503.

Raymond, William J.: *See—*
Geils, Alfred E.; Raymond, William J.; Roberts, Richard W.; and Shreck, Peter K., 3,697,162.

Raytheon Company: *See—*
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RCA Corporation: *See—*
Avins, Jack; and Craft, Jack, 3,697,885.
Christensen, Edward Walter, II; and Eu Daly, Ronald Dale, 3,697,909.
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Douglas, Edward Curtis, 3,697,178.
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Lamorte, Michael F., 3,697,336.
Mc Ardle, John Joseph; and Rauck, Robert Louis, 3,697,800.
Richard, Norman; Jean, Robert; Huh, William; and Patton, Willard Thomas, 3,698,000.
Stoudenheimer, Richard G.; and Dourte, Rodger P., 3,697,794.
Yongue, James McIntire, 3,697,817.

Readyhough, Peter A., to Textron Inc. Nail having a pair of outwardly diverging head elements shaped to provide packaging, driving and fastening effectiveness and package thereof. 3,696,701, Cl. 85-28.000.

Recaro Aktiengesellschaft: *See—*
Strien, Werner; and Faust, Eberhard, 3,697,128.

Recasens, Joseph, to L'Electro-Refractoire. Cluster casting apparatus for workpieces made o poured molten refractory material. 3,697,037, Cl. 249-81.000.

Reckseit, Bernard S.; and Burgess, George A., to Sweco, Inc. Hoist pans and hoist pan handling apparatus. 3,697,006, Cl. 241-171.000.

Redmore, Derek; and Oude Alink, Bernardus A., to Petrolite Corporation. Use of thionium derivatives as corrosion inhibitors. 3,697,221, Cl. 21-2.500.

Reece, Jack E.; and Fozzard, George B., to Phillips Petroleum Company. Certain thiazine-2-thione compounds and method of preparing same. 3,697,516, Cl. 260-243.00r.

Reed, Robert D., to Zink, John, Company. Burner assembly for flare stack. 3,697,231, Cl. 23-277.00c.

Reese, Frank P.; and Yancey, LeRoy D. Display device. 3,696,536, Cl. 40-35.000.

Reeves, Wilson A.: *See—*
Beninate, John V.; Daigle, Donald J.; Drake, George L., Jr.; Reeves, Wilson A.; and Donaldson, Darrell J., 3,697,316.

Rehkopf, Charles H.: *See—*
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Reichenberger, Kurt: *See—*
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Reicheneder, Franz; Kropp, Rudolf; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Pyridazone derivatives. 3,697,522, Cl. 260-250.00a.

Reimann, Hans, to Schering Corporation. Process for the production of antibiotic W847-A from related antibiotics. 3,697,649, Cl. 424-120.000.

Reineking, Vernon H.: *See—*
Staudhammer, Karl P.; and Reineking, Vernon H., 3,697,634.

Reinhart, Henry F.; and Dega, Robert L., to General Motors Corporation. Side seal for rotary combustion engine. 3,697,202, Cl. 418-142.000.

Reinke, George W. Foraminous printing screen. 3,696,741, Cl. 101-128.300.

Reip, Raymond G., to GPE Controls, Inc. Electromagnetic fluid control valve. 3,696,837, Cl. 137-625.330.

Reisch, Hans, to Siemens Aktiengesellschaft. Method for the establishment of conference telegraphy connections in centrally controlled telegraphy dial exchange installations. 3,697,672, Cl. 178-3.000.

Reisman, Abraham J.; and Wilkinson, Thomas B., III, to Alton Box Board Company and Monsanto Company. Rigid-when-wet boxboard. 3,697,365, Cl. 161-133.000.

Reitan, Daniel K.; and Nagavarapu, Ramarao, to Wisconsin Alumni Research Foundation. Method and apparatus for non-oscillatory removal of transients in minimum time by bang-bang control of reactance in a power system. 3,697,773, Cl. 307-93.000.

Remington Arms Company, Inc.: *See—*
Scanlon, John J., 3,696,749.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,697,588.

Remy, David C.: *See—*
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Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,585.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,592.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,697,604.

Republic Industries, Inc.: *See—*
Martin, Paul W., 3,696,462.

Reynard, Remi: *See—*
Chatard, Michel; Grolet, Pierre; and Reynard, Remi, 3,697,114.

Reynolds, Rolfe E.; and Carlile, Alfred E., to Textron Inc. Plastic fastener and method of securing same to material. 3,696,470, Cl. 24-90.000.

Rhodes, John R.: *See—*
Morgan, Ira Lon; and Rhodes, John R., 3,697,752.

Rhone-Poulenc S.A.: *See—*
Boissieras, Jean; Ceyzeriat, Louis; and Poy, Guy, 3,697,568.
Sausse, Andre, 3,696,806.

Ribner, Herbert S.; and Siddon, Thomas E., to University of Toronto, The Governors of the. Method and means of measuring velocity fluctuations in unsteady flow. 3,696,673, Cl. 73-194.00b.

Richard, Eugene D. Aquarium with improved optical qualities. 3,696,789, Cl. 119-5.000.

Richard, Norman; Jean, Robert; Huh, William; and Patton, Willard Thomas; to RCA Corporation. Flexible and slidable waveguide feed system for a radiating horn antenna. 3,698,000, Cl. 343-772.000.

Richards, Dennis H. Camping trailers. 3,697,122, Cl. 296-23.00r.

Richards, Harold R., to Canadian Patents and Development Limited. Shrinkproofing and improvement in stretch characteristics of wool. 3,697,219, Cl. 8-127.600.

Richardson, Company, The: *See—*
Alsberg, Henry, 3,697,494.

Richmond, Charles A., to Nichols Engineering & Research Corporation. Gas scrubbing system. 3,696,590, Cl. 55-238.000.

Richo Co., Ltd.: *See—*
Uchida, Michio, 3,697,849.

Richter, Fred A.: *See—*
Winsler, Robert J.; and Richter, Fred A., 3,697,723.

Rickard, Donn J., to Brown International Corporation. Apparatus for filling a container with a weighed load of fragile articles. 3,696,584, Cl. 53-239.

Ricoh Co., Ltd.: *See—*
Suzuki, Shigeru, 3,697,166.

Riehle, Harald, to IWA-Rechenschieberfabrik F. Riehle KG. Foldable game playing board. 3,697,078, Cl. 273-136.00g.

Rieker, Justus, Dr., & Co.: *See—*
Hornung, Gerhard, 3,696,534.

Riess, Joseph A., to General Motors Corporation. Three-phase inverter control circuit. 3,697,843, Cl. 318-227.000.

Riester, Oskar; and Hase, Marie, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsions which are spectrally sensitized and which contain color couplers. 3,697,282, Cl. 96-139.000.

Rieter Machine Works Ltd.: *See—*
Lattion, Andre, 3,696,468.

Rigacci, Fernando. Plant for dyeing yarn continuously. 3,696,642, Cl. 68-5.00d.

Rigg, Ralph R.: *See—*
Carlin, Ralph E.; and Rigg, Ralph R., 3,696,632.

Riiner, Ulo, to AB Karlshamns Oljefabriker. Process for producing a bakery fat product with improved ability to retard the staling of bread. 3,697,294, Cl. 99-123.000.

Riley, Donald R.: *See—*
Emon, Donald E.; and Riley, Donald R., 3,697,373.

Riley, Jefferson B. Learning table. 3,696,760, Cl. 108-32.000.

Ripoche, Gerard: *See—*
Biet, Jean-Pierre; Nguyen, Quang Tan; Peres, Gerard; and Ripoche, Gerard, 3,697,760.

Ritter, Charles P. Fish bait container and wrapping device. 3,696,585, Cl. 53-390.000.

Riva Calzoni S.p.A.: *See—*
Ortelli, Aurelio, 3,696,710.

Roano, Domenico: *See—*

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Robba, William A.; and Klasson, George A., to Air Products and Chemicals, Inc. and Pfizer Inc. Pyrolytic graphite nozzles and guide tubes for welding torches. 3,697,721, Cl. 219-136.000.

Robbins, Ernest A.: *See—*
Faith, William T., Jr.; Steigerwalt, Ronald B.; and Robbins, Ernest A., 3,697,285.

Robbins, Robert; Whitty, Arthur R.; and Kachavos, Louis J., to Sanders Associates, Inc. Antenna self-test systems. 3,697,876, Cl. 325-67.000.

Roberts, Karl Hutcheson: *See—*
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Roberts, Richard W.: *See—*
Geils, Alfred E.; Raymond, William J.; Roberts, Richard W.; and Shreck, Peter K., 3,697,162.

Roberts, Roger G.; and Algeo, Jerry A., to North American Rockwell Corporation. Latchable, polarization-agile reciprocal phase. 3,698,008, Cl. 333-31.00a.

Robertson, Aura M. Portable shampoo chair. 3,697,127, Cl. 297-182.000.

Robinson, Thomas E.: *See—*
Bartholomew, Gerald E.; Kostuch, Donald J.; Robinson, Thomas E.; and Rohland, William S., 3,697,951.

Robson, George E.: *See—*
Gunther, Gregory M.; Lewis, J. Stephen; Nishiguchi, Masakatsu; Robson, George E.; Wagner, Raymond P.; and Yarbrough, William R., 3,696,552.

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Rockwell Manufacturing Company: *See—*
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Rodal, David R.: *See—*
Van Heeckeren, Jacob; Rodal, David R.; and Markevitch, Bob V., 3,697,149.

Rodgers, John J., to White Motor Corporation. Motor vehicle with air flow deflector. 3,696,732, Cl. 98-2.140.

Roe, Malcolm David: *See—*
Edwards, John David; Perkins, Leonard; Donald, John Henry; Chappell, Peter Lee; Newcombe, Sean Benjamin; and Roe, Malcolm David, 3,697,729.

Roe, Richard R.: *See—*
Moss, James R.; Roe, Richard R.; Coubrough, Lawrence E.; and Buck, Robert W., 3,697,836.

Roeder, Harold H.; and Roeder, Marcia A. Educational testing and instructional device. 3,696,526, Cl. 35-9.00e.

Roeder, Marcia A.: *See—*
Roeder, Harold H.; and Roeder, Marcia A., 3,696,526.

Rogers, Alan B.; and Sebring, Michael, to Armour and Company. Method for making a food product in portions of controlled size and shape. 3,697,283, Cl. 99-1.000.

Rogers, Howard G.; and Taylor, Lloyd D., to Polaroid Corporation. Polymer encapsulated silver halide grains and photographic materials employing same. 3,697,279, Cl. 96-77.000.

Rohland, William S.: *See—*
Bartholomew, Gerald E.; Kostuch, Donald J.; Robinson, Thomas E.; and Rohland, William S., 3,697,951.

Rohm and Haas Company: *See—*
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Rohr Corporation: *See—*
Ellis, Peter H., 3,696,617.

Roje, Albert Norman, to Kango Electric Hammers Limited. Electric motor armature with stress relieved, resilient commutator load connections. 3,697,792, Cl. 310-234.000.

Rolstape Corporation: *See—*
Evans, Wallace D., Jr., 3,696,510.

Rolland, Thomas P.: *See—*
Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., 3,697,346.

Rollings, Ernest J., Jr.: *See—*
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Rombrecht, Hans-Malte: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 3,697,471.

Ronnings, Jacob A. Apparatus for repairing damaged carpeting. 3,697,358, Cl. 156-514.000.

Rood, Alvin A.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schneider, Richard E.; and Rood, Alvin A., 3,697,313.

Roos, Ernst: *See—*
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 3,697,433.

Rosa, Juan. Antismog device for cleaning, burning, and muffling the exhaust gases and engine compartment fumes of internal combustion engines. 3,696,619, Cl. 60-297.000.

Rosemount Engineering Company Limited: *See—*
Johnston, James Stewart, 3,697,768.

Rosemount Inc.: *See—*
Geronime, Robert L., 3,697,726.

Rosenberg, David, to Pall Corporation. Disposable filter assembly. 3,696,932, Cl. 210-437.000.

Rosenblum, Julia R. Multiple unit hand luggage. 3,696,850, Cl. 150-33.000.

Roser, Robert A.: *See—*
Moore, John R.; Noack, William D.; and Roser, Robert A., 3,696,967.

Rosher, Ronald; and Simmons, Ronald L., to Hercules Incorporated. Cool burning smokeless powder composition containing nitramine ethers. 3,697,341, Cl. 149-92.000.

Ross, Howard R.; Goodrich, Lloyd D.; and Mc Queen, Norman, to Transportation Technology, Inc. Guideway and switching linear motor propelled vehicle. 3,696,753, Cl. 104-148.0lm.

Ross, Richard J.; and Tjon, Harry X., to Kaiser Aluminum & Chemical Corporation. Mold system and apparatus for producing a composite panel. 3,697,205, Cl. 425-4.000.

Rossnan, Michael. Method of preparing crab bodies for the removal of the meat therefrom. 3,696,465, Cl. 17-48.000.

Rotadraw Limited: *See—*
Mabbutt, David Robert, 3,696,529.

Rotondo, Fortunato N.; Toledo, Emil; and Lawrence, Leslie, to United States of America, Navy. Tool for U-bending of plated wire. 3,696,846, Cl. 140-102.000.

Rotta Research Laboratorium S.p.A.: *See—*
Rovati, Luigi; Mascherpa, Sergio; and Casula, Pierluigi, 3,697,652.

Roussel-UCLAF: *See—*
Boucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,697,556.
Bucourt, Robert; Nedelec, Lucien; Gasc, Jean-Claude; and Pierdet, Andre, 3,697,510.
Bucourt, Robert; and Nedelec, Lucien, 3,697,511.

Rousselot, Felix, to Ciba-Geigy Corporation. Gas flow dispenser bag. 3,696,972, Cl. 222-189.000.

Rovati, Luigi; Mascherpa, Sergio; and Casula, Pierluigi, to Rotta Research Laboratorium S.p.A. N-Acetylglucosamine for treating degenerative afflictions of the joints. 3,697,652, Cl. 424-180.000.

Rowland-Hill, Edward W.; and Margerum, Edwin O., to Sperry Rand Corporation. Detachable side plate for a threshing and separating unit of an axial flow combine. 3,696,815, Cl. 130-27.00j.

Roydon, William Merry, to AMP Incorporated. Electrical connector. 3,697,934, Cl. 339-217.500.

Ruben, Paul L., to Eastman Kodak Company. Compact zoom lens. 3,697,155, Cl. 350-184.000.

Rubico, Jerome A.: *See—*
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Ruby, Philip Randolph: *See—*
Giambalvo, Vito Albert; and Ruby, Philip Randolph, 3,697,464.

Ruggiero, Edward M.: *See—*
Ensminger, Clifford H.; and Ruggiero, Edward M., 3,698,012.

Rumanowski, Edmund J., to Tenneco Chemicals, Inc. Process for the control of pests with substituted N,N'-Bis(haloacetyl)-o-phenylene diamines. 3,697,658, Cl. 424-324.000.

Rumball, Paul G.: *See—*
Kitchener, Charles J.; and Rumball, Paul G., 3,696,942.

Runge, Richard J., to Chevron Research Company. Method of detecting geologically anomalous bodies lateral to a borehole by comparing electrical resistivity measurements made using short-range measuring means and a long-spaced electrode array. 3,697,864, Cl 324-10.000.

Ruppel, Kurt: *See—*
Bales, Joseph H.; Prodger, Brian S.; and Ruppel, Kurt, 3,696,555.

Ruppel, Reinhold. Self-propelled toy. 3,696,557, Cl. 46-243.00m.

Rushmere, John D., to Du Pont de Nemours, E. I., and Company. Production of vinyl acetate from ethylene using novel liquid catalyst compositions. 3,697,586, Cl. 260-497.00a.

Rusnak, Michael: *See—*
Bosten, Donald R.; and Rusnak, Michael, 3,696,693.

Russell, Stanley L.: *See—*
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Russell, William N.: *See—*
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Ryan Aeronautical Co., The: *See—*
Kafitz, Peter H., 3,697,995.

Rygiol, Henry V. Servomotor control. 3,697,847, Cl. 318-608.000.

S & C Electric Company: *See—*
Chabala, Leonard V., 3,697,712.

S&C Electric Company: *See—*
Chabala, Leonard V.; and Evans, David M., 3,696,729.

S&S Research & Development Corporation: *See—*
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Sachs, Ersa Ernst, K.G.: *See—*
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Sacks, William: *See—*
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Sadao, Ishige: *See—*
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Saenz, Eliseo: *See—*
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Safety Signaling, Inc., mesne: *See—*
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Sagami Chemical Research Center: *See—*
Fujisawa, Tamotsu; and Kojima, Takakazu, 3,697,601.

Saggers, David Thomas, to Fisons Pest Control Limited. Decafluorbenzhydrol as a selective herbicide. 3,697,254, Cl. 71-122.

Sakai, Toshikiko: *See—*

Nozaki, Choji; Kono, Kiichi; Sakai, Toshikiko; and Kamigaito, Osami, 3,696,604.

Salaun, Harold L., Jr.: *See—*
Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,603.
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,600.

Salomon, Georges P. J. Safety boot binding for skis with two-stage recocking. 3,697,094, Cl. 280-11.35t.

Salto, Rinaldo; and Roano, Domenico, to Olivetti, Ing., C., & C., S.p.A. Character selecting device for a printing mechanism. 3,696,906, Cl. 197-18.000.

Saltzberg, Burton R.: *See—*
Lawrence, Thomas R.; and Saltzberg, Burton R., 3,697,892.

Saltzer, Joseph M., Sr. Shrink film packaging method. 3,696,580, Cl. 53-27.000.

Sanders Associates, Inc.: *See—*
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Robbins, Robert; Whitty, Arthur R.; and Kachavos, Louis J., 3,697,876.

Sandoz Ltd., a/k/a Sandoz AG: *See—*
Closse, Annemarie; and Harri, Eugen, 3,697,650.
Hunziker, Fritz; and Schmutz, Jean, 3,697,523.

Sandvikens Jernverks AB: *See—*
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Sangiolo, Thomas L.: *See—*
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Santa Fe International Corporation: *See—*
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Santway, Robert W.: *See—*
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Sapkus, Jurgis: *See—*
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Sardisco, John B.: *See—*
Drechsel, Erhart K.; Sardisco, John B.; and Stewart, James R., Jr., 3,697,246.

Sarkozi, Miklos; Szabo, Andras !., and Hite, Perry J., to Westinghouse Electric Corporation. Signal transmission system. 3,697,896, Cl. 333-12.000.

Sarno, Richard L., to Leisure Products, Inc. Boat hoists. 3,697,048, Cl. 254-148.000.

Sarten, Paula; and Mair, Winfried, to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung. Solid propellant charge for combined rocket-ram-jet engines and process for making the same. 3,697,339, Cl. 149-19.000.

Sasaki, Toshiharu; Miyano, Ryuzo; and Onishi, Masaru, to Matsushita Electric Industrial Co., Ltd. Electrophotographic processor camera. 3,697,173, Cl. 355-27.000.

Saskatchewan Government Insurance Office, The: *See—*
Loos, Edwin; and Caudle, James William, 3,697,101.

Sassa, Atsuo; Yukutomi, Masuo; Shinkawa, Hirotoshi; Moriya, Tuneo; and Homma, Keisuke, to Kyodo Chemical Company Limited and Sumitomo Bakelite Company Limited. Novel organo-tin compounds. 3,697,566, Cl. 260-424.700.

Sassin, Wolfgang: *See—*
Doose, Conrad; and Sassin, Wolfgang, 3,697,665.

Satcher, James Ware, Jr.: *See—*
Pizzimenti, Roger Philip; and Satcher, James Ware, Jr., 3,697,157.

Satomura, Masato: *See—*
Hayakawa, Yoshihide; and Satomura, Masato, 3,697,275.

Satori, Gyula, to Medicor Muvek. Capacitive pressure transducer. 3,697,835, Cl. 317-246.000.

Sauer, Louis E.; and Miller, Orville C., to Centenary Central, Inc. Method of and apparatus for accurately working rotary die boards to receive cutting rule. 3,696,480, Cl. 29-26.00a.

Sauerbrey, Dennis F.: *See—*
Smith, Richard L.; and Sauerbrey, Dennis F., 3,697,865.

Sauerland, Franz L., to Clevite Corporation. Equal-resonator piezoelectric ladder filters. 3,697,903, Cl. 333-72.000.

Saunders, James H.: *See—*
Dobinson, Frank; and Saunders, James H., 3,697,486.

Saunders, Walter Selden. Drag reducer for land vehicles. 3,697,120, Cl. 296-1.00s.

Saunders, William T., to National Steel Corporation. Tool-free hand-openable container. 3,696,963, Cl. 220-60.00r.

Saurenman, Donald G.; and Smith, Harold W., to Consan Pacific Incorporated. Poultry growth enhancement method and apparatus. 3,696,791, Cl. 119-21.000.

Sausse, Andre, to Rhone-Poulenc S.A. Apparatus for taking samples of liquid. 3,696,806, Cl. 128-2.00f.

Sawada, Oshio, to Aisin Seiki Kabushiki Kaisha. Basting stitch mechanism for household zigzag sewing machine. 3,696,769, Cl. 112-159.000.

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Schmidlin, Albertus E., to TPI & Company. Control device for a reciprocating machine. 3,696,709, Cl. 91-3.000.

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Schmidt, Paul. Apparatus for performing operations on hydraulic tubing. 3,696,481, Cl. 29-33.00t.

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Dillon, Janus J.; and Snowden, Bryan T., 3,696,464.
Sobota, Herbert; Siepmann, Walter Sr.; and Siepmann, Walter, Jr., to Siepmann-Werke KG. Protective mail mesh. 3,696,853, Cl. 152-231.000.
Societe Anonyme dite: L'Oreal: *See—*
Kalopissis, Gregoire; Gascon, Jean; Bugaut, Andree; Gallien, Jacqueline; and Gaston-Breton, Hubert, 3,697,215.
Societe Anonyme dite: Roussel-UCLAF: *See—*
Boissier, Jacques R.; and Ratouis, Roger, 3,697,590.
Societe de Fabrication d'Instruments de Mesure (SFIM): *See—*
Autechaud, Denis; and Grisard, Jean-Claude, 3,697,022.
Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Croissant, Pierre Michel Rene; Armbruster, Jean-Claude; and Chaumeau, Andree, 3,697,327.
Jammet, Jean Firmin, 3,697,326.
Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale-Suresnes: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,697,588.
Societe Generale de Constructions Electriques et Mecaniques: *See—*
Soffer, Jacques; and Lhommelet, Robert, 3,697,845.
Societe Industrielle Honeywell Bull: *See—*
Daproux, Jacques Roland, 3,696,993.
Societe Lignes Telegraphiques et Telephoniques: *See—*
Chiron, Bernard; Deschamps, Andre; and Duffau, Louis, 3,697,901.
Societe Nationale des Petroles d'Aquitaine Tour Aquitaine: *See—*
Barbier, Maurice, 3,698,009.
Societe Nationale Industrielle Aerospatiale: *See—*
Baillard, Marcel, 3,696,492.
Societe pour l'Equipement des Industries Chimiques Speichim: *See—*
Maurice, Guy; and Jullien, Yves, 3,696,832.
Soffer, Jacques; and Lhommelet, Robert, to Societe Generale de Constructions Electriques et Mecaniques. Circuit for a direct current electric motor which is controlled by thyristors both while running and while being braked. 3,697,845, Cl. 318-341.
Soga, Setsuo: *See—*
Ohta, Wasaburo; and Soga, Setsuo, 3,697,172.
Solbern Corporation: *See—*
Eisenberg, Bernard C., 3,696,581.
Solli, Arne. Welding transformers. 3,697,912, Cl. 336-133.000.
Sollman, George H.; and Dixon, Samuel J., to Honeywell Inc. Two phase encoder system for three frequency modulation. 3,697,977, Cl. 340-347.0dd.
Solo Products Corporation: *See—*
Braverman, Leslie, 3,696,937.
Somerville Industries Limited: *See—*
Dewhurst, Ernest James, 3,696,990.
Sommer, G. M., Co., Inc.: *See—*
Sommer, Gordon M., 3,696,898.
Sommer, Gordon M., to Sommer, G. M., Co., Inc. Clutch-brake unit. 3,696,898, Cl. 192-18.00a.
Sonntag, Manfred: *See—*
Ganter, Wolfgang; Assmus, Friedrich; and Sonntag, Manfred, 3,697,766.
Sorg, Earl H.: *See—*
Gallagher, John P.; Meyers, Robert M.; Sorg, Earl H.; and Willitts, Clark M., 3,697,472.
Soulie, Guy; and Lozach, Gerard, to Entreprise de Recherches et D'Activities Petrolieres (ELF). Couplings for tools and safety devices used in oil-wells. 3,697,104, Cl. 287-111.000.
Southern California Gas Co.: *See—*
Teague, Walter D., Jr., 3,696,802.
Souza, Ronald: *See—*
Dunne, Owen F.; Hebert, William E.; Souza, Ronald; and Wargat, Edward, 3,696,770.
Sovcor Electronique: *See—*
Boursin, Rene A., 3,697,818.
Sparks, Fred L. Bagging and checkout counter system. 3,696,586, Cl. 53-390.000.
Spears, Harry L. Slide valve pump. 3,697,199, Cl. 417-498.000.
Spenadel, Lawrence; Hall, Homer J.; and Kirshenbaum, Isidor, to Esso Research and Engineering Company. Method for making cellular rubbery polymer. 3,697,455, Cl. 260-2.50r.
Spencer, Merrill P. Electromagnetic flowmeter apparatus. 3,696,674, Cl. 73-194.0em.
Sperry Rand Corporation: *See—*
Arthur, Richard J., 3,697,987.
Bauer, Leo, 3,696,836.
Chow, Woo F., 3,697,964.
Colby, Kenneth G., 3,697,986.
Freimuth, John H.; and Hurlburt, Joseph C., 3,696,594.
Freyheit, Paul J.; and Lustig, Claude D., 3,697,797.
Gluck, Julius; and Lara, Raul, 3,696,908.
Macek, Warren M.; and Wang, Chao Chen, 3,697,181.
Minden, Henry T.; and Donahue, John A., 3,697,330.
Rowland-Hill, Edward W.; and Margerum, Edwin O., 3,696,815.
Schaufelberger, Arthur H., 3,697,998.
Tetrick, Elton E., 3,697,711.
Sperry Rand Corporation, mesne: *See—*
Huetten, Clarence, 3,697,965.
Spies, Robert: *See—*
United States of America, National Aeronautics and Space Administration, 3,696,833.
Spoor, Herbert: *See—*
Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, 3,697,461.
Sprague Electric Company: *See—*
Alwitt, Robert S.; and Santway, Robert W., 3,697,822.
Spriggs, Frank A., to Pneumo Dynamics Corporation. Ball mill cutter. 3,696,484, Cl. 29-105.00r.
Spruyt, Harry: *See—*
Hoffman, Louis S.; and Spruyt, Harry, 3,696,940.
Squibb, E. R., & Sons, Inc.: *See—*
Chen, James Ling, 3,696,811.
Hoehn, Hans; and Schulze, Ernst, 3,697,527.
Hoehn, Hans; and Schulze, Ernst, 3,697,532.
Staco-Switch, Inc.: *See—*
Wells, Robert R., 3,697,858.
Staley, A. E., Manufacturing Company: *See—*
Sullivan, Charles I.; and Cahill, Richard H., 3,697,466.
Stamicarbon N.V.: *See—*
Kaasenbrood, Petrus J.C., 3,697,519.
Van Nassau, Petrus J. M.; Brand, Wilhelmus K.; and Kaasenbrood, Petrus J. C., 3,697,521.
Stamler, W. R., Corporation: *See—*
Anderson, Charles M.; and Ratcliff, Edward H., Jr., 3,696,754.
Standard Oil Company: *See—*
Poppe, Wassily; and Khelghatian, Habet M., 3,696,665.
Standard Oil Company (Indiana): *See—*
Piasek, Edmund J.; and Karll, Robert E., 3,697,574.
Stanford Research Institute: *See—*
Collis, Ronald T. H., 3,696,670.
Stanislaw, Lansy: *See—*
Paszke, Jan; Pstrocki, Henry; Ploszajski, Janusz; Lachman, Rudolf; Stanislaw, Lansy; and Wiszczor, Jan, 3,697,051.
Stanley, Michael R., to Xerox Corporation. Cross-mixing baffle. 3,697,050, Cl. 259-4.000.
Stanziola, Ralph T.; and Shuster, George A., to S&S Research & Development Corporation. Method and apparatus for generating electricity. 3,697,764, Cl. 290-42.000.
Starmer, Philip H., to Goodrich, B. F., Company, The. Polymers of alkoxy alkyl acrylates, alkyl acrylates and substituted norbornene. 3,697,490, Cl. 260-80.760.
Staten, Hi W., Jr.: *See—*
Michael, Richard W.; and Staten, Hi W., Jr., 3,697,780.
Staudhammer, Karl P.; and Reinecking, Vernon H., to TRW Inc. Alignment and orientation of whiskers and fibers. 3,697,634, Cl. 264-109.000.
Stauffer Chemical Company: *See—*
Brokke, Mervin E., 3,697,536.
Fancher, Llewellyn W., 3,697,582.
Lauck, Robert M., 3,697,292.
Weil, Edward D., 3,697,628.
Stauffer-Wacker Silicone Corporation, mesne: *See—*
Lengnick, Gunther F.; and Pande, Kailash Chandra, 3,697,477.
Ste'An Automobiles Citroen: *See—*
Cadiou, Jean, 3,697,093.
Stebakov, Emelyan Semenovich; Leontiev, Alexandr Ivanovich; Simpura, Petr Mikhailovich; Kozlov, Ivan Ivanovich; Glotov, Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich. Machine for casting thin-walled large-size pieces. 3,697,038, Cl. 249-137.000.
Steele, Clarence R.; Price, Frank B.; and Marshall, John M., to CF & I Engineers, Inc. Apparatus for removing liquid from fibrous materials. 3,697,324, Cl. 127-2.
Steele, David J.: *See—*
Heinrich, Theodore M.; Martin, Robert L.; and Steele, David J., 3,697,850.
Steele, Michael F.; and Yates, John S., to Susquehanna Corporation, The. Separation system. 3,696,488, Cl. 29-200.00d.
Steele, Michael F., to Susquehanna Corporation, The. Control apparatus. 3,696,686, Cl. 74-337.500.
Stehlin, Robert A., to Texas Instruments, Incorporated. Process for fabricating a monolithic circuit with high Q capacitor. 3,697,337, Cl. 148-175.000.
Steigerwalt, Ronald B.: *See—*
Faith, William T., Jr.; Steigerwalt, Ronald B.; and Robbins, Ernest A., 3,697,285.
Steigleder, Charles J.; Smithey, Linual D.; and Ydon, Lloyd E., to Hughes Aircraft Company. Aircraft horizontal situation navigation display system. 3,696,671, Cl. 73-178.00r.

Stein, Alfred: *See—*
Schmitt, Dieter; Stein, Alfred; and Baumer, Wilhelm, 3,697,225.

Stein, Alvin A.: *See—*
Simms, Bernard B.; Stein, Alvin A.; and Larosa, Charles N., 3,696,621.

Steiner Company Lausanne S.A.: *See—*
Boisen, Christian K. F., 3,697,146.

Stenbacka, Johan Runar, to Atlas Copco Aktiebolag. Rotary power tool having automatic torque shift. 3,696,871, Cl. 173-12.000.

Sterlich, Heinrich. Device for automatic plant watering. 3,696,827, Cl. 137-79.000.

Sterling Drug Inc.: *See—*
Gubitz, Franklyn W., 3,697,505.
Lesher, George Y., 3,697,531.
Teletzke, Gerald H.; Knopp, Paul V.; and Erickson, Allen H., 3,697,417.

Sterling, Walter S., to Pneumatic Scale Corporation. Cap feeding apparatus. 3,696,924, Cl. 209-73.000.

Sternbach, Leo Henryk: *See—*
Field, George Francis; and Sternbach, Leo Henryk, 3,697,545.

Sternberger, Ludwig A.: *See—*
Meier, Eugene P.; Lenz, David E.; and Sternberger, Ludwig A., 3,697,645.

Stevens, Alan F.; and Bergson, Arnold A., to Quest Electronics Corporation. Sound hazard integrator. 3,697,973, Cl. 340-261.000.

Stewart, James R., Jr.: *See—*
Drechsel, Erhart K.; Sardisco, John B.; and Stewart, James R., Jr., 3,697,246.

Stewart, Larry C. Equation apparatus. 3,696,531, Cl. 35-31.00a.

Stewart, Sterling E.: *See—*
Lloyd, Harold B.; and Stewart, Sterling E., 3,696,996.

Stier, Henry Willy: *See—*
Schnellamn, Oscar; and Stier, Henry Willy, 3,696,561.

Stillwell-Gerard Construction Co.: *See—*
Alexander, James M., 3,696,625.

Stirzenbecher, George H., to Air Plastic Service GmbH. Heating devices. 3,697,728, Cl. 219-548.

Stoffel, Paul J.; and Beaver, David J., to Monsanto Company. Phytotoxicant. 3,697,252, Cl. 71-95.000.

Stone, Julian, to Bell Telephone Laboratories, Incorporated. Arrangements for detecting distorted optical pulses using a correlation technique. 3,697,757, Cl. 250-199.000.

Stones, Dennis S.: *See—*
Skoroszewski, Wladyslaw H.; and Stones, Dennis S., 3,697,636.

Stonier, Robert Alden: *See—*
Berenson, Herman; Stonier, Robert Alden; and Wiese, Eugene Everett, 3,697,655.

Stoudenheimer, Richard G.; and Dourte, Rodger P., to RCA Corporation. Photocathode comprising layers of tin oxide, antimony oxide, and antimony. 3,697,794, Cl. 313-94.000.

Straccia, William J.; Gernert, Brooke E.; and Sherer, Ronald B., to Electro-Space Fabricators, Inc. Printed circuit card rack. 3,696,936, Cl. 211-41.000.

Strauss, William A., Jr. Coil form. 3,697,911, Cl. 336-84.000.

Strickland, Edward T.; and Amos, Homer C., to PPG Industries, Inc. Method and apparatus for providing controlled quench in the manufacture of fiber glass. 3,697,241, Cl. 65-2.

Strien, Werner; and Faust, Eberhard, to Recaro Aktiengesellschaft. Motor vehicle seat. 3,697,128, Cl. 297-216.000.

Strilko, Peter S., to Du Pont de Nemours, E. I., and Company. Hexaarylbiimidazole-selected aromatic hydrocarbon compositions. 3,697,280, Cl. 96-90.000.

Stritzko, Vilem, to Bleiche AG. Method for treating a yarn with foam. 3,697,314, Cl. 117-120.000.

Strobel, Albert: *See—*
Gryctko, Carl E.; Strobel, Albert; and Ball, Kenneth D., 3,697,714.

Studli, Hans. Worm housing for double worm press. 3,696,736, Cl. 100-146.000.

Stump, Harry B.: *See—*
Portz, William E.; and Stump, Harry B., 3,697,110.

Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schneider, Richard E.; and Rood, Alvin A., to Nordson Corporation. Method of spraying closed end cans. 3,697,313, Cl. 117-96.000.

Subsea Equipment Associates Limited: *See—*
Brown, Walter, 3,696,864.

Sud-Atlas-Werke G.m.b.H.: *See—*
Markart, Ernst, 3,696,775.

Suder, Jack K.: *See—*
Lucas, James M.; Suder, Jack K.; and Vander Wall, Eugene M., 3,696,616.

Sudo, Takao: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Sukekawa, Izumi: *See—*
Nara, Kizo; Sukekawa, Izumi; and Yamada, Yasuo, 3,696,656.

Sullivan, Charles I.; and Cahill, Richard H., to Staley, A. E., Manufacturing Company. Polymer composition. 3,697,466, Cl. 260-29.6.

Sullivan, Francis G., to Simpson Industries, Inc. Three-phase gauging system. 3,696,513, Cl. 33-174.000.

Sullivan, Robert T., to Polaroid Corporation. Camera attachment for copying photographic transparencies. 3,697,175, Cl. 355-39.000.

Sullivan, William A., to Xerox Corporation. Simultaneous image transfer. 3,697,171, Cl. 355-17.000.

Sulzer Brothers, Ltd.: *See—*
Pfarrwaller, Erwin, 3,696,842.

Sumi, Mitsugu: *See—*
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, 3,696,605.

Sumitomo Bakelite Company Limited: *See—*
Sassa, Atsuo; Yukutomi, Masuo; Shinkawa, Hirotoshi; Moriya, Tuneo; and Homma, Keisuke, 3,697,566.

Sumitomo Chemical Co., Ltd.: *See—*
Ueno, Katsumi; Oshima, Takao; and Seki, Hideo, 3,697,496.

Sumitomo Chemical Company, Limited: *See—*
Tohma, Wataru; Murata, Takao; Nakamura, Nobutaka; and Kudo, Atsushi, 3,696,622.

Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,697,508.

Sumitomo Durez Company, Limited: *See—*
Tohma, Wataru; Murata, Takao; Nakamura, Nobutaka; and Kudo, Atsushi, 3,696,622.

Sumitomo, Norishige: *See—*
Kawase, Shinji; and Sumitomo, Norishige, 3,696,640.

Sumitomo, Norishige, to Precision Fukuhara Works, Ltd. Needle selecting means for knitting machines. 3,696,641, Cl. 66-40.000.

Summerfelt, Vernon E., to Clorox Company, The. Liquid drain opening composition and method. 3,697,431, Cl. 252-103.000.

Sun Oil Company: *See—*
Turner, John O., 3,697,603.

Sun Oil Company (Delaware): *See—*
Bennett, John D., 3,696,624.

Sun Oil Company of Pennsylvania: *See—*
Seitzer, Walter H., 3,697,415.

Sundby, Bjorn; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Wash cycle softener. 3,697,423, Cl. 252-8.800.

Sundelin, Allen O. Boat stabilizer-sailing ring. 3,696,772, Cl. 114-39.000.

Sunderman, Wallace H.: *See—*
Unger, Robert W.; and Sunderman, Wallace H., 3,696,507.

Sundstrand Corporation: *See—*
Pollman, Frederic W., 3,697,200.

Sung, Fu-Tien, to Kidde, Walter, & Company, Inc., mesne. Multi-section hydraulic ram. 3,696,712, Cl. 92-52.000.

Sur, Ferdinand F. Combined, jack, and clamp, sure, clamp. 3,697,046, Cl. 254-111.000.

Surprenant, Norman F.: *See—*
Brown, Perry H.; Tremblay, Maurice H.; and Surprenant, Norman F., 3,697,238.

Susquehanna Corporation, The: *See—*
Steele, Michael F.; and Yates, John S., 3,696,488.
Steele, Michael F., 3,696,686.

Suttkus, David J.: *See—*
Grabill, Paul J., Jr.; and Suttkus, David J., 3,696,615.

Sutton, Trevor G.: *See—*
Schaffer, David J.; and Sutton, Trevor G., 3,696,895.

Suvanto, Antti; and van Santen, Aart, to Allmanna Svenska Elecktriska Aktiebolaget. Fuel assembly for insertion from above into a nuclear reactor core. 3,697,375, Cl. 176-78.000.

Suzue, Seigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keichi; and Shinada, Hirotaka, 3,697,577.

Suzuki, Hiroshi: *See—*
Nakajima, Akira; and Suzuki, Hiroshi, 3,697,218.

Suzuki, Migaku: *See—*
Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Takimoto, Hisao, 3,697,637.

Suzuki, Shigeru, to Ricoh Co., Ltd. Exposing device for copying apparatus. 3,697,166, Cl. 355-8.000.

Svendsen, Per Just, to LKB Produkter AB. Apparatus for electrophoretic separation. 3,697,406, Cl. 204-299.000.

Svenska Dataregister AB: *See—*
Maxe, Sven-Erik, 3,697,954.

SW Industries, Inc.: *See—*
McIntyre, Hal Byers; and Hickey, Harvey Edward, 3,696,514.

Sweco, Inc.: *See—*
Reckseit, Bernard S.; and Burgess, George A., 3,697,006.

Swedenberg, Clyde J.; and Cziesla, Manfred J., to United States of America, Navy. Homogeneous solid solution oxidizing composition. 3,697,340, Cl. 149-19.000.

Sweeney, Richard Francis: *See—*
Anello, Louis Gene; Sweeney, Richard Francis; and Litt, Morton Herbert, 3,697,564.

Sweeten, Orlin L.; and Abromavage, John C., to Advanced Management Engineering & Research Co. Carrousel multiphasic screening laboratory. 3,696,805, Cl. 128-2.00r.

Swensen, Eugene L.; and Gibson, Franklin E., to Liskey Aluminum Inc. Floor panel for an elevated floor assembly. 3,696,578, Cl. 52-618.000.

Switsen, Henry N. Gas discharge lamp firing circuit. 3,697,805, Cl. 315-241.00p.

Sybron Corporation: *See—*
Schneier, Michael Lawrence, 3,697,769.

Syeles, Albert M.: *See—*

Anderson, Wallace E.; Krall, Albert D.; and Syeles, Albert M., 3,697,831.

Synstad, Alvin R.; Burges, Luther M.; and Day, Paul P., to United States of America, Navy. Threaded ring turning device. 3,696,495, Cl. 29-240.000.

Synvar Associates: *See—*
Boocock, David G. B.; and Ullman, Edwin F., 3,697,538.
Leute, Richard K.; and Ullman, Edwin F., 3,697,535.

Syria, Ronald L.: *See—*
Verner, Dalton R.; and Syria, Ronald L., 3,697,719.

System for generating compensating signals for: *See—*
Greenberg, Myron M.; Macintyre, Steven A.; and United States of America, Navy, 3,697,869.

Syversen, Finn Kohler. Combined feeding and sorting device for sheet material. 3,696,926, Cl. 209-122.000.

Szabo, Andras I.: *See—*
Sarkozi, Miklos; Szabo, Andras I.; and Hite, Perry J., 3,697,896.

Szpur, Roman, to NDM Corporation, mesne. Medical electrode with relatively rigid electrolyte cup. 3,696,807, Cl. 128/0010e.

Tabler, Donald C.: *See—*
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 3,697,448.

Tachida, Hiroki, to Nippon Gakki Seizo Kabushiki Kaisha. Hammer flange mounting structure for use in piano. 3,696,699, Cl. 84-25.00.

Taiyo Kogyo Company Limited: *See—*
Itokawa, Hideo, 3,697,352.

Tajima, Tatsuya: *See—*
Tatsuta, Sumitaka; Ueno, Wataru; Tajima, Tatsuya; and Akao, Mutsuo, 3,697,305.

Takagi, Motoyoshi: *See—*
Watanabe, Masami; Namikawa, Keishi; Yasuda, Kotaro; and Takagi, Motoyoshi, 3,697,605.

Takagi, Tetitsu: *See—*
Iwai, Tadashi; Yamashina, Hisao; Takagi, Tetitsu; and Adachi, Shoichi, 3,697,386.

Takahashi, Satoshi: *See—*
Fukuoka, Ichiro; Kimura, Shoji; Nishimura, Takehiko; and Takahashi, Satoshi, 3,697,609.

Takahashi, Yoshio, to Pioneer Electronic Corporation. Automatic record player. 3,697,087, Cl. 274-23.00r.

Takao, Shuji: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Takeda Chemical Industries, Ltd.: *See—*
Imai, Yoshio; Matsumura, Haruki; Yurugi, Shojiro; and Miyake, Akio, 3,697,530.
Matsuoka, Toshiro; Takeda, Keinosuke; Goto, Minoru; and Miyake, Akira, 3,697,647.

Takeda, Keinosuke: *See—*
Matsuoka, Toshiro; Takeda, Keinosuke; Goto, Minoru; and Miyake, Akira, 3,697,647.

Takenaka, Haruo; Okiyama, Toshiaki; and Hiratsuka, Nobuo, to Fuji Photo Film Co., Ltd. Process for producing resistance films. 3,697,450, Cl. 252-511.000.

Takenaka, Osamu: *See—*
Imai, Takeshi; Matsubara, Tamotsu; and Takenaka, Osamu, 3,697,913.

Takenaka, Seisuke: *See—*
Yamanouchi, Akira; Takenaka, Seisuke; and Mitori, Yukio, 3,697,350.

Takimoto, Hisao: *See—*
Kawai, Atsushi; Katsuyama, Takehiro; Suzuki, Migaku; and Takimoto, Hisao, 3,697,637.

Talcott, Thomas D.: *See—*
Polmanteer, Keith E.; Willing, David N.; and Talcott, Thomas D., 3,697,473.

Tamag Basel A.G.: *See—*
Buchmann, Paul; and Beringer, Monique, 3,696,816.

Tampax Incorporated: *See—*
Jaycox, Willardr., 3,696,812.

Tanaka, Harumi, to Minolta Camera Co., Ltd. Exposure adjusting device in a camera. 3,696,718, Cl. 95-10.00c.

Taner, Mehmet Turhan, to Seismic Computing Corporation. Seismic prospecting with random injected signal. 3,697,938, Cl. 340-15.5ta.

Tanikoshi, Kinji, to Canon Kabushik Kaisha. Automatic exposure control device. 3,696,719, Cl. 95-10.0cd.

Tarasov, Vasily Mikhailovich: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Tarshis, Lemuel A.; Walker, James L.; and Berry, Thomas F., to General Electric Company. Superalloy segregate braze. 3,696,500, Cl. 29-487.000.

Tasman Vaccine Laboratory Limited: *See—*
Grant, Roy Arthur, 3,697,419.

Tate, Bryce E.; and Berg, Rudolph G., to Pfizer Inc. Iminodisuccinic acid salts as detergent builders. 3,697,453, Cl. 252-546.000.

Tatsuta, Sumitaka; Ueno, Wataru; Tajima, Tatsuya; and Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Method for producing a photographic element. 3,697,305, Cl. 117-47.00a.

Taylor, Donald F., Jr., to Otis Engineering Corporation. Well flow control valves and well systems utilizing the same. 3,696,868, Cl. 166-315.000.

Taylor, Earl Richard, Jr., to Du Pont de Nemours, E. I., and Company. Removal of dissolved organic lead from aqueous alkyl lead process effluents. 3,697,567, Cl. 260-437.00r.

Taylor, Glenn N., to Kendall Company, The. Smock or gown with adjustable belt. 3,696,443, Cl. 2-114.000.

Taylor, Larry H.; Porter, William D.; Anderson, William J.; and Caneer, Ralph A., to Northrop Carolina, Inc. Winding apparatus. 3,697,007, Cl. 242-18.0dd.

Taylor, Lloyd D.: *See—*
Rogers, Howard G.; and Taylor, Lloyd D., 3,697,279.

Taylor, Lytton: *See—*
Brouchu, Rene Robert; and Taylor, Lytton, 3,697,353.

Taylor, Robert L., to Hewlett-Packard Company. Power supply having means for limiting load currents with both active and passive loads. 3,697,862, Cl. 323-9.000.

Teague, Walter D., Jr., to Southern California Gas Co. Gas heater. 3,696,802, Cl. 126-110.00b.

Technicon Instruments Corporation: *See—*
Kassel, Aaron; and Kopelman, Donald F., 3,697,185.

Technology Marketing Incorporated: *See—*
Wells, George H.; and Persons, Perry B., 3,697,966.

Technomedic Corporation: *See—*
Gilmour, A. Scott, 3,696,675.

Teeter, George R. Drive sprocket for wide chain of drum cutting head. 3,697,136, Cl. 299-83.000.

Tehalit Kunststoffoffwerk G.m.b.H., Firma: *See—*
Pollak, Gottfried; and Kolb, Peter, 3,697,667.

Teijin Limited: *See—*
Kurihara, Osamu; Kuramoto, Naoya; Kamiyoshi, Masaya; and Yamaguchi, Takeshi, 3,697,310.

Tektronix, Inc.: *See—*
Gilbert, Barrie, 3,697,785.
Olson, Ronald A., 3,697,778.

Teledyne, Inc.: *See—*
Caldwell, John W.; and Smith, Edward M., 3,697,799.
Youtz, Donald E.; and Eigenbrode, Edwin M., 3,696,454.

Teledyne Mid-American Corporation: *See—*
Elmore, Clifford L.; and Young, Richard C., 3,696,756.

Telefonaktiebolaget LM Ericsson: *See—*
More, Oskar Wilhelm, 3,696,781.

Telefunken Patentverwertungsgesellschaft m.b.H.: *See—*
Kummerer, Karl-Heinz, 3,697,064.

Teletype Corporation: *See—*
Appel, Sherman P., 3,698,002.

Teletzke, Gerald H.; Knopp, Paul V.; and Erickson, Allen H., to Sterling Drug Inc. Heat treatment of sewage sludge. 3,697,417, Cl. 210-10.000.

Telex Computer Products, Inc.: *See—*
Fort, Larry W.; and Marshall, Connie T., 3,697,884.

Telfer, Dugald J.: *See—*
Patterson, Gordon I.; and Telfer, Dugald J., 3,697,746.

Teller, Alvin N., to Kinetic Technologies, Inc. Educational building toy modules with interior lights and mechanical connections acting as circuit closers. 3,696,548, Cl. 46-25.000.

Temple, Stephen, to Durcam Research and Development Company Limited. Method of and apparatus for locating a bit of material in a pile fabric. 3,697,344, Cl. 156-72.000.

Tenneco Chemicals, Inc.: *See—*
Rumanowski, Edmund J., 3,697,658.

Tenner, Arnold J., to Monsanto Company. Blow molding. 3,697,632. Cl. 264-40.

Tennessee Valley Authority: *See—*
Jones, Thomas M.; and Frazier, Alva W., 3,697,247.

Teno, Vincent N.: *See—*
Lodrick, Lester B.; and Teno, Vincent N., 3,696,582.

Terai, Akio; Kawamura, Eiji; Fukumoto, Hisashi; and Aoki, Hidekatsu, to Kabushiki Kaisha Komatsu Seisakusho. Heavy bulldozer. 3,696,879, Cl. 180-9.480.

Terasaki, Iwao: *See—*
Fujimuto, Yoshihisa; Kimura, Yoshio; Terasaki, Iwao; and Kitago, Takanobu, 3,697,230.

Terbrack, William H.: *See—*
Shade, Ross A.; and Terbrack, William H., 3,697,891.

Teschner, Kurt: *See—*
Kosziech, Karl-Heinz; and Teschner, Kurt, 3,697,024.

Tetrick, Elton E., to Sperry Rand Corporation. Snap action switch. 3,697,711, Cl. 200-67.0db.

Teuscher, Leon A.; Trubisky, Michael P.; Palermiti, Frank M.; and Levine, Charles J., to Xerox Corporation. Vitreous selenium alloy matrix containing isolated particles and particle networks of resin. 3,697,265, Cl. 96-1.500.

Texas Instruments, Incorporated: *See—*
Brassard, Theodore, 3,697,915.
Dromsky, John A., 3,696,499.
Ensminger, Clifford H.; and Ruggiero, Edward M., 3,698,012.
Kilner, Olive H., 3,697,863.
Stehlin, Robert A., 3,697,337.

Textron, Inc.: *See—*

Burk, Charles R., 3,696,483.
Radune, Karl F., 3,696,485.
Readyhough, Peter A., 3,696,701.
Reynolds, Rolfe E.; and Carlile, Alfred E., 3,696,470.
Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., 3,697,346.

Tezuka, Kunitoshi. Apparatus for forming packed refuse blocks. 3,696,583, Cl. 53-124.00d.

Thiokol Chemical Corporation: *See—*
Desjardins, Stanley P.; Canfield, Alan R.; and Wilson, Jonathan W., 3,696,999.
Gallagher, John P.; Meyers, Robert M.; Sorg, Earl H.; and Willitts, Clark M., 3,697,472.

Thomas & Betts Corporation: *See—*
O'Loughlin, Francis A.; and Herb, Philip J., 3,697,669.
Sinclair, William Y., 3,696,506.

Thomas, David F.: *See—*
Berglund, Harold A.; and Thomas, David F., 3,697,197.

Thomas, Edmund P.: *See—*
Ness, Leif A.; and Thomas, Edmund P., 3,696,637.

Thomas, Ieuan: *See—*
Andrews, Timothy Douglas; Short, Glynn David; and Thomas, Ieuan, 3,697,528.

Thompson, Bernard C., 1/2 to Sherman, William P. Soap bar attachment device. 3,697,111, Cl. 294-64.000.

Thompson, Edward A.: *See—*
Carpenter, David B.; and Thompson, Edward A., 3,697,414.

Thompson, Edward J., to Upjohn Company, The. Method of preparing organic isocyanates in the presence of molecular sieves. 3,697,570, Cl. 260-453.0ph.

Thompson, Howard D. Tube float or boat. 3,696,451, Cl. 9-2.00a.

Thompson, John F., to Weaver, W. R., Company. Scope tube with ocular retainer ring. 3,696,516, Cl. 33-245.000.

Thompson, Raymond V., to Chandler Evans Inc. Vertical lift machine. 3,697,020, Cl. 244-12.000.

Thompson, Richard D.: *See—*
Beeley, Michael G.; and Thompson, Richard D., 3,696,523.

Thompson, William M. Therapeutic rocker having lateral and longitudinal rocking motion. 3,697,131, Cl. 297-258.000.

Thomson, J. Brent, to Hercules Incorporated. Silane sulfonyl azides. 3,697,551, Cl. 260-349.000.

Thor Power Tool Company: *See—*
Vonhoff, William, Jr., 3,696,834.

Thorsell, Leif Urban Folke: *See—*
Weibull, Bengt J. G.; Thorsell, Leif Urban Folke; and Lindstrom, Sven-Olof, 3,697,598.

Thorud, Richard A.; Snegoski, James J.; and Hasenbank, Kenneth N., to Toro Manufacturing Corporation. Electric start for mowers. 3,696,593, Cl. 56-17.500.

Three Way, Inc.: *See—*
Hinson, James L., 3,696,870.

Tibbetts, George C.: *See—*
Flint, William T.; and Tibbetts, George C., 3,697,790.

Tibbott, David W., to Ingersoll-Rand Company. Pneumatic motor governor. 3,697,189, Cl. 415-36.000.

Tidball, Robert A., to Aerojet-General Corporation, mesne. Flash distillation apparatus and method. 3,697,385, Cl. 203-11.000.

Tiffin, James R.; and Trimble, David C., to Haskon, Inc. Reinforced foam headliner. 3,697,126, Cl. 296-137.00a.

Time, Incorporated: *See—*
Lopas, Kasimir, 3,696,708.

Timmons, William P.: *See—*
Johnson, Lemoine L.; and Timmons, William P., 3,696,666.

Timson, William J., to Polaroid Corporation. Novel photographic products and processes. 3,697,269, Cl. 96-3.000.

Timson, William J., to Polaroid Corporation. Novel photographic products and processes. 3,697,270, Cl. 96-3.000.

Timson, William J., to Polaroid Corporation. Novel photographic products and processes for color diffusion transfer utilizing silver halide emulsions with specific proportions of average halide grain size. 3,697,271, Cl. 96-3.000.

Titemore, Robert George: *See—*
Lester, Frank Backus; Laurent, Robert Parker; and Titemore, Robert George, 3,696,704.

Titt, Georg. Two-stage worm gear transmission. 3,696,691, Cl. 74-797.000.

Tjon, Harry X.: *See—*
Ross, Richard J.; and Tjon, Harry X., 3,697,205.

Tohma, Wataru; Murata, Takao; Nakamura, Nobutaka; and Kudo, Atsushi, to Sumitomo Durez Company, Limited and Sumitomo Chemical Company, Limited. Method of soil stabilization and leakage prevention. 3,696,622, Cl. 61-36.00r.

Toi, Tatsuo: *See—*
Murai, Tsuyoshi; and Toi, Tatsuo, 3,696,779.

Tojza, Roman A.; and De Simone, Frank C., to Bally Manufacturing Corporation. Coin escrow means and circuit. 3,696,905, Cl. 194-9.000.

Toki, Hisashi: *See—*
Yamamoto, Masayuki; Toki, Hisashi; and Shibuya, Hideo, 3,697,334.

Tokura, Tadao, to NGK Insulators, Ltd. Horizontal compression type automatic filter press. 3,696,930, Cl. 210-225.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, 3,697,430.
Kojima, Mikiharu; and Iwata, Tetuo, 3,696,909.

Tokyo Tokei Seizo Kaisha, Ltd.: *See—*
Kawaki, Katsumi; and Usui, Masashi, 3,697,982.

Tole, Walter Roland: *See—*
Kyriakis, John; and Tole, Walter Roland, 3,697,335.

Toledo, Emil: *See—*
Rotondo, Fortunato N.; Toledo, Emil; and Lawrence, Leslie, 3,696,846.

Tomalia, Donald A.; and Ooha, Narayanlal D., to Dow Chemical Company, The. Process for preparing 1,4-disubstituted piperazines. 3,697,524, Cl. 260-268.0st.

Tomalia, Donald A., to Dow Chemical Company, The. 2-(Aryloxy)-2-thiazolinium compounds. 3,697,537, Cl. 260-306.700.

Tomezsko, Edward S. J., to Atlantic Richfield Company. Catalytic oxidative dehydrogenation of paraffin. 3,697,614, Cl. 260-683.300.

Tomita, Teiji: *See—*
Honma, Tsutomu; Yamada, Tatsuya; Kawashima, Toshihide; Amano, Hideo; Mizuguchi, Mamoru; Inomata, Suekichi; Oguchi, Toshihiko; Nakano, Hiroshi; Nagata, Jiro; Takao, Shuji; Nishihar Takao; Sudo, Takao; and Tomita, Teiji, 3,696,717.

Tonsbeek, Christiaan Herman Theodoor, to Lever Brothers Company. Furanone meat flavor compositions. 3,697,291, Cl. 99-107.000.

Toole, Pierce C., to United States of America, National Aeronautics and Space Administration. High speed direct binary to binary coded decimal converter and scaler. 3,697,733, Cl. 235-155.000.

Toole, Richard Charles: *See—*
Nacci, George Raymond; and Toole, Richard Charles, 3,698,005.

Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., to Dempster Brothers, Inc. Refuse collection vehicles. 3,696,951, Cl. 214-83.300.

Torii, Masaru, to Brother Kogyo Kabushiki Kaisha. Ornamental zigzag stitch sewing machine. 3,696,768, Cl. 112-158.00r.

Torning, Ralph R.: *See—*
Kennedy, Ralph C.; and Torning, Ralph R., 3,696,543.

Toro Manufacturing Corporation: *See—*
Thorud, Richard A.; Snegoski, James J.; and Hasenbank, Kenneth N., 3,696,593.

Torr Laboratories, Inc.: *See—*
De Lucia, Victor E., 3,697,907.

Townsend, Franklin L., to Barber-Colman Company. Warp clamp. 3,696,477, Cl. 28-44.000.

TPI & Company: *See—*
Schmidlin, Albertus E., 3,696,709.

Trane Company, The: *See—*
Webb, Ralph L., 3,696,861.

Tranly Walls and Mini Courts (Proprietary) Limited: *See—*
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Transportation Technology, Inc.: *See—*
Ross, Howard R.; Goodrich, Lloyd D.; and Mc Queen, Norman, 3,696,753.

Tremblay, Maurice H.: *See—*
Brown, Perry H.; Tremblay, Maurice H.; and Surprenant, Norman F., 3,697,238.

Tri W-G, Inc.: *See—*
Wieland, Roman G., 3,697,066.

Tridair Industries: *See—*
Parris, Peter P., 3,696,759.

Trimble, David C.: *See—*
Tiffin, James R.; and Trimble, David C., 3,697,126.

Trimble, Robert L., to Sinclair-Koppers Company. Foamed polymer particles of distinctive shape and method of making same. 3,697,454, Cl. 260-2.50b.

Trocki, Thomas: *See—*
Mefford, Carl R.; Lass, James L.; Smith, Bart A.; Venier, Domic A.; and Trocki, Thomas, 3,697,376.

Troeger, Gottfried; Mueller, Gerhart Hermann; Bachmann, Gerhard; Spoor, Herbert; and Batzill, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Coating materials for the production of electrodepositable coatings. 3,697,461, Cl. 260-19.00u.

Tropello, Sam Duane: *See—*
Jacisin, Joseph Michael; and Tropello, Sam Duane, 3,697,089.

Troxell, Harold M. Flight control system. 3,696,550, Cl. 46-77.000.

Trubetskov, Kirill Mikhailvoch: *See—*
Chaikin, Boris Semenovich; Kozlov, Lev Ivanovich; Oblasti, Khimki Moskovskoi; Malchenko, Thomas Vasilievich; Mokrushin, Konstantin Dmitrievich; Yarovsky, Lev Volfovich; Maryanchik, Grigory Efimovich; Zhelnov, Boris Stepanovich; Tarasov, Vasily Mikhailovich Trubetskov, Kirill Mikhailvoch; Borschevsky, Igor Konstantinovich; and Chermensky, Dmitry Pavlovich, 3,697,058.

Trubisky, Michael P.: *See—*
Teuscher, Leon A.; Trubisky, Michael P.; Palermiti, Frank M.; and Levine, Charles J., 3,697,265.

True Temper Corporation: *See—*
Portz, William E.; and Stump, Harry B., 3,697,110.

TRW Inc.: *See—*
Beck, Alfred B., 3,697,895.

Brenneke, Arthur M., 3,697,090.
Grabill, Paul J., Jr.; and Suttkus, David J., 3,696,615.
Lubowitz, Hyman R.; and Vaughan, Robert W., 3,697,308.
Staudhammer, Karl P.; and Reineking, Vernon H., 3,697,634.
Vaughan, Robert W.; and Lubowitz, Hyman R., 3,697,345.

Tschunt, Edgar, to Siemens Aktiengesellschaft. Apparatus for radiation diagnosis. 3,697,751, Cl. 250-50.000.

Tsuchimochi, Yoshihisa: *See—*
Mabuchi, Kenichi; and Tsuchimochi, Yoshihisa, 3,696,558.

Tsuji, Shoichi, to Ishikawajima Harima Jukogyo Kabushiki Kaisha. Rotary plate oil burner. 3,697,214, Cl. 431-168.000.

Tsuruoka, Takashi: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Eiichi; and Niida, Taro, 3,697,648.

Tumilty, Thomas George, to Northern Electric Company, Limited. Wire wrapping tool. 3,696,482, Cl. 29-33.00f.

Turbo Machine Company: *See—*
Lohrke, James L., Jr., 3,696,467.

Turner, Donald B.: *See—*
Murdoch, Kenneth E.; and Turner, Donald B., 3,696,948.

Turner, John O., to Sun Oil Company. Novel process for preparing a haloether. 3,697,603, Cl. 260-614.00a.

Turner, Thomas Adkins: *See—*
Harris, Julian Taylor; and Turner, Thomas Adkins, 3,697,974.

Turnhout, Jan Van, to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid Handel en Verkeer. Unilaterally metallized electret foil. 3,696,505, Cl. 29-592.000.

Tuskos, Michael E. Pleating device. 3,696,515, Cl. 33-192.000.

Tutt, Richard D., to Lear Siegler, Inc. Air distributing apparatus. 3,696,731, Cl. 98-41.000.

Tyco Laboratories, Inc.: *See—*
Mermelstein, Seymour, 3,696,471.

Tyler, Norvel P. Telephone system including atmospheric pressure telemetering means. 3,697,694, Cl. 179-2.00r.

U. S. Plywood-Champion Papers Inc.: *See—*
Lee, Hong Man, 3,696,958.

Ube Industries, Ltd.: *See—*
Iwai, Tadashi; Yamashina, Hisao; Takagi, Tetitsu; and Adachi, Shoichi, 3,697,386.

Uber, Jay R.; and Dirks, Johan F. Sensitizable coated paper sheet adapted for photoelectrostatic reproduction. 3,697,267, Cl. 96-1.800.

Uchida, Koji; and Kuriu, Sadao, to Mitsubishi Paper Mills, Ltd. Method for retouching an electrophotographic offset master plate. 3,697,304, Cl. 117-37.00r.

Uchida, Michio, to Richo Co., Ltd. On-off servomechanism controlled by a wheat stone bridge. 3,697,849, Cl. 318-674.000.

Ueno, Katsumi; Oshima, Takao; and Seki, Hideo, to Sumitomo Chemical Co., Ltd. Method for the polymerization of a compounds containing an oxirane group. 3,697,496, Cl. 260-88.30a.

Ueno, Wataru: *See—*
Tatsuta, Sumitaka; Ueno, Wataru; Tajima, Tatsuya; and Akao, Mutsuo, 3,697,305.

Ugine Kuhlmann: *See—*
Allirot, Rene Joseph; Darcas, Claude; and Jobert, Raymond, 3,697,576.

Ullman, Edwin F.: *See—*
Boocock, David G. B.; and Ullman, Edwin F., 3,697,538.
Leute, Richard K.; and Ullman, Edwin F., 3,697,535.

Ullman, John E.; and Rollings, Ernest J., Jr., to United States Steel Corporation. Spool valve with internal passage. 3,696,838, Cl. 137-625.380.

Ulmer, Harry E.: *See—*
Wells, Rodney L.; Ulmer, Harry E.; and Mason, Paul J., 3,697,249.

Umbaugh, Charles Wayne, to General Electric Company. Electromagnetic force system for integrated circuit fabrication. 3,697,837, Cl. 318-119.000.

Umemoto, Samuel Junji. Cooling head gear. 3,696,814, Cl. 128-380.000.

Uneeda Doll Co., Inc.: *See—*
Sklarsky, Bernard B.; and Ostrander, Robert K., 3,696,551.

Unger, Robert W.; and Sunderman, Wallace H., to Emerson Electric Co. Method and apparatus for making electric heater. 3,696,507, Cl. 29-611.000.

Union Carbide Corporation: *See—*
Aleckner, John F., Jr., 3,697,311.
Freudewald, Joachim E.; and Konrad, Frederic M., 3,697,606.
Smith, Percy L.; and Comstock, Lowell R., 3,697,625.

Union Oil Company of California: *See—*
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United Aircraft Corporation: *See—*
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United Kingdom Atomic Energy Authority: *See—*
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Agriculture: *See—*
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Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,603.
Mayer, Mayer, Jr.; Kotter, James I.; Salaun, Harold L., Jr.; and Brown, Roger S., 3,696,600.

Army: *See—*
Harp, Richard D.; and Williams, Lyle G., 3,696,561.
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Meier, Eugene P.; Lenz, David E.; and Sternberger, Ludwig A., 3,697,645.
Picard, Jean P.; Seals, William O.; and Pell, Lawrence W., 3,696,748.
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Atomic Energy Commission: *See—*
Acree, Elick H.; Brashear, Hugh R., Jr.; and Case, Forrest N., 3,697,756.
Bunker, James F.; Poland, James E.; Sayell, Emerson H.; and Schmidt, George V., 3,697,329.
Coppinger, Eugene A.; and Johnson, Benjamin M., 3,697,436.
Emon, Donald E.; and Riley, Donald R., 3,697,373.
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Ogle, Pearl R., Jr., 3,697,235.
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McCawley, Frank X.; Wyche, Charlie; and Schlain, David, 3,697,390.

National Aeronautics and Space Administration: *See—*
Howard, Frank S., 3,697,021.
Toole, Pierce C., 3,697,733.
Yoshino, Stanley Y., 3,697,630.

National Aeronautics and Space Administration; Acting Administrator; with respect to an invention of:
Baughman, James R.; Spies, Robert; and Hays, Lance G. Observation window for a gas confining chamber. 3,696,833, Cl. 137-559.000.
Deo, Narsingh. Dual purpose momentum wheels for spacecraft with magnetic recording. 3,697,968, Cl. 340-174.10r.
Lushbaugh, Warren A.; and Lyland, James W. Versatile arithmetic unit for high speed sequential decoder. 3,697,950, Cl. 340-146.1aq.

Navy: *See—*
Anderson, Wallace E.; Krall, Albert D.; and Syeles, Albert M., 3,697,831.
Conn, James B.; Delbauve, J. Richard; and Lilienkamp, Hugh, 3,697,886.
Crippa, Eugene R.; and Lowry, Ray B., 3,697,969.
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Greenberg, Myron M.; Macintyre, Steven A.; and United States of America, Navy, 3,697,869.
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Synstad, Alvin R.; Burges, Luther M.; and Day, Paul P., 3,696,495.
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Colgate, Stirling A.; Kempton, Marvin L.; Hanson, Merle E.; Munson, William O.; and Nicholson, Dallas E., 3,696,750.
Emch, George F., 3,697,990.
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Unitrade Corporation: *See—*
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Universal Instruments Corporation: *See—*
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Universal Oil Products Company: *See—*
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University of Toronto, The Governors of the: *See—*
Ribner, Herbert S.; and Siddon, Thomas E., 3,696,673.

Unwenehr, Lewis E., to Ford Motor Company. Bridge circuit controller and process for supplying electrical energy to a variable reluctance motor. 3,697,839, Cl. 318-138.000.

Upjohn Company, The: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Pyke, Thomas R., 3,697,380.
Bannister, Brian, 3,697,503.
Jahnke, Heinz K.; and Meyer, Heinz F., 3,697,557.
Thompson, Edward J., 3,697,570.

Urech, Jakob: *See—*
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, 3,697,515.

Urifu, Tohoru: *See—*
Morikawa, Takashi; Higake, Sotomatsu; Sumi, Mitsugu; Urifu, Tohoru; and Yamamoto, Manabu, 3,696,605.

Urwin, Peter T., to Electrohome Limited. Dual control mechanism. 3,697,921, Cl. 338-131.000.

U.S. Philips Corporation: *See—*
Daniels, Alexander, 3,696,626.
Eulenberg, Hannspeter, 3,697,801.
Lesare, Paul, 3,697,684.
Meuleman, Johannes; and Aussant, Michel, 3,697,825.
Moulding, Kenneth William, 3,697,784.
Schroder, Johann, 3,697,239.
van den Plassche, Rudy Johan, 3,697,882.
Von Marinelli, Silvio M.N.K.W.F.; Vree, Jules Herman; and Verboom, Joannes B., 3,696,512.

Ushiyama, Keichi: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keichi; and Shinada, Hirotaka, 3,697,577.

USM Corporation: *See—*
Kitchener, Charles J.; and Rumball, Paul G., 3,696,942.
Kyritsis, William T.; and Simmonds, Robert C., Jr., 3,697,204.

Usui Kokusai Sangyo Kabushiki Kaisha: *See—*
Usui, Masayoshi, 3,697,399.

Usui, Masashi: *See—*
Kawaki, Katsumi; and Usui, Masashi, 3,697,982.

Usui, Masayoshi, to Usui Kokusai Sangyo Kabushiki Kaisha. Method of continuously plating a steel strap on one surface. 3,697,399, Cl. 204-15.000.

Uyeda, Yoshio: *See—*
Lee, Leonard S.; Uyeda, Yoshio; and Heneghan, Leo F., 3,697,322.

Uzinele Electronica Bucharest: *See—*
Georgescu, Gheorghe, 3,697,878.

Vald Henriksen A/S: *See—*
Henningsen, Erik; and Nielsen, Hans Borge, 3,696,645.

Valdes, Pelayo F. Integrated modular refrigeration system. 3,696,631, Cl. 62-282.000.

Van Baarn, Paul S., to Captocap Limited. Fluid-tigh, flexible and tamper-proof caps for containers having a matching neck profile. 3,696,957, Cl. 215-41.000.

Van De Velde, Valere: *See—*
Decker, Wilton K.; and Van De Velde, Valere F. (said Decker assor. to said), 3,697,738.

Van De Velde, Valere F.: *See—*
Decker, Wilton K.; and Van De Velde, Valere F., 3,697,738.

Van Den Ouweland, Godefridus Antonius Maria; and Peer, Henricus Gerardus, to Lever Brothers Company. Flavouring substances. 3,697,295, Cl. 99-140.00r.

van den Plassche, Rudy Johan, to U.S. Philips Corporation. Amplifier circuit. 3,697,882, Cl. 330-15.000.

Van Der Veken. Apparatus for transferring a product, liquid or suchlike in a liquid. 3,696,974, Cl. 222-251.000.

Van Dijk, Jan, to Shell Oil Company. Industrial furnace. 3,696,862, Cl. 165-178.000.

Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., to Textron Inc. Method of making a composite plastic bearing. 3,697,346, Cl. 156-161.000.

Van Dyck, Ken: *See—*
De Van, William T.; and Van Dyck, Ken, 3,696,969.

Van Dyke Tiers, George: *See—*
Rambosek, George M.; Allen, Michael George; and Van Dyke Tiers, George, 3,697,485.

Van Heeckeren, Jacob; Rodal, David R.; and Markevitch, Bob V., to Ampex Corporation. Fourier transform holographic storage and retrieval system. 3,697,149, Cl. 350-3.500.

Van Klinken, Jakob; Kouwenhoven, Herman Wouter; and Van Weeren, Pieter Aldert, to Shell Oil Company. Preparation and use of silica/alumina-based hydrocarbon conversion catalyst. 3,697,444, Cl. 252-451.00.

Van Leer (U.K.) Limited: *See—*
Fehres, Hans; and Boogert, Lucas W. P., 3,696,962.

Van Nassau, Petrus J. M.; Brand, Wilhelmus K.; and Kaasenbrood, Petrus J. C., to Stamicarbon N.V. Integrated process for the preparation of urea and melamine. 3,697,521, Cl. 260-249.70a.

van Roosbroeck, Willy Werner: *See—*
Casey, Horace Craig, Jr.; and van Roosbroeck, Willy Werner, 3,697,834.

van Santen, Aart: *See—*
Suvanto, Antti; and van Santen, Aart, 3,697,375.

Van Sickle, John. Detachable vehicle glare shield. 3,697,125, Cl. 296-97.00c.

Van Surksum, Edwin J., to Mastercraft Furniture Corporation. Multiposition lock-rock rocker and rocking type reclining chair. 3,697,132, Cl. 297-269.000.

Van Weeren, Pieter Aldert: *See—*
Van Klinken, Jakob; Kouwenhoven, Herman Wouter; and Van Weeren, Pieter Aldert, 3,697,444.

Van Wierst, Wilhelmus Lambertus; and Paffen, Pieter Jozef Marie, to Kominklyke Nederlandsche Hoogodns en Staalfabrieken N. V. Railway wheel and axle assembly. 3,697,119, Cl. 295-36.00r.

Vander Wall, Eugene M.: *See—*
Lucas, James M.; Suder, Jack K.; and Vander Wall, Eugene M., 3,696,616.

Vanderbilt, R. T., Company, Inc.: *See—*
DeHoff, Ronald Lee, 3,697,462.

Vanguard Industries, Inc.: *See—*
Herolzer, Ralph H., 3,696,966.

Vapor Corporation: *See—*
Patterson, Gordon I.; and Telfer, Dugald J., 3,697,746.

Varian Adco: *See—*
Anstin, Wayne D., 3,697,680.

Vaughan, Robert W.: *See—*
Lubowitz, Hyman R.; and Vaughan, Robert W., 3,697,308.

Vaughan, Robert W.; and Lubowitz, Hyman R., to TRW Inc. Process for preparing polyimide laminates. 3,697,345, Cl. 156-155.000.

Veb Druckmaschinenwerk Planeta: *See—*
Johne, Hans; Schumann, Gunter; and Reichenberger, Kurt, 3,696,743.

Veb Wtz fur Bekleidungstechnik: *See—*
Glasow, Gunthard; Grosse, Klaus; Hykel, Knut; Schleifer, Werner; Karste, Eberhard; and Kliehe, Helmut, 3,696,766.

Vecchi, John C., to Oberg Manufacturing Co., Inc. Die assembly and disassembly bench. 3,696,489, Cl. 29-200.00d.

Vegliante, Donald E.: *See—*
Kranyik, Robert Donald; Vegliante, Donald E.; and Balmer, Donald F., 3,696,524.

Venier, Domic A.: *See—*
Mefford, Carl R.; Lass, James L.; Smith, Bart A.; Venier, Domic A.; and Trocki, Thomas, 3,697,376.

Ventron Corporation: *See—*
Wade, Robert C., 3,697,232.

Vepa AG: *See—*
Fleissner, Heinz, 3,696,475.

Verboom, Joannes B.: *See—*
Von Marinelli, Silvio M.N.K.W.F.; Vree, Jules Herman; and Verboom, Joannes B., 3,696,512.

Verein zur Forderung der Feslkorperphysik an der Edgenossischen Technischen Hochschule: *See—*
Busch, Georg; and Wachter, Peter, 3,697,688.

Vernay Laboratories, Inc.: *See—*
Gifford, Robert T., 3,696,997.

Verner, Dalton R.; and Syria, Ronald L., to Elox Inc. Pulse narrowing and cut-off protection system for electrical discharge machining. 3,697,719, Cl. 219-69.00s.

Verstegen, Willi, to International Standard Electric Corporation. Method for the signal exchange in telecommunication, particularly telephone exchanges employing time-division multiplexing. 3,697,696, Cl. 179-15.

Victor Company of Japan, Ltd.: *See—*
Iwata, Mitsuo, 3,697,015.

Viewlex, Inc., mesne: *See—*
Kongelka, Robert Michael, 3,696,899.

Villaneu, Michel, to IBS Industrialized Building Systems, Incorporated. Prefabricated building panel having positioner means. 3,696,567, Cl. 52-98.000.

Villasana, Armando P.: *See—*
Lewis, J. Stephen; Sapkus, Jurgis; and Villasana, Armando P., 3,696,553.

Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, to Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale-Suresnes. Cyclohexenyl acetic acid compounds. 3,697,588, Cl. 260-514.00r.

Vinson, Billy H., to Integrated Controls, Inc. Method and apparatus for photographing oscilloscope traces with conventional camera. 3,696,720, Cl. 95-10.00c.

Vischer, Ernst: *See—*
Fechtig, Bruno; Vischer, Ernst; Bickel, Hans; Bosshardt, Rolf; and Urech, Jakob, 3,697,515.

Vogel, Charles B. Board game apparatus. 3,697,076, Cl. 273-131.00a.

Voigt, Hartmut: *See—*
Burba, Christian; Drawert, Manfred; Voigt, Hartmut; and Griebsch, Eugen, 3,697,458.

Volker, Theodor; and Hering, Klaus, to Lonza Ltd. Process for producing acrylic acid esters. 3,697,583, Cl. 260-486.00r.

Volkswagenwerk AG: *See—*
Ehrenberg, Hans Joachim, 3,697,213.

Vom Rath, Herbert: *See—*
Kundt, Edmund; Klaiber, Max; Leitz, Wilfried; and Vom Rath, Herbert, 3,696,955.

Von Hippel, Eric A., to Graphic Sciences, Inc. Electro-sensitive printing resin control system. 3,697,691, Cl. 178-94.000.

Von Hofe, George W., to New Jersey Machine Corporation. Continuous strip of label web. 3,697,300, Cl. 117-15.000.

Von Hollen, Dieter; and Holder, Heinz, to Mannesmann Aktiengesellschaft. Method for manufacturing welded pipes tubes with helical seam. 3,697,718, Cl. 219-62.000.

Von Marinelli, Silvio M.N.K.W.F.; Vree, Jules Herman; and Verboom, Joannes B., to U.S. Philips Corporation. Extensometer. 3,696,512, Cl. 33-147.00d.

Von Starck, Axel: *See—*
Seulen, Gerhard; and Von Starck, Axel, 3,696,858.

Vonhoff, William, Jr., to Thor Power Tool Company. Fluid control device. 3,696,834, Cl. 137-596.000.

Voorhees, Steven C.: *See—*
Toppins, Charles R.; Harvey, Samuel E.; Liberman, Harvey W.; Ratledge, Houston; and Voorhees, Steven C., 3,696,951.

Voss, Harold C.: *See—*
Bixler, William L.; and Voss, Harold C., 3,696,511.

Vree, Jules Herman: *See—*
Von Marinelli, Silvio M.N.K.W.F.; Vree, Jules Herman; and Verboom, Joannes B., 3,696,512.

Vshivkov, Boris Alexandrovich: *See—*
Stebakov, Emelyan Semenovich; Leontiev, Alexandr Ivanovich; Simpura, Petr Mikhailovich; Kozlov, Ivan Ivanovich; Glotov, Evgeny Borisovich; Musiyachenko, Alexandr Stepanovich; Antonov, Vladimir Alexandrovich; Vshivkov, Boris Alexandrovich; Podgorny, Sevantyn Ivanovich; Zubkov, Vyacheslav Petrovich; Milov, Vladimir Nikolaevich; Navrotsky, Nikolai Viktorovich; and Nikolsky, Leonid Alexandrovich, 3,697,038.

Wachter, Peter: *See—*
Busch, Georg; and Wachter, Peter, 3,697,688.

Waddan, Dhafir; and Williams, Derek, to Imperial Chemical Industries, Limited. Preparation of 2,2'-bipyridyl. 3,697,534, Cl. 260-296.000.

Wade, Robert C., to Ventron Corporation. Preparation of potassium cyanoborohydride. 3,697,232, Cl. 23-358.

Wagner Electric Corporation: *See—*
Demas, Nickolas P., 3,697,802.
Marting, Paul G., 3,697,138.

Wagner, Herbert: *See—*
Machenschalk, Rudolf; and Wagner, Herbert, 3,697,798.

Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Automatic distance warning circuits for cameras to be used with photoflash units. 3,696,721, Cl. 95-11.00r.

Wagner, Raymond P.: *See—*
Gunther, Gregory M.; Lewis, J. Stephen; Nishiguchi, Masakatsu; Robson, George E.; Wagner, Raymond P.; and Yarbrough, William R., 3,696,552.

Wagner, Robert L.: *See—*
Bagland, Evan L., III; and Wagner, Robert L., 3,696,739.

Waid, J. M., to Shell Oil Company. Resin consolidated sandpack. 3,696,867, Cl. 166-276.000.

Wakley, Wilbur T.; and Leeds, Michael T., to Diacon, Inc. Enclosure for incapsulating electronic components. 3,697,666, Cl. 174-52.00s.

Walker, Archie L. Fly reel. 3,697,012, Cl. 242-84.51r.

Walker Bank and Trust Co.: *See—*
Brimhall, Ray S., 3,697,412.

Walker, Douglas J.: *See—*
Bunnell, Douglas E.; and Walker, Douglas J., 3,696,970.

Walker, Harry L., to Phillips Petroleum Company. Fractionation control system and process with plural feed stream controls. 3,697,384, Cl. 203-1.000.

Walker, Howard R., to Podgor, Joseph E., Inc. Silk screen stencil apparatus and method. 3,696,738, Cl. 101-38.000.

Walker, James L.: *See—*
Tarshis, Lemuel A.; Walker, James L.; and Berry, Thomas F., 3,696,500.

Wallace, David B. Winch drum drive and control. 3,697,049, Cl. 254-187.00r.

Wallach, Ronald M., to Cryomedics, Inc. Cryosurgical instrument. 3,696,813, Cl. 128-303.100.

Wallberg, Eric W.: *See—*
Ekfeldt, Axel E.; and Wallberg, Eric W., 3,696,542.

Walter, E Richard: *See—*
Bernstein, Karl; and Walter, E Richard, 3,697,975.

Waltz, Edward, to Bulman, E. O., Manufacturing Co., Inc., The. Handheld tape dispenser. 3,696,980, Cl 225-66.000.

Walworth Company: *See—*
Kllian, Henry R., 3,697,042.

Wang, Chao Chen: *See—*
Macek, Warren M.; and Wang, Chao Chen, 3,697,181.

Waplington, Geld A. P., to Garnet Products Limited. Dial assemblies. 3,696,776, Cl. 116-115.500.

Ward, V. F., mesne: *See—*
Brewington, Doyle W., 3,697,674.

Wargat, Edward: *See—*
Dunne, Owen F.; Hebert, William E.; Souza, Ronald; and Wargat, Edward, 3,696,770.

Warner & Swasey Company, The: *See—*
Joyce, Glover C., 3,696,564.

Warner & Swasey Company, The, mesne: *See—*
Mrugala, Theodore A.; and Kruck, Henry, 3,696,487.

Warner, Gene: *See—*
Hatcher, Cecil W.; and Warner, Gene, 3,697,135.

Watanabe, Masami; Namikawa, Keishi; Yasuda, Kotaro; and Takagi, Motoyoshi, to Nippon Mining Co., Ltd. Process for producing alcohols. 3,697,605, Cl. 260-618.

Watanabe, Tadayoshi: *See—*
Shinoda, Kiyonori; Watanabe, Tadayoshi; and Mizusawa, Shigeru, 3,697,443.

Watanabe, Tetsuo; Oikawa, Akira; and Masayoshi, Kuroda, to Bridgestone Tire Company Limited. Bias.ply tire having a breaker with glass cords. 3,696,854, Cl. 152-361.000.

Watarai, Syu: *See—*
Ono, Hisatake; Osada, Chiakai; Watarai, Syu; and Katsuyama, Harumi, 3,697,266.

Waterous Company: *See—*
Berglund, Harold A.; and Thomas, David F., 3,697,197.

Watson, James K., to United States of America, Navy. Stabilizing fin assembly. 3,697,019, Cl. 244-3.290.

Watson, Searcy A. Two-part hinge with integral pin. 3,696,463, Cl. 16-178.000.

Weaver, Earle R., to General Electric Company. Feedwater heater and strainer arrangement for multiple-effect ting film desalination plant. 3,697,383, Cl. 202-174.000.

Weaver, Paul J., to Automatic Control Systems, Inc. Tool offset means for tracer mechanisms. 3,697,040, Cl. 251-3.000.

Weaver, W. R., Company: *See—*
Thompson, John F., 3,696,516.

Webb, George, to Avco Corporation. Recoil pad. 3,696,544, Cl. 42-74.000.

Webb, Ralph L., to Trane Company, The. Heat transfer surface having a high boiling heat transfer coefficient. 3,696,861, Cl. 165-133.000.

Weber, Carl. Vending machine. 3,697,148, Cl. 312-268.

Weber, Robert L., to Scovill Manufacturing Company. Hair-drying comb. 3,696,818, Cl. 132-9.000.

Wegscheid, Stanley C. Watermelon harvesting device. 3,696,596, Cl. 56-327.

Wehmeier, Gilbert E.: *See—*
Fernkopf, Forrest D.; and Wehmeier, Gilbert E., 3,697,159.

Weibull, Bengt J. G.; Thorsell, Leif Urban Folke; and Lindstrom, Sven-Olof, to Mo och Aktiebolag Ornskoldsvik. Continuous process for preparing monoalkanolamines from ammonia and alkylene oxides. 3,697,598, Cl. 260-584.000.

Weichel, Ernst. Apparatus for collecting crops. 3,696,598, Cl. 56-364.000.

Weigert, Wolfgang: *See—*
Schreyer, Gerd; and Weigert, Wolfgang, 3,697,602.

Weigl, John W., to Xerox Corporation. Belt electrode imaging system. 3,697,409, Cl. 204-300.000.

Weil, Edward A.: *See—*
Atkinson, Roger F.; Parr, Richard H., Jr; and Weil, Edward A., 3,697,984.

Weil, Edward D., to Stauffer Chemical Company. Benzylation of triaryl phosphates. 3,697,628, Cl. 260-968.000.

Weinberg, Gerd: *See—*
Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, 3,697,208.

Weiner, David William: *See—*
Greason, William Wallace, III; and Weiner, David William, 3,697,700.
Greason, William Wallace, III; and Weiner, David William, 3,697,701.

Weisker, Alexander; and Smith, Raymond L., Jr., to C & M Manufacturing Company, Inc., mesne. Side loading stacker. 3,696,954, Cl. 214-731.000.

Weldle, Helmut: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,696,706.

Wells, George H.; and Persons, Perry B., to Technology Marketing Incorporated. Current driver system for a core memory. 3,697,966, Cl. 340-174.0tb.

Wells, Robert R., to Staco-Switch, Inc. Linear solenoid and inverter. 3,697,858, Cl. 321-18.000.

Wells, Rodney L.; Ulmer, Harry E.; and Mason, Paul J., to Allied Chemical Corporation. Substituted s-triazine formaldehyde adducts useful as herbicides. 3,697,249, Cl. 71-93.000.

Wenckus, Joseph F., to Little, Arthur D., Inc. Apparatus for growing crystals in plate form. 3,697,228, Cl. 23-273.00v.

Werner, Ervin R., Jr., to Du Pont de Nemours, E. I., and Company. Adhesion of fluoropolymer top coat. 3,697,309, Cl. 117-72.000.

Werner, Georg. and Kunst, Detlef, to Olympia Werke AG. Segment guide for typewriters and similar machines. 3,696,907, Cl. 197-41.000.

Werner, William J., to United States of America, Atomic Energy Commission. Fluxless aluminum brazing composition. 3,697,259, Cl. 75-134.00n.

Wernlund, Roger F., to Franklin Gno Corporation. Apparatus and methods for enhancing the detection of small-source plumes from moving aircraft. 3,697,749, Cl. 250-41.90d.

Wessells, Henry W., III. Torston Resistant open end automobile body. 3,697,124, Cl. 296-28.00r.

Wessling, Ritchie A.; and Settineri, William J., to Dow Chemical Company, The. Process for electrolytically applying polymer coatings on electroconductive articles. 3,697,398, Cl. 204-14.00n.

Western Electric Company, Incorporated: *See—*
Anderson, Aldin R.; Jennings, John D.; and Killerby, Walter E., 3,696,986.
Baldwin, Wiley M.; Fuchs, Edward O.; and Sharp, Donald J. (said Baldwin and said Sharp assors. to), 3,697,255.
Fuchs, Francis Joseph, Jr., 3,696,652.
Herring, Carl R.; and Schneider, Fred J., 3,696,985.
Jacisin, Joseph Michael; and Tropello, Sam Duane, 3,697,089.
Schjerven, William N., Jr., 3,696,928.

Westinghouse Electric Corporation: *See—*
Baker, Donal E., 3,697,860.
Berman, Paul A., 3,696,612.
Breed, Charles P.; and Anderson, Melvin R., 3,697,740.
Cooper, Herbert W., 3,697,997.
Eargle, William R., 3,697,743.

Fox, David A., 3,697,813.
Goldstein, Robert P.; and Agnew, Frank R., 3,697,227.
Heinrich, Theodore M.; Martin, Robert L.; and Steele, David J., 3,697,850.
Heymann, Frank J., 3,697,191.
Jones, William S.; and Hacker, Philip S., 3,697,993.
Kernick, Andress; and Ernsberger, Glenn W., 3,697,855.
Keto, August I.; and Farley, James R., 3,697,932.
Kilgore, Lee A.; and Demerdash, Nabeel A., 3,697,791.
Maniero, Daniel A.; and Wolf, Charles B., 3,697,612.
Mazur, Robert G., 3,697,873.
Sarkozi, Miklos; Szabo, Andras I.; and Hite, Perry J., 3,697,896.
Wilson, John I.; and Gary, Wardell, 3,697,810.

Weston Chemical Corporation: *See—*
Rattenbury, Kenneth; and Larrison, Millard S. (said Rattenbury assor. to), 3,697,627.

Weston, David. Flotation of copper and nickel sulfides from talcose bearing ores. 3,696,922, Cl. 209-5.000.

Weston Instruments, Inc.: *See—*
Luedeman, Robert T., 3,696,677.

Westvaco Corporation: *See—*
Falkehag, Sten I., 3,697,497.

Wetzig, John M., III: *See—*
Charman, Walter M., Jr.; Hayes, Robert R.; Middaugh, George J., Jr.; and Wetzig, John M., III, 3,697,631.

Wheelabrator-Frye Inc.: *See—*
Claeys, Ronald, 3,696,565.

Whirlpool Corporation: *See—*
Bunnell, Douglas E.; and Walker, Douglas J., 3,696,970.
Nystuen, Arne M., 3,697,841.

White, Albert: *See—*
Bryant, Clifford F., 3,696,530.

White Motor Corporation: *See—*
Rodgers, John J., 3,696,732.

Whitehead, Jack D., to International Products, Inc. Log lighter. 3,696,801, Cl. 126-92.00r.

Whitfield, Homer G., to Condeco Automation, Inc. Parts washer. 3,696,824, Cl. 134-6.200.

Whittaker Corporation: *See—*
Senter, Louis; and Johnson, Robert E., 3,696,689.

Whitty, Arthur R.: *See—*
Robbins, Robert; Whitty, Arthur R.; and Kachavos, Louis J., 3,697,876.

Widmer, Robert: *See—*
Meinhardt, Norman A.; and Widmer, Robert, 3,697,428.

Wieland, Roman G., to Tri W-G, Inc. Motorized parallel bar device manufactured in various lengths. 3,697,066, Cl. 272-63.000.

Wiese, Eugene Everett: *See—*
Berenson, Herman; Stonier, Robert Alden; and Wiese, Eugene Everett, 3,697,655.

Wiesenfeld, Arnold: *See—*
Mausner, Marvin L.; and Wiesenfeld, Arnold, 3,697,451.

Wiggershaus, Fred; and Donner, Klaus, to Demag Aktiengesellschaft. Blocking mechanism for an overhead crane trackway. 3,696,755, Cl. 104-250.000.

Wikner, Karl Gustav. Apparatus for packaging refuse and other materials. 3,696,737, Cl. 100-233.000.

Wilcox, Joseph C.: *See—*
Foltz, Thomas R.; Hegarty, Gerald R.; Hopkins, Ervin W.; and Wilcox, Joseph C., 3,696,662.

Wilcox, Milton E., to Motorola, Inc. Automatic gain control circuit. 3,697,883, Cl. 335-29.000.

Wilfert, Karl; and Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Safety steering for motor vehicles. 3,697,097, Cl. 280-87.00a.

Wilhelm Bleyle KG: *See—*
Merkle, Eberhardt, 3,696,764.

Wilkinson, Thomas B., III: *See—*
Reisman, Abraham J.; and Wilkinson, Thomas B., III, 3,697,365.

Will, Michael J. Stirring device. 3,697,053, Cl. 259-108.000.

Williams, Derek: *See—*
Waddan, Dhafir; and Williams, Derek, 3,697,534.

Williams, Kenneth Barnett, to International Business Machines Corporation. Card position sensing apparatus. 3,697,707, Cl. 200-46.000.

Williams, Lyle G.: *See—*
Harp, Richard D.; and Williams, Lyle G., 3,696,561.

Willing, David N.: *See—*
Polmanteer, Keith E.; Willing, David N.; and Talcott, Thomas D., 3,697,473.

Willis, William F. Double package. 3,696,991, Cl. 229-53.000.

Willitts, Clark M.: *See—*
Gallagher, John P.; Meyers, Robert M.; Sorg, Earl H.; and Willitts, Clark M., 3,697,472.

Wilsch, Herbert: *See—*
Ehgartner, Gabriele; and Wilsch, Herbert, 3,697,018.

Wilson, James A.: *See—*
Garabrant, Arthur R.; Beerbower, Alan; and Wilson, James A., 3,696,661.

Wilson, Joan L., to Goodyear Tire & Rubber Company, The. Amine salts of polyhydrosulfuric acids as shortstopping agents for emulsion polymerizations. 3,697,491, Cl. 260-82.300.

Wilson, John I.; and Gary, Wardell, to Westinghouse Electric Corporation. Electrical apparatus including interlocking circuit for ground fault sensor. 3,697,810, Cl. 317-18.00d.

Wilson, Jonathan W.: *See—*
Desjardins, Stanley P.; Canfield, Alan R.; and Wilson, Jonathan W., 3,696,999.

Wilson, Richard D.: *See—*
Pilipovich, Donald; and Wilson, Richard D., 3,697,394.

Winitz, Milton, to Morton-Norwich Products, Inc., mesne. Amino acid food composition. 3,697,287, Cl. 99-1.000.

Winsler, Robert J.; and Richter, Fred A., to Ardco, Inc. Mullion construction for refrigerator door frame. 3,697,723, Cl. 219-218.000.

Winter, Roland A. E., to Ciba-Geigy AG. Triazine carboxylic acids and esters. 3,697,520, Cl. 260-249.600.

Wisconsin Alumni Research Foundation: *See—*
De Luca, Hector F.; Schnoes, Heinrich K.; and Holick, Michael F., 3,697,559.
Reitan, Daniel K.; and Nagavarapu, Ramarao, 3,697,773.

Wiswell, James David: *See—*
Clack, Peter Joseph; Wiswell, James David; and Clemens, Anton Hubert, 3,697,730.

Wiszczor, Jan: *See—*
Paszke, Jan; Pstrocki, Henry; Ploszajski, Janusz; Lachman, Rudolf; Stanislaw, Lansy; and Wiszczor, Jan, 3,697,051.

Witco Chemical Corporation: *See—*
Mausner, Marvin L.; and Wiesenfeld, Arnold, 3,697,451.

Witkor, Dominik M., to Automatic Switch Company. Bypass and isolation switch. 3,697,709, Cl. 200-48.00r.

Wittich, Willibald: *See—*
Butter, Karl; and Wittich, Willibald, 3,697,405.

Wixon, Harold Eugene: *See—*
Sundby, Bjorn; and Wixon, Harold Eugene, 3,697,423.

Wolf, Charles B.: *See—*
Maniero, Daniel A.; and Wolf, Charles B., 3,697,612.

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LIST OF DEFENSIVE PUBLICATIONS

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Brizee, Mary J. W. Sensitizing dye combination containing symmetrical benzimidazolocarbocyanine dyes. T903,034, 10–10–72, Cl. 96—124.

Davis, Lee H., and D. R. Leonard. Waxing and polishing of surfaces by means of ablative waxing compositions. T903,031, 10–10–72, Cl. 401—96.

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McBrayer, Robert L. Bacteria-inhibiting urethane foams. T903,027, 10–10–72, Cl. 260—2.5.

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Phillips, Bobby M. Process for producing texturized yarn. T903,028, 10–10–72, Cl. 57—140.

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LIST OF REISSUE PATENTEES

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173 3,696,572
224 3,696,573
236 3,696,574
287 3,696,575
583 3,696,577
618 3,696,578
747 3,696,576

CLASS 53
21R 3,696,579
27 3,696,580
35 3,696,581
59 3,696,582
124D 3,696,583
239 3,696,584
390 3,696,585
3,696,586

CLASS 55
62 3,696,587
163 3,696,588
233 3,696,589
238 3,696,590
337 3,696,591
500 3,696,592

CLASS 56
15.2 3,696,594
16.9 3,696,595
17.5 3,696,593
327 3,696,596
328TS 3,696,597
364 3,696,598

CLASS 57
1VN 3,696,599
5 3,696,600
34HS 3,696,601
34 Re.27,501
53 3,696,602
58.89 3,696,603
58.95 3,696,604
3,696,605

CLASS 58
58 3,696,606
85.5 3,696,607
90R 3,696,608
125R 3,696,609
145R 3,696,610

CLASS 60
23 3,696,611
39.14 3,696,612
52S 3,696,613
54.5R 3,696,614
54.6P 3,696,615
218 3,696,616
229 3,696,617
276 3,696,618
297 3,696,619
321 3,696,620

CLASS 61
36R 3,696,621
3,696,622
38 3,696,623
46 3,696,624
53.5 3,696,625

CLASS 62
6 3,696,626
51 3,696,627
115 3,696,628
129 3,696,629
188 3,696,630
282 3,696,631
285 3,696,632
294 3,696,633
333 3,696,634
344 3,696,635
399 3,696,636
402 3,696,637

CLASS 64
21 3,696,638
29 3,696,639

CLASS 65
2 3,697,241
30 3,697,242
273 3,697,243

CLASS 66
40 3,696,640
3,696,641

CLASS 68
5B 3,696,643
5D 3,696,642
15 3,696,644
177 3,696,645

CLASS 70
1.5 3,696,646
49 3,696,647
92 3,696,648
456R 3,696,649
457 3,696,650

CLASS 71
.1 3,697,244
28 3,697,245
34 3,697,246
3,697,247
38 3,697,248
78 3,697,250
93 3,697,249
94 3,697,251
95 3,697,252
97 3,697,253
122 3,697,254

CLASS 72
22 3,696,651
60 3,696,652
296 3,696,653
299 3,696,654
321 3,696,655
420 3,696,656
450 3,696,657
481 3,696,658

CLASS 73
4R 3,696,659
40.5R 3,696,660
54 3,696,661
81 3,696,662
91 3,696,663
99 3,696,664
104 3,696,665
118 3,696,666
143 3,696,667
146.8 3,696,668
168 3,696,669
170R 3,696,670
178R 3,696,671
189 3,696,672
194EM 3,696,674
194B 3,696,673
295 3,696,675
343R 3,696,676
3,696,677
346 3,696,678
358 3,696,679

CLASS 74
1.5 3,696,680
13 3,696,681
57 3,696,682
89 3,696,683
104 3,696,684
230.3 3,696,685
337.5 3,696,686
431 3,696,687
573 3,696,688
609 3,696,689
752E 3,696,690
797 3,696,691

CLASS 75
.5AB 3,697,255
40 3,697,256
64 3,697,257
128B 3,697,258
134N 3,697,259
139 3,697,260
208R 3,697,261
214 3,697,262

CLASS 76
112 3,696,692

CLASS 81
52.3 3,696,693
57.27 3,696,694

CLASS 82
1C 3,696,695
2.5 3,696,696

CLASS 83
649 3,696,697

CLASS 84
1.01 3,697,661
1.13 3,697,662
3,697,663
1.17 3,697,664
173 3,696,698
251 3,696,699
291 3,696,700

CLASS 85
28 3,696,701
77 3,696,702

CLASS 86
20C 3,696,703

CLASS 89
34 3,696,704
35A 3,696,705
196 3,696,706

CLASS 90
11C 3,696,707
3,696,708

CLASS 91
3 3,696,709
487 3,696,710

CLASS 92
48 3,696,711
52 3,696,712
121 3,696,713
170 3,696,714

CLASS 95
1R 3,696,715
1.1 3,696,716
4.5R 3,696,717
10CD 3,696,719
10C 3,696,718
3,696,720
11R 3,696,721
18R 3,696,722
31FM 3,696,723
44C 3,696,724
45 3,696,725
53EA 3,696,726
57 3,696,727
89 3,696,728

CLASS 96
1R 3,697,268
1.4 3,697,263
1.5 3,697,264
3,697,265
3,697,266
1.8 3,697,267
3 3,697,269
3,697,270
3,697,271
27 3,697,272
35.1 3,697,273
36.3 3,697,274
48R 3,697,275
48 3,697,276
50PL 3,697,277
67 3,697,278
77 3,697,279
90 3,697,280
108 3,697,281
139 3,697,282

CLASS 98
1 3,696,729
2.06 3,696,730
2.14 3,696,732
41 3,696,731

CLASS 99
1 3,697,283
3,697,287
2R 3,697,284
18 3,697,285
56 3,697,286
71 3,697,288
81 3,697,289
86 3,697,290
107 3,697,291
115 3,697,292
116 3,697,293
123 3,697,294
140R 3,697,295
307 3,696,733
331 3,696,734
404 3,696,735

CLASS 100
146 3,696,736
233 3,696,737

CLASS 101
38 3,696,738
93C 3,696,739
111 3,696,740
128.3 3,696,741
128.4 3,696,742
365 3,696,743
415.1 3,696,744
3,696,745
465 3,696,746

CLASS 102
10 3,696,747
38 3,696,748
49.7 3,696,749
67 3,696,750
3,696,751

CLASS 104
148LM 3,696,752
3,696,753
162 3,696,754
250 3,696,755
251 3,696,756

CLASS 105
4R 3,696,757
61 3,696,758
369A 3,696,759

CLASS 106
1 3,697,296
131 3,697,297
291 3,697,070

CLASS 108
32 3,696,760
53 3,696,761
134 3,696,762
157 3,696,763

CLASS 112
25 3,696,764
121.11 3,696,766
121.12 3,696,765
130 3,696,767
158R 3,696,768
159 3,696,769
252 3,696,770
417 3,696,771

CLASS 114
39 3,696,772
54 3,696,773
203 3,696,774

CLASS 116
67A 3,696,775
115.5 3,696,776

CLASS 117
2R 3,697,298
3 3,697,299
15 3,697,300

33.5C 3,697,301
34 3,697,302
37LE 3,697,303
37R 3,697,304
47A 3,697,305
3,697,306
56 3,697,307
65.2 3,697,308
72 3,697,309
3,697,311
76T 3,697,310
93.31 3,697,312
96 3,697,313
120 3,697,314
122P 3,697,315
130R 3,697,317
136 3,697,316
212 3,697,318
3,697,319
217 3,697,321
234 3,697,320
3,697,322
3,697,323

CLASS 118

5 3,696,777
9 3,696,778
48 3,696,779
69 3,696,780
425 3,696,781
637 3,696,782
3,696,783
3,696,784
3,696,785

CLASS 119

1 3,696,786
3,696,787
2 3,696,788
5 3,696,789
14.47 3,696,790
21 3,696,791
23 3,696,792

CLASS 122

4D 3,696,793
235R 3,696,794

CLASS 123

1A 3,696,795
8.01 3,696,796
8.09 3,696,797
32ST 3,696,798
136 3,696,799

CLASS 126

25A 3,696,800
92R 3,696,801
110B 3,696,802
276 3,696,803
285R 3,696,804

CLASS 127

2 3,697,324

CLASS 128

2F 3,696,806
2R 3,696,805
2.1B 3,696,808
2.1E 3,696,807
66 3,696,809
75 3,696,810
156 3,696,811
263 3,696,812
303.1 3,696,813
380 3,696,814

CLASS 130

27J 3,696,815

CLASS 131

133R 3,696,816
145 3,696,817

CLASS 132

9 3,696,818
33R 3,696,819
40 3,696,820
91 3,696,821
122 3,696,823

CLASS 134

6.2 3,696,824
167R 3,696,825

CLASS 135

45 3,696,826

CLASS 136

86A 3,697,326
86B 3,697,325
157 3,697,327
175 3,697,328
202 3,697,329

CLASS 137

79 3,696,827
81.5 3,696,828
183 3,696,829
209 3,696,830
246.12 3,696,831
512.1 3,696,832
559 3,696,833
596 3,696,834
625.25 3,696,836
625.33 3,696,837
625.38 3,696,838
625.6 3,696,835
625.61 3,696,839

CLASS 138

39 3,696,840
42 3,696,841

CLASS 139

57 3,696,842
125 3,696,843
186 3,696,844
383 3,696,845

CLASS 140

102 3,696,846

CLASS 146

42 3,696,847
83 3,696,848
146R 3,696,849

CLASS 148

1.5 3,697,330
6.15R 3,697,331
3,697,332
24 3,697,333
33.3 3,697,334
143 Re.27,505
154 3,697,335
171 3,697,336
175 3,697,337
188 3,697,338

CLASS 149

19 3,697,339
3,697,340
92 3,697,341

CLASS 150

33 3,696,850

CLASS 152

220 3,696,852
231 3,696,853
361 3,696,854

CLASS 156

13 3,697,342
3,697,343
72 3,697,344
155 3,697,345
161 3,697,346
181 3,697,347
190 3,697,348
219 3,697,349
245 3,697,350
272 3,697,351
3,697,352
310 3,697,353
319 3,697,355
380 3,697,354
467 3,697,356
510 3,697,357
514 3,697,358
518 3,697,359
551 3,697,360
558 3,697,361

CLASS 160

24 3,696,856
135 3,696,855
371 3,696,857

CLASS 161

30 3,697,362
44 3,697,363
59 3,697,364
133 3,697,365
159 3,697,366
168 3,697,367
227 3,697,368
250 3,697,369

CLASS 162

164 3,697,370
183 3,697,371

CLASS 164

49 3,696,858
52 3,696,859
73 3,696,860

CLASS 165

133 3,696,861
178 3,696,862
179 3,696,863

CLASS 166

.5 3,696,864
24B 3,696,866
64 3,696,865
276 3,696,867
315 3,696,868

CLASS 168

44 3,696,869

CLASS 171

17 3,696,870

CLASS 173

12 3,696,871
149 3,696,872

CLASS 174

ISC 3,697,665
52S 3,697,666
68C 3,697,667
68.5 3,697,668
84C 3,697,669
107 3,697,670
115 3,697,671

CLASS 175

20 3,696,873
122 3,696,874
329 3,696,875
374 3,696,876

CLASS 176

60 3,697,372
68 3,697,373
69 3,697,374
78 3,697,375
3,697,376
79 3,697,377

CLASS 178

3 3,697,672
5.4CD 3,697,673
5.4TE 3,697,674
5.4R 3,697,688
6.5 3,697,675
6.6DD 3,697,678
6.6A 3,697,679
6.6P 3,697,676
6.6R 3,697,677
6.8 3,697,680
3,697,681
3,697,682
7.1 3,697,683
7.2 3,697,684
7.3R 3,697,685
7.82 3,697,686
18 3,697,687
69.5R 3,697,689
3,697,690
94 3,697,691

CLASS 179

1SA 3,697,699
3,697,703
1G 3,697,692
2DP 3,697,693
2R 3,697,694
7MM 3,697,695
15BC 3,697,697
15BS 3,697,696
15A 3,697,698
18AB 3,697,700
18FA 3,697,701
18B 3,697,702
86 3,697,704
100.2C 3,697,705

CLASS 180

5R 3,696,877
9.46 3,696,878
9.48 3,696,879
77R 3,696,880
79.2R 3,696,881
98 3,696,882

CLASS 181

5BI 3,696,884
31B 3,696,885
3,696,886
36B 3,696,883

CLASS 182

28 3,696,887
35 3,696,888

CLASS 184

55A 3,696,889

CLASS 186

1 3,696,890

CLASS 188

1C 3,696,891
212 3,696,892
264E 3,696,893
275 3,696,894

CLASS 192

3R 3,696,895
3.28 3,696,896
4C 3,696,897
18A 3,696,898
58B 3,696,899
70 3,696,900
105BA 3,696,901
107C 3,696,902
136 3,696,903

CLASS 193

43R 3,696,904

CLASS 194

9 3,696,905

CLASS 195

31R 3,697,378
51R 3,697,379
80R 3,697,380

CLASS 197

18 3,696,906
41 3,696,907
98 3,696,908

CLASS 198

16 3,696,909
33AC 3,696,910
40 3,696,911
127 3,696,912
213 3,696,913

CLASS 200

5R 3,697,706
46 3,697,707
48R 3,697,709
61.21 3,697,708
61.41 3,697,710
67DB 3,697,711
146R 3,697,712
153J 3,697,713
172A 3,697,714

CLASS 201

40 3,697,381

CLASS 202

173 3,697,382
174 3,697,383

CLASS 203

1 3,697,384
11 3,697,385
48 3,697,386
72 3,697,387
96 3,697,388

CLASS 204

14N 3,697,398
15 3,697,399
37R 3,697,389
39 3,697,390
43 3,697,391
49 3,697,392
58 3,697,393
106 3,697,400
143R 3,697,401
157.1R 3,697,394
159.14 3,697,395
3,697,396
3,697,397
3,697,402
218 3,697,403
267 3,697,404
275 3,697,405
299 3,697,406
300 3,697,407
3,697,408
3,697,409
301 3,697,410
302 3,697,411

CLASS 206

1R 3,696,914
16BC 3,696,915
16.6 3,696,916
41F 3,696,917
45.31 3,696,918
47A 3,696,919
63.2R 3,696,920
73 3,696,921

CLASS 208

11 3,697,412
59 3,697,413
85 3,697,414
143 3,697,415
146 3,697,416

CLASS 209

5 3,696,922
12 3,696,923
73 3,696,924
109 3,696,925
122 3,696,926
211 3,696,927

CLASS 210

10 3,697,417
22 3,697,418
27 3,697,419
42 3,697,420
59 3,697,421
75 3,696,928
199 3,696,929
225 3,696,930
244 3,696,931
437 3,696,932
444 3,696,933
512 3,696,934

CLASS 211

13 3,696,935
41 3,696,936
54 3,696,937
78 3,696,938
117 3,696,939
126 3,696,940

CLASS 213

76 3,696,941

CLASS 214

1BB 3,696,942
1BC 3,696,943
2.5 3,696,944
6G 3,696,945
11R 3,696,946
14 3,696,947
16B 3,696,948
16.4A 3,696,949
17D 3,696,950
83.3 3,696,951
314 3,696,952
450 3,696,953
731 3,696,954

CLASS 215

9 3,696,955
40 3,696,956
41 3,696,957
56 3,696,958

CLASS 219

8.5 3,697,720
10.43 3,697,715
10.49 3,697,716
3,697,717
69S 3,697,719
136 3,697,721
216 3,697,722
218 3,697,723
219.062 3,697,718
241 3,697,724
388 3,697,725
469 3,697,726
532 3,697,727
548 3,697,728

CLASS 220

15 3,696,959
23.4 3,696,960
54 3,696,961
60R 3,696,962
3,696,963
85P 3,696,964
90.4 3,696,965
97F 3,696,966

CLASS 221

73 3,696,967
265 3,696,968

CLASS 222

105 3,696,969
145 3,696,970
183 3,696,971
189 3,696,972
193 3,696,973
251 3,696,974
333 3,696,975
504 3,696,976
561 3,696,977

CLASS 224

1B 3,696,978
42.1E 3,696,979

CLASS 225

66 3,696,980

CLASS 226

11 3,696,981
25 3,696,982
141 3,696,983

CLASS 227

110 3,696,984

CLASS 228

3 3,696,986
4 3,696,985

CLASS 229

1.5B 3,696,987
23R 3,696,988
34 3,696,989
37R 3,696,990
53 3,696,991

CLASS 232

4 3,696,992

CLASS 234

118 3,696,993

CLASS 235

60R 3,696,994
61.7B 3,697,729
92MT 3,697,730
139R 3,696,995
150.2 3,697,731
151.3 3,697,732
155 3,697,733
164 3,697,734
175 3,697,735

CLASS 236

92 3,696,996
102 3,696,997

CLASS 238

349 3,696,998

CLASS 239

265.35 3,696,999
407 3,697,000
521 3,697,001
535 3,697,002

CLASS 240

1.2 3,697,736
6.4B 3,697,737
7.1 3,697,741
10.6 3,697,738
17 3,697,739
46.37 3,697,740
78HA 3,697,742
147 3,697,743

CLASS 241

24 3,697,003
27 3,697,004
101M 3,697,005
171 3,697,006
186R Re.27,508

CLASS 242

18DD 3,697,007
43 3,697,008
55.19 3,697,009
56A 3,697,010
84.1A 3,697,011
84.51R 3,697,012
129.8 3,697,013
182 3,697,014
186 3,697,015
189 3,697,016
3,697,017
197 3,697,018

CLASS 244

1SB 3,697,021
3.29 3,697,019
12 3,697,020
17.13 3,697,022
153R 3,697,023

CLASS 246

169D 3,697,744
249 3,697,745
428 3,697,746
468 3,697,747

CLASS 248

15 3,697,024
27 3,697,025
46 3,697,026
68CB 3,697,027
101 3,697,030
121 3,697,028
171 3,697,031
188.4 3,697,032
188.8 3,697,029
226A 3,697,033
243 3,697,034
260 3,697,035

CLASS 249

74 3,697,036
81 3,697,037
137 3,697,038
219 3,697,039

CLASS 250

41.9TF 3,697,748
41.9D 3,697,749
43.5D 3,697,750
50 3,697,751
71.5R 3,697,752
71.5S 3,697,753
83.3 3,697,754
106S 3,697,755
106T 3,697,756
199 3,697,757
202 3,697,758
209 3,697,759
3,697,760
222R 3,697,761
239 3,697,762

CLASS 251

3 3,697,040
3,697,041
163 3,697,042
315 3,697,043

CLASS 252

8.1 3,697,422
8.55D 3,697,424
8.8 3,697,423
12 3,697,425
42.7 3,697,426
49.9 3,697,427
51.5A 3,696,851
56D 3,697,428
59 3,697,429
62.9 3,697,430
103 3,697,431
182 3,697,433
188.3 3,697,432
3,697,434
301.1R 3,697,436
301.1S 3,697,441
301.1 3,697,435
316 3,697,437
321 3,697,438
3,697,439
3,697,440
442 3,697,442
451 3,697,443
452 3,697,444
455Z 3,697,445
458 3,697,446
464 3,697,447
474 3,697,448
511 3,697,449
545 3,697,450
3,697,451
546 3,697,452
3,697,453

CLASS 254

45 3,697,044
51 3,697,045
111 3,697,046
141 3,697,047
148 3,697,048
187R 3,697,049

CLASS 259

4 3,697,050
3,697,051
8 3,697,052
108 3,697,053
154 3,697,054

CLASS 260

2A 3,697,496
2.5AJ 3,697,456
2.5AQ 3,697,458
2.5B 3,697,454
2.5F 3,697,457
2.5R 3,697,455
17.2 3,697,459
19U 3,697,461
21 3,697,462
23XA 3,697,463
27R 3,697,465
28.5AV 3,697,468
29.2M 3,697,469
29.6TA 3,697,466
3,697,467
29.7N 3,697,470
33.4R 3,697,471
33.8R 3,697,472
37SB 3,697,473
40R 3,697,474
41A 3,697,475
41R 3,697,476
46.5G 3,697,477
47CB 3,697,480
47CZ 3,697,478
47XA 3,697,481
47C 3,697,479
58 3,697,482
75NE 3,697,483
77.5AN 3,697,484
77.5NC 3,697,485
78SC 3,697,486
78.5R 3,697,618
79.1 3,697,487
79.7 3,697,488
80.7 3,697,489
80.76 3,697,490
82.3 3,697,491
85.5ES 3,697,492
85.5XA 3,697,493
86.7 3,697,494
91.3PV 3,697,495
124A 3,697,497
124R 3,697,498
139 3,697,499
154 3,697,500
163 3,697,501
209D 3,697,502
210R 3,697,503
211.5R 3,697,504
239B 3,697,505
239.1 3,697,506
3,697,507
239.3B 3,697,508
239.5 3,697,509
239.55R 3,697,510
3,697,511
240G 3,697,514
240R 3,697,512
3,697,513
243C 3,697,515
243R 3,697,516
244R 3,697,517
247.2B 3,697,460
248AS 3,697,518
249.6 3,697,520
249.7A 3,697,521
249.7P 3,697,519
250A 3,697,522
268SY 3,697,524
268TR 3,697,523
279R 3,697,464
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17	3,697,170	175	3,697,184	54	3,697,194	12	3,697,639	184	3,697,653	450	3,697,212
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3,697,883	3,696,953	3,697,560	3,697,960	3,697,570	3,696,466
5 : 3,696,803	3,696,959	3,697,561	3,697,965	3,697,591	3,697,013
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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,587,568, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; **2,706,697,** same, filed Sept. 21, 1962, D.C. Md. (Baltimore), Doc. 14084–W, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated* v. *Westinghouse Electric Corporation.* Opinion, ordered and adjudged that judgment be entered in favor of defendant, Mar. 20, 1972. **Same,** filed Dec. 19, 1962, D.C. Md. (Baltimore), Doc. 14299–W, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated* v. *U.S. International Telephone & Telegraph Corp.* Opinion, ordered and adjudged that judgment be entered in favor of defendant, Mar. 20, 1972. **Same,** filed Jan. 28, 1972, D.C. Md. (Baltimore), Doc. 14374–W, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated* v. *McDonnell Aircraft Corp.* Opinion, ordered and adjudged that judgment be entered in favor of defendant, Mar. 20, 1972. **Same,** filed Oct. 18, 1961, D.C. Md. (Baltimore), Doc. 13358, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated* v. *Martin-Marietta Corp.* Opinion, ordered and adjudged that judgment be entered in favor of defendant, Mar. 20, 1972.

2,706,697. (See 2,587,568.)

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2,746,291, R. C. Swengel, FLUID VELOCITY MEASURING SYSTEM, filed Apr. 18, 1968, D.C. Md. (Baltimore), Doc. 19419–W, *Robert C. Swengel, Sr.* v. *Westinghouse Electric Corporation.* Order that the complaint herein is dismissed with prejudice, Mar. 16, 1972.

3,090,605, Copeland and Neier, FEED MIXER, filed Mar. 2, 1972, D.C. Nebr. (Omaha), Doc. CV 72–0–167, *B/J Manufacturing Co., Inc.* v. *Creston Mfg. Co., Inc. and Norman Behrens.*

3,092,530, W. A. Plummer, HEAT PROTECTIVE SHEATHING; **3,467,761,** same, ELECTRICALLY SHIELDED HEAT-REACTIVE JACKET FOR CONDUCTORS, filed Aug. 4, 1970, D.C.N.J. (Newark), Doc. 1045–70, *Walter A. Plummer* v. *Herbert G. Bostrom, Arthur Johnson, Radcon Corp.* Consent judgment for permanent injunction, Feb. 7, 1972.

3,093,528, R. L. Reich, LABEL APPLYING MEANS, filed Dec. 22, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–3021–IH, *Compac Corporation* v. *John B. French, doing business as Better Built Engineering.* **Same,** filed Mar. 14, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–586–ALS, *Compac Corporation* v. *Synchro Electronics Inc.*

3,194,584, T. J. Reese, LOAD TRANSFERRING TRAILER HITCH, filed Mar. 29, 1966, D.C., N.D. Ind. (Hammond), Doc. 3787, *Terrell J. Reese and Reese Products, Inc.* v. *Elkhart Welding and Boiler Works, Inc.* Interlocutory judgment, patent is valid as to claims 5, 7 and 9; defendant enjoined, Dec. 19, 1969.

3,343,196, P. L. Barnhouse, SCRUB PUFF; **3,481,651,** same, APPARATUS FOR MAKING A SCRUB PUFF, filed Dec. 29, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–3060–F, *Paul L. Barnhouse* v. *Maywood Industries, Inc.*

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3,420,693, Scholes andl Pickard, GLASS HAVING DUAL PROTECTIVE COATINGS THEREON AND A METHOD FOR FORMING SUCH COATINGS, filed Feb. 18, 1972, D.C., S.D. Ill. (Springfield), Doc. S–C–72–27, *Ball Brothers Service Corporation* v. *Indian Head Inc.*

3,444,865, G. F. De Vita, TRANSFORMATION WIG, filed Oct. 12, 1971, D.C., N.D. Ohio (Cleveland), Doc. 71–1012, *Carousel Fashions, Inc.* v. *The Higbee Company.* Stipulation and order dismissing case with prejudice as regards the defendant per se but it is not to be construed as prejudicial against any supplier of defendant with respect to the subject matter of this litigation, Feb. 29, 1972. **Same,** filed Feb. 3, 1972, D.C., S.D.N.Y., Doc. 72–C–502, *Carousel Fashions, Inc.* v. *Paragon Hair Goods, Ltd. (Inc.).* **Same,** filed Feb. 11, 1972, D.C., W.D. Mo. (Kansas City), Doc. 20104–4, *Carousel Fashions, Inc.* v. *Eva Gabor's International Wigs Boutique, Ltd.*

3,447,351, C. W. Werntz, ROLL FORMING MACHINE INCLUDING DIVIDED ROLL PARTS AND SPACERS THEREFOR, filed May 18, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C314(2), *The Lockformer Co.* v. *Engel Equipment, Inc.* Plaintiff's complaint dismissed (pending on counterclaim), Nov. 12, 1971. Defendant Engel Equipment, Inc. redesignated as plaintiff and The Lockformer Co., plaintiff redesignated as defendant, Dec. 7, 1971. Patent valid and a verdict finding issues in favor of plaintiff Engel Equipment, Inc. and against defendant The Lockformer Co., Feb. 18, 1972.

3,467,761. (See 3,092,530.)

3,470,615. (See 3,415,360.)

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3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, filed Apr. 28, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1010, *The Lase Co.* v. *Introl Corp.* By stipulation of the parties, order case dismissed without prejudice, Feb. 17, 1972.

3,503,084. (See D. 216,525.)

3,509,484, P. Basse, DIGITAL FREQUENCY COUNTING AND DISPLAY APPARATUS FOR TUNABLE WIDE BAND SIGNAL GENERATORS, filed Mar. 17, 1972, D.C., S.D.N.Y., Doc. 72–C–1139, *Logimetrics, Inc.* v. *The Singer Company.*

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3,542,663, S. Alewitz, ANODE FITTING, filed Mar. 9, 1972, D.C., S.D. Ohio (Trenton), Doc. 8337, *Perfection Corporation* v. *Magnode Products, Inc.*

3,550,532, T. Zimmerman, MOISTURE-PROOF COMBUSTIBLE CARTRIDGE CASE, filed Feb. 9, 1972, U.S. Ct. of Cl., Washington, D.C., Doc. 45–72, *Theodore Zimmerman* v. *The United States.*

3,560,979, D. A. Boelter, METHOD AND ELECTRICAL CIRCUIT FOR PROCESSING AIRPORT RUNWAY LOCALIZER AND GLIDESLOPE INFORMATION, filed Aug. 6, 1971, D.C., S.D. Tex. (Houston), Doc. 71–H–865, *General Aviation Electronics, Inc.* v. *Van Dusen, Inc. and Narco Scientific Industries, Inc.* Consent decree and order of dismissal under Rule 41(a)(1)(i). Patent valid, plaintiff owner and defendant has infringed and is enjoined, Mar. 20, 1972.

3,575,196, Marrese and O'Sullivan, CLOSED EXHAUST DISCHARGE SYSTEM FOR ANESTHESIA MACHINES, filed Jan. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c161, *Rocco Anthony Marrese and William T. O'Sullivan* v. *Richard's Medical Equipment Inc.* **Same,** filed Jan. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c162, *Rocco Anthony Marrese et al.* v. *Air Reduction Co.*

Service by Publication

John Hudnall

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on October 1, 1970, of an application for patent entitled "Method of Unassisted Friction-Resistive Exercising," on behalf of John Hudnall, whose last known address is 1817 23rd Ave., San Francisco, Calif., 94107. The application was filed as a Streamlined Continuation of an application earlier made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Edgar E. Holkesvick without execution by the said John Hudnall. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said John Hudnall in connection with the present application must be taken within 30 days of the publication of this notice.

RICHARD A. WAHL,
Assistant Commissioner of Patents.

Sept. 22, 1972.

Certificates of Correction for the Week of Oct. 17, 1972

D. 223,829	3,626,977,	3,645,240	3,668,246
3,394,518	3,627,015	3,646,013	3,668,358
3,459,461	3,627,119	3,646,088	3,669,126
3,516,853	3,627,220	3,648,153	3,669,177
3,542,841	3,627,228	3,649,497	3,669,217
3,550,371	3,627,711	3,649,578	3,669,368
3,554,360	3,628,310	3,649,876	3,669,626
3,573,300	3,628,331	3,649,891	3,669,649
3,573,863	3,628,403	3,650,293	3,669,706
3,580,403	3,628,909	3,650,816	3,669,819
3,580,664	3,629,547	3,652,583	3,669,947
3,588,344	3,629,611	3,653,277	3,670,678
3,590,687	3,629,711	3,654,944	3,670,872
3,594,343	3,630,043	3,656,002	3,671,063
3,594,503	3,630,467	3,656,453	3,671,438
3,596,306	3,630,548	3,656,666	3,671,608
3,600,847	3,630,745	3,657,528	3,671,780
3,600,996	3,631,185	3,658,427	3,671,851
3,601,683	3,631,266	3,658,460	3,672,147
3,601,687	3,631,325	3,658,660	3,672,350
3,602,695	3,631,398	3,658,776	3,672,453
3,602,851	3,631,676	3,658,850	3,672,564
3,604,374	3,631,797	3,658,949	3,672,759
3,605,536	3,631,948	3,659,334	3,672,796
3,607,252	3,632,230	3,659,665	3,672,919
3,611,883	3,633,442	3,660,488	3,673,003
3,614,467	3,633,865	3,660,731	3,673,318
3,614,744	3,633,998	3,660,898	3,673,789
3,615,308	3,634,620	3,661,275	3,674,068
3,616,669	3,634,793	3,661,768	3,674,316
3,618,232	3,635,746	3,661,790	3,674,404
3,620,763	3,635,795	3,662,578	3,674,488
3,620,767	3,636,239	3,662,713	3,674,556
3,621,888	3,636,731	3,662,975	3,674,740
3,621,954	3,637,375	3,664,460	3,675,240
3,622,064	3,637,666	3,664,477	3,675,442
3,622,109	3,638,215	3,664,992	3,676,138
3,622,184	3,639,789	3,666,370	3,676,291
3,622,682	3,640,618	3,666,618	3,676,424
3,623,765	3,641,046	3,667,100	3,676,629
3,624,085	3,641,553	3,667,596	3,676,736
3,624,528	3,642,072	3,667,687	3,677,225
3,625,020	3,643,569	3,667,824	3,678,147
3,625,728	3,643,620	3,667,847	3,678,306
3,625,831	3,644,739	3,667,848	
3,626,881	3,645,168	3,668,162	

Patents Withdrawn from the Register

General Electric Company hereby withdraws the following 6 patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available in the OFFICIAL GAZETTES as indicated below:

3,427,880. OVERHEATING DETECTOR FOR GAS COOLED ELECTRIC MACHINE. July 29, 1969.

3,573,460. ION CHAMBER DETECTOR FOR SUBMICRON PARTICLES. Feb. 22, 1972.

2,728,840. SPECIMEN HEATING MEANS. June 20. 1961.

2,761,068. AUTOMATIC POLE FIGURE RECORDER. Aug. 1, 1961.

3,100,261. X-RAY ANALYZING APPARATUS. June 29, 1965.

3,143,652. METHOD FOR MAKING A COLLIMATOR. June 29, 1965.

Patents Available for Licensing or Sale

3,369,256. HOSPITAL ROBE. Alice Kern, 419 W. 8th Ave., Tarentum, Pa., 15084.

3,420,560. MASONRY WALL JOIST HANGER. Jerome Pfahning, 526 William St., Key West, Fla., 33040.

3,514,117. SIMULATED ANIMAL BICYCLE. Paul J. Olsen, 19511 Almaden Road, San Jose, Calif., 95120.

3,544,103. RESILIENT CRADLE APPARATUS. Milo G. Conable, 5356 15th Ave., Sacramento, Calif., 95820.

3,567,218. BENDING EXERCISING DEVICE. Edwin S. Johnson, Chokio, Minn., 56221.

3,571,586. AN ARTIFICIAL CHRISTMAS TREE WITH INTEGRAL LIGHTING MEANS. Hugh L. Duckworth, 3305 W. Palmer St., Chicago, Ill., 60647.

3,591,925. LINE ANGLE DEGREE LEVEL INSTRUMENT. Frank Dupin, Box 109, Gurnee, Ill., 60031.

3,605,384. BREAKAWAY HALTER. Edo Pacini, 17494 Ehle St., Castro Valley, Calif., 95120.

3,606,555. TOOTHBRUSH HANDLE FOR INTERCONNECTING A BRISTLED HEAD AND A PRESSURED TOOTHPASTE CONTAINER. Tomas Ferro, 533 Grand St., Alameda, Calif., 94501.

3,650,522. MECHANICAL CLAMPING DEVICE IN PARTICULAR MACHINE VISE. Charles Wermuth and Heinz Wagner. Correspondence to: Woodhams, Blanchard & Flynn, 2026 Rambling Road, Kalamazoo, Mich., 49008.

3,651,650. APPARATUS FOR MAKING UNDERGROUND PASSAGES. Bruno Weiss, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,651,712. MOBILE DRIVE MECHANISM SUITABLE FOR STEERING TRACKED OR MULTIPLE-WHEELED VEHICLES. John L. Davis, 3228 Pillsbury Ave. S., Minneapolis, Minn., 55408.

3,666,936. ANIMATED DISPLAY SIGN. Ernst N. Jarke, 8467 Everglade Drive, Sacramento, Calif., 95826.

3,667,160. DEVICES FOR INDIVIDUAL AUTOMATIC PARKING IN LOTS AND IN THE STREETS. Charles R. Salloum, 120 Ellis St., #307, San Francisco, Calif., 94102.

3,668,625. TRAFFIC MONITORING SYSTEM. David Wolf and Edward Blank. Correspondence to: Wolf, Greenfield & Sacks, 185 Devonshire St., Boston, Mass., 02110.

3,668,841. ANTI-POLLUTION CHAMBER. Howard R. Nunn, 2397 Main St., Napa, Calif., 94558.

3,669,294. SAFETY CLOSURES. Claude Petronelli et al., Wanganui, New Zealand. Correspondence to: Holman & Stern, 2401 15th St. N.W., Washington, D.C., 20009.

3,671,036. GOLF TEE SETTER. Joseph Rubino, Earlton, N.Y., 12058.

3,675,785. POSITIONABLE CLOTHESLINE SUPPORT. Calvin C. Martin, P.O. Box 3516, Visalia, Calif., 93277.

3,679,213. TRANSPARENT CONTAINER AND LETTERED CUBES PUZZLE. Vladimir Moss, 10463 Ambassador Drive., Rancho Cordova, Calif., 95670.

3,679,471. METHOD FOR THE PRODUCTION OF ELECTRICAL RESISTOR BODIES, AND ELECTRICAL RESISTOR BODIES PRODUCED IN ACCORDANCE WITH SAID METHOD. Hugo Wyss. Correspondence to: Werner W. Kleeman, Suite 212, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

The following 2 patents are offered by: George J. Miller, 2441 Arthur St., Hollywood, Fla., 33020.

3,507,496. PITCHING GAME.

3,668,803. BALL ROLLING TOY.

The following 2 patents are offered respectively for Yvette B. Kopp and Jack D. Jackson by James B. Lake, Rault Center, New Orleans, La., 70112.

3,608,704. COMBINED CIGARETTE LIGHTER CASING AND SLIDABLE CLOSURE.

3,619,596. ILLUMINATING COMPACT AND LIGHT SOURCE.

The Sam P. Wallace Co., Inc., is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to any and all persons, firms, corporations, and un-incorporated associations.

Applications for licenses may be addressed to Sam P. Wallace Co., Inc., 2102 Proctor St., P.O. Box 35828, Dallas, Tex., 75235.

3,669,349. AIR FLOW CONTROL SYSTEM.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 46 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice Pres., Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,199,939. PHOSPHOR DEPOSITION.
3,426,221. THERMIONIC CONVERTER.
3,428,773. IN-LINE, HIGH TEMPERATURE, HIGH VACUUM CLOSURE.
3,673,652. FILAMENTARY DISPLAY DEVICES.
3,673,983. HIGH CAPACITY DEPOSITION REACTOR.
3,674,342. LIQUID CRYSTAL DISPLAY DEVICE INCLUDING SIDE-BY-SIDE ELECTRODES ON A COMMON SUBSTRATE.
3,674,488. METHOD OF MAKING MATCHING PHOTOPRINTING MASTERS.
3,674,551. FORMATION OF OPENINGS IN INSULATING LAYERS IN MOS SEMICONDUCTOR DEVICES.
3,674,568. HYBRID THERMOELECTRIC GENERATOR.
3,674,921. THREE-DIMENSIONAL TELEVISION SYSTEM.
3,674,932. AUTOMATIC BEAM CURRENT LIMITER.
3,675,095. CAPACITORS OF CONSTANT CAPACITANCE.
3,675,096. NON AIR-POLLUTING CORONA DISCHARGE DEVICES.
3,675,134. METHOD OF OPERATING AN INFORMATION STORAGE TUBE.
3,675,144. TRANSMISSION GATE AND BIASING CIRCUITS.
3,676,082. MAGNETIC COMPOSITIONS.
3,676,129. METHOD FOR MAKING A LIGHT INTENSITY CORRECTION FILTER.
3,676,229. METHOD FOR MAKING TRANSISTORS INCLUDING BASE SHEET RESISTIVITY DETERMINING STEP.
3,676,252. METHOD OF ELECTRICALLY MOUNTING COMPONENTS IN HYBRID CIRCUITS.
3,676,590. DECODERS AND COUPLING CIRCUITS FOR SOLID STATE VIDEO PICKUP.
3,676,610. MAGNETIC HEAD WITH MODIFIED GRAIN BOUNDARIES.
3,676,702. COMPARATOR CIRCUIT.
3,676,705. LOGIC CIRCUITS EMPLOYING SWITCHES SUCH AS FIELD-EFFECT DEVICES.
3,676,711. DELAY LINE USING INTEGRATED MOS CIRCUITRY.
3,677,505. TAPE WINDING MECHANISM.
3,677,848. METHOD AND MATERIAL FOR ETCHING SEMICONDUCTOR BODIES.
3,678,180. RADIO FACSIMILE POSTAL SYSTEM FOR MULTIPLE ADDRESSEES.
3,678,292. MULTI-FUNCTION LOGIC GATE CIRCUITS.
3,678,403. BALANCED VARIABLE GAIN AMPLIFIER.
3,678,405. AMPLIFIER-LIMITER CIRCUIT WITH REDUCED AM TO PM CONVERSION.
3,678,406. VARIABLE GAIN AMPLIFIER.
3,678,407. HIGH GAIN MOS LINEAR INTEGRATED CIRCUIT AMPLIFIER.
3,678,418. PRINTED CIRCUIT BALUN.
3,678,995. SUPPORT FOR ELECTRICAL COMPONENTS AND METHOD OF MAKING THE SAME.
3,679,284. METHOD FOR FILLING AN EVACUATED ELECTRON TUBE WITH GAS TO ATMOSPHERIC PRESSURE.
3,679,379. MAGNETIC COMPOSITIONS.
3,679,816. CONTROL APPARATUS FOR A COLOR TELEVISION RECEIVER.
3,679,819. VIDEO BLANKING AND SOUND MUTING CIRCUIT EMPLOYING GROUNDED TUNER SWITCHES.
3,679,827. OPTICAL APPARATUS FOR CONTINUOUS TELEVISION FILM PROJECTION SYSTEM.
3,679,911. DECODER CIRCUIT.
3,679,942. METAL-OXIDE-METAL, THIN-FILM CAPACITORS AND METHOD OF MAKING SAME.
3,679,981. SYNCHRONOUS DEMODULATOR EMPLOYING COMMON BASE TRANSISTOR AMPLIFIER INPUT AND BASE-EMITTER CLAMPING ACTION.
3,679,982. SYNCHRONOUS DEMODULATOR EMPLOYING TRANSISTOR BASE-EMITTER CLAMPING ACTION.
3,679,989. CLAMP CIRCUIT FOR PREVENTING SATURATION OF OPERATIONAL AMPLIFIER.
3,680,060. ELECTRO-OPTICAL MEMORY EMPLOYING FERROELECTRIC ELEMENT.
3,680,068. ALARM CIRCUIT.

The General Electric Company is prepared to grant non-exclusive licenses under the following 63 patents upon reasonable terms to domestic manufacturers.

Applications for licensing under the following patent may be addressed to: Patent Counsel, General Electric Company, Box 237, G.P.O., Detroit, Mich., 48232.

3,481,825. DIRECT BONDING OF DIAMOND TO MOLYBDENUM.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Department, General Electric Co., Lynchburg, Va., 24502.

3,649,769. IMPROVED CIRCUIT FOR SUPPLYING DIRECT CURRENT TO A TELEPHONE LINE.

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,676,943. NON-FLAMMABLE, THIN, INTEGRALLY ILLUMINATED CONTROL PANEL OVERLAY.

Applications for licenses under the following 2 patents may be addressed to the: Patent Counsel, Mobile Radio Department, General Electric Co., Lynchburg, Va., 24502.

3,662,459. METHOD FOR MANUFACTURING DISCRIMINATORS.
3,659,248. COMBINED SOCKET COVER AND PLUG RETAINER.

Applications for license under the following 10 patents may be addressed to: Francis K. Richwine, Patent Counsel, Ordnance Systems Department, General Electric Co., 100 Plastics Ave., Pittsfield, Mass., 01201.

3,352,718. SEA WATER-ACTIVATED PRIMARY BATTERY.
3,431,479. PHASE CONTROLLED POWER AMPLIFIER LOCKOUT CIRCUIT.
3,535,025. MOSAIC PRISM STRUCTURE.
3,401,567. GYROSCOPES.
3,449,961. OPTICAL READOUT SYSTEMS.
3,382,023. MULTIPLE APERTURE ROOF PRISM.
3,508,252. ANALOG TO DIGITAL AND DIGITAL TO ANALOG SIGNAL CONVERTERS.
3,456,511. STBILIZATION CONTROL SYSTEM.
3,338,643. HYDROSTATIC BEARING.
3,525,029. PULSE WIDTH MODULATION POWER SWITCHING SERVO AMPLIFIER AND MECHANISM.

Applications for licenses under the following 11 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky., 40225.

3,440,308. METHOD OF MAKING A REFRIGERATOR CABINET ASSEMBLY.
3,459,011. COMPENSATED CONTROL FOR ELECTROMAGNETIC CLUTCH.
3,463,285. ELECTRIC CLUTCH WITH SPEED CONTROL.
3,514,964. ICEMAKER WITH IMPROVED ICE STORAGE RECEPTACLE.
3,621,684. CHILD SAFE FREEZER.
3,653,224. ICE SERVICE FOR HOUSEHOLD REFRIGERATORS.
3,656,203. CASTER AND CASTER BRAKE STRUCTURE FOR APPLIANCES AND THE LIKE.
3,659,696. LIVE ROLLER CONVEYOR.
3,662,197. COMBINATION MOTOR-CLUTCH APPARATUS.
3,670,521. SIDE-BY-SIDE REFRIGERATOR.
3,670,533. LIQUID FILL CONTROL.

Applications for license under the following 11 patents may be addressed to: Patent Counsel, General Electric Co., Wiring Device Business Department, 95 Hathaway St., Providence, R.I., 02904.

3,446,991. ALTERNATING CURRENT SWITCH.
3,447,067. HYSTERESIS FREE PHASE CONTROL CIRCUIT USING SILICON BILATERAL SWITCH.
3,467,939. GROUNDING STRAP IMPROVEMENT FOR ROUND GROUNDING OUTLET.
3,467,941. DUPLEX SOCKET CONTACT WITH BREAK-OFF TAB.
3,489,985. CONTINUOUS CAM CONTACT FOR CONVENIENCE OUTLET.
3,493,848. PHASE ANGLE CONTROL CIRCUIT USING SBS.
3,532,846. COMBINED PUSH-IN AND SCREW TERMINAL CONTACT.
3,562,627. LOW HYSTERESIS FIRING CIRCUIT FOR SOLID STATE SWITCH.
3,566,337. DUPLEX LOCKING RECEPTACLE WITH ISOLATED THIRD WIRE.
3,573,567. SOLID STATE SWITCH HOUSING.
D. 220,186. CASING FOR CAPS AND CONNECTORS.

Applications for license under the following 16 patents may be addressed to: General Electric Co., Nuclear Energy Division, 175 Curtner Ave., San Jose, Calif., 95114. Attention: Patent Counsel.

2,741,410. METHOD AND APPARATUS FOR HANDLING CONTAMINATED GLOVES.
3,094,621. IDENTIFYING PLANT AND ANIMAL DEFICIENCIES BY RADIOACTIVE MEANS.

3,178,355. REACTOR LEAK DETECTOR USING FILTERS.
3,221,165. DEVICE FOR MEASURING BIOLOGICAL EFFECT OF RADIATION.
3,271,691. RADIATION MONITOR CIRCUIT INCLUDING AMPLIFIER.
3,311,770. GAMMA COMPENSATED NEUTRON ION CHAMBER.
3,373,688. PUMPS.
3,375,402. NEON LAMP WARNING CIRCUIT.
3,395,781. VELOCITY LIMITER.
3,400,047. JET PUMPING SYSTEM FOR A NUCLEAR REACTOR.
3,520,989. PRESSURE CONTAINMENT ELECTRICAL PENETRATION ASSEMBLY.
3,533,863. PROCESS FOR PRODUCING APERTURED BODY COMPRISING CASTING AN ALLOY, PLASTICALLY DEFORMING THE CAST ALLOY, AND ETCHING TO REMOVE ONE OF ALLOYS, AND BODY PRODUCED THEREBY.
3,566,145. RECTIFIER CIRCUIT.
3,594,134. PROCESS FOR PRODUCING POROUS METAL FILMS AND ARTICLES PRODUCED THEREBY.
3,594,292. PROCESS FOR PRODUCING ARTICLES WITH APERTURES OR RECESSES OF SMALL CROSS-SCETION AND ARTICLES PRODUCED THEREBY.
3,621,926. NUCLEAR REACTOR COOLANT RECIRCULATION SYSTEM.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 19, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-15-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-26-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-11-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-24-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-18-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-30-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-29-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

PATENTS

GRANTED OCTOBER 17, 1972

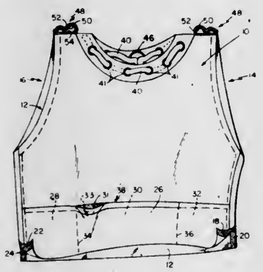
GENERAL AND MECHANICAL

3,698,014
COMBINATION JACKET AND HOOD
John W. Little, Hinsdale, and Thaddeus J. Cebula, Lombard, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,379
Int. Cl. A41d 3/00
U.S. Cl. 2—84 **1 Claim**



A combination jacket and hood in which the hood is attached to the neckline of the jacket by a strip of flexible fabric which permits the hood to move relative to the jacket.

3,698,015
ARTICLE OF CLOTHING
Bernardine J. Richards, 9 West Street, Plymouth, Mass., and Bernadette T. O'Neil, 62 Ludlam Street, Lowell, Mass.
Continuation-in-part of Ser. No. 67,350, Aug. 27, 1970. This application July 13, 1971, Ser. No. 162,085
Int. Cl. A41d 1/22
U.S. Cl. 2—105 **4 Claims**



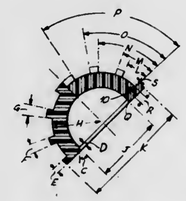
A sleeveless, waist-length garment which includes sealing means extending from the arm openings to the waist opening at the side edges of front and back garment panels. The garment includes a lining in at least one of the panels. The lining is permanently secured to the panel along the waistline edge of the panel as well as along the sides of the panel. Along the neck opening of the garment, however, the lining is not attached to the panel. There is also provided a decorative draw cord which is disposed around substantially the entire neck opening of the garment.

3,698,016
CLOTH ARTICLE PROVIDED WITH TEST TAB
Rupen L. Saddler, 161 Churchill Road, Tenafly, N.J.
Continuation-in-part of Ser. No. 18,387, Feb. 26, 1970. This application April 8, 1971, Ser. No. 132,375
Int. Cl. A41d
U.S. Cl. 2—243 R **8 Claims**



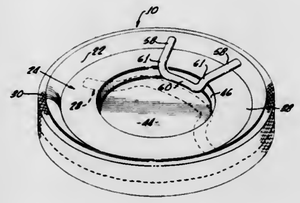
An article includes a panel of material, e.g., textile fabric or plastic, having a tab projecting from one edge of the panel, the edge forming part of a seam of the article so that the tab projects from the seam. The panel and tab are a single piece of material. The article may be a garment and the tab may project into the interior of the garment. The tab may be removed when desired to serve as a specimen for testing some characteristic of the article material. The length and width dimensions of the tab are at least as large as those required by generally accepted standards for testing flame resistance of cloth.

3,698,017
PROSTHETIC ACETABULAR DEVICES
John Tracey Scales, Stanmore, and David Goddard, Kings Langley, both of England, assignors to National Research Development Corporation, London, England
Filed July 29, 1970, Ser. No. 59,085
Claims priority, application Great Britain, Aug. 11, 1969, 40039/69
Int. Cl. A61f 1/00, 1/24
U.S. Cl. 3—1 **5 Claims**



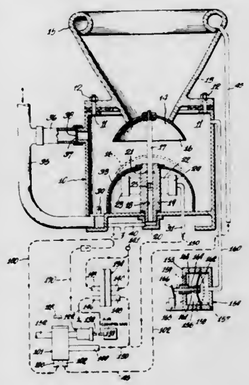
A prosthetic acetabular device of generally hemispherical cup form has for cement fixation, a plurality of annular ribs formed around its outer surface, the ribs extending from a minor proportion of such surface. The ribs preferably are parallel to the cup rim, have undercut side walls, and have transverse passages to facilitate cement flow except for the rib nearest the cup rim. The device was initially designed for manufacture from plastics material, but in a subsequently preferred form is of metal with a liner cup of plastics material.

3,698,018
PIVOTED DISCOID HEART VALVE HAVING A CHANGING PIVOT AXIS
Donald P. Shiley, 11022 Huntington, Santa Ana, Calif.
Continuation of Ser. No. 809,754, March 24, 1969, abandoned. This application May 6, 1971, Ser. No. 140,900
Int. Cl. A61f 1/22
U.S. Cl. 3—1 **23 Claims**



A heart valve prosthesis having a discoid poppet mounted therein for pivotal movement between a closed and opened position. The poppet is supported for movement by opposed, spaced support struts which form an eccentric pivot point for opening of the valve and a changing pivot point for closing of the valve. The spacing between the struts is sufficient to enable rotational movement of the poppet during operation.

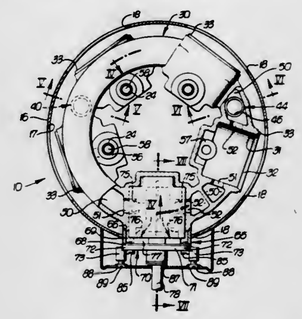
3,698,019
PRESSURE DISCHARGE WASTE DISPOSAL APPARATUS
Duane Culp, P.O. Box 345, North Lima, Ohio
Filed July 2, 1971, Ser. No. 159,404
Int. Cl. E03d 7/36, 1/30, 3/10
U.S. Cl. 4—10 **13 Claims**



The present invention is an improvement on the construction shown in U.S. Pat. No. 3,566,415, issued to me on Mar. 2, 1971. The toilet structure is substantially the same as in the patent and the improvement resides in controls for water and air used in flushing the toilet and removing waste therefrom.

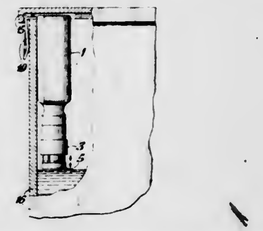
3,698,020
MANIFOLD BODY FOR A MULTI-PERSON SHOWER ASSEMBLY
Earl L. Morris, 1501 North Cloister Road, Whittier, Calif.
Filed Aug. 21, 1970, Ser. No. 65,943
Int. Cl. A47k 17/00
U.S. Cl. 4—145 **7 Claims**

A generally cylindrical one-piece manifold body mounted in a hollow vertical housing with a plurality of shower heads to provide a multi-person shower assembly has a cylindrical configuration with a plurality of circumferentially, equally spaced chambers opening outwardly to receive a mixing valve in each chamber, hot and cold water inlets connected to hot and cold water supply pipes, hot and cold water manifold passages connecting their respective inlets with each chamber through ports, and outlet means from each chamber for passing hot and cold water, properly mixed to a desired temperature by



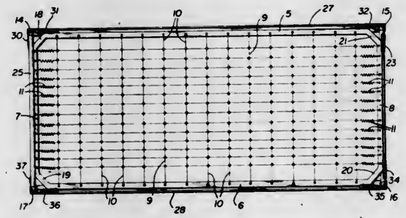
the valve in the chamber, through a tube to the respective shower head. A ring extension is provided over each chamber to extend through an opening in the housing for increasing the effective depth of the chamber without increasing the diameter of the body between the chambers. The outlet means has upper or lower outlets therein to permit the body to be mounted with either axial side up to accept supply pipes extending from either the ceiling or the floor.

3,698,021
AUTOMATIC TOILET BOWL CLEANER DISPENSER
Frank Joseph Mack, Miamiville, and Terry John Simpkins, Dublin, both of Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Feb. 17, 1970, Ser. No. 12,039
Int. Cl. E03d 9/02
U.S. Cl. 4—227 **8 Claims**



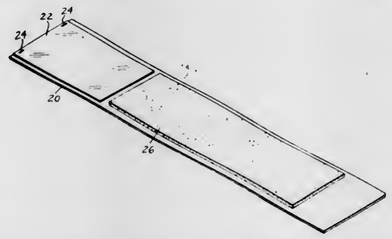
This invention relates to a dispenser for releasing a measured amount of fluid into the flush tank of a toilet. The dispenser consists of a container having an open neck, a shroud which fits over the neck and restricts the discharge opening in the neck, and a float member slidably connected to the shroud which in one of its positions seals the discharge opening. A measuring chamber is formed in the float element in direct communication with the discharge opening. The entire container is inverted in the toilet flush tank in such a manner that the float member rises and falls with the flushing action of the toilet. In the upper position the float member closes the discharge opening and in the lower position the measuring chamber fills with fluid. As the float member rises after the measuring chamber is filled, the fluid is forced out of the chamber through openings therein and into the toilet flush tank.

3,698,022
BUNK FOR A TRUCK CAB SLEEPING BERTH
Tom H. Knight, 7710 Popular, Commerce City, Colo.
Filed Dec. 28, 1970, Ser. No. 101,464
Int. Cl. B60p 3/32; A45f 1/00
U.S. Cl. 5—118 **4 Claims**



Apparatus for suspending a mattress in a truck cab cleeping berth to form a sleeping bunk includes a frame-mounted wire web supported between upright posts by inclined tension springs. Spaced tension springs at the ends and spaced anti-sag wires at the sides mount the wire web in the frame. A variable shock obsorber is provided for adjusting the unit to the weight of the user.

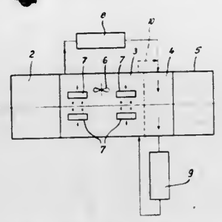
3,698,023
PILLOW AND METHOD OF MAKING
Alice R. Archbold, R. #1, Smith Road, Yoder, Ind.
Filed Jan. 4, 1971, Ser. No. 103,750
Int. Cl. A47g 2/00; A47c 27/00
U.S. Cl. 5—337 **5 Claims**



The specification discloses a pillow which is cylindrical so as to be receivable under the neck thereby to support the head without disturbing the hair. The pillow is made by rolling up textile material to form a cylinder and enclosing the pillow in a snugly fitting case. The textile material is in the form of a long strip of woven material and a strip of plastic material is placed on top of the woven material at one end and then a batt of fibers is placed on the major portion of the remainder of the length of a woven material and this assembly is then rolled up from the end having the plastic strip thereon so that the plastic strip is in the radially inner part of the pillow and forms stiffening means therefor.

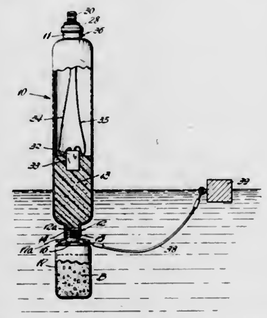
3,698,024
TREATMENT OF CONTINUOUS FABRIC WEBS
Kurt Bruckner, Michelstadt, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach/Odenwald, Germany
Filed March 3, 1971, Ser. No. 120,530
Int. Cl. F23b 7/00; F26b 21/04
U.S. Cl. 8—151 **3 Claims**

The web is wet with a solvent, dried in a stream of circulating air in a drying chamber, and then cooled. A secondary stream of air is withdrawn from the circulating air, cooled in a condenser to recover solvent, reheated, and returned to the circulating air. The web leaving the drying chamber is precooled in a separate chamber by means of the secondary



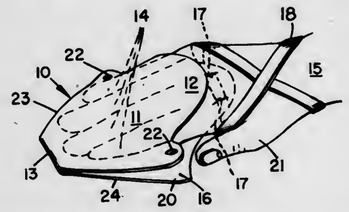
air stream, after such stream is cooled and before it is reheated.

3,698,025
MARKING BUOY
Walter J. Worobel, Milford, Conn., assignor to The Hitchcock Gas Engine Co., Inc., Bridgeport, Conn.
Filed Oct. 12, 1970, Ser. No. 79,938
Int. Cl. B63b 51/02
U.S. Cl. 9—8.3 E **1 Claim**



The disclosed buoy is lightweight and portable and comprises an elongate tubular body of tough but resilient plastic material which is partially filled with light porous plastic material, the bottom end having a detachable connection with a receptacle which may be filled with sand or other ballast material, the open top end of the body carrying signaling means, such as a photoelectrically-controlled flashing light which is operated by a replaceable electric battery contained within the body of the buoy, there being means whereby the buoy may be attached to a boom for controlling oil spillage for instance or to an anchor.

3,698,026
SWIMMING TEACHING AND TRAINING AID
Jenry J. Buntin, P.O. Box 18, Murray Hill, N.J.
Filed Oct. 15, 1970, Ser. No. 81,038
Int. Cl. A63b 31/02
U.S. Cl. 9—308 **6 Claims**



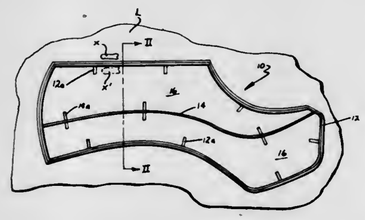
A special mitt aids teacher and competition swimmer in training by allowing near natural swimming with accentuation of errors or strength building with proper strokes.

3,698,027
MANUFACTURE OF ARTICLES OF FOOTWEAR
Johann Schwab; Kurt Buchel, both of Vienna; Otto Eder, Ternitz; Wladimir Hascic, Vienna; Maria Enzersdorf, Vienna, and Ludwig Marek, Vienna, all of Austria, assignors to SEMPERIT Aktiengesellschaft, Vienna, Austria
Filed Nov. 10, 1970, Ser. No. 88,376
Int. Cl. A43d 9/00
U.S. Cl. 12—142 R **29 Claims**



A process for the manufacture of an article of footwear comprising the steps of joining a sole to an upper of rough material to which the sole can be directly joined without further processing, and applying to the part of the upper which is not covered by the sole in the finished article at least one covering layer. The sole can first be joined to the upper, e.g., by injection moulding, and the covering layer subsequently applied, or the covering layer can first be applied to the upper leaving uncovered the lower edge region to which the sole is to be joined and the sole then joined to this region.

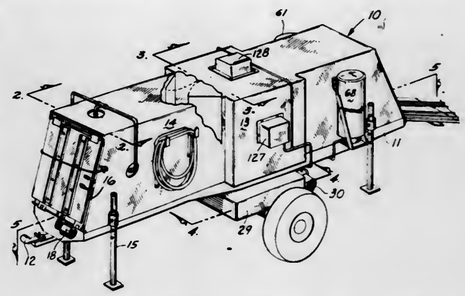
3,698,028
VISION EFFECTIVE CUTTING AND MARKING DIE
Peter D. Panter; Claude P-E. Denis, Grand Rapids, and Gerhard P. Kaempfer, Wyoming, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.
Filed June 4, 1970, Ser. No. 43,505
Int. Cl. B26f 1/46
U.S. Cl. 12—52.5 **1 Claim**



A combination cutting and marking die for materials such as leather, having marker portions specially mounted to the cutter portions with a resilient transparent polymeric material enabling the operator to rapidly cut and mark areas free of defects with total material observation.

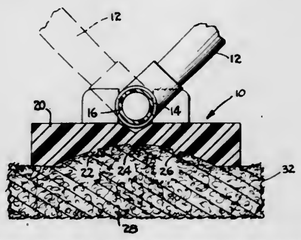
3,698,029
AUTOMATIC WASHING APPARATUS
William D. Pulliam, 15710 Rosalita Drive, La Mirada, Calif.
Filed Dec. 19, 1969, Ser. No. 886,678
Int. Cl. B60s 3/04
U.S. Cl. 15—21 D **3 Claims**

Apparatus for automatically washing nestable shopping carts and the like. Automatic conveyor means separately engaging an undercarriage of each of a plurality of shopping carts for nested conveyance of the carts successively through a wash chamber and a rinse chamber of said apparatus. A plurality of rotatably mounted brushes, disposed about the conveyor means, are adapted to frictionally engage the moving carts in a scrubbing action. A counter-balanced, vertically movable and inclined array of wash nozzles forms a vertically-movable adaptable array, provided for accommodating and



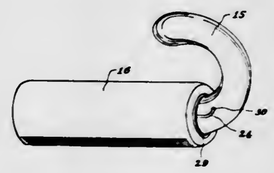
washing the undercarriage of shopping carts of different design and manufacture.

3,698,030
MOP
Eugene C. Lockett, 1580 Stewart Street, Reno, Nev.
Continuation-in-part of Ser. No. 874,151, Nov. 5, 1969. This application May 26, 1971, Ser. No. 146,899
Int. Cl. A47l 13/17, 13/46, 13/22
U.S. Cl. 15—104.94 **14 Claims**



A mop member having a frame including a concave surface on the bottom of the frame and a porous, bristly material impaled upon protruding attaching members and adapted to trap soil and dust. A porous cloth, impregnated with oils, extends over the bristly material, retaining the loose soil and dust in the bristly material. The porous cloth is attached to the frame of the mop.

3,698,031
PAINT APPLICATOR
Mark Descant, 3617½ Iberville Street, New Orleans, La.
Filed March 14, 1969, Ser. No. 807,298
Int. Cl. B05c 1/06
U.S. Cl. 15—210 **2 Claims**

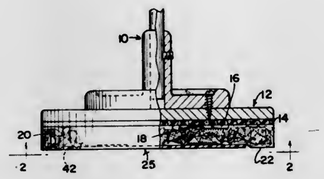


A hand operated handle which can be used for painting. The handle consists of two members; a piece of shaped plywood and a spring like wire. Both members being so arranged as to receive a detachable lambskin roller cover.

3,698,032
PRESSURE PLATE FOR CLEANING CARPETING WITH SURFACE WORKING PAD

Edward G. Young, Gloucester, Mass., assignor to Beatrice Foods Co., Chicago, Ill.

Filed March 31, 1971, Ser. No. 129,896
Int. Cl. A471 *11/283*
U.S. Cl. 15—230 5 Claims

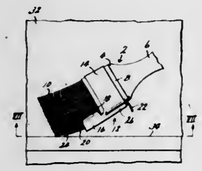


Improvements in the use of floor cleaning equipment utilizing the weight of the equipment to apply pressure to a worked surface through a surface working pad which is moved by the machine. Heretofore, if one were to attempt to use such machines on carpeting with surface working pads which are normally used for cleaning hard surfaces, e.g. nylon pads, the pads would remain stationary with respect to the carpet and the machine would move. For example, a rotary machine would rotate with enough force, in some instances, to throw an operator around with it. By this invention, open non-woven three-dimensional web material surface working pads are readily adapted for use in carpet cleaning with such equipment. This is achieved through positioning of a novel article of manufacture, consisting of smooth stiff pressure plate means, on the working face of the surface working pad, leaving a margin of the pad exposed at the periphery for acting upon a carpet or rug.

3,698,033
PAINT BRUSH TRIM GUIDF

Robert L. French, 1109 West 35th Street, Independence, Mo.

Filed Feb. 16, 1971, Ser. No. 115,584
Int. Cl. A46b *15/00*; B44d *3/22*
U.S. Cl. 15—246 3 Claims

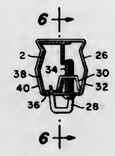


A paint brush trim guide including a clip adapted to be attached to the head of a paint brush and including a channel-shaped portion adapted to extend from said head to enclose therein an edge portion of the bundle of bristles extending from said head, and terminating in spaced apart relation from the free ends of said bristles, and a leaf spring guide member disposed in and extending along the base portion of said channel-shaped portion and extending outwardly therefrom to a point adjacent the free ends of said bristles.

3,698,034
CURTAIN HANGER

Hidehiro Endou, Noda and Takashi Yokota, Yokohama, both of Japan, assignors to Yokota Kinzoku Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1969, Ser. No. 872,585
Int. Cl. A47h *13/10*
U.S. Cl. 16—87.4 R 1 Claim

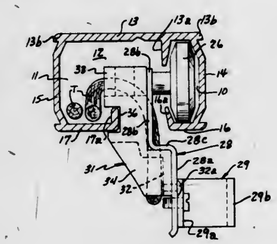


A curtain hanger which can be made of selected lengths and which avoids derailment or dragging of the runners. A selected number of standard length channel segments are interconnected by fishplates to provide for variable length hangers. The segments are provided with a trackway along the floor for guiding wheeled runners. A stop in the trackway prevents escape from the ends of the runners.

3,698,035
TRAVERSE ASSEMBLY FOR DRAPERIES AND THE LIKE

Ferdinand F. Salzmann, Madison, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed Aug. 30, 1971, Ser. No. 176,160
Int. Cl. A47h *1/04*, *15/00*; E05d *13/02*
U.S. Cl. 16—95 D 10 Claims



A traverse assembly for draperies and the like including an elongated rigid rod structure having a rearwardly opening channel along the front side of the rod defining a trackway for receiving drapery carriers, and a forwardly opening channel along the rear side of the rod defining a cord track, with the rear cord track spaced from the front carrier track to define an intermediate access passageway therebetween. Drapery carriers are mounted in the front carrier track to support draperies adjacent the front side of the rod and a master carrier is provided with followers that ride in the front carrier track and a rear guide means which slidably support the master carrier on the forward edge of the rear cord track to stabilize the master carrier during movement along the rod.

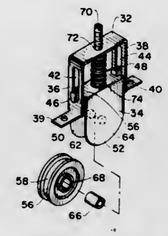
3,698,036
SLIDING STRUCTURE ROLLER ASSEMBLY

Martin M. Goodman, Tarzana, Calif., assignor to Columbia Belford Inc., Los Angeles, Calif.

Filed Oct. 14, 1970, Ser. No. 80,672
Int. Cl. A47h *15/00*
U.S. Cl. 16—100 7 Claims

Herein described is apparatus useful as roller assemblies for sliding structure such as a door or a window which engage

tracks in the door or window frames. The structure comprises a frame insertable within the outer frame of the sliding structure which is generally U-shaped and comprises a roller rotatably mounted within the U-shaped frame. A U-shaped support supports the roller within the frame and includes a pair of extensions which are insertable through slots within the

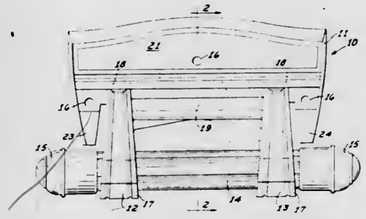


U-shaped frame on either leg thereof. Means disposable through the top of the frame engages the support structure for adjusting the limit of travel of the structure of the support within the U-shaped guide frame slots. A spring is included between this support and the frame to bias the wheel support and the wheel away from the frame.

3,698,037
INTEGRAL CASKET HANDLE AND BASE WITH CONCEALED HINGE

Bennie R. Johnson, R. R. 3, Connersville, Ind.

Filed Dec. 30, 1970, Ser. No. 102,611
Int. Cl. A47b *95/02*; B65d *25/28*
U.S. Cl. 16—112 8 Claims



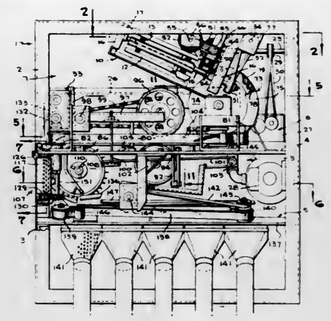
A casket handle integrally connected to a base by means of a concealed hinge. A flexible wall having laterally extending grooves on either side of the wall is integrally connected to a base securable to a casket. The flexible wall is also integrally connected to a second wall having arms and a carrying bar integrally attached thereto. A curved lip extends outward and downward from the base cooperatively with the second wall concealing the flexible wall when the carrying bar and arm are pivoted forward of the base.

3,698,038
SHELLFISH PROCESSING MACHINE

John M. Jones, Jr., Hertford, N.C., assignor to Mrs. Elvira Cheatham Jones, Henderson, N.C.

Filed March 3, 1971, Ser. No. 120,455
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 25 Claims

A shrimp processing machine including shrimp feeding, deheading, deveining and shell-slitting, shell-removing, and shrimp grading stations arranged along a path on several superposed levels with means to transport and properly orient shrimp from one level to another. A feed conveyor is used having troughs with a movable wall to clamp shrimp firmly during deheading, and brushes are used to eject deheaded shrimp from the conveyor. After shell-slitting and deveining, the shrimp are transferred from one level to another while being pressed into a converging throat between oppositely

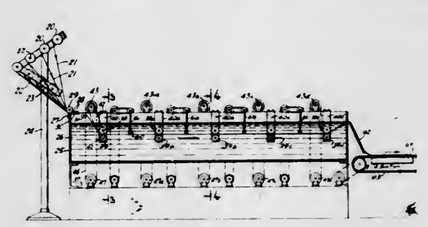


rotating rollers which grip and remove the shell from the meat. The processed meat is then carried along the grading station where it is removed according to size.

3,698,039
APPARATUS FOR SPREADING TOWS OF CONTINUOUS FILAMENTS INTO SHEETS

Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson

Division of Ser. No. 472,504, July 16, 1965, Pat. No. 3,376,609. This application Oct. 23, 1967, Ser. No. 677,214. The portion of the term of this patent subsequent to April 9, 1982, has been disclaimed.
Int. Cl. D02g *1/00*
U.S. Cl. 19—66 T. 2 Claims



Apparatus for spreading a plurality of tows of continuous filaments into sheet form comprising a container for a liquid in which there are placed a series of pairs of nip rolls submerged in a liquid. Between each successive pair of nip rolls there are positioned in the liquid means for applying both longitudinal and transverse forces to the plurality of tows as they pass through the successive pairs of nip rolls. There is feed means at one end of the container and means for removing the tow in sheet form at the other end of the container. The removing means is preferably an inclined plane over which liquid from the container is flowing to apply diverging forces to the plurality of tows to further open them into sheet form.

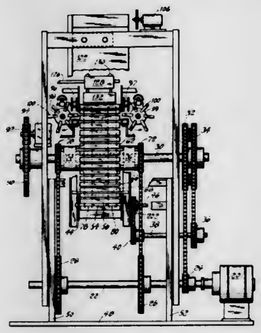
3,698,040
APPARATUS FOR FABRICATION OF SWABS

George M. Mourkakos, 39-23 57th Street, New York, N.Y.

Filed April 26, 1971, Ser. No. 137,367
Int. Cl. D01g *13/00*
U.S. Cl. 19—145.3 9 Claims

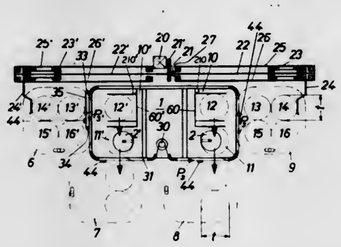
A machine for the fabrication of cotton swabs embodying a rotating carrier or conveyor drum provided with circumferential cross slots which individually receive sticks from a vibrated hopper. The feed mechanism at the terminus of the hopper feed is formed to coact with a complementary member

to assure the insertion of only one stick into each peripheral slot and to temporarily restrain the succeeding stick. The sticks are engaged by a rotating friction wheel which imparts longitudinal axial spin as the carrier advances the sticks through a glue pot station to apply adhesive to the opposite ends of the sticks. Cotton in the form of a rope is presented to the sticks at the next station, by a cotton feed mechanism whose fingers are radially adjustable for controlling the amount of cotton to be applied. The cotton adheres to the



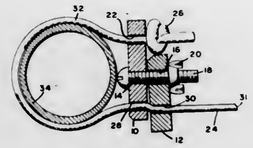
stick and is wound thereon by the spin thereof and is severed by the coaction of a plurality of rotating blades against the forward edge of a spring loaded block as the stick ends enter the first compressive die. Here, as in the successive dies, the cotton is compressed and more tightly wound thereon as the stick continues to be spun. An escapement wheel thereafter diverts the sticks from the carrier to a slotted transfer carrier belt and then to an automatic packaging unit where the sticks are counted and layered into a box tray with interlayer separators.

3,698,041
CAN CHANGING IN STRAND MATERIAL HANDLING
Hans B. Hertzsch, Enschede, Netherlands, assignor to Deutsche Spinnereimaschinenbau Ingolstadt Niederlassung der Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt/Danube, Germany
Continuation of Ser. No. 569,556, July 26, 1966, Pat. No. 3,443,287, which is a continuation-in-part of Ser. No. 256,220, Feb. 1, 1963, abandoned. This application Feb. 26, 1969, Ser. No. 802,694
Claims priority, application Germany, Feb. 9, 1962, D 38105; Feb. 12, 1963, D 40673. The portion of the term of this patent subsequent to May 13, 1986, has been disclaimed.
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 A **9 Claims**



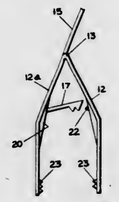
The automating of can changing in the production of roving. Provision is made for automatically supplying sliver cans to a filling station and for removing filled cans from the filling station.

3,698,042
ROPE CLAMPS
Sidney H. Hirschhorn, 8-20 Fairlawn Avenue, Fairlawn, N.J.
Filed Jan. 25, 1971, Ser. No. 109,355
Int. Cl. B65d *63/00*; **F16g** *11/00*
U.S. Cl. 24—19 **3 Claims**



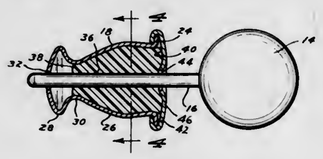
Two plates having means extending through aligned holes so as to draw the plates towards one another to clamp an intermediate portion of a rope extending through a hole in each of the plates, the latter holes offset from one another, and one of the plates being adapted to be engaged by an end portion of the rope so as to form a loop in the rope intermediate the end portion and the clamped portion.

3,698,043
MOLDED GARMENT CLAMP
John H. Batts, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed March 10, 1970, Ser. No. 18,108
Int. Cl. A44b *21/00*
U.S. Cl. 24—84 H **25 Claims**



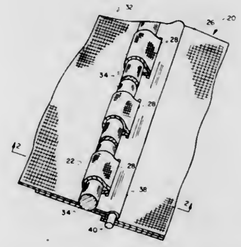
A device for gripping and hanging articles. The device includes, as a single integral part molded from a plastic material, a pair of clamping members, a flexible web joining these members and serving as a hinge, a latch to lock the members in closed position and a hook by which the device can be suspended. The arrangement of the various features of the device is such that the device can be molded in a two-part die without the use of cams or similar devices to permit release of the molded part from the die.

3,698,044
CLUTCH MECHANISM FOR JEWELRY PIN
Michael Chernow, New York, N.Y., assignor to Monocraft, Inc.
Filed July 19, 1971, Ser. No. 163,690
Int. Cl. A44c *7/00*
U.S. Cl. 24—108 **6 Claims**



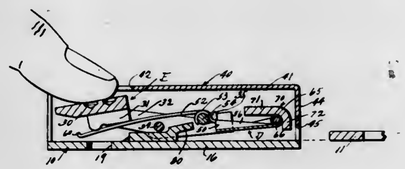
A clutch mechanism for securing a jewelry piece, such as a pierced earring, to a support member. The jewelry piece includes an elongated pin, and the clutch mechanism is slidably mounted on the pin in such a manner that it can readily be separated from the pin. The clutch mechanism includes a gripper portion for facilitating easy handling of the clutch, and it includes a flexible insert for frictionally gripping the pin.

3,698,045
FABRIC CONNECTOR
Robert J. Redden, Newark, Del., assignor to ILC Industries, Inc.
Filed Dec. 6, 1968, Ser. No. 781,834
Int. Cl. A44b *19/00*
U.S. Cl. 24—203 **29 Claims**



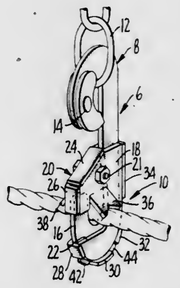
A connector for releasably joining opposite edges of sheets of flexible material such as adjacent fabric sections of an inflatable structure wherein one of the sheets is provided with spaced loop members while another sheet is provided with mating spaced apertures inwardly positioned from the edge of the sheet and adapted to receive the loops therethrough. The loop members, after passage through the apertures, are held in locked position by rod-like means that pass through the loops locking the sheets tightly together. Also, more loops can be provided than mating apertures so that there are free loops after connection has been made between two sheets of flexible material for attaching a third sheet of material to the free loops in a manner as described above.

3,698,046
SPRING LATCHING SAFETY BELT PUSH TYPE
William J. Eubank, Livonia, Mich., assignor to Irvin Industries Inc., Greenwich, Conn.
Continuation of Ser. No. 762,943, Sept. 26, 1968, abandoned. This application Aug. 27, 1970, Ser. No. 67,599
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **6 Claims**



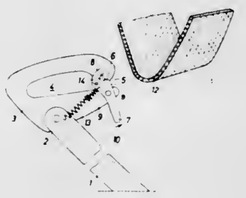
A safety belt buckle construction in which a latching dog and biasing spring are integrally connected in such relation within a casing as to enable an operating means to simultaneously flex the spring and move the the dog into operative latching position. The rigidly and integrally connected biasing means and latching dog provide a mechanical device capable of withstanding large belt forces. The movable mounting construction of the latch is such as to provide added strength to the latching dog.

3,698,047
CABLE CLAW ATTACHMENT
George W. Pierce, 340 West 29th Avenue, Eugene, Oreg.
Filed Oct. 5, 1971, Ser. No. 186,727
Int. Cl. A44b *13/00*; **F16g** *11/00*; **B64d** *17/38*
U.S. Cl. 24—238 **2 Claims**



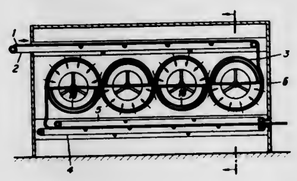
A cable claw attachment for tying down small aircraft is provided which is easily moved along the cable to a desired position by hand but wherein any upward or sideways movement of the aircraft will engage the claw and prevent movement along the cable. Tools are required to fasten the claw so that pilferage losses are reduced. An adapter provides for clamping on various sizes of cables.

3,698,048
FASTENING FOR THE LOOP OF A THREE-POINT SAFETY BELT IN MOTOR VEHICLES
Per Olaf Weman, Stockholm, Sweden, assignor to Sigmatex Ag, Basel, Switzerland
Filed Nov. 26, 1969, Ser. No. 880,196
Claims priority, application Germany, Dec. 2, 1968, P 18 12 115.8
Int. Cl. A44b *13/00*; **A47c** *3/00*
U.S. Cl. 24—241 P **8 Claims**



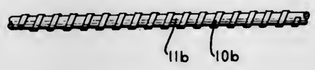
A fastening for holding the loop of a three-point safety belt in motor vehicles comprises a rigid bracket secured to the vehicle floor and carrying a clasp formed with an arm of which the underside defines a slot extending lengthwise of the vehicle for the insertion thereinto of the loop, the open end of said slot which faces the back of the vehicle being closed by a catch which is openable by the belt itself when this is pushed into the slot from the back.

3,698,049
APPARATUS FOR THE CONTINUOUS GASEOUS TREATMENT OF TEXTILE MATERIALS
Heinz Fleissner, Egelsbach near Frankfurt Main, Germany, assignor to Vepa AG, Basel/Schweiz, Germany
Division of Ser. No. 831,686, July 9, 1968, Pat. No. 3,521,378, which is a continuation-in-part of Ser. No. 654,728, July 20, 1967, Pat. No. 3,503,134. This application Nov. 21, 1969, Ser. No. 877,564
Claims priority, application Germany, June 8, 1968, P 17 60 604.1; June 22, 1968, P 17 60 717.9; June 27, 1968, P 17 60 751.1; April 8, 1969, P 19 17 757.2
Int. Cl. D06c 3/02; F26b 3/06, 13/30
U.S. Cl. 26—60 4 Claims



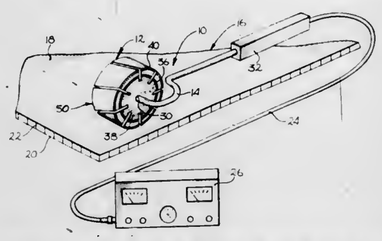
The present disclosure is directed to apparatus for the treatment of materials which comprises a heat-insulated housing divided into a circulation chamber and a treatment chamber, a plurality of sieve drum means subjected to a suction draft rotatably disposed within said treatment chamber, fan means associated with the sieve drum means for producing a suction draft and for circulating the treatment medium in said treatment chamber, heating means provided in the circulation zone of the treatment medium, perforated conveying means cooperating with the sieve drum means for the effective conveyance of the material being treated by free fall to said sieve drum means, and additional perforated conveying means disposed below the sieve drum means for guiding the material to outlet means for discharging the material being treated from the treatment chamber.

3,698,050
METHOD OF PRODUCING A COMPOSITE ELECTRODE
Leonard R. Rubin, Short Hills, N.J., assignor to Engelhard Minerals & Chemicals Corporation
Filed May 25, 1971, Ser. No. 146,619
Int. Cl. H01j 9/16, 9/44
U.S. Cl. 29—25.18 7 Claims



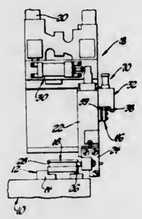
A composite material comprising titanium or a titanium alloy substrate to which is bonded a platinum group metal coating is prepared by a method which includes the steps of wrapping a platinum group metal wire around the substrate, which is in the form of a cylinder, and then converting the wire-wrapped cylinder to a unitary body by annealing and swaging steps. The resultant composite material is particularly useful as an electrode material.

3,698,051
METHOD OF MAKING AN ACOUSTICAL TRANSDUCER
Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation
Filed Feb. 6, 1970, Ser. No. 9,239
Int. Cl. H04r 17/00
U.S. Cl. 29—25.35 16 Claims



A method of constructing an acoustical transducer in roller shape wherein the transducing structure is a plurality of piezoelectric segments about the circumference of the roller. The method includes the precision boring to size of the inside and outside diameters of an oversize piezoelectric tube which has been fired but is still in the unpolarized state. An electrical coating is then deposited on the inside and outside diameter and the tube is electrically polarized. The tube is filled with a low exotherm electrically conductive acoustical damping material which is allowed to harden. The tube is then divided into a plurality of parallel sections and cut into several individual roller acoustical transducers, each transducer having a plurality of individual segments.

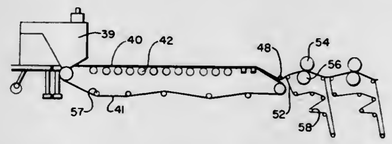
3,698,052
VARIABLE POSITIONING MEANS
Walter S. Ellis, Troy, Mich., assignor to Schulze & Burgess Company, Mount Clemens, Mich.
Filed April 16, 1971, Ser. No. 134,636
Int. Cl. B23p 23/00
U.S. Cl. 29—38 C 15 Claims



In a machine having a frame and a moveable table mounted on the frame, the moveable table having a plurality of workpiece carrying stations that are moveable to serially locate each station adjacent a tool mounted on a crosslide on the frame for operation on the workpiece at the station. The machine is provided with variable positioning means for limiting movement of the tool a predetermined distance relative to each of the workpieces at the operating station. The variable positioning means includes a reference device mounted on the crosslide and in fixed location relative to the tool, and a movement limiting device for each of the workpiece stations and adapted to be engaged by the reference device at the end of the tool operation. The limiting devices are equal in number to the number of workpiece stations and each may be dimensioned in accordance with the workpiece mounted at the station. Thus, variances in tolerance stackup and movement in the machine itself will be accommodated for each workpiece

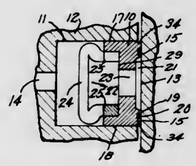
station and the workpiece mounted thereon. Means are provided to move the limiting devices into adjacent relation to the reference device as the machine table is moved to place a different station adjacent the crossslide. Further means are provided to prevent retrograde movement of the limiting devices as they are moved from station to station.

3,698,053
HIGH SPEED ROLL FOR MACHINERY
Ralph A. Hess, Medfield, Mass., and James P. McNamee, Pawtucket, R.I., assignors to SW Industries, Inc., Newton, Mass.
Continuation-in-part of Ser. No. 857,186, Sept. 11, 1969, Pat. No. 3,593,398. This application May 6, 1971, Ser. No. 140,722
Int. Cl. B21b 31/08
U.S. Cl. 29—132 5 Claims



A press roll for paper making machinery has a mandrel, characteristically composed of a two phase system with an external phase containing a synthetic polymeric matrix and an internal phase containing aligned continuous carbon fibers. The construction of this press roll permits unusually high speed operation.

3,698,054
METHOD OF MAKING OIL CONTROL PISTON RINGS
Herbert F. Prasse, Town & Country, Md., assignor to Ramsey Corporation, St. Louis, Mo.
Filed March 10, 1971, Ser. No. 122,798
Int. Cl. B23p 15/06
U.S. Cl. 29—156.63 3 Claims

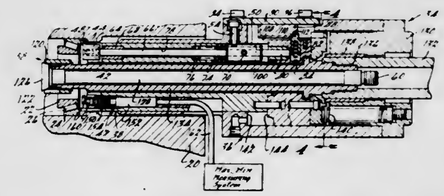


A method of making oil control piston rings having inner diameter and outer diameter central channels with oil drainage slots spaced apart circumferentially communicating the channels, the outer diameter having axially spaced apart scraping beads with radial grooves therein filled with a hard facing metal. The method includes the sequential steps of making a cast unsplit ring, providing axially-spaced-apart radial grooves in the outer diameter of the ring, providing an internal inner diameter channel in the said ring, forming blind oil drainage slots in the inner diameter of the ring, spray-coating stacked rings on the outer diameter with a hard-faced coating, machining the stacked rings on the outer diameter to remove the coating except in the area of the outer diameter grooves, forming an outer diameter channel on the ring thereby opening the blind oil slots and forming bevels on the axial ends of the outer diameter of the ring and thereafter splitting the ring axially.

3,698,055
HEAT RESISTANT ALLOYS OF IRON, COBALT AND/OR NICKEL AND ARTICLES THEREOF
Frederick C. Holtz, Jr., Evanston, Ill., and Hugh Morrow, III, Ann Arbor, Mich., assignors to Crucible, Inc.
Continuation-in-part of Ser. No. 743,921, July 21, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,203
Int. Cl. C22c 39/10, 39/36, 39/50
U.S. Cl. 29—180 7 Claims

Alloys of iron, cobalt and/or nickel containing from 0.5 to 4.0% carbon and from 5 to 60% tungsten, molybdenum or mixtures thereof characterized by the absence of "reactive" elements such as Cr, V, Cb, Ta, Ti, Si, Mn and Al. which form hard-to-reduce oxides.

3,698,056
GAGE HEAD
Guy Donald Pierce, Birmingham, Mich., and Rudi K. Ruaft, Windsor, Ontario, Canada, assignors to The Cross Company, Fraser, Mich.
Continuation-in-part of Ser. No. 669,103, Sept. 20, 1967, abandoned, Continuation of Ser. No. 19,551, March 19, 1970, abandoned. This application May 17, 1971, Ser. No. 143,966
Int. Cl. B23p 19/04; B23q 17/00
U.S. Cl. 29—201 28 Claims



A gage head mechanism for selecting bearing shims during assembly of a differential drive for insertion behind the differential bearings at opposite sides of the differential case so as to assure a proper and acceptable amount of backlash between the ring gear and the drive pinion.

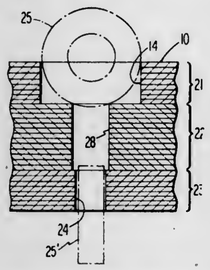
The gage head mechanism is adapted to provide a proper and acceptable backlash between the drive pinion and the ring gear under conditions in which the differential case is supported in the differential carrier with the side bearings loosely resting on and shiftable relative to the side bearing seats. The mechanism includes spaced gage heads including reciprocable clamps which are movable in opposite directions against the side bearings to shift the side bearings and the differential case within the differential carrier and simultaneously preload the bearings to a predetermined force, and thus load the ring gear and drive pinion. Upon seating of the spaced gage heads, a rotary drive is positioned in engagement with the differential drive and operates to rotate the differential case while the bearings are preloaded by the clamps.

The gage head includes a transducer assembly which measures the axial spacing between the bearing seat and the bearings under the preload conditions, and thus the runout of the ring gear during rotation of the differential case by the rotary drive means. An electrical system may be provided for deriving a signal from the transducer for measuring the space between the bearings and their respective seats. This measurement is used to select and cause the placement of suitably sized shims when the case is positioned in the mean runout position, and the illustrated system includes a brake assembly for stopping the rotation of the gage head automatically in the mean runout position.

The purpose of the foregoing abstract is to enable the Patent Office and the public generally, and especially the scientists, engineers, or practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection, the nature and es-

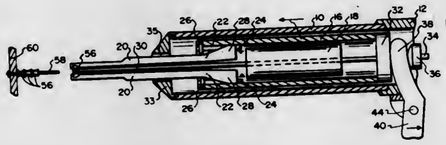
sence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,698,057
REVERSIBLE FIXTURE FOR POSITIONING MAGNETIC MEMORY CORES
Clifford George Warner, Abington, and James Henry Kade, Norwood, both of Mass., assignors to RCA Corporation
Filed June 10, 1971, Ser. No. 151,820
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 MM **2 Claims**



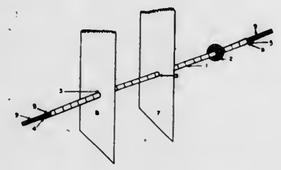
A fixture for accurately positioning magnetic memory cores in an array has a top surface for receiving agitated magnetic cores and has a bottom surface for connection to a source of vacuum. The fixture comprises a flat rigid laminar metallic plate formed from a plurality of thin flexible sheets, having etched apertures, arranged in top, middle, and bottom groups, all bonded together in precise registry. The sheets of the top group and the sheets of the bottom group are the same in having rectangular apertures each dimensioned to receive a core edgewise to a depth of up to one-half of the outer diameter of the core. The sheets of the middle group have smaller apertures. The useful life of the fixture can be doubled by turning it over when the top surface becomes worn by the abrasive cores.

3,698,058
APPARATUS FOR APPLYING WITH CLAMP TERMINAL CLIPS OF THE FLANGED TUBULAR TYPE
William A. Reimer, Wheaton, Ill., and Frederick G. Storz, Englishtown, N.J., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 14, 1971, Ser. No. 143,342
Int. Cl. H01r *43/00*
U.S. Cl. 29—200 HC **10 Claims**



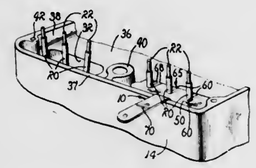
A tool for the installation of flanged tubular type wire clamp terminal clips over a wire lead and post terminal includes a plurality of finger members pivotally mounted about a hollow central push rod such that they close radially toward the rod on the application of axial pressure. Means for applying axial pressure is provided whereby a flanged tubular type wire clamp terminal clip is gripped between the fingers and push rod. As pressure is increased the fingers and rod exert opposing axial forces on the terminal clip sufficient to deform the cylindrical clip wall inwardly thereby securing the wire to the terminal. In an alternative embodiment a solid central push rod is employed to effect removal of the terminal clips.

3,698,059
EZE-WIRE AND CABLE PULLER
Gayle Darwin Richardson, 505 Dallas Avenue, Artesia, N. Mex.
Filed July 8, 1971, Ser. No. 160,838
Int. Cl. H01r *43/00*; B23p *19/04*
U.S. Cl. 29—203 H **1 Claim**



This invention relates to a one-piece wire and cable puller, with no moving parts, which will efficiently and quickly pull wires and cables through apertures in any wall or place where threading or pulling might be difficult.

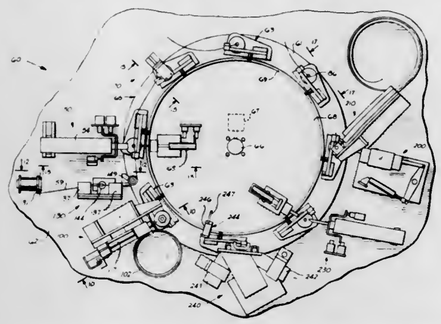
3,698,060
REMOVABLE PUSH ROD GUIDE FOR ENGINE ASSEMBLY
Clyde E. Helton, 22238 Avenue 152, Portervlle, Calif.
Filed Jan. 28, 1971, Ser. No. 110,406
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **10 Claims**



A removable push rod guide for facilitating the assembly of the rocker arm head on the cylinder head of an engine with the guide providing a plurality of apertures therethrough in correspondingly spaced relation to the spacing of the rocker arm seats for individually receiving the push rods in order temporarily to hold the push rods in precise alignment with their respective rocker arms during such assembly of the rocker arm head onto the cylinder head of the engine. The push rod guide is adapted readily to be removed without disturbing the seated push rods prior to complete assembly of the heads.

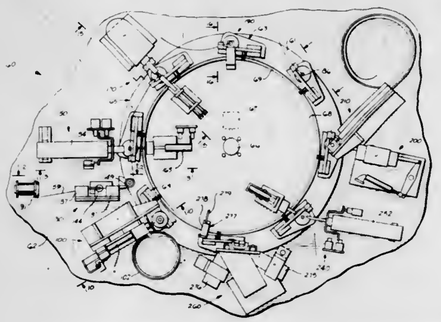
3,698,061
APPARATUS FOR FORMING AND TESTING ELECTRICAL COMPONENTS
Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company Incorporated, New York, N.Y.
Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,433
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 D **2 Claims**

A turntable having workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders has the leading end of an insulated wir extending from a supply of wire welded thereto. The firs part is indexed without severing the wire extending from the first part to the supply, and a combined swaging and testing apparatus swages an upper rim of the first part. A portion of the wire extending to the first part in the workholder is separated from the supply while testing the weld of the wire to the first part and the new leading end of the wire is



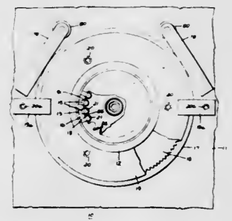
attached to the first part in the next succeeding workholder. Subsequently, the portion of the wire is wound on the first part, a second part is assembled to the first part and, the trailing portion of the wire is welded to a metal cap which is secured to the second part, and the strength of the weld is tested, whereafter the electrical component is tested electrically and then sorted.

3,698,062
APPARATUS FOR WINDING ELONGATED MATERIAL ON AN ELECTRICAL COMPONENT
Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,505
Int. Cl. H01r *43/00*; B23p *19/04*
U.S. Cl. 29—203 D **4 Claims**



A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders has the leading end of an insulated wire extending from a supply of wire welded thereto, after which the first part is indexed to another without severing the wire extending from the first part to the supply. A portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable. Facilities are provided for orienting the workholders prior to the winding of the wire on the first parts. Subsequently, a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped, whereafter the trailing portion of the wire is welded to a metal cap which is secured to the second part, the strength of the weld is tested, and the electrical component is advanced to a last work station, tested electrically, and then sorted.

3,698,063
APPARATUS FOR INSERTING COIL SIDE TURN PORTIONS AND INSULATORS INTO THE SLOTS OF A MAGNETIC CORE
Dallas F. Smith, Fort Wayne, Ind., assignor to General Electric Company
Filed March 19, 1971, Ser. No. 126,078
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R **12 Claims**

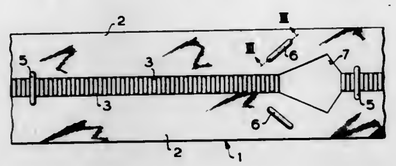


Apparatus for inserting coil side turn portions, and insulators when desired, into axially extending slots of a magnetic core having a given stack height within a predetermined range of stack heights. The apparatus has a turn inserting device including coil turn feeder blades and a support for mounting the coil turn feeder blades and a core for relative axial movement. A drive effects an increment of relative movement of the turn feeder blades and core for inserting the coil side turn portions. A control is adjustable through the turn inserting device at a location remote from the drive for setting the selected increment of travel to conform to the given core stack height. The apparatus also has divider blades forming turn-receiving gaps and movable relative to the core during a selected portion of the selected increment of movement of the coil turn feeder blades. There is another control, adjustable concurrently with the control that is adjustable through the turn inserting device, for setting the selected portion of the selected increment of movement to conform to the given core stack height.

3,698,064
METHOD FOR DRAWING SLIDING CLASPS AND FIXING STOP MEMBERS ONTO ENGAGED SLIDING-CLASP FASTENER TAPES
Wilhelm Uhrig, Wuppertal-Elberfeld, Germany, assignor to Supia Etablissement, Vaduz, Liechtenstein, Germany
Filed June 29, 1971, Ser. No. 157,821
Claims priority, application Germany, July 24, 1970, P 20 36 709.3
Int. Cl. B23p *11/00*; B21d *53/50*
U.S. Cl. 29—408 **4 Claims**

A method for applying small prefabricated stop members and drawing sliding clasps onto sliding-clasp fastener tapes comprising attaching two upper stop members and one lower stop member at top and bottom ends of an engaged fastener

tape, the lower member fitting over the engaged teeth of the top and providing a lower stop for the travel of the clasp, while the upper stop members are fitted in outwardly splayed



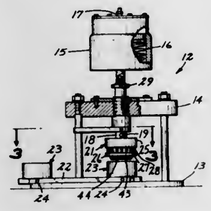
fashion with the divergent ends in the direction of the tape advance so that the moving clasp can back over these members in traveling toward the lower stop member.

3,698,065

APPARATUS FOR MAKING A DISPLAY BUTTON

Judson Olbert Sorenson, Winona, Minn., assignor to Asco, Inc., Winona, Minn.

Filed Aug. 24, 1970, Ser. No. 66,210
Int. Cl. B23p *19/04*
U.S. Cl. 29—238 **10 Claims**



Apparatus for the manufacture of a laminated button comprising a metallic backing plate having a transverse peripheral edge and an outwardly extending flange, an illustrated paper sheet and a protective acetate covering. The apparatus comprises a pneumatically operated press which receives the plate, illustrated sheet and covering, and, with a single downward movement, causes the sheet to conform to the plate and be crimped between the transverse edge and flange.

3,698,066

METHOD OF PRODUCING TUNNEL OR LIKE STRUCTURE

Charles E. Cornwell, Alexandria, Va., assignor to Jennings Bailey, Jr., Frederick, Md.

Filed Dec. 21, 1970, Ser. No. 100,197
Int. Cl. E04b *1/04, 1/16*
U.S. Cl. 29—458 **1 Claim**



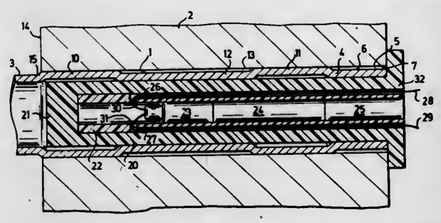
A tunnel section is produced by enclosing an annular ring of expanded metal within an outer covering of plastic material. The expanded metal has inward projections struck out from it which are small enough to enter the spaces or to enter into openings provided in another sheet. The inner surface of the expanded metal is then sprayed with concrete, the thickness of the layer formed being less than the length of the struck out tongues. After the concrete is sufficiently cured, another layer of expanded metal is placed on the inside wall, with the tongues of the first layer passing through openings in it, and the tongues are bent over to secure the latter layer in position and to connect the layers together. The second layer also has inwardly projected tongues. The second layer is then sprayed in the same manner as the first. This is continued until the desired wall thickness is obtained.

3,698,067

METHOD FOR MOUNTING A PIPE IN A PERFORATED PLATE

Rene T. Feiss, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Sept. 4, 1970, Ser. No. 69,703
Claims priority, application Switzerland, Sept. 23, 1969, 014326/69
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **8 Claims**



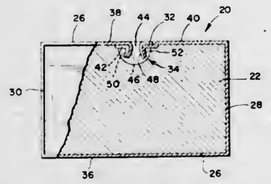
The pipe is fitted with at least a pair of explosive members, one of which serves to weld the pipe to the perforated plate while the other serves to expand the pipe into bearing contact with the plate. The detonation of the two members takes place in the same operation. A third explosive member can also be fitted in the pipe for welding the pipe to an opposite side of the plate.

3,698,068

METHOD OF APPLYING A METAL PLATE TO A REFRACTORY BRICK

Clarence G. Norris, 8303 Oakleigh Road, Parkville, Md., and Woodrow W. Merrick, Route 1, P.O. Box 496A, Upperco, Md.

Filed June 30, 1970, Ser. No. 51,223
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—509 **13 Claims**



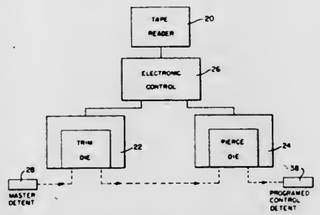
A furnace block comprising a refractory brick having a metal casing is provided. In the construction of the furnace block, overlapping ends of the metal plate are secured together at an elongated groove formed along one surface of the brick to provide a metal casing for the brick. One end of the metal plate has an offset which is received in the elongated groove. The overlapping ends of the metal plate are connected by puncturing or welding to lock the overlapping ends together and to secure the metal plate to the brick. A method of applying a metal plate to a refractory brick is also provided. In this method, the brick is positioned on one surface of the metal plate at a position intermediate between the ends of the metal plate, and the ends of the plate are bent into contact with the sides of the brick by using the brick as a male die. During the bending, the metal plate is held firmly against the bottom surface of the brick. Then the portions of the metal plate which extend above the top surface of the brick are bent into contact with the top surface to overlap the ends of the metal plate while holding the previously bent portions of the metal plate firmly against the sides of the brick. Finally, the overlapping ends of the metal plate are secured together to provide a metal casing for the brick. An apparatus for producing the metal encased bricks is also provided.

3,698,069

METHOD FOR PRODUCING A SET OF CONTROL DETENTS FOR A BUSINESS MACHINE

Clifford W. Bossmann; Harland A. Kaufmann, and Charles E. Mathes, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 673,829, Oct. 9, 1967, Pat. No. 3,512,435.
This application March 6, 1970, Ser. No. 24,951
Int. Cl. B23p *17/00*
U.S. Cl. 29—407 **5 Claims**



A method and apparatus for producing a set of control detents for a business machine like a cash register. The method includes trimming off the unwanted external control surfaces on a control detent blank and then forming the internal control surfaces desired on said blank as controlled by a punched tape. A special die construction having five shiftable die units is used in the forming operation. Each die unit has nine different die sets which can be selectively positioned over the blank to effect the forming operation in response to instructions from said tape.

3,698,070

METHOD OF FABRICATING SEAMLESS STEEL PIPES

Jacques Sejournet, Paris, France, and Jose Ignacio Martinez Garin, Bilbao, Spain, assignors to Ceflac, Paris, France

Filed Sept. 24, 1970, Ser. No. 75,273
Claims priority, application France, Sept. 25, 1971, 6932680
Int. Cl. B23k *19/00*
U.S. Cl. 29—527.6 **7 Claims**

A process for the manufacture of seamless steel tubing comprising continuous casting rectangular cross-section bars, cutting the bars into billets, heating the billets, upsetting and piercing the billets into hollow circular cross-sectioned blanks, hot extruding the blanks into seamless tubes and stretch reducing the seamless tubes where necessary.

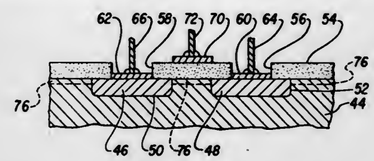
3,698,071

METHOD AND DEVICE EMPLOYING HIGH RESISTIVITY ALUMINUM OXIDE FILM

Lou H. Hall, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 19, 1968, Ser. No. 706,256
Int. Cl. B01j *17/34*; B44d *1/18*
U.S. Cl. 29—571 **4 Claims**

This invention record discloses an improvement in a method for forming aluminum oxide films characterized by being formed from trimethyl aluminum and nitrous oxide at a reaction temperature of 600°–900°C. The films are deposited over components formed in a semiconductor material. By this



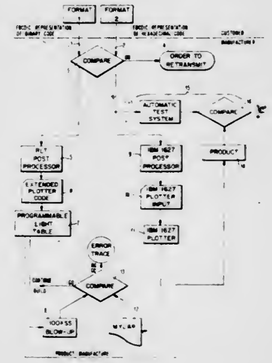
means a special high resistivity insulating film is formed and a shallow region of P-type conductivity is induced at the surface of the semiconductor material. Also disclosed are electronic devices employing the high resistivity aluminum oxide film.

3,698,072

VALIDATION TECHNIQUE FOR INTEGRATED CIRCUIT MANUFACTURE

Jeffrey G. Koens, Wappingers Falls, and Robert D. Merillat, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,972
Int. Cl. H01l *19/00*
U.S. Cl. 29—574 **11 Claims**



A method of making an integrated circuit involves first placing the digital information characterizing the circuit into two separate and different formats. The latter are then transmitted to the manufacturing plant where they are compared. The two formats are then used to form respective artworks depicting a mask for making the integrated circuit. The artworks are then compared. The integrated circuit is then built from the information of one of said formats and is compared with the information in the other format.

3,698,073

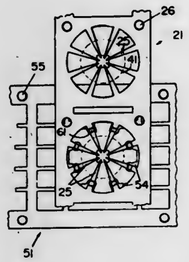
CONTACT BONDING AND PACKAGING OF INTEGRATED CIRCUITS

Robert W. Helda, Hollywood, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 691,041, Dec. 15, 1967, abandoned, which is a continuation of Ser. No. 691,040, Dec. 15, 1967, abandoned. This application Oct. 13, 1970, Ser. No. 80,378
Int. Cl. B01j *17/00*; H01l *1/16*
U.S. Cl. 29—577 **20 Claims**

Wire bonding is eliminated in the assembly of microelectronic devices, by a process involving the direct bonding of

circuit electrodes to a metallic sheet-frame member having a plurality of inwardly extending leads. A single-step bonding technique is employed for the simultaneous bonding of all leads to a semiconductor integrated circuit chip. Lateral confinement of the lead frame member during the bonding steps causes a buckling action in the lead fingers, to introduce a small but critical loop in each lead to ensure clearance between the lead fingers and the perimeter of the semiconductor chip, whereby electrical shorting is avoided. The loop also

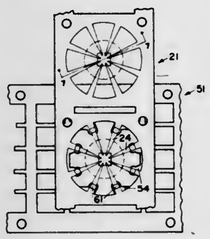


provides a structural flexibility in the leads, which tends to protect the bonding sites from excessive stresses. Subsequently, the first frame member including the bonded circuit is attached, preferably by resistance welding, to a second lead frame member of heavier gage and increased dimensions, suitable for connection with external circuitry. Excess portions of the first frame member are then removed, providing a completed assembly for packaging; e.g., plastic encapsulation or heremetic sealing, as in a ceramic-glass flat package.

3,698,074
CONTACT BONDING AND PACKAGING OF INTEGRATED CIRCUITS

Robert W. Helda, Scottsdale, and Harry J. Geyer, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 691,040, Dec. 15, 1967, abandoned, which is a continuation of Ser. No. 691,041, Dec. 15, 1967, abandoned. This application June 29, 1970, Ser. No. 56,081
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **5 Claims**

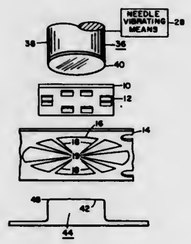


Wire bonding is eliminated in the assembly of microelectronic devices, by a process involving the direct bonding of circuit electrodes to an unsupported metallic sheet-frame member having a plurality of inwardly extending leads. A single-step vibratory pressure welding technique is employed for the simultaneous bonding of all leads to a semiconductor integrated circuit chip. Lateral confinement of the leads during the bonding steps causes a buckling action to introduce a small but critical loop in each lead to ensure clearance between the lead fingers and the perimeter of the semiconductor chip, whereby electrical shorting is avoided. The loop also provides a structural flexibility in the leads, which tends to protect the bonding sites from excessive stresses. Subsequently, the first frame member including the bonded circuit is attached, preferably by resistance welding, to a second lead frame member of heavier gage and increased dimensions, suitable for connection with external circuitry. Excess portions of the first frame member are then removed, providing a completed assembly for packaging; e.g., plastic encapsulation or hermetic sealing, as in a ceramic-glass flat package.

3,698,075
ULTRASONIC METALLIC SHEET-FRAME BONDING

Donald Francis Boyle, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 5, 1969, Ser. No. 874,343
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **7 Claims**



In simultaneously bonding all the bonding pads of an integrated circuit chip to respective inwardly extending leads comprising parts of an unsupported metallic sheet-frame, a chip bearing the integrated circuit is positioned with its pads in contact with the ends or tips of the leads, comprising part of the frame, on a bonding post. The contacting flat tip of a bonding needle is pressed against the back of the chip to squeeze the ends of the leads and the pads together and the bonding needle is vibrated to cause rubbing motion between the tips of the leads and the bonding pads thereby to bond the ends of the leads to their respective pads. To make sure that the vibrating force is applied to the chip, the flat tip of the steel needle has a layer of soft metal such as copper deposited thereon. To make sure that the ends of the leads do not move and yet to prevent cutting through the leads, the top of the post is not serrated but is roughened as by vapor honing. The tips of the leads are thinned by the squeezing action. The honing also puts a slight curvature on the edges of the posts that are in contact with the leads, whereby a curvature is imparted to the leads at the junction of the thinned and unthinned portions thereof, whereby the leads are weakened at this junction to a lesser extent than in the prior art. The working tip of the post is made hollow to concentrate the compressive force to the area where the leads are in contact with the bonding pads, thereby requiring less pressure on the needle.

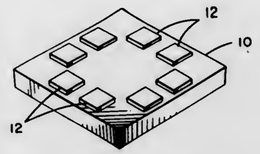
3,698,076
METHOD OF APPLYING LEADS TO AN INTEGRATED CIRCUIT

John T. Kingsley, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 3, 1970, Ser. No. 60,340
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **5 Claims**

In the process of applying leads to the bonding pads of an integrated circuit chip, after the lead portions of the first frame member are bonded to respective bonding pads on an integrated circuit, the first frame member is so contacted with

the sticky side of an adhesive tape as to stick the first frame member and its leads to the tape. Then the part of the first frame member which is not to be used is cut away from the lead portions of the first frame member while the first frame member and its leads are still stuck to the tape. If desired, the resultant product, without further steps, may be put on a reel for sale or storage or for transportation to another work posi-

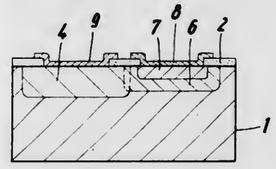


tion, or respective leads of a second lead frame member may be bonded to the respective leads of the first frame member and the resultant product which includes the leads of the first frame member and the complete second frame member may be peeled from the tape and transported to storage or to another work position where the packaging of the integrated circuit may be completed.

3,698,077
METHOD OF PRODUCING A PLANAR-TRANSISTOR

Reinhard Dahlberg, Heilbronn-Bockingen, Germany, assignor to Telefunken Patentverwertungsgesellschaft G.m.b.H., Donau, Germany

Filed Nov. 25, 1969, Ser. No. 879,860
Claims priority, application Germany, Nov. 27, 1968, P 18 11 136.9
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—578 **16 Claims**



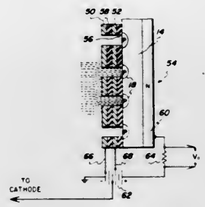
A method of producing a planar transistor by forming a window in a passivating layer on a semiconductor body, diffusing into the semiconductor body through this window an emitter region and a base region in either order, forming a second window adjacent the first window and diffusing a base contact region there through to a depth such as to make contact with the base region. Electrodes are then provided in the first window for the emitter region and in the second window for the base region. Either window may be formed first depending on the diffusing arrangements.

3,698,078
DIODE ARRAY STORAGE SYSTEM HAVING A SELF-REGISTERED TARGET AND METHOD OF FORMING

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 22, 1969, Ser. No. 886,951
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—578 **3 Claims**

A self-registered diode array camera tube target is formed utilizing a refractory metal grid as a mask both during etching of the insulating layer protecting the semiconductive substrate from electron beam irradiation and during diffusion of the monolithic diode array into the substrate. The refractory metal grid thus completely overlies the insulating layer between adjacent diodes of the target and, upon the application of a suitable electrical bias to the grid, the landing characteristics of the electron beam upon the target is controlled to

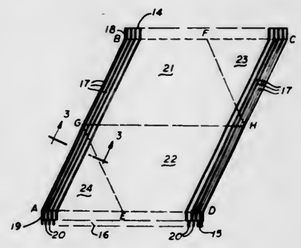


inhibit charging of the insulating layer by the scanning beam. A dual grid camera tube target also is disclosed wherein the outermost grid controls the electron beam landing profile while a more positively biased inner grid remote from the electron beam negates the generation of conductivity producing charge carriers at the substrate-insulating layer interface.

3,698,079
METHOD OF MAKING A PRINTED CIRCUIT ARMATURE

Joshua Lifschitz, Stamford, Conn., assignor to Sperry Rand Corporation

Division of Ser. No. 844,884, July 25, 1969, Pat. No. 3,609,431. This application Nov. 5, 1970, Ser. No. 87,297
Int. Cl. H02k *15/02, 15/10*
U.S. Cl. 29—598 **3 Claims**



A printed circuit armature wherein the conductors are printed on one face of an insulated support member, and which member is adapted to be folded into opposing leaf portions and then rolled into a cylinder whereby the conductors are arranged on the inner and outer surfaces of the cylinder.

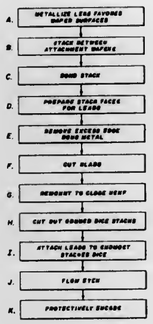
3,698,080
PROCESS FOR FORMING LOW IMPEDANCE OHMIC ATTACHMENTS

Warren E. Berner, Camillus, N.Y., assignor to General Electric Company

Continuation of Ser. No. 863,210, Oct. 2, 1969. This application Nov. 2, 1970, Ser. No. 85,960
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **4 Claims**

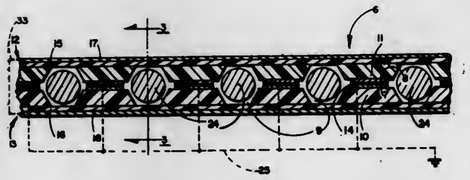
A plurality of semiconductor wafers each containing a junction are plated with aluminum on an N conductivity type surface and stacked between P conductivity type attachment wafers. The stack is heated to bond the wafers, gold is plated onto the endmost wafers, and excess aluminum at the

periphery of the stack is removed. The wafer stack is subdivided first into slabs and then the slabs repositioned to close the kerf formed by sawing. The repositioned slabs are then subdivided into unitary dice stacks. The unitary dice stacks are then attached to gold coated leads and freed of surface



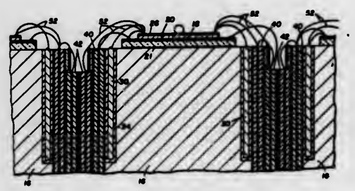
contaminants by flow etching. The cleaned unitary dice stacks are separately protectively encapsulated to form completed rectifiers by first depositing a passivant over the semiconductive surfaces and then molding a plastic housing around the elements.

3,698,081
METHOD OF PROVIDING INTERSTITIAL CONDUCTORS BETWEEN PLATED MEMORY WIRES
Joseph M. Shaheen, La Habra, and John Simone, Garden Grove, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Division of Ser. No. 45,678, June 12, 1970, Pat. No. 3,662,358. This application Aug. 25, 1971, Ser. No. 174,749
Int. Cl. H01f 7/06
U.S. Cl. 29—604 **6 Claims**



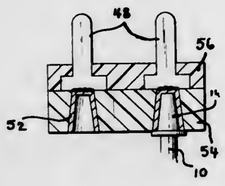
Single copper layers on two double copper clad dielectric boards are etched into strips. The strips are used as masks for permitting channels to be etched in the exposed surfaces of the dielectric substrates. After the channels have been etched, the copper strips are re-etched into a preferred interstitial conductor width. The two boards are joined together with the copper strips and channels in registration for forming tunnels for accommodating plated memory wires. The copper strips comprising the interstitial conductors between the tunnels are connected together at a common point.

3,698,082
COMPLEX CIRCUIT ARRAY METHOD
Tom M. Hyltin; Jack S. Kilby, both of Dallas; Gerald Luecke, and Harold D. Toombs, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 736,924, May 21, 1969, abandoned, which is a division of Ser. No. 545,077, April 25, 1966, Pat. No. 3,436,609. This application Feb. 25, 1971, Ser. No. 119,046
Int. Cl. H01b 13/00; H05k 3/28
U.S. Cl. 29—624 **6 Claims**



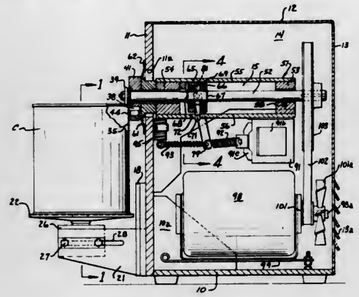
A method for fabricating an integrated circuit array supporting substrate having coaxial transmission lines formed about a core means in proper position for electrically connecting integrated circuit chips. After determining the position and function of the integrated chips mounted upon the core means, the substrate is fabricated by properly positioning insulated conductors in a frame designed to retain the conductors in a desired arrangement, folding the frame about the core, plating the insulated conductors, core and frame with metallized layers to form coaxial cables of the insulated conductors, encapsulating the device, and exposing the ends of the coaxial lines.

3,698,083
ELECTRO FORMED ELECTRICAL CONNECTOR PROCESS
John Thomas Schreck, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 722,297, April 18, 1968, abandoned. This application Sept. 15, 1970, Ser. No. 72,507
Int. Cl. H02g 15/00
U.S. Cl. 29—629 **7 Claims**



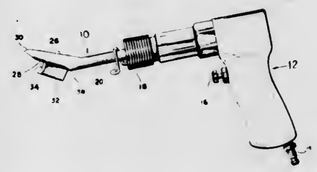
Method and means are disclosed wherein electrical connector elements are formed by electro-plating conductive material onto a passive metal mandrel with an insulating material then being molded about the plating with the mandrel being withdrawn. Selective plating of precious metal only where needed, as within a receptacle, is achieved directly in forming the element.

3,698,084
POWER OPERATED CAN OPENER
Ralph M. Peterson, Rockford, Ill., assignor to Peterson-Kruse, Inc., Rockford, Ill.
Filed Jan. 18, 1971, Ser. No. 107,142
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R **14 Claims**



An apparatus for opening cans of the type having an axially projecting end seam. The can opener has a cutter and a drive wheel mounted on a vertically movable head to enable lowering and raising of the cutter and drive wheel into and out of position at relatively opposite sides of the can end seam, and the rotary drive wheel is mounted for movement relative to the cutter head in a direction laterally of the cutter into and out of an operative position firmly pressing the end seam of the can against the cutter. A common actuator means is provided for raising and lowering the cutter head and for moving the drive wheel toward and away from the cutter.

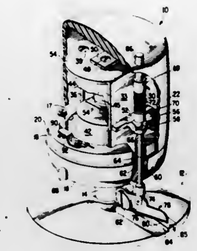
3,698,085
SLEEVE SLITTER
Jimmy C. Ray, Route 2 P.O. Box 33, Denison, Tex.
Filed Dec. 24, 1970, Ser. No. 101,366
Int. Cl. B26b 27/00
U.S. Cl. 30—90.4 **2 Claims**



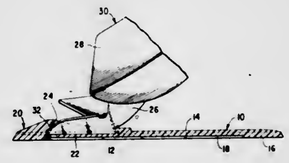
A chisel has a bent forward portion with a guide surface and a chisel blade projecting at right angles from the guide surface. The tool is for the purpose of slitting sleeves of telephone cables and is operated from a pneumatic hammer.

3,698,086
ELECTRIC SCISSORS
John A. Herr, Gardwood, N.J., assignor to The Singer Company, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,467
Int. Cl. B26b 15/00
U.S. Cl. 30—228 **8 Claims**

An electric scissors unit having a vibratory motor for oscillating a pivotal blade to effect a cutting engagement along a small portion thereof with a ledger blade. A drive rod connected to the pivotal blade is oscillated by a pivotally mounted armature reed which forms the movable element of the motor. A portion of the drive rod projects out the housing of the unit and is accessible for engagement by the operator for overriding the motor to manually effect a controlled snip cutting stroke along substantially the entire portion of the blade.



3,698,087
PEDESTAL FOR ELECTRIC SCISSORS
Roy M. Cowdrey, and Wayne A. Current, both of Cranford, N.J., assignors to The Singer Company, New York, N.Y.
Filed April 5, 1971, Ser. No. 131,315
Int. Cl. B26b 15/00
U.S. Cl. 30—228 **6 Claims**

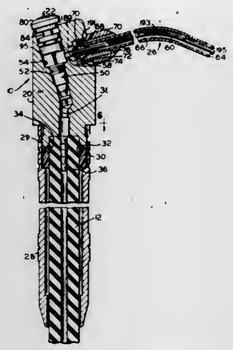


A pedestal for supporting an electric scissors having a housing and a ledger blade mounted at the front of the housing. The pedestal comprises a plastic plate having formed therein a longitudinal slot extending from the upper surface to the lower surface thereof. An integral bridging member longitudinally spans the slot at the upper surface of the plate. A blade-receiving slot is formed in the bridging member for detachably connecting the ledger blade to the pedestal. The blade receiving slot includes an abutment surface against which the ledger blade coacts to prevent the blade from inadvertently withdrawing from the slot. A longitudinal recess may extend along the lower surface of the plate from the termination of the slot to control the amount of springyness of the pedestal. The pedestal is such that it not only supports the scissors on a cutting surface but dampens the vibrations and thus the noise level transmitted from the scissors to the cutting surface.

3,698,088
DENTAL SYRINGES
George K. Austin, Jr., 604 Holly Drive, Newberg, Oreg.
Filed Oct. 24, 1969, Ser. No. 869,222
Int. Cl. A61c 19/02
U.S. Cl. 32—22 **12 Claims**

A dental syringe (FIGS. 1–4) includes a head having air and water passages normally blocked by valves opening into a manifold leading to a syringe tip and opened by pushbutton actuators in bores having cupped diaphragms serving to seal

the bores and also serving as springs to return pushbuttons to their normal positions and each serving to draw the fluid back into its own portion of the manifold. Another dental syringe



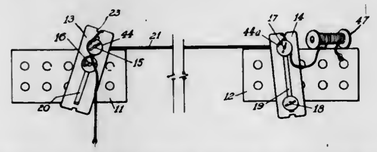
(FIGS. 5 and 6) has a head with a slide valve selectively positionable to connect either water or a medicament to one valve leading to a manifold.

3,698,089

MASON'S GUIDE FOR ALIGNING BUILDING BLOCKS

Charles W. Huston, 6931 Waterloo Road, N.W., Canal Winchester, Ohio

Filed Feb. 3, 1971, Ser. No. 112,344
Int. Cl. B44d *3/00*
U.S. Cl. 33—86 **5 Claims**



A Mason's Guide for Aligning Building Blocks consisting of (1) a clamp element having an aperture, (2) a pair of screws extending through the aperture, and (3) having at one end a pair of washers, one of which is a flat washer and the other of which is a dished washer, (4) nuts on one end of each screw and securing the washers against the clamped element, and (5) a cord secured to the clamp by being interposed between the two washers. The aperture is elongated and the clamp element has a channel parallel with and registering with the aperture on one side thereof. The screws extend through the aperture and are slidable along the length thereof. A nut is threaded on each screw at one end thereof and is positioned in the channel. A wing nut is threaded onto the opposite end of each screw for co-operating with the first named nut which is positioned in the channel for clamping the clamp element between said nuts. The cord is secured at the opposite end thereof to a fixed point and at its nearest end to the clamp by it being wound around the screw between the two washers.

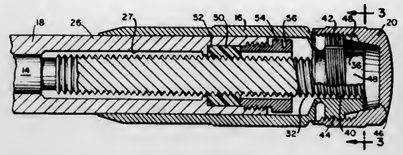
3,698,090

MICROMETER BACKLASH ADJUSTMENT DEVICE

Anthony D. Parone, Elmwood, Conn., assignor to Pratt & Whitney Inc., West Hartford, Conn.

Filed Jan. 13, 1971, Ser. No. 106,002
Int. Cl. G01b *3/18*
U.S. Cl. 33—164 R **2 Claims**

A micrometer embodies an assembly to control the engagement between an annular plastic structure and the threads of a spindle for adjusting the play and backlash between these parts. A compression nut is threadingly secured to the body of a micrometer such that it may be adjusted to compress the



plastic structure to control the engaging contact between the threads of the plastic structure and the micrometer spindle.

3,698,091

OPEN GUN SIGHTS FOR SMALL ARMS

Alvin S. Merrill, Salt Lake City, and Bill J. Rosenhan, Murray, both of Utah, assignors to Moroni Corporation, Salt Lake City, Utah

Filed March 12, 1970, Ser. No. 18,915
Int. Cl. F41g *1/00, 1/32, 11/00*
U.S. Cl. 33—233 **4 Claims**



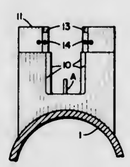
A gun sight for small firearms having applicability to short and medium range, quick-firing situations and for night-firing has been invented. The gun sight or aiming device comprises a pair of U-shaped sights each having a horizontal opening of substantial width. The horizontal opening of the front sight can be sufficiently wide to permit sighting of a target therethrough under conditions of substantial darkness. The U-shaped rear sight has a horizontal opening sufficiently wide so that at least a portion of the face of the front side on each side of the U-shaped opening can be viewed by an operator aiming the weapon. Also, the front sight may contain on its rear face a pair of rectangular, light-colored patches having sides coextensive with the upper edge of the sight and the vertical interior edge of the sight; each patch being located on opposite sides of the U-shaped opening.

3,698,092

NOVEL ILLUMINATED GUN SIGHTS FOR SMALL ARMS

Bill J. Rosenhan, Murray, Utah, assignor to Moroni Corporation, Salt Lake City, Utah

Filed March 12, 1970, Ser. No. 18,999
Int. Cl. F41g *1/30, 1/32*
U.S. Cl. 33—241 **9 Claims**



An illuminated gun sight for small firearms having applicability to short and medium range, quick-firing situations under conditions of darkness has been invented. The illuminated gun

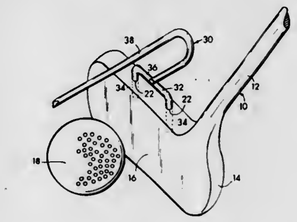
sight or aiming device preferably comprises a pair of open sights, such as U-shaped sights each having a horizontal opening of substantial width. The horizontal opening of the front sight must be sufficiently wide to permit sighting of a target therethrough under conditions of substantial darkness. The rear sight has a preferably horizontal opening sufficiently wide so that at least a portion of the face of the front sight on each side of the opening can be viewed by an operator aiming the weapon. Also, a U-shaped front sight may contain on its rear face a pair of rectangular, light-colored patches having sides coextensive with the upper edge of the sight and the vertical interior edge of the sight; each patch being located on opposite sides of the U-shaped opening. Also, the sights are illuminated by positioning in or near the body of said sights a light source which can be seen by an operator of the firearm when aiming same. A pair of lighted dots are preferably positioned on each sight so that an operator aiming the weapon can view all four spots and may properly align the weapon by aligning the four lighted spots on a horizontal line.

3,698,093

SIGHT ATTACHMENT FOR A GOLF PUTTER

James O. Marshall, East Genesee Turnpike, Fayetteville, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,186
Int. Cl. A63b *53/00*
U.S. Cl. 33—263 **2 Claims**



The specification discloses a sighting means for a golf putter, comprising a pointer and a mounting means at least one downwardly directed projection adapted to be inserted into an aperture in the upper surface of the putter head.

3,698,094

TILT METER

Frank Donald Stacey, Kenmore; John Munro William Rynn, Annerley, both of Australia; Eric Cooper Little, Moggill, Great Britain, and Clyde Croskell, Taringa, Australia, assignors to The Universtity of Queensland, St. Lucia, Brisbance, Queensland, Australia

Continuation of Ser. No. 758,720, Sept. 10, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,102
Int. Cl. G01c *9/22*
U.S. Cl. 33—366 **13 Claims**



A tilt meter is provided with a horizontally disposed beam that supports on its underside a pair of spaced liquid containers. Insulated electrodes are supported and spaced above each liquid surface and connected to the underside of the beam. The liquids are electrically conductive. A first pipe is provided to communicate the liquid in one container with the liquid in the other container, and a second pipe is provided to communicate the space above each liquid surface with that space above the other.

ERRATUM

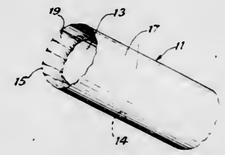
For Class 33—172 R see:
Patent No. 3,699,473

3,698,095

FIBER CONDITIONING ARTICLE

Paul S. Grand, South Bound Brook; Pasquale Joseph Fallvene, Union City, and Henry P. Furgal, Bernardsville, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,239
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **12 Claims**



An article for conditioning fibrous materials by contact includes a form-retaining base and, held to an outside surface of the base in form-retaining relationship with it, a flexible material which has an outer surface thereof containing a fiber conditioning agent. Conditioning effected is preferably fabric softening and may take place in an automatic laundry dryer wherein damp laundry is brought into tumbling contact with the conditioning article while being dried. Such contact causes the transfer to the laundry of softening agent and the dried laundry is satisfactorily soft, non-static and unwrinkled, upon removal from the dryer.

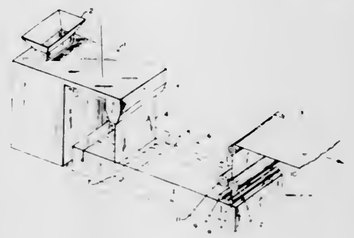
Also disclosed are packages for the articles wherein the form-retaining base is a paperboard cylinder and is employed as a container for the flexible material coated with softening agent.

3,698,096

CONTINUOUS PROCESS OF REMOVING SURFACE WATER FROM PLASTIC SHEET MATERIAL

John M. Wininger, Jr., Blountville, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

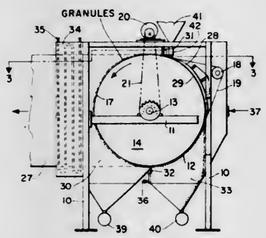
Continuation-in-part of Ser. No. 877,328, Nov. 17, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,462
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **10 Claims**



Polyolefin, polyester and cellulose ester plastic sheet products produced at high production rates without optical or visible defects by extruding the plastic in the molten state into

a water quench bath, and completely removing surface water from the quenched sheet. This is accomplished according to the instant invention by heating the sheet immediately after it leaves the quench bath to impart internal heat thereto, removing surface water by conveying the wet sheet through a pair of squeeze rolls which hold back the bulk of the excess water and spread any water not thus removed in a layer of minute thickness over both surfaces of the sheet, and thereafter conveying the heated sheet from the exit side of the squeeze rolls for a sufficient distance and a sufficient interval to permit the internal heat previously imparted to the sheet to evaporate all remaining water therefrom.

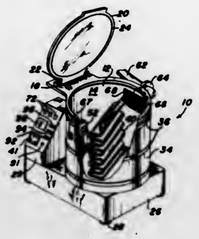
3,698,097
METHOD AND APPARATUS FOR TREATING GRANULAR MATERIAL
Gustav A. Maag, Crestview Hills, Ky., and Donald L. Gerth, Springfield Twsp, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 14, 1971, Ser. No. 152,826
Int. Cl. F26b 3/00
U.S. Cl. 34—9 **16 Claims**



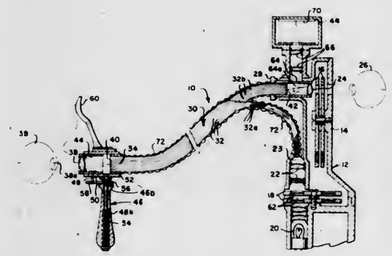
A method and apparatus for continuously treating granular material for the purpose of heating, cooling and/or drying the material. An endless belt of fine mesh fabric is supported around a treating drum having a perforated peripheral surface. The belt is moved by the rotation of the drum. A layer of granular material is continuously deposited on the surface of the moving belt. A fluid treating medium, preferably air, is continuously drawn through the belt and drum periphery whereby it passes through the granular material and simultaneously creates a sufficient pressure differential to retain the granular material on the belt as it moves through a substantial arc of rotation. The treating medium can heat, cool and/or dry the granules depending upon the desired treatment. A sealing plate is disposed in contiguous relationship to the drum periphery, either internally or externally, for that portion of its arc in which the belt does not contact the drum periphery.

3,698,098
METHOD FOR DRYING ARTICLES HAVING A LOW HEAT TOLERANCE
James M. Ramsay, Yuma, Ariz., assignor to The United States of America as represented by the Secretary of the Navy
Division of Ser. No. 861,104, Sept. 25, 1969, Pat. No. 3,605,278. This application March 29, 1971, Ser. No. 129,062
Int. Cl. F26b 5/04
U.S. Cl. 34—15 **2 Claims**

A method for drying articles having a low heat tolerance, such as parachutes fabricated of synthetic fibers, comprising the steps of first heating a hermetically sealable chamber to a predetermined temperature which the article can tolerate, then evacuating the chamber to create a vacuum therein for substantially reducing the boiling-point of any moisture in the article, and exhausting the boiled-off moisture to complete the drying cycle.



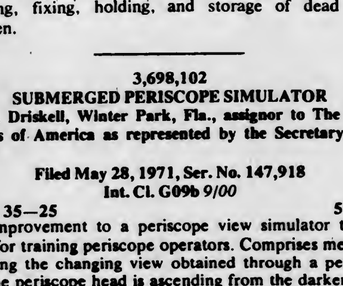
3,698,099
OPHTHALMOSCOPES
Thomas T. Matsura, Tokyo, Japan, assignor to American Optical Corporation, Southbridge, Mass.
Filed Jan. 29, 1971, Ser. No. 110,858
Int. Cl. A61b 3/12, 3/14; G02b 5/16
U.S. Cl. 351—6 **6 Claims**



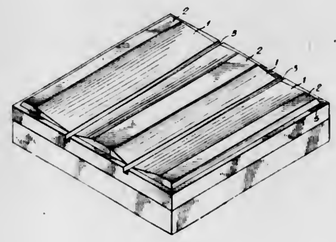
An instrument for selectively performing direct and photographic ophthalmoscopy including a variable focus image-forming objective at one end of an elongated flexible illuminating and image-transporting bundle of optical fibers having an image-viewing eyepiece and associated ophthalmoscopic optics adjacent its opposite end for diagnostically viewing images transported by the optical fiber bundle and a camera associated with said eyepiece for selectively photographically recording images transported by said flexible bundle of optical fibers.

3,698,100
OPERATOR RESPONSIVE PROGRAMMED LEARNING APPARATUS
Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,276
Int. Cl. G09b 7/08
U.S. Cl. 35—9 A **13 Claims**

In a rear projection viewer for showing a programmed viewing web having encoded frames thereon, light beams are directed across the face of a display screen onto photodetectors located about its periphery. A student can indicate a response to a projected answer coded scene, such as a question, by presenting a finger or other object at the face of the display screen at a selected answer point, thereby interrupting a light beam or beams. The photodetectors are connected to correlating circuitry which compares the student's response with information coded on the scene's frame. The next scene presented is program selected in accordance with what response the student registered.



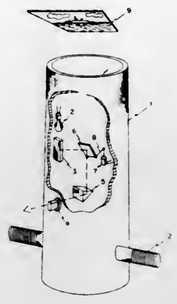
3,698,101
CONTAINERS FOR FIXING, HOLDING, AND STORAGE OF DEAD INSECT SPECIMEN
Clarence C. Bowling, 1750 Wooten Road, Beaumont, Tex.
Filed Feb. 8, 1971, Ser. No. 113,434
Int. Cl. G09b 23/36
U.S. Cl. 35—20 **3 Claims**



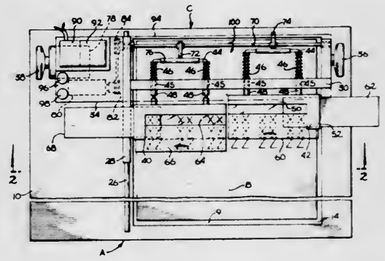
A light weight container molded of penetrable material for spreading, fixing, holding, and storage of dead insect specimen.

3,698,102
SUBMERGED PERISCOPE SIMULATOR
Carl R. Driskell, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 28, 1971, Ser. No. 147,918
Int. Cl. G09b 9/00
U.S. Cl. 35—25 **5 Claims**

An improvement to a periscope view simulator training device for training periscope operators. Comprises means for simulating the changing view obtained through a periscope when the periscope head is ascending from the darker ocean depths through lighter greenish colored waters near the surface and on to the daylight brightness of an above the surface position. Also simulates the view obtained when the periscope head descends from an above the ocean surface position down through the near-surface waters to the depths.



3,698,103
SPEED READING MACHINE
Peter E. Harmon, 4339 Bellaire Avenue, North Hollywood, Calif.
Filed Jan. 13, 1969, Ser. No. 790,760
Int. Cl. G09b 17/04
U.S. Cl. 35—35 **6 Claims**

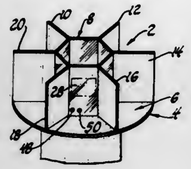


A device for developing reading speed and comprehension comprising a variable speed pacing member which traverses a page of reading material from the top to the bottom thereof in a series of predetermined steps or hesitations. The pacing member includes a plurality of cam-actuated spacing shutters which, when viewed from above, sequentially expose laterally adjacent areas of the underlying reading material so that during each hesitation, or step, of the pacing member, the reader sees first one area of the reading material, while the like area adjacent thereto is blocked from view; and then, in sequence, sees the laterally adjacent area while the preceding area is blocked from view. The pacing shutter may be adjusted to vary the size of the area of reading material exposed thereby according to the nature of the reading material and the state of the trainee's development.

3,698,104
PORTABLE STUDY CARREL
Thomas J. Sutton, Livonia, Mich., assignor to Oakland Community College, Bloomfield Hill, Mich.
Filed July 15, 1970, Ser. No. 55,182
Int. Cl. A47b 41/00
U.S. Cl. 35—60 **3 Claims**

A study carrel including a horizontal work surface with a hollow core unit projecting upwardly from the work surface and a plurality of vertical side panels extending outwardly from the peripheral surface of the core member toward the

peripheral edge of the work surface to define a plurality of work stations. Each of the work stations is enclosed by an adjacent pair of side panel surfaces, the portion of the outer sur-

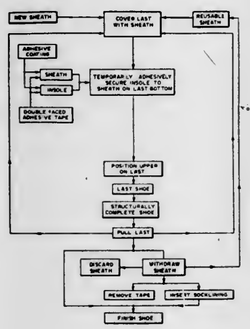


face of the core unit that extends between the adjacent pair of side panel surfaces, and the corresponding portion of the horizontal work surface that extends between the adjacent pair of side panel surfaces.

3,698,105
LASTING ELEMENT

Jerome A. Rubico, Boston, and Charles F. Batchelder, Milton, both of Mass., assignors to Batchelder Rubico, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 805,205, May 7, 1969, Pat. No. 3,525,110. This application Aug. 24, 1970, Ser. No. 66,212
Int. Cl. A43b
U.S. Cl. 36—2.5 R **5 Claims**



A method for making shoes over a sheathed last using a lasting element. In one embodiment of the invention, the lasting element comprises a single layer of a very thin and relatively flexible material while in another embodiment, the lasting element comprises a laminated structure.

3,698,106
SKI BOOT

Justus Rieker, Panoramastrasse 130, 7200 Tuttlingen, Germany

Filed May 24, 1971, Ser. No. 146,359
Claims priority, application Germany, June 23, 1970, P 20 30 737.3
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **13 Claims**

A ski boot is described having interchangeable ankle-engaging parts inclined at differing angles to the remainder of the boot for matching the desired angular inclination of skier's lower leg and ankle to the foot in accordance with different

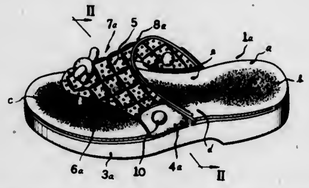


skiing conditions; the ankle-engaging part of the boot being detachably connected to the remainder by plug-in connectors.

3,698,107
FOOTWEAR

Tatsuo Fukuoka, 3,3-Ban, 2-chome, Shin-Minami, Tokushima, Japan

Filed Feb. 12, 1971, Ser. No. 114,844
Claims priority, application Japan, Oct. 19, 1970, 45/104050; Nov. 12, 1970, 45/112294
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **9 Claims**



A footwear comprises a sole provided with a foamed inner layer therein and a non-foamy outer layer integrally surrounding said foamed inner layer, a shape preservative fixture for an instep cover member being protruded integrally from the required edge portion of said sole, the foamed inner layer and non-foamy outer layer of said fixture being respectively and integrally connected with the foamed inner layer and non-foamy outer layer of the sole and the fitting portion of the instep cover member being affixed removably or firmly to the shape preservative fixture.

3,698,108
SANDALS AND METHODS AND MACHINES FOR THEIR MANUFACTURE

Adolf Brunner, Vienna, Austria, assignor to Semperit Osterreichisch-Amerikanische Gummiwerke A.G., Vienna, Austria

Filed March 6, 1970, Ser. No. 17,186
Claims priority, application Austria, March 6, 1969, A 2198
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **10 Claims**

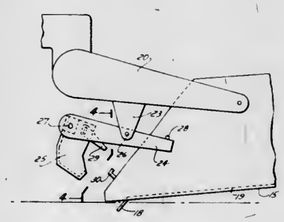


The sandal is made of a foam rubber or a foam plastic sole within which a central portion of a single-piece fastening strip of a non-moldable material is embedded. The sole is manufactured in a mold having lateral recesses for insertion of the fastening strip prior to the molding process.

3,698,109
COVER PLATE ATTACHMENT FOR ELEVATING SCRAPER

Charles Davis, Farmingdale, N.Y., assignor to Davis Construction Corporation, Hicksville, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,022
Int. Cl. E02f *5/00*
U.S. Cl. 37—124 **5 Claims**

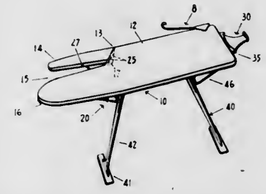


A cover plate attachment for an elevating scraper which has a closed position for closing the open end of the scraper bowl when the scraper is in the raised or transport position and an open position allowing access to the open end of the scraper bowl when the scraper is in lowered position and the cutting edge of the bowl is in ground engagement; said cover plate being shiftable automatically and positively between said positions upon the raising or lowering of said scraper.

3,698,110
DOMESTIC IRONING BOARD

Ralph E. Shettel, Route 1, Twin Falls, Idaho

Filed Aug. 3, 1970, Ser. No. 60,242
Int. Cl. D06f *81/00*
U.S. Cl. 38—107 **3 Claims**



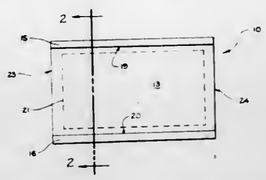
An ironing appliance offering a mini-board means built into the parent contour disposed to selectively swing outwardly for use. In the closed position, it serves to enlarge the board extremity and thereby speed up the ironing chore through reduced manipulation of the work. A control is provided to support and lever a desired position. Understructure leg supports are set apart to provide knee space and work with board extremity bracing to produce an unobstructed separation between the mini-board and the ironing board. A snap on cord curbing unit and flatiron arrestor are accessories that attach the board and complete the ironing appliance in eliminating rumpling of the work by the cord while giving the flatiron safe rest and storage.

3,698,111
DOCUMENT HOLDER

Thomas R. Smith, Newton, Iowa, assignor to Pyramid, Inc., Newton, Iowa

Filed Feb. 8, 1971, Ser. No. 113,260
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R **4 Claims**

A generally rectangular document holder comprising a pair of flexible film-like transparent sheets fixed along opposite sides to a pair of elongated magnetic strips. The document holder will receive and retain a document such as an automo-

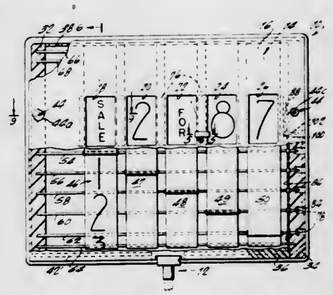


bile registration to permit displaying the document in a suitable location within the automobile.

3,698,112
VARIABLE INDICIA SIGN

John J. Kelly, 2 Normandie Place, Cranford, N.J.

Filed Dec. 1, 1970, Ser. No. 93,999
Int. Cl. G09f *11/26*
U.S. Cl. 40—96 **8 Claims**

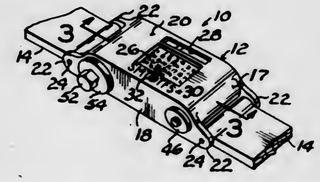


A variable indicia sign for use in retail merchandising and the like which has a plurality of windows through which shopper sees indicia such as price. The indicia in each window is formed on a continuous tape, the position of which is controlled externally and which can be varied by the merchandiser to accurately and selectively bring into view the desired information. The structure of the device allows for easy adjustment by authorized personnel but effectively precludes customers from varying the indicia.

3,698,113
PERPETUAL CALENDAR

Lauren D. Spicer, c/o Arthur Jaqua R.R. #1, Napoleon, Ohio

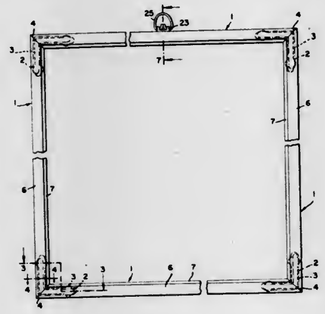
Filed April 8, 1971, Ser. No. 132,453
Int. Cl. G09d *3/10*
U.S. Cl. 40—118 **5 Claims**



A substantially rectangular hollow case is connected at its respective ends with strap means encircling a user's wrists. Cog wheels and rollers are journalled within respective end

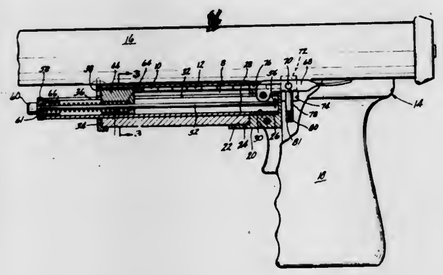
portions of the case on transverse axles for supporting superposed endless bands having calendar data printed thereon. Openings, formed in opposing surfaces of the case walls, expose calendar data on the endless bands when the bands are selectively positioned.

3,698,114
FRAME CONSTRUCTION
Stanley Hirsch, and Irving Schneider, both of Westbury, N.Y., assignors to Structural Industries, Inc., Westbury, N.Y.
Filed March 15, 1971, Ser. No. 124,166
Int. Cl. G09f 1/12
U.S. Cl. 40—155 **8 Claims**



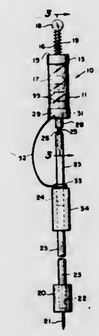
The invention relates to a frame made of multiples of a maximum of three different parts which when predeterminately assembled provide a strong, rigid aesthetic looking frame which requires no tools for assembly or disassembly.

3,698,115
TUBULAR MAGAZINE AND DISPENSER THEREFOR
Robert W. Henning, North Haven, Conn., assignor to Olin Corporation
Filed Dec. 2, 1970, Ser. No. 94,386
Int. Cl. F41c 25/08, 25/00; B25c 1/10
U.S. Cl. 42—49 R **9 Claims**



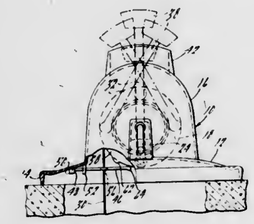
A magazine for holding a plurality of disc-shaped articles comprising a tubular body having a plurality of annularly spaced, T-shaped tracks communicating with the interior of the body. Also, a dispenser whereby an article may be individually dispensed from the magazine.

3,698,116
FISH BITE SIGNALING DEVICE
Stewart N. Rosier, P.O. Box 366, Dover R.D. 2, Washington Twp., York County, Pa.
Filed July 7, 1971, Ser. No. 160,351
Int. Cl. A01k 97/12
U.S. Cl. 43—17 **12 Claims**



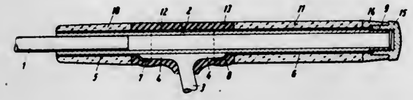
A fish bite signaling device wherein the flexing movements of the outboard end of a fish pole incident to fish bite activity on a fish line attached to said pole are converted into variations in the level of liquid within a container operatively associated with said fish pole together with calibrated indicia for evaluating the strength or vigor of the fish bite in terms of rise of liquid level within said container.

3,698,117
TIP-UP
Donald G. Wiltse, Madison Heights, Mich., assignor to Topper Corporation, Madison Heights, Mich.
Filed July 27, 1971, Ser. No. 166,484
Int. Cl. A01k 97/12
U.S. Cl. 43—17 **9 Claims**



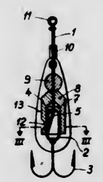
A tip-up for use in ice fishing which comprises a housing containing a rotatable reel having a fishing line wound thereon, a crank for rotating the reel, a signal member pivoted on the reel on an axis offset from the axis of rotation of the reel and extending through a slot in the housing, the upper end of the signal member having a visual signal portion which oscillates externally of the housing when a fish takes the line off of the reel, and means for yieldably resisting unwinding of the reel. The housing is hollow and is adapted to completely cover the hole in the ice to retard freezing of the water therein.

3,698,118
DEVICE FOR ATTACHING FISHING REELS TO FISHING TACKLES
Rudolf Schultz, Berlin, Germany, assignor to Deutsche Angelgerate Manufaktur (DAM) Hellmuth Huntze Gesellschaft mit beschrankter Haftung & Co. Kammanditgesellschaft, Berlin, Germany
Filed Oct. 23, 1969, Ser. No. 868,765
Claims priority, application Germany, Oct. 25, 1968, G 68 04 685.5
Int. Cl. A01k 87/06
U.S. Cl. 43—22 **1 Claim**



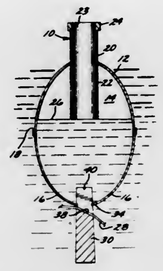
A fishing reel having a T-shaped base is attached to a fishing tackle the handle of which has the shape of a hollow cylindrical tube with two cylindrical sleeves mounted on the handle and movable relatively to each other. The sleeves are located on opposite sides of the reel base and each of them has a shoe-like extension with an inclined surface extending over a separate flange of the base. Each sleeve is enclosed by a cover which is a poor conductor of heat. The sleeves and their covers are held by a cap which can be screwed upon the reel handle, whereby the base is firmly clamped. The cap has an annular space for receiving a rotary radial flange located upon that side of the sleeve which is opposite its shoe-like extension. The present invention is particularly characterized in that the cap consists of two parts which engage each other while forming an annular space and which are rigidly interconnected after the insertion of the flange, the part of the cap located away from the sleeve being provided with screw threads.

3,698,119
FISHING TACKLE
Francis Jean Henri Raymond Levoin, Lugano, Switzerland, assignor to Carpano & Pans S.A. Boite Postale, Cluses, France
Filed Aug. 21, 1970, Ser. No. 65,966
Claims priority, application Switzerland, June 4, 1970, 8513/70; Aug. 18, 1969, 12575/69
Int. Cl. A01k 85/00
U.S. Cl. 43—42.08 **8 Claims**



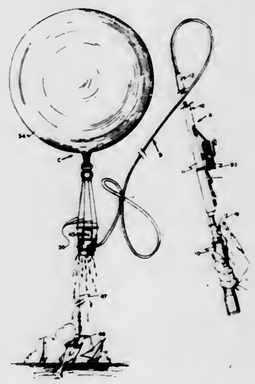
An artificial bait for fish includes a body having a cavity for receiving a looped portion of a resilient pin. The loop releasably supports a hook and at the extremity of one free end of the pin forming part of the loop, has an outwardly formed part which engages a surface of a ledge formed in the cavity to resiliently resist movement of the pin away from the body. The ledge is formed by the junction of a hole formed in the body laterally of, and communicating with, the cavity.

3,698,120
FLOAT-SINKER
Daniel R. Grogan, 705 West 39th Street, San Pedro, Calif.
Filed Nov. 16, 1970, Ser. No. 89,767
Int. Cl. A01k 93/00, 95/00
U.S. Cl. 43—43.14 **12 Claims**



A float-sinker for mounting to a fishing line and including a float chamber having water passages for flooding the float chamber. The lower end of a vent tube projecting through the upper portion of the float chamber determines the level to which water can rise in the float chamber. After the float-sinker is cast, water enters the float chamber and the float-sinker slowly sinks toward the bottom with the associated hooks, bait, and the like. Upon withdrawal of the float-sinker from the water, the water remaining in the float chamber provides additional weight to aid in casting. The float-sinker may be fixed to the line or slidable thereon within certain limits.

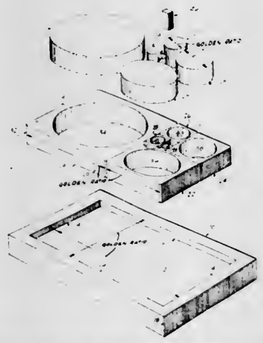
3,698,121
FISHING APPARATUS
Gerald C. Nordeen, 4509 Ritchie Highway, Baltimore, Md.
Filed May 11, 1971, Ser. No. 142,311
Int. Cl. A01k 93/00
U.S. Cl. 43—43.14 **3 Claims**



A fishing apparatus having a buoyant float assembly consisting of a container and an inflated lighter than air balloon to be positioned over a fishing area, the container adapted to be initially filled with water to render the float assembly sufficiently buoyant so as to float on water; the float assembly having a conventional depending fishhook and having a hollow flexible

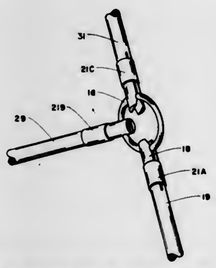
tube forming a line adapted to be carried upon a reel having one end attached to the container thereof and connected to a fishing pole, a source of inert gas under pressure in the fishing pole and valve means on the fishing pole to manually release the gas through the hollow tube and into the container to force the water therefrom and thus lighten the float sufficiently to cause the balloon portion to lift the container, the attached hook and any fish which may be caught thereon, to a point adjacent the surface of the water, whereby the fisherman may reel in his catch.

3,698,122
GOLDEN RATIO PLAYING BLOCKS AND GOLDEN RECTANGLE FRAME
Wilbur Henry Adams, 66 East 83rd Street, New York, N.Y.
Filed March 7, 1968, Ser. No. 711,255
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **2 Claims**



A set of playing blocks is described wherein blocks of different sizes are provided with characteristic dimensions that bear a preselected golden ratio relationship with one another. Blocks of successive sizes are related to each other with the Golden Ratio. The Golden Ratio is defined as the ratio between successive numbers in a sequence produced by starting with one and adding the last two numbers to arrive at the next. Blocks of rectangular shape bearing the Golden Ratio to one another are described as well as circular blocks whose diameter varies successively in accordance with the sequence.

3,698,123
STRUCTURAL TOYS
Carl R. Heldt, 320 South Country Club Road, Tucson, Ariz.
Filed Dec. 6, 1971, Ser. No. 204,896
Int. Cl. A63h *33/10*
U.S. Cl. 46—29 **8 Claims**



A round rod is bifurcated at both ends in a plane. Near each end, in the plane, a hole is drilled. Each end is slotted in the plane back from the hole for a short distance. Small round rods are provided having the diameter of the hole. Short lengths of tubing are provided to fit over the bifurcated round rod.

When a small rod is placed in one of the holes in the bifurcated rod and the tubing is slid toward the small rod, the latter is locked in place in the jaws of the bifurcation.

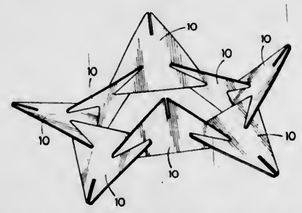
Small tori are provided, made of round stock having the diameter of the holes in the round rod; these tori can be placed in jaws of the bifurcated rod, instead of the small rods.

Small wheels having rims of the size of the holes in the rod also are provided.

Long tubes also are provided to connect two bifurcated rods and to act as locks.

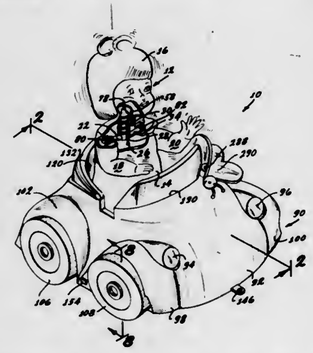
Out of these elements extensive rigid structures can be built.

3,698,124
CONSTRUCTION TOY
John S. Reitzel, and Gail L. Reitzel, both of West Concord, Mass., assignors to Reitzel Designs, Inc., West Concord, Mass.
Filed June 16, 1971, Ser. No. 153,500
Int. Cl. A63h *33/06*
U.S. Cl. 46—30 **6 Claims**



A construction toy having a plurality of equilateral triangular construction elements adapted to be sequentially interlocked together to create a variety of free form constructions. Each triangle is transparent, flexible, made of resilient plastic, and has locking slots extending from the triangle vertices toward the triangle centroid. The locking slots have a working width less than the triangle thickness which allows the triangles to be firmly interlocked together. The locking slots also have a length of approximately three-sevenths of the distance from a triangle vertex to the triangle centroid.

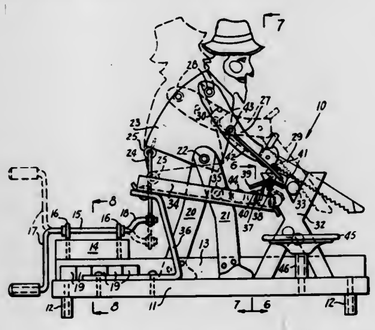
3,698,125
ANIMATED FIGURE TOY
Donald C. Hartling, Garden Grove; Joseph Kossoff, Hawthorne, and William Radin, Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed March 2, 1970, Ser. No. 15,539
Int. Cl. A63h *5/00*
U.S. Cl. 46—118 **7 Claims**



A doll includes a torso to which a head and arms are resiliently connected for movement with respect to the torso

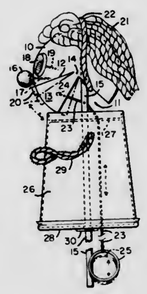
when the doll is jiggled or bounced. The doll is seated on a seat which is rocked from side-to-side by a suitable motor provided in a toy vehicle, musical instrument or the like.

3,698,126
ANIMATED TOY
Wolfe Grebow, 8402 Carlson Lane, Baltimore, Md.
Filed June 28, 1971, Ser. No. 157,498
Int. Cl. 163h *11/00*
U.S. Cl. 46—119 **5 Claims**



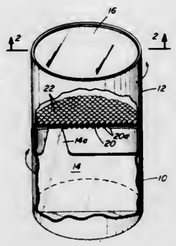
An animated toy simulating a wood cutter sawing a log when actuated by a hand crank. On each stroke of the saw a simulated log section is dropped from a point near the sawing operation simulating the cutting off of a section of log.

3,698,127
DOLL-LIKE PUPPET WITH MOVABLE MOUTH
Grace E. Harp, 100 Belhaven Drive, Los Gatos, Calif.
Filed Feb. 4, 1971, Ser. No. 112,569
Int. Cl. A63h *7/00*
U.S. Cl. 46—126 **2 Claims**



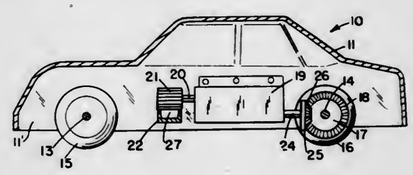
A puppet with a substantially spherical head having a movable mouth which is operated by a pull string. The string is attached to the lower jaw if the lower jaw is to be moved or it is attached to the upper part of the head if the upper part of the mouth is to move with respect to the lower part. The head is supported upright on a rod extending downward therefrom so that the lower end of the rod may be gripped to hold the puppet upright or said lower end may be set into a support. The head may be rotated with respect to the cup-shaped member by rotating the rod and suitable arms may be attached to the cup-shaped member so that this member appears as the upper part of the puppet body.

3,698,128
AMUSEMENT DEVICE PRODUCING SOUND WITH VISUAL REINFORCEMENT
Alan J. Moeser, Roosevelt, N.J., assignor to Columbia Broadcasting System, Inc.
Filed Feb. 24, 1971, Ser. No. 118,373
Int. Cl. A63h *5/00*
U.S. Cl. 46—175 **8 Claims**



An action toy for young children which produces a clicking or popping sound accompanied by a popping action imparted to a number of small objects, such as tiny balls, as the toy is manipulated with the hands.

3,698,129
TOY VEHICLES
Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.
Continuation of Ser. No. 53,832, July 10, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,273
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **5 Claims**

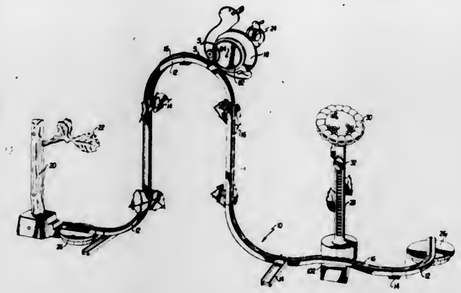


A vehicular toy having an inertially operated mechanism for driving the wheels of said toy to power operate the toy across a surface. The mechanism is composed of an inertia wheel having an input means including a circular gear which is rotated by means of a gear strip inserted through an opening and guideway accessible to the exterior of the toy. The gear strip is pulled rapidly past the gear, thereby accelerating the inertia wheel of the toy. The inertia wheel is coupled to one or more wheels of the toy and operates to rotate said wheel or wheels to cause the toy to be driven across a surface. Both direct and clutch-type coupling means between the inertia wheel mechanism and the wheels of the toy are provided.

3,698,130
AMUSEMENT DEVICE
Hikoo Usami, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1971, Ser. No. 193,310
Claims priority, application Japan, Dec. 28, 1970, 45/136625
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **6 Claims**

An amusement device featuring a trackway along which a vehicle moves including automatic turn-around sections at the

ends of the trackway permitting the vehicle to reverse its direction of travel and a stand wherein the movement of the



vehicle is halted while a second vehicle traverses the stand after which the vehicle continues its forward motion.

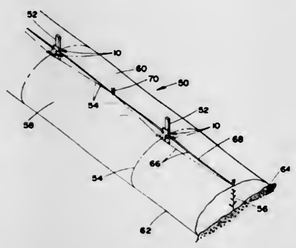
ERRATUM

For Class 46—135 R see:
Patent No. 3,698,134

3,698,131
PLANT COVER AND METHOD

Donald A. Kesinger, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed March 31, 1971, Ser. No. 129,772
Int. Cl. A01g *13/04*; E05f *15/20*
U.S. Cl. 47—29 **11 Claims**



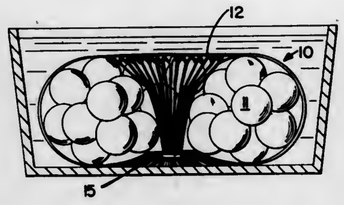
A plant cover having a thermally responsive actuator for venting purposes. The actuator includes a hermetically sealed plyable bag containing an amount of vaporizable liquid that when vaporized expands the bag to effect actuator actuation. A method of growing plants using the plant cover of the invention including planting in an earthen trough and covering the trough with a plant cover of the invention.

3,698,132
VARIABLE DISPLACEMENT HOLDER

Lawrence E. Green, Stinson Beach, and William G. McDermott, Sausalito, both of Calif., assignors to McDermott & Green, Inc., San Francisco, Calif.

Filed Dec. 23, 1971, Ser. No. 211,436
Int. Cl. A01g *5/00*; B65d *29/04*
U.S. Cl. 47—41.13 **5 Claims**

A variable displacement holder and support for flower stems, pencils, hors d'oeuvre sticks, etc. formed with a plurality of marbles and a net enclosure formed with the mesh large enough to permit insertion of stems of various size through the net openings but small enough to contain the marbles. A net enclosure surrounds and loosely contains the marbles so that stems can be inserted through the net openings to displace the



marbles which provide support under the restraint of the enclosure. In the preferred form, the net enclosure confines the marbles in a toroidal configuration.

3,698,133
SEED HAVING A MULTIPLE LAYERED COATING AND PROCESS FOR PREPARING SAME

Kurt Schreiber, Winnipeg, Manitoba, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Dec. 21, 1970, Ser. No. 100,381
Claims priority, application Canada, Feb. 5, 1970, 074077
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 **25 Claims**

A plant seed having a multiple coating thereon, said multiple coating comprising (1) an inner porous coating which is permeable to water comprising a water insoluble particulate material dispersed throughout a water soluble binder and (2) an applied outer coating of a non-elastomeric material, such as a polymer, said material in film form having a controlled permeability to water and an elongation to breaking less than about 250 percent and said coating being of a thickness such that it will control the water imbibition of the seed to the extent necessary to delay germination until environmental conditions are satisfactory to continued crop growth.

3,698,134
DOLL HAVING ADJUSTABLE LOCK OF HAIR

Francis Robert Amici, Northford; Robert E. David, North Branford, both of Conn., and Richard Levine, Howard Beach, N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,262
Int. Cl. A63h *11/00*
U.S. Cl. 46—135 R **10 Claims**

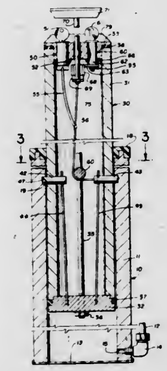


The specification discloses an improved arrangement for controlling the degree of exposure of a long lock of hair from the head of a doll. Through the provision of a rotatable spindle to which the lock of hair is attached, the lock of hair is manually adjusted by turning the spindle against a complementary locking ratchet arrangement. A reel whose diameter is much larger than that of the spindle is mounted for free rotation with respect to the spindle. As the spindle is rotated, the lock of hair eventually contacts the reel causing it to rotate to a point limited by stops formed in the interior of the doll.

3,698,135
VEHICLE PARKING SPACE LOCKING DEVICE

Patrick R. Boots, and Kenneth W. Gaddis, both of Houston, Tex., assignors to Scope Lock, Inc., Houston, Tex.

Filed Sept. 17, 1971, Ser. No. 181,512
Int. Cl. E01f *13/00*
U.S. Cl. 49—35 **13 Claims**

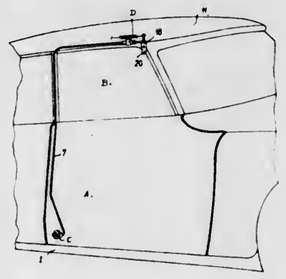


A device for use with a substantially unenclosed parking space to selectively permit ingress and egress from the parking space comprising an erectable barrier means operatively mounted in the surface of the associated parking space for selectively raising and lowering. The device is provided with dual locking means, each of which permits locking and unlocking of the erectable barrier means in the raised position. One of the locking means is adapted to allow release of the erectable barrier means from the remainder of the device for repair or replacement.

3,698,136
LATERAL ABUTMENT DEVICES FOR VEHICLE WINDOWS

Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Jan. 5, 1971, Ser. No. 104,061
Claims priority, application France, Jan. 12, 1970, 7000905
Int. Cl. E05b *65/061*
U.S. Cl. 49—394 **4 Claims**

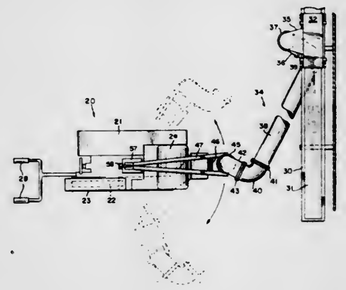


A device for preventing the lateral movement of the side windows of a motor vehicle. A sensing and transmitting device is mounted on the side rail of the door and is actuated by the closing of the door. The sensing and transmitting device is connected to a receiver by a fluid circuit, the fluid being a liquid under pressure. The fluid transmitted by the sensing and transmitting device causes the receiver to act on a latching member through a push-rod to move the latching member into position on the opposite side of the window from the sealing member thereby providing an abutment preventing the lateral movement of the window.

3,698,137
GRINDER WITH MOVABLY SUPPORTED FRAME

Robert C. Overmyer, Indianapolis, Ind., and John R. Scheel, Ocqueoc, Mich., assignors to Hawley Manufacturing Corporation, Indianapolis, Ind.

Filed July 13, 1971, Ser. No. 162,240
Int. Cl. B24b *7/00, 9/00, 55/06*
U.S. Cl. 51—99 **10 Claims**



A system for use with a cutting wheel to capture and dispose of the dust discharged from such a wheel during operation. The term "cutting wheel" is used herein to mean any rotor including a belt or web traveling about one or more pulleys which, when brought into contact with a piece of work, will progressively remove particles of the work material, whether in a cut-off operation or in what is usually referred to as a grinding, abrading, shaping or polishing operation. The system is primarily intended for use with a relatively heavy wheel assembly which is supported, with its motive power, for limited, substantially universal movement relative to the work, and comprises a continuously-evacuated, elongated duct, a car defining a chamber continuously in communication with the interior of the duct as it moves along the length of the duct, an air scoop positioned in or near the stream of dust emanating from the wheel during operation and an articulated conduit providing communication and a driving connection between the scoop and the car.

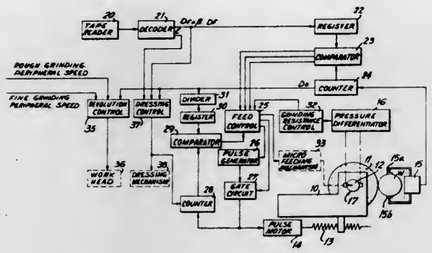
3,698,138
GRINDING MACHINE WITH ADAPTIVE CONTROL SYSTEM

Ryuzi Wada; Kelichi Nakamura, both of Kariya, and Kimio Kanou, Aichi-ken, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha

Filed Aug. 10, 1970, Ser. No. 62,300
Claims priority, application Japan, Aug. 13, 1969, 44/64373
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.8 **22 Claims**

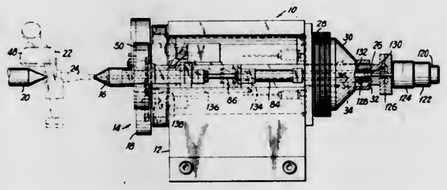
A grinding machine operative for controlling the feeding speed of a wheel slide to obtain high machining accuracy and efficiency, incorporating a sizing device for constantly measuring the diameter of a workpiece during a grinding operation thereon and directs feed control means to change the feed speed of the wheel slide. A grinding resistance control means

is provided for detecting the grinding resistance applied on the grinding wheel and supplies the feed control means with the detected grinding resistance in a rough grinding stage at a



predetermined value. For the final grinding operation, the axis of a wheel spindle carrying the grinding wheel is shifted to obtain a required diameter of the workpiece.

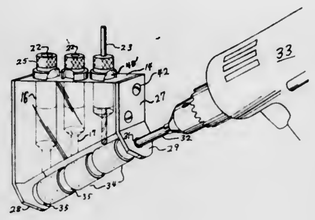
3,698,139
AUTOMATIC BALANCING DEVICE
Cecil D. Everett, West Boylston, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 14, 1970, Ser. No. 71,760
Int. Cl. B24b 41/04
U.S. Cl. 51—237 R **13 Claims**



An automatic balancing device for use on a machine tool adapted to perform the same or a similar machining operation on a series of differently balanced workpieces. The workpieces are received at the machine tool in a random sequence and the machine tool performs a common automatically cycled machining operation upon each workpiece while it is supported by a workpiece holder in the machine tool. The workpiece holder is mounted within a fixed housing on the machine tool for rotation about a predetermined axis during each machining operation and the machine tool is stopped between succeeding machining operations to allow a workpiece to be loaded and unloaded. The balancing device includes a balance weight which is automatically movable between supports therefor on the workpiece holder and on the housing in response to a signal indicating that succeeding workpieces delivered to the workpiece holder are differently balanced about the axis of rotation of the workpiece holder.

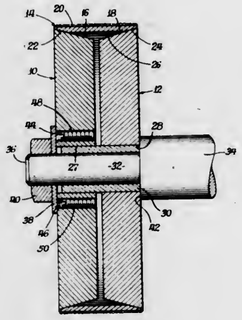
3,698,140
DRILL BIT SHARPENING MECHANISM FOR USE IN CONJUNCTION WITH HAND DRILLS
Rufus F. Steadman, 2530 South Congress, Austin, Tex.
Filed Dec. 30, 1970, Ser. No. 102,801
Int. Cl. B24b 19/00
U.S. Cl. 51—241 G **12 Claims**

A compact and highly portable mechanism for sharpening standard drill bits with the grindstone, all tools and associated hardware built in to the device and motive power supplied by attachment of a conventional hand drill with provision for adjustment of the angle of interaction between the rotatable grind stone and the face of the drill bit to preserve the original cutting angle of each of the drill bit biting surfaces. The device



is provided with chuck holders for drill bits of varying sizes and guide structures hold the drill bit in proper alignment with respect to the grindstone during the sharpening operation.

3,698,141
MODULAR ABRASIVE WHEEL ASSEMBLY
Kenneth L. Landmark, and Allan J. Ashley, both of Geneva, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed Jan. 27, 1971, Ser. No. 110,010
Int. Cl. B24d 9/02
U.S. Cl. 51—372 **4 Claims**

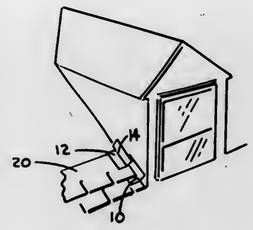


The assembly includes a pair of opposed aluminum hubs on which is mounted a cylindrical sleeve bearing particles of tungsten carbide grit. The inside surface of the sleeve has outwardly tapered surfaces near both sides that engage corresponding tapered surfaces of the hubs to prevent rotational slipping.

3,698,142
FLASHING
George R. Theriault, 580 Main Street, Orange, Mass.
Filed Jan. 18, 1971, Ser. No. 107,394
Int. Cl. E04d 13/14
U.S. Cl. 52—58 **1 Claim**

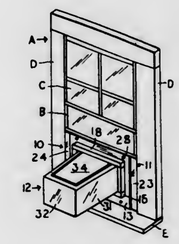
Flashing comprising a sheet bent into a general "V" shape for disposition on a shingle and against the side to be flashed,

said sheet having a cut-back and bent under lip portion at one end thereof for insertion under the top edge of the shingle, the



lip portion forming a connection with the shingle without the use of fasteners.

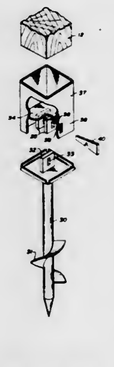
3,698,143
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston Street, Haverhill, Mass.
Continuation-in-part of Ser. No. 18,616, March 11, 1970, Pat. No. 3,593,467. This application June 28, 1971, Ser. No. 157,223
Int. Cl. A47g 7/02; A47h 27/00
U.S. Cl. 52—29 **11 Claims**



This invention provides for a retractable window case structure or container, in the form of a box-like unit, removably attached and adjustably supported from a laterally adjustable support removably and frictionally engaged within an open window area. The adjustable support is provided with at least one laterally movable end member for frictional supporting engagement within the window frame area. The case structure is fully supported through an opening within the support and the added supporting members, for movement to either outside weather or inside house environment. The device is a protective container for food, birds, plants and the like.

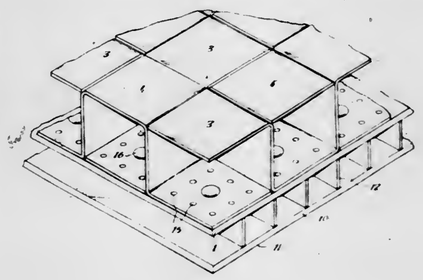
3,698,144
POST ANCHOR
Patrick Joseph Stratton, 30 Sandy Drive, Whitecourt, Alberta, Canada
Continuation-in-part of Ser. No. 863,010, Sept. 24, 1969, abandoned. This application Dec. 3, 1970, Ser. No. 94,935
Int. Cl. E01f 9/01; E04c 3/32
U.S. Cl. 52—99 **1 Claim**

A detachable post anchor for use with highway marker posts and the like is provided. The anchor comprises two separable elements, more particularly a spike member and a holder. The spike member includes a spike, a horizontal base plate carried by the spike at its upper end, and a slotted lug extending upwardly from the base plate. The holder is tubelike in form and receives the bottom end of the post in its upper end. A pair of spaced, vertical, slotted lugs are fixed within the bottom end of the holder. The slots of the spike and holder lugs line up when the holder is mounted on the base plate. A



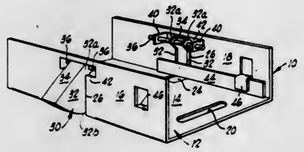
shear pin is inserted through the lugs to secure the holder and spike together. When the post is struck from the side, the holder pivots about its bottom edge; the shear pin parts and the post and holder topple over. The anchor can be re-assembled by insertion of a new shear pin.

3,698,145
HOLLOW STRUCTURE WITH CORE OF INTERWOVEN STRIPS
Paul Newman, and Maxwell John Holland, both of Filton, England, assignors to Secretary of State for Defence, London, England
Filed Aug. 3, 1970, Ser. No. 60,601
Claims priority, application Great Britain, Aug. 18, 1969, 41,130/69
Int. Cl. E04b 1/82, 2/14
U.S. Cl. 52—144 **8 Claims**



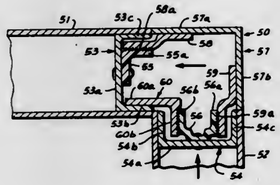
A liner for a wall is made from strips of rigid material bent into a rectangular wave form and woven to form two substantially plane surfaces with chambers in between. The strips are perforated and attached to a backing member either (a) with the perforations facing away from the backing member to act as an acoustic liner, or (b) with the perforations in contact with the backing member and aligned with perforations therein for supply of cooling fluid, so that the structure can be used as an impingement cooled heat shield.

3,698,146
ANCHOR DEVICE FOR DOOR FRAMES
J. W. Brents, 2 Sheffield Drive, Little Rock, Ark.
Filed Nov. 19, 1970, Ser. No. 90,963
Int. Cl. E06b 1/18, 1/60
U.S. Cl. 52—214 **8 Claims**



An anchoring device for anchoring door frames which includes a base bracket of generally U-shaped configuration having an apertured web portion and a pair of legs extending therefrom. The legs are slotted, and a pair of retainer latches are pivotally mounted on each of the legs adjacent the slots therein for pivoting through the slots into the path of flanges carried by a door frame to be secured in the opening in a wall by means of the anchor device. The retainer latches are biased through the slots in the legs of the base bracket by means of springs extended along the inside surface of the legs, and bearing against one side of each of the retainer latches.

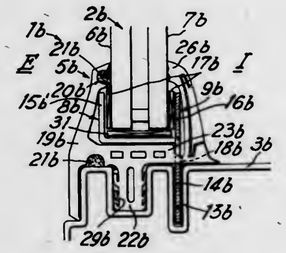
3,698,147
STRUCTURAL MEMBER CONSTRUCTION FOR BUILDING WALLS
John Sikes, 8535 Findley, Houston, Tex.
Continuation-in-part of Ser. No. 697,672, Jan. 15, 1968, abandoned. This application Dec. 8, 1969, Ser. No. 882,995
Int. Cl. E04b 1/343, 1/30
U.S. Cl. 52—276 **4 Claims**



One embodiment comprises two structural channel members having edge abutting flanges having flange inner surfaces disposed in co-planar alignment by providing connector plates having first portions disposed against and secured to the inner surfaces of the flanges of one channel member and having vertically spaced apart latching slots formed in the other portions of such plates, the flanges of the other structural member having latch bolts extending inwardly from their inner surfaces to be received in the latching slots of such plates. With the space between the channel members filled, as with concrete, a strong column is provided to space wall sheaths which are mounted upon the opposite outer flange faces of the channel members.

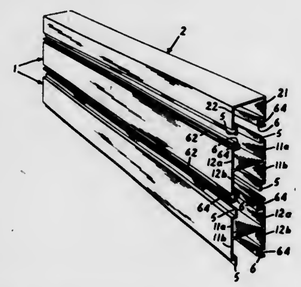
In another embodiment, the channel members are latched to one another by means of overlapping-U-shaped connectors secured to the channel members intermediate the flanges thereof. The open end of one such connector is sized to fit snugly over the open end of the other connector, the legs of the outer connector being provided with inner ribs which engage outer ribs on the inner connector in an interlocking manner.

3,698,148
PANEL MOUNTING MEANS AND METHOD
Bernard Marantier, 18, Avenue du General Leclerc, 92 Boulogne-sur-Seine, France
Filed Dec. 7, 1970, Ser. No. 95,719
Claims priority, application France, Dec. 8, 1969, 6942402
Int. Cl. E06b 1/68, 3/60, 3/62
U.S. Cl. 52—400 **9 Claims**



Apparatus for mounting panel means of the mirror or window pane type within an opening contained in a support, characterized by the provision of a plurality of retaining means arranged in spaced relation about the periphery of said panel means, said retaining means being dimensioned to engage only a fraction of the peripheral edge portion of said panel means, in combination with seal means for sealing the entire peripheral space between the exterior face of said panel means and said support. In the preferred embodiment, the retaining means and the lower portion of said seal means extend within a common groove contained in the support, while in a second embodiment, they extend within separate spaced parallel grooves. According to a third embodiment, the seal means are integral with a cover member that also covers the retainer members and is adapted to engage the internal face of the panel means.

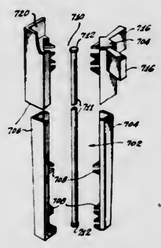
3,698,149
COMPOSITE BEAM STRUCTURE AND ASSEMBLY
William Baker, 403 Loudonville Road, Albany, N.Y.; Clyde Worrell, 334 Southwest 12th Avenue, Boynton, and Donald Howard Banzhaf, 5805 Orchard Way, Palm Beach, both of Fla.
Filed Sept. 15, 1969, Ser. No. 9,252
Int. Cl. E04c 2/40, 3/04
U.S. Cl. 52—731 **26 Claims**



A composite beam structure is provided for the construction of walls, roofs, partitions, and other structural supporting assemblies. The beam structure utilizes side-to-side modular double-walled beams, interlocking along two edges on each side, and attached together.

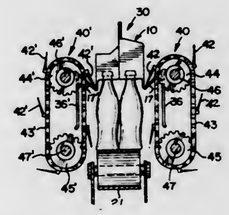
A high strength, lightweight composite structure is provided requiring no additional structural support members to secure each beam to an adjacent beam or to support the composite structure. The composite beam structure can be disassembled without destroying the beams and later reassembled at another location.

3,698,150
BIPARTITE TUBULAR MOLDED SYNTHETIC RESIN FURNITURE PART WITH INTERNAL REINFORCEMENT
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, New York, N.Y.
Continuation-in-part of Ser. No. 797,616, Feb. 7, 1969, abandoned. This application June 4, 1970, Ser. No. 43,521
Int. Cl. E04c 3/00, 2/30
U.S. Cl. 52—731 **4 Claims**



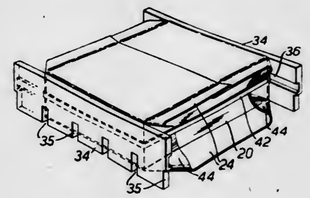
A bipartite generally tubular molded synthetic resin furniture part, such as a leg for a chair or table or a chair back assembly. The furniture part is composed of two complementary molded synthetic resin tube sections arranged side by side and having mating longitudinal marginal portions bonded to one another so as to define a cavity extending longitudinally through the part. One or both of the tube sections are provided with integral molded synthetic resin reinforcing formations, such as reinforcing ribs or flanges, which extend across the cavity at intervals and are bonded to the opposite tube section in such a way as to reinforce the part against deformation under the load. Additional reinforcement of the part may be provided by a metal rod positioned longitudinally within the cavity and extending through aligned openings in the reinforcing ribs.

3,698,151
METHOD AND APPARATUS FOR PACKAGING BOTTLED PRODUCTS IN BASKET-STYLE CARRIERS
Edwin L. Arneson, Hilladale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Sept. 8, 1970, Ser. No. 70,435
Int. Cl. B65b 21/22, 5/06
U.S. Cl. 53—26 **18 Claims**



A method and apparatus for continuous packaging of bottled beverages, or the like, in basket-style carriers wherein the carriers are advanced by an overhead conveyor, in opened-up condition with bottom wall forming flaps, which initially depend in the plane of the side walls being hinged to an upwardly inclined position while the carriers travel down an inclined path, for assembly with groups of the bottled beverages which are advanced on a bottom conveyor to an assembly area where successive carriers are forced in telescoping relation down over groups of bottles and the bottom wall forming panels of the carriers which have been hinged upwardly are engaged and drawn downwardly by plate members carried on endless conveyors traveling in vertical paths on opposite sides of the groups of bottles, after which heat activatable adhesive on the bottom wall forming flaps is activated and the flaps which have been swung down upon advance beyond the draw down plates are plowed into bottom wall forming position with overlapping margins in seam forming engagement so as to complete the packages.

3,698,152
PACKAGING
Geoffrey R. Reed, London, England, assignor to The British Iron and Steel Research Association, London, England
Filed March 24, 1970, Ser. No. 22,189
Claims priority, application Great Britain, April 11, 1969, 18,766/69
Int. Cl. B65b 25/14, 27/08
U.S. Cl. 53—27 **7 Claims**

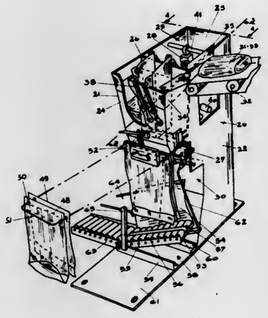


A rectangular pile of steel sheets is packaged in a single steel sheet automatically by first folding a sheet of steel around the top, bottom and end faces. Blocks are advanced against the end faces and a band is then tensioned around the side and end faces to form partial folds in packaging material protruding from the side face. Further bands are then tensioned around the top, bottom and side faces to form a completed package. The folding is carried out without the need to beat the packaging sheet manually.

3,698,153
AUTOMATIC LOADING, ARRANGING AND DISPENSING DEVICE FOR ARTICLES AND INCLUDING CONTAINERS, POUCHES AND THE LIKE
Abraham Buddy Lieberman, St. Leonard, Canada, assignor to Glolok Co., Ltd., St. Leonard, Montreal, Canada
Filed Oct. 6, 1969, Ser. No. 863,823
Claims priority, application Canada, Sept. 25, 1969, 63105
Int. Cl. B65b 57/10, 35/30
U.S. Cl. 53—61 **14 Claims**

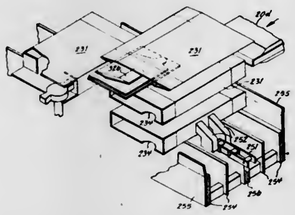
The invention refers to an automatic loading, arranging and dispensing device for articles and including containers, pouches and the like, in which the device has an article loading and arranging section provided with a plurality of self-guiding and aligning walls which are adapted to receive the ar-

ticles individually and to be actuated thereby for guiding and collating the articles in vertical and aligned positions in the



loading and arranging section and to dispense the same therefrom by automatically dropping them, as a unit, vertically into an outer bag or other closures.

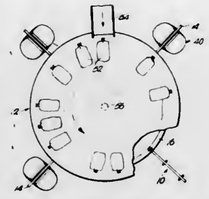
3,698,154
PACKAGING APPARATUS AND PROCESS
George M. Woodruff, Nyack; Oscar W. Stoeckli, Rye, both of N.Y., and Joseph G. Shando, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 610,367, Jan. 19, 1967, Pat. No. 3,513,618. This application March 12, 1970, Ser. No. 26,484
Int. Cl. B65b *43/26, 43/34, 57/12*
U.S. Cl. 53—73 **12 Claims**



A cartoning mechanism includes a magazine for retaining a stack of cartons in flattened condition and a reciprocally driven blade operative for penetrating the lowermost carton of the stack to open said carton and advance it in opened condition to a loading station.

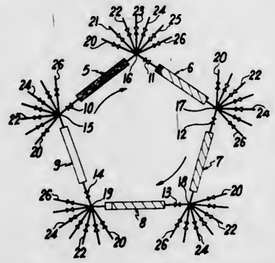
3,698,155
BAG SUPPORT ASSEMBLY
Allan B. Robinson, Overland Park, Kans., assignor to Mobil Oil Corporation
Filed April 8, 1971, Ser. No. 132,298
Int. Cl. B65b *67/12*
U.S. Cl. 53—390 **7 Claims**

A bag support assembly for use in connection with packaging equipment wherein is provided a laterally extending member projecting outwardly in a horizontal plane from a table intended to receive smaller packages, the member having a plurality of L-shaped arms thereon, provided with protective rubber sleeves, which arms receive the upper marginal edge of one sidewall of a larger bag within which the smaller



packages are to be deposited, the user of the device supporting the opposite sidewall of the bag whereby to present an open top for the bag.

3,698,156
METHOD OF CONTINUOUS SEPARATION BY GAS-PHASE CHROMATOGRAPHY ON FIXED GRANULAR REDS
Gregoire Dirian, Palaiseau, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed May 20, 1970, Ser. No. 39,091
Claims priority, application France, May 22, 1969, 6916709
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 **12 Claims**

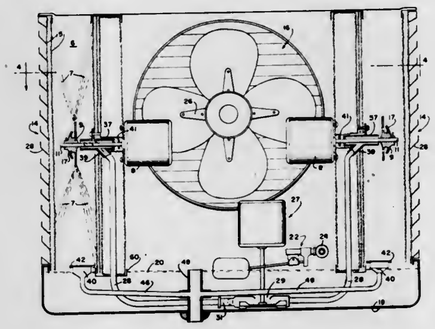


At least four columns filled with granular material are arranged so as to form a circulation loop, each column being intended to perform in cyclic operation successive functions of stripping, enriching, collecting the tail gas which is enriched in the least strongly adsorbed component of a gas mixture and feeding of the tail gas which is enriched in the most strongly adsorbed component. The mixture to be separated is introduced at a point of the pipe which connects the column employed at a given moment as stripping column to the column which serves at the same moment as enriching column. A fraction of the gas which is enriched in the least strongly adsorbed component is recovered at the outlet of the enriching column whilst the other fraction is fed into the following column. The gases which are adsorbed on the granular material are desorbed from the column containing the tail gas. A fraction of the gas which is enriched in the most strongly adsorbed component is withdrawn at the outlet of the column containing the tail gas whilst the other fraction is fed into the column which performs the function of stripping column.

3,698,157
SEPARATION OF MIXTURES WITH MODIFIED ZEOLITES
Paul T. Allen, and B. M. Drinkard, both of Beaumont, Tex., assignors to Mobil Oil Corporation
Filed June 1, 1971, Ser. No. 149,050
Int. Cl. B01d *15/08*; **C07c** *7/12*
U.S. Cl. 55—67 **24 Claims**

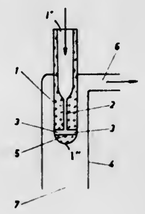
An improved method for separation and isolation of individual components contained in a C_8 aromatic mixture such as p-xylene and ethylbenzene, by contacting the mixture with an aluminosilicate zeolite which has been contacted with an organic-radical substituted silane to modify the characteristics of the zeolite.

3,698,158
AIR RECONDITIONING APPARATUS
John E. Kinnebrew, 1311 North 31st, Phoenix, Ariz.
Filed Feb. 24, 1971, Ser. No. 118,367
Int. Cl. B01d *50/00*
U.S. Cl. 55—227 **7 Claims**



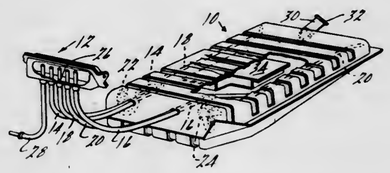
In an air reconditioning apparatus including a casing having inlet and outlet openings, a fan is mounted adjacent the outlet opening for drawing air to be reconditioned into the inlet opening through a plurality of expanded metal impingement screens, a power-operated dual action centrifugal atomizer is provided adjacent the inlets for supplying scrubbing water to the incoming air and a dehumidifying means is provided between the atomizer and the outlet fan.

3,698,159
GAS ANALYZER AND MIST SEPARATOR
Alois Ruse, Stierstadt (Taunus), Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Sept. 11, 1968, Ser. No. 759,134
Int. Cl. B01d *47/00*
U.S. Cl. 55—257 **1 Claim**



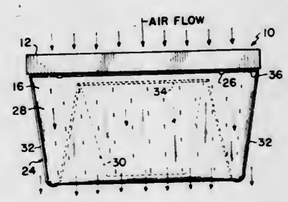
A device for gas analysis where sulfur trioxide mist droplets are entrained and are to be separated from a sample gas stream before the gas enters an analyzer. Entrained droplets are removed by passing the gaseous suspension through an entrance capillary and thence out through exit capillaries at right angles thereto and at the end thereof after coalescence of the droplets.

3,698,160
MOTOR VEHICLE FUEL TANK VENTING
William A. Hunter, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed July 16, 1970, Ser. No. 55,543
Int. Cl. B01d *45/06*; **B65d** *25/00*
U.S. Cl. 55—385 **4 Claims**



Positionally responsive valves mounted in a motor vehicle fuel tank and connected into part of the tank evaporative control vent system to aid in the separation of liquid fuel from vapor fuel in the vent system.

3,698,161
FILTER
Jacob K. Brixius, Parma; Lawrence M. Takacs, Solon, and James P. Van Sweringen, Cleveland Heights, all of Ohio, assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Nov. 3, 1970, Ser. No. 87,366
Int. Cl. B01d *27/06*
U.S. Cl. 55—493 **2 Claims**

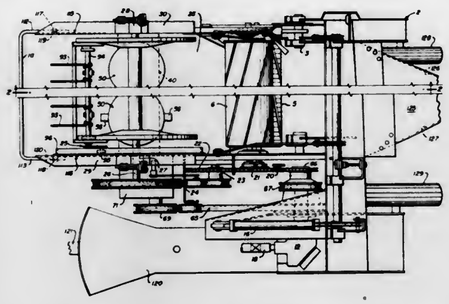


A filter for removing impurities from an airstream comprising a housing having filter media holding means operatively attached thereto and a flange portion disposed around said housing, a filter media retainer fixedly attached to said housing, filter media attached in an airtight manner on said flange portion by said holding means, said retainer retaining said media in such a position with respect to the airstream that said filter media forms two coaxial filter pockets of substantially equal depth, thereby optimizing the impurity-removing properties of said filter media.

3,698,162
CROP HARVESTING MACHINE
Thomas J. Scarnato, Barrington, and Martin H. Meyer, Elburn, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed April 23, 1970, Ser. No. 31,110
Int. Cl. A01d *43/00*
U.S. Cl. 56—1 **9 Claims**

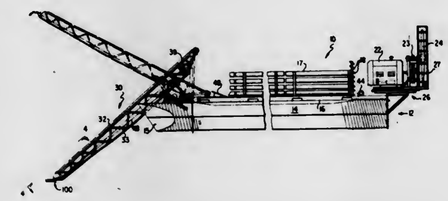
A harvesting device comprising a platform with rotary mowing devices along its forward edge arranged to sling the material upwardly and rearwardly onto an upwardly and rearwardly sloping platform for delivery of the crops to a pair of conditioning rollers, and a reel cooperating with the mowing

devices which functions to feed the material prior to cutting into the mowing devices and after the material is cut sweeping



the cut material off the mowing devices and controlling the flow of the material into the hay conditioning rollers.

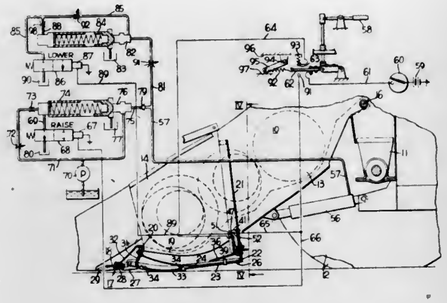
3,698,163
AQUATIC HARVESTER
Thomas G. Kelpin, 8877 Boyonne Drive, Shreveport, La.
Filed Dec. 14, 1970, Ser. No. 97,497
Int. Cl. A01d *45/08*
U.S. Cl. 56—9 **26 Claims**



An improved aquatic harvester is disclosed having an aquatic craft comprising a plurality of pontoons secured to a flat deck member, the craft being propelled and steered by a totally above-the-water air propulsion system. Other features include a self-unloading conveyor system, a heavy duty cutter bar assembly specially designed for cutting underwater weed growth, and a three-phase electrical power system to operate all subassemblies. The harvester is capable of carrying payloads in excess of 10 tons while at the same time having a draft of approximately 15 inches of water with no below-the-water drive or controls, thus rendering the craft free from fouling.

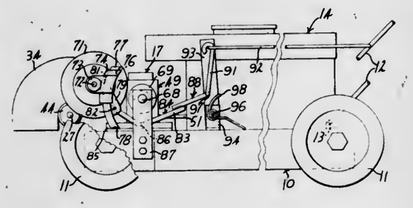
3,698,164
AUTOMATIC HEADER HEIGHT CONTROL SENSED FROM FLOATING CROP ENGAGING MECHANISM
Jerry C. Boone, and Lawrence E. Allen, both of Independence, Mo., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed July 9, 1970, Ser. No. 53,444
Int. Cl. A01d *67/00*
U.S. Cl. 56—10.4 **11 Claims**

A combined electrical, mechanical and hydraulic mechanism in a combine harvester wherein the cutter bar rides on the ground and is mounted on the forward end of a frame member having its rear end pivotally attached to a cut crop receiving mechanism on the harvester. A feeler member mounted on the cut crop receiving mechanism contacts the frame member for actuating a control to raise or lower the cut crop receiving mechanism for maintaining the position of the



cut crop receiving mechanism relative to the cutter bar. A manual control for raising or lowering the cut crop receiving mechanism is also provided.

3,698,165
EDGER FOR LAWN MOWER
Ernest W. Keesee, 3767 South Court Street, Montgomery, Ala.
Filed March 3, 1971, Ser. No. 120,552
Int. Cl. A01d *35/26*
U.S. Cl. 56—11.4 **2 Claims**

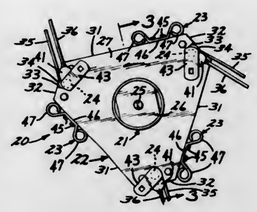


An edger support is mounted on a mower housing for pivotal movement selectively to an upper inoperative position to a lower operative position. An edger blade is carried by the support and operatively connected to a power unit in response to movement of support to lower operative position and disconnected from power unit in response to movement to upper inoperative position. Releasable means holds edger support in selected positions and releasable means connects power unit to wheels of mower.

3,698,166
REEL CONSTRUCTION WITH HEXAGONAL SPIDERS FOR MOUNTING BOTH BATS AND TINE BARS
Ivan E. Fisher, Owatonna, Minn., assignor to Owatonna Manufacturing Company, Owatonna, Minn.
Filed June 2, 1971, Ser. No. 149,195
Int. Cl. A01d *57/00*
U.S. Cl. 56—220 **2 Claims**

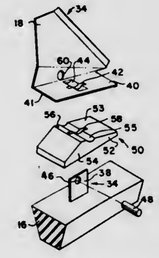
A feeding reel including an axial tubular body and a plurality of axially spaced spider elements rigidly mounted thereon, these spider elements defining hexagons having alternate sides of equal relatively long length and alternating sides of equal relatively short length, flanges projecting in directions axially

of the reel and defining the relative long side of the hexagons, elongated reel bats mounted on the flanges, and tine mounting



bars journaled in bearings on the spider elements adjacent the short side defining edges thereof, the tine mounting bars extending in directions axially of the reel.

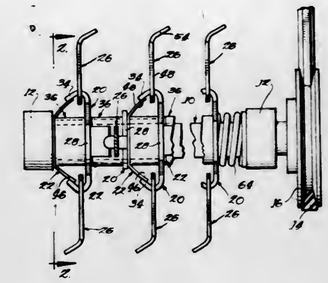
3,698,167
BLADE MOUNT FOR BELT MOWER
Joseph C. Hurlburt, Leola; Horace G. McCarty, Lancaster, both of Pa., and Norman C. Locati, Lake Oswego, Oreg., assignors to Sperry Rand Corporation, New Holland, Pa. and Omark Industries, Inc., Portland, Oreg.
Filed March 23, 1971, Ser. No. 127,111
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 **6 Claims**



An endless belt type cutter assembly for a mower having cutter blades of the impact type fixed at spaced intervals and projecting outwardly from one edge of the belt, the blades being connected to the belt by means permitting limited yieldability.

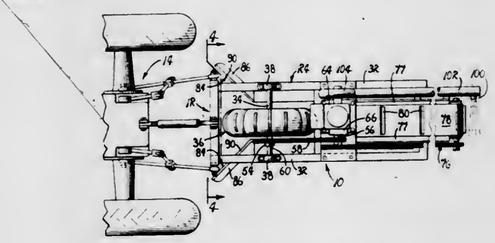
3,698,168
BLADE CONNECTING MEANS
Carl W. Mott, deceased, late of Lake Ozark, Mo. (by Elsie Viola Mott, executrix); Carl Wheeler Mott, Jr., La Grange Park, Ill.; Elnora Mott Hart, Rock Falls, Ill.; Dorothy Mott Battles, De Kalb, Ill.; Phyllis Mott Haigren, and Elmer Samuel Mott, both of Downers Grove, Ill. (heirs), assignors to Mott Corporation, La Grange, Ill.
Filed July 6, 1971, Ser. No. 160,010
Int. Cl. A01d *55/22*
U.S. Cl. 56—294 **14 Claims**

Blade connecting means comprises a lug member and a retaining member. The lug member and retaining member are adapted to be secured to a mower shaft and to removably secure a mower blade to the mower shaft. The lug member has at least on one end a hook on which the blade is hung, and the retaining member normally engages and closes the hook of the lug member to retain the blade on the hook and, hence, on the shaft. The blade may be easily installed on or removed from



the shaft by manipulating the blade to move the retaining member to a position where the hook is open, no tools being necessary to install or remove the blade.

3,698,169
GATHERING APPARATUS
Lee S. Simpson, 440 North Cornelia, Fresno, Calif.
Filed Feb. 3, 1971, Ser. No. 112,312
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 **9 Claims**

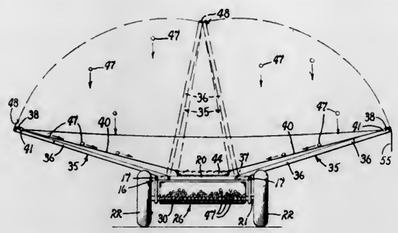


A gathering apparatus particularly suited for use in harvesting nuts and similar discrete articles. The apparatus is characterized by a pair of converging wings horizontally extended to scrape the surface of the ground to form a window of articles being gathered and a driven impeller having a circular periphery supported to receive the articles in operative engagement, for ejecting the articles from the windrow along an upwardly directed trajectory to an inclined conveyor having a discharge opening disposed above a portable article-receiving bin, whereby randomly deposited articles, such as nuts deposited beneath parent trees, can readily be gathered and rapidly delivered into an article-receiving bin.

3,698,170
CATCHER FOR FRUITS, NUTS, AND THE LIKE
Joseph F. Kenrick, 734 East Fairmont, Fresno, Calif.
Filed May 19, 1971, Ser. No. 144,760
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 **11 Claims**

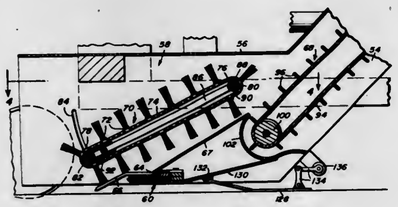
A catcher for fruits, nuts, and the like including a mobile vehicle, a hopper, means mounting the hopper on the vehicle for slidable movement between a predetermined catching position and a position spaced transversely of the vehicle from the catching position and at which the hopper is removable from said means, a frame mounted in the vehicle defining an opening above the hopper when the hopper is in catching position, a pair of wings connected to opposite sides of the frame

pivotal between catching positions oppositely upwardly inclined from the frame and retracted positions pivoted upwardly substantially vertically over the frame. The invention also includes the combination of a plurality of such catchers



pivotally connected in following relation and with the wings forwardly and rearwardly overlapped in vertically spaced relation when in catching positions to avoid interference during relative pivotal movement of the catchers while forming a continuous catching surface.

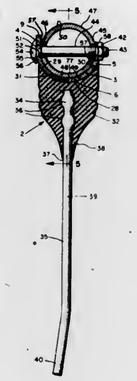
3,698,171
MECHANICAL PICKER FOR STRAWBERRIES
Charles L. Hecht, Route 2, P. O. Box 237, Scio, Oreg.
Filed Aug. 31, 1970, Ser. No. 68,336
Int. Cl. A01g *19/00*
U.S. Cl. 56—331 **24 Claims**



A self-propelled strawberry harvester including a series of picking fingers which move along close to the ground so as to engage under and lift the berry clusters for a severing thereof from the plant by a sickle bar. A leafer belt moves the clusters rearwardly up onto and along the fingers to the sickle bar and upwardly therefrom onto an upwardly and rearwardly inclined conveyor elevator which in turn discharges the severed clusters onto a foraminous belt for movement through a cleaning unit consisting of an underlying blower fan and an overlying suction fan. The cleaned clusters are subsequently discharged into a collection box or container. The height of the picking head is vertically adjustable in response to variations in ground level. The sickle utilizes elongated narrow knives and ledger plates on equal spacing with the picking fingers.

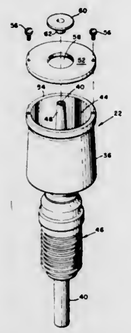
3,698,172
CROP ENGAGING TINE MEANS
Edward J. Johnston, La Grange, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,284
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **7 Claims**

A crop-engaging tine assembly comprising a U-shaped clip having an upwardly projecting lug on its front portion and a pair of upwardly projecting bendable ears on the rear portion. The lug has a hole therein for a bolt which extends through aligned openings in a support bar. The headed or nut end of the bolt assembly engages the external side of the lug and the other end of the bolt assembly engages the bar and nests between the ears which embrace the bar with the lug to



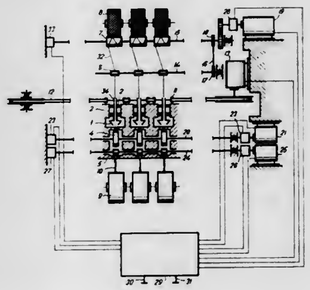
prevent turning. A method of fabricating the clip by cutting with a single shear the lug of the front portion of one lug and the notch in the rear portion of the next clip to form the ears so that there is no waste of material and a single cut accomplishes both.

3,698,173
YARN COVERING APPARATUS
Robert Peel, 1502 Reynolda Road, Winston-Salem, N.C., and Francis B. Northup, 725 West End Boulevard, Winston-Salem, N.C.
Filed Aug. 4, 1969, Ser. No. 847,072
Int. Cl. D02j *3/28*
U.S. Cl. 57—18 **14 Claims**



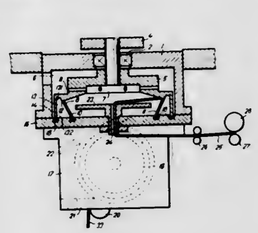
Apparatus used in conjunction with machinery operating at high speeds for wrapping elastomeric thread with a cover yarn, including a spindle and a concentrically mounted housing on the spindle having a interior chamber suitable for receiving one or more self-supporting yarn packages. Yarn is fed from the packages held within the chamber through an opening therein and dispensed, as the spindle and housing rotate at high speed, about the elastomeric thread passing through a longitudinal passage in the spindle. The apparatus contains various means for regulating the behavior of the cover yarn as it is dispensed from the chamber and is wrapped about the elastomeric thread.

3,698,174
SPINNING MACHINE AND METHOD OF OPERATING THE SAME
Miroslav Boucek, and Miroslav Jiskra, both of Usti Nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Jan. 6, 1971, Ser. No. 104,245
Claims priority, application Czechoslovakia, Jan. 19, 1970, 36770
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.95 **6 Claims**



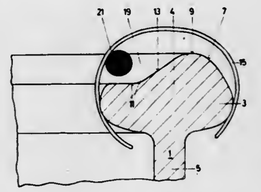
A spinning machine and a method of operating it. The spinning machine has one or more rotary spinning chambers each of which receives fibrous sliver from a rotary carding and feed roller, spins it into a yarn and has the yarn withdrawn by a withdrawing device. To stop the operation of the machine, the drive of the feed and carding roller is first terminated and simultaneously positive braking action is applied to the roller. Thereupon the withdrawing device has its drive terminated and only then is the rotary spinning chamber disconnected from its own drive.

3,698,175
SPINNING MACHINE
Jaroslav Dykast, Usti Nad Orlici, Czechoslovakia, assignor to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Jan. 18, 1971, Ser. No. 107,362
Claims priority, application Czechoslovakia, March 27, 1970, 205070
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **10 Claims**



A rotary spinning chamber is rotatable about a predetermined axis and has an open side. A peripheral wall of the rotary spinning chamber has an inner circumferential fiber-collecting surface which extends inwardly from the open side and surrounds the axis of rotation. Outlet apertures are provided in the peripheral wall extending from the surface to the outer side of the wall, and wall means defines a closed compartment adjacent the outer side and communicating with these apertures.

3,698,176
SPINNING RING FOR RING SPINNING AND RING TWISTING FRAMES
Ernst Kunz, Breitigasse 26, Oberuster, Switzerland
Filed Oct. 6, 1970, Ser. No. 78,526
Claims priority, application Switzerland, Oct. 7, 1969, 15037/69
Int. Cl. D01h *7/52*
U.S. Cl. 57—119 **9 Claims**

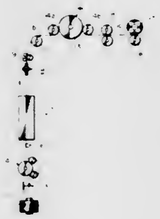


A spinning ring for spinning of roving into yarn is provided with a generally T-shaped cross-section with the upper flange of the T having a convex contour at the outer periphery of the ring and a concave or straight contour of the flange top inside the convex portion.

3,698,177
TEXTURIZING YARN, PROCESS AND PRODUCT
Franz Nyfeler, Kaltbrunn, Switzerland, assignor to Heberlein Patent Corporation, New York, N.Y.
Filed Jan. 21, 1971, Ser. No. 108,607
Claims priority, application Switzerland, Feb. 9, 1970, 1805/70
Int. Cl. D02g *1/02*
U.S. Cl. 57—140 J **5 Claims**

Synthetic yarn of non-circular cross-section is temporarily twisted to a less than normal extent and heat set at a temperature lower than normal to maintain original geometry and lustre.

3,698,178
METHOD OF MANUFACTURING TEXTURED YARN HAVING TRASVERSE DEFORMITIES
Mutsuo Iwaoka, Yasu-gun; Akio Takegawa, Kusatsu; Hiraku Inoue; Katsusuke Egami, both of Otsu; Kouiti Nishikura, Kusatsu; Shigeji Yamashita, Koga-gun, and Tadahiro Nagayasu, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed July 29, 1970, Ser. No. 59,065
Claims priority, application Japan, Aug. 25, 1969, 44/67299; Feb. 2, 1970, 45/85961
Int. Cl. D02h *1/02, 1/20*
U.S. Cl. 57—157 TS **10 Claims**



A method of manufacturing textured yarn comprises providing a crimped yarn composed of numerous crimped and entangled together thermoplastic synthetic fibers, partially

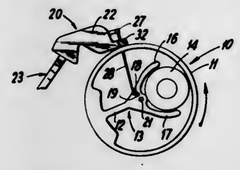
removing some of the crimp from the crimped yarn, heating and pressing together the resulting partially crimped yarn to contact the fibers at their mutually intercrossed locations with sufficient pressure and at a sufficient temperature to effect permanent transverse deformation of the fibers at their contact points, and terminating the heating and pressing to obtain a textured yarn composed of numerous fibers having longitudinally and randomly spaced transverse deformities. The yarn is initially crimped by false twisting and steam setting, and some of the crimp is removed from the crimped yarn to remove from 75 to 95 percent of the crimp.

3,698,179

CONTACT ASSEMBLY FOR ELECTRIC WATCHES

Edward Kaulins, New Milford, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed July 20, 1970, Ser. No. 62,302
Int. Cl. G04c 3/04; H01h 3/16
U.S. Cl. 58—28 R **6 Claims**



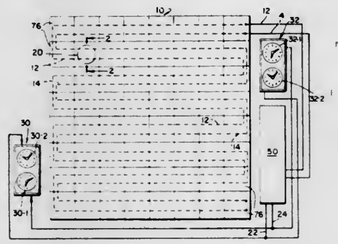
A contact spring assembly for an electric watch comprises an elongated contact spring which intermittently engages a contact pin on the balance wheel. The contact spring is fixedly mounted at one end to a base member and damped to eliminate undesirable oscillations by positioning a spring portion located a predetermined distance from the end in a slotted member. The spring portion in the slot is surrounded by a material which dampens the vibrations of the spring as the free end contacts the pin during the oscillations of the balance wheel.

3,698,180

AUTOMATIC CHESS TIME INDICATOR

Emil Klein, New York, N.Y., assignor to Samuel F. Kinnroth, New York, N.Y., a part interest

Continuation-in-part of Ser. No. 804,118, March 4, 1969, abandoned. This application Aug. 6, 1971, Ser. No. 169,718
Int. Cl. G04f 3/00; A63f 3/02, 9/00
U.S. Cl. 58—145 D **10 Claims**



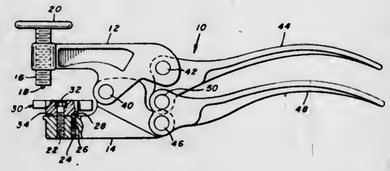
An automatic time indicator for use during a chess match. A control circuit is provided to alternately control the running of respective players' time clocks without any direct manual intervention, relying on circuitry in the chess board itself and the placement of a chess piece on a new square by any player.

3,698,181

ROLLER CHAIN DISCONNECTOR APPARATUS

William T. Paul, Holyoke, and Wayne R. Tracy, Willimansett, both of Mass., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1970, Ser. No. 85,059
Int. Cl. B21l 21/00
U.S. Cl. 59—11 **4 Claims**



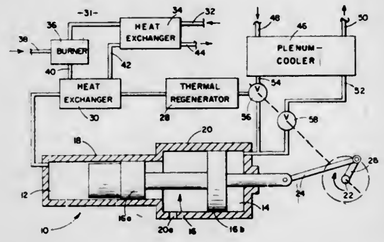
Apparatus for disconnecting the interconnections of a power transmitting chain wherein a chain link pin forcer means is mounted on a first closing arm of a toggle and a chain holder means is spaced from the chain link pin forcer means and mounted on a second closing arm of the toggle. The holder means acts as a base for mounting a link pin interconnecting two link sub-assemblies. Hinge means pivot the closing arms in opposite directions about a toggle joint which interconnects the closing arms, thereby applying a multiplied closing force to the link pin force means and thereby forcing the link pin free of the sub-assemblies.

3,698,182

METHOD AND DEVICE FOR HOT GAS ENGINE OR GAS REFRIGERATION MACHINE

Stellan Knoos, Fregattvagen 2, Taby, Sweden

Filed Feb. 16, 1971, Ser. No. 115,547
Claims priority, application Sweden, March 2, 1970, 12640/70
Int. Cl. F01k 7/06
U.S. Cl. 60—24 **35 Claims**



A closed-cycle gas expansion engine and a closed-cycle or open-cycle gas expansion refrigerator, including a thermal regenerator, devices for transferring heat into the gas or subtracting cold gas, and a piston assembly for developing approximately 180° phase difference in the varying volumes of the warmer and colder gas chambers. A general valve mechanism is employed for properly timed flow of working gas into the primary gas chamber from a plenum chamber containing cooling devices for closed-cycle operation, or for flow of working gas into the primary gas chamber from an ambient atmosphere for open-cycle operation. A valve mechanism, separate or coupled to the first mechanism, is used for proper initiation and termination of gas flow between the primary and secondary chambers in one particular phase of the reciprocating piston motion. Still another valve, which may be integrated with any of the other mentioned valve mechanisms, is used for release of suitably recompressed

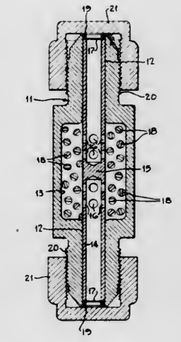
working gas in the secondary chamber into the plenum chamber with a closed cycle, or for properly timed exhaust of such gas back to the ambient atmosphere with an open cycle.

3,698,183

INITIATOR BOOSTER

Hugh D. MacDonald, Cinnaminson, N.J., and Eugene J. Doebley, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed June 1, 1971, Ser. No. 148,563
Int. Cl. F01b 31/00, 9/100
U.S. Cl. 60—26.1 **2 Claims**



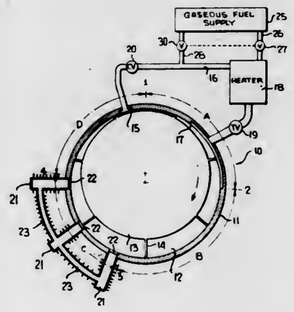
A miniature initiator booster for an energy transmission system having a minimum of size, weight and production cost. It includes a unitary body with a longitudinal passage defined by an internal cylindrical wall at the body ends and an intermediate enlarged annulus substantially filled with propellant pellets that surround predetermined small apertures in the sidewall of a hot gas transmitting flash tube. The central portion of the flash tube is blocked with an integral transverse wall to direct the inlet hot gas into the propellant containing annulus for ignition of the booster propellant and release of the booster gas through the sidewall apertures in a manner to satisfy the system requirements.

3,698,184

LOW POLLUTION HEAT ENGINE

George M. Barrett, R.R. #5, Galt, Ontario, Canada

Filed Nov. 4, 1970, Ser. No. 86,738
Int. Cl. F01k 25/00
U.S. Cl. 60—36 **9 Claims**



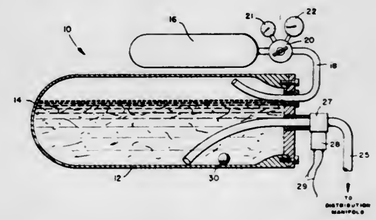
This disclosure relates to a heat engine which operates generally on the basis of the Carnot cycle and includes a rotor mounted within a chamber and sealed relative to the chamber by means of a plurality of radiating vanes. Gas compressed in the mechanical compression cycle of the engine is by-passed to the part of the invention wherein isothermal expansion normally occurs in the Carnot cycle, and these compressed gases are heated to supply greater energy thereto to produce a greater energy working in both the isothermal expansion phase and the reversible adiabatic expansion phase and the reversible adiabatic expansion phase of the cycle. In addition, external flow passages are connected to the chamber of the engine in the area where isothermal compression occurs for accelerating the isothermal compression. It is proposed to use a substantially pollution free hydrocarbon as the fuel for the heater, and the same hydrocarbon may be utilized as the gas sealed within the engine.

3,698,185

METHOD FOR DISPERSING DISCRETE PARTICLES

John D. Crecelius, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 1, 1969, Ser. No. 866,072
Int. Cl. F02g 9/00
U.S. Cl. 60—39.02 **4 Claims**



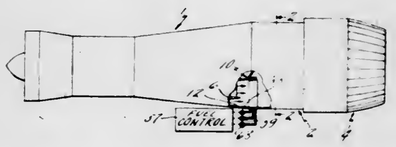
A slurry of metal flakes and freon is carried in a pressure tank connected to a supply tank of pressurized gas and to a distribution manifold attached near the exhaust pipe of a vehicle. When the slurry is released, the metal flakes are dispensed into the area surrounding heat radiating portions of the vehicle.

3,698,186

AFTERBURNER COMBUSTION APPARATUS

David J. Beane, North Palm Beach, Fla., and John H. Gastler, Portland, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

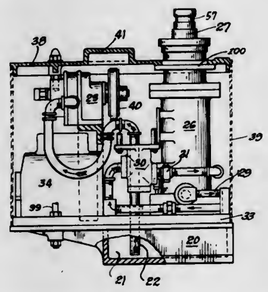
Filed Dec. 24, 1970, Ser. No. 101,225
Int. Cl. F02k 3/10
U.S. Cl. 60—39.72 R **15 Claims**



A power plant with an afterburner has a combustion apparatus therein which comprises a flameholder-spraybars extending radially into the afterburner at a plurality of locations. A third of the flameholder-spraybars are full length and extend to a center body, a third are of medium length and extend to the center of a hot exhaust, and a third are short and extend inwardly to a point rearwardly of a splitter separating the hot exhaust from a cooler fan duct air. The medium length

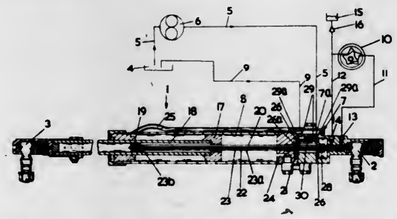
flameholder-spraybars are divided into two fuel injection compartments and the full length flameholder-spraybars are divided into three fuel injection compartments. For primary zone burning fuel is admitted to the innermost compartment of each of the full length flameholder-spraybars; for secondary zone burning, the inner compartments of the medium length flameholder-spraybars and the middle compartments of the full length flameholder-spraybars then also have fuel directed thereto; and for tertiary zone burning, fuel is then also directed to the outermost compartment of each of the full length and medium length flameholder-spraybars and to the short length flameholder-spraybars.

3,698,187
ACTUATOR
Henry H. Logan, 6107 North Newbury Avenue, Chicago, Ill.
Filed Jan. 28, 1971, Ser. No. 110,509
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 US **5 Claims**



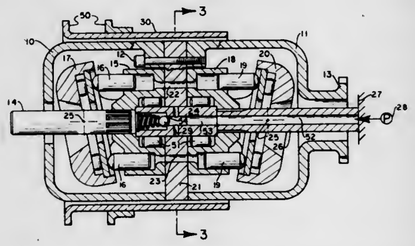
A self-contained actuator of the hydraulic type for moving loads of a magnitude and for distances not practical for electric solenoids. A fluid reservoir, an electric motor, a pump and a hydraulic cylinder are mounted on a common base to comprise a compact unit, together with a belt drive connecting the motor and pump, a check valve to hold the liquid in the cylinder, a solenoid-operated return valve to drain the cylinder and a metering valve to control the rate of flow out of the cylinder. A remote, manually controlled switch device is designed to energize the motor and the solenoid in a mutually exclusive manner, the switch device having a neutral position and a spring-operated cam for normally urging the switch device to its neutral position.

3,698,188
POWER-ASSISTED STEERING MECHANISMS FOR MOTOR VEHICLES
Leslie Richard Jenvey, Reading, England, assignor to Adwest Engineering Limited, Reading, Berkshire, England
Filed Dec. 18, 1970, Ser. No. 99,460
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 S **7 Claims**



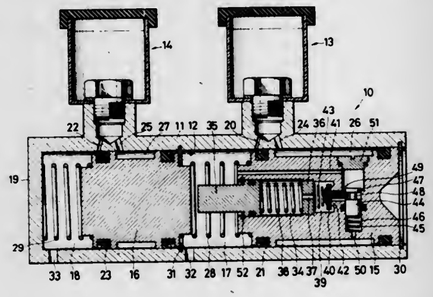
Power-assisted steering mechanism for a motor vehicle comprising a double-acting power-assist piston and cylinder means, a valve having a member movable to connect one side or the other of the power-assist piston and cylinder means with a source of fluid under pressure, and control means for controlling the movement of the movable valve member, the control means comprising a closed hydrostatic circuit which includes at least one positive displacement pump motor adapted for actuation by a manual steering control.

3,698,189
NEUTRAL CONTROL FOR HYDRAULIC TRANSMISSION
Leonard H. Reimer, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed April 9, 1971, Ser. No. 132,797
Int. Cl. F16h *39/10*
U.S. Cl. 60—53 A **12 Claims**



A neutral hydraulic clutching valve incorporated within the valve disc of a hydromechanical transmission. An actuating stem on the valve poppet extends outwardly of the valve disc to be actuated by a cam surface on the transmission control sleeve upon movement of the control sleeve to the neutral position. A neutral valve intercepts each valve slot of the closed loop and relieves pressure therein when actuated.

3,698,190
TANDEM MASTER CYLINDER
Masaya Miyai, Toyota, Japan, assignor to Aisin Seiki Kabushiki, Kariya, Kariya Aichi Pref., Japan
Filed March 15, 1971, Ser. No. 124,258
Claims priority, application Japan, March 25, 1970, 45/24624
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 E **16 Claims**



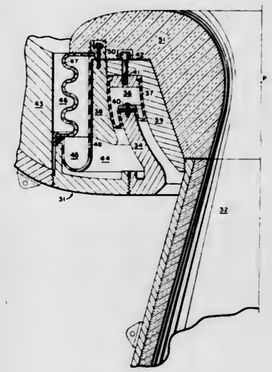
A tandem master cylinder for the brake systems of the vehicle has a primary piston operable mechanically by a brake pedal and a secondary piston operable by hydraulic pressure generated by the primary piston. At least one of the primary and secondary pistons comprises a fluid storage chamber to normally store the brake fluid therein, a fluid locking piston

urged to move within the storage chamber by the other piston or end wall of the cylinder, and a valve means for controlling fluid communication to the storage chamber in response to brake fluid pressure. When no hydraulic pressure is generated in one of the brake systems associated with the storage chamber, the locking piston and the valve means will cooperate to lock the fluid in the storage chamber thereby minimizing brake pedal travel loss.

3,698,191
NONSUSTAINING HYBRID PROPELLANT GRAIN
Robert W. Ebeling, Jr., Kutztown, Pa., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 1, 1967, Ser. No. 660,869
Int. Cl. C06d *5/10*
U.S. Cl. 60—220 **6 Claims**

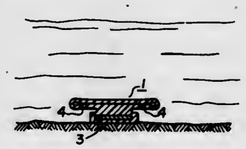
A nonsustaining hybrid propellant grain is provided for use in hybrid rocket systems employing halogen and interhalogen oxidizers. The propellant grain comprises an organic binder and a nitrate oxidizing salt in amounts substantially stoichiometric with the carbon content of the grain. The preferred nitrate is ammonium nitrate.

3,698,192
UNIVERSAL JOINT EMPLOYING A FLUID BEARING FOR A MOVABLE NOZZLE
Clarence A. Le Febvre, Jr., San Jose, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 22, 1970, Ser. No. 48,203
Int. Cl. F02k *1/24*
U.S. Cl. 60—232 **18 Claims**



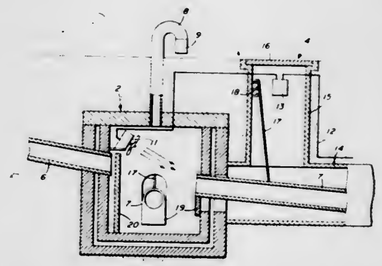
A universal joint permitting the relative axial angular deflection of two members comprises a receptacle in one of said members, a plug on the other of said members received in said recess and spaced apart therefrom, rolling seal means between the periphery of said receptacle and the periphery of said plug and a fluid filling the volume between the plug member, the seal means and the receptacle. Such a seal is particularly useful for permitting the relative angular deflection of two members which are subjected to loads tending to force the members towards each other such as are encountered, for example, in a reaction motor employing a movable nozzle where the blow-out loads on the nozzle tend to force the movable nozzle against the fixed nozzle support structure. This joint, with the receptacle, plug and seal means in annular form, is a lightweight, reliable, load bearing universal joint and nozzle seal which requires relatively low actuating forces.

3,698,193
CONDUITS
Stewart F. Daymond, 383 Victoria Avenue, Chatham, Ontario, Canada
Continuation-in-part of Ser. No. 105,065, Jan. 8, 1971, which is a continuation of Ser. No. 790,544, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 710,371, March 4, 1968, abandoned. This application April 9, 1971, Ser. No. 132,648
Claims priority, application Canada, April 15, 1966, 958,055
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R **5 Claims**



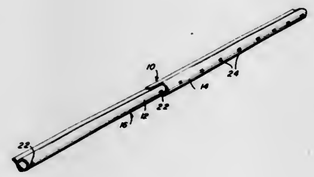
A weighted, elastically deformable conduit having discharge openings spaced along the length thereof and adapted to be submerged beneath the surface of a liquid to be agitated, aerated or displaced by means of compressed air discharged from said openings, is described. The conduit wall is sufficiently thin and flexible so that the conduit collapses under the influence of the liquid pressure on the outside of same when the supply of pressurized air to the interior of the conduit is shut off. In addition, the discharge outlets are located in those portions of the conduit wall adjacent the weight retaining means. Both these features contribute towards the elimination of foreign material from the interior of the conduit, especially around the discharge openings, which might tend to clog the latter.

3,698,194
AUTOMATICALLY AERATED LEACHING FIELD SYSTEM
John F. Flynn, 358 Strawberry Hill Road, Concord, Mass.
Filed Feb. 1, 1971, Ser. No. 111,209
Int. Cl. E02b *11/00*; B01d *21/10*; C02c *1/18*
U.S. Cl. 61—11 **11 Claims**



A sewage system comprising a septic tank, an air vented distribution chamber, and a leaching field formed of an array of air vented leaching canals. The flow of effluent from the distribution chamber into each leaching canal can be controlled from above ground. Air can be forced through the system by incorporating fans at the vents of the distribution chamber and leaching canals. By properly cycling the flow of air with the flow of effluent, a more efficient and longer lasting leaching field system with less pollution of nearby soil and water results, due to improved aerobic action, increased evaporation, and benefits from total drying of each canal.

3,698,195
WATER DISTRIBUTING HOSE
Richard D. Chapin, 368 North Colorado Avenue, Watertown, N.Y.
Filed May 25, 1970, Ser. No. 40,138
Int. Cl. E02b *13/00*; A01g *25/02*
U.S. Cl. 61—12 **18 Claims**



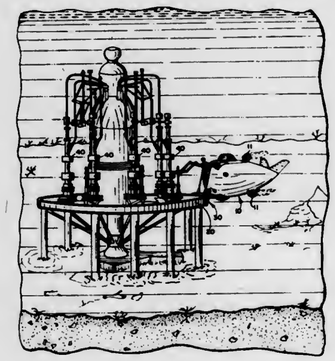
A water distributing hose for use in trickle irrigation comprising an outer tubular wall and an inner wall spaced interiorly from the outer wall and defining an inner tubular member fixed to the outer tubular wall for generally line contact therewith along the full length thereof. Both walls are perforated, normally in opposed relation to the line contact therebetween with the outer wall having a substantially greater number of openings. The inner tube functions so as to carry water along the full length of the hose and maintain, to a substantial degree, the pressure thereof. The water discharges through the inner wall openings and subsequently flows to and through the outer wall openings immediately adjacent to each inner wall opening for a trickle-like discharge therefrom.

3,698,196
METHOD FOR REINFORCING LOOSE ROCK AND COAL
Alfons Jankowski, Essen-Heisingen; Otto-Ernst Glaesmann, Castrop-Rauxel, and Gerhard Haake, Essen-Kray, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany
Filed March 3, 1971, Ser. No. 119,822
Claims priority, application Germany, March 4, 1970, P 20 10 140.0
Int. Cl. E21d *20/02*
U.S. Cl. 61—45 B **12 Claims**



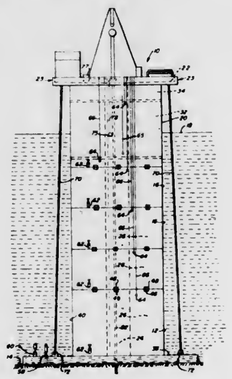
A plastic foil container having two separate compartments filled with the components of a foaming mixture, is inserted into a bore drilled into loose and caving rock or coal, and broken by a pointed rod inserted into the bore so that after sealing said bore with a plug a foam mixture fills, expanding due to swelling pressure, the bore and surrounds loose and caving rock or coal and reinforces the rock after hardening, particularly when the rod is left in the bore.

3,698,197
SUBMERGED PIER FOR MOVING A SUBMARINE UNDER WATER
Charles E. Bodey, 7412 McCool Avenue, Los Angeles, Calif., and Robert G. Cook, 2003 Avenida Feliciano, San Pedro, Calif.
Continuation-in-part of Ser. No. 771,903, Oct. 30, 1968, abandoned. This application Feb. 22, 1971, Ser. No. 117,667
Int. Cl. B61b *13/02*; B63b *21/50*; E02b *3/06*
U.S. Cl. 61—46 **4 Claims**



A pier positioned on the ocean floor having a circular track disposed around a working area, such as oil well heads, wherein the track is contoured to allow a descending submarine to engage the track at its upper edge and then, by losing buoyancy, pivot downward about the track to a horizontal position to engage the track under its lower edge. The submarine has drive wheels which engage the track to cause the submarine to move along the track to service the different well heads.

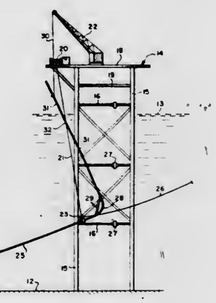
3,698,198
DEEP-WATER DRILLING, PRODUCTION AND STORAGE SYSTEM
Rex V. Phelps, Tulsa, Okla., assignor to Warren Petroleum Corporation, Tulsa, Okla.
Filed Feb. 12, 1971, Ser. No. 114,810
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **8 Claims**



An offshore platform for drilling wells and producing oil from wells comprising a plurality of stacked annular concrete

modules having concentric inner and outer walls enclosing a central opening that extends downwardly from the deck to the marine floor and a buoyancy chamber surrounding the central opening. The ends of the buoyancy chamber are closed to allow the modules to be floated to the well site. Means are provided to supply compressed air into the buoyancy chambers to control the amount of water in the buoyancy chambers to control the negative buoyancy of the platform and the load placed on the marine floor by the platform. The deck of the platform slopes downwardly from a curbing around its periphery to the central opening. Means are provided to lock the modules together into a unitary structure.

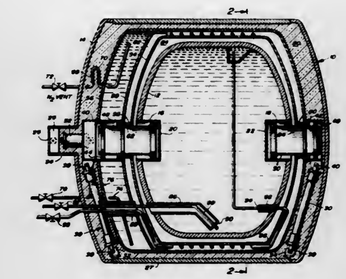
3,698,199
METHOD AND APPARATUS FOR INSTALLATION OF A FLOW LINE RISER ON AN OFFSHORE STRUCTURE
Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company
Continuation of Ser. No. 802,458, Feb. 26, 1969, abandoned. This application March 22, 1971, Ser. No. 126,965
Int. Cl. E16l *1/00*; E21b *43/01*
U.S. Cl. 61—72.3 **22 Claims**



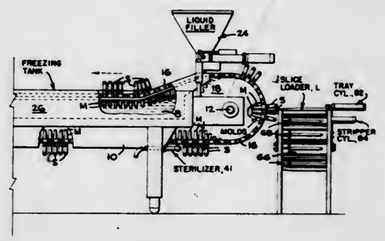
A flow line riser is installed on an offshore structure by laying a pipeline to a point on water bottom adjacent the structure and raising the offshore structure to water surface where lengths of pipe are attached perpendicularly to the pipeline to form a riser, the pipeline and riser being lowered to water bottom as the lengths of pipe are attached while longitudinally maintaining substantially constant tension on said pipeline. When the pipeline and connected riser reaches water bottom, it is then attached to the structure.

3,698,200
CRYOGENIC STORAGE DEWAR
Glenn B. Johnson, Whitehall, and John L. Petering, Slatington, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Dec. 16, 1970, Ser. No. 98,629
Int. Cl. F17c *7/02*
U.S. Cl. 62—45 **7 Claims**

A non-continuous venting dewar for safely storing a cryogenic fluid during a prolonged period of transit with minimized evaporation of the cryogenic fluid. The dewar is characterized in that between the inner storage tank of the traditional vacuum-jacketed cryogenic storage dewar and the outer shell thereof, there is placed a plurality of spaced-apart radiation shields, the innermost of which is of relatively greater mass than the others and can be reduced in temperature to approximately the level of the stored cryogenic fluid as the dewar is filled.



3,698,201
FREEZE MOLDING SLICE MATERIAL
Katsuji Hirahara, 781 Teresi Court, San Jose, Calif.
Division of Ser. No. 821,210, May 2, 1969, Pat. No. 3,604,319. This application April 2, 1971, Ser. No. 130,723
Int. Cl. F25d *25/00*
U.S. Cl. 62—62 **1 Claim**

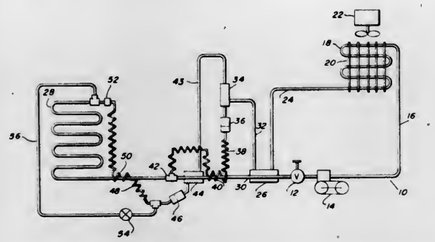


Slice material (e.g., turkey slices) is loaded onto a loading tray backed up by a stripper bar. Both of these elements are projected into an empty horizontal mold, first the tray is retracted and then the stripper bar, leaving the slice material in the mold. The mold is then brought to a vertical position, filled with liquid (e.g., gravy) and the product aggregate is immersion frozen in the mold.

3,698,202
CONTROL SYSTEM FOR LOW TEMPERATURE REFRIGERATION SYSTEM
Dale J. Missimer, San Anselmo, Calif., assignor to Gulf & Western Industries, Inc., New York, N.Y.
Filed Aug. 16, 1971, Ser. No. 171,874
Int. Cl. F25b *1/00*
U.S. Cl. 62—114 **15 Claims**

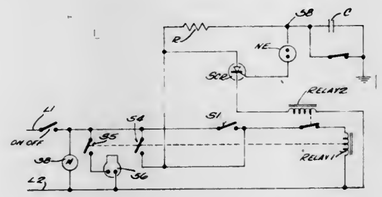
In a compression refrigeration cycle employing a mixture of refrigerants and a single compressor wherein low temperatures are reached by one or more vapor-liquid separations in which the expanded and cooled liquid from each separation stage is evaporated and used to condense the vapors from that

stage, high starting discharge pressures are avoided and rapid cool down to low temperature is achieved by incorporating a



by-pass system for the throttling device feeding the evaporator which is responsive to predetermined operating characteristics of the cycle.

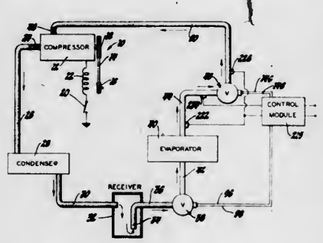
3,698,203
CONSISTENCY CONTROL FOR SLUSH FREEZER
Carl R. Stoelting, Kiel, Wis., assignor to Stoelting Brothers Company, Kiel, Wis.
Filed Feb. 4, 1971, Ser. No. 112,559
Int. Cl. F25c 7/10; G05d 24/02
U.S. Cl. 62—136 **5 Claims**



Liquid feeds from the upper reservoir to the lower refrigerated chamber where it is frozen on the walls. The scrapers and blades in the lower chamber scrape ice from the walls and keep the liquid/ice mix agitated. The slush is drawn off to be served. As the ice content increases, the load on the scraper drive increases. When the desired consistency is reached, the control shuts down the refrigeration. The control responds to torque and requires a sustained torque for a predetermined period to respond and shut down the compressor. The compressor is not restarted until the torque has dropped to a predetermined lower value.

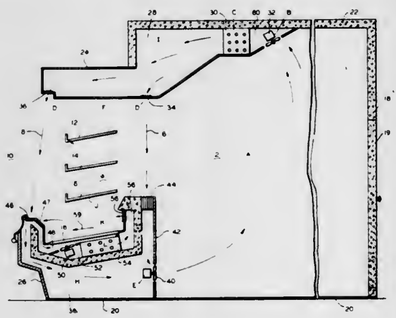
3,698,204
ELECTRONIC CONTROLLER FOR AUTOMOTIVE AIR CONDITIONING SYSTEM
David L. Schlotterbeck, and John R. Briar, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed June 16, 1971, Ser. No. 153,736
Int. Cl. F25b 41/00
U.S. Cl. 62—206 **5 Claims**

An automotive air conditioning system including a compressor, a condenser and an evaporator core over which air is directed and cooled for return to the passenger compartment of the car. The evaporator core is maintained at approximately 32° F. by the combined control of an expansion valve between the condenser and evaporator and a suction throttling valve between the evaporator and the inlet of the compressor. The expansion valve is controlled in response to the temperature of the outlet pipe of the evaporator core and the temperature of the outlet pipe from the suction throttling valve and the flow of refrigerant is metered through the valve to keep the core full of liquid refrigerant to assure maximum cooling efficiency. The suction throttling valve is controlled by sensing the temperature of the outlet pipe from the



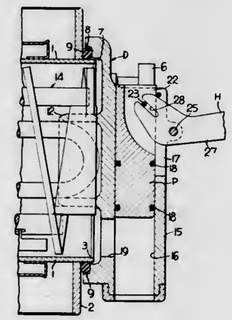
evaporator core and controlling a throttling piston by means of a transducer for converting electrical energy into mechanical movement of the throttling piston to maintain an evaporator pressure at a constant pressure of 29.5 psi plus or minus 0.5 psi to maintain tubes and fins of the evaporator core at approximately 32° F.

3,698,205
WALK-IN COOLER REFRIGERATED DISPLAY CASE COMBINATION
Arthur Perez, Niles, Mich., assignor to Clark Equipment Company
Filed Oct. 7, 1971, Ser. No. 187,360
Int. Cl. A04f 3/04
U.S. Cl. 62—256 **10 Claims**



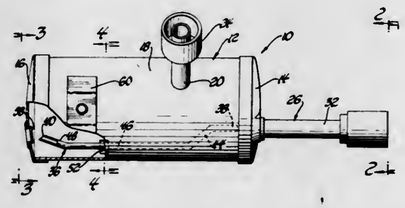
This is a combined refrigerated display case and walk-in cooler or cold room with the display case having a front opening for unimpeded access to the refrigerated area and a rear opening for unimpeded access from the walk-in cooler or cold room area. Each of these access openings has a curtain of refrigerated air thereacross to prevent the ambient room temperature air and the air from the cold room entering the refrigerated case space. The case has shelves therein from which goods may be removed through the front access opening and on which food may be deposited through the rear access opening. The case also has a separate horizontal curtain of refrigerated air across the lower portion of the refrigerated space to provide two vertically adjacent zones of refrigeration within the refrigerated space. The refrigerated air forming the curtain in front of the refrigerated display space is recirculated into the cold room or walk-in cooler space after passing under the refrigerated display case.

3,698,206
FREEZER DOOR AND DRAW OFF VALVE FOR A CONTINUOUS FREEZER
Bernfried M. Werner, Pompano Beach, Fla., assignor to Louis A. M. Phelan, Pompano Beach, Fla.
Filed July 29, 1970, Ser. No. 59,100
Int. Cl. F25c 7/08
U.S. Cl. 62—342 **5 Claims**



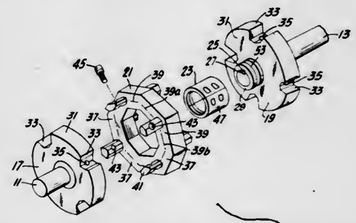
A continuous freezer for ice cream, malted, custard or the like in which the product is drawn off through a serving valve located in the cover at one end of the freezing cylinder. The valve includes a vertically shiftable plunger which is actuated by a swingable lever and a pin and slot connection is provided between the lever and the plunger to shift the latter between closed and dispensing positions. A pair of O-rings are provided around the plunger so as to seal the product in the cylinder and prevent it from escaping either upwardly or downwardly in the vertical bore in which the plunger is mounted.

3,698,207
ACCUMULATOR
William Melnyk, Lathrup Village, Mich., assignor to McCord Corporation, Detroit, Mich.
Filed Nov. 25, 1970, Ser. No. 92,756
Int. Cl. F25b 43/00
U.S. Cl. 62—503 **13 Claims**



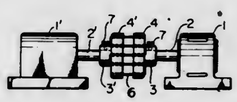
An accumulator including a casing having top and bottom ends interconnected by a cylindrical side wall. An inlet conduit extends radially through the cylindrical side wall and an outlet extends from the top end of the casing. An aspirator tube has a first end disposed in the outlet and extends downwardly and slants radially outwardly to a portion which extends along the cylindrical wall and then slants radially inwardly and downwardly to a second end adjacent the bottom end of the casing. The aspirator tube is connected to the side wall of the casing by welding, as brazing and the like, and/or by a clip into which the tube is snapped into position. The bottom end of the casing has a hole with a plug therein disposed adjacent the second end of the aspirator tube.

3,698,208
FLEXIBLE COUPLING
Charles H. Williams, Export, Pa., assignor to Koppers Company, Inc.
Filed Feb. 2, 1971, Ser. No. 112,006
Int. Cl. F16d 3/17
U.S. Cl. 64—11 R **5 Claims**



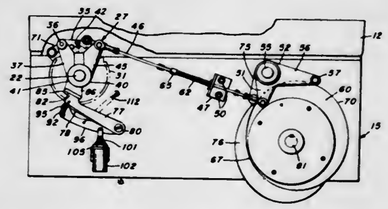
A flexible coupling for two generally coaxially arranged shafts has a hub for each shaft, a flexible means disposed between and securely fixed to the hubs for tolerating axial misalignment between the shafts and a rigid means coaxially disposed between and loosely attached to the hubs for limiting axial movement of the hubs in respect of each other.

3,698,209
JOINT DEVICE
Kazuo Moro, 55, Higashi Asakawa-machi, Tokyo, Japan
Filed Jan. 25, 1971, Ser. No. 109,517
Int. Cl. F16d 3/64
U.S. Cl. 64—12 **6 Claims**



A joint device adapted to be used particularly in small apparatuses. Rotation torque of driving shaft is transmitted from a wheel fixed to said shaft to an opposed wheel fixed to driven shaft through a resilient wire alternately hung to respective one of said wheels substantially along their periphery.

3,698,210
PATTERN MECHANISM FOR KNITTING MACHINES
Rudolph G. Anke, Reading, and James D. Moyer, Wyomissing, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 14, 1970, Ser. No. 80,544
Int. Cl. D04b 15/00
U.S. Cl. 66—155 **1 Claim**



Pattern mechanism for a circular knitting machine, the pattern mechanism including a cam drum, first and second index-

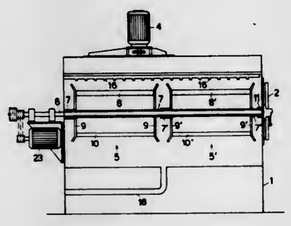
ing means movable through indexing strokes to successively index the cam drum during first and second rotations of pairs of rotations of the needle cylinder of the machine, and means for controlling the indexing strokes of the first and second indexing means whereby the indexing strokes of both indexing means are prevented during the pairs of cylinder rotations, indexing strokes of both indexing means are permitted during a pair of cylinder rotations, or the indexing stroke of one of the indexing means is permitted in one cylinder rotation and the indexing stroke of the other indexing means is prevented in the other cylinder rotation of the pair.

3,698,211

MACHINE FOR WASHING AND TREATING WITH FINISHING AGENTS YARNS OF NATURAL, ARTIFICIAL AND SYNTHETIC FIBERS WOUND ON A REEL

Felice Garzotto, Valdagno, Italy, assignor to Rimar S.p.A., Trissina (Vicenza), Italy

Filed Jan. 22, 1971, Ser. No. 108,861
Claims priority, application Italy, Feb. 19, 1970, 20818 A/70
Int. Cl. B05c *8/02, 11/10*
U.S. Cl. 68—19.2 **6 Claims**



A machine for washing and/or applying finishing agents onto yarns in form of skeins, which prevents any type of friction to the yarn fibers. The machine substantially comprises one or more cells in each of which is rotatably mounted at least one reel on which the skeins of yarns are disposed. At the upper part of each cell a row of nozzles is provided for spraying the washing or treatment liquid and a longitudinal slot for blowing an air flow drying the yarns. Each reel comprises a number of spokes one half of which are movable and alternately disposed between two adjacent stationary spokes on which are pivotedly and resiliently mounted. An example of a complete treatment cycle of the machine is also given.

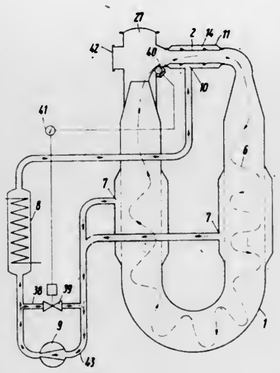
3,698,212

APPARATUS FOR WET TREATMENT OF WARP-ROPE OR BOARD-SHAPED TEXTILE GOODS

Bernhard Ameling, and Siegfried Kaup, both of Coesfeld, Germany, assignors to Firma B. Thies, Coesfeld, Germany

Filed Nov. 25, 1970, Ser. No. 92,666
Claims priority, application Germany, Nov. 28, 1969, P 19 59 743.4
Int. Cl. B05c *11/124*
U.S. Cl. 68—178 **4 Claims**

An apparatus for wet treatment of warp-rope, or board-shaped textile goods, which comprises a U-shaped tube having at least two leg members, to constitute a treatment container. A drive set is provided which connects the leg members, and is adapted to circulate therein the textile goods. A liquid pump feeds liquid to the drive set and has a suction side and a pressure side. A connection conduit is disposed between the suction side and the pressure side of the pump, and a control member is provided in the connection conduit and serves the control of the quantity of the liquid to be fed.

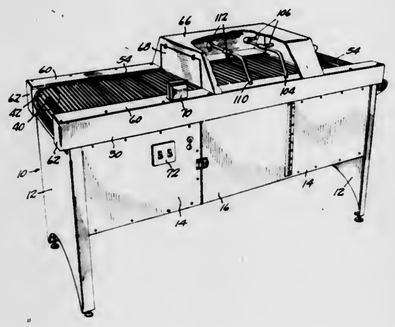


3,698,213

APPARATUS FOR TREATING DUST MOPS, DUST CLOTHS, AND RUGS

Fred A. Mann, Jr., 504 North Nottawa Street, Sturgis, Mich.

Filed Feb. 25, 1971, Ser. No. 118,728
Int. Cl. B05c *9/04, 11/10*
U.S. Cl. 68—205 R **6 Claims**



Apparatus for treating fabric and other articles by spraying liquid thereon while advanced by an apertured flexible conveyor belt through a spray-confining hood. Spray precipitate is collected on a collection pan below the conveyor and discharged into a sump. A liquid circulating system is connected to a liquid container and has valve means therein responsive to means sensing the presence of articles on the conveyor, valved normally closed bypass means for supplying spray means, and normally closed pressure responsive valve means for draining liquid in the system to the sump. The sump has valved liquid return means connected to the system.

3,698,214

CONTINUOUS WASHING APPARATUS

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Nov. 25, 1969, Ser. No. 879,764
Int. Cl. B05c *5/00*
U.S. Cl. 68—205 R **38 Claims**



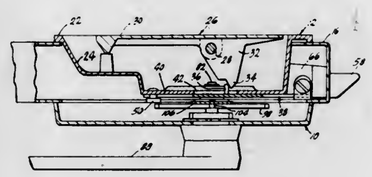
Method and apparatus for loosening soil from a mass of pervious cloth in which wash solution is applied to the rolls in the form of a plurality of reciprocable cascades to maintain the surfaces of the pervious cloth wet for a time sufficient to saturate the same; excess wash solution is continually drained from the mass of tightly wound rolls. The cloth articles are transported through a washing apparatus on a conveyor supported by a plurality of shafts extending through movable side walls of the washing apparatus and supported on bearings outside of the washing apparatus to prevent contact of the wash solution with the bearings supporting the shafts, orbital movement of the movable walls imparts similar orbital movement to the conveyor supported by the shafts to impart cycloidal movement to the cloth articles transported by the conveyor. The cloth articles are rinsed by directing a mist of gas and rinse liquid along a path normal to the articles therethrough to prevent puddles of the rinse liquid and the wash solution from forming thereon; thereafter, liquids are expressed from the articles by feeding the articles onto the side of a freely rotatable cylinder and therearound and upwardly between the cylinder and an associated roller, the cylinder and the roller are urged toward each other to press the articles therebetween to express the liquid therefrom. A dryer completes the drying of the articles.

3,698,215

DOOR LOCK

John A. Truhon, 16514 Blackstone Avenue, Detroit, Mich.

Filed April 7, 1971, Ser. No. 132,158
Int. Cl. E05b *5/00, 65/02*
U.S. Cl. 70—152 **12 Claims**



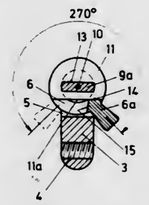
A door lock having a recessed door handle at the outer side thereof, the thickness of the lock being maintained at a minimum so that it can be used on relatively thin doors (for example, the exterior door of a mobile home) by forming numerous components of the lock, including the bolt, as relatively thin flat metal stampings. The bolt is adapted to be retracted by actuating an exterior handle mounted within a recessed outside escutcheon plate or by an inside handle mounted on an inner escutcheon plate. The door lock includes a lock cylinder key operated from the exterior and, if desired, by a push button from the inside for enabling or preventing retraction of the lock bolt.

3,698,216

AN INSERTABLE CYLINDER FOR A DOOR LOCK

Ernest Keller-Volper, 6, Querstrasse, 8805 Richterswil, Switzerland

Filed Feb. 11, 1971, Ser. No. 114,569
Claims priority, application Switzerland, Feb. 13, 1970, 2146/70
Int. Cl. E05b *17/04*
U.S. Cl. 70—380 **6 Claims**



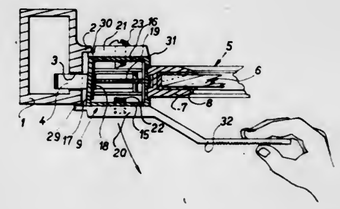
A cylinder for a door lock is comprised of a casing insertable into the lock and provided with two spaced portions separated by a slot and each carrying a rotatable drum. The spaced portions are integral with a solid, depending limb which is provided with a threaded opening for securing the cylinder in the lock. A rotatable actuator disk with a radially projecting cam is supported in the slot and is driven in rotation by a carrier disk in the form of a circular segment.

3,698,217

DOOR LOCK GUARD

Fernand Roy, 405 Vanier Street, Ville Brossard, Quebec, Canada

Filed June 22, 1971, Ser. No. 155,488
Claims priority, application Canada, May 25, 1970, 113850
Int. Cl. E05b *9/08*
U.S. Cl. 70—451 **11 Claims**

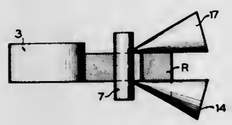


A guard system for door locks mainly used in metal doors. The guard system comprises two elongated registering plates applied on both sides of the door around the door lock and secured together by means of through bolts. At least one of the plates has a key hole registering with the key hole of the lock barrel and an elongated slot at the inside face of the plate receiving an elongated protruding portion of the lock barrel to positively prevent rotation and unscrewing of the lock barrel. The plate on the door opening side has a tongue overlapping the joint between the door frame and the door itself to prevent access to the lock bolt. The plate on the opposite side of the door has a tongue inserted between the door and the door stopper, in the closed position of the door, to prevent removal of said plate by an unauthorized person locked inside the premises. Preferably, one or the other, or both of the plates, form a handle to open the door. The system considerably diminishes the possibilities of tampering with the door lock mechanism.

3,698,218
ROLLING MILLS

Eugen Wieting, Hamm in Westphalia, Germany, assignor to J. Banning Aktiengesellschaft, Hamm, Westfalen, Germany

Continuation of Ser. No. 845,819, July 29, 1969, abandoned.
This application June 18, 1971, Ser. No. 154,659
Claims priority, application Germany, July 31, 1968, P 17 52 887.9
Int. Cl. B21b 37/00
U.S. Cl. 72—10 9 Claims

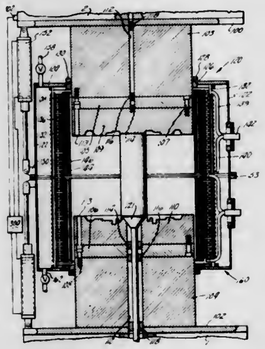


A four-roll ring rolling apparatus with a pair of rolls for rolling the two curved ring faces and a pair of conical rolls which roll the radial faces of the ring and can be displaced in relation to the ring radially. One roll of each pair of rollers can be fed towards the other radially. At least one roll of each roll pair can be driven. The conical roll pair of rolls is arranged to be automatically displaced in accordance with the increase in the external diameter of the ring owing to the displacement of a feeler roller or the like sensing this diameter at a position adjacent to the pair of rolls, so that it always acts on the radial ring face. The speed of the displacement drive for the conical-roll pair is controlled so as to correspond at least approximately to the speed of increase in ring or hoop diameter. The speed of rotation of the conical-roll pair should be capable of being changed in accordance with the movement of the ring or hoop in relation to the conical rolls in a stepless manner.

3,698,219
APPARATUS FOR FORGING

Joseph B. Moore, Tequesta, and Roy L. Athey, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 10, 1971, Ser. No. 141,528
Int. Cl. B21j 1/06, 13/10
U.S. Cl. 72—38 17 Claims

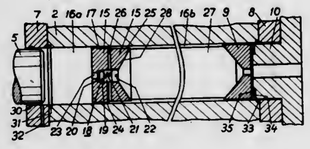


Forging means are shown wherein a heating device is located around the dies so that the heat can be controlled while the press is being operated. Means are provided to place an inert atmosphere or vacuum around the dies while they are forging a billet. Chambers are located adjacent the forging means to preheat one billet while another billet is being forged and also to insert and remove a billet without losing much of the heat or forging atmosphere.

3,698,220
PRESS FOR HOT HYDROSTATIC EXTRUSION

Jan Nilsson, and Hans Larker, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 20, 1971, Ser. No. 145,183
Claims priority, application Sweden, May 26, 1970, 7171/70
Int. Cl. B21d 25/06
U.S. Cl. 72—60 3 Claims



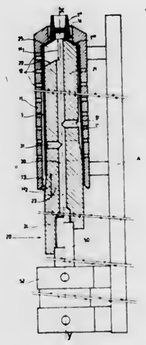
A press for hot hydrostatic extrusion of a billet, has a stand, a pressure chamber axially movable in the stand to engage a die mounted in one end against a die support carried by the stand, a punch slidable in the pressure chamber to raise a pressure medium in the pressure chamber to extrusion pressure, and a billet holder slidable in the chamber for pressing the billet against the die during sliding movement of the pressure chamber to closing position.

In order to prevent contact between the die support and the die until extrusion is about to begin, with consequent cooling of the billet which interferes with the extrusion, an annular canted spring is arranged in a groove in the face of the die support opposite the die so as to prevent contact therebetween during closing movement of the pressure chamber.

3,698,221
APPARATUS FOR TAPERING FLEXIBLE METAL TUBES

Roger Couland, Fontenay-aux-Roses, France, assignor to Societe de Conditionement en Aluminum, Paris, France

Filed June 22, 1971, Ser. No. 155,540
Claims priority, application France, June 26, 1970, 7023778
Int. Cl. B21d 26/04
U.S. Cl. 72—62 10 Claims

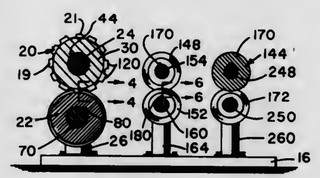


Apparatus for converting flexible metal cylindrical tubes into nestable tapered tubes including a mandrel having a cylindrical portion shorter than the tube and a frustoconical portion whose largest diameter is equal to or greater than the filling opening of the tube and in which air is blown through ducts in the mandrel to force the tube against the inner surface of a matrix while the mandrel advances and the frusto-conical portion compensates for the widening of the bottom opening and the shortening of the length of the tube.

3,698,222
PERFORATING MACHINE

Darrell N. Blake, 143 Glen, Council Bluffs, Iowa

Continuation-in-part of Ser. No. 673,391, Oct. 6, 1967, abandoned. This application Oct. 13, 1969, Ser. No. 871,443
Int. Cl. B21d 13/04, 28/36
U.S. Cl. 72—129 5 Claims

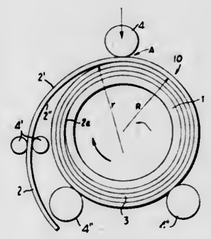


A machine for manufacturing corrugated perforated material having successive sets of corrugation forming roll means preceded or succeeded by rotating punch and die roll means cooperatively correlated with the corrugated roll means in a manner for forming openings in material in positions such that the openings will have side flanges extending outwardly from the crests of the finished corrugated material, the punch roll being formed of discs separated by spacers, each disc having a special shape for the sharpening of punches projecting therefrom.

3,698,223
APPARATUS FOR SPIRALLY WINDING STRIP METAL

Hideo Sagara, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Ciyoda-ku, Tokyo, Japan

Division of Ser. No. 667,547, Sept. 13, 1967, Pat. No. 3,528,162. This application Dec. 16, 1969, Ser. No. 888,094
Claims priority, application Japan, Sept. 27, 1966, 41/63598
Int. Cl. B21c 47/00
U.S. Cl. 72—146 2 Claims

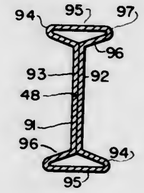


Apparatus for spirally winding strip metal comprising a pressure roll for urging the strip metal into a coil, feed rolls for feeding the strip material to the pressure roll and combining with the pressure roll to increase the radius of the strip material immediately preceding its application to the coil, and means for supporting the coil as it is wound and for maintaining the coil in contact with the pressure roll.

3,698,224
PROCESS FOR THE PRODUCTION OF STEEL STRUCTURAL SHAPES

Adam Eric Saytes, Maracaibo, Venezuela, assignor to Siderurgica Occidental C.A., Maracaibo, Venezuela

Continuation of Ser. No. 821,843, May 5, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,603
Int. Cl. B21d 47/00
U.S. Cl. 72—178 1 Claim

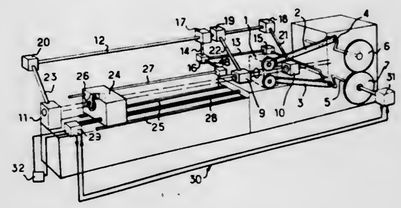


Steel structural shapes such as "H," "I," and channel beams are cold fabricated by progressively deforming welded seam steel tubing made from hot or cold rolled steel in a welded tube mill, the structural shapes being closed curves in section and having web portions of two adjacent thicknesses with flange portions at each end thereof.

3,698,225
INTERMITTENTLY ACTING ROLLING MILL

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies), Bugeaud, Paris, France

Filed Dec. 29, 1969, Ser. No. 888,659
Int. Cl. B21b 17/10
U.S. Cl. 72—208 8 Claims



Intermittently acting rolling mill comprising continuous rotary drive means, a roll cage which is reciprocated longitudinally of the work, means by which said work is intermittently rotated, and means for converting the continuous rotary movement of said drive means to reciprocating movement to drive said cage and intermittent rotary movement to turn said work in synchronism with the movement of said cage.

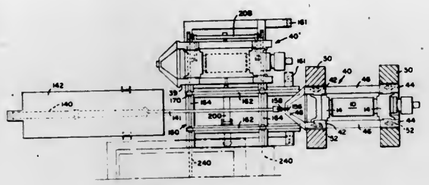
3,698,226
ROLL CHANGERS

Werner W. Elbe, Pittsburgh, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Filed July 1, 1971, Ser. No. 158,930
Int. Cl. B21b 31/08
U.S. Cl. 72—239 30 Claims

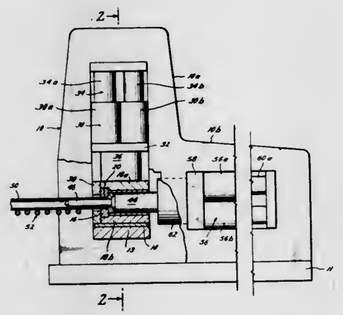
A roll changer for rapidly changing the work rolls of a rolling mill particularly designed for incorporation into existing mills. The roll changer includes a cartridge adapted to support the work rolls during a roll changing operation and pro-

vided with rotatable wheels which are turned by a rotatable rail section on a side shifting platform so that the work roll



carrying cartridge can be moved into and out of the mill along a first pair of rails and transversely on a second set of rails during a side shifting operation.

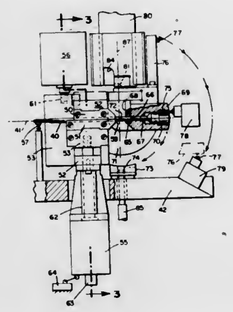
3,698,227
EXTRUSION PRESS AND METHOD
Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Sept. 14, 1970, Ser. No. 71,872
Int. Cl. B21c *23/00, 27/00*
U.S. Cl. 72—263 **9 Claims**



The press includes a die assembly having a die and a horizontally split can. To load a preform of material to be extruded, the upper half of the can is moved upwardly far enough to permit the preform to be moved horizontally to a position between the two halves of the can and then downwardly into the lower half of the can. The upper half of the can is then moved back into engagement with the lower half to enclose the preform and confine it as the preform is extruded horizontally through the die assembly.

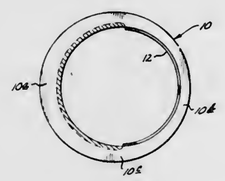
3,698,228
ROD FORMING PROCESS AND APPARATUS
William G. Campbell, Chalfont, Pa., assignor to Hurst Performance Inc., Warminster, Pa.
Filed Dec. 1, 1970, Ser. No. 94,095
Int. Cl. B21d *11/04, 31/00*
U.S. Cl. 72—306 **21 Claims**

A process and apparatus for performing same are disclosed for making a uniform bend of original rod cross-section or larger than original cross-section, and coining a circular flange on the rod adjacent to the bend, without detrimental folding between flange and rod, in one clamping cycle, by first bending the rod about a pivot point displaced from the center line of the rod so as to produce with a minimum of tensile stresses a bend with a bulge of excess rod material at the point of the bend, and then pressing the rod at the bend to coin an annular flange partially from such excess material and partially from the bent rod extension, leaving the rod of a uniform diameter around the entire bend. The supporting structure which holds the rod during the pressing step is moved in the direction of



the press force in coordination with the application of the press force, in order to take up material in the length of the bent rod extension while forming the flange, and to avoid bending anywhere along the rod except at the desired bend.

3,698,229
REDUCING TUBE-WALL ECCENTRICITY IN TUBE INTERMEDIATES
Ivan Baksay, 1113 West 29th Street, Albany, Oreg.
Filed May 17, 1971, Ser. No. 143,830
Int. Cl. B21c *37/30*
U.S. Cl. 72—341 **3 Claims**

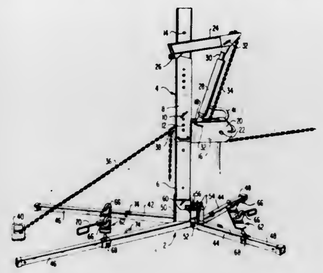


A method of correcting eccentricity in the inner and outer circumferential surfaces bounding a tube wall. First high and low wall thickness regions are determined. Material then is removed from the regions of high wall thickness. Subsequently the tube wall is worked, to remove ovality in the cross section introduced by the material removal, thus to reintroduce roundness to the tube.

3,698,230
PULLING POST BASE
Ervin Buske, P.O. Box 190, Gowrie, Iowa
Filed June 28, 1971, Ser. No. 157,505
Int. Cl. B21d *9/14*
U.S. Cl. 72—386 **11 Claims**

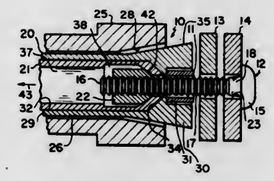
For use with a pulling post of the type used for applying tension via a chain to a damaged automobile, a base having retractable rollers is formed of two V-shape sections pivoted together at their apexes. One of the sections has a post socket. The sections are spring biased to pivot relative to one another

and normally form an angle. When tension is applied via the chain, the base sections pivot contra to the spring bias and



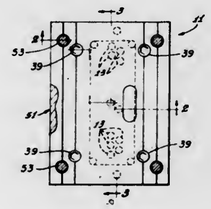
flatten out against the floor. Thus, all slack is removed from the chain before strong pulling force is applied.

3,698,231
FASTENING TOOLS
Samuel B. Davis, Jr., New Galilee, Pa., assignor to Vits Maschinenbau GmbH, Langenfeld (Rhineland), Germany
Filed April 22, 1971, Ser. No. 136,346
Int. Cl. B21d *9/05*; **B23p** *11/00*
U.S. Cl. 72—391 **5 Claims**



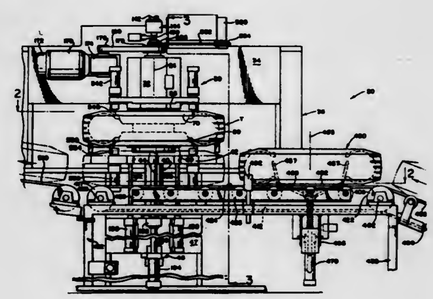
A crimp lock fastener tool for joining a swageable collar to a threaded lockbolt includes a stationary housing and a floating split collet which swages the collar to the threads of the lockbolt and severs the remainder of the lockbolt at a point adjacent the collar. The swaging and simultaneous shearing results from the interaction of the inclined surfaces of the stationary housing and the split collet.

3,698,232
TOOLHOLDER
Paul Vinson, Orange, Calif., assignor to Vinson Industries, Inc., Orange, Calif.
Filed July 9, 1970, Ser. No. 53,509
Int. Cl. B21d *37/00*; **B21k** *21/00*
U.S. Cl. 72—482 **22 Claims**



A toolholder for mounting inner and outer telescoping tools comprising a body having a cavity therein and structure for mounting the outer tool. A member is provided in the cavity and the inner tool is connected to the member for movement therewith. The member can be retained in a working position in which the inner tool is in position to perform a work operation and a grinding position in which the inner tool is withdrawn from the working position.

3,698,233
APPARATUS FOR PROCESSING CURED TIRES
William D. Braden, Stow; Richard P. Marshall, Tallmadge; Richard J. Greenborn, Stow, and Arnold S. Buser, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 7,489, Feb. 2, 1970, Pat. No. 3,656,343.
This application Jan. 17, 1972, Ser. No. 218,180
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **3 Claims**



Apparatus for processing tires, in particular for discovering anomalies therein comprising means for chucking, inflating, and rotating a tire thereon about a vertical axis, means for operating on the tire chucked by moving a load roll to apply a radial load to the tire. The roll is mounted on a delectable yoke secured on a carriage movable to and away from the tire. Means supporting the tire first prelocates and centers the tire, then moves the tire into coaxial registry with the chucking means.

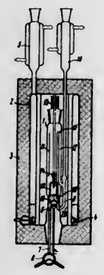
3,698,234
PROCESS FOR NONDESTRUCTIVE INSPECTION
Sidney Allinikov, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 18, 1970, Ser. No. 90,813
Int. Cl. G01n *25/18*
U.S. Cl. 73—15 **8 Claims**

A substituted 1,3,3-trimethylindolinobenzopyrylospiran is mixed with a nonpigmented, organic-soluble, resin base paint or with an organic-soluble, resin base paint containing a small amount of white pigment and a thin coat of the mixture is applied to the surface of a laminated article. The coating is then activated by ultraviolet light. Activation causes the coating to assume a color. After activation, the coating is heated to a temperature of approximately 125° F. Upon heating, any portion of the coating directly over a weakly bonded or nonbonded portion of the laminated article will return to its original colorless or white state. Any portion of the coating directly over a strongly bonded portion of the laminated article will retain its color. Thus, this invention is useful in that it permits the detection of weakly bonded or nonbonded portions of laminated articles.

3,698,235
EBULLIOMETER

Nikolai Petrovich Mikhailov; Lev Moiseevich Rapoport, and Samuil Zalmanovich Taits, all of Moscow, U.S.S.R., assignors to Institut Organicheskoi khimii Im. N.D. Zelinskogo AN SSSR, Moscow, U.S.S.R.

Filed June 11, 1970, Ser. No. 45,353
Int. Cl. G01n 25/08
U.S. Cl. 73—17 A 2 Claims

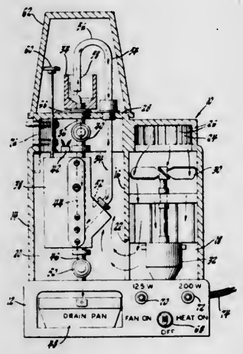


An ebulliometer having an air lift in the form of a chamber separated by at least one partition into sections having outlet nozzles for feeding a vapor-air mixture of a solvent and a solution of a substance under investigation onto a device for measuring the temperature difference between the boiling points of the solvent and the solution, the nozzles being so arranged that each of them communicates with one section.

3,698,236
FLUID VAPORIZATION TESTER WITH HOT AIR PURGE AND METHOD

Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1971, Ser. No. 110,853
Int. Cl. G01n 25/02
U.S. Cl. 73—17 A 3 Claims

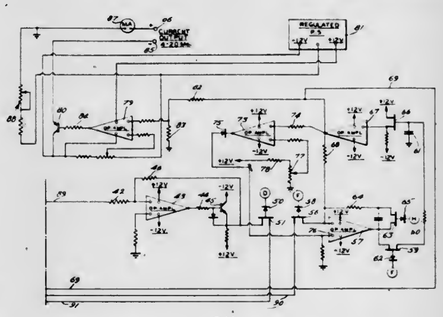


A visual fluid vaporization indicator in which a sample of the test fluid is placed in a boiler, heated to cause a percolating action until a fluid column surges through the visual indicator tube at the vaporization temperature of the fluid, this temperature being measured and considered to be the boiling point of the fluid sample. After the test is completed, a drain valve is opened to drain the fluid sample from the boiler, and a cooling fan is energized to blow air to cool the boiler, hot air having passed over the boiler being directed through the boiler and the visual indicator tube and out the drain valve to purge the system of the remains of the fluid which was tested, as well as cooling the boiler, prior to inserting another fluid sample.

3,698,237
MEMORY CIRCUIT FOR CHROMATOGRAPHS

Charles F. Rhodes, Jr., Richardson, Tex., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Nov. 20, 1970, Ser. No. 91,375
Int. Cl. G01n 31/08
U.S. Cl. 73—23.1 8 Claims

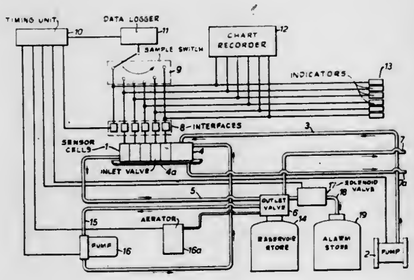


A solid-state circuit useful with a two-component vapor phase chromatograph provides and stores a voltage representative of one of the two chromatograph peaks, and, in addition, obtains and stores a voltage representative of the ratio between the two peaks. The circuit includes an arrangement for limiting the ratio to some adjustable value, which enables the full scale of the recorder to be utilized.

3,698,238
FLUID TESTING APPARATUS

Reginald Victor Wall, and Harold Rodney Sven Page, both of Dorset, England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Feb. 9, 1971, Ser. No. 113,971
Int. Cl. G01n 11/00
U.S. Cl. 73—53 5 Claims

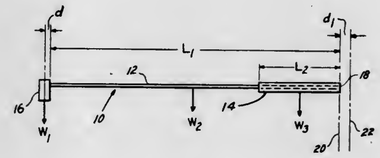


Fluid testing apparatus comprising a number of sensor cells serially connected in a fluid pipe-line each responsive to a particular characteristic of a fluid passed therethrough and a store for calibration liquid, from which calibration liquid is released to the sensor cells, consequent upon the operation of a valve. The apparatus may also comprise a further valve which is operated when fluid of a particular characteristic is detected so that this fluid can be stored for subsequent analysis.

3,698,239
DYNAMICALLY MATCHED SET OF GOLF CLUBS

James L. Everett, III, 743 Mancill Road, Strafford, Pa.

Filed Oct. 14, 1970, Ser. No. 80,575
Int. Cl. G01m 1/12
U.S. Cl. 73—65 2 Claims

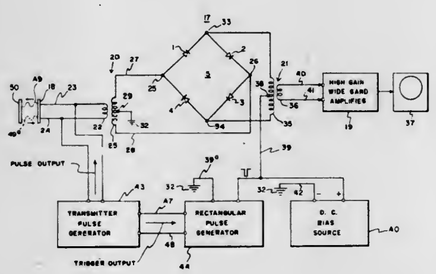


A dynamically matched set of golf clubs having identical moments of inertia with respect to a common swinging axis and, starting with a selected favored club, the method of determining by calculation from simple length and weight parameters, the head weights required for dynamically matching the other clubs of the set to the favored club. Use is made of the fact that the moment of inertia of a conventional golf club with respect to a swinging axis can be represented by the summation of the moments of inertia of the grip, the shaft and the head components.

3,698,240
ELECTRONIC CIRCUIT FOR PREVENTION OF RECEIVER PARALYSIS IN ULTRASONIC ECHO RANGING

Otto R. Gericke, Medfield, Mass., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 29, 1971, Ser. No. 184,741
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 3 Claims

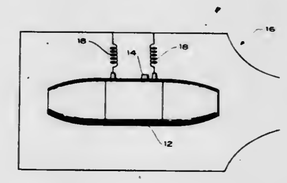


A pulse-echo instrument wherein a balanced modulator is d.c. biased to pass a.c. signals is coupled between the transducer and wide-band amplifier of the instrument. The balanced modulator is also biased by a rectangular pulse having the amplitude and width of the excitation pulse applied to a transducer and the input of the balanced modulator, but of opposite polarity to the d.c. bias. This rectangular pulse is applied to the balance modulator coincidentally with the excitation pulse whereby the output of the balanced modulator is held at ground optential for the duration of the excitation pulse thereby preventing current flow in the output of the balanced modulator during the duration of the excitation pulse whereby paralysis of the wide-band amplifier by the excitation pulse is prevented.

3,698,241
VIBROACOUSTIC TEST METHOD

Peter Boucilin, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 1, 1971, Ser. No. 119,979
Int. Cl. G01h 1/00; B06b 1/00
U.S. Cl. 73—69 1 Claim

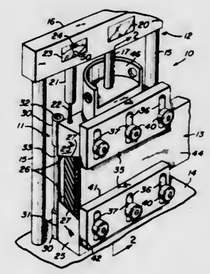


Vibroacoustical method for vibration qualification of weapon systems to determine structural integrity, which comprises exposing externally carried aircraft store to a controlled acoustic environment which develops the operational vibration environment.

3,698,242
ENDLESS POWER TRANSMISSION BELT TESTING MEANS

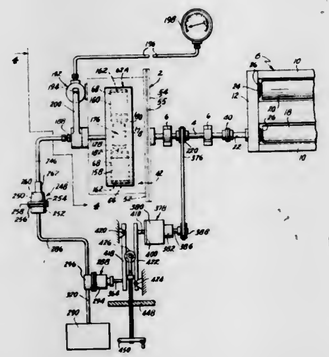
Donald E. Clinkenbeard, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed July 15, 1971, Ser. No. 162,889
Int. Cl. G01n 3/08
U.S. Cl. 73—94 14 Claims



An endless power transmission belt holding fixture and apparatus using the same is provided wherein the fixture has a pair of supports each having an inclined bearing surface and the bearing surfaces correspond in inclination to the inclination of the sides of a power transmission belt to be held in the fixture. The fixture has means guiding the supports for movement towards and away from each other and the belt is retained from moving out of the fixture in a direction transverse the inclined bearing surfaces whereupon the fixture enables a power transmission belt to be compressed in an edgewise manner to thereby determine the amount such belt is compressed upon applying a particular compressive force thereagainst.

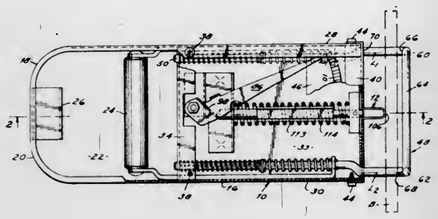
3,698,243
APPARATUS FOR CONTROLLING THE CHARACTERISTICS OF FLUID PRESSURE OPERATED FRICTION TYPE POWER ABSORPTION DEVICES
Edwin L. Cline, Pasadena, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.
Division of Ser. No. 559,490, July 22, 1966, Pat. No. 3,453,874. This application July 3, 1969, Ser. No. 839,005
Int. Cl. G01l 3/16
U.S. Cl. 73—135 12 Claims



Apparatus for controlling a rotary power absorber while absorbing driving torque produced by a prime mover. The power absorber includes a housing containing fluid pressure operated brake elements that are actuatable hydraulically to provide retarding force. The control means for the brake applying means includes a governor-controlled air valve and a transducer which converts air pressure into hydraulic pressure for actuating the brake elements. The governor is driven at a speed proportional to the speed of rotation of the prime mover and actuates the air valve so that fluid pressure is applied to the brake elements in direct proportion to the speed of the prime mover. An adjustable linkage is interposed between the governor and the air valve for controlling the maximum retarding force at various engine speeds. The linkage includes two parallel bars pivoted at opposite ends, with the governor acting on the free end of one bar and the free end of the other bar acting on the air valve. A roller is positionable at any desired point along the length of the bars to vary the ratio of air valve movement to governor movement, as desired, to correspondingly vary the retarding force. The retarding force is increased and decreased at a rate faster than the changes in speed and torque of the prime mover to avoid stalling of the prime mover as frequently occurs when a constant load is sought to be applied to the prime mover and there is a momentary failure in power of the prime mover.

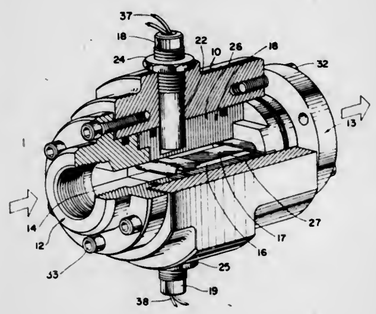
3,698,244
BELT TENSION GAUGE
Roy Deming, Royal Oak, Mich., assignor to Kent-Moore Corporation, Warren, Mich.
Filed Dec. 17, 1970, Ser. No. 99,006
Int. Cl. G01l 5/04
U.S. Cl. 73—144 7 Claims

A belt tension gauge for automotive accessory drive belts clamps a length of the belt at spaced apart locations along the belt and deflects the clamped length over a spring-loaded plunger operating a lazy hand pointer sweeping a scale face



with the amount of plunger depression, when the belt is clamped, being a function of belt tension reflected by the pointer position relative to the scale.

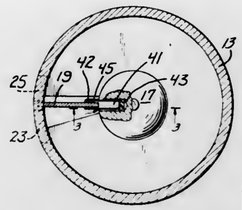
3,698,245
FLUID OSCILLATOR FLOWMETER
George C. McNabb, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed April 14, 1970, Ser. No. 28,331
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 19 Claims



A flowmeter for measuring liquid or gas flow based on flow-induced resilient oscillation of a reed in the flow passage of the meter. An output sensor responds to the oscillations to produce a frequency output. The oscillations are produced by alternately retarding and accelerating each of two parallel flow paths. Between these flow paths is mounted a vane, resiliently spring at its downstream end, having a bulbous nose piece at its upstream end, and with a significant 'sail' area in its middle portion.

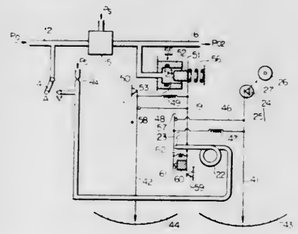
3,698,246
THRUST PISTON FLUID METERS
Howard E. Rittenhouse, 919 South 19th Street, Rogers, Ark.
Filed Sept. 24, 1971, Ser. No. 183,390
Int. Cl. G01f 3/12
U.S. Cl. 73—258 9 Claims

A thrust piston positioned in the ball portion of the disc of a nutating disc liquid measuring device whereby the said piston is actuated by incoming pressure to force the piston axially against a partition plate to counteract axial thrust imposed on



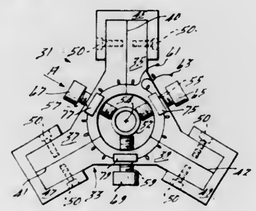
the ball and disc and also absorb any side thrust by straddling the said plate. A modified embodiment utilizes a resilient means to actuate the thrust piston.

3,698,247
AUTOMATIC-MANUAL CHANGE-OVER SWITCH CAPABLE OF PROVIDING PRESSURE INDICATION
Yoshikuni Doki, Tokyo, Japan, assignor to Honeywell Inc., Fort Washington, Pa.
Filed June 9, 1971, Ser. No. 151,227
Int. Cl. G01l 7/00
U.S. Cl. 73—388 BN 1 Claim



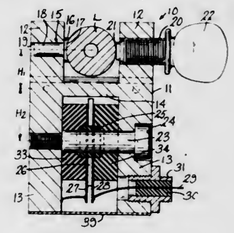
In a manual operation, the ultimate pressure at an automatic operation is stored by the position of a pointer. When the pointer is set on any desired pressure position, the back pressure of a nozzle becomes the input pressure to a pilot valve to feedback the back pressure to a beam to balance the beam.

3,698,248
PRESSURE RESPONSIVE TRANSDUCER
Anthony G. Vasek, Pontiac, Mich., assignor to The Bendix Corporation
Filed May 15, 1970, Ser. No. 37,716
Int. Cl. G01l 9/04
U.S. Cl. 73—398 AR 15 Claims



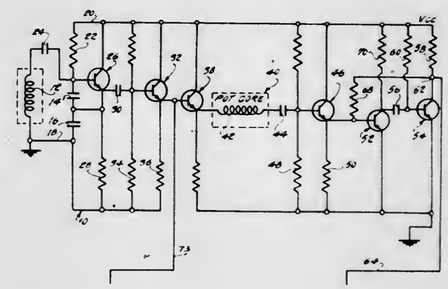
A clamp-on pressure responsive transducer for measuring changes in pressure exerted on vibrating enclosures of regular cross section by detecting changes in cross sectional area of the enclosure which are caused by pressure and distinguishing them from variations in cross sectional geometrical shape of the enclosure which are caused by vibration. A plurality of sensors are positioned around the enclosure and pressure changes cause uniform changes in each sensor while vibration causes different changes in the sensors. These changes are detected and utilized to produce an output indicative of pressure changes independently of vibration of the enclosure.

3,698,249
FLUID PRESSURE MONITORING SYSTEM
Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.
Filed Aug. 3, 1970, Ser. No. 60,429
Int. Cl. G01l 9/08
U.S. Cl. 73—398 R 39 Claims



This disclosure relates to a transducing apparatus adapted to sense fluid pressure in a line by sensing expansion of the line. A transducer mounting member which is generally H-shaped defines a line receiving passage through one pair of legs and supports a transducing element between the other pair of legs. Stress applied to the mounting member by the line is detected by the transducer.

3,698,250
ELECTRONIC SENSOR FOR DEVELOPING A VOLTAGE SIGNAL PROPORTIONAL IN MAGNITUDE TO DISPLACEMENT
James I. Berry, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 13, 1970, Ser. No. 11,238
Int. Cl. G01p 15/08
U.S. Cl. 73—517 5 Claims



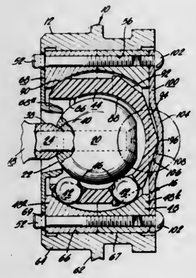
A displacement sensing electronic circuit comprising an oscillator connected to the input of a resonant circuit, said resonant circuit including an inductance element having relatively displaceable parts whereby the inductance may be changed in proportion to displacement of the parts to vary the

phase relationship between the oscillator output and the resonant circuit output, and a bistable multi-vibrator circuit adapted to receive the output signals of the oscillator and the resonant circuit, the duty cycle for the output signal for the multi-vibrator circuit being proportional to the displacement of the relatively movable parts of the inductance element.

3,698,251
THRUST RETAINER FOR SPHERICAL RACE BALL BEARINGS

Everett R. Silvia, Huntington Station, N.Y., assignor to AMBAC Industries, Inc., Garden City, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,203
Int. Cl. G01c *19/16*; F16c *31/06*
U.S. Cl. 74—5 R **13 Claims**

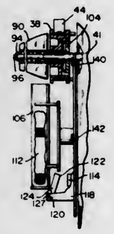


A spherical bearing assembly for gyroscopes and the like including means for minimizing the frictional effects on the ball retainer of acceleration forces. Said means includes a thrust plate on the outer bearing race having an inner spherical surface concentric with the spherical bearing surfaces and centered on the axis of rotation of the outer bearing race. An axially centered spherical portion of the retainer having a radius less than that of the spherical surface of the thrust plate is adapted to cooperatively engage the thrust plate spherical surface to transmit thereto axial components of the thrust forces substantially along the axis of rotation of the outer race. For minimizing frictional thrust forces in both axial directions, an inner face of the retainer is adapted to cooperatively engage a spherical surface of the inner ball race assembly concentric with the spherical bearing surfaces at a point on or closely adjacent the axis of rotation of the outer race.

3,698,252
ESCAPEMENT MECHANISM

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Filed March 9, 1971, Ser. No. 122,471
Int. Cl. G04b *15/00*
U.S. Cl. 74—1.5 **9 Claims**

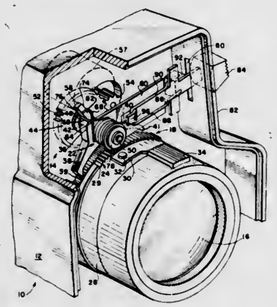


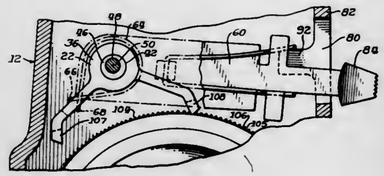
A driven mobile having a plug secured to a first shaft with a plurality of arms radially extending from the plug. Objects of interest are secured to each arm and means is provided for allowing each object to oscillate about the arm to which it is attached as said first shaft is rotated. A spring motor is provided for supplying energy for rotating the first shaft. An escapement mechanism controls the rotation of the first shaft and includes a tube that is rotatable in conjunction with the first shaft. The tube is enclosed at its ends and has a pair of magnets therein. The magnets have their south poles facing each other with the north poles diametrically opposed to each other. The magnets can move within the tube. A lever is positioned adjacent the tube bottom when the tube is vertical, is rotatable about an axis to a vertical position and includes a stop. The stop prevents rotation of the tube when the lever is in the vertical position. A magnetic means biases the lever to the vertical position. If the tube is in a vertical position with the magnets therein at the top of the tube, the lever will be in a vertical position as a result of the magnetic biasing means and the stop will prevent rotation of the tube. The magnets in the tube will descend to the bottom of the tube under the influence of gravity and the bottommost magnet overcomes the magnetic biasing means and any frictional forces and causes the lever to be moved out of its vertical position. Consequently, the tube and first shaft are free to rotate. After the tube is rotated a few degrees, the magnetic biasing means then moves the lever to a vertical position and the cycle is again repeated after the tube has come to a vertical position.

3,698,253
POWER TRANSMISSION MECHANISM

Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 2, 1969, Ser. No. 854,474
Int. Cl. F16h *27/02*
U.S. Cl. 74—129 **20 Claims**



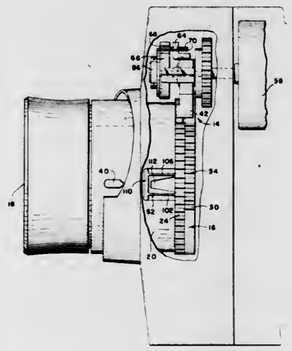


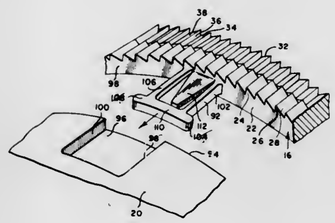
A power transmission mechanism for converting continuous rotary motion into intermittent rotation is provided. The power transmission mechanism is used to axially move at least one lens element of a zoom lens in a forward or backward direction with a smooth, uniform zooming action. The power transmission mechanism comprises a reversibly rotatable body which transmits power from a continuously rotating power source, and has a plurality of ratchet teeth on its outer periphery. A ratchet pawl is mounted at a point spaced from the ratchet teeth of the reversibly rotatable body and is movable between an operative position where the ratchet pawl is engageable with the ratchet teeth and an inoperative position where the ratchet pawl cannot engage with the ratchet teeth. Operating means are connected to the ratchet pawl to cause the ratchet pawl to intermittently engage the ratchet teeth and rotate the reversibly rotatable body.

3,698,254
POWER TRANSMISSION MECHANISM

Gordon E. Bradt, Wilmette, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 2, 1969, Ser. No. 854,408
Int. Cl. F16h *27/02*
U.S. Cl. 74—143 **8 Claims**



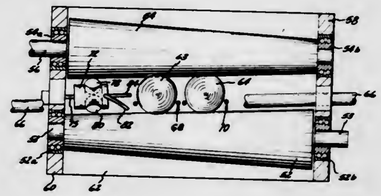


A power transmission mechanism having a reciprocating drive means for imparting rotation to a reversibly rotatable body is improved by having an output drive member connected to the rotatable body and resilient means connecting the rotatable body and the output drive member for transmitting the rotational motion of the rotatable body to the output drive member. The resilient means is deflectable so that it can deflect from its normal position to store a portion of the rotational energy while transmitting the remainder of the rotational energy in the form of rotational movement to the output drive member while the reversibly rotatable body is rotating. The resilient means then reverts to its normal position to release the stored energy and continue moving the output drive member after the reversibly rotatable body is stopped.

3,698,255
MOTION TRANSMITTING MECHANISM

Lawrence A. Schott, 15940 Warwick, Detroit, Mich.

Filed Dec. 29, 1970, Ser. No. 102,393
Int. Cl. F16h *15/16*
U.S. Cl. 74—193 **28 Claims**

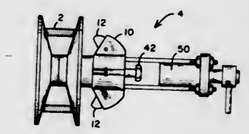


A motion transmitting mechanism including a pair of spaced parallel shafts having a conical portion, each tapering in a direction opposite to the conical portion of the other shaft. The rotative movement of the driving shaft conical portion is transmitted to the driven shaft conical portion through a spherical intermediate drive member. The relative velocity of the two shafts is controlled by axial movement of the drive member along the conical portion. A reversing means including a pair of caged spherical members is further mounted normally disengaged from the shafts. Provision is made for engaging the caged spherical members into contact with the respective shafts and at the same time disengaging the first mentioned spherical drive member.

3,698,256
TRANSMISSION BELT-DRIVE SYSTEM

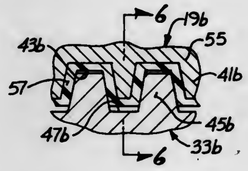
Robert V. Albertson, 2100 Shady Wood Road, Wayzata, Minn.

Filed May 13, 1970, Ser. No. 36,776
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 E **5 Claims**



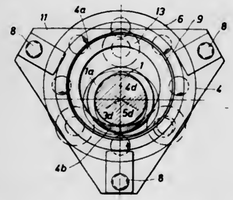
A transmission belt drive system having an automatic change in ratio of drive-pulley belt diameter to driven-pulley belt diameter with increase in speed of the driven pulley by causing opposing flanges on each pulley to move with respect to each other thereby changing the point on the diameter of each pulley at which the transmission belt operates, a bracket rigidly attached to the driving pulley and a drive belt ratio locking device mounted in the bracket for selectively limiting the distance the drive-pulley flanges can move with respect to each other thereby maintaining a constant drive belt ratio regardless of the speed which the drive pulley is rotated.

3,698,257
LEAD SCREW AND NUT
John W. Ballentine, Manhattan Beach, and Frank R. Chaffin, Thousand Oaks, both of Calif., assignors to U.S. Shamban & Co., Los Angeles, Calif.
Filed Jan. 25, 1971, Ser. No. 109,490
Int. Cl. F16h *1/18, 55/18*
U.S. Cl. 74—424.8 R **16 Claims**



An assembly comprising a lead screw having external threads and a nut having internal threads. The nut receives the screw with the internal and external threads forming an interference fit. The threads of at least one of the nut and screw are somewhat deformable.

3,698,258
SCREW DRIVE
Robert Gartner, Freiherr v. Stein Strasse 8, 6308 Butzbach, Hessen, Germany
Filed May 27, 1971, Ser. No. 147,470
Claims priority, application Germany, May 30, 1970, P 20 26 550.3
Int. Cl. F16h *1/18, 27/02*
U.S. Cl. 74—424.8 **16 Claims**



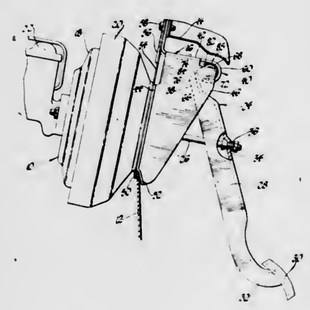
The specification discloses the combination of a threaded member and a nut arrangement moveable therealong in which the nut arrangement comprises a frame moveable relative to the member parallel to the axis thereof and having at least one ring rotatably mounted therein and engaging a circumferential region of the thread on said member whereby the area of interengagement of the ring and the thread is sickle shaped. The ring is inclined to be disposed in the plane of the region of the thread engaged thereby. Advantageously, more than one ring is employed with the rings spaced axially and each engaging the thread in a different circumferential region.

3,698,259
RELATING TO ENERGY ABSORBING SHAFTS AND METHOD OF MAKING SAME
Keith Clarkson Reeves, Frankston, Australia, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 17, 1971, Ser. No. 116,145
Claims priority, application Australia, Feb. 23, 1970, PA 0411/70
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **4 Claims**

An energy absorbing shaft for steering motor vehicles and other purposes comprising a pair of telescopically engaged inner and outer members one of which has a plurality of circumferentially spaced and parallel edges extending lengthwise thereof and the other member has a plurality of circumferentially spaced and parallel grooves formed in zones extending lengthwise of the shaft, each of the grooves having a cross sectional formation which is substantially complementary to said edges and avoids frictional engagement between said inner and outer members between said zones, said edges and grooves having a predetermined interference fit so that the shaft assembly is capable of torque transmission in either direction and is also adapted automatically to collapse under predetermined axial impact at a predetermined rate.

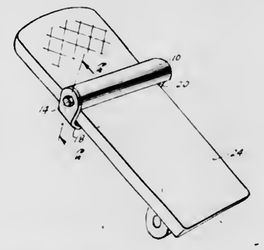


3,698,260
VEHICLE BRAKE CONTROL MODULE AND PEDAL LEVER MOUNTING AND HINGE MEANS THEREFOR
Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 30, 1971, Ser. No. 158,426
Int. Cl. G05g *1/04*
U.S. Cl. 74—560 **9 Claims**



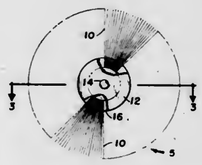
A vehicle brake control module comprising a bracket to which the brake booster and master cylinder are mounted on one side and the brake pedal lever is pivotally mounted on the other side, the pedal lever being connected to operate the booster and master cylinder when the pedal is depressed. The module is adapted to be easily installed through an aperture in a suitable vehicle panel such as the firewall, the bracket closing the aperture. The pedal lever is hinged to the bracket by a pinless hinge formed of scrolls or rolls integrally formed from the bracket and the pedal lever and arranged to permit pedal lever removal and replacement only when the pedal lever is disconnected from the booster and moved out of its usual operating range. The hinge has bushing means attached to one of the rolls and fitting between the rolls. Due to lack of space to provide reinforced pedal lever sections, the portion of the pedal lever adjacent the rolls formed thereon is arranged to be primarily in compression during at least the middle to full-stroke portion of the brake apply range of movement.

3,698,261
ACCELERATION SELECTOR UNIT FOR AUTOMOBILE ACCLEREATORS
John F. Kinney, P.O. Box 122, Humboldt, Kans.
Filed Jan. 19, 1971, Ser. No. 107,796
Int. Cl. G05g *1/16*
U.S. Cl. 74—562 **3 Claims**



A bar extends transversely across the top surface of an accelerator pedal. Means are provided for enabling the bar to be slid along the pedal to any desired transverse position and then locked in position.

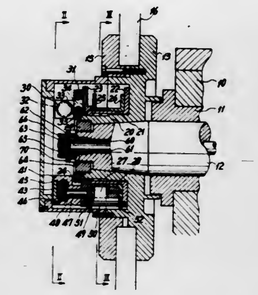
3,698,262
FIXED ELEMENT ROTOR STRUCTURES
David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed July 30, 1971, Ser. No. 167,643
Int. Cl. F16h *33/02*
U.S. Cl. 74—572 **21 Claims**



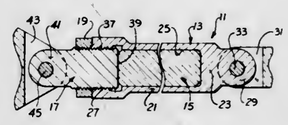
The invention relates to inertial energy storage devices wherein a central hub holds a multiplicity of anisotropic filaments, the filaments extending from the hub in fixed relation thereto and in parallel planes perpendicular to an axis of rotation through said hub. Each filament extending from the central hub is so disposed within the structure that the stress component imposed on said filament acts uniaxially along its length.

3,698,263
BALANCING APPARATUS FOR A ROTATING BODY
Teruyuki Ito, Aichi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan
Filed June 25, 1971, Ser. No. 156,803
Claims priority, application Japan, June 30, 1970, 45/57157
Int. Cl. F16f *15/22*
U.S. Cl. 74—573 **6 Claims**

A balancing apparatus for a rotating body mounted on a spindle comprises a support for first and second motors being rotatably disposed on the spindle, the motors being secured on the support at diametrically opposed points relative to the spindle axis, and first and second balancing weights mounted on the support and being rotatable in annular paths thereon concentric to the spindle axis. Transmission gearing is provided for permitting the first motor to drive itself and the support thereof for rotating the support about the spindle axis and for permitting the second motor to rotate the balancing weights toward and away from each other in the annular paths of travel thereof.

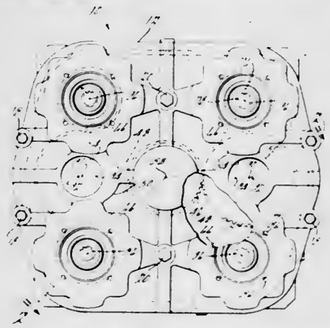


3,698,264
COMPOSITE ROD
Ray A. York, Villa Park, Calif., assignor to Bertea Corporation, Irvine, Calif.
Filed Dec. 28, 1970, Ser. No. 101,844
Int. Cl. F16c *7/02*
U.S. Cl. 74—581 **13 Claims**



A composite rod comprising an elongated outer rod section and an inner rod section within the outer rod section. The stiffness of the inner rod section is greater than the stiffness of the outer rod section. The outer rod section is preloaded in tension and the inner rod section is preloaded in compression.

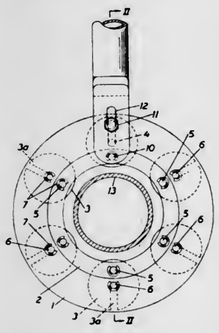
3,698,265
POWER TRANSMITTING DRIVE APPARATUS
John E. Williams, Oshkosh, Wis., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Jan. 18, 1971, Ser. No. 107,439
Int. Cl. F16h *37/06, 57/02*; **F01c** *11/00*
U.S. Cl. 74—665 GA **8 Claims**



A power transmitting drive apparatus for distributing power from a single power source to a plurality of power consuming

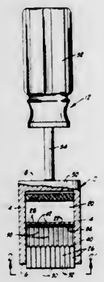
mechanisms such as fluid pumps. The apparatus includes a housing and a positively located power input means rotatably mounted in the housing. A plurality of positively located power output means are rotatably mounted in the housing but spaced from the input means. At least two intermediate drive means, each of which is driven by the input means and drives a plurality of output means, are rotatably supported in the housing by stationary support means of sufficiently great dimensions that the location of the intermediate drive means can be varied, thereby allowing different sizes of intermediate drive means to be utilized and various power consuming mechanisms to have different drive ratios.

3,698,266
PIPE WRENCH
Horst Heinrich Georg Mader, Horenberg, Germany, assignor to Atlas Copco Aktiebolag, Nackas, Sweden
Filed April 26, 1971, Ser. No. 137,306
Claims priority, application Germany, April 28, 1970, P 20 20 625.1
Int. Cl. B25b *13/00, 21/02, 13/28*
U.S. Cl. 81—53 A **8 Claims**



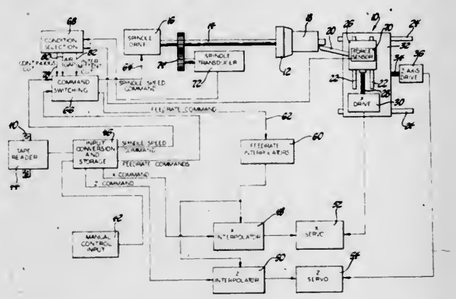
A pipe wrench has a holder ring unit (2—2) and a dog actuating ring unit (1—1) which units are coaxial and turnable relative to each other by means of a handle (8, 9). A number of dogs (3) are pivotally mounted on bolts (5) of the holder ring unit and actuated so as to pivot into gripping positions by means of bolts (6) of the dog actuating ring unit when the handle is actuated.

3,698,267
FASTENER ACTUATOR
Jon R. Denney, 437 N.W. 81st, Oklahoma City, Okla.
Filed Dec. 18, 1970, Ser. No. 99,602
Int. Cl. B25b *13/58, 13/12*
U.S. Cl. 81—185 **10 Claims**



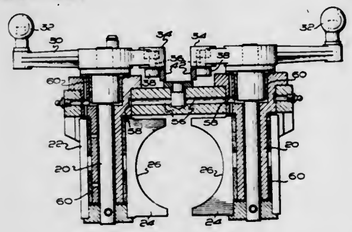
A fastener actuator having a plurality of fastener engaging elements, each fastener engaging element being independently positionable in an engaging proximity to a fastener, the fastener engaging elements being adapted to cooperate to remove or tighten the fastener.

3,698,268
NUMERICAL CONTROL SYSTEM FOR INTERRUPTED CUTTING CONDITIONS
Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation
Filed Aug. 7, 1970, Ser. No. 61,883
Int. Cl. B23b *7/14*
U.S. Cl. 82—2 B **8 Claims**



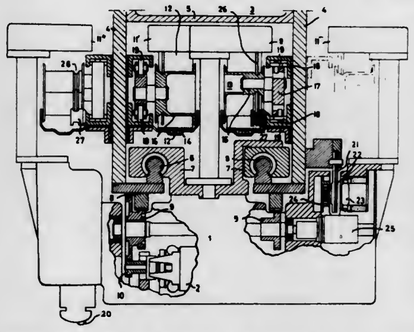
A numerical control system for a lathe includes a transducer which generates an electrical signal proportional to the force being exerted by the cutter. This signal is compared with a preset value which is equal to the minimum force exerted by the cutter when it was in contact with the workpiece to develop an output signal which consists of a pulse occuring each time the cutter is brought into contact or goes out of contact with the workpiece. This signal is used to clear a counter which receives a pulse for each small increment of rotation of the spindle. Based on the state of the counter and the outputs of the comparator, signals are derived indicating that the cutter is either out of contact with the workpiece, in contact with the workpiece, or performing an intermittent or interrupted cut such as occurs when the workpiece is out of round. These signals are used to provide one of three levels of signals to control the spindle speed and the rate of feed of the cutter relative to the spindle.

3,698,269
MACHINE TOOLS, PARTICULARLY A DEVICE FOR BAR FEED MECHANISM AND A BAR FEED MECHANISM
Austin Cartwright Mercer, Jr., Guiseley, England, assignor to Mercer Pneumatic Tools Limited
Filed Dec. 14, 1970, Ser. No. 97,908
Claims priority, application Great Britain, April 30, 1970, 20,806/70
Int. Cl. B23q *5/22*
U.S. Cl. 82—38 R **3 Claims**



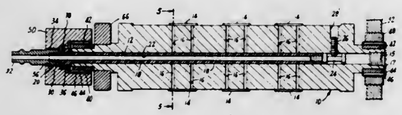
A device is employed in conjunction with a bar stock feed mechanism for a machine tool to support the bar stock intermediate its ends as the stock is rotated. The device utilizes a two part split collar whose parts are held closed by an over-center tension spring. The collar can be moved apart to a position in which the spring goes over-center and acts to hold the collar parts apart to allow the feed mechanism stock pusher to pass between the separated collar parts.

3,698,270
GUIDE BEAM FOR PLURAL CARRIAGES EQUIPPED WITH DRIVING MOTORS
Jean Gouttierre, Nivelles, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium
Filed Feb. 17, 1971, Ser. No. 116,098
Claims priority, application Belgium, Feb. 19, 1970, 85535
Int. Cl. B26d *3/08*
U.S. Cl. 83—11 **8 Claims**



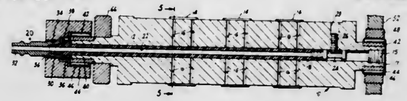
A guide beam for plural carriages including supporting rails secured to the beam, driving devices disposed along the rails each associated with a carriage and operated by a separate motor, troughs placed along the length of the beam, flexible cables placed in the troughs, and a hollow arm fixed to each carriage and the end of which moves above each trough, the flexible cables placed in each trough being inserted into the end of the arm located above the trough. The guide beam is characterized by guide tracks placed along the beam one for each carriage and by caterpillars for the cables, each being movable above its associated trough in one of the guide tracks, and supporting the end of the variable length of the cables which are inserted into the hollow arm.

3,698,271
ADJUSTABLE AIR EJECT DIE-CUTTING ASSEMBLY
Martin Kesten, West Hartford, Conn., and Ralph Bruce O'Connor, Suffield, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.
Filed May 3, 1971, Ser. No. 139,395
Int. Cl. B26d *7/18*
U.S. Cl. 83—99 **8 Claims**



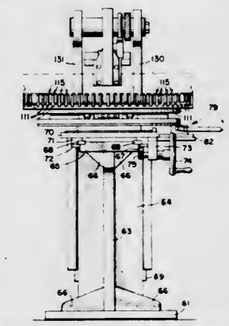
A rotary air eject die-cutting assembly utilizes an air delivery manifold having a cylindrical core portion that is closely seated within the cavity of a journaled die-cutting roll. The roll has a cutting element of closed configuration on its outside surface and an aperture that extends between the cutting element and the cavity. The core portion has an interior passageway and a generally radially extending port that is positioned for registry with the aperture of the roll, permitting air to flow through the passageway and the port, and out of the aperture,upon registry of the aperture and port. This occurs intermittently as the roll rotates about the core portion, and enables pressurized air to eject scrap that would otherwise tend to build up within the cutting element. A support member mounts the manifold and includes means for pivoting the core portion and securing it in a multiplicity of pivoted positions, permitting facile adjustment of the direction of air flow from the aperture.

3,698,272
ROTARY AIR EJECT DIE-CUTTING ASSEMBLY
Martin Kesten, West Hartford, Conn., and Ralph Bruce O'Connor, Suffield, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.
Filed May 3, 1971, Ser. No. 139,378
Int. Cl. B26d *7/18*
U.S. Cl. 83—99 **10 Claims**



A rotary air eject die-cutting assembly utilizes an air delivery manifold having a cylindrical core portion that is fabricated of a relatively resiliently deformable material and is closely seated within the cavity of a journaled die-cutting roll. The roll has a cutting element of closed configuration on its outside surface and an aperture that extends between the cutting element and the cavity. The core portion has an interior passageway and a generally radially extending port that is positioned for registry with the aperture of the roll, permitting air to flow through the passageway and the port, and out of the aperture, upon registry of the aperture and port. This occurs intermittently as the roll rotates about the core portion which is secured in a substantially fixed position, and enables pressurized air to eject scrap that would other wise tend to build up within the cutting element. Use of a resiliently deformable core portion eliminates the need for added support and bearing members within the roll cavity; it simplifies the assembly and enhances its useful life.

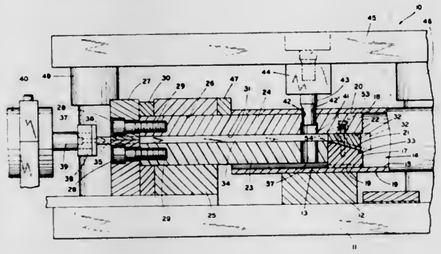
3,698,273
AUTOMATIC PUNCH PRESS FOR FLEXIBLE METAL BAND
Yvon L. Richard, Sebago Lake, and Charles Wojchiwski, Portland, both of Maine, assignors to Rich Tool & Die Company
Continuation of Ser. No. 740,341, June 26, 1968, abandoned.
This application Feb. 10, 1971, Ser. No. 114,385
Int. Cl. B23d *21/14, 5/34*
U.S. Cl. 83—183 **2 Claims**



A punch press for flexible metal bands such as jet engine cooling bands which holds varying size bands in a true radius

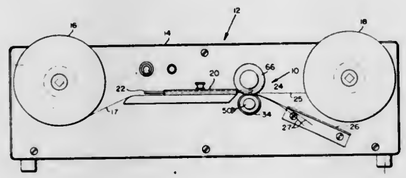
on a rotatable table angularly indexing the band past a punching head.

3,698,274
APPARATUS FOR PIERCING OPENINGS IN TUBING
Edward I. Coulon, Twin Lakes, Wis.; Benny Jay Miller, Elmhurst, and Dale C. Mohr, Addison, both of Ill., assignors to Vogel Tool and Die Corporation, Stone Park, Ill.
Filed May 14, 1971, Ser. No. 143,315
Int. Cl. B23d *21/14*
U.S. Cl. 83—188 7 Claims



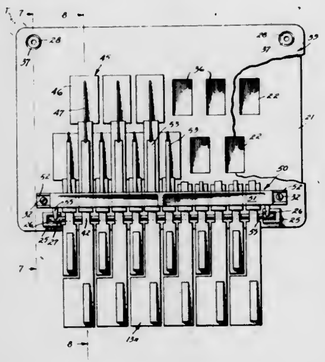
A tube piercing apparatus includes mandrel members positioned within the tube for supporting the inner wall of the tube. The tube is positioned on a supporting member having an arcuate seat. One of the mandrel members includes an inner wedge shaped surface. Wedge means is movable into engagement with the inner surface to spread the mandrel members apart against the inner wall of the tube. One of the mandrel members includes a bore and cutting edge which cooperates with a preparing punch for cutting openings in the wall of the tube.

3,698,275
VARIABLE FILM-WIDTH MICROFILM TRIMMER
Augustus W. Griswold, Rochester, and Boris W. Haritonoff, Geneseo, both of N.Y., assignors to Keystone Micro-Scan, Inc., Boston, Mass.
Filed Sept. 23, 1970, Ser. No. 74,639
Int. Cl. B23d *19/00*
U.S. Cl. 83—481 5 Claims



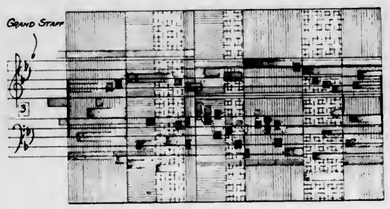
An adjustable trimmer for stripping off the unused edge portions from film strips containing microfilm images of any one of several different widths, for use in making microfiche. The trimmer employs a center cutter roll having the desired width of the microfiche strips, and being removably mounted on one shaft; and a pair of opposed cutter wheels, mounted on a second, parallel shaft, and being spring-biased toward and in cutting engagement with the center cutter roll. One of the cutter wheels is retractable, whereby the center cutter roll can be removed and replaced with another cutter roll of a different, desired width.

3,698,276
CHORD ORGANS
Harold B. Martin, Roselle, and Herman O. Rogg, Watchung, both of N.J., assignors to Graber-Rogg, Inc., Cranford, N.J.
Filed Dec. 3, 1970, Ser. No. 94,894
Int. Cl. G09b *15/06*
U.S. Cl. 84—365 6 Claims



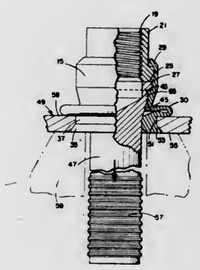
In an improved chord organ of the type which includes base and keyboard sections having corresponding reed assemblies provided with openings that are normally closed by extending pallets of keys operative by a user, a spring device is provided for normally urging the key pallet against its reed assembly opening. The spring device includes a plastic unitary body having a plurality of compression fingers extending therefrom for contact with the pallets, there being relative sliding movement between the fingers and their respective pallets during movement of the pallets between open and close positions with their reed assembly openings. The organ also features an improved gasket for each reed assembly, said gasket including a plastic unitary body which is located over the top of the reed assembly and possessing an inherent tacky surface for adhering thereto. The organ also features a tonal device which includes a single molded plastic body having a plurality of uniquely arranged pivotally mounted baffle plates located adjacent the sound slots of the organ, said plates being movable with respect to the slots to cause the tonal sounds emanating therefrom to range between a brassy and muted quality.

3,698,277
ANALOG SYSTEM OF MUSIC NOTATION
Donald P. Barra, 115 East 9th Street, New York, N.Y.
Filed May 23, 1967, Ser. No. 640,700
Int. Cl. G10b *15/00*
U.S. Cl. 84—483 1 Claim



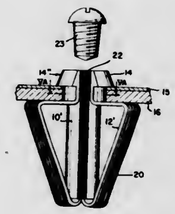
A system of musical notation in which the sound pattern constituting a musical composition is recorded essentially in visual forms which represent the duration, pitch, intensity and other significant characteristics of organized sound.

3,698,278
NUT MEMBER
William H. Trembley, Granada Hills, Calif., assignor to VSI Corporation
Filed March 15, 1971, Ser. No. 124,290
Int. Cl. F16b *13/06*
U.S. Cl. 85—70 12 Claims



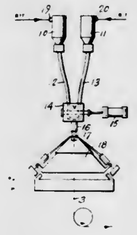
A hollow nut assembly for engagement with a plate having a receiving hole therethrough, the assembly including a nut member, a deformable sleeve affixed to the nut having a generally circular inner diameter having at least three radially protruding lobes integrally formed thereon, and a pulling stem in said sleeve having an outer diameter sufficient to cause radial outer movement of the lobes when the stem is pulled through the sleeve.

3,698,279
EXPANSION FASTENER
Emile Mallet, Paris, France, assignor to Expandet S.A., Paris, France
Filed Feb. 23, 1971, Ser. No. 118,140
Claims priority, application France, Feb. 26, 1970, 7006894
Int. Cl. F16b *13/04, 19/08, 39/28*
U.S. Cl. 85—71 7 Claims



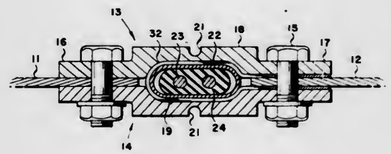
A blind fastener has an elongated body of polygonal cross-section with a plurality of longitudinally extending laterally projecting ribs formed at the corners of its sides. These ribs bite into the wall of a bore when the fastener is inserted therein. The short leg of each of a plurality of J-shaped arms is connected to the end of the fastener opposite its head and the long leg of each arm is formed with its own head so that on insertion of the fastener into the bore the short legs are bent out and the long legs lie against the blind side of a panel. The ribs are longitudinally ridged and the fastener is made of a deformable synthetic-resin material so that a screw inserted into the tubular body can expand it.

3,698,280
MANUFACTURE OF DETONATING FUSE CORD
David Martin Welsh, Brownsburg, Quebec, Canada, assignor to Canadian Safety Fuse Company Limited, Montreal, Quebec, Canada
Filed Jan. 19, 1970, Ser. No. 3,859
Claims priority, application Canada, Nov. 10, 1969, 067,150
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 R 5 Claims



A method of manufacturing a detonating cord having a dual explosive core is described. The total quantity of explosive in the dual core varies along the length of the cord and the product is useful in metal expansion operations.

3,698,281
EXPLOSIVE SYSTEM
Oscar E. Brandt, Saratoga, Calif., and Joseph G. Harris, Dallas, Tex., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Feb. 27, 1970, Ser. No. 15,032
Int. Cl. F42b *1/00*
U.S. Cl. 89—1 B 7 Claims

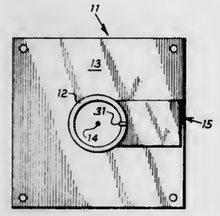


A steel tube having a flattened or oval cross section contains a pair of explosive cores. A sheath of pliable material such as silicone rubber surrounds and holds the core separated from each other and generally centered with respect to the steel tube. The rubber (1) protects the explosive cores from environmental temperature changes, and (2) absorbs the shock of detonation such that one of the cores may be detonated while the other remains undetonated as a reserve for redundancy of the system. Upon detonation of an explosive core, the steel tube expands from the flattened or oval cross section to a circular cross section; whereupon a pair of doublers enclosing the tube are fractured and separated along a weakened section underlying a notch or groove which extends longitudinally along a doubler joint and along the steel tube.

3,698,282
MORTAR SAFETY DEVICE FOR PREVENTING DOUBLE LOADING

Zigmund M. Albatys, Louisville, Ky., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 23, 1971, Ser. No. 155,990
Int. Cl. F41f 1/06
U.S. Cl. 89—1 F 6 Claims

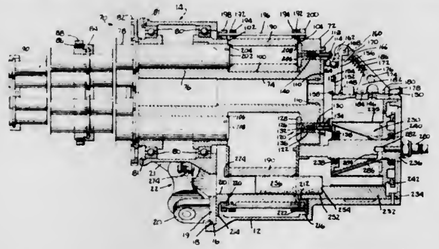


A safety device for preventing feeding a mortar round into a barrel already containing a round. A tripping arm of a bell crank extends into the barrel of a mortar and permits one mortar round to enter the barrel. The tripping arm then locks to prevent a second round from entering the barrel. The firing of the first round unlocks the tripping arm to permit a subsequent firing of the mortar.

3,698,283
MULTIBARREL AUTOMATIC WEAPON

Eugene Ashley, Burlington; Douglas P. Tassie, St. George, and James M. Seemann, South Burlington, all of Vt., assignors to General Electric Company

Filed March 10, 1970, Ser. No. 18,031
Int. Cl. F41d 7/02
U.S. Cl. 89—12 4 Claims



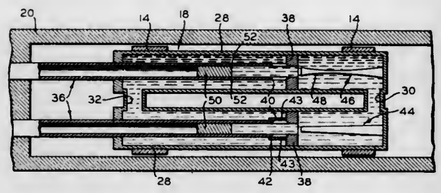
A gun having at least a barrel, at least a chamber and means for moving said chamber transversely to said barrel from a noncoaxial feed station to a coaxial lock and fire station, and means including a stationary cam surface for progressively chambering a cartridge in said chamber as it moves from said feed station to said lock and fire station.

3,698,284
BUFFER SYSTEM FOR DECELERATING A RECIPROCATING GUN

Robert J. Toering, Moline, Ill., and Robert E. Seamands, Bettendorf, Iowa, assignors to The United States of America as represented by the Secretary of the Army

Filed July 16, 1970, Ser. No. 55,497
Int. Cl. F41f 19/02
U.S. Cl. 89—43 R 9 Claims

In a recoil mechanism for a large caliber gun wherein an elongated tapered control rod is fixed in each of a pair of cylinders filled with oil and mounted to the moving parts of the gun for respective slidable engagement with a pair of hollow pistons fixed to a stationary part of the gun and is arranged to enter into the respective pistons during the recoil travel of the moving parts to progressively restrict the flow of fluid

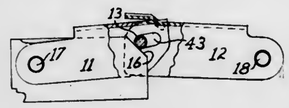


therethrough for bringing the parts to a halt, the foregoing structure can also be utilized to halt the moving parts during a portion of the counter-recoil movement thereof simply by providing one of the control rods with a reverse tapered end portion arranged to enter the associated hollow piston with a minimum clearance.

3,698,285
TOGGLE ACTION FIREARM

Gary Wilhelm, Hamden, Conn., assignor to Stoeger Arms Corporation, South Hackensack, N.J.

Division of Ser. No. 766,380, Oct. 7, 1968, Pat. No. 3,614,908.
This application April 15, 1971, Ser. No. 90,224
Int. Cl. F41d 3/02
U.S. Cl. 89—189 3 Claims



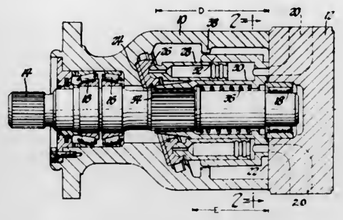
Shown in a toggle action recoil operated semiautomatic pistol is a toggle consisting of two inverted channel shaped arms that straddle the bolt with the outer end of one arm pivotally secured to the frame of the pistol and the outer end of the other arm pivotally secured to the bolt. The arms are joined by a link pin fixed within the channel of the rear arm and slidable in a slot in the sides of the front arm. The rear upper shoulder of the bolt is bevelled. After the bolt recoils a short distance defined by the slot and the link pin, the bevel strikes the link pin and cams it upward to fold the toggle arms. A recoil spring restores the bolt and toggle to their original positions.

3,698,286
POWER TRANSMISSION

Gaylord O. Ellis, Rochester, and John A. Halat, Troy, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed June 28, 1971, Ser. No. 157,511
Int. Cl. F01b 3/00
U.S. Cl. 91—486 3 Claims

A hydraulic pump or motor of the axial piston type having a cylinder barrel rotating against a fixed valve plate perpendicular to the shaft and free to find its own seat against the valve plate has an improved casing which produces a non-uniform velocity in the fluid circulating by frictional drag of the cylinder barrel. This produces Bernouli effects which react upon the sides of the cylinder barrel and conteract the Bernouli effects acting on the back end face of the cylinder

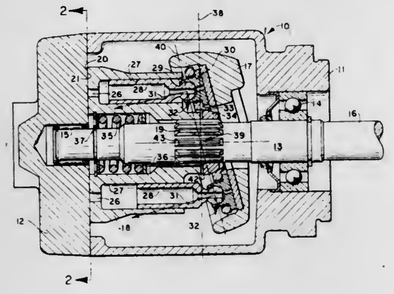


barrel which are produced by the rotary motion of the projecting pistons. This increases the maximum speed at which the unit can operate.

3,698,287
AXIAL PISTON DEVICE

Robert J. Martin, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Dec. 9, 1970, Ser. No. 96,451
Int. Cl. F01b 3/00, 13/04
U.S. Cl. 91—507 8 Claims



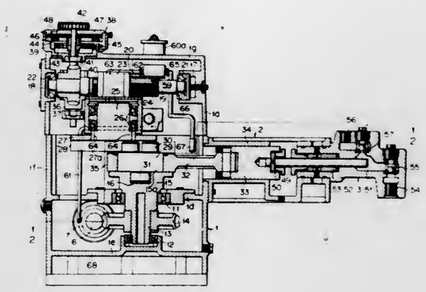
An improved manner of supporting the cylinder barrel against side or transverse loads utilizing a flat, uncrowned spline driving connection between the drive shaft and cylinder barrel. The unit is constructed so that the side load imposed on the cylinder barrel and shaft acts at the outer edge of the cylinder barrel. By controlling design parameters such as shaft selection and bearing location, the point of maximum shaft deflection is maintained at a location within the axial length of the cylinder barrel to maintain alignment of the side load and its support during shaft deflection to prevent tilting of the cylinder barrel.

3,698,288
VARIABLE METERING PUMP

Kiyomi Sonobe, Saitama, Japan, assignor to Iwaki Co., Ltd., Tokyo, Japan

Filed July 6, 1971, Ser. No. 159,593
Claims priority, application Japan, July 16, 1970, 45/61985; Aug. 18, 1970, 45/81759
Int. Cl. F01b 31/14
U.S. Cl. 92—13.4 8 Claims

A variable metering pump comprising a plunger type pump unit; a reciprocating mechanism for reciprocating the plunger thereof consisting of a connecting rod and an Oldham coupling; a device for adjusting the stroke of the plunger; and a lubricating system for lubricating the sliding portions of the plunger, wherein adjustment by said device can vary the capacity of the pump during operation and the forward end of

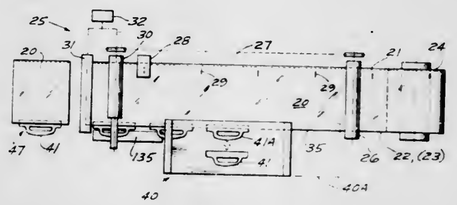


the reciprocating plunger always stops in the forward stroke at a fixed point in a pump chamber, no matter how the plunger stroke is changed.

3,698,289
APPARATUS FOR AUTOMATIC MANUFACTURE OF HANDLE BAGS

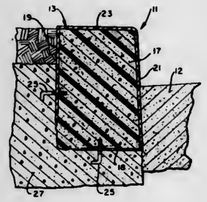
Seymour Kamins, Oceanside; Norman Rosenberg, Bayside, and Per Bentsen, Bronx, all of N.Y., assignors to CTP Industries Inc., Brooklyn, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,659
Int. Cl. B31b 1/86, 1/20, 1/72
U.S. Cl. 93—8 WA 5 Claims



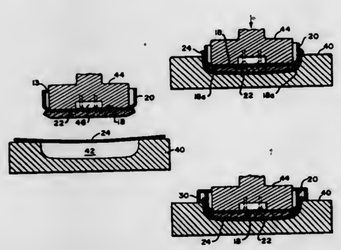
Apparatus for the automatic manufacture of thermoplastic carrier bags of the type formed of thin film of thermoplastic material and having a thermoplastic handle and closure means secured to the inner walls of the bag at its mouth. The machine includes apparatus for transporting a double layer bag blank of thermoplastic material, inserting a combined handle and closure means into the open edge of the blank and heat sealing each side thereof to a respective wall of the blank. Thereafter, the bag blank, with handle and closure means attached thereto, is transported to a further station at which a combined sealing and cutting operation occurs to form separate bags whose side edges are now sealed. A magazine is provided for storing a plurality of such handle and closure means and means is provided for feeding one at a time into the bag blank. The apparatus includes means for adjusting in a plurality of different ways the position of each handle and closure means as it is fed into the bag blank.

3,698,290
STREET CURBINGS MADE OF SYNTHETIC RESINS
Robert J. Wallace, 6502 Westland Road, Bethesda, Md.
Continuation-in-part of Ser. No. 830,700, June 5, 1969, abandoned. This application Jan. 21, 1971, Ser. No. 108,578
Int. Cl. E01c *11/22*
U.S. Cl. 94—31 6 Claims



A street curbing comprising an outer polyethylene shell reinforced with fiberglass. The shell is filled with high density polyethylene foam.

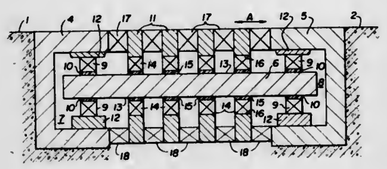
3,698,291
METHOD OF FABRICATING A COVERED BOX CONSTRUCTION
George G. Bergh, and Robert G. Bergh, both of Attleboro, Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.
Division of Ser. No. 755,617, Aug. 27, 1969, Pat. No. 3,553,822, which is a division of Ser. No. 705,836, Feb. 15, 1968, Pat. No. 3,426,938. This application Aug. 5, 1970, Ser. No. 61,472The portion of the term of this patent subsequent to Jan. 12, 1988, has been disclaimed.
Int. Cl. B31b *15/00*
U.S. Cl. 93—54 R 3 Claims



A method of fabricating a decoratively covered box component of the type having a bottom member with a continuous wall member extending vertically from the peripheral edge thereof. The method includes the steps of covering the bottom member and at least a portion of the wall member with a blank of cloth, paper or similar flexible sheet material. While the sheet material is held in a taut condition, a rim member is employed in cooperation with the wall member to hold the sheet material in place, the exposed surfaces of the latter thereafter remaining taut and movable relative to the box component surfaces over which it extends.

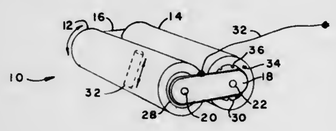
ERRATUM
For Class 94—31 see:
Patent No. 3,698,290

3,698,292
EXPANSION GAP SEALING DEVICE
Waldemar Koester, Forsbach, Germany, assignor to Firma Friedrich Maurer Soehne, Munich, Germany
Filed Dec. 21, 1970, Ser. No. 99,897
Claims priority, application Germany, Feb. 3, 1970, P 20 04 634.8; March 24, 1970, P 20 13 938.2
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 15 Claims



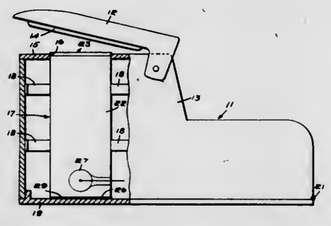
The present sealing device relates to an expansion gap. Such gaps are maintained between adjacent construction members, for example, slabs of concrete forming the roadbed on bridges or the like. A plurality of gap strips are inserted into such gaps and sealing means of elastic material are inserted between adjacent gap strips or between a gap strip and the edges of the construction member which define the gap. In order to improve the positional stability of the gap strips, the invention provides carrier bars which extend directly through apertures in the gap strips and which are supported at their ends in recesses of the edges defining the gap. Bearing means of elastic material are provided between the gap strips and the carrier bars. In one embodiment the bearing means are firmly secured to the carrier bars and to the gap strips. In another embodiment the bearing means comprise the glide pieces permitting a gliding movement between the bearing means proper and the carrier bars.

3,698,293
CONCRETE FINISHING APPARATUS
Jacob C. Wagner, P.O. Box 133 New Castle, New Castle, Del.
Filed March 2, 1971, Ser. No. 120,272
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 1 Claim



A concrete compacting, screeding, and trowelling machine comprising a pair of rollers mounted in tandem by plates at the ends of the rollers, one or both rollers having powered internal vibrators, one or both rollers having a motor providing tractive effort for moving the machine, one of the rollers having a rotation preventor so that it can be dragged by the other roller as a screed, and one or both rollers having a petcock allowing the interior to be filled with fluid.

3,698,294
SENSITOMETER APPARATUS
Lloyd C. Sanford, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed April 1, 1968, Ser. No. 717,870
Int. Cl. G01j *1/10, 1/40, 3/10*
U.S. Cl. 95—1 13 Claims

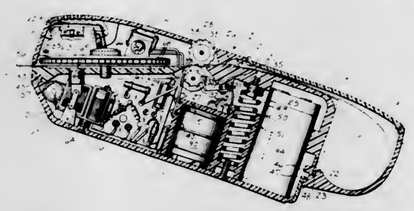


A sensitometer having a replaceable integral exposure source unit including both a constant source of actinic energy and an energy modulator. Because of the fixed relationship between its individual components, the modulated energy output remains at a known, constant level over the life of the exposure unit.

3,698,295
METHOD FOR MORE BRILLIANT COLOR PICTURE PRESENTATION
Earl C. Van Swearingen, 5714 Driftwood Parkway, Cape Coral, Fla.
Continuation of Ser. No. 614,404, Feb. 17, 1967, Continuation of Ser. No. 662,560, Aug. 3, 1967. This application Feb. 13, 1969, Ser. No. 799,122
Int. Cl. G09f *13/20, 7/00*
U.S. Cl. 95—1 9 Claims

Method of reproducing individual pictures or multiples thereof. A non-luminescent surface is placed next to a background light reflecting surface and next to the non-luminescent surface a daylight activated fluorescent surface is placed. At certain points on the picture a lighter surface is provided so as to be able to peek through and highlight a darker surface.

3,698,296
ACTINIC LABEL-MAKING TOOL
Elliott G. Heuser, Mequon, and William H. Muttera, Jr., Whitefish Bay, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.
Filed Sept. 29, 1969, Ser. No. 861,846
Int. Cl. B41t *19/00*
U.S. Cl. 95—4.5 9 Claims



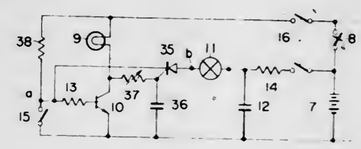
A label-making tool utilizing an ultraviolet light system and including: a supply of tape material having an ultraviolet-imaging coating, means to incrementally advance the tape material past an exposure station, rotatable type means for selectively positioning a character at the exposure station, and ultraviolet light means adapted to emit u.v. light to produce an image of the character positioned at the exposure station in the ultraviolet-imaging coating of the tape material.

3,698,297
PRISMATIC FONT ACCESSING IN PHOTOTYPESETTERS
Robert B. Herden, Webster, N.Y., assignor to The Singer Company
Filed March 18, 1971, Ser. No. 125,747
Int. Cl. B41b *13/00*
U.S. Cl. 95—4.5 R 6 Claims



An optical system for a phototypesetting machine wherein a rotating type font having at least two spaced apart rows of characters has a focused light source periodically pulsed to direct a light beam through a translucent character in each of the two rows. An optical path for each of the character images is provided through a fixed projection lens onto a predetermined portion of a photosensitive medium. A rhomboid optic element having a predetermined index of refraction is selectively interposed in either of two positions in the optical paths of the character images. In one position, the first character is blocked and light from the second character passes through the prismatic element and is sharply focused by the projection lens on the photosensitive medium. In the alternate position, the second character is blocked and light from the first character is allowed to pass directly into the projection lens to also form a sharply focused image on the medium without passing through the rhomboid element.

3,698,298
FLASH PHOTOGRAPHIC DEVICE FOR AUTOMATIC EXPOSURE CONTROL CAMERAS
Tomio Kikuchi; Hiroshi Yamaguchi, both of Tokorozawa, and Kiyoyuki Arai, Gyoda, all of Japan, assignors to Kabushiki Kaisha, Koparu, Japan
Filed March 12, 1970, Ser. No. 19,047
Claims priority, application Japan, March 14, 1969, 44/19381
Int. Cl. G01j *1/44*
U.S. Cl. 95—10 CE 8 Claims



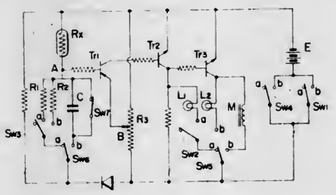
A camera equipped with an electronic shutter operative so that the intensity of the scene illumination is detected by a photoconductive cell and that the electronic automatic exposure control circuit containing said photoconductive cell is actuated in accordance with the amount of illumination thus detected and that, as a result, the electromagnet connected to said circuit is caused to effectuate the action of closing the shutter blades. An illuminant is provided opposite to said photoconductive cell so that, in case flash photograph is taken, said illuminant is lighted in the stage of the release of the shutter mechanism of the camera. Therefore, prior to

being subjected to the reflected light from the scene illuminated by a flash bulb, the photoconductive cell is preliminarily exposed directly to the irradiation from the illuminant.

3,698,299
ELECTRONIC SHUTTER FOR PHOTOGRAPHIC CAMERA EQUIPPED WITH EXPOSURE CONDITION CHECKING CIRCUIT AND EXPOSURE TIME CONTROL CIRCUIT

Kunio Arisaka, Tokyo, and Toshikazu Takizawa, Saitama, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Sept. 14, 1970, Ser. No. 71,769
Claims priority, application Japan, Sept. 19, 1969, 44/89248
Int. Cl. G03b *17/18*
U.S. Cl. 95—10 CT **1 Claim**

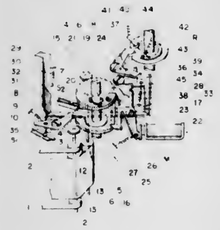


An electronic shutter for a photographic camera having electronic circuitry including an exposure-condition checking circuit and an exposure-time control circuit. These circuits are arranged so that, upon depression of the release button of the camera, the power switch of said electronic circuitry is closed first to connect the checking circuit to the power source by a changeover switch. A further depression of the button causes said changeover switch to be switched from said checking circuit to the exposure time control circuit. Finally, the shutter operating mechanism is released by said button. Throughout the exposure effected by the shutter, both the power switch and the changeover switch are held locked at the position in which said exposure time control circuit is formed by the shutter operating members.

3,698,300
ELECTRIC SHUTTER MECHANISM FOR A CAMERA

Toshio Kobori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1970, Ser. No. 63,777
Claims priority, application Japan, Aug. 18, 1969, 44/78321
Int. Cl. G01j *1/44*
U.S. Cl. 95—10 CT **2 Claims**

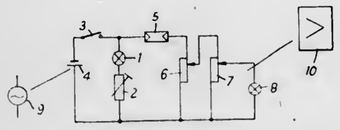


In an electric shutter mechanism for a camera the shutter is retained in a cocked position and held there by an operating member when exposure time setting is set for a bulb exposure so as to reduce the power consumed from the battery in maintaining energization of the circuitry normally retaining the shutter in a cocked position.

3,698,301
APPARATUS FOR METERLESS EXPOSURE VALUE INDICATION

Hubertus Reimann, and Fritz Lindner, both of Dresden, Germany, assignors to Kombinat Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed July 18, 1969, Ser. No. 843,148
Int. Cl. G01j *1/10*
U.S. Cl. 95—10 C **1 Claim**

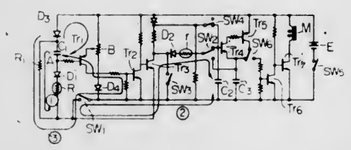


An exposure measuring apparatus has a lighting element which can be connected to and influenced by a source of supply potential. Means are provided for presetting the light emission of the lighting element. A photo-sensitive receiver influenced by prevailing light conditions is connectable with the source of supply potential and influences the light emission of a second lighting element which is connected in circuit with the photo-sensitive receiver and at least one resistance attenuation element. The resistance attenuation element or elements are adapted to adjust the light emission of the second lighting element in accordance with required exposure factors when the supply potential is connected. The lighting elements are formed as light source pillars the color of which are influenced by their supply frequency, e.g. electro luminescent plates. The source of supply potential is an alternating current source and the second lighting element is connected therewith via a variable frequency generator the frequency of which is influenced by the setting of the resistance attenuation elements. The first and second lighting elements are arranged to illuminate respective surfaces positioned immediately adjacent one another whereby when the color and brightness of each of the surfaces is equal, the exposure factors are set to values required for accurate exposure.

3,698,302
CIRCUIT FOR PREVENTING FALSE OPERATION OF AN ELECTRONIC CAMERA SHUTTER

Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed Oct. 29, 1970, Ser. No. 85,210
Claims priority, application Japan, Nov. 14, 1969, 44/108771
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT **3 Claims**

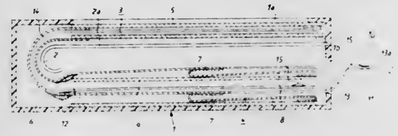


A circuit for preventing false operation of an electronic shutter includes a diode connected in the R-C circuit of the light integrating portion of the circuit which diode inhibits untimely discharge of the integrating capacitor in the presence of undesired contact chatter in the switching means associated with the circuit.

3,698,303
PHOTOGRAPHIC FILM PACK

Hans-Peter Huber, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 785,277, Dec. 19, 1968. This application Dec. 15, 1971, Ser. No. 208,059
Claims priority, application Germany, Dec. 12, 1967, A 57781The portion of the term of this patent subsequent to March 21, 1989, has been disclaimed.
Int. Cl. G03b *17/52*
U.S. Cl. 95—22 **10 Claims**



Successive film units which are stored in the container of a photographic film pack for use in a camera which develops the film are connected to each other by flexible coupling strips each of which automatically passes between the pressure applying rolls of the camera in response to withdrawal of the preceding film unit. The leading ends of coupling strips are weakened so that they can be readily separated from preceding film units. Such separation is further facilitated by transversely extending or inclined beads provided on the coupling strips and engaging with the pressure applying rolls during separation of respective coupling strips from the preceding film units.

3,698,304
SHUTTER RELEASE CONTROL MECHANISM

Shohei Tenkumo, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed March 3, 1970, Ser. No. 16,010
Claims priority, application Japan, March 6, 1969, 44/19502; March 10, 1969, 44/20631; March 10, 1969, 44/20632
Int. Cl. G03b *9/08*
U.S. Cl. 95—53 EB **7 Claims**

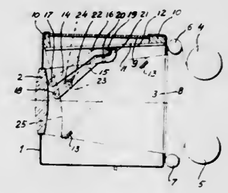


An electrically controlled shutter mechanism has a shutter closing member movable between a cocked and a rest position with an armature actuated by an electromagnet controlled by an electric timing circuit for holding the shutter closing member in the cocked position. A mechanism engages the shutter closing member and biases it in the rest position and additional structure moves the shutter closing member to the cocked position and moves the armature into contact with the electromagnet. The aforesaid mechanism is moved by the shutter opening member to cock the aforesaid additional structure while the armature engages the electromagnet so as to cause the armature to be pressed against the electromagnet with the shutter opening member locked in the cocked position.

3,698,305
VIEWFINDER MIRROR MECHANISM FOR SINGLE-LENS REFLEX

Alf Ingva Alfredsson, Savedalen, Sweden, assignor to Dr. Fritz Victor Hasselblad, Goteborg, Sweden

Filed Dec. 10, 1970, Ser. No. 96,742
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **2 Claims**

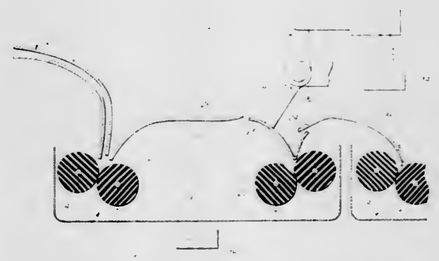


A viewfinder mirror mechanism for one-piece, single-lens reflex cameras in which three or four arms have one end pivotally attached to the sides of the camera and their other ends pivotally attached to lateral edges of the mirror and the pivot points are selected so that movement of the mirror between a folded-down and a folded-up position causes the edge of the mirror adjacent the lens to describe an extended S-shaped curve which curves away from the lens until the mirror clears the lens area and then curves toward the lens in the area above the lens area.

3,698,306
PHOTOGRAPHIC PROCESSOR

Henry N. Fairbanks, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

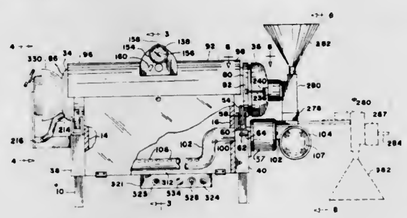
Filed June 10, 1971, Ser. No. 151,635
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 **9 Claims**



A photographic processing unit in which an increased amount of processing time in one processing station of the unit is attained by recycling the photographic materials through that processing station. Recycling is achieved by providing a movable two position deflector at the exit of the processing station. The deflector is movable to a first position in which it

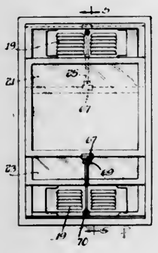
deflects the photographic materials existing from that processing station back to the entrance for one or more further cycles through the processing station. After the photographic materials have been recycled a sufficient number of times to allow complete chemical treatment, the deflector is moved to a second position wherein it deflects the photographic materials to the next processing station of the unit wherein the same type of recycling may be utilized if so desired.

3,698,307
PHOTOGRAPHIC PRINT AND FILM PROCESSING MACHINE
Theodore A. Reichardt, 4501 East 8th Street, Tucson, Ariz.
Continuation-in-part of Ser. No. 64,285, Aug. 17, 1970, abandoned. This application Feb. 19, 1971, Ser. No. 116,870
Int. Cl. G03d *3/08*
U.S. Cl. 95—93 **17 Claims**



A photographic print and film processing apparatus having a housing adapted for holding a plurality of chemicals containers; a processing drum rotatable relative to said housing; a convective heating and cooling device for maintaining said containers and said drum substantially at a desirable temperature; and thermostatic elements for controlling said convective device whereby the temperature of chemicals in said containers and said drum are maintained compatible to the successive use of said chemicals in said drum for processing sensitized materials.

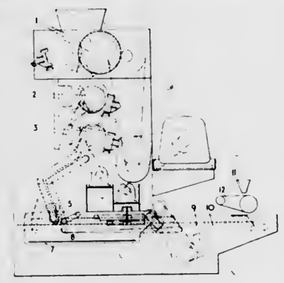
3,698,308
FILTER SYSTEM FOR WINDOWS
Joseph Navara, 2105 West Walton Street, Chicago, Ill.
Filed May 28, 1970, Ser. No. 41,191
Int. Cl. E06b *7/08*
U.S. Cl. 98—99 R **1 Claim**



A window filter system providing filter means positionable in window frames adjacent opened windows for providing a cooling air flow to the associated room. Filter units are provided at both the top and bottom of the window frame to provide air circulation.

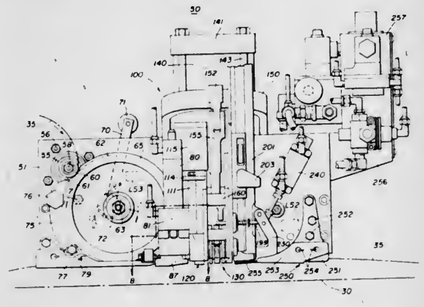
The system is a passive system in that no mechanical parts are utilized for blowing air in or out of the room.

3,698,309
DOUGH LAMINATING
Gordon Steels, Peterborough, England, assignor to Baker Perkins Limited, Peterborough, England
Filed Nov. 20, 1970, Ser. No. 91,382
Int. Cl. A21c
U.S. Cl. 99—450.1 **7 Claims**



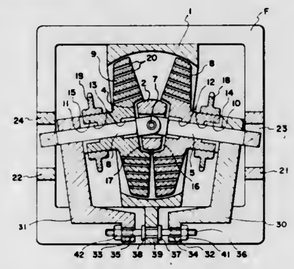
In a method and apparatus for laminating bakery dough in the manufacture of crackers for example a continuously moving peeler conveyor band is caused to reciprocate with a reciprocatory laminating device for the purpose of depositing an additive such as fat/flour dust between the dough laminations the speed of the conveyor band relative to the speed of the laminating device being such that the additive is discharged from the conveyor during movement of the laminating device in one direction only.

3,698,310
STRAPPING MACHINE
Robert F. Plattner, Chicago Heights, and James A. Kocian, Evergreen Park, both of Ill., assignors to Interlake, Inc., Chicago, Ill.
Filed Jan. 18, 1971, Ser. No. 107,269
Int. Cl. B65b *13/34*
U.S. Cl. 100—4 **20 Claims**



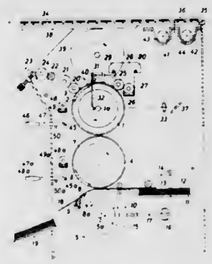
A strapping machine of the type including gripping means for holding the strap encircled in a loop about the object, seal feed mechanism, gathering jaws, tensioning means, sealing jaws, crimping die members and a shear blade, also comprises a single air-actuated piston adapted for reciprocating movement in directions substantially normal to the plane of the strap in the sealing region, the piston driving a crosshead having cam surfaces and abutment surfaces thereon respectively operative to produce substantially simultaneously a cammed movement of the sealing jaws to their sealing configuration, movement of the die members to their crimping position, movement of the shear blade to its shearing position and opening of the gathering jaws, all during a single stroke of the crosshead; novel linkage for coupling the piston to the crosshead is also disclosed.

3,698,311
APPARATUS FOR CONTINUOUS DEHYDRATION
Ryutaro Yoritomi, 5-17-12 Koishikawa, Bunkyo-ku, Tokyo, Japan
Filed Nov. 30, 1970, Ser. No. 93,562
Claims priority, application Japan, Dec. 6, 1969, 44/97534
Int. Cl. B30b *3/04*
U.S. Cl. 100—158 C **10 Claims**



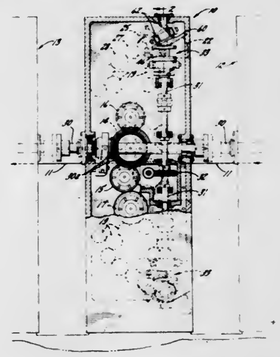
A dehydrating apparatus having facially opposed filter discs mounted angularly for rotation on the inner ends of two fixed supporting shafts. The inner tip ends of the supporting shafts are joined for pivotal movement by a pin assembly which is supported by an arm plate integrated with the apparatus' outer annular casing. The outer ends of the shaft are supported for movement in a horizontal plane by guides carried by the apparatus' side plates. Connecting levers integrally formed with the outer ends of the supporting shafts extend to the outer periphery of the outer annular casing. The free ends of the connecting levers connected by an adjustable connecting rod which permits the space between the filter discs to be varied. In one embodiment the adjustable connecting rod is provided with a resilient member to permit the space between the filter discs to be increased if the pressing force therebetween becomes too great.

3,698,312
ROTARY PLANOGRAPHIC PRINTING PRESS
Rodolf Muller, Deisenhofen, Germany, assignor to Agfa-Gevaert, Mortsel, Belgium
Continuation-in-part of Ser. No. 503,696, Oct. 23, 1965, abandoned. This application Oct. 31, 1969, Ser. No. 873,028
Claims priority, application Germany, Dec. 15, 1964, A 47884
Int. Cl. G03b *27/12*; G03f *7/10*; B41l *25/00*
U.S. Cl. 101—142 **7 Claims**



A rotary planographic printing press wherein a hydrophobic photoconductive recording layer carried on the printing cylinder of the press is exposed to acquire a latent photoconductive image of the information to be printed and is then developed by means of an aqueous conductive developing liquid applied to the photoconductive recording layer under an external electrical field of such a polarity as to attract such liquid differentially into wetting relation with the recording layer surface in accordance with the exposed image thereon, a hydrophobic planographic printing ink is applied to the thus selectively wetted recording layer so as to adhere selectively to the unwetted areas of the recording layer while being repelled from the wetted areas thereof, and the ink image thus obtained is printed onto a copy sheet fed to the press. Preferably the press includes an off-set cylinder operating in conjunction with an impression cylinder. Preferably, the aqueous developing liquid and the hydrophobic printing ink are applied by means of a common applicator roller onto which is applied a fine screen pattern of the ink and in the uninked open areas the aqueous developing liquid is applied.

3,698,313
MEANS FOR OSCILLATING AND SILENCING A DUCTOR ROLLER IN A PRINTING PRESS
Leonard I. Tafel, La Orange, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed June 25, 1970, Ser. No. 49,587
Int. Cl. B41f *31/06*
U.S. Cl. 101—350 **3 Claims**



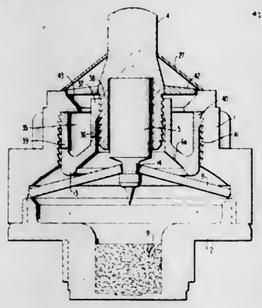
A mechanism for selectively oscillating the ductor roller of a printing press wherein a barrel cam, mounted on a drive shaft, has a first cam track which is ramped to provide "throw" for oscillation of the ductor roller and a second track having zero "throw" for maintaining the ductor roller in constant contact with the ink drum. In the preferred embodiment a ductor roller-supporting shaft, mounted perpendicularly to the drive shaft, carries the ductor roller eccentrically mounted for lateral swinging movement and also carries a cam follower eccentrically mounted for engagement with the barrel cam member. An actuator axially shifts the ductor roller-supporting shaft for selective engagement of the first and second cam tracks.

3,698,314
METHOD FOR IMAGE TRANSFER
John D. Grier, Temperance, Mich., assignor to Owens-Illinois
Filed June 15, 1970, Ser. No. 46,063
Int. Cl. B41c *3/08*
U.S. Cl. 101—426 **1 Claim**

A method and apparatus for image transfer in an electrophotography printing system wherein the removal of solid particulate toner in the form of an image on an image-defining element is accomplished by contacting the toner with a heated

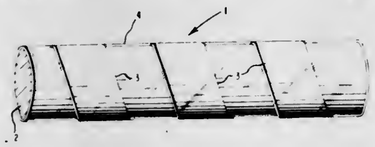
transfer roll. The portion of the toner directly contacted by the heated transfer roll softens and interparticle adhesion is increased by the combination of heat and pressure applied by the heated transfer roll. Simultaneously, the portion of the toner directly on the image-defining element becomes relatively less adherent to the surface of the image-defining element to thereby facilitate its transfer from the image-defining element to the heated transfer roll.

3,698,315
NON-METALLIC MINE PRESSURE FUSE
Franz Becker, Bonn, Germany, assignor to Dyamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed June 13, 1969, Ser. No. 833,025
Claims priority, application Germany, Aug. 1, 1968, P 17 71 935.6
Int. Cl. F42b *23/28*
U.S. Cl. 102—8 **9 Claims**



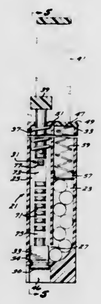
A non-metallic mine pressure fuse, having a housing comprising upper and lower portions secured together, a leaf spring with its peripheral surface retained between the upper and lower housing portions and its central portion projecting upwardly in the unbiased state, a percussion pin supported for axial displacement relative to the housing and retained at a central aperture provided therefor in the leaf spring so as to penetrate a percussion explosive charge in the lower housing upon flexing of the leaf spring to a downwardly projecting position, a trip member projecting from the upper surface of the housing and arranged for axial displacement relative thereto, and a pressure translating member interposed between the trip member and the leaf spring to cause a downward flexing of the spring upon an external pressure in excess of a predetermined value applied to the trip member, wherein detent means are provided to prevent restoration of the pressure translating member to its initial position prior to the exertion of a pressure of lesser magnitude than the predetermined value.

3,698,316
DETONATING FUSE OF PETN-POLYETHYLACRYLATE
William L. Evans, Blackwood, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 18, 1970, Ser. No. 99,474
Int. Cl. F42b *1/00*
U.S. Cl. 102—27 **14 Claims**



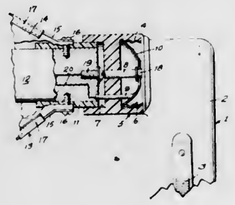
A detonating fuse having an inert flexible core, and wound around said core a strip of explosive composition comprising particulate pentaerythritol tetranitrate incorporated in a polyethylacrylate rubber.

3,698,317
FLARE GUN
William L. Finch, 1644 21st Street, Manhattan Beach, Calif.
Filed April 19, 1971, Ser. No. 135,037
Int. Cl. C06d *1/04*; F41c *27/06*
U.S. Cl. 102—37.4 **10 Claims**



A hand operated flare gun including a housing formed with an elongated flare magazine having an ejector compartment co-extensive therewith. The magazine terminates in its lower end with an outlet leading to the ejector compartment and an ejector is disposed in such compartment and includes a plunger reciprocable from a retracted position behind the outlet to an ejecting position adjacent such outlet. The ejector is biased to its ejecting position and includes a trigger disposed adjacent a hand grasp handle on the housing. Igniting means is disposed adjacent one end of the outlet whereby an operator may grasp the handle and pull the trigger rearwardly to enable a flare to be discharged from the outlet and into the path of the plunger and the trigger may then be released to enable the plunger to be biased to its ejecting position to engage the flare and eject it outwardly past the igniting means to ignite one end thereof.

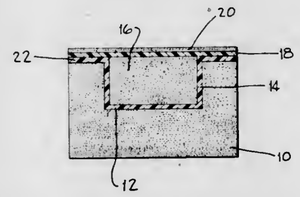
3,698,318
ADAPTABLE PYROTECHNIC CANDLE WITH DISPOSABLE FOLDING SHIELD
Glenn L. Shira, Newark, Del., and Joseph N. Ruff, Havre de Grace, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 21, 1970, Ser. No. 100,017
Int. Cl. C06d *1/10, 1/04*
U.S. Cl. 102—37.8 **9 Claims**



A high intensity pyrotechnic candle with disposable, foldable shield for producing a temporarily blinding light source as a mob dispersal means during periods of reduced light and consists of a conical shield of aluminum backed, asbestos

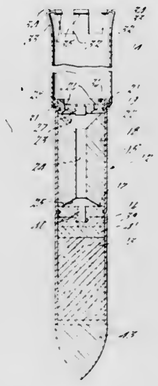
cloth, reinforced by a plurality of flat steel springs secured longitudinally to the cloth and attached at their rearward ends to a bushing which receives the candle. The bushing is inserted into an adaptor having embedded electrical contacts. The adaptor is screwed onto the lens cap threads of a standard hand flashlight. The candle is then ignited by turning on the flashlight's switch.

3,698,319
HIGH TEMPERATURE-RESISTANT WATERPROOF CASELESS PRIMER
Joseph B. Quinlan, and Earl F. Van Artsdalen, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army
Filed June 8, 1971, Ser. No. 151,087
Int. Cl. F42b *3/10*
U.S. Cl. 102—45 **4 Claims**



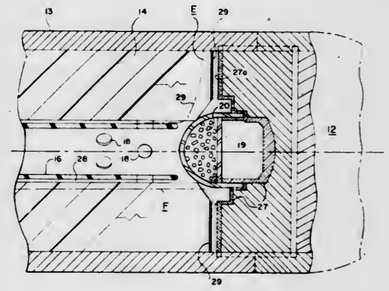
A combustible primer for use with caseless small arms ammunition, the primer being resistant to water, and elevated temperatures and less prone to accidental ignition and cook-off. The primer pellet is completely surrounded by energetic, high-temperature resistant, waterproofing seals, none of which require any liquid binder for room temperature pressure bonding thereof.

3,698,320
TELESCOPIC ROCKET
David L. Cochran, Danville; Arthur L. Deleray, Pleasanton, and John P. Lehman, Alamo, all of Calif., assignors to M B Associates, San Ramon, Calif.
Filed July 29, 1970, Ser. No. 59,253
Int. Cl. F42b *15/00*
U.S. Cl. 102—49.3 **2 Claims**



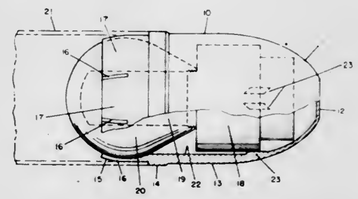
A safety device comprising a rocket having a body of cylindrical form and an ogive head over which a sleeve is slidably disposed in nested relation for storage. Upon initial movement of the rocket, the sleeve slides rearwardly so as to extend from the rear end thereof. If the rocket is directed outwardly into the relative airstream of an airplane, a javelin effect is produced so as to stabilize the rocket for travel in the direction of the airplane. If the rocket is directed upwardly from the ground by means of a hand-held launcher or other fixed launcher, the telescoping rear sleeve will cause the rocket to stabilize in flight.

3,698,321
ROCKET ASSISTED PROJECTILE
Richard H. Wall, Huntsville, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 29, 1969, Ser. No. 872,176
Int. Cl. F42b *13/02*
U.S. Cl. 102—49.3 **9 Claims**



An improved projectile suitable for use in artillery pieces, through preferably in the higher calibres, is disclosed wherein projectile range upon launching by the gun is considerably extended by means of a solid propellant rocket motor in combination therewith which is characterized by internal means for supporting the solid propellant. Ignition of the propellant produces propulsive gases. The motor is operated after exit from the gun barrel and extends the flight range of the projectile.

3,698,322
PROJECTILE HOUSING
Donald Miller, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed April 21, 1971, Ser. No. 135,976
Int. Cl. F42b *13/12*
U.S. Cl. 102—56 **6 Claims**



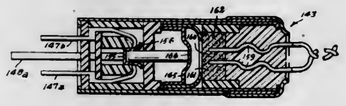
A unitary, one piece projectile housing for a high explosive which explosive is within a container of a generally spherical shape and into which is threaded a fuze to form a fuze-ball assembly. The housing being generally cylindrical and having a closed nose end with the aft end provided with a converging spherically shaped portion. Said shaped portion being provided with a plurality of longitudinal slits thereby forming or defining a plurality of rearwardly extending spherical cantil-

ever springs. The housing being of a material which is relatively thin, elastic and resilient and having at its forward inner surface a plurality of annularly disposed, inwardly directed positioners.

3,698,323
EXPLOSIVE OPERATED SWITCH FOR BOMB FUZING SYSTEM

Maurice Apstein, Bethesda, Md.; Evert Blomgren, Kensington, Conn.; George R. Keehn, Washington, D.C.; Laurence M. Andrews, Silver Spring, and Jacob Rabinow, Takoma Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 555,216, Dec. 23, 1955. This application May 26, 1969, Ser. No. 848,129
Int. Cl. F42b 5/08
U.S. Cl. 102—70.2 R **3 Claims**

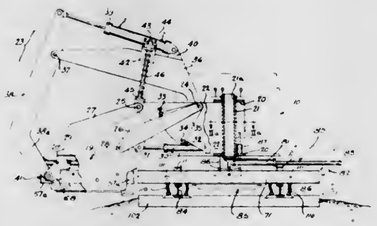


This invention relates to an explosive type switching device and comprises a main explosive charge, means for causing the detonation of this main explosive charge in response to an electrical signal, a deformable diaphragm adapted to be deformed by the detonation of the explosive charge such that a shaft is projected forward from a first position to a second position in response to the deformation. The movement of said shaft causes the actuation and change of mode of at least two sets of fixed contacts. Movement of the shaft transposes at least one electrical contact member such that the first set is electrically connected to each other when said shaft is in the first position. Upon movement of the shaft the first set of fixed contacts are irreversibly disconnected from each other and the shaft moves the electrical contact member to a second position irreversibly connecting the second set of fixed contacts to each other through the contact member. The second set of contacts are located at a plane transverse to the plane of the first set of contacts.

3,698,324
MACHINE FOR INSERTING TIES BENEATH A RAILROAD TRACK

Richard A. Peppin, and Lawrence D. Trottochau, both of Minneapolis, Minn., assignors to Mannix Construction, Inc., Minneapolis, Minn.

Filed Dec. 3, 1970, Ser. No. 94,749
Int. Cl. E01b 29/10
U.S. Cl. 104—9 **11 Claims**

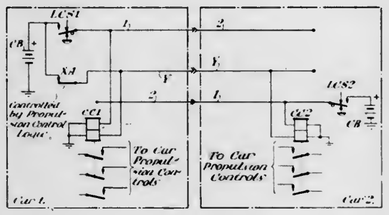


Ties dumped on the rails are withdrawn individually into a guide sleeve mounted on a tie inserting mechanism extending laterally from an on-track vehicle. The sleeve is then lowered to a location beneath the track and the withdrawn tie is pushed under the track and against an old tie to force the latter out. The track may be jacked up during this operation.

3,698,325
PROPULSION CONTROL SYSTEM FOR SELF-PROPELLED TWO-CAR TRAINS

Reed H. Grundy, Murraysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 26, 1970, Ser. No. 66,971
Int. Cl. B61c 3/00
U.S. Cl. 105—61 **9 Claims**

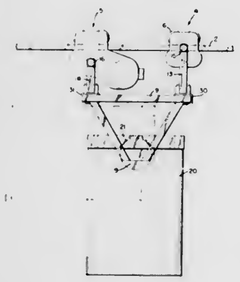


A special signal is transmitted through train line communication channels from a transmitter means on one car to a receiver means on the other car of the self-propelled train unit. The transmission of this signal is controlled by the propulsion control logic means located on one car. The receiver means includes a relay which controls the propulsion condition of one of the cars, normally the trailing car, shifting between direct, multiple unit control from the operator's position and a preset condition, e.g., propulsion off, as the special signal is or is not received. The special signal may be direct current energy or alternating current energy having a selected frequency characteristic. This latter signal is superimposed on train line channels used for other purposes, e.g., the directional train line wires. The direct current signal, however, requires a separate, dedicated train line channel used in conjunction with the directional train line wires.

3,698,326
TRANSPORT UNIT FOR OVERHEAD OR SUSPENDED CONVEYOR SYSTEMS

Eugen Schurch, and Rolf Storrer, both of Gerlafingen, Switzerland, assignors to Van Roll AG, Gerlafingen, Switzerland

Filed June 2, 1970, Ser. No. 42,778
Claims priority, application Germany, June 2, 1969, P 19 28 058.1
Int. Cl. B61b 3/02, 13/04
U.S. Cl. 105—156 **4 Claims**



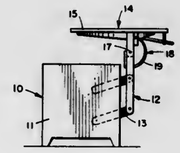
A transport unit constructed for the suspension of load-carrying containers or the like for single-track overhead conveyor

systems, incorporating two undercarriages which are operatively coupled together by a coupling mechanism of the invention. This coupling mechanism comprises swivel frame means embodying a support frame having two support arms, and wherein such coupling mechanism further includes at most two pairs of swivel joints arranged at pivot axes which are disposed substantially perpendicular to one another.

3,698,327
COUNTERBALANCING TABLETOP CONSTRUCTION

James R. Litvinoff, Phillips, and David F. Evans, Manitowoc, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 4, 1971, Ser. No. 103,528
Int. Cl. A47f 5/12
U.S. Cl. 108—2 **14 Claims**

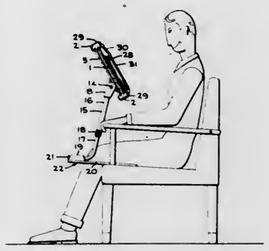


A counterbalancing mechanism for a table, such as a drafting table, having an angularly adjustable top. The mechanism is double acting, thereby counterbalancing the top against forward tipping forces when it is moved towards a horizontal position, and against rearward tipping forces when it is moved towards a vertical position, and is adjustable to control the onset and thereby the magnitude of such counterbalancing forces.

3,698,328
READING TABLES

Stanley M. Weir, 1717 Woodland Avenue, Palo Alto, Calif.

Filed Oct. 21, 1968, Ser. No. 769,347
Int. Cl. A47f 5/12
U.S. Cl. 108—6 **6 Claims**

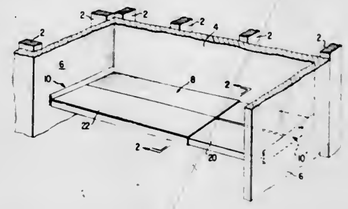


A reading table arranged for support on a bed, chair or the floor including a table top mounted for lateral shifting motion as well as changed inclination relative to upright legs and supporting feet, each of the latter being arranged for adjustment to vary the disposition of the table top and to enable collapse into a storage position wherein the top, legs and feet reside in adjacent parallel planes.

3,698,329
WALL MOUNTED SHELF ASSEMBLY

Robert F. Diamond, Reston, Va., and George W. Kingston, Chevy Chase, Md., assignors to Timber Engineering Company, Washington, D.C.

Filed Jan. 15, 1971, Ser. No. 106,809
Int. Cl. A47b 23/00
U.S. Cl. 108—42 **7 Claims**



A wall mounted shelf assembly especially suitable for closet shelves. A pair of support brackets are installed in opposite walls. Each bracket has a plurality of teeth which are driven into the wall to secure the bracket in place. Each bracket has a flange that projects outwardly from the wall and a shelf that is formed of thin, substantially rigid, material, such as sheet metal, is supported on the flanges of the brackets. The shelf has telescoping sections for adjusting the length of the shelf and a locking device for preventing movement of the sections relative to each other.

3,698,330
MECHANIC'S OVER-THE-ENGINE ACCESSIBILITY CARRIER

Thomas C. Krombach, 17 Saint Joan Lane, Cheektowaga, N.Y.

Filed March 30, 1971, Ser. No. 129,405
Int. Cl. A47b 23/00
U.S. Cl. 108—44 **10 Claims**



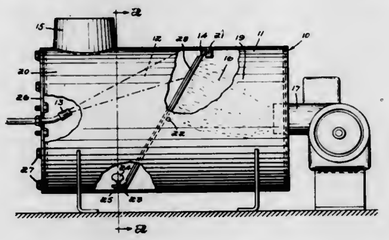
A mechanic's over-the-engine accessibility carrier is adapted to be located over the engine compartment of a vehicle and to be supported on the adjoining fender portions thereof and is composed of a body supporting assembly adapted to be located over the engine and including an upper and elongated rigid platform provided with a head rest and a tool tray and a lower elongated supporting frame provided with longitudinal bearing shafts and lateral flanges, and four elongated telescopic leg assemblies adapted to extend laterally outwardly and downwardly from opposite sides of the body supporting assembly adjacent opposite ends thereof, with each leg assembly including a transverse sleeve at its inner end pivotally mounted on and adjustable longitudinally of the corresponding bearing shaft, a spring biased lever and detent

device intermediate its ends for longitudinal adjustment thereof, an adjustable depending foot pad at its outer end and adapted to rest upon the underlying fender portion and a longitudinally adjustable stop including a wedge engageable between the underside of the corresponding lateral flange and the upperside of the inner end of the corresponding leg assembly for varying and limiting its outward pivotal movement about and longitudinal adjustment along the corresponding bearing shaft.

3,698,331
APPARATUS AND METHOD FOR THE DISPOSAL OF LIQUID WASTE MATERIAL

Alton J. Rohr, Framingham, and Cornelius J. McKeown, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army

Filed July 19, 1971, Ser. No. 163,794
Int. Cl. F23g 5/12
U.S. Cl. 110—7 R **10 Claims**

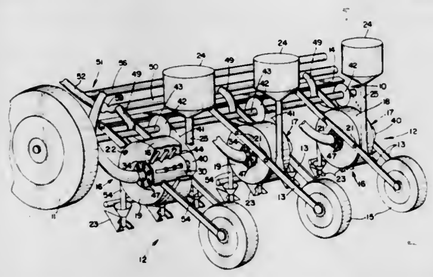


An incinerator and method for the disposal of liquid waste material containing a substantial amount of water. The incinerator comprises a hollow shell having an inclined elliptically shaped thermally conductive baffle plate having a plurality of openings therethrough. The baffle plate is mounted at an oblique angle inside of the shell, dividing the latter into two portions. Liquid waste material is sprayed through a nozzle onto the upper surface of the baffle plate while a fuel-fired flame is directed against the lower surface of the baffle plate. Water is rapidly evaporated and combustible components of the liquid waste material are burned, the water vapor and combustion products passing into the atmosphere through a flue.

3,698,332
POSITIVE PRESSURE FEED WHEEL

Donald A. McCallum, Burlington, Ont., Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 24, 1970, Ser. No. 75,059
Int. Cl. A01c 7/18
U.S. Cl. 111—77 **11 Claims**

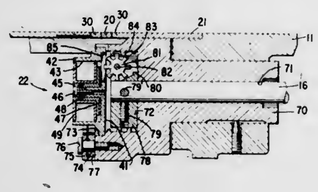


A positive pressure feed wheel for a planter of the pneumatic type wherein a hollow rotor vented to atmospheric air pressure is provided with radial fingers having a passage therethrough terminating in a seed pick-up port. The rotor is rotatable in a closed stationary housing having an internal air pressure greater than atmospheric, so that positive air pressure forces seed against the ports and holds them there during a predetermined rotation of the rotor.

3,698,333
ROTATING SHUTTLE DRIVE MECHANISMS

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,608
Int. Cl. D05b 57/08
U.S. Cl. 112—189 **4 Claims**

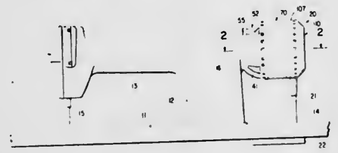


A drive mechanism for a rotary shuttle in which the shuttle is operatively connected to a rotary actuator by means of a pinion extending therebetween and serving as a radial driving key. In order to pass needle thread loops between the shuttle and the pinion, the pinion is turned slowly about its own axis during rotation of the shuttle so that the thread loops will be carried in one of the radial indentations between adjacent pinion teeth.

3,698,334
POSITION SIGNALING DEVICES FOR SEWING MACHINE DRIVING UNIT

Johann O. Kleinschmidt; Heinz E. Walter, both of Blankenloch-Buchig, and Helmar H. Holl, Karlsruhe, all of Germany, assignors to The Singer Company, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,664
Int. Cl. D05b 69/24
U.S. Cl. 112—220 **5 Claims**

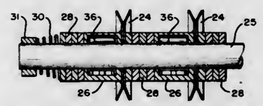


A direct drive unit for a sewing machine applied on the sewing machine frame co-axially of the sewing machine main shaft including a device for producing signals responsive to discrete positions of the sewing machine main shaft. The position signaling device is capable of indicating a plurality of different angular positions of the sewing machine main shaft, which positions may be selected simply by turning frictionally restrained arms accessibly located on the free extremity of the drive unit into the angular positions for which signals are desired.

3,698,335
WRAP-AROUND MECHANISM FOR THE STOP MOTION MEANS OF A MULTI-NEEDLE SEWING MACHINE

Harold C. Forrester, and Harold E. Tatum, both of Louisville, Ky., assignors to Louisville Bedding Company, Louisville, Ky.

Filed May 20, 1971, Ser. No. 145,325
Int. Cl. D05b 49/00
U.S. Cl. 112—243 **4 Claims**



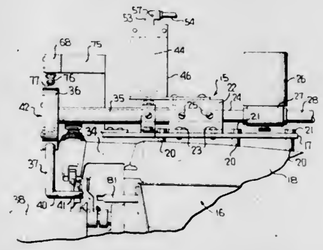
An automatic stop motion means using, at the beginning of the conventional thread-tensioning section, a separate rotary wrap-around unit for each separate needle thread, each unit comprising a wrap-around wheel mounted on a one-way clutch. All units are mounted on a common shaft which is driven at an adjustably fixed minimum speed. Each wrap-around wheel is normally rotated by its needle thread at a thread-dictated speed which is higher than the adjustably fixed minimum speed of that common shaft. Upon the breakage of a given needle thread, the rotary speed of its wrap-around wheel quickly decreases. When the decreasing rotary speed of the wrap-around wheel equals the fixed speed of said common shaft, which is set to approximate (but not to equal or exceed) the minimum speed of the slowest moving unbroken needle thread, the common shaft will then take over the job of rotating that particular wrap-around wheel. Consequently, the supply end of the broken needle thread continues to be fed into the thread-tensioning section while the withdrawal of that thread from that section decreases and may stop altogether. This action hastens its loss of tension in the thread-tensioning section and correspondingly hastens the operation of the threadtension sensor in shutting down the sewing machine.

The foregoing arrangement not only minimizes the frequency of shut-downs, due to overloads on the fastest threads and to false indications of thread breakage on the slowest threads, but also minimizes the "line-out" time, which elapses between thread breakage and shut-down, and thus correspondingly reduces the length of the "line-out" (i.e. the line which is not stitched into the work by the broken thread) and the magnitude of the repair required to correct it.

3,698,336
DEVICE FOR TACKING DOWN THE FREE END OF A THREAD CHAIN

Wilbur A. Launer, West Camp, N.Y., assignor to Union Special Machine Company, Chicago, Ill.

Filed Dec. 29, 1970, Ser. No. 102,295
Int. Cl. D05b 65/04
U.S. Cl. 112—252 **18 Claims**

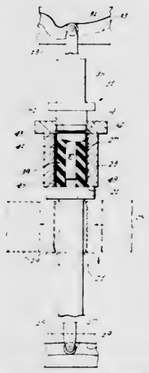


This disclosure relates to an attachment for a sewing machine for automatically picking up the loose end of a thread chain and folding the same back under the presser foot against the direction of feed, in which position the thread chain is automatically sewn down during the formation of stitching in the next workpiece. The attachment is automatic in operation with the operation thereof timed so as to make certain that the thread chain is folded back in position when the next work is presented to the sewing machine so that the thread chain is tacked down from the first stitch implanted in the next work.

3,698,337
CAN BODIES AND METHOD AND APPARATUS FOR MANUFACTURE THEREOF

William H. Brawner, Anaheim; Claude A. Gunsalus, Covina, and Lowell K. Rockwell, Walnut, all of Calif., assignors to Dale E. Summer, Tiburon; Lowell K. Rockwell, Walnut; Paul C. Rogers, Whittier; Nick A. Lazalbat, Fullerton; Claude A. Gunsalus, Covina; William H. Brawner, Anaheim; Gordon R. Kimmich, Newhall; Leonard J. Plourde, Canoga Park; Marcus W. McGuire, El Cajon and George F. Smyth, Los Angeles, Calif., a part interest to each

Filed Dec. 11, 1969, Ser. No. 884,299
Int. Cl. B21d 51/00, 22/10
U.S. Cl. 113—120 AA **23 Claims**



A tubular can body comprising a radially expanded central portion, a neck at each end of the central portion, and a radially extending flange adjacent each neck at the ends of the tubular member. A tubular, elastomeric member is positioned within a die-contained can body and is pressurized to mold the can body to the shape of the die. The operation forms a radially expanded can body, necks the can body adjacent the radially expanded portion, and flanges the ends of the body in a single operation. A tapered elastomeric mandrel may be utilized in place of the tubular mandrel, obviating the necessity of lubricating the mandrel and allowing the body to be axially extended so that the material from which the can is formed is altered in cross section both radially and axially. A structural groove, suitably positioned in the mandrel surface allows flanging to be effected at the upper end of the can body without damage to the mandrel. Alternatively, an expandable member may be substituted in place of either the tubular or tapered mandrel to form the can body through use of hydraulic pressure.

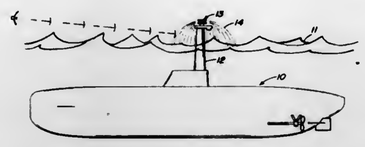
3,698,338
SUBMARINE SNORKEL CAMOUFLAGE METHOD

Emil W. Hymowitz, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 16, 1958, Ser. No. 780,904
Int. Cl. B63g 9/00, 9/02, 13/00
U.S. Cl. 114—15 **3 Claims**

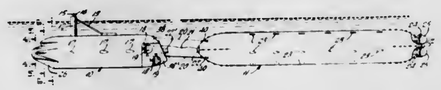
1. In combination with a submarine having a hull, a snorkel housing extending vertically from said hull, a water nozzle

having a horizontal flow axis fixedly secured to said snorkel, means connected to said nozzle for admitting water thereto, and adjusting means for controlling the amount of water and



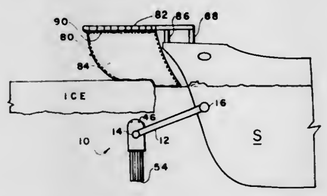
shape of water spray released from said nozzle, whereby the amount of radar echo from said exposed submarine is effectively diminished and detection of said submarine is obviated.

3,698,339
METHOD AND MEANS FOR THE WATER TRANSPORT OF LIQUIDS
Marcel J. E. Golay, 116 Ridge Road, Rumson, N.J., and Amory H. Waite, Jr., 46 Monmouth Boulevard, Oceanport, N.J.
Filed Feb. 26, 1970, Ser. No. 14,482
Int. Cl. B63b *35/00, 25/08*
U.S. Cl. 114—16 R **9 Claims**



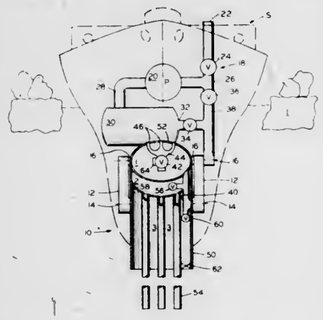
A submersible fluid transporting watercraft which may be self-propelled or towed and which is separable into segments with the segments having means for compensation for bouyancy and for shifting the segments one relative to the others to facilitate assembly and disassembly of a single unit. The invention further includes improved means for navigating ice covered waters which is capable of cutting through ice of substantial thickness or which can travel beneath the ice in waters of adequate depth.

3,698,340
ICE-BREAKING SYSTEM FOR SHIPS
Jacob C. Wagner, P.O. Box 133 New Castle, New Castle, Del.
Continuation-in-part of Ser. No. 16,516, March 4, 1970. This application March 2, 1971, Ser. No. 120,271
Int. Cl. B63b *35/08*
U.S. Cl. 114—40 **12 Claims**



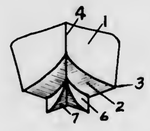
A system for making navigable channels through heavy sea-ice, comprising a ship carried, compressed-air operated, water-thrust actuated vertical ram for positioning beneath the water to break sea-ice by powered upward impacts with the under surface of the ice, accompanied by water-hammer ice shattering action, interspersed with powered descents, in rapid oscillation; a co-acting spray suppressant curtain and a spray suppresant underwater thrust exhaust are disclosed, as well as an inertia-slug valve design in one embodiment to further the ice breaking efficiency.

3,698,341
ICE-BREAKING HAMMER ATTACHMENT FOR SHIPS
Jacob C. Wagner, P.O. Box 133 New Castle, New Castle, Del.
Filed March 4, 1970, Ser. No. 16,516
Int. Cl. B63b *35/08*
U.S. Cl. 114—40 **13 Claims**



A sea-ice breaker for ships, including a ship-borne high capacity source of compressed air and a submersible free-floating vertical ram assembly for pivotal attachment to the bow of a ship, the ram consisting of three chambers: an uppermost spheroidal chamber reinforced for splitting the ice from beneath by impact and having connection to the high-pressure air supply for throwing the ice aside after splitting by exhausting fluid against it under high pressure; a middle chamber connected through a header with a downwardly disposed array of parallel pipes and having connection to the high pressure air supply for driving the ram upward against the ice by rapid downward expulsion of seawater from the pipes; and a bell-like lower chamber open at the bottom to serve as an air-spring, and having connection to the high pressure air supply for adjusting the nominal buoyancy of the ram assembly and for supplying extra driving force to the ram when required.

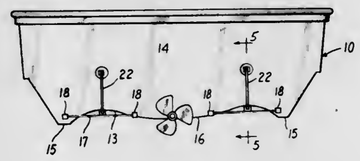
3,698,342
BOAT HULLS
Donald N. Jackson, 9402 44th Avenue S.W., Seattle, Wash.
Field Dec. 30, 1970, Ser. No. 102,820
Int. Cl. B65b *1/18*
U.S. Cl. 114—66.5 R **3 Claims**



A boat hull constructed with a bottom configuration of generally V cross-sectional shape except with an additional appendage as an integral part of the bottom described herein as a "widened keel form" with a modified W cross-sectional shape. Said "widened keel form" extends along both sides of the longitudinal centerline of the boat hull from the forward section of the hull to the stern. One half of the bottom portion of the said "widened keel form" is located approximately in the same inclined plane or nearly parallel plane to that of the opposite V bottom side of the boat hull. The forward portion

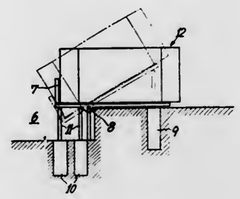
of said "widened keel form" extends above the load water line of the boat hull.

3,698,343
BOAT HULL
Martin W. Boome, 12 Hampstead Court, Nova Scotia, Canada
Filed Jan. 7, 1971, Ser. No. 104,585
Claims priority, application Canada, Feb. 3, 1970, 073,870
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 P **8 Claims**



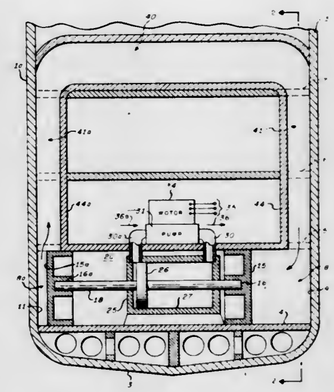
The hull bottom is shaped to form a longitudinal air-water channel which in the stern portion of the hull is divided into two transversely spaced air-water passages open at the transom. A pair of trim tabs are horizontally pivoted on the transom in such position that streams of air-water from the passages flow over as well as under the trim tabs.

3,698,344
SHIP BUILDING METHOD
Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Jan. 12, 1971, Ser. No. 105,870
Claims priority, application Japan, Sept. 4, 1970, 45/77564
Int. Cl. B63b *3/02*
U.S. Cl. 114—77 R **4 Claims**



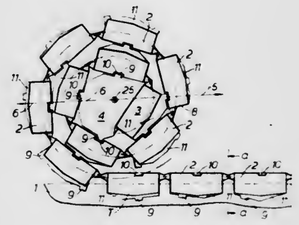
A procedure for building ships in which predetermined blocks of the hull are fabricated in an attitude where both the deck and the hull bottom are substantially vertical and longitudinal bulkheads and side plating are welded between the deck and the bottom along with transverse bulkheads. Following assembly of the hull block, it is transported to dockside and the bottom of the block is projected beyond the edge of the dock. Using the edge of the dock as a turning axis, the block is rotated to position the bottom of the block lowermost and the deck uppermost. The rotation of the hull block is preferably accomplished by elevating the block adjacent the deck by a hydraulic cylinder. Simultaneously the bottom of the hull block is lowered by hydraulic cylinders. A swing table may be used to support the hull block during such rotation, the table being pivoted to the edge of the dock.

3,698,345
ACTIVE TANK STABILIZER FOR MARINE VESSELS
Frederick J. Kreitner, Syosset, N.Y., assignor to Sperry Rand Corporation
Filed Dec. 28, 1970, Ser. No. 101,648
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **8 Claims**



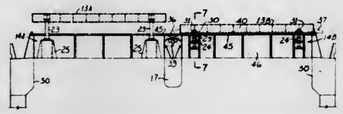
Active tank ship's stabilizer devices are disclosed having symmetrically positioned variable active tanks operated in cooperation by a common actuator. The tanks are arranged to permit injection or ejection of ballast liquid in a system avoiding unstabilizing secondary resonances by additively combining the effects of static and dynamic roll moments of the ballast liquid. The system may also be coupled to the ship's hull in such a manner as to counteract roll-induced disturbances of the ship about its yaw axis.

3,698,346
ROLL-BACK CLOSURE ASSEMBLY FOR LARGE OPENINGS, ESPECIALLY FOR HATCH OPENINGS OF SHIPS
Ralf Bauer, Warnemunde, Germany, assignor to Veb Warnowwerft, Warnemunde, Germany
Filed April 9, 1970, Ser. No. 27,016
Int. Cl. B63b *19/20*
U.S. Cl. 114—201 **9 Claims**



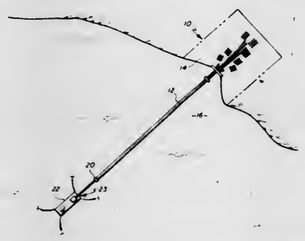
A roll-back closure assembly for large openings, especially for the hatch openings of marine vessels, comprises a plurality of deck elements of identical dimensions which are articulated to one another. When the assembly is rolled back, the pivotal axes of the linkage members between the elements lie along an Archimedian Spiral.

3,698,347
HATCH COVERS AND VENTILATING SYSTEM
Norman V. Laskey, 3641 Aylmer Street, Montreal, Quebec, Canada
Filed Jan. 5, 1971, Ser. No. 104,092
Claims priority, application Great Britain, May 19, 1970, 24,091/70
Int. Cl. B63b 19/18
U.S. Cl. 114—202 12 Claims



A vessel of the OBO type in which the holds are serviced by a pair of transversely disposed hatches and a central longitudinal girder forms a ventilating trunk extending lengthwise of the vessel and a support for the adjacent hatch coamings of the transversely disposed hatches. The hatch covers are raised and lowered by jacks and one of the pair of hatch covers of the transversely disposed hatches is movable transversely of the vessel to underneath the other of the pair of hatch covers, and both of the pairs of hatch covers are movable piggyback transversely of the vessel.

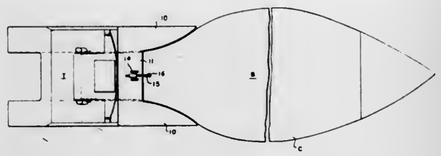
3,698,348
METHOD AND APPARATUS FOR SUBSURFACE TOWING OF FLOWLINES
George W. Morgan, Anaheim, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed Sept. 21, 1970, Ser. No. 74,052
Int. Cl. B63b 21/00
U.S. Cl. 114—235 B 14 Claims



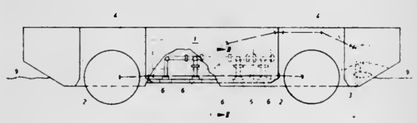
This disclosure is directed to a method of transporting a flowline or flowline bundle for installation in an offshore petroleum field wherein the fabrication of the flowline is land based, after which the full-length flowline is towed (at a sufficient depth below the surface of the water) to the installation site, so as not to be affected by adverse sea conditions while in tow. Each free end of the line is adapted with a connecting apparatus for connecting to submerged connecting assemblies or structures. When the flowline is drawn down to the connecting assemblies, connection is made thereto just prior to the final settlement of the flowline to the ocean floor.

3,698,349
SEAGOING TUG AND BARGE CONSTRUCTION
John N. Stevens, West Palm Beach, Fla., assignor to Catug Corporation, Fort Lauderdale, Fla.
Filed June 29, 1971, Ser. No. 157,875
Int. Cl. B63b 21/00
U.S. Cl. 114—235 R 10 Claims

An integrated tug and barge unit capable of operation on the high seas is produced by providing a twin hull tug boat of the catamaran type and having a horizontally disposed shelf connecting the twin hulls to one another and adapted to receive and retain a projection extending rearwardly from the aft end of the sea-going, cargo carrying barge in firm engagement therewith. The tug boat has a portion of the forward end of each hull shaped to conform with the curvature of a portion of the aft end of the barge hull so that a substantially tight mating engagement therebetween can be provided. Positively driven sliding wedge units or like wedging means are positioned between the barge and tug engagements to insure a tight engagement and to eliminate any relative movement between the tug and barge. Further, positively driven connecting and disconnecting means are provided between the forward end of the barge and the aft end of the tug to draw the tug and barge tightly together and thus prevent the tug from moving aft relative to the barge.



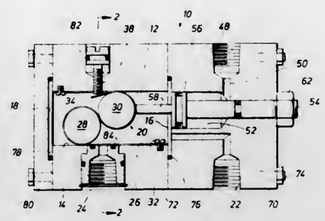
3,698,350
AMPHIBIOUS VEHICLE
Hermann Walter Gehlen, Pirmasenser Strasse 60, Kaiserslautern, Germany
Filed Nov. 10, 1969, Ser. No. 875,099
Claims priority, application Germany, May 23, 1969, P 19 26 388.8
Int. Cl. B63f 3/00
U.S. Cl. 115—1 R 1 Claim



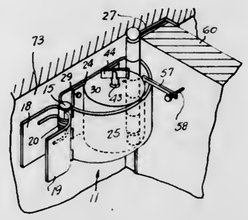
The amphibious vehicle which has a buoyant vehicle body and marine drive means for movement in water and wheels for driving on land, is provided at its bottom by substantially equally distributed air discharge nozzles supplied from a source of air under pressure to form a film of air between the bottom of the vehicle and any ground of muddy or sludgy consistency.

3,698,351
VIBRATION DETECTOR
Robert S. Harrah, P.O. Box 14410, Houston, Tex., and Manmohan Suigh Kalsi, 8706 Amblewood Drive, Houston, Tex., assignors to said Harrah, by said Kalsi
Filed Oct. 27, 1969, Ser. No. 869,718
Int. Cl. G01l 19/12
U.S. Cl. 116—70 10 Claims

For use in detecting vibrations of rotary equipment or the like, the apparatus incorporating a case enclosing a rolamite structure including a pair of cylindrical rollers and tension band, the band being biased to position the rollers at a range of locations on normal or non-excessive vibrations wherein an increase in vibrations moves the cluster to an alternative position to thereby trigger operation of indicator equipment associated with the vibration detector.



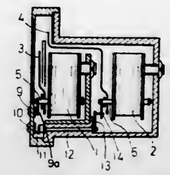
3,698,352
BURGLAR ALARM
Willey G. Forman, 153 S. Palm Drive, Beverly Hills, Calif.
Filed July 16, 1971, Ser. No. 163,326
Int. Cl. G08b 13/08
U.S. Cl. 116—86 9 Claims



An alarm device for frightening intruders consisting of a key-wound, spring-driven siren having a gear train between its driving spring and its rotor. The siren is mounted on one leaf of a spring clip adapted to embrace the pintle sleeve portions of a conventional door hinge. Pivotally mounted in the siren assembly is a spring-biased vertical shaft with a first arm lockingly engageable with a gear of the gear train and a second arm engageable with the door and arranged to rotate the shaft so as to release the gear when the door is opened and thereby to cause the siren to be activated.

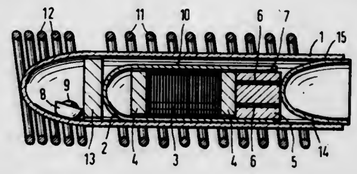
3,698,353
INDICATOR PROVIDED WITH A PLURALITY OF CONCENTRIC INDICATING NEEDLES
Masatake Nakahata, and Tatsuo Sugi, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1971, Ser. No. 118,253
Claims priority, application Japan, Feb. 27, 1970, 45/18699
Int. Cl. G09f 9/00
U.S. Cl. 116—129 A 6 Claims

An indicator is provided with a plurality of indicating needles on the same indicating surface. The revolving axis of the indicating needles are arranged on one straight line. One of the indicating needles is provided for indicating a low sensitivity range (L range), another of the indicating needles is provided for indicating a high sensitivity range (H range). By using the above-mentioned indicator in automatic measuring



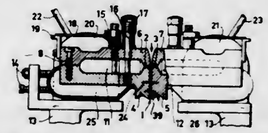
apparatus, the indication of full range grinding and the condition of precise grinding are read at the same time and on the same indicating surface.

3,698,354
DEVICE FOR INDIFFUSING DOPANTS INTO A SEMICONDUCTOR MATERIAL
Konrad Reuschel, Vaterstetten; Karl Platzoder, Munich, and Helga Kurzawe, Pretzfeld, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany
Filed Jan. 22, 1971, Ser. No. 108,724
Claims priority, application Germany, Feb. 27, 1970, P 20 09 359.8
Int. Cl. C23c 13/08
U.S. Cl. 118—49.1 14 Claims



The present invention relates to a device for indiffusing dopants into a semiconductor material, in high vacuum. The device comprises a heatable ampule which is accommodated in a sealed container and consists of the same semiconductor material and contains wafers of the semiconductor material to be doped. The ampule, at least on its outer surface, has at least a partially polycrystalline surface. The ampule has openings whose area is small in comparison to the cross-section surface of the ampule and that a dopant source is available which is located outside the ampule but within the sealed container.

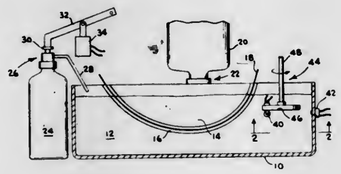
3,698,355
APPARATUS FOR COATING AND/OR IMPREGNATING A SHEET MATERIAL
James W. I. Heijnis, Arnhem, and Joseph T. V. M. Geusgens, Dieren, both of Netherlands, assignors to Aku N. V., Arnhem, Netherlands
Filed Nov. 17, 1969, Ser. No. 877,140
Claims priority, application Netherlands, Nov. 29, 1968, 6817090
Int. Cl. B05c 3/00
U.S. Cl. 118—411 2 Claims



A sheet being passed through a slit-shaped channel in a metering device is contacted on one or more sides with a coating

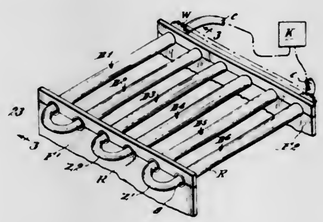
and/or impregnating agent which is supplied through one or more feed openings in the walls of the channel. The size of the feed openings may be adjusted to vary the distribution of the coating and/or impregnating agent, and the contour of the slit-shaped channel may be adjusted e.g., to vary the pressure build-up within the channel.

3,698,356
COMPENSATED TONER DENSITY CONTROL FOR ELECTROSTATIC PHOTOCOPIES
Robert Clark DuBois, Fairfield; Donald G. Mikan, Ridgefield, and Wayne H. Miller, Stamford, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 21, 1971, Ser. No. 108,329
Int. Cl. G03g 13/00
U.S. Cl. 118—637 **18 Claims**



A toner density control for use in electrostatic photocopiers employs a lamp optically coupled to a photosensor over a light path through a latent electrostatic image developer liquid. The spacing between the lamp and photosensor is uniformly, cyclically varied to derive differential photosensor electrical responses indicative of the toner particle concentration or density in the developer liquid. The differential electrical responses are processed and utilized to selectively control replenishment of the toner particle concentration in the developer liquid.

3,698,357
GRID FOR PRODUCING AN ELECTROSTATIC FIELD
Francis T. Spencer, Biddeford, Maine, assignor to West Point-Pepperell, Inc., Boston, Mass.
Filed Dec. 5, 1969, Ser. No. 882,466
Int. Cl. B05b 5/02; H01b 5/00
U.S. Cl. 118—636 **9 Claims**

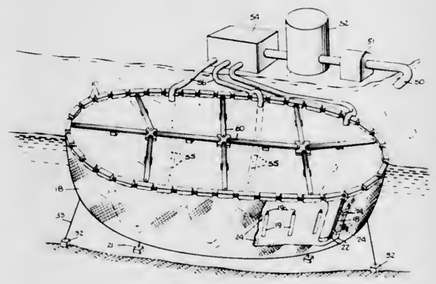


A grid for producing an electrostatic field of high intensity, capable of employing, for the purpose, alternating current in a range from 40,000 volts to 100,000 volts or more without arcing or rapid deterioration of the grid.

3,698,358
METHOD FOR MAINTAINING FRESHNESS OF AQUATIC ANIMALS
Takeo Wada; Kazuo Okada, and Masaru Ohyama, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Feb. 3, 1971, Ser. No. 112,409
Claims priority, application Japan, Feb. 13, 1970, 45/12703; March 3, 1970, 45/18104
Int. Cl. A01k 61/00
U.S. Cl. 119—2 **10 Claims**

A method and compositions for maintaining the freshness or viability of live, hard-skinned crustaceous type aquatic animals wherein in said method said animals are embedded in a granular filler composition comprising expanded vermiculite particles. The expanded vermiculite can advantageously be prepared from a dry composition comprising unexpanded vermiculite particles and a hydrogen peroxide addition compound by the addition of water thereto but expanded vermiculite made in other ways is also useful for the purpose.

3,698,359
FLOATING FISH ENCLOSURE
Howard J. Fremont, New York, N.Y., assignor to Marine Protein Corporation, New York, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,831
Int. Cl. A01k 63/00
U.S. Cl. 119—3 **18 Claims**

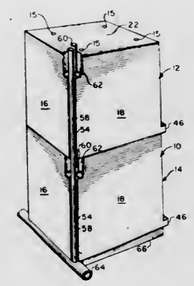


A floating enclosure for containing a closed volume of water for efficient fish raising. A closed membrane, forming the sides and bottom of the enclosure, is supported by a closed anchored chain of floats. Protective nets can be provided, inside and outside the enclosure, to enhance durability. Stiffener slats, insertable in pockets in the sides of the membrane, are provided. Catwalks across the enclosure may be included. The water quality within the enclosure is controlled by pumping in oxygenated and treated water. Gutters are provided at the periphery of the enclosure whereby displaced water exits therefrom. Nonreflective sectional tarps are provided to furnish surface protection to the enclosed body of water, and to utilize absorbed sunlight in heating the water.

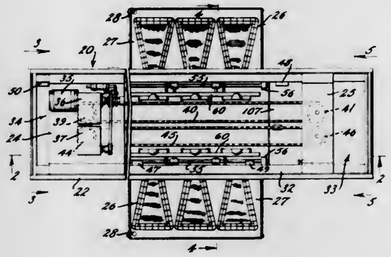
3,698,360
SMALL ANIMAL CAGE
Jeanette L. Rubricius, P.O. Box 66, New York, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,401
Int. Cl. A01k 01/02
U.S. Cl. 119—17 **16 Claims**

A small animal cage is formed as a single unit from plastic compositions of a nature enabling it to accommodate scratching and biting actions by a housed animal without deleterious effect and in a structural symmetrical fashion so that several cages can be stacked in an interlocked and interchangeable assembly. Each cage is formed with five solid

walls and an open front which is closed off by hinged grill doors and each cage can be individually flushed and drained. The floor of each cage is pitched toward one rear corner wherein an opening communicates with a vertical drain pipe that is nested in a corner recess of the cages and empties into a drain conduit that extends along the rear of a structural foam block having a rearwardly slanting top wall supporting the floor of the lowermost cage with the top walls of the cages being sloped rearwardly causing the floors of the upper cages to slope the same as the bottom cage.

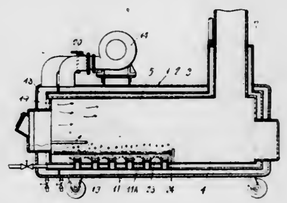


3,698,361
APPARATUS FOR FEEDING AND MAINTAINING NEONATAL PIGLETS
James G. Lecce, 2729 Cambridge Road, Raleigh, N.C.
Filed March 22, 1971, Ser. No. 126,751
Int. Cl. A01k 5/02, 7/02
U.S. Cl. 119—51.11 **10 Claims**



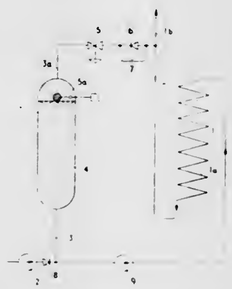
Apparatus for feeding and maintaining newborn animals to increase the rate of survival as well as to increase the growth potential of the animals. The apparatus includes a plurality of individual cages or containers with one cage being provided for each animal, means for feeding each animal at specific time intervals with precise amounts of food based on the characteristics of the individual animals, and means for automatically cleaning the food receptacles at the termination of the feeding period to maintain the receptacles in an aseptic condition.

3,698,362
METHOD AND APPARATUS FOR INCINERATING WASTE OIL
Wataru Ishibashi; Satoru Nakano, both of Shigaken, and Takeo Yokotani, Osaka, all of Japan, assignors to Iwatani & Co., Ltd., Osaka, Japan
Filed Jan. 15, 1971, Ser. No. 106,742
Claims priority, application Japan, March 23, 1970, 45/24654; June 4, 1970, 45/48957
Int. Cl. F22b 7/00
U.S. Cl. 122—136 R **6 Claims**



Waste oil to be incinerated is atomized in a combustion chamber by primary air emanating from air tuyeres arranged on the floor of the combustion chamber, and is agitated by secondary air additionally introduced into the combustion chamber. The atomized waste oil is well mixed with air, and the waste oil is then ignited so that it can be incinerated in complete combustion without applying any additional burning device or agent.

3,698,363
ONCE-THROUGH BOILERS
John Mackinlay Yellowlees, Knutsford, England, assignor to The Nuclear Power Group, Limited, Knutsford, England
Filed Dec. 22, 1970, Ser. No. 100,723
Claims priority, application Great Britain, Dec. 24, 1969, 62,781/69
Int. Cl. F22b 29/02
U.S. Cl. 122—406 S **4 Claims**

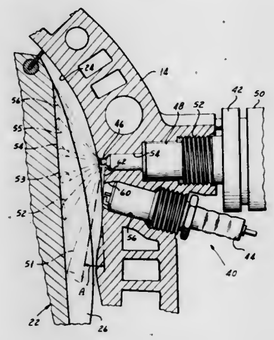


A 'once-through' boiler which is provided with a water storage drum connected to the boiler inlet and carries a head of water sufficient to maintain a supply of water to the tubes in the event of failure of external water supply to the boiler.

3,698,364
FUEL COMBUSTION SYSTEM FOR ROTARY PISTON INTERNAL COMBUSTION ENGINES

Charles Jones, Hilladale, N.J., assignor to Curtiss-Wright Corporation

Filed Feb. 26, 1971, Ser. No. 119,131
Int. Cl. F02b 53/10
U.S. Cl. 123—8.09 10 Claims

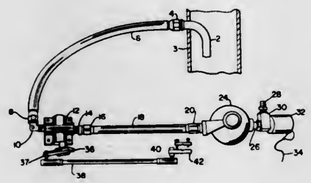


The fuel combustion system for a rotary piston, internal combustion engine having an unthrottled air intake port provides two sets of fuel burning means, each set comprising a fuel injector nozzle and spark plug combination supported in the engine housing in spaced relationship with the other set along a line parallel to the axis of rotor rotation. Each fuel injection nozzle is constructed and arranged to emit a plurality of fuel streams in different planes and directions into the working chambers of the engine. The fuel injection nozzles are each disposed relative to each other and with respect to the rotor direction of rotation to emit at least one of the streams of fuel in the same general direction as the direction of rotor rotation and the other fuel streams toward the adjacent set of injector nozzle and spark plug. This pattern of fuel emission provides the requisite distribution of fuel in the working chambers for achieving a proper stoichiometric mixture of fuel and air for improved combustion efficiency.

3,698,365
DIESEL BOOSTER

John E. Haliberg, Oakland, Calif., assignor to Industrial Propane, Inc.

Filed Sept. 14, 1970, Ser. No. 71,797
Int. Cl. F02b 49/00
U.S. Cl. 123—121 1 Claim

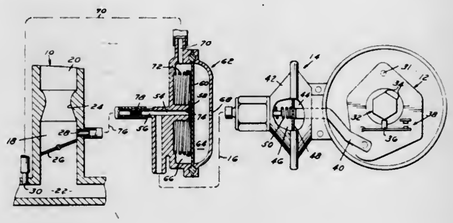


A source of constant pressure propane gas is inserted in the air intake manifold of a Diesel engine at a volume rate proportional to the Diesel fuel consumption. A specially designed metering valve coupled to the Diesel engine fuel pump facilitates regulation of the propane gas.

3,698,366
ENGINE SPARK TIMING CONTROL SYSTEM

Karl H. Gropp, Grosse Pointe Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 3, 1970, Ser. No. 60,489
Int. Cl. F02p 5/06
U.S. Cl. 123—117 A 6 Claims

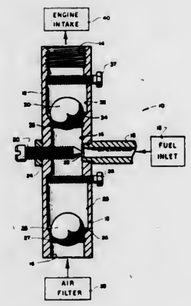


A mechanical device is located between the carburetor spark and intake manifold vacuum ports and the distributor breaker plate servo, the device containing two parallel flow circuits connected to the servo, one being connected to the spark port and containing an orifice, the other being connected to the intake manifold port and containing a servo operated valve that alternately blocks or unblocks the manifold vacuum application to the servo; the orifice providing slow changes in spark advance settings during light vehicle accelerations, and a rapid recovery upon subsequent momentary decelerations; the valve unseating during heavy accelerations to quickly lower the spark advance setting to avoid engine detonation.

3,698,367
GAS CARBURETOR VALVE

Orval L. Goodwin, Great Bend, Kans., assignor to Allan Pump and Supply, Inc., Great Bend, Kans.

Filed June 21, 1971, Ser. No. 154,866
Int. Cl. F02m 21/02; C10j 1/00
U.S. Cl. 123—120 9 Claims

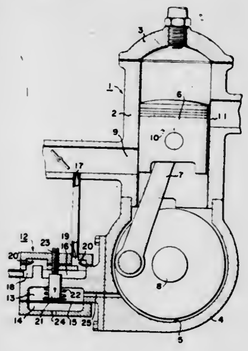


A gaseous fuel carburetion device utilized with a reciprocating piston engine fueled with low pressure gas; the valve having a first check valve connecting to atmosphere allowing outside air to be sucked in but preventing the low pressure gas from flowing into the atmosphere, and a second check valve connecting with the intake of the engine allowing air and gas to flow into the engine only on the suction stroke, and a needle valve controlling the maximum rate of gas flow from the source.

3,698,368
FUEL FEED DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Hiroshi Yamamoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed March 8, 1971, Ser. No. 121,777
Claims priority, application Japan, March 13, 1970, 45/21310
Int. Cl. F02m 39/00; F02b 33/04, 33/12
U.S. Cl. 123—139 AJ 16 Claims

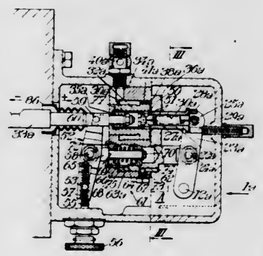


A fuel feed device for use in crank chamber compression-type two-cycle engines, comprising a first chamber and a second chamber separated by a movable member, means for communicating said first chamber with the crank chamber of said engine, a pump member operatively connected with said movable member, a pump chamber the volume of which varies incident to movement of said pump member, and valve means operative such that fuel is sucked into said pump chamber incident to movement of said pump member when said movable member moves from said first chamber toward said second chamber and is discharged therefrom incident to reverse movement of said pump member.

3,698,369
REGULATING DEVICES FOR THE FLOW OF FUEL IN INTERNAL COMBUSTION ENGINES

Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Venissieux, France

Filed Dec. 30, 1970, Ser. No. 102,604
Claims priority, application France, Dec. 31, 1969, 6945752
Int. Cl. F02d 1/04, 31/00
U.S. Cl. 123—140 R 13 Claims

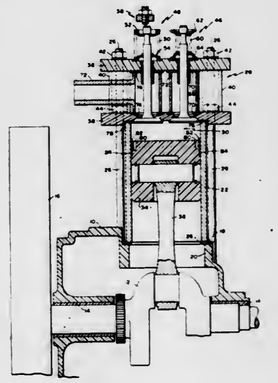


The device comprises a centrifugal regulator, a first element mechanically actuated by the regulator, a second element actuating a regulating member for the flow per revolution of the pump, and linking means between the two elements including a hydraulic servo device. The latter is of the follower type and comprises a pilot slide valve constituting the first element and a jack provided with a differential piston constituting the second element. The slide valves and differential piston define a variable by-pass. The regulating member is constituted by first and second levers pivoted on axles which are connected to one another by a hydraulic time-delay. The device is especially useful for controlling the flow of large injection pumps.

3,698,370
TRANSPARENT INTERNAL COMBUSTION ENGINE

Charles W. Haldeman, and Vahan V. Basmajian, both of Lexington, Mass., assignors to Megatech Corporation, Belmont, Mass.

Filed Sept. 3, 1970, Ser. No. 69,246
Int. Cl. F02f 1/00
U.S. Cl. 123—193 CP 15 Claims



An operative internal combustion engine is transparent for demonstration of internal combustion engine principles. A transparent cylinder houses a noncontacting piston, the combustion chamber being sealed by means such as protruding annular teflon rings seated in an annular groove of the piston or a flexible flap formed integrally with the piston which is pressed firmly to the internal surface of the cylinder wall by pressure developed within the combustion chamber during operation of the engine. Other portions of the engine are transparent to enable their contained parts to be observed during operation. The engine also has an enlarged flywheel to permit operation of the engine at low, observable speeds. The invention burns low carbon fuels such as alcohol to keep the cylinder walls clean and operate without polluting the air.

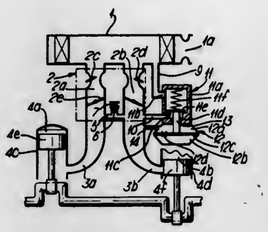
3,698,371
SURGING PREVENTION DEVICE FOR USE IN VEHICLE HAVING MULTICYLINDER SPARK-IGNITION INTERNAL COMBUSTION ENGINE

Masaru Mitsuyama, and Shigeru Morita, both of Hiroshima, Japan, assignors to Toyo Kogyo CO., Ltd., Hiroshima-ken, Japan

Filed April 28, 1971, Ser. No. 138,195
Claims priority, application Japan, April 28, 1970, 45/41660
Int. Cl. F02d 9/00; F02m 13/04, 73/04
U.S. Cl. 123—198 F 4 Claims

A device for preventing fluctuations in the output torque of a spark-ignition internal combustion engine which result from irregular combustion of air-fuel mixture. According to the

present invention, instead of the conventional idling device of which the idling jet is situated on the engine side of the edge of the throttle valve, a communication passage communicating at the downstream side of the throttle valves between a pair of intake passages each connecting the carburetor to the respective combustion chambers, an additionally fuel supplying means interposed in the communication passage and means for supplying a primary air from an air source to one of said pair of the intake passages are provided in the intake system of the internal combustion engine.

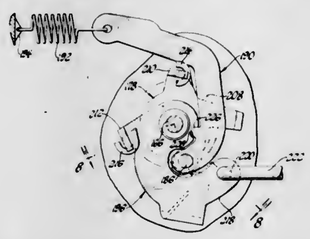


3,698,372

THROTTLE RETURN SPRING REDUNDANCY SYSTEM

Philip V. Eshelman, Southfield; Roy O. Erickson, Utica, and Keith D. Marsh, St. Clair Shores, all of Mich., assignors to Holley Carburetor Company, Warren, Mich.

Filed June 8, 1971, Ser. No. 150,997
Int. Cl. F02b 77/08; F02d 11/04; B60k 22/08
U.S. Cl. 123—198 DB 15 Claims



A throttle valve, situated within the induction passage bore of a fuel or air induction device, is carried by a throttle shaft for fixed rotation therewith; a lever fixedly connected to the throttle shaft is operatively connected to a remotely situated operator's foot-operated throttle control; a first throttle return spring is operatively connected to the first lever for returning the throttle valve to an idle position whenever the foot-operated throttle control is released; and a second safety spring is provided for assuring the movement of the throttle valve to the idle position in the event that, for example, either the first throttle return spring or the associated throttle control linkage should fail while the throttle valve is in either a partly or fully opened position.

3,698,373

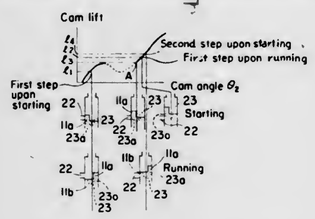
FUEL INJECTION SYSTEM FOR DIESEL ENGINE

Shigeo Nagasawa, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1969, Ser. No. 886,960
Int. Cl. F02b 3/00; F02n 17/00
U.S. Cl. 123—32 G 1 Claim

A fuel injection system for a diesel engine has a plunger barrel with a fuel intake port and a plunger slidable axially in the barrel. A plunger operating cam has a pair of lobes for operating the plunger. During either the intake or the compression stroke, the cam advances the plunger to a first position blocking the port to inject fuel, after which the plunger retracts. At the end of the compression stroke, the cam advances the plunger further to a second position to block the port to inject fuel.

A switching device is effective to rotate the plunger between a starting position and a running position. In the starting position, the peripheral surface of the plunger blocks the port during the two fuel injections strokes of the plunger and, in the running position, the plunger is rotated to a position where its peripheral surface blocks the port only upon the further advance of the plunger to the second position. The invention improvement comprises at least one fuel passage in the plunger connecting the peripheral surface to the inner end face of the plunger and communicating with the port, during starting of the engine, and in the second plunger position.

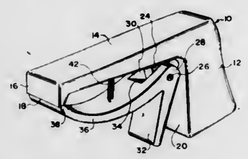


3,698,374

BALLOON GUN AND GAME

Le Roy V. Casper, 3740 West Wrightwood, Chicago, Ill.

Filed July 22, 1971, Ser. No. 165,275
Int. Cl. F41b 11/00
U.S. Cl. 124—11 9 Claims



A toy gun capable of releasing inflated balloons for erratic flight to a target is disclosed. The gun has a pair of spring biased jaws which grip the neck of a balloon and hold it in inflated condition. One jaw is pivoted by a trigger away from the other to release the balloon. In one embodiment the gripping portions of the opposing jaws are themselves individually pivoted to hinge outwardly from a stop position for friction free release of the balloon and have conforming concave faces to provide a recess to aid in supporting the inflated balloon. The lower jaw can have a forward lip to support the balloon. A basket target is provided to catch the balloon in its flight and score a hit.

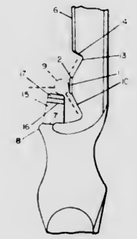
3,698,375

ARCHERY BOW WITH ARROW SUPPORT STRUCTURE

George D. Brougham, R.D. 2, P.O. Box 37, Gillett, Pa.

Filed July 31, 1970, Ser. No. 59,934
Int. Cl. F41b 5/00
U.S. Cl. 124—24 1 Claim

An archery bow with an arrow supporting member so configurated that the feathers on the rear end of the shaft of an arrow will not touch any part of the bow when the arrow is shot. The bow is provided with an arrow supporting member which is in the form of a pad that has the basic configuration of a trapezoid when the aforesaid bow is viewed in the shooting position. The aforesaid arrow supporting member is rectangular in shape when viewed from the side and has a convexed top on which is secured a standard adhesive backed arrow rest on which is placed the arrow for shooting. The bow has V-shaped recesses in the portion of the bow forming the bow window to receive fletches of an arrow in order that the feather of the arrow will pass free of the bow when shot. The portion of the bow between the V-shaped recesses is a flat surface against which an arrow rests when supported on the arrow support member.

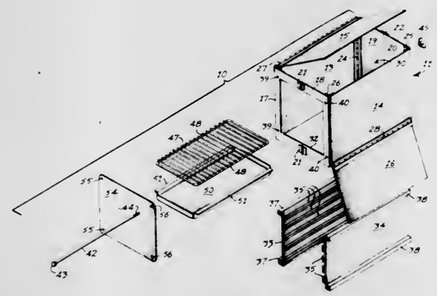


3,698,376

PORTABLE COOKING STOVE

Louis R. Webb, 1108 Batey Drive, Nashville, Tenn.

Filed July 6, 1971, Ser. No. 159,794
Int. Cl. F24c 1/16
U.S. Cl. 126—9 R 10 Claims



A portable cooking stove including a cooking chamber having interior removable side guide panels. The assembled guide panels have opposed parallel pairs of slide rails adapted to receive food receptacles or fuel receptacles having opposite side portions or flanges slidably engaging the rails. The slide panels are also provided with longitudinal rod guide members, preferably tubular, for removably receiving elongated rods, which are also received through aligned holes or openings in the front and rear walls of the chamber.

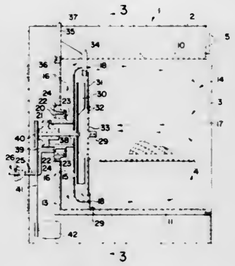
The stove also preferably includes front, back, side, top and bottom walls hinged together for collapsing into a dis-assembled position for storage or transportation.

3,698,377

GAS-FIRED FORCED CONVECTION OVENS

Anthony Smith, Marlow Bottom, England, assignor to The Hoover Company, North Canton, Ohio

Filed May 7, 1971, Ser. No. 141,280
Int. Cl. A21b 1/26; F24c 15/32
U.S. Cl. 126—21 A 5 Claims



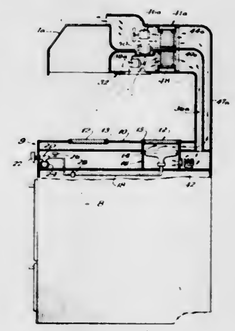
In the preferred form, the present invention concerns a gas oven having a cavity including a rear wall, a gas burner mounted on the rear wall, a flow former spaced forwardly of the rear wall so as to form a combustion chamber between the flow former and the rear wall, a cooking chamber forward of the flow former, a blower mounted immediately forward of the flow former which causes recirculative gas flow through the cooking chamber and aids the passage of combustion chamber gases from the combustion chamber around the peripheral edge of the flow former.

3,698,378

SMOOTH TOP GAS RANGE

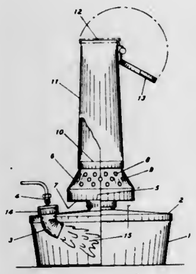
Robert B. Rosenberg, Evergreen Park; Esher R. Kweller, Downers Grove, and William R. Staats, Chicago, all of Ill., assignors to Institute of Gas Technology

Filed July 12, 1968, Ser. No. 744,582
Int. Cl. F24c 3/00, 15/20
U.S. Cl. 126—39 R 26 Claims



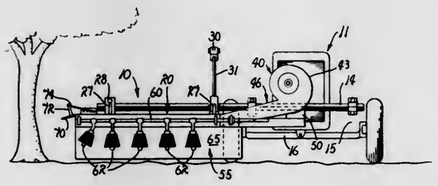
A smooth top gas range which includes a hood that draws cooking vapors and fumes and air into a regenerative type heat exchanger for preheating prior to combustion with gas at the burner surface unit. Each burner unit is enclosed in a separate combustion compartment with heat being transmitted to a cooking vessel through an air impervious compartment wall or plate by means of radiation. The combustion products exhaust from the combustion compartment, are cooled to a safe temperature by the heat exchanger and are finally vented to the room.

3,698,379
ORCHARD HEATER
Harold L. Cheney, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Oct. 12, 1970, Ser. No. 80,886
Int. Cl. A01g 13/06
U.S. Cl. 126—59.5 6 Claims



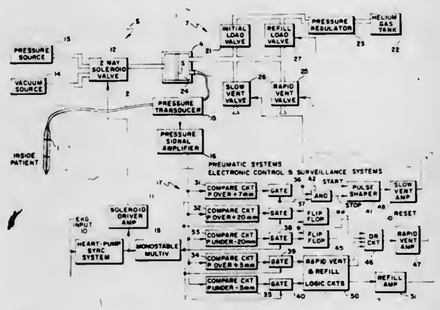
An orchard heater is provided which has improved combustion properties and, consequently, reduced soot deposit problems. The orchard heater is provided with a primary combustion chamber, a stack mounted thereon and an air-fuel mixer in combination with directional means which directs the primary combustion flame to more evenly distribute the heat generated thereby insuring complete combustion and little, if any, build-up of soot.

3,698,380
WEED BURNER
Einar Cook, 4160 East Shaw Avenue, Fresno, Calif.
Filed Jan. 8, 1971, Ser. No. 105,009
Int. Cl. A01m 15/00
U.S. Cl. 126—271.2 A 12 Claims



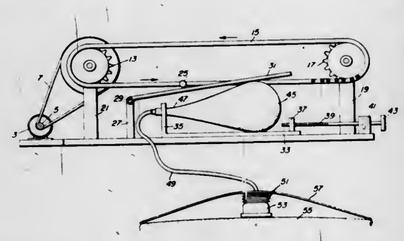
A weed burner adapted for ground traversing movement in a predetermined forward direction of travel along the berm of a tree line in an orchard or the like providing a housing disposed in predetermined elevationally spaced relation to the ground forming a combustion chamber between the housing and the ground and having ignition means borne by the housing adjacent to the combustion chamber and blower means connected to the housing for producing a relatively high velocity airstream above the combustion chamber and outwardly from the housing in a laterally extended path relative to the direction of ground traversement of the burner so as to direct heat and smoke emanating from the combustion chamber transversely through the tree line and outwardly away from the foliage of the trees.

3,698,381
MONITORING SYSTEM FOR PHYSIOLOGICAL SUPPORT SYSTEMS
Armando Federico, Medford, and Henry R. Guarino, Revere, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Dec. 30, 1970, Ser. No. 102,778
Int. Cl. A61b 19/00
U.S. Cl. 128—1 R 16 Claims



A system for automatically monitoring and controlling the fluid load in physiological support systems. The system samples gas pressure at fixed periods and adds fluid or vents fluid from the system to prevent malfunction and the catastrophic results.

3,698,382
DEVICE FOR MEASURING VENO CAPILLARY FILLING TIME
William L. Howell, 3562 Macomb Street, Washington, D.C.
Filed Oct. 15, 1970, Ser. No. 80,845
Int. Cl. A61b 5/02, 6/08
U.S. Cl. 128—2 R 9 Claims



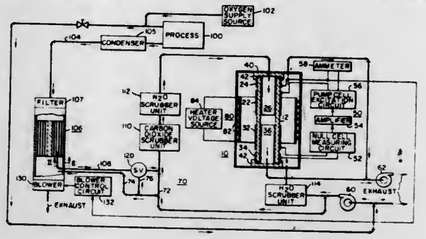
Apparatus for automatically applying intermittent and uniform pressure to the skin of a patient at predetermined and variable time intervals, in order to force blood from the blood vessels subjacent to the skin area to which pressure is applied, and further apparatus for measuring the rate of return of the blood into the collapsed blood vessels upon release of pressure from the skin.

3,698,383
RECIPIENT IDENTIFICATION
Keight K. Baucom, Ramsey, N.J., assignor to Baxter Laboratories, Inc.
Filed July 20, 1970, Ser. No. 56,524
Int. Cl. A61b 05/00
U.S. Cl. 128—2 G 13 Claims

An identification band, fastener and pilot tube for use in blood handling procedures to minimize blood transfusion errors. The fastener and pilot tube are integrally connected to the band and the pilot tube is adapted for release through action of the fastener when forming the band into a bracelet on an extremity. The bracelet and pilot tube carry removable labels presenting like indicia.



3,698,384
OXYGEN CONSUMPTION RATE MONITOR
William J. Jones, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 3, 1970, Ser. No. 86,491
Int. Cl. A61b 5/00
U.S. Cl. 128—2.07 4 Claims



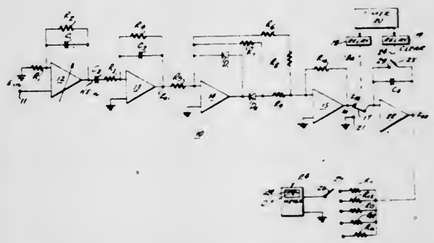
The disclosure relates to a system for monitoring the oxygen consumption rate of a process and includes a dual solid electrolyte electrochemical cell combination in which one cell is utilized as an oxygen measuring cell operating in a null mode, while the second cell is utilized as an oxygen pump which is responsive to a signal developed by the measuring cell. A gas source derived from the process provides a reference for the null measuring cell and also serves as a source of oxygen for the pump cell. Flow control means, including a flow splitter and a fluid dilution circuit, is provided to sample the process fluid and to maintain the sample flow and reference gas flow through the dual cell combination relatively constant.

3,698,385
REACTION TESTER
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Harry H. Brown, 3012 Potshop Road, Norristown, Pa.
Filed Oct. 7, 1970, Ser. No. 78,717
Int. Cl. A61b 5/16
U.S. Cl. 128—2 N 10 Claims

A reaction tester is disclosed for testing the simple and disjunctive reaction of a subject to light stimuli. The embodiment disclosed is in the form of a bar member which has spaced grooves for receiving the index fingers of a subject. Near the bottom of each groove are openings aligned along a transverse axis to a groove and a light beam is projected through the openings to a photo transistor. The subject's finger breaks the light beam and when the finger is moved relative to the groove, the light beam actuates the transistor. A logic circuit is provided to interconnect the "reaction key," above defined, to a panel having neon light indicators. A "ready," "left" and "right" neon light indicators are selectively actuatable. The "ready" light informs the subject that the test will begin. Next, either the "left" or "right" or both lights are actuated through the logic circuit. A counter is started and when the subject reacts by moving the correct finger, the light indicator is extinguished and the counter is stopped. An incorrect reaction causes an error indicator to operate.



3,698,386
CARDIAC RHYTHM COMPUTER DEVICE
Robert Fried, 52 Herbert Drive, East Brunswick, N.J.
Continuation of Ser. No. 822,548, May 7, 1969, abandoned. This application July 16, 1971, Ser. No. 163,507
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 A 7 Claims

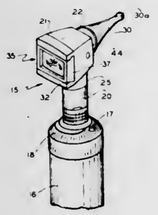


A device which monitors electrocardiac activity for providing direct and discrete output readings which simply and positively identify specific cardiac activity patterns. Samples are taken over predetermined time intervals during which the total number of cycles of the entire electrocardiac signal occurring during the time interval undergoes slope analysis for the purpose of providing in-line indices of the various cardiac arrhythmias. Mathematical manipulation of the electrocardiac signals (also referred to as EKG signals) are performed by analog circuit means to yield a direct output reading which, by providing an appropriate scale or by providing a chart usable in conjunction with the output meter, positively and directly provides an indication of the various cardiac arrhythmias.

3,698,387
OTOSCOPE CONSTRUCTION

William C. Moore, Skaneateles, and William S. Pilgrim, Port Byron, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,348
Int. Cl. A61b 1/22
U.S. Cl. 128—9 1 Claim



An otoscope constructed so that its head can be either open or closed, the closed head being employed when it is desired to introduce air into the ear canal. The otoscope has a generally rectangular shape and a large proximal end opening which is provided with a removable slide closure comprising a lens and lens frame of gasket material. The otoscope head and speculum portions are formed as a unitary member, and optical fibers are embedded therein to conduct light to the distal end of the speculum from a source removed therefrom.

3,698,388
INTERDENTAL STIMULATOR

Joseph C. Muhler, Indianapolis, Ind., assignor to Plastek Company, Sturgis, Mich.

Continuation of Ser. No. 798,883, Feb. 13, 1969, abandoned.
This application Jan. 11, 1971, Ser. No. 105,691
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A 17 Claims



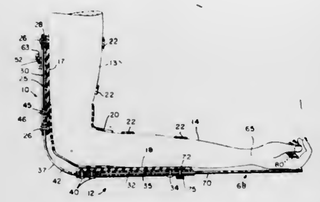
An improved interdental stimulator device designed for use in cleaning and polishing tooth surfaces and for safe gingival stimulation takes the form of a unitary body molded of synthetic plastic material. The unitary body is of generally elongated shape and has a first working end which tapers substantially to a point and has a cross section generally taking the form of an isosceles triangle, the base and sides of which may have a slight outward curvature. Preferably, the body is impregnated with up to about 20% by weight of a dental abrasive material, especially a dental abrasive material comprising zirconium silicate. The body may have at its other end a flat-sided projecting member as a second working end.

3,698,389
ELBOW LOCKING DEVICE

Arthur R. Guedel, Indianapolis, Ind., assignor to Guedel Company, Inc.

Filed May 21, 1971, Ser. No. 145,700
Int. Cl. A61f 5/10
U.S. Cl. 128—77 13 Claims

A device for releasably locking a person's elbow against bending, having a pair of hingedly connected shells adapted to be mounted on the user's upper arm and forearm. A bendable slide is mounted on one of said shells and is slidably carried in a guide on the other of said shells. Locking means are engaga-

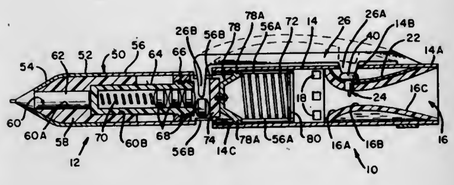


ble with the slide for releasably locking it in position in the guide and thereby releasably locking the shells and the user's arm against bending.

3,698,390
DISPENSING FOR MEDICAMENTS

Frank Donald Ferris, 5481 Plaza de Ray, San Jose, Calif.

Filed Oct. 27, 1969, Ser. No. 869,478
Int. Cl. A61j 07/00
U.S. Cl. 128—222 5 Claims

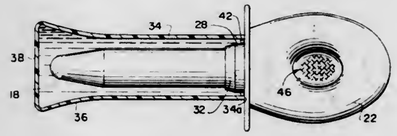


A medicament dispensing apparatus which includes a first housing and a nozzle of the convergent-divergent type having an inlet and outlet adjacent the opposite ends of a nozzle chamber. A reservoir for liquid medicament is located outside the nozzle chamber adjacent the throat of the nozzle, and a metering and dispensing valve is positioned adjacent the throat for injecting a measured amount of medicament from the reservoir into the nozzle. Upon inhaling at the outlet of the nozzle the medicament injected into the nozzle is drawn into the mouth of the patient. A tablet storage and dispensing device in a second housing is provided adjacent the inlet end of the nozzle and includes a tablet container within said second housing. A container closure member for the tablet container is carried by the first housing, and a resilient member normally urges the container and closure together in air-tight engagement. A resilient member inside the container urges a stack of tablets therein into engagement with the closure. When the container and closure are separated, a tablet actuating arm is movable across the inner face of the closure to remove a tablet therefrom. The tablet actuating arm is included on a movable actuating member which also includes a valve actuating arm for operation of said metering and dispensing valve. The tablet storage and dispensing means may be replaced by an aerosol container for injection of medicament therefrom at the inlet of the nozzle chamber from whence it may be drawn through the nozzle by inhalation of the patient.

3,698,391
MEATAL DILATOR

David T. Mahony, c/o Mahony Urology Assoc., Inc., 966 Park Street, Stoughton, Mass.

Filed Dec. 16, 1970, Ser. No. 98,844
Int. Cl. A61m 35/00, 29/00; A61b 17/34
U.S. Cl. 128—261 1 Claim



A meatal dilator designed specifically to dilate the urethra has a relatively long dilating shaft one of whose ends is tapered to a blunt tip. The other end of the shaft is connected to a grip designed to fit the hand. A protective diaphragm arranged perpendicularly to the shaft is interposed between the shaft and the grip to limit the depth of penetration of the dilator. Also, a generally cylindrical cap containing an antibiotic and/or lubricant is snugly engaged over the head of the shaft and removably held in place to protectively enclose the shaft.

3,698,392
TOPICAL DRESSING

John W. Vogt, South Russell, and Peter G. Schrier, Medina, both of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

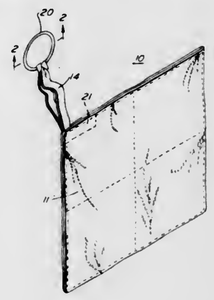
Filed April 21, 1971, Ser. No. 136,257
Int. Cl. A61f 7/02
U.S. Cl. 128—268 5 Claims

A topical dressing applicable to the body, as well as to the mucous membranes such as the oral cavity. The dressing or pharmaceutical preparation includes a physiologically active material, optionally combined with a solid, finely divided particulate carrier or inert material, and sufficient finely divided polytetrafluoroethylene (hereinafter referred to as "PTFE") to form, after subjecting the materials to a working or kneading action, a flexible, coherent mass.

3,698,393
SURGICAL PAD

Charles E. Stone, Douglaston, N.Y., assignor to Chaston Medical & Surgical Products, Inc., Plainview, N.Y.

Filed June 15, 1971, Ser. No. 153,216
Int. Cl. A61f 13/00
U.S. Cl. 128—296 7 Claims

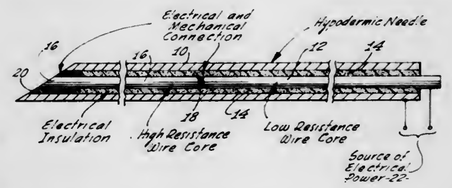


A surgical pad or sponge is provided which includes a central portion of absorbent gauze with a loop attached thereto with an attached plastic ring having irradiation opaque properties.

3,698,394
ELECTRICALLY HEATED HYPODERMIC NEEDLE

William S. Piper, 555 Greencraig Road, and Teodor Polak, 443 Greencraig Road, both of Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,549
Int. Cl. A61b 17/36; A61n 3/06
U.S. Cl. 128—303.1 7 Claims

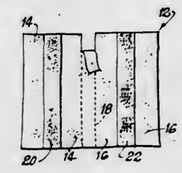


A surgical instrument is provided in the form of a hypodermic needle, the tip of the needle being heated by passing an electric current through a resistance wire within the needle adjacent its tip. The needle has particular utility for medical purposes, and is used, for example, to destroy blood vessels or tissue.

3,698,395
SURGICAL CLOSURE

Harrith M. Hasson, 6942 North Waukesha Avenue, Chicago, Ill.

Filed March 12, 1971, Ser. No. 123,559
Int. Cl. A61b 17/04
U.S. Cl. 128—335 18 Claims



A sutureless closure device for use in surgery which is both an operative drape and a post-operative skin dressing. A flexible sheet having a pressure sensitive adhesive undersurface is adapted for placement on the skin over the area to be cut. The sheet is differentiated into two opposing dressing portions which remain on the skin as a post-operative dressing and which define a narrow median strip that acts as a surgical drape and can be removed at the end of the operation. One of the dressing portions of the sheet carries, on its upper surface, means for engagement with the opposite dressing portion whereby the engagement means can be connected to bridge the incision thereby forming a connected closure.

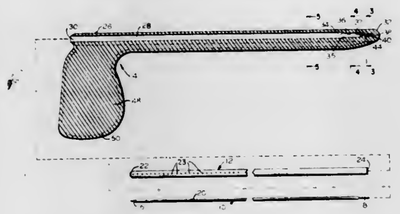
3,698,396
CATHETER ASSEMBLY FOR PERITONEAL CAVITY INSERTION

Dean R. Katerndahl, Wheaton; Earl D. Wilson, Ingelside; Fidel V. Macalalad, Lake Forest, and Gene C. Ring, Libertyville, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 4, 1970, Ser. No. 95,012
Int. Cl. A61b 17/34; A61m 25/00
U.S. Cl. 128—347 12 Claims

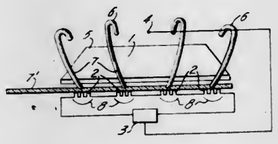
A catheter assembly for peritoneal insertion, including an elongated stylet, an elongated catheter slidably disposed

around the stylet and a gripping member secured to a proximal end of the stylet and having a handle grip extending transversely therefrom adjacent a shank of the stylet such that the handle grip may be grasped in the palm of one hand with the fingers grasping the catheter adjacent a distal end thereof whereby the catheter assembly may be firmly held and guided



with one hand during peritoneal cavity insertion. Various embodiments of the catheter assembly include an elongated barrel surrounding the catheter having a closed end anchored to the proximal end of the stylet, a stylet which is bent upon itself to form the gripping member, and a gripping member disposed parallel to the shank of the stylet and having an upper end bent upon itself and secured to the proximal end of the stylet.

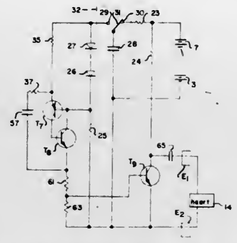
3,698,397
ENERGY TRANSMISSION APPARATUS
Irwin H. Franzel, 501 Linwood Drive, Fort Lee, N.J.
Filed Nov. 10, 1969, Ser. No. 875,018
Int. Cl. A61b *19/00*
U.S. Cl. 128—399 **6 Claims**



Energy transmission apparatus for controlling neonate body temperature consisting of a support platform for infant support, a heat source in proximity to the platform, energy guides surrounding the platform which transmit and guide heat energy from the heat source to the platform, and a heat control for controlling changes of the heat source in accordance with body temperature changes of the neonate in order to maintain the body temperature constant.

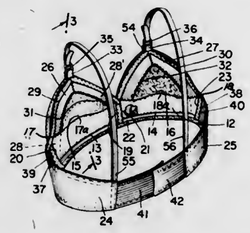
3,698,398
RATE-SCANNING PACER FOR TREATMENT OF TACHYCARDIA
Baroub V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 6, 1970, Ser. No. 87,387
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **8 Claims**

An externally activated implantable rate-scanning heart pacer. Apparatus is disclosed for supplying to the heart of a patient a burst of stimulating pulses in which each successive interval between pulses of the burst is different in duration from the next previous interval. All of these intervals can correspond to repetition rates that lie within the physiological heartbeat range of the patient. The pacer comprises terminals for connection to the heart, a controllable electrical stimuli generator controlled internally by a discharging capacitor and controlled externally by a magnet. The pacer is particularly applicable to the treatment of paroxysmal supra-ventricular



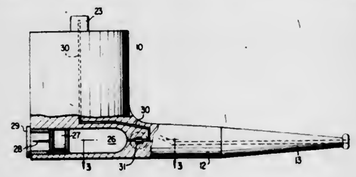
tachycardias, a rapid heartbeat condition originating in the atrium. The pacer can be temporarily activated by the patient.

3,698,399
BRASSIERE
Hi Hand, 16456 Sloan Drive, Los Angeles, Calif.
Filed Aug. 20, 1971, Ser. No. 173,429
Int. Cl. A41c *3/00*
U.S. Cl. 128—483 **4 Claims**



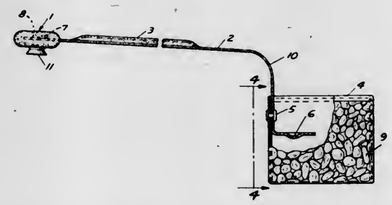
A brassiere having a pair of shaped elongated bust supporting straps for disposition below the bust of the user, and additionally having a flexible bust extending strip for encircling the upper portion of the bust attached to each bust support strap such that each of the bust extending strips is affixed to an opposite end of the associated bust supporting strap. Additionally, the brassiere has a pair of bust-shaping cups of flexible fabric secured to each bust supporting strap, and a means for adjustably securing a portion of each bust extending strip to the associated shaping cup.

3,698,400
SMOKER'S PIPE WITH BUILT-IN GASEOUS FUEL LIGHTER
Hale E. Tucker, 625 North Edge Park Drive, Haddonfield, N.J.
Filed Sept. 9, 1970, Ser. No. 70,643
Int. Cl. A24f *47/00*
U.S. Cl. 131—185 **6 Claims**



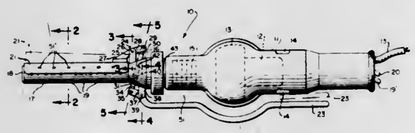
A smoker's pipe has a built-in lighter system comprising a source of pressurized gaseous fuel, an igniter at the top of the pipe bowl, a fuel gas conduit from the source to the igniter, and valve means operative both to control and to regulate ignition timing and the gas flow through the conduit. The igniter is of the battery electric type and is activated by a switch moving to closed position in response to movement of the valve means in performing its control function. In an alternative embodiment of the invention the igniter is of the piezoelectric type.

3,698,401
TOBACCO ASH RECEIVER
Robert V. Tucker, 1954 Axtell Road, Troy, Mich.
Filed March 1, 1971, Ser. No. 119,567
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R **1 Claim**



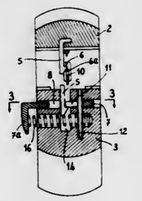
A tobacco ash receiver that is placed on top of an automobile instrument panel by means of a weighted T-shaped support member arranged to follow the contour of the dash panel. The lower end portion of the T-shaped member extends perpendicularly therefrom and terminates in an extinguisher. The upper portion of a wall of the receiver and said lower end portion are apertured to receive a rivet therethrough so that the receiver may be held in position approximately at eye level thus allowing his eyes on the road ahead. The receiver in this position is more readily accessible than the standard ash trays that come with the automobiles and especially the automobiles with no vent windows. It may be positioned center, left or right for maximum convenience.

3,698,402
HAIR CURLING DEVICE
Bernhard A. Arnesen, 67 Dartmouth Drive, Depew, N.Y.
Filed April 22, 1970, Ser. No. 30,791
Int. Cl. A45d *2/24*
U.S. Cl. 132—37 R **10 Claims**



A hair curling device including a handle providing a source of heated air to a perforate cylindrical fixed jaw attached thereto and having a movable jaw pivotally mounted relative to the fixed jaw, with the pivoting action being effected by a lever which extends generally lengthwise of the handle and which is located on the opposite side of the handle from the movable jaw, a linkage between the lever and the movable jaw extending through a mounting connector which mounts the fixed jaw on the handle and includes a spring for biasing the movable jaw into clamped relationship with the fixed jaw. A hair curling device of the foregoing type in which the jaws, lever, and linkage are mounted on a mounting connector which may be selectively mounted and demounted from a handle.

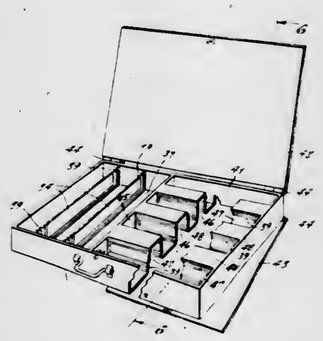
3,698,403
HAIR-SLIDE
Gilles Morand, 01 Ceyzeriat, France
Filed Feb. 24, 1972, Ser. No. 229,027
Claims priority, application France, June 28, 1971, 7124388
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **4 Claims**



This hair-slide, notably of the "horse-tail," captive type, comprising two substantially arcuate elements hingedly interconnected and having their free ends provided with releasable locking means, the closed slide having a substantially elliptic configuration.

The releasable locking means comprise a hooking member carried by one element and engageable in a slot formed in the other element; the latter has formed across this slot another slot parallel to the hinge pin interconnecting said elements, in which a lock-bolt in the form of a plate formed with an L-shaped notch is slidably fitted and engageable by said hooking member; a pin parallel to said slot constitutes one stop means for limiting the permissible longitudinal movement of said lock-bolt in one direction, the other stop means consisting of a bent outer portion of said lock-bolt, the latter being constantly urged to its locking position by spring means.

3,698,404
STYLING VALET
Thomas E. Greco, 5421 Oberlin Avenue, Lorain, Ohio
Filed Aug. 25, 1970, Ser. No. 66,806
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 R **1 Claim**



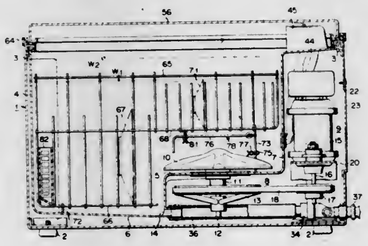
A carrying case for containing hair dressing equipment such as shampoo bottles, spray nets and the like, the carrying case being divided into a plurality of compartments for readily and quickly locating all objects placed therewithin.

3,698,405
ORTHODONTAL TOOTHPICK
Richard M. Walker, 50 Beacon Street, Chestnut Hill, Mass.
Filed April 8, 1970, Ser. No. 26,540
Int. Cl. A45d *44/18*
U.S. Cl. 132—84 **5 Claims**



An improved toothpick, primarily for use by orthodontal patients, is disclosed, wherein a plastic or metal rod has a resilient jacket bonded to the rod and may have over a portion of its surface a multitude of protrusions such as bristles, stubs, short filaments or filters extending radially outward from the surface. When the toothpick is inserted between adjacent teeth and passed therethrough several times, a virulent scrubbing action results which not only dislodges unwanted food particles but provides a massaging action for the gums. This massaging action aids in maintaining the gums in a healthy condition and also aids in preventing pyorrhea by preventing accumulation of plaque.

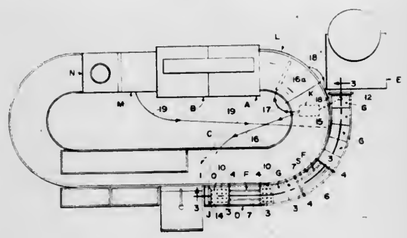
3,698,406
AUTOMATIC DISHWASHER
Hideo Sato, Nagoya, and Kunihiko Ito, Gifu-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Jan. 15, 1971, Ser. No. 106,660
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **12 Claims**



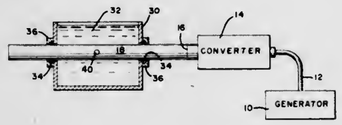
In an automatic dishwasher of the type wherein tablewares are soaked in water and are than washed, there are provided an impeller for producing a whirling stream of water in the washing tub and a timer for performing the programmed operation of washing, rinsing and drying steps.

3,698,407
DISHWASHING MACHINE AND DISH-CONVEYING TABLE WITH RECIRCULATING FLUSHING TROUGH
Tore H. Noren, San Francisco, Calif.
Continuation-in-part of Ser. No. 791,954, Jan. 17, 1969, abandoned. This application April 5, 1971, Ser. No. 131,211
Int. Cl. B08b *3/02*
U.S. Cl. 134—60 **22 Claims**

A recirculating flushing trough for an oval-shaped dish-conveying means of the endless conveyor type for a dishwashing machine that reuses water to convey material removed from dishes to a waste receiving system, a part of the water also being used for a power scrapper to clean the dishes just prior to washing and rinsing them. This does away with the use of fresh water for the power scrapper and thus saves water. The use of a recirculating flushing trough does away with the necessity of having a power scrapper as one of the units in the dishwasher and this reduces the overall length of the dishwasher by one unit and results in a saving of space of about twenty square feet. The final hot water rinse after being sprayed onto the dishes is conveyed to the flushing trough for replenishing it and heating the water therein.



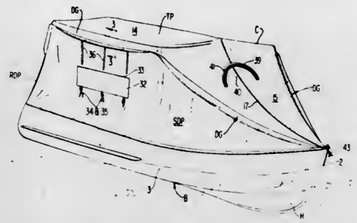
3,698,408
ULTRASONIC PROCESSING APPARATUS
Stanley E. Jacke, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed June 11, 1971, Ser. No. 152,095
Int. Cl. B08b *3/10*
U.S. Cl. 134—122 **12 Claims**



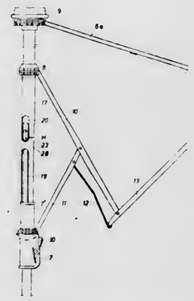
An apparatus for ultrasonically treating (e.g., cleaning, plating) a workpiece comprises a full wavelength resonator or horn supported at its nodal regions. The antinodal region of the horn is surrounded by a suitable treating liquid, typically, a solvent or liquid metal and a workpiece to be treated is immersed in the liquid in proximity to the nodal region of the horn. In a preferred embodiment, the horn is provided with a depression or aperture at its antinodal region and a workpiece to be treated is inserted into the depression or aperture.

3,698,409
PROTECTIVE COVER STRUCTURE
Raymond A. Koontz, R.D. 4, P.O. Box 239, and Walter H. Reese, 433 South Juliana, both of Bedford, Pa.
Filed Nov. 12, 1969, Ser. No. 875,627
Int. Cl. B63b *17/00*
U.S. Cl. 135—6 **7 Claims**

A protective cover of flexible material such as canvas or duck is mountable in raised position on a support to provide a top portion and depending portions covering and substantially enclosing an area to be protected. The depending portions may be adjustably positioned selectively to provide generally vertical openings in different parts of the cover. When in raised position, the cover material itself can be adjusted to provide a drainage gutter. The cover may also be conditioned for being mounted in unraised, substantially flat condition for protecting an unoccupied area, such as in a boat when moored or being transported. The cover may be set up to protect various other areas, such as on the ground, for example at a camp site.



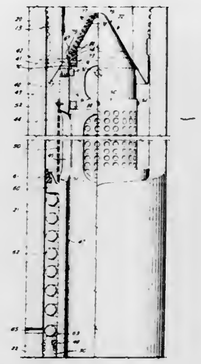
3,698,410
TELESCOPIC UMBRELLA
Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Oct. 23, 1970, Ser. No. 83,493
Claims priority, application Germany, Oct. 25, 1969, P 19 53 794.1
Int. Cl. A45b *19/04*
U.S. Cl. 135—26 **3 Claims**



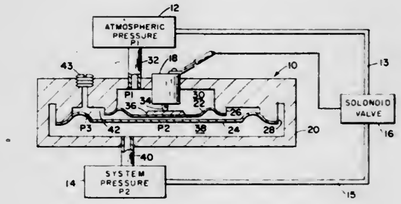
A telescopic umbrella having a main runner and an auxiliary runner sliding on the telescopic stick, the auxiliary runner having an extended sleeve with slots therein adapted to temporarily engage abutment projections in the stick for enhancing the spreading of the dome ribs as the umbrella is being opened.

3,698,411
KELLY FOOT VALVE
William R. Garrett, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.
Filed July 29, 1970, Ser. No. 58,824
Int. Cl. F16k *17/18*, *17/40*
U.S. Cl. 137—71 **16 Claims**

A valve assembly to be disposed between lower end of kelly and upper end of drill string comprises a spring loaded upwardly closing, pressure release, poppet valve, the poppet including an upwardly opening check valve with a frangible closure for the passage of well tools. A foraminous skirt on the downstream side of the poppet provides a strainer for the drilling fluid. An annular flange carried by the skirt engages and seals with the inside of the valve housing to provide increased area subject to upstream pressure when the poppet opens, the housing being ported to atmosphere downstream of the flange and the skirt sealing with the housing below the port to prevent loss of drilling fluid. The spring is housed in the annulus formed between the skirt and housing.



3,698,412
DIFFERENTIAL PRESSURE CONTROL
Harold M. Smyly, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 26, 1970, Ser. No. 50,208
Int. Cl. F16k *31/42*
U.S. Cl. 137—81 **1 Claim**

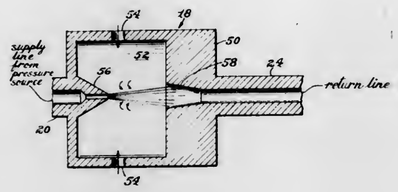


A differential pressure control for activation in response to the difference in pressure between two applied pressures wherein one pressure is applied to an outer side of a first diaphragm and the other pressure is applied to an outer side of a second diaphragm. The inner sides of the diaphragms are positioned face to face within a central chamber to which is applied a reference pressure. An electrical switch is operated by the movement of one of the diaphragms in response to a difference in the applied pressures, which response is a function of the reference pressure, the ratio of diaphragm surface areas, and one of the applied pressures.

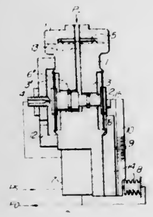
3,698,413
FLUIDIC FLUID METERING SYSTEM
Janusz S. Sulich, Detroit, Mich., assignor to The Bendix Corporation
Filed Sept. 15, 1969, Ser. No. 858,021
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **6 Claims**

In a fluidic metering system having a return line, a means is provided of reducing or completely eliminating the back pressure effects of the fluid in the return line on the fluidic portion

of the system. The means comprise a jet pump operative to draw excess or unmetered fluid away from the fluidic portion of the system and to provide the fluidic portion of the system with a stable back pressure.



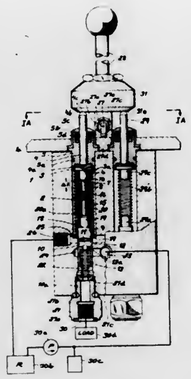
3,698,414
PRESSURE RESPONSIVE APPARATUS
Takeo Nagata; Masahiro Takasaka, and Ichiro Kimura, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 29, 1969, Ser. No. 888,568
Claims priority, application Japan, Dec. 27, 1968, 44/311
Int. Cl. G05d 16/00; F15b 5/00
U.S. Cl. 137—85 **9 Claims**



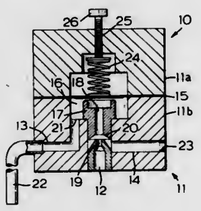
A pressure responsive apparatus having a differential piston operable in response to a measuring pressure, and elements for sealing a fluid which transfers the pressure to said piston. The apparatus is designed to detect said pressure in the form of a displacement of said piston.

3,698,415
PRESSURE-REGULATING VALVE
Franz Forster, Haibach; Alfred Krusche, Grossostheim, and Gunter Hantelmann, Neuenrade, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed July 29, 1970, Ser. No. 59,081
Claims priority, application Germany, Aug. 1, 1969, P 19 39 293.9
Int. Cl. G05d 7/00
U.S. Cl. 137—102 **4 Claims**

A pressure-regulating valve has a control member shiftable in a cylindrical bore of the valve housing by a lever or like actuator. The control member bears upon the valve body via a plurality of springs, at least one of which comes into play only after the control member has been displaced through a predetermined extent.

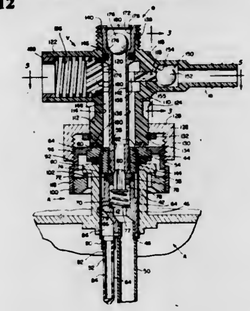


3,698,416
FLUID OSCILLATOR AND PULSATING DENTAL SYRINGE EMPLOYING SAME
Clyde Chi Kai Kwok, Montreal, Quebec, Canada, assignor to Edward V. Rippingille, Jr., Key Largo, Fla.
Filed March 16, 1971, Ser. No. 124,905
Int. Cl. F16k 21/04
U.S. Cl. 137—119 **6 Claims**



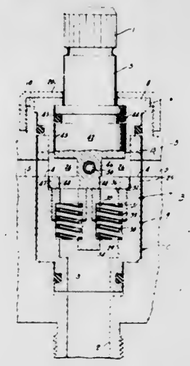
A fluid oscillator having a housing with a fluid inlet channel connected to a source of fluid under pressure, and first and second fluid outlet channels which communicate with the fluid inlet channel. A diaphragm is positioned so as to control the flow of fluid from the fluid inlet channel to the first fluid outlet channel. The second fluid outlet channel is connected to the fluid inlet channel upstream of the diaphragm, but the arrangement is such that the fluid flows through the first outlet channel when the diaphragm is in its open position. When the diaphragm is in its closed position, the fluid is diverted to the second outlet channel. The first outlet channel terminates in an end which is open to the atmosphere, and is dimensioned to produce an inertial effect in the fluid flowing through it. When the diaphragm moves to its closed position there is a momentary partial vacuum in the first outlet channel, which helps to hold the diaphragm firmly in its closed position. After the inertial effect has substantially dissipated, the force of the fluid against the diaphragm is sufficient to cause the diaphragm to return to its open position, whereupon the fluid resumes its flow through the first outlet channel.

3,698,417
KEG TAPPING DEVICE WITH AUTOMATIC GAS SHUTOFF VALVE
Vern Smith, Woodland Hills; Merton R. Fallon, Thousand Oaks, and Mack S. Johnston, Rolling Hills, all of Calif., assignors to Republic Corporation, Los Angeles, Calif.
Filed March 11, 1970, Ser. No. 18,476
Int. Cl. B65d 83/14; B67d 5/54
U.S. Cl. 137—212 **7 Claims**



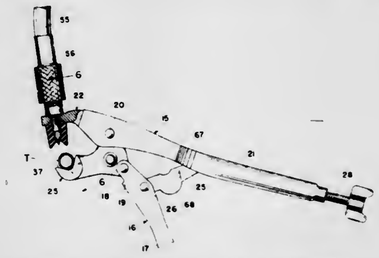
The device includes an adapter for semi-permanent securement within a keg opening and having liquid and gas passages with normally closed valves in the passages. A coupler is releasably secured to the adapter and has liquid and gas passages providing for ingress of gas under pressure through the coupler and adapter into the keg and egress of fluid under pressure from the keg through the adapter and coupler to a faucet. The coupler includes a gas shutoff valve having a piston member in the gas passage normally maintaining a ball valve spaced from its seat permitting flow of gas through the coupler. The piston, in response to gas pressure in the gas line in excess of a predetermined pressure, shifts to permit the ball to seal against its seat thereby precluding gas flow into the keg. A check valve is provided in the liquid line in the coupler to prevent backflow of liquid from a faucet through the coupler when the latter is uncoupled from the keg.

3,698,418
NON-RISE VALVE FOR FAUCETS OR THE LIKE
William C. Schmitt, Brown Deer, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.
Filed July 1, 1971, Ser. No. 158,886
Int. Cl. F16k 11/06
U.S. Cl. 137—315 **7 Claims**



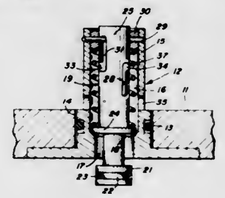
A valve for a water faucet or the like of the type which when actuated does not have a part that rises, and which valve includes a rotary sealing plate against which spring loaded seals cooperate to seal the valve when the plate is turned to the "off" position. The valve includes a cartridge which has a stem formed as one piece along with the rotary valve and which cartridge also has a sleeve in which the stem rotates. The assembled sleeve is formed of two sleeves which are held in assembled relationship by means of a recess and projection connection, thereby the upper sleeve can be easily moved axially from the lower sleeve when the valve is to be disassembled. The lower sleeve has a pair of circumferentially spaced slots which function both as a water passage and also as a stop for limiting the rotation of the stem within the assembled sleeve.

3,698,419
DEVICES FOR PIERCING TUBES IN CLOSED PRESSURE SYSTEMS
Natale G. Tura, 343 Griswold Street, N.E., Warren, Ohio
Continuation-in-part of Ser. No. 107,046, Jan. 18, 1971. This application May 11, 1971, Ser. No. 142,231
Int. Cl. F16e 41/04; B23b 41/08
U.S. Cl. 137—318 **14 Claims**



A device for use in the servicing of a sealed fluid system, such as a refrigeration or air conditioning system, comprising a plier-like tool, preferably of the Vice-grip type, one jaw having a cradle for receiving a part of the peripheral wall of a tube in the system, and the other jaw having a piercing needle for piercing a hole in the wall portion of the tube opposite to that being cradled. A resilient bushing seal surrounds the piercing needle and is compressed between the jaw carrying the needle and the tube wall surrounding the pierced hole to prevent leakage of fluid during the piercing operation. A lever is provided for pivotal connection to the pliers tool for squeezing the tubing closed at either side of the pierced hole so that the tool may be removed without loss of fluid from the system.

3,698,420
DRAIN VALVE HAVING AUXILIARY SEAL
Douglas Grundy, East Islip, and John E. Wills, Brightwaters, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 5, 1968, Ser. No. 781,487
Int. Cl. F16k 31/528, 43/00
U.S. Cl. 137—329.06 **4 Claims**



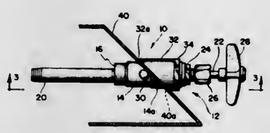
A drain valve having a spring-biased poppet which has a first seal on one end for closing an aperture and a second seal

spaced apart from said first seal for closing said aperture while said first seal is being replaced, and means for selectively positioning said first and second seals in sealing relation with said aperture.

3,698,421
VALVE ASSEMBLY

Samuel D. Kersten, Jr., Highland Park; Alton F. Sautter, Chicago, and John M. Simon, Downers Grove, all of Ill., assignors to Water Saver Faucet Co., Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,156
Int. Cl. F16l *5/00*
U.S. Cl. 137—356 **9 Claims**

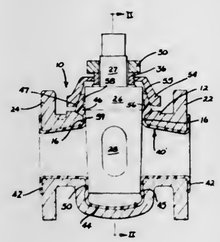


A valve assembly adapted to be mounted on a support panel through an opening in the panel. The assembly comprises a control valve having positioning means for engaging the inner surface of a support panel, irrespective of the degree at which the support panel may be angled. A locking sleeve or collar is provided for the assembly to enable the control valve to be secured on the panel. One end of the locking sleeve or collar is shaped to enable it to make flush contact with the outer surface of the support panel at the opening therethrough. Locking means are provided to maintain the positioning means and the locking sleeve or collar in locked engagement on the support panel.

3,698,422
LINED PLUG VALVE

Jacob B. Freed, Battle Creek, Mich., and Victor G. Relling, Dayton, Ohio, assignors to Union Pump Company, Battle Creek, Mich.

Filed May 6, 1970, Ser. No. 35,016
Int. Cl. F16k *27/00*
U.S. Cl. 137—375 **26 Claims**

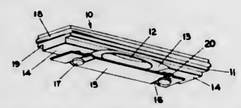


A plug valve whose chamber or bore and whose runs or port passages are fully lined with corrosion-resistant material, most preferably polytetrafluoroethylene, such valve having recesses in its runs, near their intersection with the bore, into which lining material distended by heat and pressure may creep, and with the valve body defining an internally rounded concave wall or dome at the bottom of the bore. The lining material is formed within the runs so as to be under tension longitudinally between the bore and the outer ends of the runs, and the lining material extends integrally upwardly from the bore and outwardly of the valve body to define a thick collar immediately above the neck of the bore. The valve is manufactured by use of an integral hollow rubber or like forming element comprised of tubular legs, and is placed inside the valve body with one such tubular leg extending through each run and through the bore. Different components of a multi-part mandrel are then inserted inside the tubular legs of the forming element and assembled together therewithin. Following this, the space between the rubber forming element and the inner walls of the valve body are filled with lining material, which is then compacted by resilient outer expansion of the forming element. Subsequently, the valve body and the compacted lining material are heated to coalesce or cure the latter in place.

3,698,423
VALVE UNIT FOR VACUUM OPERATED PALLETIZER LIFTING HEADS

Ernst A. Dahlquist, Grand Rapids; Stanley J. Polakowski, Kalamazoo, and Teunis Vaalburg, Ann Arbor, all of Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Filed Sept. 4, 1970, Ser. No. 69,688
Int. Cl. F16k *15/02, 15/14*
U.S. Cl. 137—454.2 **6 Claims**

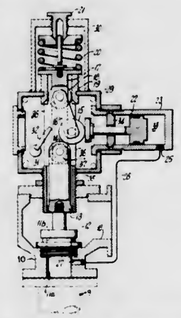


A valve unit adapted for insertion in an air passage opening through the grid of a vacuum operated palletizer lifting head having a rectangular body with a pair of elongated faces on opposite sides thereof and a generally central aperture therethrough between the elongated faces to permit air to pass through the body. The body has in one of its elongated faces a concave valve seat surrounding the aperture. The valve unit also has a valve member and means movably supporting the same on the body adjacent the valve seat, the valve member being a thin, resilient element adapted to be flexibly shiftable between an open position spaced from the valve seat and a closed position seated against the valve seat and shaped to conform to the concavity thereof. Means are provided around the periphery of the body for forming a seal between the body and the grid of the palletizer.

3,698,424
PRESSURE CONTROL VALVE

Charles W. Wiegand, 18 Circuit Road, New Rochelle, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,011
Int. Cl. F16k *17/00*
U.S. Cl. 137—467 **4 Claims**



A valve operable to open when a predetermined fluid pressure value is applied comprising a valve body having a passage

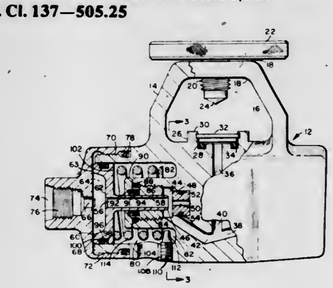
way, a closure member for controlling the flow, a control spring initially shouldered on a fixed abutment, a pendulant type member operatively pivoted to the shouldered end of the spring with the free end of the pendulant engaging a convexed surface on the closure member initially at a point tangential to its axis, a pressure responsive means when pressurized engages the free end of the pendulant urging it toward the axis of the closure member and by cam action raising the spring from its abutment thereby loading the closure member. When a predetermined pressure value is reached, the free end of the pendulant is pushed by the pressure responsive means beyond the axis of the closure member returning the spring to its fixed abutment and concurrently releasing the spring force on the closure member permitting the valve to open.

The valve may include a main spring to initially load the closure member. The cam action of the pendulant on the control spring would furnish a supplemental force on either the valve stem or the main spring and release this force when a predetermined pressure value is reached, returning the control to the main spring in the valve.

3,698,425
ADJUSTABLE BREATHING GAS PRESSURE REGULATOR

John A. Fisher, Fountain Valley, Calif., assignor to U.S. Divers Company

Filed Feb. 3, 1970, Ser. No. 8,268
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.25 **5 Claims**



An adjustable breathing gas pressure regulator comprising means for connecting a pressurized gas source to a chamber having a spring biased piston therein with a hollow stem for gas passage, terminating in a valve surface for closure with an adjacent seat. The spring bias on the piston is externally adjustable by radially positioned threaded members which have tapered ends spaced radially about the end of the spring so that when they are turned, and moved along a radius, the taper effectively compresses or releases the spring by a general wedging action at the end of the spring, thereby changing the operative pressure characteristics of the piston.

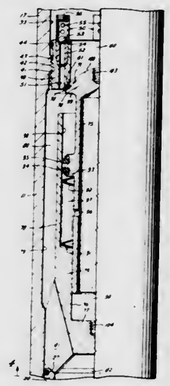
3,698,426
MUD SAVER VALVE AND METHOD

Mason Rawleigh Litchfield, and Floyd Logan Scott, Jr., both of Houston, Tex., assignors to Smith International, Inc.

Filed July 29, 1970, Ser. No. 58,825
Int. Cl. F16k *3/02*
U.S. Cl. 137—512.1 **28 Claims**

A mud saver valve assembly is connected between the lower end of the kelly and uppermost joint of drill pipe, the assembly including a downwardly opening spring loaded poppet valve and an upwardly opening ball check valve. The downstream face of the poppet is shielded from line pressure by a sealed air chamber at atmospheric pressure in such a manner that the resultant force of downstream pressure on the poppet tends to open the poppet.

Before adding another joint to the drill string the mud pump is shut down and the pressure gage checked to make sure there is no pressure in the drill string, any pressure in the drill string being transmitted through the ball check valve. If there is pressure it is bled off through a bleed off valve, if possible. With pressure down, the connection between the mud saver valve assembly and drill string is broken and a connection is made between the mud saver valve assembly and a joint of pipe in the mouse hole. No mud escapes from the kelly since the hydrostatic head of mud in the kelly is not sufficient to open the poppet valve in the mud saver valve assembly. The added joint of pipe is connected to the drill string still in the hole and the mud pump is turned on, automatically opening the poppet valve to restore circulation. The new joint is checked for leaks and if okay the drill string is lowered and

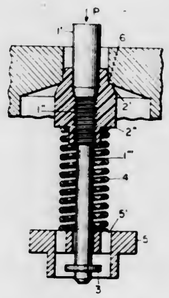


drilling resumed. Since the downstream side of the poppet is shielded from mud pressure the pressure drop across the valve need not equal the spring force to hold the valve open, whereby pump horsepower is not wasted and whereby rapid valve erosion is eliminated. If on opening the bleeder valve, drill string pressure is not relieved, it is possible to close the blow out preventers and reverse circulate to kill the pressure in the formation, the poppet valve being full open under well pressure thereabove in the kelly transmitted by the ball check valve, the atmospheric chamber below the poppet enabling the poppet to stay open when there is well pressure in the kelly sufficient to overcome the spring bias tending to close the poppet.

3,698,427
FLUID FLOW CONTROL VALVE

Frank Baranowski, Jr., 7 Pine Street, Lynnfield Center, Mass.

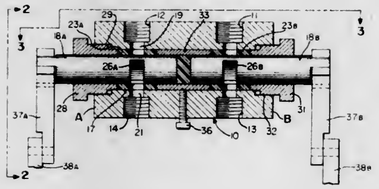
Filed Dec. 11, 1970, Ser. No. 97,276
Int. Cl. F16k *15/00, 21/02, 17/00*
U.S. Cl. 137—542 **4 Claims**



A valve including a valve element and valve stem unit is adapted to control a flow of fluid with a high degree of preci-

sion. The final configuration of the valve element is established by its engagement under pressure with the valve seat, resulting in cold flow, or creep, of the synthetic material of which the valve element is made. The valve element is joined to its stem by a screw-thread and without resorting to any adhesive bonding means.

3,698,428
VALVE ASSEMBLY
Darrell L. Gastin, Logan, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed March 22, 1971, Ser. No. 126,767
Int. Cl. F16k *11/10*
U.S. Cl. 137—595 **1 Claim**



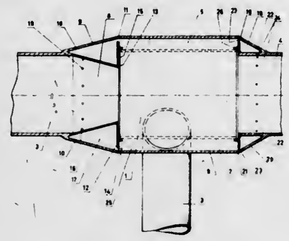
A valve assembly embodying a single actuator for two valve elements permitting positive opening and closing under actuation of the single actuator.

3,698,429
GAS TIGHT ISOLATORS AND VALVES
Walter Max Lowe, and Frederick Squirrell, both of London, England, assignors to Thermo-Technical Development Limited, London, England
Filed Feb. 1, 1971, Ser. No. 111,542
Claims priority, application Great Britain, Feb. 6, 1970, 5,918/70; March 18, 1970, 12,919/70
Int. Cl. F16k *11/14*
U.S. Cl. 137—601 **10 Claims**



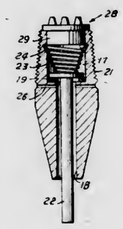
A cantilever seal for an isolator or valve comprises a cantilever leaf spring and a bias spring acting on the leaf spring to tension the leaf spring when in a free position, the bias spring being itself tensioned to press the leaf spring against a seating when the seal is in a sealing position. An isolating valve for a flue or duct is provided with two sets of flexible cantilever leaf springs facing in opposite directions of the duct, the cantilever leaf springs forming a pair of opposed co-operating seals when the duct is closed; these cantilever leaf springs may be provided with bias springs arranged to act thereon as described above. Preferably the bias spring or springs cause the leaf spring to have a curved cross section in the free position, and the leaf spring is flat in the sealing position.

3,698,430
MIXING DEVICE FOR MIXING TWO MEDIA WITH GREATLY DIFFERENT TEMPERATURES
Max L. G. Van Gasselt; Pieter A. Van Rijs, and Willem J. Basting, all of Apeldoorn, Netherlands, assignors to N.V. Neratoom, The Hague, Netherlands
Filed July 22, 1969, Ser. No. 843,634
Claims priority, application Netherlands, July 26, 1968, 6810707
Int. Cl. E03b *7/09*; F17d *1/16*
U.S. Cl. 137—604 **6 Claims**



A mixing device for mixing two media of greatly different temperatures, especially for mixing liquid metals such as sodium, comprising a cylindrical mixing chamber having an axial inlet conduit and an inlet conduit connected transversely to the wall of the mixing chamber for the media to be mixed, and also an axial outlet conduit, wherein a perforated cylinder is positioned concentrically inside the mixing chamber, this cylinder forming the wall of the mixing part proper, and also wherein the axial inlet conduit is conically contracted, at the place where it is connected to the mixing chamber, to a diameter which is smaller than the diameter of the perforated cylinder and the diameter of the perforated cylinder is at least equal to the diameter of the axial inlet conduit before its contraction, and wherein furthermore there are annular spaces around the axial inlet and outlet conduits where they are connected with the mixing chamber, which communicate via relatively small ports with the inlet conduit and outlet conduit at one side and with the mixing chamber at the other side.

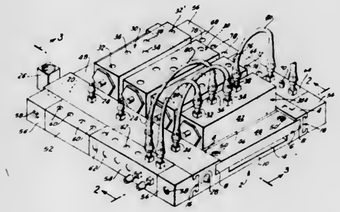
3,698,431
WATER DISPENSER FOR ANIMALS
Earl Clayton Thompson, Drawer A, Dallas, Tex.
Filed July 12, 1971, Ser. No. 161,532
Int. Cl. A01k *7/00*
U.S. Cl. 137—604 **15 Claims**



A dispensing valve for attachment to a water conduit includes an elongated housing having an external pipe thread at its inlet end. The housing provides an enlarged inlet chamber opening to the inlet end, and an axially aligned outlet passage of smaller diameter, defining an intermediate transverse shoulder. An annular gasket positioned on the shoulder defines a valve seat; and a closure member includes a head seating on the valve seat gasket and an elongated shank extending through the outlet passage and beyond the outlet end

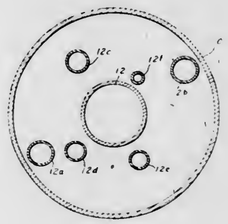
of the housing. The valve is opened by either tilting or lifting the closure member which is held against the seat by a spring in the inlet chamber. An orifice cap of a plastic material, for example, closes the inlet end of the inlet chamber and includes one or more bosses providing inlet passages. The bosses may be selectively sheared to change the area of the inlet passages.

3,698,432
FLUID LOGIC MODULE ASSEMBLY WITH BUILT-IN MANIFOLD
Aaron Kutz, Forest Hills, N.Y., assignor to Fluidic Controls Corporation, Hackensack, N.J.
Filed Oct. 8, 1970, Ser. No. 79,203
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 **4 Claims**



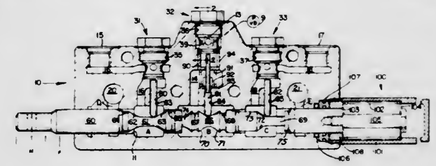
A mounting base with a built-in manifold passage is provided, on which fluid logic modules, such as valves, control relays, fluid interconnection elements and the like may be mounted in various combinations and arrangements as desired, means being provided for ready fluid interconnection between the manifold and appropriate fluid logic modules.

3,698,433
FLUID-SWIVEL
Christian D. Dobler, Tustin, and Herbert J. Lilly, Jr., Mission Viejo, both of Calif., assignors to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed Sept. 11, 1969, Ser. No. 857,073
Int. Cl. F16l *5/00*, *27/06*
U.S. Cl. 137—615 **6 Claims**



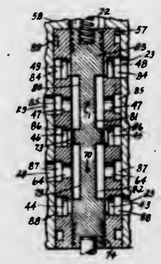
The disclosed multi-line fluid-swivel comprises a drum-like structure with the various lines entering the drum, and being directed to respective apertures in the drum-wall. Each aperture has an individually-associated peripheral rotatable manifold, so that each incoming line has fluid communication with a respective manifold. Each manifold is individual; and may be installed, removed, and repaired without interference of or from the others.

3,698,434
HYDRAULIC DIRECTIONAL CONTROL VALVE
Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 840,647, July 10, 1969, abandoned.
This application April 1, 1971, Ser. No. 130,443
Int. Cl. F16k *11/02*
U.S. Cl. 137—624.27 **8 Claims**



A directional flow control valve for controlling fluid flow between a source of fluid energy and a hydraulic motor having a valve housing, intake ports, motor ports, and exhaust ports, control means movable within said valve housing so as to selectively interconnect the ports of said valve housing, and flow responsive means within one of said ports, engageable with the control means for holding same in the selected position until flow ceases.

3,698,435
MULTISECTION VALVE AND HOUSING THEREFOR
Wendell I. Evans, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed March 15, 1971, Ser. No. 124,164
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.18 **4 Claims**

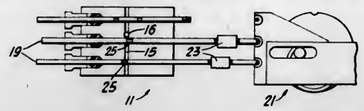


A valve mechanism has a single bushing and spool containing a plurality of separate valve functions. Each valve function is a section angularly spaced from other valve function sections in the same longitudinal region of the bushing and spool.

3,698,436
METERING VALVE
Charles H. Williams, Export, Pa., assignor to Koppers Company, Inc.
Filed June 22, 1971, Ser. No. 155,478
Int. Cl. F16r *3/24*
U.S. Cl. 137—624.15 **12 Claims**

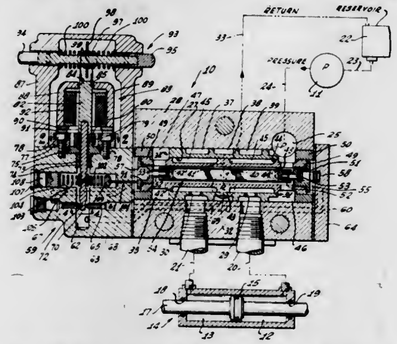
A metering valve comprises a valve block that has at least one fluid carrying duct through which a pressurized fluid may flow and that has at least two valve ducts intersecting the fluid carrying duct wherein each valve duct carries a valve rod. Each valve rod has at least one radial passage in the form of a groove or a bore. The radial passages of each valve rod are disposed in a fixed relationship to each other and are capable of reciprocating across the fluid carrying duct as a unit for in-

termitting the fluid flow through the fluid carrying duct. A means for changing the fixed relationship between the radial



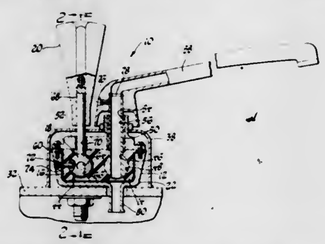
passages of the valve rods is provided whereby the duration of the intermission of the fluid flow can be changed.

3,698,437
CONTROL VALVE ASSEMBLY WITH MECHANICAL FEEDBACK
Robert M. Cox, Northridge, Calif., assignor to SLI Industries
Filed July 15, 1971, Ser. No. 162,831
Int. Cl. F16k 11/07, 31/04
U.S. Cl. 137—625.62 **17 Claims**



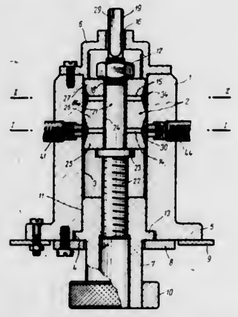
A valve assembly comprising a spool valve for controlling flows of actuating fluid to and from a hydraulic cylinder by movement of the spool in opposite directions from a neutral position in response to unbalanced pressures in chambers at the ends of the spool, and a pilot valve assembly mounted on the end of the spool valve housing and including an electromagnetically actuated flapper for variably restricting flows from the end chambers. Two balanced springs engage opposite sides of the flapper to urge it toward a centered position, and a longitudinally slidable feedback pin between one spring and the end of the spool adjusts the force of the spring in accordance with changes in the position of the spool.

3,698,438
VALVE ASSEMBLY
Walter J. Rozmus, Hubbardsville, N.Y., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed July 22, 1970, Ser. No. 57,215
Int. Cl. F16k 11/06
U.S. Cl. 137—625.46 **22 Claims**



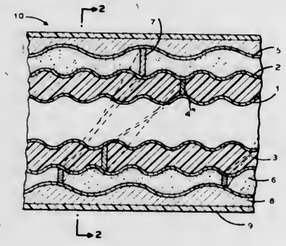
A single handle mixer valve comprising an elastomeric body which sealingly supports a spherical valve member for rotation about two mutually perpendicular axes to regulate degree and balance of flow between two fluid inlets and an outlet. Three embodiments are disclosed.

3,698,439
DISTRIBUTING SLIDE VALVE FOR LABORATORY PURPOSES
Miloslav Kolinsky, Praha, Czechoslovakia, assignor to Ceskoslovenska Akademie ved, Praha, Czechoslovakia
Filed May 5, 1971, Ser. No. 140,434
Claims priority, application Czechoslovakia, May 8, 1970, 321770
Int. Cl. F16k 11/02
U.S. Cl. 137—625.48 **4 Claims**



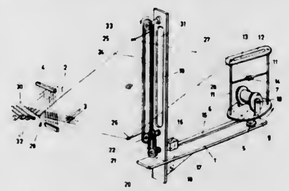
A distributing slide valve comprises a spindle consisting of at least one pair of conical truncated discs secured on an actuating rod. The pair of discs defines in respect of the valve bore an annular space for receiving a sealing ring and pressure means are provided to apply a force to the discs and to urge the rings against the bore. Each ring contains a system of individual ducts adapted to establish fluid communications between a system of fluid conduits which are to be operated by a valve.

3,698,440
THERMALLY INSULATED CONDUIT
Paul Matthieu, Berlin; Ottmar Leuchs, Hannover; Fritz Glander, Isernhagen NB; Hubert Kuypers, Bad Nenndorf, and Diethart Pelz, Langenhagen, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed April 20, 1971, Ser. No. 135,585
Claims priority, application Germany, April 21, 1970, P 20 19 081.2
Int. Cl. F16l 9/14, 59/02, 5/04
U.S. Cl. 138—149 **7 Claims**



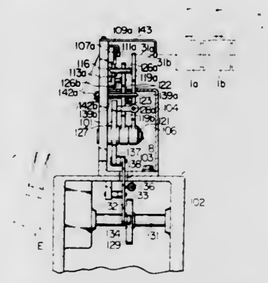
Thermally insulated conduit of indefinite length for transporting liquid or gaseous material in a heated or cooled state; the conduit including an oscillation damping layer.

3,698,441
DEVICE FOR FORMING A SELVAGE
Hubert Peter Van Mullekom, Deurne, Netherlands, assignor to N. V. Machinefabriek L. Te Strake, Deurne, Netherlands
Filed June 16, 1971, Ser. No. 153,607
Claims priority, application Netherlands, June 19, 1970, 7009073
Int. Cl. D03c 11/00
U.S. Cl. 139—54 **2 Claims**



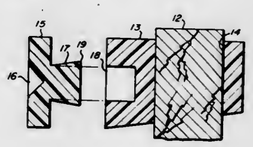
A device for forming a selvage with a fabric, comprising a rotatably mounted support for a binding thread supply and at least two binding thread guide members secured to an endless support means guided along an elongated endless path for guiding a corresponding number of binding threads from a binding thread supply to a fixed binding point, a common thread guide having a slot shaped guiding aperture being provided between the binding thread guide members on the one hand and the binding thread supply on the other hand, said guide being rotatably mounted in synchronism with the support means in its plane perpendicular to the plane of the support means, such that the distance between the support means and the adjacent end of the guiding aperture is minimum when the binding thread guide members are at or near the ends of their elongated path of movement.

3,698,442
WEFT CONTROLLER USABLE FOR A WEAVING LOOM OF WEFT PROPELLENT FLUID JET TYPE
Toemon Sakamoto, Hamamatsu, Japan, assignor to Enshu Limited, Hamana-gun, Shizuoka-ken, Japan
Filed June 18, 1971, Ser. No. 154,424
Int. Cl. D03d 47/34
U.S. Cl. 139—127 P **6 Claims**



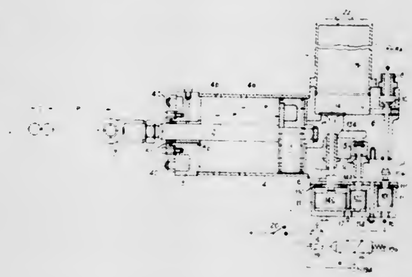
A weft controller usable for a weft propellant fluid jet type weaving loom, whereon two sets of wefts are picked alternately, having two sets of control mechanisms for pulling back the wefts after picking, clamping the wefts during the pulling back and releasing the wefts during the picking and a single driving source for the two control mechanisms. Control actions of the two control mechanisms can be varied from each other as desired.

3,698,443
LOOM PICKER
Richard J. Jacob, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed April 16, 1971, Ser. No. 134,561
Int. Cl. D03d 49/36
U.S. Cl. 139—159 **8 Claims**



A loom picker which has a body of resilient elastomeric material with a shuttle-contacting insert of a wear-resistant material which is harder than the body. The inner end of the insert has an outwardly tapered configuration and is mounted in a cavity with a constant cross section so that the tapered end forces the material surrounding the cavity outward and creates a lock between the members. The cross section of the insert and cavity may have any of several conventional geometric shapes to prevent rotation of the insert in the cavity.

3,698,444
PNEUMATIC PICKING MECHANISMS
Thomas Hindle, and David Dugmore Banks, both of Blackburn, England, assignors to Hindle Son and Company Limited, Blackburn, England
Filed Aug. 20, 1970, Ser. No. 65,412
Claims priority, application Great Britain, Aug. 23, 1969, 42134/69
Int. Cl. D03d 49/34
U.S. Cl. 139—142 **21 Claims**



A pneumatic picking motion for a weaving loom includes a linear-actuator comprising a piston movable in a cylinder under the influence of a measured change of compressed air applied thereto, the piston being connected with a picking-stick of the loom by means of a linkage. Preferably, the linkage is a compensating linkage arranged to provide uniformity of speed for the power-stroke of the piston.

3,698,445
LOOM SHUTTLE BINDER
Charles F. Travis, Greenville, S.C., assignor to Tranoco, Inc., Travelers Rest, S.C.
Filed March 11, 1971, Ser. No. 123,203
Int. Cl. D03d 49/54
U.S. Cl. 139—185 **2 Claims**

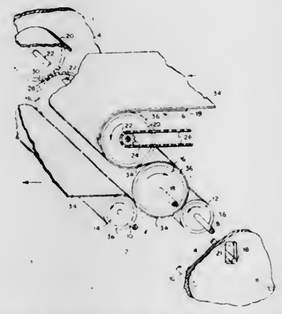
A loom shuttle binder having a body portion formed entirely of compressed laminated wood. Metal and non-metal at-

tachment components are eliminated from the binder and



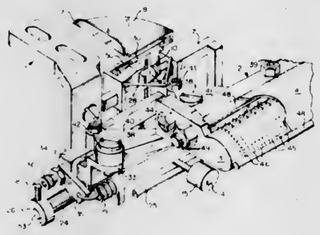
conventional cushioning materials may be used on the side of the binder next to the shuttle, if desired.

3,698,446
TAKE-UP MECHANISMS
Jarrell Miller, Denver, and Jimmy Talmage Whiteside, both of Greeneville, Tenn., assignors to Huyck Corporation, Stamford, Conn.
Filed Nov. 12, 1969, Ser. No. 875,875
Int. Cl. D03d *49/20*
U.S. Cl. 139—308 **11 Claims**



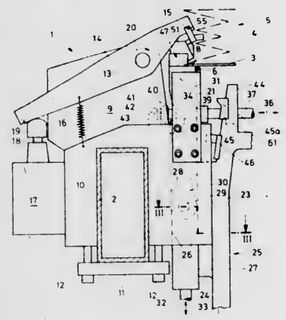
This invention relates to new and useful improvements in loom take-up mechanisms. More particularly, this invention relates to a take-up mechanism for a loom for weaving fabric comprising a positively driven take-up roll and at least one support roll which together cooperatively form at least one press nip and exert a positive resultant force on the fabric as it passes through the press nip.

3,698,447
CONTINUOUS FRINGE CUTTER FOR FABRICS WOVEN WITHOUT WEFT LOCKED SELVAGES
Ernest P. Guerin, Methuen, Mass., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed March 3, 1971, Ser. No. 120,580
Int. Cl. D03d *49/70*
U.S. Cl. 139—303 **6 Claims**



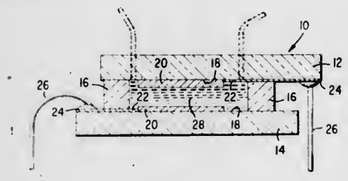
Woven fabrics in which wefts do not form weft locked selvages but are cut off at each pick, producing uneven weft fringes, are provided with two pairs of leno warp ends, one pair on each edge, spaced apart and preferably crossing every pick. The fabric is passed against two scissor-shaped cutters which, through suitable linkage, are actuated by the lay at the end of its travel in beating up a pick. These cutters cut the fabric between the two pairs of leno ends at each edge, removing a ragged fringe. To maintain the cutters close to the inner pair of leno ends at each edge, the fabric edge contacts a vertical guide which with the cutters can move a small distance parallel to the wefts. In other words, with the guide the cutters float and are always perfectly aligned with the fabric edge.

3,698,448
APPARATUS FOR FASTENING THE END COILS OF BORDER SPRINGS OF A SPRING CONSTRUCTION TO AN ELONGATE WIRE
Walter Spuhl, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland
Filed May 24, 1971, Ser. No. 146,328
Claims priority, application Germany, June 23, 1970, P 20 30 793.1
Int. Cl. B21f *27/16*
U.S. Cl. 140—3 CA **11 Claims**



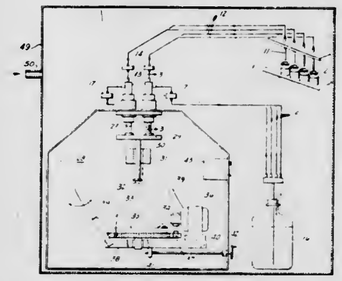
The end coils of border springs of a spring construction are clamped by clamping jaws against a common elongate wire with the end coils overhanging the wire. A bending head attached to a pivotal and reciprocable arm undergoes a sequence of movements to produce bending of the overhanging ends of the coils around the wire.

3,698,449
FABRICATION OF LIQUID CRYSTAL DEVICES
Howard Sorkin, Berkeley Heights, and Richard Ira Klein, Edison, both of N.J., assignors to RCA Corporation
Filed June 23, 1971, Ser. No. 155,897
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—1 **4 Claims**



To provide a uniform composition of the liquid crystal material throughout the device, the interior surfaces of the device are coated or contacted, prior to filling with the liquid crystal material, with certain additive materials normally contained in the liquid crystal material to improve the device performance.

3,698,450
STERILE CONTAINER FILLING MECHANISM
Arthur Sinclair Taylor, Spring Valley; Ellsworth Sandhage, Pearl River, both of N.Y.; George Bott, Westwood, N.J., and William Konazewski, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 812,142, April 1, 1969, abandoned, which is a division of Ser. No. 562,620, July 5, 1966, Pat. No. 3,453,804. This application Oct. 30, 1970, Ser. No. 85,735
Int. Cl. B65b *3/32*, *43/42*
U.S. Cl. 141—85 **5 Claims**



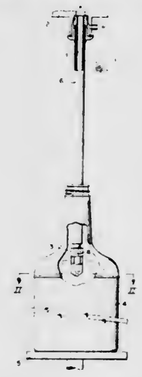
A filling machine for sterile filling of containers such as vials is described in which a moving conveyor brings predetermined amounts of single file, empty, sterile containers under filling nozzles and holds them there until they are filled. The filling machine has a number of nozzles equal to the number of containers, each nozzle having a pumping mechanism in the form of a double-compartment chamber, the two compartments being separated by flexible diaphragms. Pumping means are provided for pumping a predetermined amount of liquid into the second chamber, the amount corresponding to the volume which is to be filled into each container through the nozzle. The diaphragm flexes and in one stroke sucks into the first compartment an amount of liquid from a source which, of course, is the same volume that is pumped out of the second compartment. Then when the pump reverses, this amount is forced into each vial through the filling nozzle. The diaphragm keeps the two liquids separated and maintains sterile conditions. Preferably pumping is effected by a rotating plate connected through a rod and bushing to a plate which moves up and down to effect pumping. The connection is via a rigid rod with a ball and socket joint at each end. The stroke and hence the volume of liquid pumped is varied by lateral displacement of the axis of the horizontal driving plate. Of course check valves are provided in all of the lines so that there can be no back-flow of the liquid being pumped into the containers.

3,698,451
AUTOMATIC BAG OPENING AND FILLING APPARATUS
Doyle R. Hudson, West Monroe, La., assignor to Clinkraft, Inc.
Filed Feb. 8, 1971, Ser. No. 113,216
Int. Cl. B65b *43/46*
U.S. Cl. 141—166 **5 Claims**

An automatic bag opening and filling apparatus comprising: means for removing a bag from a hopper and transferring same to a fill station; means for at least partially opening said bag during the transfer operation; means for holding the bag at the fill station such that the bag is fully open at the top thereof; and means for conveying a filled bag from the fill station to a bag closing device. The apparatus also comprises means for preventing the transfer of product at the fill station when a bag is not removed from the bag hopper. In a preferred embodiment, vacuum means are used to transfer the bag to the fill station and to partially open said bag during the transfer whereas mechanical gripping means are used to hold the bag at the fill station.



3,698,452
BOTTLE FILLING DEVICE
Chester E. Waxlax, Moon Township, Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.
Filed Nov. 12, 1970, Ser. No. 88,577
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—286 **7 Claims**

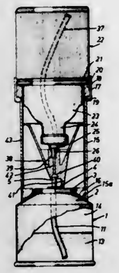


Extending down from the lower end of a vertical filling tube is a porous nozzle that is adapted to be inserted in a bottle to be filled. Liquid is discharged from the side of the nozzle in extremely fine streams around it. Preferably, the porous side wall of the nozzle includes a narrow non-porous band extending from top to bottom to create an open vertical path past the liquid issuing from the nozzle for free escape of air from the bottle while it is being filled.

3,698,453
DEVICE FOR STORING TWO LIQUIDS SEPARATELY AND DISPENSING THEM SIMULTANEOUSLY UNDER PRESSURE
Bruno Morane, Paris; Charles Paoletti, Aulnay-Sous-Bois, and Yves Hardouin, Survilliers, all of France, assignors to L'Oreal, Paris, France
Filed Dec. 15, 1970, Ser. No. 98,359
Claims priority, application France, Sept. 1, 1970, 7031762
Int. Cl. B65d *83/14*
U.S. Cl. 141—349 **10 Claims**

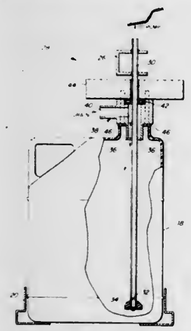
Storage and dispensing device comprises a storage container for holding one liquid under pressure and a dispensing

container in which another liquid is stored. The two containers are connected by a connecting tube along which one of the containers is axially slidable. Such sliding movement opens



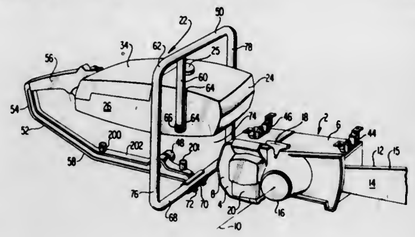
valves on both containers, so that liquid from the pressurized storage container is driven into the dispensing container, which is then separated from the tube and storage container and used as a dispenser.

3,698,454
CONTAINER REPLACEMENT SYSTEM
Harold Cunha, Pittsford, and James A. Kostrzewski, Rochester, both of N.Y., assignors to Itek Corporation, Lexington, Mass.
Filed July 8, 1971, Ser. No. 160,853
Int. Cl. B65b *1/04*; G01f *11/00*
U.S. Cl. 141—375 **11 Claims**



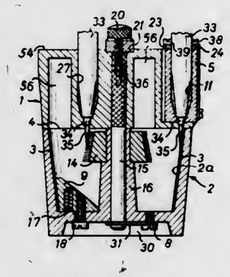
Apparatus for enabling the replacement of containerized processing solutions in a photographic processor in a convenient manner and without leakage of the solutions. When replacement is desired the operator raises vertically slidable door to gain access to processing containers in the processor. Upward movement of the door causes an upward movement of access equipment mechanically coupled to the door, which equipment provides contact with the processing containers and access to the solutions therein. An initial upward movement of the door retracts an access tube, through which the processing solution is pumped, to the top of each container. Each access tube has a conically shaped plug at its end, and further upward movement of each access tube causes the conically shaped plug to seal off an outlet of the access equipment through which the chemical solutions might leak. Still further upward movement of each access tube causes the access equipment to move up to a position completely clear of all the processing containers. At that point the vertically slidable door is completely open. The processing containers are located on a horizontally slidable drawer which is slided out of the machine through the open door. The processing containers are then removed from the drawer and replaced with new containers with fresh processing solutions.

3,698,455
VIBRATION ISOLATION AND BUMPER SYSTEM
Robert Eugene Frederickson, South Gate; John Louis Zimmerer, Torrance, and Jay Richard Bailey, Woodland Hills, all of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
Filed June 26, 1970, Ser. No. 50,163
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 R **14 Claims**



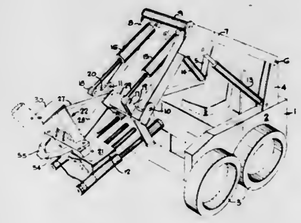
A chain saw comprising first and second assemblies. The first assembly generates mechanical vibrations and may include an internal combustion engine, a cutting chain with a guide bar and a drive system. The second assembly comprises an inertia mass and may include a fuel tank and a carburetor. Vibration isolation means connect the two assemblies and a handle network may be provided to define a cage-like structure connected with the second assembly. The first assembly is resiliently supported within the cage-like network by the vibration isolation means and bumper devices are associated therewith to preclude the failure of the resilient vibration isolation means due to unusual shearing influences being applied thereto. The axis of rotation of a crank shaft within the engine and the cutting plane of the overall saw are arranged to direct a substantial portion of the total vibrational energy along a primary plane of vibration. The vibration isolation means and the bumper devices are generally aligned with, and cooperate to absorb shock energy directed along, this primary plane. The vibration isolation means may be arranged to absorb vibration in shear and the bumper devices may be arranged to absorb energy generally in compression.

3,698,456
LEAD SHARPENER
Antonio Cho, Feldbumenweg 47, Zurich, Switzerland
Filed Oct. 12, 1970, Ser. No. 79,888
Claims priority, application Switzerland, June 18, 1969, 9543/69; Germany, June 18, 1970, P 20 29 929.0
Int. Cl. B43l *23/00*
U.S. Cl. 144—28.11 **12 Claims**



A lead sharpener with oppositely secured, cup-shaped upper and a lower parts which are rotatable relative to each other for grinding a lead retained in a lead holder. A holding member for receiving the lead holder is supported by the upper part, which holding member is pivotably mounted on the upper part relative to an axis which is parallel to the axis of rotation and further for movement to vary the angle of inclination relative to the axis of rotation, so that a desired angle may be ground on a lead retained in the lead holder.

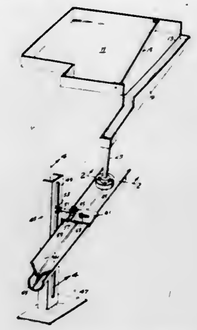
3,698,457
TREE HARVESTING DEVICE AND METHOD
Joseph E. Blonsky, Atlanta, Ga., assignor to American Pulpwood Association, New York, N.Y.
Filed Feb. 24, 1971, Ser. No. 118,331
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 R **4 Claims**



A tree harvesting device is mounted on a wheeled vehicle arranged to manipulate the device into desired orientation relative to the vehicle and includes base structure mounted on the vehicle and adapted for manipulation thereon together with a pair of vertically disposed tree engaging elements arranged to engage one side of a tree to be cut. A cutting blade is movably mounted on the base structure and provided with means for operating the blade into cutting engagement with the tree and toward the lower one of the tree engaging elements. Holding means pivotally mounted on the base structure is arranged to engage a part of a tree opposite from the tree engaging elements and to urge the tree into engagement therewith thereby to relieve the blade of at least a part of the weight of the tree and thus to facilitate cutting and to eliminate cutting damage to the severed portions near the cut. Control means is arranged to swing the blade into and out of its operating position, and latch means is provided for aiding in holding the blade in its operating position during a tree cutting operation. The device may be arranged for rotary movement about a longitudinal axis to accommodate changes in terrain.

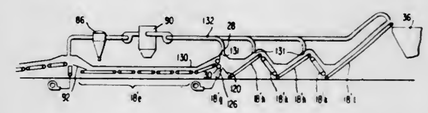
3,698,458
EMBRYO STRIPPER
Wayne E. Hill, Rosemont, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Feb. 11, 1971, Ser. No. 114,439
Int. Cl. C12k *7/00*, *9/00*
U.S. Cl. 146—2 R **2 Claims**

An embryo stripper utilized in combination with a conventional egg breaker comprising a sloped tray mounted under the egg breaker to receive the embryo containing sacs, a trough having a slope traverse to the slope of the tray in juxtaposition to the tray in order to receive the embryo containing sacs, funnel means extending downward from one end of the trough to conduct the embryo containing sacs to a cutter assembly. The cutter assembly slashes the sacs to liberate the embryos. The embryos are retained on collecting means



suitably designed to allow the sacs and allantoic fluids to drop into a waste chute below.

3,698,459
METHOD AND APPARATUS FOR PREPARING SUGARCANE STALKS FOR SUBSEQUENT PROCESSING
Sydney E. Tilby, Winterburn, Alberta, Canada, assignor to Canadian Cane Equipment Ltd., Edmonton, Alberta, Canada
Division of Ser. No. 692,237, Dec. 20, 1967, Pat. No. 3,566,944. This application Sept. 2, 1970, Ser. No. 68,982
Int. Cl. B02c *18/00*; A01d *55/00*
U.S. Cl. 146—119 **12 Claims**



A method for preparing a mass of randomly oriented, slender cane stalks for subsequent processing at a selected location. The method is intended to deliver the stalks in cleaned condition, chopped into uniform, relatively shorter lengths and aligned longitudinally in their direction of motion.

The method includes delivering the mass of stalks to a series of successively, more rapidly moving, conveyor means and subjecting the stalks to sudden vertical deflections at some of various junctions between adjacent ones of the conveyor means. At some of the junctions heavy debris (such as rocks) mixed with the stalks is caused to gravitate rearwardly and downwardly between adjacent ones of the conveyor means. At least one junction, leading portions of the stalks in the mass are also subjected to a force in a downstream direction aligned with their direction of travel upstream of the one junction. At another junction concurrently with vertical motion the canes are also subjected to a force in a direction downstream of the other junction, inclined transversely to direction of travel of the canes upstream of the other junction to exert a disentangling effect on the canes. The canes are progressively thinned out and aligned in the direction of travel and, at a point where substantially all the stalks are aligned in the direction of travel, they are chopped into shorter lengths while moving longitudinally.

The chopped lengths are then realigned.

At some point in their travel, the stalks are projected at high velocity across a vertical discontinuity in the conveyor means to cause the stalks to become partially airborne, at which time fluid is directed through the stalks to remove trash.

Apparatus for preparing a mass of randomly oriented, slender cane stalks for subsequent processing which includes a series of separate conveyors successively receiving the stalks.

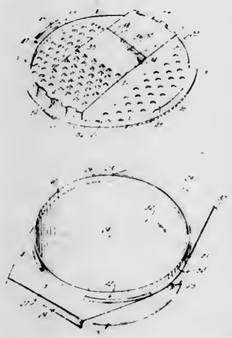
Some of the conveyors in the series are arranged with their downstream ends spaced vertically above and overlapping the upstream ends of the next succeeding conveyors to define cascading junctions, between adjacent conveyors at which a vertical deflection is imparted to the stalks.

At least one pair of successively related, cascading conveyors have their respective directions of travel aligned and another pair of successively related, cascading conveyors have their respective directions of travel transversely inclined. With this arrangement, the stalks are subjected to simultaneous vertical and accelerating forces, the latter being at separate times in different perpendicularly related directions, thereby facilitating disentangling and alignment of the canes.

A chopping means is positioned adjacent one of the conveyor means positioned sufficiently downstream, at a point where almost all of the canes are travelling longitudinally. The chopping means cuts the stalks transversely thereof into uniform shorter lengths, while they are moving longitudinally. Realigning means positioned adjacent the chopping means realign the chopped lengths of stalk in parallel relation.

At some point in their travel, the conveyor means project the stalks at sufficiently high velocity across a transversely extending, vertical discontinuity in the series of conveyor means to cause the stalks to become at least partially airborne during which time fluid-directing means directs fluid through the stalks to remove trash.

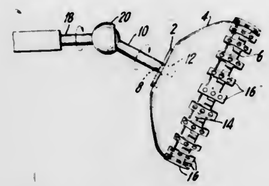
3,698,460
FOOD GRATER
Harold P. Ashton, Providence, and James B. Swett, Barrington, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 30, 1970, Ser. No. 102,623
Int. Cl. A23n *15/00*
U.S. Cl. 146—180 **6 Claims**



A Food Grater including a unique bowl having at least one handle and at least one flattened planar portion at the side of the bowl. The outermost extent of the handle is in the same plane as the flattened planar portion so the bowl can be held in a tilted position and rested on the outermost extent of the handle and the planar portion without rolling. The bowl is also provided with spaces to accept projections on a mating grater element so that the grater element will not rotate on the bowl when the grater is being used.

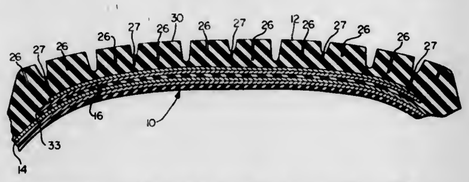
The grater element is divided into separate grating surfaces, some of which are in separate parallel planes. The separation helps prevent the fingers from being scraped on a nearby unused surface. The grater blades on some of the surfaces face in opposite directions from the grater blades on other surfaces so that a portion of the blades can be used when the grater element is in one position and the remainder can be used when the element is inverted. A unique plastic slicer is provided which has a substantially sinusoidal edge which permits the plastic slicer to be used where metal slicers were formerly required.

3,698,461
ELASTIC CONOID SHAPED WHEEL
Edward G. Markow, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, L.I., N.Y.
Filed Dec. 18, 1969, Ser. No. 886,059
Int. Cl. B60b *3/00*, *9/00*
U.S. Cl. 152—5 **7 Claims**



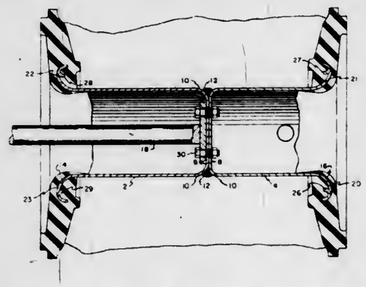
A wheel having a hub connected to a conoidally shaped solid section, the base edge of which is attached to a rim. The wheel is mounted to a vehicle axle by means provided with the hub.

3,698,462
PNEUMATIC TIRE
Paul F. Jacobs, Copley, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 27, 1971, Ser. No. 110,086
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 **18 Claims**



A pneumatic tire having a plurality of circumferentially extending ribs with circumferentially extending grooves separating each pair of ribs. Alternate circumferentially extending grooves extend radially inwardly for only about one-half the depth of the non-skid portion and each has circumferentially extending and circumferentially spaced apart slots in its base which extend for the remainder of the depth of the non-skid portion.

3,698,463
TIRE RIM ASSEMBLY
Neill K. Banks, Jr., and Mark L. Standley, both of Gloucester, Mass., assignors to Bomco, Incorporated, Gloucester, Mass.
Filed Sept. 17, 1969, Ser. No. 858,756
Int. Cl. B60c *5/16*, *7/24*
U.S. Cl. 152—379 **4 Claims**



This invention relates to a one-piece pneumatic tire and wheel assembly wherein two generally cup-shaped members

are welded together back to back to form an airtight rim, and preferably wherein the edge of the rim and the bead of the tire are bonded to each other.

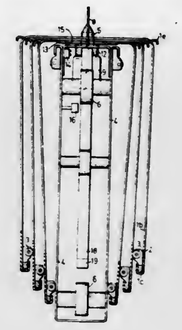
3,698,464
FOLDING DOOR FOR LUGGAGE COMPARTMENT OF VEHICLES SUCH AS MOTOR-COACHES FOR EXAMPLE
Neal W. Scheltel, Versoix, Switzerland, assignor to Bus & Car Company S.A., Sint.-Michiels-Brugge, Belgium
Filed May 29, 1969, Ser. No. 829,063
Claims priority, application Belgium, Aug. 2, 1968, 61831/68
Int. Cl. E05d *15/26*
U.S. Cl. 160—188 **3 Claims**



A folding door for the luggage compartment of vehicles comprises a pair of leafs pivotally interconnected to one another. The upper leaf is pivotally connected to the wall of the compartment, whereas the lower leaf is pivotally connected to the wall of the compartment. An actuating device is provided which is pivotally connected to the wall of the compartment at one end and also pivotally connected to a projecting arm projecting from the first leaf. The arrangement of pivotal connection of the leafs together with the actuator provides for a dead center position of the projecting arm of the first leaf. When the projecting arm is above the dead center position, the actuator acts on the projecting arm so as to close the leafs against the opening in the compartment. When the projecting arm is below the dead center position, the actuator acts to pull the projecting arm and thereby the first leaf away from the opening in the compartment.

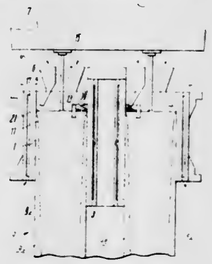
3,698,465
DOOR WITH SECTIONS TELESCOPICALLY DISPLACEABLE INTO EACH OTHER
Martin Birger Aberg, Oslovagatan 20, Lagan, Sweden
Continuation of Ser. No. 828,280, May 27, 1969, abandoned. This application July 23, 1971, Ser. No. 165,734
Claims priority, application Sweden, Aug. 18, 1968, 7347/68
Int. Cl. E06b *3/44*; E05d *15/16*
U.S. Cl. 160—222 **3 Claims**

A door comprises a number of sections telescoping into each other in the vertical direction. Each section has a base portion and downwardly directed legs which, in the open position of the door, incline inwardly towards each other and, in the closed position of the door, in a substantially parallel position abut the upper portions of the legs of the section underneath. Members such as rollers facilitating the relative movement between the sections are mounted on the lower part of the inside of the legs and are supported at a distance above the lower edge of the sections so that, in the closed position of the door, they are above the base portion of the section underneath. The lowest section is provided with rollers engaging the door frame and an upwardly directed centering pin



which, in the open position of the door, passes through recesses in the base portions of the sections above.

3,698,466
METHOD FOR CONTINUOUS CASTING OF STEEL
Gerd Vogt, Strump, and Hans-Peter Poeste, Heiligenhaus, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Dec. 23, 1970, Ser. No. 101,056
Claims priority, application Germany, Dec. 30, 1969, P 19 65 784.2
Int. Cl. B22d *27/20*
U.S. Cl. 164—55 **9 Claims**



Differently melting casting powders are used to control imbalance of heat transfer conditions in the cross section of a mold and ingot.

3,698,467
METHOD OF REMOVING SILACEOUS CORES FROM NICKEL AND COBALT SUPERALLOY CASTINGS
Michael H. Fassler, Middletown, and James S. Perron, Deep River, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 4, 1971, Ser. No. 103,544
Int. Cl. B22d *29/00*
U.S. Cl. 164—132 **3 Claims**

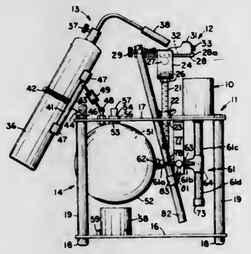
The removal of silaceous ceramic cores from nickel- or

cobalt-based superalloy casting is effectuated by heating the



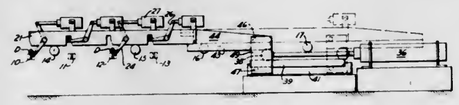
casting in a solution of potassium carbonate.

3,698,468
INVESTMENT CASTING APPARATUS
Billy C. Hudson, 1163 El Dorado Drive, Livermore, Calif.
Filed Nov. 19, 1969, Ser. No. 878,111
Int. Cl. B22d *27/16, 35/06*
U.S. Cl. 164—255 **6 Claims**



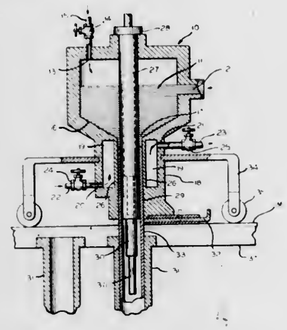
Investment, or lost wax, casting machine including means for forming an investment mold, melting a metal and pouring it into the mold, condensing steam to produce a partial vacuum, and applying the vacuum to the mold to enhance the flow of metal to the details of the mold.

3,698,469
DUMMY BAR HANDLING SYSTEM
Joseph Irwin Greenberger, Pittsburgh, and Joseph James Ciochetto, Allison Park, both of Pa., assignors to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed March 17, 1971, Ser. No. 125,042
Claims priority, application Great Britain, April 23, 1970, 19,571/70
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **6 Claims**



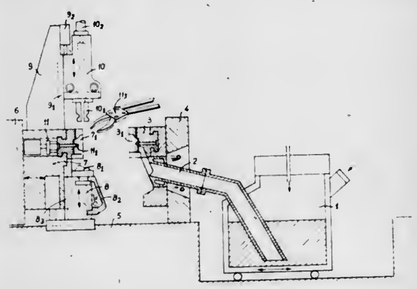
The disclosure of the present invention relates to a dummy bar handling system for use in a single or multistrand continuous casting machine. It includes a traversable support beam on one side of the run-out table and movable to and from a position over the table by a piston cylinder assembly. The beam carries one or more pivotal arms, the lower end of which is designed to carry a dummy bar assembly. The lowering of the arm places the dummy bar on the rollers of the run-out table from where the bar is advanced by the rollers to the pinch rolls of the casting machine. When the bar has served its purpose and is returned to the run-out table, the arm will pick up the bar and carry it to a storage station.

3,698,470
PRESSURE CASTING DEVICE FOR CASTING HOLLOW PRODUCTS
Irving E. Fink, 925 Park Road, El Paso, Tex.
Filed Feb. 26, 1970, Ser. No. 14,276
Int. Cl. B22d *27/14*
U.S. Cl. 164—281 **2 Claims**



A casting device and process wherein molten material is forced by gravity and pressure into the forming mold where it is cooled and solidified by cold water in a surrounding envelope. The casting device may be mounted on wheels to enable successive pourings into adjacent forms.

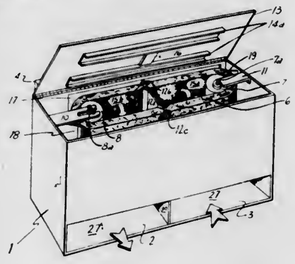
3,698,471
AUTOMATICALLY OPERATED MULTIPLE CAVITY DIE FOR LOW-PRESSURE CHILL-CASTING
Pierre Chatourel, and Jean Lefebvre, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France
Filed Sept. 28, 1970, Ser. No. 75,920
Claims priority, application France, Oct. 15, 1969, 6935366
Int. Cl. B22d *33/04*
U.S. Cl. 164—340 **9 Claims**



This device permits the low-pressure chill-casting of parts such as engine pistons in mold cavities formed in pairs of half-dies, said mold cavities being aligned and formed in a fixed half-die receiving the duct supplying the molten metal thereto and in the movable half-die adapted to move by translation away from said fixed half-die by means of retractable members of the type comprising movable core elements, the automatic control units associated with said half-dies being adapted to assemble and disassemble said core elements

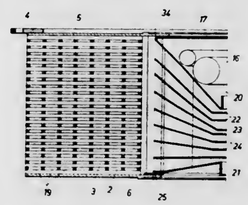
through a sequence of mechanical movements produced by an actuator, automatic means being associated with the device for ejecting and discharging the castings.

3,698,472
THERMAL EFFECT RECLAIM DEVICE
Harold E. Gold, Bettendorf, Iowa, and Ralph B. Smith, Rock Island, Ill., assignors to American Air Filter Company, Inc., Louisville, Ky.
Division of Ser. No. 796,839, Feb. 5, 1969, abandoned. This application May 7, 1970, Ser. No. 47,920
Int. Cl. F23l *15/02*
U.S. Cl. 165—6 **1 Claim**



A heat exchange apparatus to improve the thermal efficiency of a room air conditioning device which provides conditioned air to a served space and includes means to provide fresh air to the served space. The heat exchange apparatus is disposed in communicative relation with the air intake of the air conditioning device and with an air outlet from the served space.

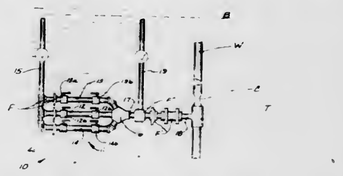
3,698,473
ANNULAR RADIATOR
Willi Frank, Egerlander Str. 11, 714 Ludwigsburg, and Gustav Engler, Schillerstrasse, Neckargroningen, both of Germany
Filed Jan. 27, 1969, Ser. No. 794,082
Int. Cl. F24b *1/06*
U.S. Cl. 165—51 **4 Claims**



An annular radiator having cooling ribs disposed in axial planes between coolant carrying elements which are constructed and arranged in the manner of a diffuser.

3,698,474
WELL CONDUIT TREATING APPARATUS
Kermit G. Rowley, Houston, Tex., assignor to Tenneco Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 29,091, April 16, 1970, Pat. No. 3,647,000. This application Dec. 14, 1970, Ser. No. 97,940
Int. Cl. E21b *33/03*
U.S. Cl. 166—90 **13 Claims**

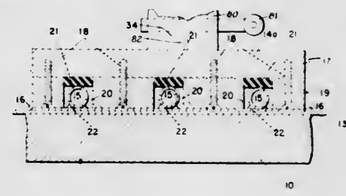
An apparatus which injects successively smaller solid particles into a flowing well conduit where the injected particles are carried to a downstream restriction to form a flow interrupting plug. After the plug is formed, the apparatus injects a heavy fluid into the flow conductor to overcome the formation pressure. The injector apparatus includes a plurality of tubular chambers, each of which contains solid plugging particles of predetermined size. The ends of the chambers are equipped with valving means and a source of high pressure fluid is connected to the inlet end of each chamber. Sequential opening of the valves at the chamber ends permits the high pressure fluid in the inlet end to drive the particles from each of the chambers and inject them into the well flow conduit. After the



plug is formed at the restriction, heavy fluid is pumped through a well control fluid supply line which opens into the well conduit through the injector.

In a modified form, a single tubular chamber contains the graded plugging particles in sequential order according to size. A valving means at the outlet end of the chamber is employed to regulate injection of particles into the well conduit. The inlet end of the chamber is connected to a supply line which provides the fluid drive forcing the plugging materials into the flow conductor and also provides the inlet source for the heavy well treating fluid.

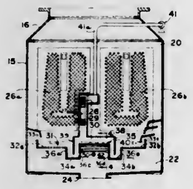
3,698,475
FLAT SHEET OF METAL HAVING AN ELONGATED MEMBER SECURED THERETO
Edward G. Beck, Jr., Ft. Thomas, Ky., assignor to The Stolle Corporation, Sidney, Ohio
Division of Ser. No. 673,138, Oct. 5, 1967, Pat. No. 3,514,834, and a continuation-in-part of Ser. No. 523,619, Jan. 28, 1966, abandoned. This application March 9, 1970, Ser. No. 17,565
Int. Cl. F28f *1/32*
U.S. Cl. 165—171 **4 Claims**



A method of securing metallic tubing and the like to a flat metal sheet while maintaining the flatness of the sheet so that the composite tube and sheet may be used as radiant heating or cooling panels in building interiors where distortion or wrinkling of the flat sheet would be undesirable. The apparatus comprises a heating station where a composite of sheet, of suitably disposed bonding material, and a piece of tubing in properly assembled relationship and under pressure are heated to induce a bond between the tubing and the sheet while maintaining the sheet in flat condition. An assembly station is provided including a jig in which the piece of tubing may be accurately located, means for accurately locating the jig with respect to the sheet, and means for raising and lowering the jig and for releasing the jig from the raising and lowering means so that it may move with the assembly from the assembly station to the heating station. After the heating cycle, the assembly moves to a cooling station (which may be the

same as the assembly station) for a cooling cycle. A combined assembly and cooling station may be provided on each side of the heating station, each assembly station having a jig whereby production may be speeded up.

3,698,476
COUNTER FLOW-DUAL PRESSURE VENT SECTION DEAERATING SURFACE CONDENSER
Leonard J. Wyzalek, Pompton Plains, and Henry W. Peterson, Millington, both of N.J., assignors to Worthington Corporation, Harrison, N.J.
Filed Dec. 31, 1970, Ser. No. 103,074
Int. Cl. F28b *9/10*
U.S. Cl. 165—112 **9 Claims**



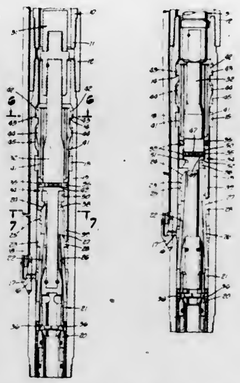
Various forms of surface condensers are disclosed each respectively with a dual pressure deaerating system for condensate using a true counter-flow tray stack section. The tray stack section is disposed within reheating chamber and below a vent condenser chamber through which non-condensible gases are withdrawn from the condenser. Both the reheating chamber and the vent condenser chamber are pressure-isolated by trap means from the associated condenser space. Thus, variations in condenser load are not reflected by pressure changes in the deaerating system and the efficiency of the deaerating system is maintained. Reheating steam introduced into the reheating chamber below the level of the tray stack, flows through the tray stack, counter to the direction of flow of condensate, and to the vent condenser chamber which is maintained at a relatively lower pressure by an ejector. The true counterflow of steam through the tray stack both reheats the condensate and accommodates the separation of non-condensible gases from the condensate. One or more of the tray stack trays is disclosed to be of a construction having serrations along both its upper and lower edges to establish a plurality of drop points for the condensate.

ERRATUM

For Class 166—90 see:
Patent No. 3,698,474

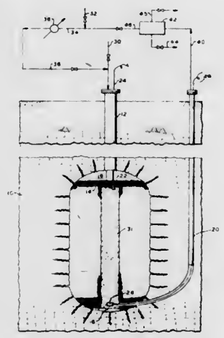
3,698,477
RUNNING-IN TOOL FOR WELLS
Gary A. Radig, Lakewood; Olive A. Rowell, Jr., Long Beach, both of Calif., and Harvey R. Edwards, Beirut, Lebanon, assignors to Cook Testing Co., Long Beach, Calif.
Filed April 6, 1971, Ser. No. 131,605
Int. Cl. E21b *23/00*
U.S. Cl. 166—214 **8 Claims**

A running-in tool for placing a flow control device in a section of a pipe installed in a well comprises a carrier connected by shear pins to the flow control device and adapted to be lowered into the well pipe, together with a collet encircling a portion of the carrier and connected thereto by additional shear pins. The collet is provided with a series of axially extending spring fingers each having a portion adapted to engage an internal shoulder provided in the well pipe. The flow control device also has axially extending spring fingers for engagement with an internal recess in the well pipe. The collet has an inverted tapered bowl proportioned to receive the upper end of most of the spring fingers of the flow control device to hold them in a retracted inoperative position, the remaining spring



fingers being shorter and held in the inoperative position by posts on the collet extending below the bowl.

3,698,478
RETORTING OF NUCLEAR CHIMNEYS
Harry W. Parker, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 10, 1969, Ser. No. 883,773
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—248 **9 Claims**



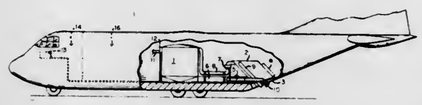
Oil-yielding rubble in a nuclear chimney is preconditioned for retorting by forming a generally vertical column of coke-like rubble therein. The mass of rubble in the chimney is then retorted by introducing a hot heating medium. Hydrocarbons educed from the rubble can be recovered in any suitable manner.

3,698,479
SOLUBILIZED OIL-WATER SOLUTIONS SUITABLE FOR MISCIBLE FLOODING
Warren S. Askew, and Richard E. Marrs, both of Tulsa, Okla., assignors to Amoco Production Company
Filed Aug. 8, 1969, Ser. No. 848,500
Int. Cl. E21b *43/16*
U.S. Cl. 166—273 **9 Claims**

Solubilized oil-water solutions suitable for use in miscible flooding and injection well clean-out methods are prepared from an alkali metal petroleum sulfonate containing free

mineral oil and/or crude oil, a cosurfactant or coupling agent such as the ethylene oxide adducts of 4 to 10 carbon atom primary alcohols and a mono-valent ion brine solution having a solids concentration not greater than about 60,000 parts per million. Such solubilized oil-water systems when introduced in the form of a slug into an oil bearing reservoir and displaced through the latter tend to dissolve oil into and reject water from the leading edge of the slug thus creating a gradation of viscosity which increases from the leading edge to the trailing edge of the slug thereby aiding in preventing bypassing of the driving water around the slug during flooding operations. The ratio of sulfonate to cosurfactant employed in these compositions ranges from 1:9 to 7:3.

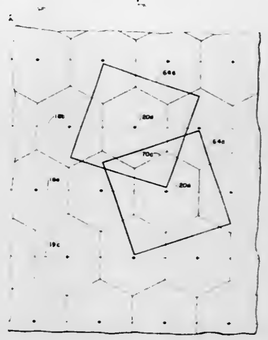
3,698,480
DUAL TANK AIR BORNE FIRE RETARDANT DISPENSING SYSTEM
Dale P. Newton, Chico, Calif., assignor to Aero Union Corporation, Chico, Calif.
Filed July 12, 1971, Ser. No. 161,528
Int. Cl. A62c *3/00*
U.S. Cl. 169—1 A **10 Claims**



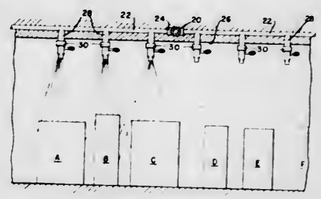
A method and apparatus for airborn fire suppression by means of a portable fire retardant chemical dispensing system, readily adaptable, without extensive aircraft modification, to various makes of aircraft, for dispensing current types of forest and range fire fighting chemicals in a conventional and proven manner. A large capacity main slurry storage tank is centrally located within the aircraft and coupled by means of fluid transfer pipes to a lower capacity slurry dispensing tank positioned aft of the main tank in the doorway of the aircraft's cargo doors. Once emptied, the dropping tank is refilled from the main tank. Bleed air from the engines is used to pressurize the system. The system is readily installed and removed from the aircraft with a minimum of tools in a minimum of man-hours for increasing utilization of the aircraft.

3,698,481
METHOD AND APPARATUS FOR FIGHTING FIRE
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed Feb. 18, 1971, Ser. No. 116,536
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **2 Claims**

A method and apparatus for fighting fire wherein a plurality of extinguishant-discharging heads are supported in an elevated position within the space to be protected and are adapted to discharge the extinguishant in a substantially square pattern over the area to be protected. The heads are arranged in spaced parallel rows with the location of the heads of each row being staggered relative to the location of the heads of its adjacent row, and the diagonal of the square pattern of each head of each row being canted relative to the diagonal of the square pattern of the heads of its adjacent rows.



3,698,482
FIRE PROTECTION SYSTEM UTILIZING HIGH-CAPACITY DIRECT DISCHARGE NOZZLES
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Continuation-in-part of Ser. No. 72,333, Sept. 15, 1970, Pat. No. 3,653,444, which is a continuation-in-part of Ser. No. 864,612, Oct. 8, 1969, Pat. No. 3,653,444, which is a continuation-in-part of Ser. No. 885,501, Dec. 16, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,684
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **7 Claims**

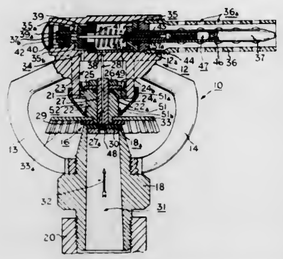


A fire protection system wherein a source of extinguishant is connected to a plurality of high-capacity direct discharge nozzles mounted in an elevated position in the space to be protected. The nozzles are activated in a sequence dictated by their proximity to the fire, with the spacing between the nozzles and the configuration of the extinguishant discharge pattern from each nozzle being such that the operation of each nozzle is independent of the operation of the remaining nozzles. Each nozzle has the capacity to discharge the extinguishant at a rate of no less than one-eighth the total capacity of the system.

3,698,483
AUTOMATICALLY RESETTABLE FIRE SPRINKLER VALVE
John E. Martin, Winchester, N.H., and Roger B. Landry, Hudson, Mass., assignors to Temptat Corporation, Hinsdale, N.H.
Filed Oct. 27, 1970, Ser. No. 84,319
Int. Cl. A62c *37/08*
U.S. Cl. 169—37 **12 Claims**

An automatically-resettable fire sprinkler valve is normally held closed by a piston-cylinder unit in which both ends of the

piston are exposed to the high main-supply water pressure, one of the piston ends being of greater effective area than the other, such that the same water pressure acting on the different end areas normally forces a valve member to a flow-blocking position. A normally-closed bleed port associated with the broader-area end of the unit is valved open to a pressure-relieving condition by mechanical response of a thermal actuator to temperatures above a predetermined critical level, whereby the sprinkler valve is forced open by the main-supply pressure; when the temperature decreases to a safe low level, the bleed port is automatically closed by the thermal actuator, and equal pressures on the unequal-area piston ends cause positive reclosing of the sprinkler valve.

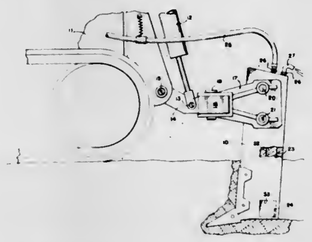


3,698,484

VIBRATORY EARTH ENGAGING SHANK

Frank R. Kinnan, Route 1, P.O. Box 445, Camas Valley, Oreg.

Filed Nov. 25, 1970, Ser. No. 92,724
Int. Cl. A01b *35/00*
U.S. Cl. 172—40 **2 Claims**



An earth engaging shank carried by a tractor for displacement of earthen material upon movement of the shank therethrough. A roller is embodied within the lower portion of the blade remote from the shank attachment to the tractor, to impart vibratory motion to said lower portion of the shank to facilitate passage through the earthen material. Air or hydraulic fluid under pressure powers the roller.

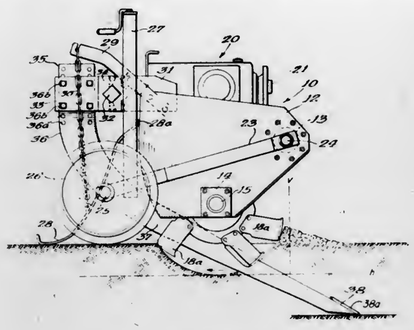
3,698,485

TILLAGE DEVICE

Clarence W. Trimpe, and Roy A. Beldon, both of Seymour, Ind., assignors to Rotary Hoes Ltd.

Continuation of Ser. No. 702,325, Feb. 1, 1968, abandoned. This application Aug. 3, 1970, Ser. No. 60,597
Int. Cl. A01b *49/02*, *33/00*
U.S. Cl. 172—65 **14 Claims**

A power driven, rotary soil tillage device in which a driven shaft having spaced rotary tillage members with soil engaging blades is provided with soil erupting chisel point members that extend from a point above and behind the driven shaft, downwardly and forwardly and terminate forward of and below the cylinder of rotation of the blades, so that the blades may work to the depth for forming a seed bed and the chisel point members erupt soil upwardly from below seed bed depth into the rotary tillage members where it is broken into an acceptable tilth. Independent adjustment of the depth of operation of the blades and of the chisel points permits optimum operation under varying soil conditions.

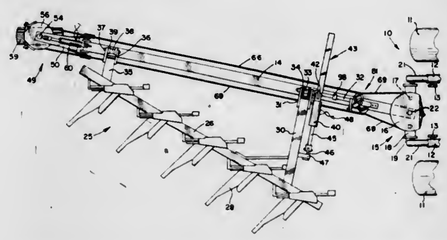


3,698,486

STEERING COMPENSATOR TO ALTERNATELY OFFSET THE TAIL WHEEL ON SEMI-MOUNTED TWO-WAY PLOWS

James Morkoski, Memphis, and Louis B. Garriott, Jr., Knoxville, both of Tenn., assignors to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 45,457, June 11, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,405
Int. Cl. A01b *3/42*, *3/46*, *5/14*
U.S. Cl. 172—212 **8 Claims**



A semi-mounted two-way plow has a supporting frame which in its alternate operating positions is arranged diagonally and has a combination transport and gauge wheel at its rear end which follows a path laterally offset from the center line of the tractor in each of its operating positions, the wheel being steered by means compensating for the offset position of the wheel to constrain the wheel to follow the tractor when turning and to retain its parallel relation to the path of travel in both operating positions.

3,698,487

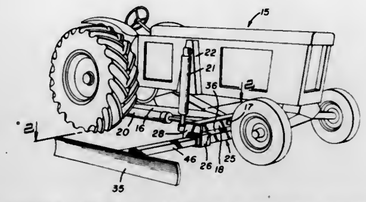
ROAD MAINTAINER ATTACHMENT

Harold C. Ruth, Caledonia, and James W. Thompson, Ashley, both of Ohio, assignors to A-T-O Inc., Willoughby, Ohio

Filed Nov. 12, 1970, Ser. No. 88,689
Int. Cl. A01b *59/046*, *65/00*, *63/104*
U.S. Cl. 172—305 **4 Claims**

A road maintainer attachment for use on a tractor-type road maintainer and comprising a dozer attachment adapted to operate at the side of the vehicle, for example, in cleaning or smoothing the shoulders of a highway and under guard rails

disposed therealong. The attachment is formed of extensible and retractible sections so that it will have maximum reach when extended and minimum overall length when retracted.



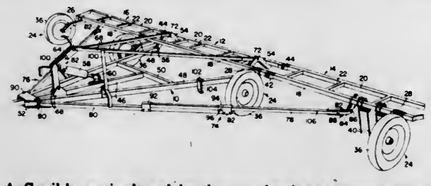
This provides for efficient use of the attachment without increasing the over-all width of the vehicle on which it is mounted.

3,698,488

FIELD CONDITIONER

Alfred Dean Yoder, East Moline, and Robert Richard Roth, Rock Island, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Sept. 3, 1970, Ser. No. 69,365
Int. Cl. A01b *49/00*, *63/00*
U.S. Cl. 172—311 **7 Claims**



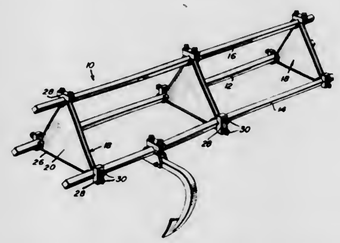
A flexible agricultural implement having a center section pivoted to an elongated draft frame for movement about a transverse axis between alternate lowered working and raised transport positions, a pair of outrigger sections pivotally connected to the ends of the center section for vertical swinging movement when the center section is in the lower working position and forward folding movement when the main frame is in the transport position, and brace means interconnecting each of the outrigger frame sections with the draft frame, each brace means including a pair of pole sections interconnected for limited telescopic movement.

3,698,489

TOOL BAR CONSTRUCTION

Arvin L. Norrell, P.O. Box North Avenue North, and Arvin W. Norrell, P.O. Box 135 925 Avenue Q, both of Sunray, Tex.

Filed Sept. 10, 1969, Ser. No. 856,642
Int. Cl. A01b *23/04*
U.S. Cl. 172—656 **5 Claims**



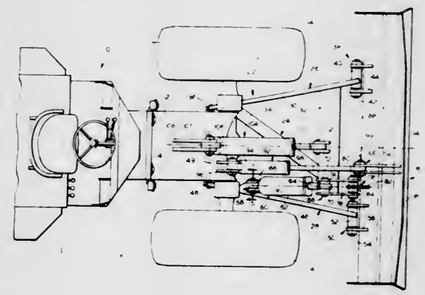
A tool bar unit comprising three parallel tool bars and a series of triangular spacers positioning the bars at approximately equal distances in a triangular pattern whereby two of the tool bars are in the same horizontal plane and act as the mounting tool bars, while the third tool bar is located centrally between the first two tool bars and in a horizontal plane vertically thereabove so as to cooperate with the triangular spacers and define stiffening means. The spacers each consists of a pair of solid plates sandwiching edge reinforcing rods therebetween, the opposed ends of the rods being threaded and orientated so as to define tool bar receiving and clamp mounting members.

3,698,490

BULLDOZER MOUNTING AND CONTROLS

James F. King, Cupertino, Calif., assignor to Clark Equipment Company

Filed Oct. 23, 1969, Ser. No. 868,786
Int. Cl. E02f *3/76*
U.S. Cl. 172—803 **14 Claims**



Bulldozer mounting and controls, including a first rigid push beam assembly mounting the blade at laterally spaced points, and a second push beam assembly connected with the blade at the end of the blade, and a tilt jack working between the blade and the second push beam assembly, eliminating warping of the blade or any mounting parts, and maintaining the same tilted position of the blade in all positions of elevation.

3,698,491

DRILLING METHOD AND BIT

Robert N. Hoffman, Richardson, and Loyd R. Kern, Irving, both of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,831
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **7 Claims**

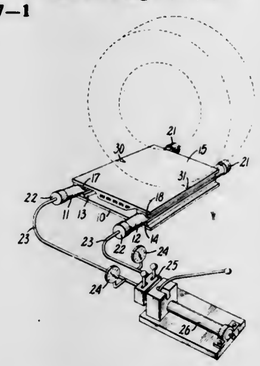


A diamond-type bit of certain cross-sectional configuration and a method for drilling a slim hole wellbore wherein the bit is rotated at a high rate during drilling.

3,698,492
HYDRAULIC BALANCE

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissement Michelin Raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed May 3, 1971, Ser. No. 139,697
Claims priority, application France, May 15, 1970, 7018017
Int. Cl. G01g 17/00, 5/04
U.S. Cl. 177—1 2 Claims

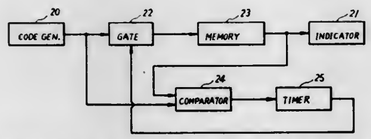


A hydraulic balance is provided which comprises two deformable parallel tubes containing a fluid under pressure and arranged between a lower base plate and an upper load supporting plate, each of the tubes forming part of a separate hydraulic circuit having a separate pressure measuring device.

3,698,493
DIGITAL BALANCE

Masami Yamanaka, Miki, and Takashi Aga, Akashi, both of Japan, assignors to Yamato Scale Company, Limited, Akashi-shi, Japan

Filed Dec. 29, 1971, Ser. No. 213,569
Claims priority, application Japan, June 7, 1971, 46/40021
Int. Cl. G01g 23/38
U.S. Cl. 177—3 2 Claims



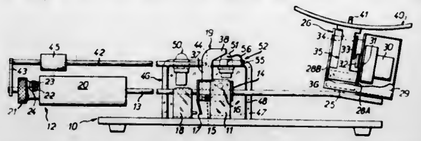
A digital balance having a code generator and indicating means for displaying the weight of a commodity and other related information in digital form which includes a gate and a memory circuit between the code generator and indicating means, a device for comparing the output of the code generator with the output of the memory circuit and a timer connected between the comparing device and the gate to operate said gate and feed a signal to the memory device when a condition of non-coincidence exists for a predetermined period of time.

3,698,494
BALANCE FOR BLOOD BAG

Jean Joseph Gaudin, Bordeaux-Cauderan, France, assignor to LABAZ, Paris, France

Filed April 8, 1971, Ser. No. 132,476
Claims priority, application France, April 20, 1970, 7014176
Int. Cl. A61m 1/00; G01g 1/18, 13/30
U.S. Cl. 177—118 11 Claims

A balance for weighing and agitating a blood bag into which blood is fed from a donor, comprises a pivoted beam provided with an adjustable counterweight on one side of the pivot axis and a pan on the other side. The pan is mounted on a rocking

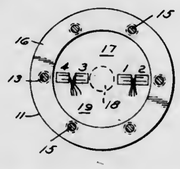


arm pivotally supported on the beam and rocked about an axis extending along the beam by a motor mounted on the beam.

3,698,495
ELECTRICAL WEIGHT INDICATING DEVICE

Norman H. Vogt, 457 Fisher Court, Clawson, Mich.

Filed Sept. 25, 1970, Ser. No. 75,469
Int. Cl. G01g 3/14
U.S. Cl. 177—211 1 Claim

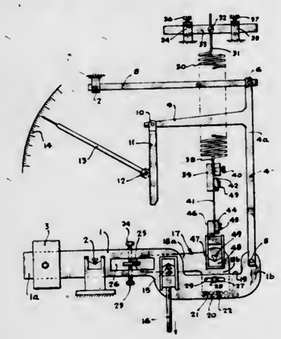


An electrical weight indicating device signaling imposed weight in terms of output voltage having a stainless steel sealed case inclosing a chamber. A diaphragm plate in the case has a central load point or button and the two sets of resistors are aligned diametrically of the load point within the sealed chamber on either side of the load point. Input voltage is fed to the two resistor sets separately, but output voltage is combined on two sides from resistors of each set so that variations in plate or resistor bending are averaged out in the cumulation of the output voltage at the reading device so that output voltage is substantially linearly proportional to imposed weight.

3,698,496
SPRING BALANCE WITH VERTICAL LINEARIZING MEANS

Ernst Lohmann, Duisburg, Germany, assignor to Berkel GmbH, Duisburg, Germany

Filed May 20, 1971, Ser. No. 145,324
Claims priority, application Germany, May 29, 1970, P 20 26 309.6
Int. Cl. G01g 1/18, 3/06, 21/00
U.S. Cl. 177—230 12 Claims



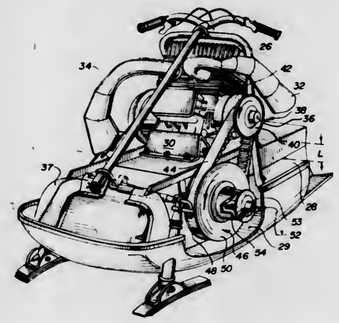
A measuring instrument of the spring balance type for measuring a mass, through a measurement of force, which in-

cludes mounting means for a resilient member counteracting the force that maintains the axis of operation of the resilient member linear along the vertical.

3,698,497
VARIABLE SPEED TRANSMISSION SYSTEM AND BRAKING MEANS

Jerome Bombardier, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed July 23, 1970, Ser. No. 57,433
Int. Cl. B62m 9/08, 27/02
U.S. Cl. 180—5 R 10 Claims

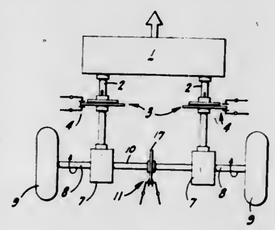


A snowmobile variable speed transmission system using a sheave drive, the driven pulley of which is mounted directly on one end of the drive sprocket axle; thus the chain case, including the chain and all the associated parts, are no longer required in the transmission of power from the engine to the endless track. The other end of the drive sprocket axle is used to mount the disc of the brake mechanism.

3,698,498
DRIVE AND STEERING MECHANISM FOR TRACTORS

Robert M. Stanford, 2275 Swain Road, Stockton, Calif.

Filed July 12, 1971, Ser. No. 161,753
Int. Cl. B62d 11/10
U.S. Cl. 180—6.2 7 Claims



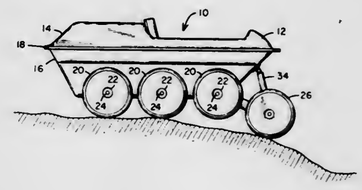
A drive and steering mechanism, for a tractor which includes non-dirigible right and left drive wheels (or endless tracks) supported by axle shafts, comprising an engine-driven transmission having dual drive shafts corresponding to the axle shafts, a clutch unit in each drive shaft, a brake unit associated with each drive shaft beyond the related clutch unit, a differential corresponding to and driven by each drive shaft beyond the related brake unit, one lateral shaft of each differential being the corresponding axle shaft and the other lateral shaft being the adjacent end portion of a common shaft spanning between the differentials, and a third brake unit associated with such common shaft.

With the first-named brake units released, and the clutch units and said third brake unit engaged, the tractor is driven straight ahead, but—with selective and independent manipulation of said clutch units and brake units—the tractor can be caused to turn to right or left with a mild, sharp, or very abrupt steering action as operating conditions may dictate, and all under the effective control of the driver of the tractor.

3,698,499
ALL TERRAIN VEHICLE STABILIZING WHEELS

Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.

Filed May 13, 1970, Ser. No. 36,775
Int. Cl. B62d 61/10
U.S. Cl. 180—6.2 2 Claims

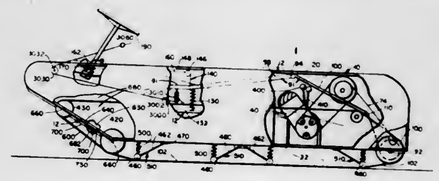


An all terrain vehicle having an additional pair of wheels extending outwardly from the front or the back of the vehicle a predetermined distance and shock absorbing means urging the additional pair of wheels downwardly toward the ground on which the vehicle is riding such that the tendency for the vehicle to pitch forward when passing over rough terrain is reduced.

3,698,500
TWO-TRACK VEHICLE

Albert T. Jernigan, Payson Route P.O. Box 210, Globe, Ariz.

Continuation-in-part of Ser. No. 780,402, Dec. 2, 1968, abandoned. This application May 19, 1969, Ser. No. 840,579
Int. Cl. B62d 11/08
U.S. Cl. 180—6.7 2 Claims



An off-the-road vehicle having two tracks for operating on soft terrain and having two belt clutches one for each track.

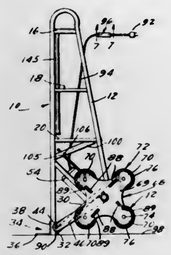
3,698,501
POWER-OPERATED DOLLY

Eshcol Silas Gross, 3320 1/2 Delmarr, South San Gabriel, Calif.

Filed June 1, 1971, Ser. No. 148,639
Int. Cl. B62d 5/02
U.S. Cl. 180—8 A 9 Claims

An apparatus for electrically, as well as manually, moving heavy objects up stairways. A group of wheels at each side of a dolly frame are arranged about a common axis, each group being operable about the axis of an electric drive and each

wheel of each group being rotatable about its own axis, but capable of being locked against forward rotation when



required. A tilting mechanism facilitates loading of a piece of equipment on the apparatus.

3,698,502

STABILIZED THREE-WHEEL VEHICLE

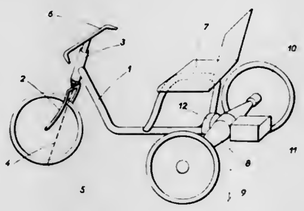
Pierre C. Patin, 58 rue de Sevres, Boulogne-sur-Seine, France

Division of Ser. No. 800,860, Feb. 20, 1969, Pat. No. 3,601,213. This application Aug. 7, 1970, Ser. No. 62,078

Claims priority, application France, Feb. 22, 1968, 68140891; Feb. 7, 1969, 6902980

Int. Cl. B62d *61/08*

U.S. Cl. 180—27 **9 Claims**



This invention is concerned with a stabilized three-wheel vehicle having a steering wheel at the front and two driving wheels at the back, wherein the vehicle comprises a chassis carrying the front steering wheel mounted on a fork with positive play, a rear framework having two driving wheels, and a member which will pivot around the substantially horizontal axis and is disposed between the chassis and the rear framework, a device sensitive to resultant of weight and centrifugal force being provited to enable the pivotal member to be locked.

3,698,503

SUPPORT OF AN AIR HOSE OF AN AIR CLEANER OF A MOTORCYCLE AT ITS INLET OPENING

Mikihiro Koyama, Adachi-machi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

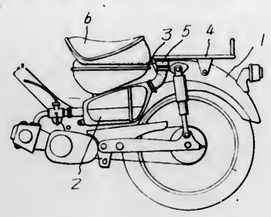
Filed Nov. 30, 1970, Ser. No. 93,643

Claims priority, application Japan, Dec. 10, 1969, 44/116773

Int. Cl. B62d *3/00*

U.S. Cl. 180—33 R **6 Claims**

An air inlet opening of the hose of an air cleaner in a motorcycle faces upwardly and is fixedly located below the front portion of a carrier. The carrier is made larger in width than the vehicle frame, and a housing is attached in offset manner to the lower surface of the carrier and is provided with an opening in its rear surface position just above the vehicle



frame, the air hose being attached to the bottom of the housing on one side of the frame.

3,698,504

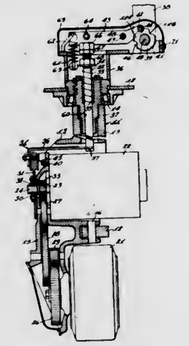
SPRING APPLIED DISK BRAKE AND HANDLE CONTROL FOR INDUSTRIAL TRUCK

Dennis G. Harvey, Ancaster, Ontario, Canada, assignor to Allis-Chalmer Manufacturing Company, Milwaukee, Wis.

Division of Ser. No. 29,140, April 16, 1970, Pat. No. 3,659,681. This application June 25, 1971, Ser. No. 156,790

Int. Cl. B60k *17/30*; B62d *7/00*

U.S. Cl. 180—52 **7 Claims**



A compact disk brake having a pair of brake shoes floatingly mounted on a pair of pins and a brake operating lever which is operative to move the shoes into engagement with opposite sides of a brake disk. One of the shoes is U-shaped and presents two pairs of openings through which the pins extend.

3,698,505

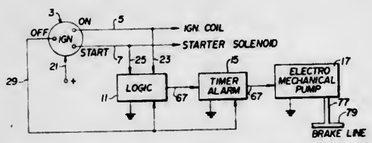
VEHICULAR ANTI-THEFT BRAKE LOCKING DEVICE AND METHOD

Houston F. Webley, 102 Park Avenue, Herndon, Va.

Filed May 17, 1971, Ser. No. 143,763

Int. Cl. H02g *3/00*

U.S. Cl. 180—114 **11 Claims**



The invention applies to vehicular brakes for a predetermined time period whenever the vehicular coil or starting motor circuitry is energized with the ignition in the OFF position. A logic circuit is readied when the vehicle ignition is turned to the OFF position and/or the key removed. Subsequently, if the wires are crossed or a jumper used to excite the coil, starting solenoid or motor, the logic system senses this tampering and energizes an electro-mechanical pump to actuate a piston in an auxilliary cylinder connected to the vehicular brake system to apply and lock the brakes on under control of a timer. An alarm controlled by the timer may be sounded at any selected moment during the lock-up time. The circuitry is automatically reset at the expiration of the predetermined time to again sense his tampering and lock up the brakes if detected. Access is provided to the timer alarm to release the pump and alarm, but use of the ignition key is required to open the auxilliary cylinder.

3,698,506

TRIMMING A GROUND-EFFECT MACHINE

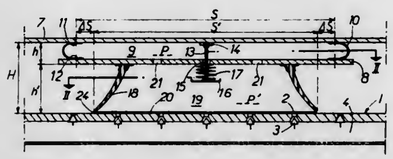
Francis Jean Croix-Marie, Viry Chatillon, France, assignor to Bertin & Cie, Plaisir, France

Filed Oct. 2, 1970, Ser. No. 77,598

Claims priority, application France, Oct. 2, 1969, 6933700

Int. Cl. B61b *13/08*

U.S. Cl. 180—118 **6 Claims**



Trimming of an air cushion vehicle is obtained by properly delaying the compensation effect derived from a bracing actuator extending between the vehicle frame and a bearing plate movable relatively to the latter to compensate for possible variations in the distance between this bearing plate and the surface along which the vehicle moves.

3,698,507

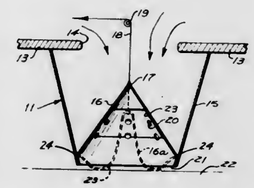
DIRECTION AND BRAKING CONTROL FOR FLUID CUSHION VEHICLES

Albert P. Meriano, Fair Oaks; Giles A. Fuller, and William H. Knuth, both of Sacramento, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 15, 1970, Ser. No. 37,544

Int. Cl. B60v *1/00, 1/14*

U.S. Cl. 180—119 **4 Claims**



A fluid cushion vehicle of the type provided with a number of cushion cells beneath it which by the force of fluid such as compressed air sent through them, cause the vehicle to hover above the terrain, water, ice or similar supporting medium, has one or more of its cushion cells arranged as a control cell, and provided with a flexible diaphragm within the cell in the general shape of a cone when distended. The bottom rim of the diaphragm is fixed within the cushion cell near the lower rim of the cell and the upper part or apex of the diaphragm can be held distended upwardly by a cable attachment. Fluid under pressure, such as compressed air, is sent into the cell above the diaphragm and is allowed to pass through holes in the diaphragm and out the bottom of the cell, thereby putting fluid pressure above the diaphragm. The control cell can be used for braking or steering by releasing the cable to lower the diaphragm sufficiently to drag along the terrain, or other supporting surface.

3,698,508

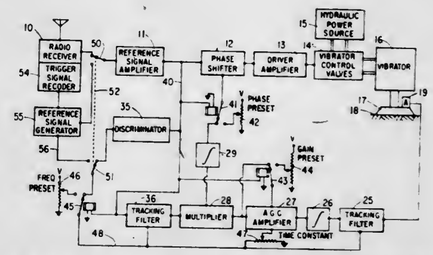
PHASE CONTROL OF SERVO HYDRAULIC VIBRATORS

Ralph A. Landrum, Jr., Tulsa, Okla., assignor to Amoco Production Company

Filed Dec. 28, 1970, Ser. No. 101,571

Int. Cl. G01v *1/14*

U.S. Cl. 181—.5 H **4 Claims**



In scismic geophysical surveying using a servo-controlled vibrator as the energy source for transmitting a predetermined varying-frequency seismic wave train into the earth, ground-coupling distortion and vibrator inefficiency at low frequencies cause loss of phase lock so that the vibrator no longer follows the reference or pilot signal. This problem is solved by interposing a filter with a varying frequency cutoff that passes the varying reference frequency in the feedback from the vibrator base plate, but rejects the distorting harmonic frequencies. The reference signal can be transmitted from a remote recording point, but preferably it is generated from a stored program or from frequency-change data at the vibrator vehicle, triggered from the remote recording point.

3,698,509

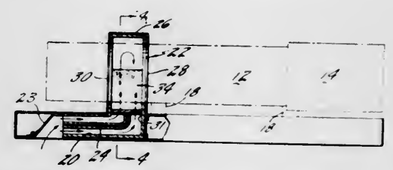
INLET NOISE SILENCER FOR A JET ENGINE

Samuel E. Fitting, East Hartland, Conn., and Gary W. Green, Springfield, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 24, 1971, Ser. No. 156,255

Int. Cl. F01n *1/10, 1/14*; B64d *33/02*

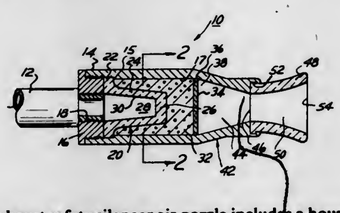
U.S. Cl. 181—33 HA **3 Claims**



The noise silencer consists of an annular chamber being in communication with the inlet of the gas turbine engine and a substantially U-shaped baffle member disposed between the inlet of the silencer and the inlet of the engine wherein the legs of the U are spaced substantially parallel to the side walls of the cavity to define flow channels with L/D ratios (length to

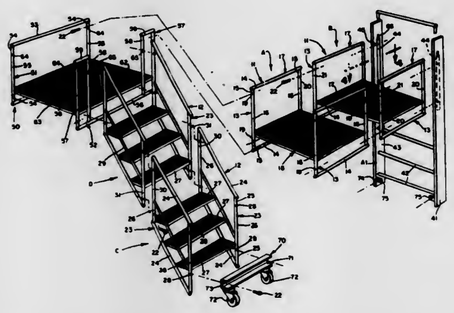
diameter or the smallest planar cross-sectional dimension when the cross section is other than circular) being greater than ½, which channels serve to guide the air and sound waves over a resistive acoustical lining and provide a lined bend around which the air and sound waves must pass.

3,698,510
SAFETY SILENCER AIR NOZZLE
Leland Francis Blatt, and Frank Henry Wiesenhofer, both of 31915 Groesbeck Highway, Fraser, Mich.
Filed Aug. 4, 1971, Ser. No. 168,861
Int. Cl. F01n 1/10, 1/24, 7/20
U.S. Cl. 181—36 A **1 Claim**



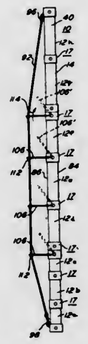
An exhaust safety silencer air nozzle includes a housing having an inlet and an outlet with spaced porous baffles. A sound absorbing filter material is disposed in the housing between the baffles so that the air entering the inlet is broken up by the inlet baffle for distribution through the sound absorbing filter material creating a back pressure and exhausts through the outlet baffle at which air flow is further broken up to considerably reduce the noise level and pressure of the exhausted air passing through the silencer. The housing converges at its outlet and terminates in a throated outwardly flared bell to further reduce the exhaust air pressure for cleaning or blowing off a part.

3,698,511
MODULAR FIXED-LEVEL WORK PLATFORM
William L. Dohan, Downingtown, Pa., assignor to Ballymore Company, West Chester, Pa.
Filed Oct. 6, 1970, Ser. No. 78,441
Int. Cl. E04g 1/14
U.S. Cl. 182—113 **9 Claims**



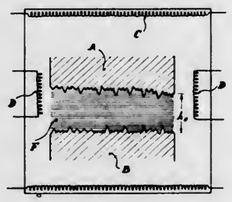
A plurality of identical platform and ladder modules can be releasably connected together in various combinations to achieve a unitary rigid structure that establishes a fixed level work platform of the desired configuration supported by steps providing access thereto. The construction of the modules permits them to be manufactured at one location, and individually shipped to a remote location where they can be assembled in-situ into the desired configuration.

3,698,512
COLLAPSIBLE LADDER DEVICE
John V. Cebular, 2126 Shallcross Street, Philadelphia, Pa.
Filed April 27, 1971, Ser. No. 137,852
Int. Cl. E06c 1/52, 7/10
U.S. Cl. 182—164 **6 Claims**



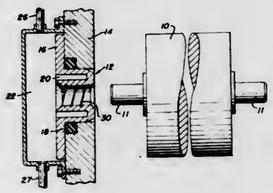
A collapsible ladder device comprising a plurality of series connected hinged members extendible to a linear condition and foldable to a collapsed condition. The plurality of members include first and second end members and a plurality of intermediate members with respective lengths allowing the device to be folded to a spiral rectangular form in its collapsed condition with the first end member located within the spiral and a second end member at the outer end of the spiral. Each member comprises a pair of displaced elongated elements substantially parallel to each other providing first and second sides of the device and a plurality of rung means connected between and securing together the first and second sides providing the steps for the device. Securing means comprising elongated flexible bands with first and second ends secured respectively with the first and second members when the device in its extended condition extends along the rear side of the elements for maintaining the device in its linear condition.

3,698,513
PROCESS FOR THE LUBRICATION OF MECHANICAL SYSTEMS SUBJECTED TO VERY HIGH CONTACT PRESSURE
Luis Arizmendi Espunes, Madrid, Spain, assignor to Instituto De Quimica Fisico Rocasolano, Madrid, Spain
Filed Sept. 24, 1970, Ser. No. 74,978
Int. Cl. F01m 15/00
U.S. Cl. 184—5 **2 Claims**



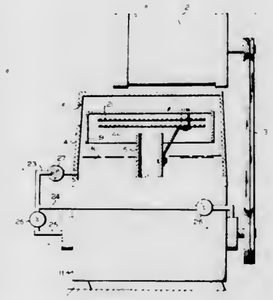
A process for utilizing molten glass as a lubricant in mechanical systems that have to meet demanding and specific load conditions. A film of lubricating glass is provided between mating surfaces, and this glass is heated to maintain it in a molten state. The contact pressure between the mating surfaces is determined, and the temperature of the glass is controlled as a function of the contact pressure in order to control the viscosity of the molten glass so that hydrodynamic lubrication can be obtained under the conditions of contact pressure to which the mating surfaces are subjected.

3,698,514
COOLING AND LUBRICATION FOR HIGH SPEED ROTATING SYSTEMS
Willard E. Buck, Los Gatos; Robert J. Herbold, Sunnyvale, and Randy J. Sherman, San Jose, all of Calif., assignors to Technical Operations Incorporated, Burlington, Mass.
Continuation of Ser. No. 668,375, Sept. 18, 1967, abandoned.
This application Aug. 28, 1969, Ser. No. 854,029
Int. Cl. F01m 1/18
U.S. Cl. 184—6.4 **4 Claims**



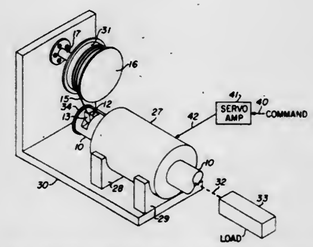
A high speed rotating system driven by a motor which constitutes a source of heat. The system has bearings of porous material through which a liquid coolant is fed and in which heat of friction causes vaporization of the lubricant and hence cooling of the bearing and dissipation of heat from the motor due to the fact that the latent heat of vaporization is derived from the bearing surface and immediately adjacent areas.

3,698,515
VACUUM PUMP LUBRICATION SYSTEM
Zbigniew C. Dobrowolski, Needham, Mass., assignor to General Signal Corporation
Filed Dec. 21, 1970, Ser. No. 100,260
Int. Cl. F16n 39/00
U.S. Cl. 184—6.23 **1 Claim**



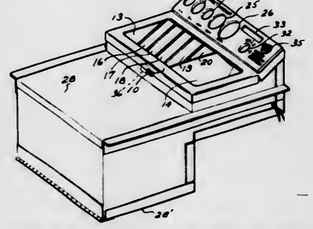
An oil-sealed, mechanical vacuum pump is provided with a scheme for reducing re-entrainment of oil in the gas stream passing through the oil separator of the pump. The scheme comprises check valve means located in the gravity feed lubrication circuit leading from the separator to the pump bearings and which serves to prevent reverse flow of gas into the separator during operation of the pump at high inlet pressures. This measure prevents agitation of the stored oil in the separator, and consequently reduces the risk of re-entrainment resulting from splashing.

3,698,516
CENTERING DEVICE
Winston F. Williams, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed July 14, 1971, Ser. No. 162,466
Int. Cl. F02g 1/02
U.S. Cl. 185—39 **8 Claims**



A low rate spring loading for a shaft axially rotatable in either direction from a defined home position is obtained by a spiral coiled spring loaded spool in combination with tension cable carried on the spool and circumferentially anchored to the shaft. Shaft rotation in either direction from home position imparts a proportional increase in loading from a selectable preload level at home position. A pivotable cable anchoring means carried by the shaft minimizes cable flexing at the anchor point as the shaft rotates through home position.

3,698,517
PURCHASE PAYMENT COLLECTION APPARATUS
Earl J. Kuehl, and La May R. Kuehl, both of 11127 West Bluemound Road, Milwaukee, Wis.
Filed Feb. 19, 1971, Ser. No. 117,011
Int. Cl. E04h 3/04
U.S. Cl. 186—1 A **3 Claims**

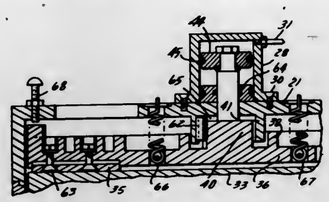


A transparent money receptacle mounted in the counter of a restaurant or diner or the like designed to receive a patron's payment, said receptacle including individual compartments for paper money and coins of different denominations, thereby permitting the ready tabulation of said payment by the waitress, and said apparatus including a lower, locked depository box into which said coins and currency are mechanically transferred by the waitress after the correctness of the customer's payment has been verified.

3,698,518
DISC BRAKE APPARATUS
Elmo N. Boyles, Maitland, Fla., assignor to Disco Industries, Inc.
Filed Jan. 14, 1971, Ser. No. 106,365
Int. Cl. F16d 55/228
U.S. Cl. 188—72.5 **7 Claims**

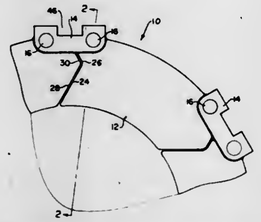
A vehicle brake apparatus for attachment to the axle of a vehicle having a rotatable disc attached so as to rotate with the

wheel of a vehicle and having flanges carried by a housing attached to the axle of the vehicle so that a brakeshoe carried by brakeshoe carrier telescopes in the flanges attached to the



axle housing for driving a brake lining on the brakeshoe against he rotating disc. Bearings riding between the brakeshoe carrier and flanges allow the telescoping action when a torque is placed on the brakeshoe.

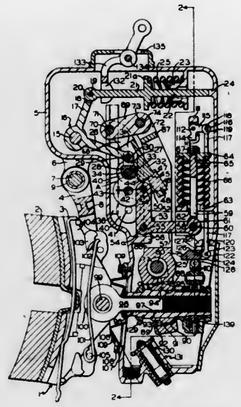
3,698,519
ARTICULATED DISC BRAKE CONFIGURATIONS
Richard L. Crossman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 23, 1970, Ser. No. 101,033
Int. Cl. F16d *65/12*
U.S. Cl. 188—73.2 **15 Claims**



The rotating disks of a multiple disk brake assembly are each formed of individual segments which are held together by clips and rivets. The clips also serve to provide the drive slots for the rotating disks. The ends of each segment are V-shaped to interlock with the adjacent segments. The stationary disks of the assembly may also be formed of individual segments joined together by links and rivets with adjacent ends of the segments being of interlocking configurations. The stationary disks and the backing and pressure plates of the brake assembly are provided with steel core plates and replaceable friction wear pads.

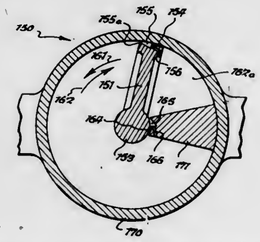
3,698,520
TREAD BRAKE APPARATUS
Glenn T. McClure, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed June 24, 1971, Ser. No. 156,394
Int. Cl. B60t *13/04*
U.S. Cl. 188—171 **11 Claims**

This invention relates to a spring-applied power-released brake assembly for each individual wheel of a railway car truck, wherein the brake assembly comprises an electrical torque motor that is effective when fully energized to cause a brake release by moving the fulcrum for a proportioning or variable ratio lever relative to this lever against the yielding resistance of a comparatively light control spring to a position in which a comparatively heavy brake-applying spring becomes effective to bias this lever in the brake-release direction. As the current supplied to the torque motor is reduced, the control spring is rendered effective to shift the fulcrum relative to the lever to a position in which the brake-applying spring is effective via one arm of the variable ratio lever to bias this lever in a brake-applying direction and thereafter, in response to a further reduction of current, to increase the length of this one



arm to thereby render the brake-applying spring effective via this lever to correspondingly increase the braking force on the wheel.

3,698,521
FLUID AMPLIFIED LIQUID SPRING SHOCKS AND/OR SHOCK ABSORBERS
Paul H. Taylor, 3877 East River Road, Grand Island, N.Y.
Division of Ser. No. 764,377, Sept. 30, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,795
Int. Cl. F16d *57/02*
U.S. Cl. 188—306 **6 Claims**

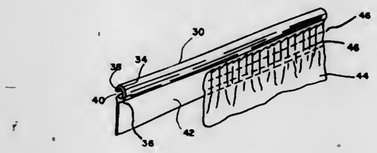


A shock absorber which uses fluid amplification to provide programmed fluid flow and highly efficient shock curves without the necessity of expensive and inefficient metering holes, metering pins, and/or pressure responsive valves is provided by the interaction of: (1) a fluid passage clearance between a shock piston head or vane and the chamber, which houses and is swept by the head or vane, (2) an indentation formed around the periphery of the head or vane, and (3) a plurality of openings between the head or vane and the indentation formed around the periphery of the head or vane.

3,698,522
LUGGAGE CASE
Arnold Aronoff, Montreal, Quebec, Canada, assignor to Holiday Luggage Mfg. Co., Inc., Montreal, Quebec, Canada
Filed June 18, 1970, Ser. No. 47,335
Int. Cl. A45c *3/00*
U.S. Cl. 190—41 R **9 Claims**

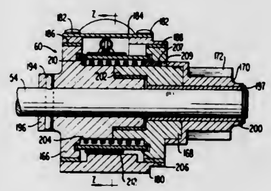
An apparatus and method of manufacture of luggage cases, improving the concealment of the interior lines of joinder by

the use of one-piece masking assemblies. The luggage cases are constructed of shell members joined to frame member forming the body of the case whereby the line of joinder is evident at the point where the shell and frame members join. The masking assembly has a resilient deformable body portion provided with a first mating member, such as a channel in the



body for engaging a second mating member, which may include a continuous or intermittent projection attached to the shell or frame. The masking assembly has a depending skirt so that when the body of the masking assembly is connected to the cooperating mating member of the luggage case the depending skirt conceals the line of joinder.

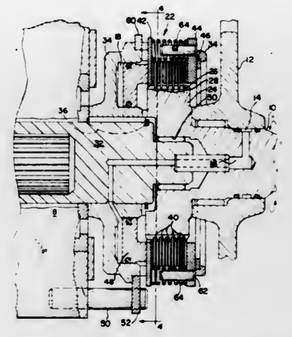
3,698,523
SELF-PROPELLED RANDOM MOTION LAWNMOWER
S. Lawrence Bellinger, Florissant, Mo., assignor to Mowbot, Inc., Tonawanda, N.Y.
Division of Ser. No. 791,566, Jan. 16, 1969, Pat. No. 3,570,227, which is a continuation-in-part of Ser. No. 405,064, Oct. 20, 1964, Pat. No. 3,550,714. This application Oct. 20, 1969, Ser. No. 870,714
Int. Cl. F16d *67/02*
U.S. Cl. 192—12 BA **4 Claims**



Disclosed is a self-propelled lawnmower for cutting grass in a completely random and unattended manner. The unit is preferably propelled by a battery and comprises a frame supported on a pair of front caster wheels and a pair of rear drive wheels. The drive wheels are coupled to a continuously rotating drive shaft by individual clutch-brake mechanisms. When a boundary wire is sensed by coils on the frame, the drive wheel furthest away from the broader is unclutched and braked to pivot or turn the mower. No backup motor or complex steering control is required. A pair of adjustable rotary cutter blade assemblies are carried on the frame.

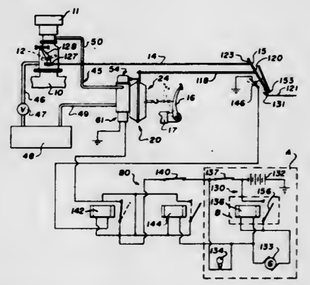
3,698,524
I.P.T.O BRAKE UNIT
William L. Schubert, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Feb. 19, 1971, Ser. No. 116,988
Int. Cl. F16d *67/04*, *71/00*
U.S. Cl. 192—18 A **5 Claims**

A braking mechanism for an independent power take-off unit that prevents the independent power take-off shaft from rotating through an arc of more than 360° when the clutch is



disengaged, but permits free rotation of the independent power take-off shaft through an arc of less than 360°.

3,698,525
CLUTCH AND THROTTLE CONTROL
August W. T. Grassmuck, 3870-216th Street, R.R. #1, Langley, British Columbia, Canada
Filed April 12, 1971, Ser. No. 132,969
Int. Cl. B60k *21/00*
U.S. Cl. 192—.075 **3 Claims**

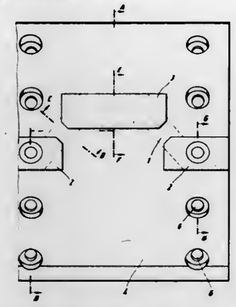


A mechanism attachable to a vehicle to convert a friction clutch, which normally is manually operated, to one which will operate automatically at the discretion of the driver. The mechanism includes a clutch operating unit powered by a difference in pressure developed by the engine and a dual control valve for the unit which is actuated simultaneously with the gas pedal to progressively engage and disengage the clutch as the gas pedal is depressed and released to vary the speed of the engine.

3,698,526
FRICTION LINING FOR BRAKES, CLUTCHES AND LIKE APPARATUS
Wilhelm Berges, Hauptstrasse 135 B, Marienheide/Rheinland, Germany
Filed Jan. 5, 1970, Ser. No. 611
Claims priority, application Germany, Jan. 7, 1969, P 19 00 459.2
Int. Cl. F16l *13/60*
U.S. Cl. 192—107 M **5 Claims**

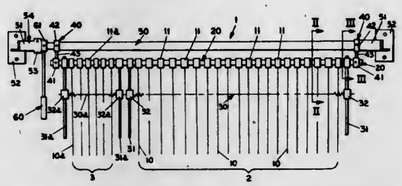
Friction lining for brakes and clutches, comprising organically bonded friction material and sintered and metallically bonded friction material membefs or particles, embedded in

the aforementioned friction material and mounted on a metallic friction lining support, the sintered member or members



are mounted on a separate metallic support and the support or supports are mounted directly on the friction lining support.

3,698,527
PRESS GUARD AND PARTS MONITOR
Nicholas W. Wiggers, 745 Lincoln, Apt. 5, Holland, Mich.
Filed Jan. 15, 1971, Ser. No. 106,679
Int. Cl. H01h 3/16; F16p 7/00
U.S. Cl. 192—129 A 20 Claims

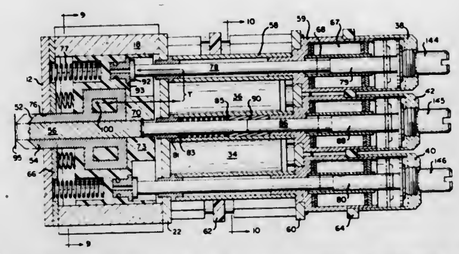


A plurality of feelers are pivotally mounted on an elongated support pipe. A contact member is positioned adjacent the feelers, extending between support rods which are positioned on either side of the feelers and which are also secured to the elongated support pipe. The control member and the feelers are part of a low voltage circuit which is completed when the feelers are pushed into the contact member. The low voltage circuit can be used to shut down a press or to monitor the passage of parts. The angle of the support rods with respect to the vertical can be varied to thereby vary the distance between the contact member and the feelers. The elongated support pipe is itself secured to a main support pipe by yokes which can be adjusted to allow one to move the feelers either closer to or farther from the press. A handle is secured to the main support rod to allow one to pivot the contact member into the feelers and then lift them up and out of the way completely.

In an alternative embodiment, the feelers are fixed at one end to the elongated support pipe, but have spring sections which allow them to be pivoted. The contact member comprises a bracket having apertures therein through which the feelers extend. Movement of the feelers causes them to engage the contact member through which they extend and thereby shut down the press or monitor parts.

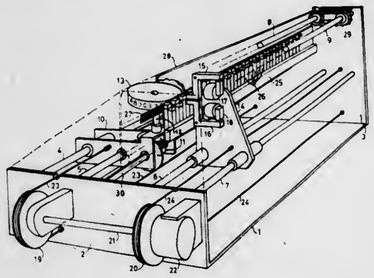
3,698,528
COMPACT PRINT HEAD ASSEMBLY WITH ANTIREBOUNDING MEANS
Peter H. De Graff, Newfield, N.Y., assignor to The National Cash Register Company, Dayton, Ohio
Filed April 3, 1970, Ser. No. 25,358
Int. Cl. B41j 7/70
U.S. Cl. 197—1 5 Claims

A printing bar arrangement for high-speed operation wherein the bars are slidably nested and supported in relation to one another and include tip portions capable of printing alpha-numeric characters upon precise striking of one or more of the separate bars. The printing bars are fixedly connected to blocks, also slidably nested, which blocks are positioned to



be driven by appropriate solenoid mechanism wherein the coupling forces derived from an offset drive line are absorbed within the blocks to provide an even and parallel operation of the printing bars.

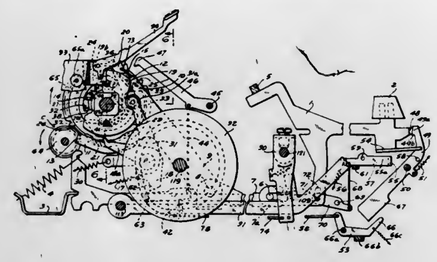
3,698,529
SERIAL PRINTER WITH FIXED INTERPOSER
Sergio Cattaneo, Pavia, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy
Filed July 12, 1971, Ser. No. 161,581
Claims priority, application Italy, July 14, 1970, 27391 A/70
Int. Cl. B41j 1/26
U.S. Cl. 197—49 11 Claims



A serial printer is provided having a movable type-carrying member, a carriage bearing a pair of printing hammers having heads partially superimposed and a fixed interposer having a plurality of elements disposed between the type-carrying member and the hammers. Printing is effected by cooperation of the print hammers and the type-carrying member through the interposer.

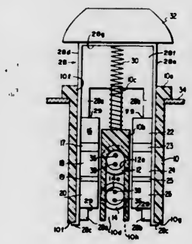
3,698,530
CASE SHIFT CONTROL APPARATUS OPERABLE BY A CASE SHIFT KEY AND BY TYPE KEYS
Wolfgang Bonleitner; Kurt Chvatlinsky, both of Wilhelmshaven, and Walter Hanke, Sande, all of Germany, assignors to Olympia Werke Aktiengesellschaft, Wilhelmshaven, Germany
Filed Sept. 2, 1969, Ser. No. 854,612
Claims priority, application Germany, Aug. 30, 1968, P 17 86 197.1
Int. Cl. B41j 25/24
U.S. Cl. 197—71 12 Claims

The case shift means of a typewriter is operated by drive means through a gear clutch actuated by a shift key, or by an other key moved beyond its depressed type actuating position. Interlock means prevent a typing operation during movement of the gear clutch and case shift means, and operation of the



case shift means while a type action is operated, but the case shift command is stored, and case shift takes place when the typing operation is completed.

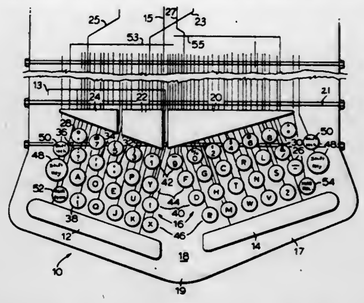
3,698,531
SOLID STATE SWITCH
Victor M. Bernin, Mt. Prospect, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Oct. 26, 1970, Ser. No. 85,182
Int. Cl. B41j 5/08
U.S. Cl. 197—98 14 Claims



The disclosure describes a keyboard switch having two magnetic cores and a plurality of permanent magnets. The permanent magnets are mounted on a keystem and are movable with respect to the cores to change the flux density in the cores and thus vary the coupling between an AC drive winding and one or more secondary output windings threading each core. Non-magnetic regions separate the permanent magnets and these regions are positioned such that flux changes in one core, resulting from movement of the keystem, are out of phase with the flux changes in the second core. The output signal from one core may be used to strobe or sample the output signals appearing on the secondary windings of the other core. When a plurality of the switches are incorporated in a keyboard, the switches possess an inherent "roll-over" capability. The disclosure also describes a keyboard circuit employing a plurality of the switches.

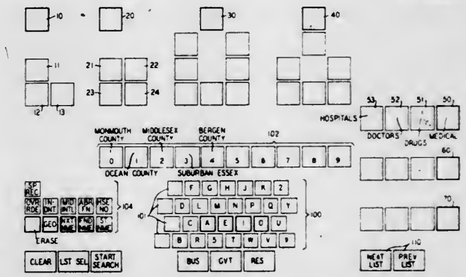
3,698,532
KEYBOARD FOR A TYPEWRITER
Irvine Dodds, 1132 Morrison Street, Niagara Falls, Ontario, Canada
Filed Aug. 21, 1969, Ser. No. 851,879
Int. Cl. B41j 5/10
U.S. Cl. 197—100 6 Claims

A typewriter keyboard includes a plurality of rows of keys with two elongated typewriter mechanism actuating bars positioned forwardly of the keys of the keyboard. The first bar extends at least part way across one-half of the width of the keyboard and the second bar extends at least part way across



the other half of the width of the keyboard. One bar operates a space mechanism and the other operates a carriage return.

3,698,533
KEYBOARD ARRANGEMENT
Howard Clayton Illig, Rumson; Wilfred Emile Lehder, Jr., Middletown; James Daniel Parker, III, Sea Bright; Alfred Michael Santacroce, Eatontown, and James Arthur Sheridan, Englishtown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 15, 1970, Ser. No. 46,284
Int. Cl. B41j 5/10
U.S. Cl. 197—100 4 Claims

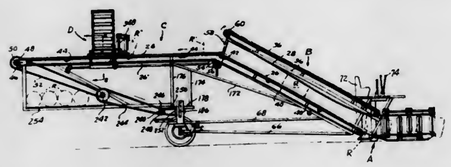


The alphabetic keys of a keyboard adapted for coded alphanumeric input are arranged in four staggered rows so as to be operated by the right hand, with the home row including the vowel letter keys A, E, I. O and U, and with the remaining letter keys arranged relative to the home row according to their frequency of use. The numerical keys 0 through 9 are arranged in a single row approximately centered above the alphabetic keys. Various directional and functional keys are arranged so as to be operated by the left hand to indicate the direction or field of the alphanumeric keys operated by the right hand.

3,698,534
MEANS FOR CONSECUTIVELY GATHERING SEPARATED ROLLS OF SOD AND CONTINUOUSLY ELEVATING THE SAME TO THE LEVEL OF AN ACCOMPANYING VEHICLE
Glen R. Hadfield, 4643 Sherwood, Oxford, Mich.
Continuation-in-part of Ser. No. 828,897, May 29, 1969, abandoned. This application May 15, 1970, Ser. No. 37,821
Int. Cl. B65g 67/22
U.S. Cl. 198—9 8 Claims

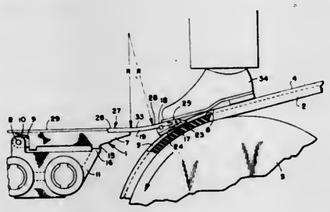
Means for gathering rolls of sod from the ground. The rolls are in spaced rows and the rolls of each row are separated by

substantial distances. The rolls of each row have their axes parallel to the direction of advance of said gathering means. The gathering means comprise at least one leading roll having its axis substantially transverse the direction of advance of the machine as a whole. This roll is continually rotated so that its lowermost surface advances in the direction of advance of the



machine as a whole. An inclined conveyor is mounted on the machine and receives rolls of sod which are progressively lifted from the ground by said first-named roll and delivered to said conveyor. Means are provided at the upper end of the conveyor for presenting the rolls gathered to workmen stationed on the accompanying vehicle.

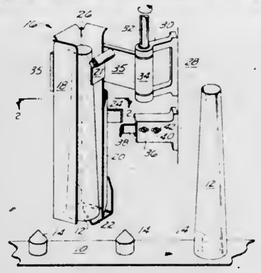
3,698,535
PASSENGER CONVEYOR LANDING
Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 4, 1970, Ser. No. 86,749
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R **4 Claims**



A lower landing for an inclined treadway type passenger conveyor in which the landing plate has an upper edge portion with a surface inclined at the same slope as the threadway for receiving passengers and objects from the treadway and a curved portion having a continuous surface for transferring passengers and objects from the inclined position to the horizontal position with a resultant motion for keeping the passengers' balance, the width of the upper edge portion and the curved portion being such that a passenger with a normal stride can step over them on entering or leaving the conveyor.

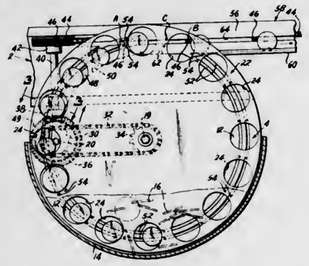
3,698,536
BOBBIN TUBE DELIVERY MEANS
Lester W. Pray, Clemson, and Clinton C. Zerfoss, Liberty, both of S.C., assignors to Maremont Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 865,943, Oct. 13, 1969, Pat. No. 3,603,440. This application June 22, 1971, Ser. No. 155,414
Int. Cl. B65g 47/22
U.S. Cl. 198—26 **10 Claims**

A bobbin tube delivery assembly is disclosed for the delivery of bobbin tubes in an axially upright position to a tube donning apparatus servicing a textile machine, wherein a pivotable tube cage having an open side, top and bottom receives tubes one at a time, and pivots to an indexed tube discharge position over one of a plurality of pegs on a moving conveyor; during receipt and pivoting, the cage is closable at the open side and bottom sufficiently to retain a tube therewithin by means of a spring biased gate which at these times overextends the open side, a bottom flange which at these times underlays the open bottom and is attached to the gate; the cage is openable at the tube discharge position upon



pivoting thereto by abutment of a "key" flange element attached to the gate with some fixed stationary element such as a flange or bracket fixed to a frame wall, and thereat the tube falls upon a peg passing therebeneath and is carried by the conveyor out through the open side of the cage to the donning apparatus.

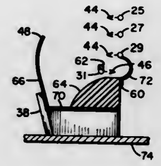
3,698,537
COIN SORTING AND CONVEYING APPARATUS
Thomas J. Black, Reston, and Werner H. Schmitt, Falls Church, both of Va., assignors to Werner F. Westermann, Falls Church, Va.
Filed June 23, 1971, Ser. No. 155,983
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA **9 Claims**



A tilted disc having openings therein rotates against a surface of a base member and the openings receive coins from a hopper and slide them upwardly along the surface. An upper portion of the surface slopes away from the disc and pins on the disc continue to propel the coins even though the coins have passed completely through the disc. The coins are propelled into the path of lugs on a linear conveyor moving at high speed and the parts are timed so that a lug engages a coin while it is still in contact with a pin and the lug accelerates and propels the coin along a linear path, thus the coin is always under the positive control of guiding and propelling means.

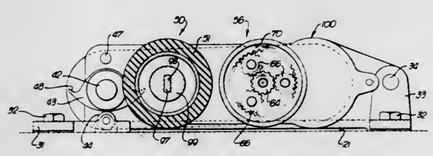
3,698,538
PNEUMATIC ROLL DEVICE FOR DOCUMENT HANDLING APPARATUS
Eugen Groeber, Salt Lake City, Utah, assignor to Sperry Rand Corporation, New York, N.Y.
Filed March 10, 1971, Ser. No. 122,955
Int. Cl. B65g 41/24
U.S. Cl. 198—33 AD **6 Claims**

A pneumatic device that receives spaced, singulated letter-mail documents in a vertical on-long-edge attitude and permits the documents to pass through in their entering attitude or pneumatically rolls the documents into a vertical on-other-



long-edge attitude in response to a stamp detector whereby all emitted letters are in a vertical on-long-edge attitude with the stamp in like face orientation is disclosed.

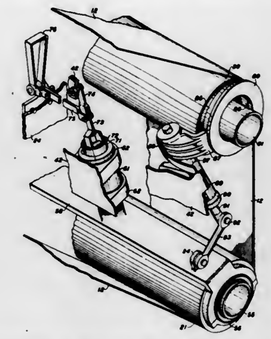
3,698,539
TORQUE CONTROLLED POWER ROLLER FOR CONVEYOR SYSTEM
John G. Schwarzbeck, Downey, Calif., assignor to Western Gear Corporation, Lynwood, Calif.
Continuation of Ser. No. 826,466, May 21, 1969, abandoned. This application July 6, 1971, Ser. No. 160,078
Int. Cl. B65g 13/02
U.S. Cl. 198—127 **18 Claims**



Torque controlled power roller for conveyor system to move cargo or baggage containers, or other objects, over a conveyor platform, mountable below the plane of the platform supporting surface, with a power source which drives the roller and automatically lifts it into operating position through a transmission system embodying planetary gearing, the ring gear of the planetary set being arranged to provide force to lift the drive roller when the electric motor or other power source is started, and conversely allow the drive roller to drop out of engagement when the driving force ceases. The lifting force exerted is proportional to the driving torque on the roller; so that the more demanding the load, the more vertical up pressure forces will be imposed.
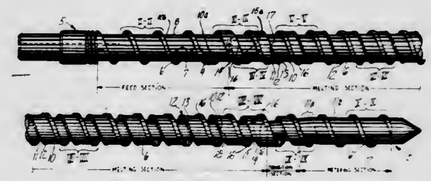
3,698,540
WEB SENSING MECHANISM FOR TRACKING SYSTEMS
William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 2, 1970, Ser. No. 102,489
Int. Cl. B65g 15/62
U.S. Cl. 198—202 **4 Claims**

A web sensing mechanism for use with the edge of a moving web to sense its deviation from a desired predetermined path of movement. The mechanism includes a ring formed with a tapered inner edge engageable with the sensed edge of the web and which is arranged generally concentric with the axis of a roller around which the web is guided. The ring is



mounted for rotation on the end of a control lever which actuates means for correcting the web deviation.

3,698,541
EXTRUDER, OR EXTRUDER-LIKE MELTING APPARATUS
Robert Alan Barr, Warren, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 799,430, Feb. 14, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 171,021
Int. Cl. B65q 33/00
U.S. Cl. 198—214 **3 Claims**

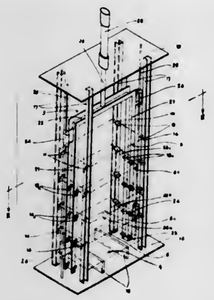


Apparatus, such as a screw type extruder, for reducing a solid thermoplastic particulate material to a fluid by continuous separation of the fluid component from the solid component of the material approximately as rapidly as formed.

3,698,542
CONVEYING ARRANGEMENT
Herbert Reger, Moglingen, and Hans-Walter Heinrich, Ochtersum, both of Germany, assignors to Robert Boech GmbH, Stuttgart, Germany
Filed Sept. 29, 1970, Ser. No. 76,363
Claims priority, application Germany, Oct. 25, 1969, P 19 53 772.5
Int. Cl. B65g 25/08
U.S. Cl. 198—225 **8 Claims**

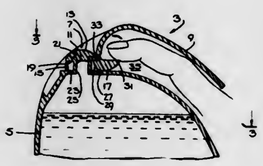
A conveying arrangement for conveying articles from a lower to a higher level. An upright frame has a lower terminal station and an upper terminal station and at least one intermediate station which is located between and equally spaced from both terminal stations by a first distance. A lift arrangement is guided in the frame for alternate movement in a predetermined path between a lower and an upper position by a distance which is slightly greater than the first distance. The lift arrangement has a lower and at least one upper transfer level which in the lower position are respectively located slightly below the lower terminal station and the intermediate station, and which in the upper position are respectively

located slightly above the intermediate station and the upper terminal station. First detent means is provided at the respective transfer levels for supporting articles to be conveyed as the lift arrangement moves to its upper position. Second detent means is provided at the respective stations of the frame



and permits upward movement of articles supported by the first detent means but intercepts and retains such articles at the respective stations when the lift moves to its lower position. Moving means moves the lift between the positions thereof.

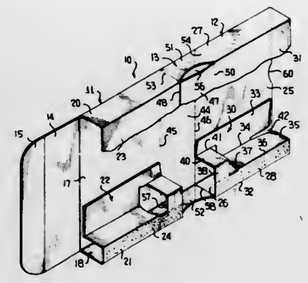
3,698,543
SAFETY CONTAINER
Frank A. Trotta, 330 West 87th Street, New York, N.Y.
Filed Feb. 25, 1971, Ser. No. 118,876
Int. Cl. B65d *55/02*
U.S. Cl. 206—42 **9 Claims**



A container having safety means to prevent children from gaining access to the contents of the container. The safety means is comprised of a protective covering having an access passage arranged therein through which an adult's finger can enter and a closure-closure opening mechanism for the container.

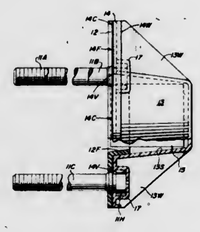
3,698,544
BOOK-TYPE CARTON
Lawrence J. Growney, Pearl River, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 19, 1969, Ser. No. 884,485
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.11 **4 Claims**

This disclosure relates to a book-type carton which is basically formed of two hollow sections constructed to have positioned therein articles to be dispensed with the articles being displayed. Each of the carton sections includes an article support, and the carton is readily foldable to a closed position with the carton including a closure panel which is readily interlockable with one of the article supports in a novel manner



which in no way detracts from appearance or strength of the carton.

3,698,545
SHIPPING COVER FOR AB TYPE CONTROL VALVE
Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.
Filed May 21, 1971, Ser. No. 145,777
Int. Cl. B65d *81/02, 85/02, 85/30*
U.S. Cl. 206—46 H **11 Claims**

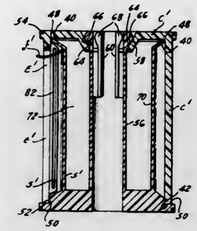


A shipping cover for railroad air brake control valves is provided for protecting the operating mechanisms of the valve during shipment and storage. Several embodiments of shipping covers specifically designed for an "AB" type valve service portion are made of high strength plastic and characterized by a unique cambered or wave-like contact face that provides complete sealing. The shipping covers can withstand high impact such as due to accidental dropping and the resilience of the covers helps to protect the valve structure against such impacts.

3,698,546
SPOOL AND COVER ASSEMBLY
David Kass, 5 Schench Avenue, Great Neck, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,229
Int. Cl. B65d *85/04;* **B65h** *55/00, 75/02*
U.S. Cl. 206—52 W **8 Claims**

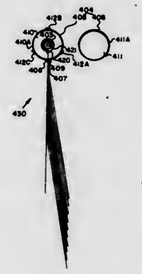
A spool and cover assembly for wound filamentary material, such as thread, yarn and the like having a winding core section and end head sections, and a cover for the spool mounted and encasing the spool, the spool and cover being provided with mating seating areas at their opposite ends for frictionally mounting the cover on the spool, the cover and spool being

mounted for relative rotation one with respect to the other about the axis of the winding core section, the cover section



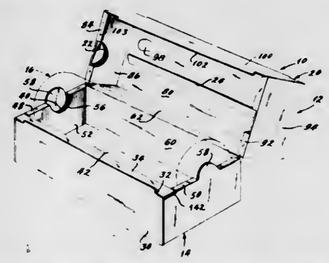
being formed with an egress orifice for the spool wound filamentary material.

3,698,547
PACKAGING APPARATUS, METHOD AND BAGS
John T. Roberts, 207 Aster Drive, Simpsonville, S.C., and Ralph L. Wing, 151 Bridgewater Drive, Greenville, S.C.
Division of Ser. No. 666,854, Sept. 11, 1967, Pat. No. 3,552,090. This application May 7, 1970, Ser. No. 47,926
Int. Cl. B65d *73/00*
U.S. Cl. 206—57 A **7 Claims**



A package of imbricated bags secured to two spaced-apart strands of tape with the extremity of each of the strands of tape being secured together and attached to a rotatable spool.

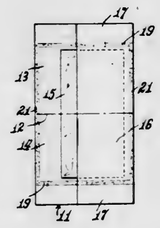
3,698,548
BOX FOR DISPENSING FLEXIBLE SHEET MATERIAL
Robert N. Stenzel, 745 Southside Drive, St. Louis County, Mo., and Donald W. Stenzel, 9839 Pebblestone Drive, St. Louis County, Mo.
Filed June 15, 1970, Ser. No. 46,067
Int. Cl. B65d *85/66*
U.S. Cl. 206—58 **9 Claims**



A box has front, back, top, bottom, and end walls arranged in a box-like configuration and contains a roll of sheet materi-

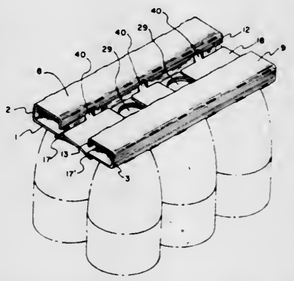
al, through which a spindle extends. The end walls of the box comprise several plies of paperboard material and some of these plies are provided with cutouts which form a cradle for the ends of the spindle. The top wall has a slot from which the sheet material is withdrawn, and this slot is positioned forwardly from the back wall of the box. A cutter blade projects upwardly beyond the top wall for cutting the sheet material after it is withdrawn from the slot.

3,698,549
PACKAGES FOR SMALL ARTICLES
Jacob A. Glassman, 1680 Meridian Avenue, Miami Beach, Fla.
Filed March 10, 1971, Ser. No. 122,911
Int. Cl. A61b *19/02*
U.S. Cl. 206—63.2 R **4 Claims**



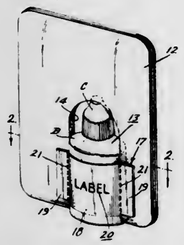
A flat disposable package for surgical supplies having front and rear panels firmly attached one to the other and having an internal pocket on one side edge to receive a side margin of the article or articles contained therein. The package also has pull tabs on one end to facilitate the sterile opening of the package.

3,698,550
CROWN-SUPPORT CARRIER
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Filed Aug. 23, 1971, Ser. No. 174,074
Int. Cl. B65d *71/00;* **B66f** *19/00*
U.S. Cl. 206—65 E **6 Claims**



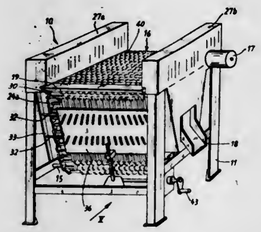
An improved multiple-article carrier of the crown-support variety comprising a bottom panel, side wall panels, crown cover panels, elevation panels, a securing panel and a top panel. The elevation panels are disposed along the inner edges of the article crowns and lie in a plane substantially parallel with the planes of the side wall panels and are provided with means for locking under the crowns of the articles in the carrier. The top panel also locks to one of the elevation panels and both elevation panels lock to the bottom panel thereby providing a tightly locked multiple article carrier.

3,698,551
DISPLAY PACKAGE AND LABEL
Harold W. Tomlinson, 27 Longwood Drive, Delmar, N.Y.
Continuation-in-part of Ser. No. 799,037, Feb. 13, 1970, Pat. No. 3,540,583. This application Oct. 22, 1970, Ser. No. 82,915
Int. Cl. B65d 73/00, 75/54
U.S. Cl. 206—80 R 14 Claims



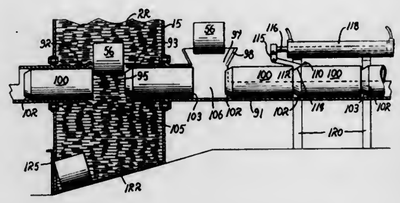
A package for displaying small articles comprising a display board having an open faced pocket with a width approximately equal to the width of the article to be displayed. A label strip retains the article in the pocket by having a central label portion firmly adhered to the article and end portions firmly secured to the display board and designed so that the label strip may be severed on either side of the central label portion, permitting removal of the article from the board and maintaining the central portion of the label strip as a permanent label for the article. Where the article is a container having a closure, the label strip may include a tab or other portion which bridges the joint between the body of the container and the closure to provide a tamper-proof seal for the closure.

3,698,552
SORTING MACHINE
Paul Wittmann, Hertlingsweg B 120¼ Neuburg/Danube, Germany
Filed Dec. 21, 1970, Ser. No. 100,190
Claims priority, application Germany, Dec. 29, 1969, P 19 65 243.8; March 17, 1970, P 20 12 654.9
Int. Cl. C10g 37/00
U.S. Cl. 209—102 13 Claims



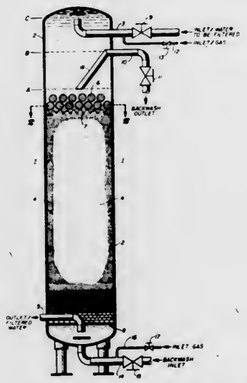
A sorting machine having a plurality of parallel rollers, all being supported by chain means, which form them into an endless belt and each supporting a plurality of spaced, double-conical sectional discs; guide rails for the discs for adjusting the positions of the discs along their rollers; slotted guide plate means connected with the rails for readjusting the positions of the rails, thereby to readjust the positions of the sectional discs. A plurality of sorting machines may be arranged in a row, each with means for providing a transition to the succeeding machine.

3,698,553
ARTICLE ELEVATING DEVICE
Ralph Minuite, P.O. Box 198, Cantua Creek, Calif.
Filed July 30, 1970, Ser. No. 59,655
Int. Cl. B03b 3/38; B63g 8/40
U.S. Cl. 209—173 10 Claims



An article elevating device for buoyant articles and the like providing a column of liquid having predetermined upper and lower ends and an article injecting mechanism downwardly spaced from the upper end of the column for successively injecting a plurality of such articles into the column of liquid for automatic ascent through the liquid to said upper end of the column. Gas charged containers are also utilized to elevate non-buoyant materials in a similar manner.

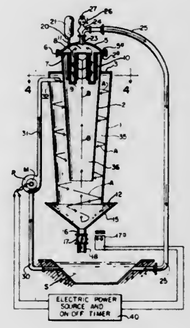
3,698,554
METHOD FOR BACKWASHING FILTERS
Isaac Paul Mail, P.O. Drawer, Tulsa, Okla.
Division of Ser. No. 737,721, June 17, 1968, abandoned. This application April 27, 1970, Ser. No. 31,935
Int. Cl. B01d 23/24, 29/08
U.S. Cl. 210—80 2 Claims



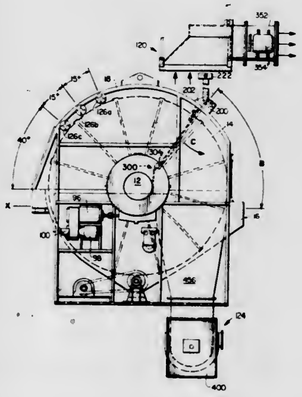
A filter bed is backwashed in a batch operation with backwash fluid and gas to dislodge particulates from the bed. The flow of gas is terminated, and the gas is flushed from the bed by additional amounts of backwash fluid. After a settling period, the backwash fluid and the dislodged particulates are siphoned from above the filter bed.

3,698,555
SELF-CLEANING FILTER SYSTEM
John R. Conner, 2210 Tupelo Road, Orlando, Fla.
Filed Nov. 23, 1970, Ser. No. 91,661
Int. Cl. B01d 29/38
U.S. Cl. 210—138 8 Claims

A filter system including permeable-surface filter means preceeded by cyclone-separator means and fitted with an electrically operated drain valve at the bottom of a specially shaped dirt trap, the electrically operated valve, an air-admitting check valve and an air volume tank being combined with pumping-cycle timer means to provide an automatic self-cleaning system in which a pumping and filtering cycle alternates with a filter-cleaning cycle to provide a frequently-cleaned efficient system especially useful for swimming pool filtration.

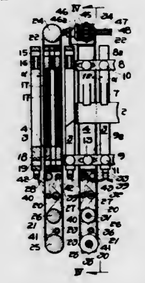


3,698,556
APPARATUS FOR STEAM DRYING FILTER CAKE
Robert C. Emmett, Jr., East Dundee, Ill.; Donald A. Dahlstrom, and John C. Brozovich, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Salt Lake City, Utah
Filed Oct. 30, 1970, Ser. No. 85,321
Int. Cl. B01d 35/18
U.S. Cl. 210—178 14 Claims



Apparatus is disclosed for steam drying filter cake formed on a drum or disc vacuum filter mounted for rotation in a container the lower portion of which comprises a feed slurry tank and the upper portion comprises a steam hood or steam dome. Means are provided to control the distribution of steam to the dome; to provide releasable seals for the rotary filter; to provide an improved steam hood; to provide exhaust means for the device and to provide an air cooler for the formed and heated filter cake.

3,698,557
CLARIFYING FILTER PRESS
Eiichi Ishigaki, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd., Chiyuo-cho, Sakaide, Japan
Filed June 14, 1971, Ser. No. 152,904
Claims priority, application Japan, July 11, 1970, 45/61227; March 13, 1971, 46/13987
Int. Cl. B01d 33/00
U.S. Cl. 210—225 9 Claims

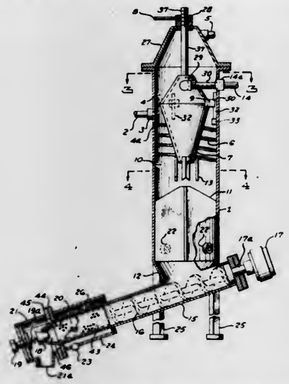


A clarifying filter press wherein a plurality of filter frames and filter plates are arranged alternately, said filter frames and filter plates are connected with connecting means in such a manner that the filter frames and filter plates can be separated to give definite intervals therebetween, there are provided to each filter plate a set of endless filter mediums comprising two or more mediums which are trained over rollers so that said mediums cover both supporting beds of each filter plate with integrating to one another and are separated from one another under each filter plate, the filter mediums having been used for filtration are travelled after the filter frames and filter plates are separated, and the filter mediums are washed by washing devices provided on the way of separately travelling of the mediums. This clarifying filter press facilitates a large-scaled filtering treatment of liquid having extremely low content of slurry to a high clarification degree owing to filtration with two or more filter mediums which are integrated to one another.

3,698,558
ANTI-POLLUTION DEVICE FOR REMOVING DEBRIS FROM LIQUID
Roland E. Weber, 363 Main Street, Holyoke, Mass., and Carl J. Zimmermann, Federal Street, Belchertown, Mass.
Filed April 29, 1971, Ser. No. 138,589
Int. Cl. B01d 21/26, 29/42
U.S. Cl. 210—256 9 Claims

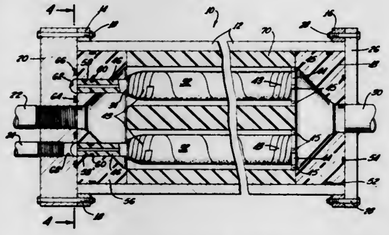
This invention is concerned with an anti-pollution device, and particularly a filter for removing deleterious particles and matter from liquids. The invention herein comprises a system and mechanism whereby liquid is caused to flow into a tank. The tank is so arranged that it has an upper area where the floating particles will rise and flow off into a designated receptacle. The heavy particles are caused to flow into a lower area in the tank and the flow of the liquid is slowed down by passing through helicoid ribs so that the heavy particles will have time to fall into a lower area and then into a chute in the bottom of the tank. Then particles are fed by a worm mechanism into a container whereby when enough of the particles have been deposited, the slurry of the particles will be caused to create a pressure so as to open up a valve. They then exit into a designated receptacle. The liquid itself flows into a chamber within the tank and through filtering means removing substantially all of the deleterious particles therefrom and out into a designated receptacle. The filtering means comprise two separate species. In one embodiment the liquid is slowed down by being fed into helicoid ribs around the inner chamber and is

further slowed down by fins attached to the bottom of the chamber and then caused to flow upwardly into the chamber and out through an opening. In another species the liquid



flows through diatomaceous earth into filter screen tubes and then passes into an upper chamber and out through an opening.

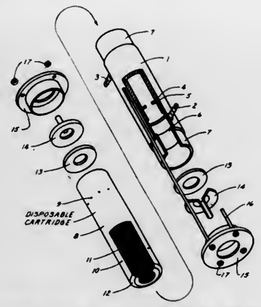
3,698,559
REVERSE OSMOSIS MODULE SUITABLE FOR FOOD PROCESSING
Serop Manjikian, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Interior
Filed March 1, 1971, Ser. No. 119,737
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **8 Claims**



A reverse osmosis module has a pressure housing containing a number of RO elements with membrane covered outer surfaces. Inside the housing a stuffer surrounds the elements, with the interior surfaces of the stuffer spaced a uniform distance from the membranes. When liquid is passed through the module between the membranes and the stuffer, the spacing between them promotes controlled, uniform, liquid flow. The RO module is particularly suited for food processing.

3,698,560
HOLLOW FIBER, ARTIFICIAL KIDNEY WITH DISPOSABLE DIALYZING CARTRIDGE
James S. Tapp, Decatur, Ala.; George L. Beemsterboer, and Ival O. Salyer, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare
Filed Dec. 28, 1970, Ser. No. 101,719
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **6 Claims**

A hollow-fiber, artificial kidney with a disposable dialyzing cartridge comprising a cylindrical body, a disposable dialyzing cartridge positioned during use within the body and having



hollow dialyzing fibers therein, and flanges and other means to hold the assembled parts of the kidney in place.

3,698,561
FILTERING PIPETTE
Arthur L. Babson, Chester, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 12, 1971, Ser. No. 142,711
Int. Cl. B01d *35/28*
U.S. Cl. 210—445 **3 Claims**

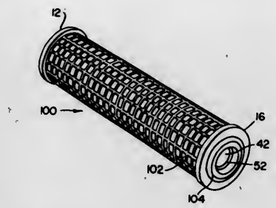


Pipette of resilient material is made of two interlocking parts which taper down at their opposite ends to a narrow opening. A filter disc of a suitable material is held in position between the interlocking parts. Liquid which is drawn into the pipette through one end passes through the filter disc before being discharged in filtered form at the other end.

3,698,562
POROUS SUPPORT CORE FOR DISPOSABLE TUBE FILTER
Roger M. Farrow; Anthony B. Kimber, both of Kent; John Barrington Cole, Sussex; John Walter Miles, Sussex, and Graham Ernest Griffiths, Sussex, all of England, assignors to W. & R. Balston (Industrial) Limited, Maidstone, Kent, England
Filed June 15, 1970, Ser. No. 46,343
Claims priority, application Great Britain, June 17, 1969, 30,646/69
Int. Cl. B01d *27/00*
U.S. Cl. 210—488 **15 Claims**

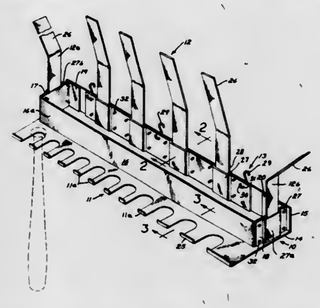
A porous support core is prepared from a synthetic polymeric material, which support core is adapted for use with disposable semirigid filter tubes, which core comprises a plurality of individual elements arranged in a stacked interlocking relationship, the elements so structured to form an axial passageway in the stacked elements and flow passages in the wall of the core so formed. The individual disc elements are

characterized by a central aperture to form an axial passageway, projecting partitions on one surface to form the



flow passage and hook elements on the opposite surface to interlock individual disc elements.

3,698,563
BASEBALL EQUIPMENT STORAGE RACK
George E. Gordon, 8207 Langdon, and Leon L. Landrum, 7715 La Roche, both of Houston, Tex.
Filed Sept. 8, 1970, Ser. No. 70,264
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 **16 Claims**

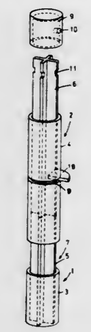


A portable storage rack is disclosed including a ball box for storage of baseballs, a plurality of bat retaining members extending from the ball box for storing bats, and a plurality of fingers extending from the ball box and providing hooks for the storage of baseball helmets or gives. Additional hooks are provided on the rack to permit the entire structure to be readily attached and detached from a chain link fence or similar structure.

3,698,564
SUPPORTING COLUMN
Hermann Muller, 43 Zugerstrasse, 6330 Cham, Switzerland
Filed Oct. 27, 1969, Ser. No. 869,646
Claims priority, application Switzerland, Nov. 4, 1968, 16401/68
Int. Cl. A47f *5/00*
U.S. Cl. 211—86 **10 Claims**

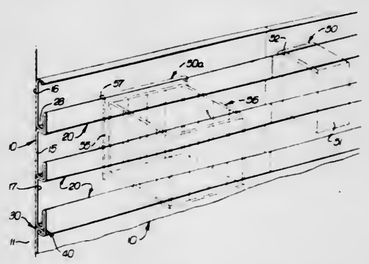
A supporting column to which supporting members are attachable which in turn support shelves, brackets, partitions and the like. The column comprises at least one longitudinal member composed of a sleeve provided therein with a lengthwise extending core having radial ribs, the outer edges of which engage tightly the inner wall of the sleeve. The sleeve is provided with at least one circumferential groove of a radial depth which is equal to the wall thickness of the sleeve so that the ribs on the core are exposed and support members may be inserted into the spaces formed between the radial ribs.

The longitudinal member preferably is made of at least two axially aligned and telescopically connected sleeves, each having a core with radial ribs therein. One sleeve has its core projecting from one of its ends to extend into the adjacent end of other sleeve which at this end has a portion of its core removed an axial distance which is shorter than the portion of



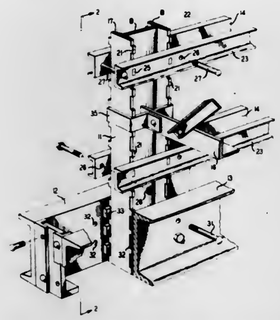
the core extending from the first mentioned sleeve, thereby forming a groove between the two telescopically connected sleeves which permits the attachment of supporting members to the exposed core portion.

3,698,565
DISPLAY PANEL FOR MERCHANDISE OR THE LIKE
Karl F. Weber, 1290 Inverness, Pasadena, Calif.
Filed Aug. 7, 1970, Ser. No. 62,042
Int. Cl. A47f *5/08*
U.S. Cl. 211—87 **10 Claims**



A unitary panel section has a continuous longitudinally extending horizontal male connecting member including a rib with an outwardly facing edge surface and an inwardly facing shoulder integrally joined at the upper edge of a vertical wall, the wall having a plurality of continuous longitudinally extending ribs extending outwardly therefrom to an outer edge, at which a longitudinally continuously extending upstanding flange extends upwardly to terminate in an upper edge spaced from the wall portion to provide lips each defining an upwardly opening trough, the panel section vertical wall at the lower edge thereof having integral upper and lower continuous longitudinally extending horizontal ribs defining a female connecting member channel opening to the back side of the wall, with a mating inwardly facing bottom surface and an outwardly facing shoulder. The panel sections may be connected along adjacent upper and lower longitudinal edges by the mating of the male and female connecting members to interlock the panel sections into a support panel for receiving the hooked ends of fasteners on the merchandise or the like to be displayed thereon. The panel sections may be rolled from sheet metal or extruded.

3,698,566
DEMOUNTABLE CANTILEVER STORAGE RACKS
Thomas N. D'Altrui, 667 Evergreen Parkway, Union, N.J.
Filed Jan. 7, 1971, Ser. No. 104,590
Int. Cl. A47f 5/10; F16b 7/18
U.S. Cl. 211—176 5 Claims



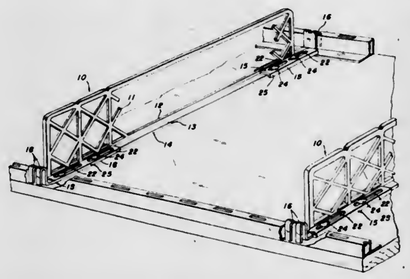
A demountable cantilever storage rack comprises a plurality of vertical posts, each having a plurality of key projections on opposite sides. Horizontal load bearing arms comprise a pair of horizontal members fitting on opposite sides of a vertical post and engaging corresponding key projections. Bolts on opposite sides of the vertical post extend through the two component members to clamp it securely to the post. The rack is stabilized by a pair of base members clamped to opposite sides of each vertical post and having lug projections nesting between successive key projections of the vertical post.

3,698,567
DISPLAY STAND
Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.
Filed May 27, 1971, Ser. No. 147,332
Int. Cl. A47f 5/00
U.S. Cl. 211—183 1 Claim



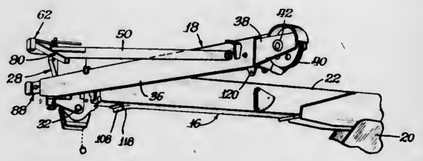
The invention relates to a display stand of the type commonly found in department stores which has two general forms known as wall cases and gondolas. This type of display stand has a base or platform having a height of about 6 or 8 inches from the floor. The base customarily has a base nose which has the general form of a longitudinally extending, rounded off protrusion extending from the upper portion of the base. Beneath or behind the base nose is a kick plate which, in conjunction with the base nose, forms a toe space. The invention is directed to a construction or arrangement in which it is optional for the kick plate to be installed in one way so as to be supported by the floor or in another way so as to be supported by base arms which in effect form the structural frame for the base.

3,698,568
PARTITION STRUCTURE WITH ADJUSTABLE END MEMBER
Blair D. Armstrong, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Dec. 18, 1970, Ser. No. 99,611
Int. Cl. A47f 5/00
U.S. Cl. 211—184 1 Claim



A partition structure combination for use with shelving or the like is detailed, with at least one adjustable end connector member. The combination is connectable to a supporting structure over a variable length. The adjustable end connector is slidably connected to the partition structure to effect the variation in mounting length.

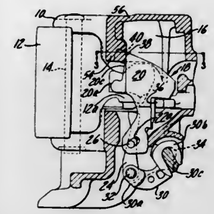
3,698,569
MOBILE CRANE WITH JIB EXTENSION
Gerald P. Lamer, Rothschild, and Duane L. Thiele, Schofield, both of Wis., assignors to J. I. Case Company, Racine, Wis.
Filed March 22, 1971, Ser. No. 127,006
Int. Cl. B66c 23/62
U.S. Cl. 212—144 14 Claims



A crane structure including a main boom comprised of a plurality of telescopically arranged boom sections, with a jib boom being connected to the main boom for movement between a usable position in alignment with the main boom and a storage position alongside of the main boom. The jib boom is connected to the main boom by an upright pivot, so that the jib boom swings in a generally horizontal plane in moving between the usable and storage positions. The connection of the jib boom to the main boom is detachable, so that the main boom section may be extended and retracted when the jib boom is in the storage position and the connection means is detached.

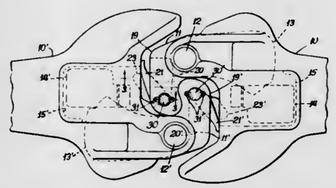
3,698,570
CAR COUPLER
William J. Metzger, East Cleveland, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed May 21, 1971, Ser. No. 145,710
Int. Cl. B61g 3/08
U.S. Cl. 213—146 8 Claims

A railway car coupler of the knuckle type in which improved fulcruming of the lock member during manual actuation of the uncoupling mechanism to unlock and open the knuckle is provided to reduce the frictional drag between the lock and the coupler head. The lock member is provided with



a fulcrum lug of a configuration which assures that the lock will fulcrum about the lug without frictional engagement occurring between the adjacent portions of the lock and the coupler head during unlocking and opening of the knuckle.

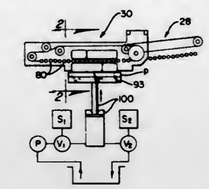
3,698,571
INTERLOCKING COUPLER
Vaughn T. Hawthorne, 5223 Deerfield Road, Mechanicsburg, Pa.
Filed Dec. 28, 1970, Ser. No. 101,923
Int. Cl. B61g 3/04, 7/14
U.S. Cl. 213—153 11 Claims



The knuckle of a railway car coupler has a dog extending from its distal end, which dog is mounted for pivotal movement about a vertical axis. The dog enters a hole in the adjacent portion of a body of another coupler to prevent the separation of the couplers by vertical movements with respect to each other. The dog is resiliently urged into said hole and has a projecting surface which rides on the body about the hole to limit the penetration of the dog into the hole. The springs that provide this resilient urging are on the ends of a shaft pivotally mounting the dog in the knuckle and also permit vertical movement of the dog with respect to the knuckle. If there is excessive vertical travel of the dog in the aperture, cam faces on the top and bottom of the aperture force the dog outwardly.

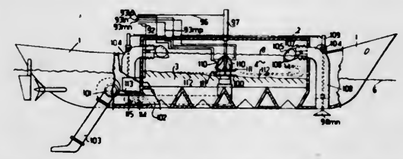
3,698,572
BAG COMPACTOR FOR CONVEYING APPARATUS
Billy J. Dahlem, Golden, and John A. Martin, Denver, both of Colo., assignors to Power-Curve Conveyor Company, Denver, Colo.
Filed Sept. 29, 1969, Ser. No. 861,979
Int. Cl. B65g 57/24
U.S. Cl. 214—6 DK 1 Claim

A pallet loader of the type having a pallet elevator onto which patterns of articles, such as sacked material, are successively deposited and incrementally lowered for receipt of additional patterns, the loader having a movable wall above the elevator on which a pattern is disposed for transfer to the elevator, characterized by an elevator motion control which compacts a pattern while on the elevator and against the lower face of said wall. Pressure sensing means are associated with



the wall for adjusting the force of compaction to a desired value.

3,698,573
METHOD AND APPARATUS FOR LOADING A DREDGING VESSEL WITH DREDGING SPOIL
Tjako Aaldrik Wolters, Vianen, and Romke van der Veen, Hesselaan, both of Netherlands, assignors to Ballast-Nedam Groep N.V., Amsterdam, Netherlands
Filed May 14, 1971, Ser. No. 143,440
Claims priority, application Netherlands, May 14, 1970, 70.06965
Int. Cl. B65g 27/00
U.S. Cl. 214—15 B 4 Claims

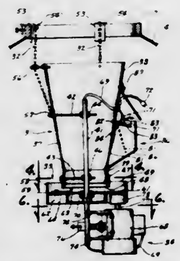


For loading a dredging vessel upto its maximum conveying capacity the weight of the load is measured, wherein a distinction is made between the dredging spoil being in settled and the dredging spoil being in fluidized condition.

The magnitude decisive of the stability of the dredging vessel with its load is calculated.

The calculated value is compared with the inadmissible value of the magnitude for determining the end of the loading process.

3,698,574
PROCESS AND APPARATUS FOR SPREADING GRANULAR MATERIAL
Robert A. Louks, Gilman, Iowa
Filed June 18, 1970, Ser. No. 47,402
Int. Cl. B65g 65/32
U.S. Cl. 214—17 CB 5 Claims

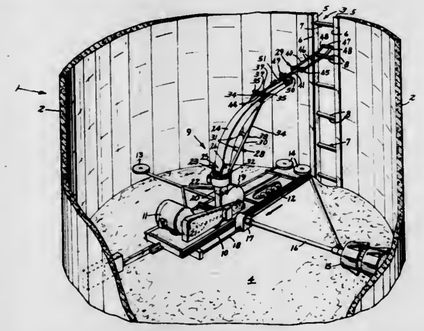


This invention relates to a process and an apparatus for spreading granular material for use primarily in a conventional

circular storage bin having a floor and a material evacuating unit: the apparatus having a hopper for receiving the material dumped therein through a roof opening by a conventional elevator, and having further a vertically adjustable rotatable pan disposed beneath the hopper for receiving and holding the material, with the upper edge of the pan outer wall disposed above the lower edge of the hopper bottom whereby the pan is not rotated, the pan will fill up with the material and then the throat of the hopper will clog with the material, and including further motorized means operable to rotate the pan so that the material is thrown outwardly of the pan by centrifugal force, the material then falling on the bin floor in a level manner.

A switch device is built into one side of the hopper and is responsive to material clogging up the hopper to automatically turn on the motor so as to rotate the pan, thus insuring that no material is discharged into the bin unless the spreader is operating at full capacity.

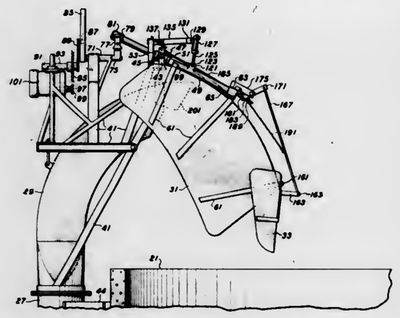
3,698,575
AUTOMATICALLY LOWERING UNLOADER
Robert F. Koser, P.O. Box 135, Almena, Wis., and Jack D. Messner, Wayzata, Minn., assignors to said Koser, by said Messner
Filed July 24, 1970, Ser. No. 57,949
Int. Cl. B65g *65/38*
U.S. Cl. 214—17 DB **8 Claims**



An automatically lowering silo unloader for use in a silo having a discharge door opening that extends vertically for the greater portion of the height of the silo and having a plurality of vertically spaced narrow bridging members extending horizontally across the opening. The unloader includes a discharge chute that is disposed to direct silage generally radially of the silo upwardly through the vertically-extended opening, and torque arm means engageable with a side edge of the opening to automatically hold the discharge chute against rotation with the unloader and in line with the opening as the unloader moves downwardly within the silo during unloading of silage therefrom.

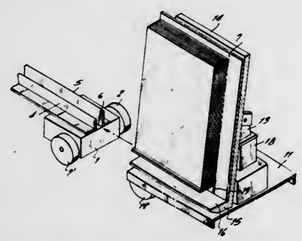
3,698,576
SILAGE DISTRIBUTOR
Erwin H. Gillette, 1711 York Street, Lima, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,441
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 C **13 Claims**

A shifting deflector, driven by a small electric motor, is attached to the top of the conventional blower tube which blows silage up from the ground level to the top of a silo. To spread the silage evenly over the area of a large silo, the deflector is moved through an orbital path tilted sharply downwardly to deflect the incoming silage to the near side of the silo, during part of the orbital movement, and raised up to an almost horizontal position for deflecting the incoming silage to the far side of the silo, and moving through various intermediate positions to direct the silage rightwardly and leftwardly. A crank arm driven by an electric motor operates a follower crank arm eccentric to the first crank arm, which controls the orbital position of the deflector, and the eccentricity of the two crank arms relative to each other results in the motion being slower when the silage is directed to a position farther away from the blower tube, and faster when the silage is directed to a posi-



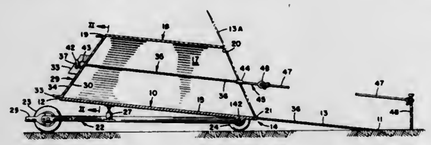
tion closer to the blower tube, thus producing a more even filling throughout the entire area of the silo. The orbital movement produced by the crank arms includes a lateral twisting motion superimposed on the main orbital motion. A supplementary deflector pivoted to the discharge end of the main deflector is operated by a linkage to assist in directing the flow of silage to the near side of the silo during the appropriate part of the orbital movement.

3,698,577
TRANSPORTING SYSTEM
George A. Dean, Kansas City, Mo., assignor to Dean Research Corporation
Filed Aug. 21, 1970, Ser. No. 65,893
Int. Cl. B65g *67/28*
U.S. Cl. 214—38 BA **5 Claims**



The system comprises a container, a transporter and, optionally, an upender. The transporter is comprised of a first base mounted on wheels and two side members mounted on the first base. The side members form therebetween a channel. The container has a back and a first rest. The first rest is fixed to the back and is preferably substantially perpendicular thereto. A lower flange portion of the back is removably insertable within the channel. The channel side members are equal in height so that when the flange portion is within the channel, the sheet material is supported therein by the container so that the sheet material is substantially parallel to the back of the container. Alternatively, one channel side member may be higher than the other so that when the flange portion is within the channel, the container is supported therein, preferably at an angle of 5°–7°. The upender comprises a second base mounted on wheels, an upright member fixed to the base and an arm pivotally fixed to the upright member. A second rest having a first face is fixed to the arm. The arm is pivotable from a first horizontal position to a second vertical position. Sliding means may be provided in the channel and on the first face to facilitate removal of the container. The upender is placed in the first position. The container is placed on the upender arm with its flange directed toward the second rest. The material to be transported is stacked on the container back. The upender is then pivoted to the second position and moved so that the channel on the transporter and the container flange are substantially in alignment. The container is then slidably ejected from the upender rest into the channel on the transporter.

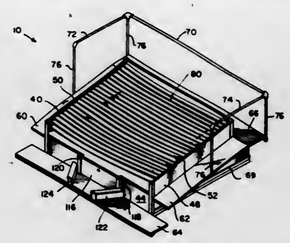
3,698,578
FEEDSTUFF HANDLING AND APPARATUS
William J. Flittie, 7820 Southwestern, Dallas, Tex.
Filed Oct. 28, 1970, Ser. No. 84,755
Int. Cl. B65g *67/26*
U.S. Cl. 214—58 **70 Claims**



A feedstuff handling apparatus provided with means for receiving an inflow of vegetable feedstuff pieces and forming them into a mass configured to have a generally flat bottom and at least a pair of faces sloping upwardly from the bottom at respective angles no greater than the angle of repose of the feedstuff pieces. The apparatus holds at least a portion of the mass in this configuration during the operation of means which discharge the mass onto the ground, the sloping faces of the mass thereafter being left freestanding. Some modifications are provided with simple means for attaining a uniform and more cohesive mass and, where effective, for obtaining some compaction of the material forming the mass. A preferred mode of covering the mass or for sealing it off from the air is described, in connection with which are disclosed features of the apparatus operative for smoothing a ground area designated for reception of the feedstuff mass and for mechanically accomplishing part of the labor involved in the covering or sealing operation. According to certain aspects of a feedstuff handling method (of which the apparatus forms an example of means of implementation), feedstuff pieces are formed into a mass of the above-noted configuration and all upwardly inclined faces of the mass are supported until completion of discharge of the mass from one surface on which it is formed to another surface. After discharge, the mass faces extending at an angle to the mass bottom face no greater than the angle of repose of the feedstuff pieces of the mass are left unsupported; support is continued for any faces of the mass which extend upwardly at a greater angle. According to one version of the method, final shaping of the mass is accomplished concurrently with discharge of the mass.

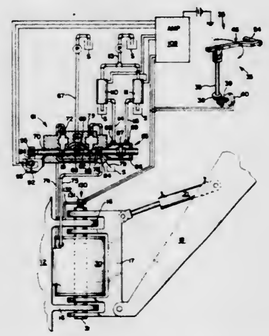
3,698,579
FRUIT HARVESTER
Ellis Peek, Jr., R.R. #3, Shoals, Ind.
Filed Sept. 28, 1970, Ser. No. 76,166
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.1 **10 Claims**

A fruit picker assembly comprising a frame, a box mounted on the frame, the box having a bottom, front and back walls, side walls, and at least a partially open top, means defining a walkway extending perimetrally about at least a portion of the box and movable therewith, and means for breaking the fall of fruit dropped into the box. The breaking means includes a plurality of straps extending transversely across the open top of the box with the spacing between adjacent straps being less than the diameter of the fruit to be picked and with the straps being flexible so that adjacent straps are separated by dropping the fruit thereon to permit the fruit to move therebetween into the box. I provide padded breaker panels or



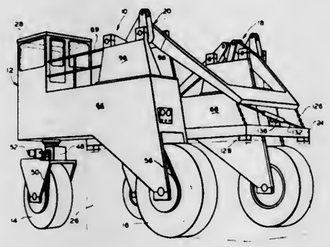
breaker walls disposed inside the box under the straps to guide the fruit falling through the straps toward the rear of the box. I also provide means for mounting the frame on a conventional front end loader of a farm tractor for pivotal movement about a generally horizontal axis, and motor means for selectively adjustably positioning the frame relative to such a front end loader and about the axis.

3,698,580
CONTROL SYSTEM FOR MATERIAL HANDLING EQUIPMENT
Ernest C. Carlson, Schwetzingen, Germany; Arthur J. Howells, Jr., Western Springs, Ill.; Marvin D. Jennings, Naperville, Ill.; Donald R. Eastman, Lockport, Ill., and Edward G. Sheets, Plainfield, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,013
Int. Cl. E02f *3/28*
U.S. Cl. 214—138 R **11 Claims**



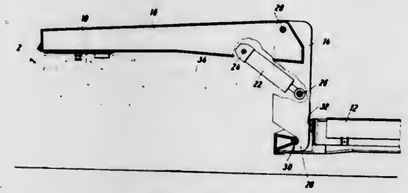
A control system for a hydraulic motor actuated material handling mechanism including a source of fluid power, a directional flow control valve interposed between the source of fluid power and the hydraulic motor, a bridge circuit including a source of electrical energy and having a first variable impedance branch varied by a command control lever and a second variable impedance branch associated with the flow control valve, comparator means connected to the output of the bridge circuit for detecting and amplifying an unbalance in the bridge circuit and means interconnected between the comparator and the directional flow control valve for controlling said valve in a manner corresponding to command movement of the variable impedance branch.

3,698,581
VAN CARRIER VEHICLE
Wynand M. J. M. Goyarts, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Feb. 16, 1971, Ser. No. 115,457
Int. Cl. B60p 1/64
U.S. Cl. 214—394 12 Claims



A self-propelled van carrier vehicle having a rearwardly opening U-shaped chassis on the legs of which are located a pair of short stroke hydraulic cylinders for actuating longitudinally extending U-shaped opposed lift levers. Depending from the lift levers is a lifting frame which is adapted to engage, lift and transport large containers and to stack them at least two deep. Operator controlled adjustable means is provided between the lifting frame and the lever arms for adjusting the lifting frame transversely of the vehicle or skewing it in relation to the vehicle. Improved mechanical load distribution means is operative to aid in equalizing the effective load both transversely and longitudinally of the vehicle when the load as supported on the lifting frame is eccentric or offset in any direction in relation to the center of gravity of the lifting frame.

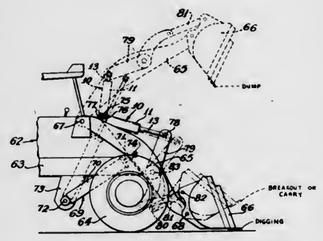
3,698,582
ARTICULATED VEHICLES
Karl Weinmann, Stuttgart, Germany, assignor to KAMAG Transporttechnik GmbH & Co.
Filed April 17, 1970, Ser. No. 29,612
Claims priority, application Germany, April 26, 1969, P 19 21 477.8
Int. Cl. B62d 53/06
U.S. Cl. 214—506 10 Claims



A rear-wheeled load-carrying frame of a low-bed type trailer is connectible to a saddle tractor by a support frame. The support frame has a horizontal arm adapted to rest on the saddle of the tractor and a normally vertical beam hinged to the rear end of the horizontal arm. The lower end of the beam has at least one hook shaped claw adapted to engage behind a corresponding coupling pin on the forward end of the load-carrying frame and engages a stop face on said forward end when the beam is in its normal vertical position. A hydraulic jack is provided between the arm and the beam.

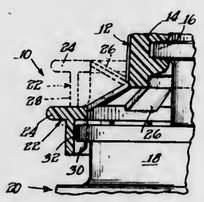
Preferably a steering mechanism for a rear bogie on the load-carrying frame includes a vertical steering shaft journalled in the beam and having a coupling arm automatically engageable with a coupling piece connected by a steering linkage to the bogie.

3,698,583
AUTOMATIC BUCKET POSITIONING DEVICE
Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Sept. 14, 1970, Ser. No. 71,778
Int. Cl. E02f 3/00
U.S. Cl. 214—764 5 Claims



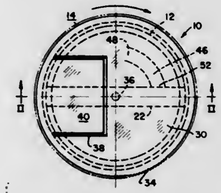
Hydraulic means operating in conjunction with a hydraulic power unit for automatically stopping in an intermediate position a device whose position is controlled by the hydraulic power unit. A digging bucket is automatically stopped at a digging position intermediate to dumping and breakout positions with respect to a boom arm. A pilot valve connected to an intermediate region of a cylinder of the hydraulic power unit regulates the control valve for the power unit.

3,698,584
TAMPERPROOF CLOSURE DEVICE
Christian F. Miller, Palos Park, Ill., assignor to V.C.A. Corporation, Greenwich, Conn.
Filed Oct. 9, 1970, Ser. No. 79,429
Int. Cl. B65d 43/02
U.S. Cl. 215—9 9 Claims



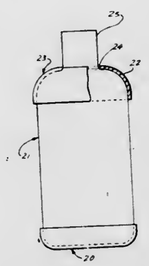
The present invention relates generally to tamperproof closure devices and more particularly to tamperproof closure devices for externally threaded containers. An embodiment of the invention disclosed herein includes an internally threaded cap section, a peripheral locking section and means coupling the locking section with the cap section in such a manner as to permit limited axial displacement of the locking section with respect to the cap section. Abutment means associated with the locking section is adapted for locking engagement and disengagement with respect to complementary abutment means associated with the container when the locking section is in a given axially displaced position.

3,698,585
SAFETY CONTAINER TOP
Bernard Smith, 7102 Plymouth Road, Baltimore, Md., and Anthony J. De Pietro, 208 School Lane, Springfield, Pa.
Filed Feb. 18, 1971, Ser. No. 116,418
Int. Cl. B65d 55/02
U.S. Cl. 215—9 15 Claims



An inner cap member adapted for being threaded onto the neck of a bottle for closing the opening therein mounts an outer cap member which interlocks with the inner cap member when it is turned in a direction to apply the inner cap member to the bottle. When turned in the opposite direction, i.e., in a direction to remove the inner cap member from the bottle, the outer cap member normally does not interlock with the inner cap member, as a consequence of which it turns freely about the inner cap member without turning the same. However, it may be made to interlock with the inner cap member when it is desired to remove the same from the bottle.

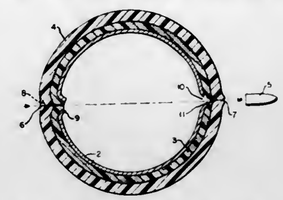
3,698,586
PLASTIC ENCASED GLASS CONTAINER
E. M. Terner, Oakhurst, N.J., assignor to Midland Glass Company, Inc., Cliffwood, N.J.
Filed Sept. 2, 1970, Ser. No. 68,931
Int. Cl. B64d 23/08
U.S. Cl. 215—12 R 2 Claims



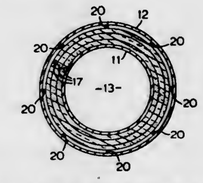
A glass container, such as a bottle, is encased in a plastic film in order to preserve the inherent strength of the glass. The film may be formed as a shrinkable sheath into which the container is placed, followed by heating, or a portion of the encasing material may be in the form of such a sheath, with the remainder of the film applied by a wrapping operation.

3,698,587
SELF SEALING COMPOSITE
Ronald E. Baker; Robert L. Fogarty, and Edwin C. Siegel, all of Phoenix, Ariz., assignors to Goodyear Aerospace Corporation, Akron, Ohio
Filed June 18, 1970, Ser. No. 47,396
Int. Cl. B65d 25/18
U.S. Cl. 220—9 F 1 Claim

This invention relates to a self-sealing wall for containers and conduits comprising a substantially rigid supporting layer of liquid impervious material, a layer of foam and at least one layer of a homogeneous elastomeric polyurethane adhered to the foam.

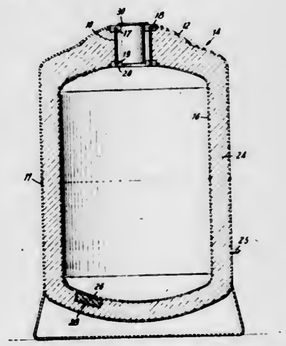


3,698,588
THERMALLY INSULATED DEVICE
Louis A. Pogorski, Toronto, Ontario, Canada, assignor to The British American Oil Company Limited and Chemical Projects Limited, part interest to each
Division of Ser. No. 765,471, Oct. 7, 1968, abandoned. This application Oct. 21, 1970, Ser. No. 82,567
Int. Cl. B65d 25/18
U.S. Cl. 220—9 C 2 Claims



A thermally insulated device having an inner wall and an outer wall. A load-supporting thermal insulation is located between and contacts the inner wall only. The thermal insulation includes a flexible casing filled with compacted finely divided material. The thermal insulation is the sole supporting member bearing the load imposed by the inner wall.

3,698,589
CRYOGENIC STORAGE APPARATUS
James L. Perry, Totowa Boro, N.J., assignor to Union Carbide Corporation
Continuation of Ser. No. 599,343, Dec. 1, 1966, abandoned, which is a continuation of Ser. No. 337,696, Dec. 26, 1963, abandoned, which is a continuation-in-part of Ser. No. 149,356, Nov. 1, 1961, abandoned. This application Dec. 29, 1969, Ser. No. 888,151
Int. Cl. B65d 25/00
U.S. Cl. 220—14 5 Claims



A double walled container having an inner vessel and an outer shell with an intervening vacuum insulation space, in-

cluding a neck tube formed of certain gas impervious fiber reinforced plastic compositions having certain physical properties, the neck tube providing access to the inner vessel and also being loaded in tension by the inner vessel as the sole suspension means therefor.

3,698,590
FRANGIBLE ELEMENTS IN SHEET MATERIAL

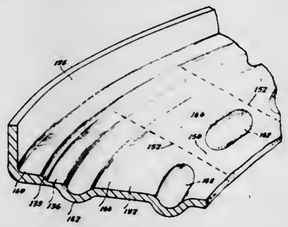
William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

Continuation-in-part of Ser. No. 796,975, Feb. 6, 1969, and a continuation-in-part of Ser. No. 28,880, April 15, 1970. This application June 24, 1971, Ser. No. 156,294

Claims priority, application Great Britain, March 16, 1968, 7,698/68; Jan. 24, 1969, 4,248/69; Nov. 26, 1970, 56,335/70; June 15, 1971, 28,024/71; Jan. 15, 1970, 58/70; Australia, Jan. 22, 1970, 10545

Int. Cl. B65d *17/00, 17/20*

U.S. Cl. 220—27 **30 Claims**



A frangible element or weakened line in sheet material, especially tinplate, which is useful in opening means for containers. A method and apparatus for making the line is described. The frangible element lies between two portions of the sheet of greater thickness than the frangible element, to which it is joined by rounded steps or other rounded formations, and a hollow indentation, e.g., a bead, lies in one of the portions. By using a series of indentations, these can be arranged so that the opening of a tear-open panel in the container wall can be controlled more easily.

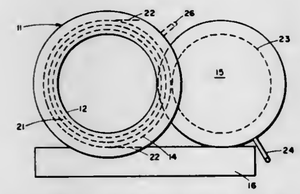
3,698,591
PRESSURE CHAMBER CLOSURE

Richard A. Morin, Snyder, and Edward H. Lanphier, Eggertsville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 4, 1971, Ser. No. 103,664

Int. Cl. B65d *53/00*

U.S. Cl. 220—46 R **10 Claims**



An access door for a pressure vessel wherein the door itself is the only moving part and the pressure difference between the interior of the chamber and ambient exterior pressure is the only sealing force is provided. The door is in the form of a disc or wafer made of metal or solid plastic material and holds in position a sealing ring having a peripheral groove for receiving one O ring and a groove on the surface facing the door for receiving a second O ring. The door is rolled manually by a substantially radially extending handle. The chamber is cut to receive the door laterally and recessed internally to permit the sealing ring to be moved axially into sealing position in the recess.

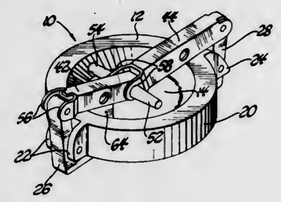
3,698,592
FILL PIPE COVER

Lowell F. Nelson, Muskegon, Mich., assignor to Enterprise Brass Works, Muskegon, Mich.

Filed Nov. 4, 1970, Ser. No. 86,669

Int. Cl. A47j *27/08*

U.S. Cl. 220—55 Z **1 Claim**



A fill pipe cover having a pair of diametrically opposite pivotal cam levers and an overcenter linkage for manual operation of the levers.

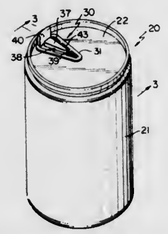
3,698,593
CONTAINER CONSTRUCTION AND CLOSURE PLUG THEREFOR

Daniel S. Cvacho; Patrick A. Fastabend; Alfred L. Garriques, and Eric L. Jensen, all of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed July 28, 1971, Ser. No. 166,946

Int. Cl. B65d *43/10*

U.S. Cl. 220—60 A **30 Claims**



A removable closure plug seals closed an opening passing through a wall of a container construction, the removable closure plug having an annular groove therein snap-fittingly receiving the edge of the opening and engaging against the annular surface of the wall that is disposed intermediate the inner and outer surfaces of the wall whereby the closure plug seals closed such opening. The closure plug is so constructed and arranged that internal pressure in the container construction is adapted to increase to a certain value without adversely effecting the seal of the closure plug thereto. The closure plug is also so constructed and arranged that the same is adapted to vent the internal pressure to the exterior of the container construction intermediate opposed ends of the closure plug when the internal pressure exceeds that certain value by toggling the closure plug intermediate the opposed ends thereof so that the opposed ends remain secured to the container construction whereby the closure plug tends to prevent the internal pressure from exceeding such certain value.

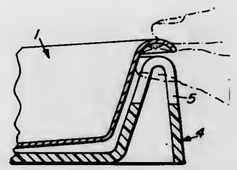
3,698,594
DISPOSABLE FEEDING DISH AND ITS COMPLEMENTARY RECEPTACLE

Marjorie A. Boehlert, 2320 Great Falls Street, Falls Church, Va.

Filed Aug. 20, 1970, Ser. No. 65,428

Int. Cl. B65d *25/16*

U.S. Cl. 220—63 **2 Claims**



A disposable dish that may be temporarily attached to its complementary receptacle by an adhesive substance which, until useful, is protected by a covering that is easily removable. The disposable dish is fitted into its complementary receptacle and may be removed therefrom, after use, by means of a flipstring or a cut away portion of the receptacle. An alternate way of temporarily fastening the disposable dish to its receptacle is through locking a raised locking ridge circumscribing the outside of the disposable dish under locking tabs complementarily placed in the receptacle. The sides and base of the receptacle may receive the entire dish which may be removed through a cut away in the receptacle or by the flipstring or the upper sides of the receptacle may extend approximately one half way around the receptacle base, in which event the upper lip of the disposable dish or the raised locking ridge is guided through an indented track and an adhesive on the disposable dish locks it into place in the receptacle. The dish is removed from its receptacle by slight manual force.

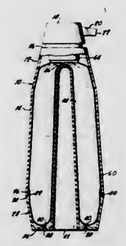
3,698,595
PRESSURIZED DISPENSER

Norman Gortz, 11151 Coventry Place, Santa Ana, Calif., and Michael B. Maccarone, 17932 Gillman Avenue, Irvine, Calif.

Filed Dec. 22, 1969, Ser. No. 887,189

Int. Cl. B65d *25/14*

U.S. Cl. 220—63 R **8 Claims**



A resilient bladder-type dispenser wherein the bladder, when empty, is prestressed over a mandril extending into the dispenser. The bladder is provided with a flexible, flat bottom wall which is self-aligning over a tapered mandril. An annular enlarged diameter portion is provided on the bladder near its upper edge for forming a fold to maintain the bladder in fluid tight relationship with a gland which can be mounted in the dispenser to lock the bladder in place. A dispensing valve is provided in the bladder so that when the valve is opened the bladder walls force fluids therefrom. A stop is provided so that when the dispenser cap which actuates the valve is oriented in a certain manner, the valve cannot be inadvertently activated.

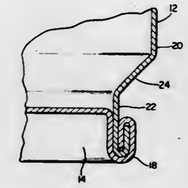
3,698,596
NECKED-IN CONTAINER

Vinson S. Potts, Cherry Hill, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jan. 20, 1970, Ser. No. 4,295

Int. Cl. B65d *7/42*

U.S. Cl. 220—67 **5 Claims**



Cans having a tubular body necked-in at one or both ends. The tubular body is side seamed and the ends are seamed to the tubular body.

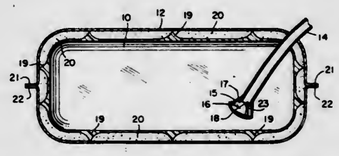
3,698,597
TANK FOR LIQUID FUEL

William F. Burke, 4825 E. Roosevelt Blvd., Philadelphia, Pa.

Filed Dec. 3, 1970, Ser. No. 94,838

Int. Cl. G05b

U.S. Cl. 220—86 **3 Claims**



An inner tank for containing liquid fuel; an outer, larger tank spaced from, and wholly enclosing, said inner tank; said tanks co-acting to define a chamber therebetween for receiving a fire-extinguishing, or fire-resisting material; a supply pipe leading into said inner tank, and an automatic valve for closing the inner end of said pipe to prevent outflow of the fuel through said pipe.

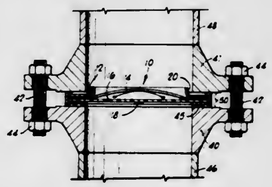
3,698,598
SAFETY PRESSURE RELIEF DEVICE

Loren E. Wood, Tulsa, and Marvin H. Free, Owasso, both of Okla., assignors to Black, Sivalls & Bryson, Inc., Tulsa, Okla.

Filed July 26, 1971, Ser. No. 165,915

Int. Cl. F16k *17/16*; **F17c** *13/06*

U.S. Cl. 220—89 A **7 Claims**



The present invention relates to an improved safety pressure relief device of the rupturable type comprising a rupture member which is of sufficient strength to rupture at a predetermined pressure having a concave-convex portion

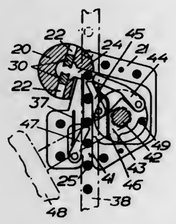
connected to an annular flat flange portion, a circular resilient sealing member positioned adjacent to and facing the concave side of said rupture member, the peripheral portion of said sealing member coinciding with the annular flat flange portion of said rupture member, and a flat circular support member positioned adjacent to the sealing member, the support member having slots radiating outwardly from a central portion and terminating short of the outer periphery thereof forming a plurality of sector shaped portions connected together at the central portion so that the support member provides support for the sealing member but readily ruptures and opens upon rupture of the rupture and sealing members. The outer peripheral edge of the support member is folded over the outer peripheral edges of the sealing and rupture members so that the members are rigidly held together.

3,698,599

FEED TO DRIVING TOOL HAVING BAND HELD SCREWS

Gustaf Harry Fernstrom, Klinten, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Division of Ser. No. 838,515, July 2, 1969, Pat. No. 3,601,168. This application Feb. 19, 1971, Ser. No. 116,852
Int. Cl. B65h 5/28
U.S. Cl. 221—25 **5 Claims**



In a driving tool for fasteners a driver has guide jaws releasably clamped thereagainst for holding a fastener in frontal alignment therewith. During driving movement of the driver together with said fastener towards a work piece, the guide jaws, in response to said fastener striking against the work piece, are arrested in spaced relation to the work piece and knocked loose from the driver for releasing the fastener from the guide jaws while the driver continues its driving movement. The driving tool may be provided with a magazine for band supported fasteners, which by an ejector are forced to break out laterally one by one from the band in between the guide jaws and by a feeder are moved together with the band one after the other to the ejector, said ejector and feeder being pivotally supported on a rocker member such as to alternately actuate the fasteners as the arm is rocked alternately in one direction and the other.

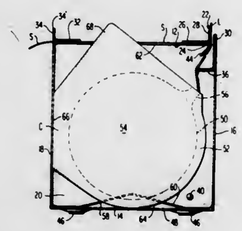
3,698,600

LABEL DISPENSER

Richard W. Foote, 144 Chestnut St., Willimantic, Conn.

Filed May 6, 1970, Ser. No. 35,206
Int. Cl. B65h 5/28
U.S. Cl. 221—70 **10 Claims**

A label dispenser comprises a box-like container adapted to receive a plurality of rolls of strip material in side-by-side relation and with each of the rolls carrying a series of labels coated with pressure sensitive adhesive. One wall of the container is provided with a dispensing slot through which the strip material is passed and bent over one edge bounding the slot to cause a label to strip therefrom. A pick-off bar is spaced slightly from said one wall substantially perpendicular thereto and generally in the same plane of said one edge. The other edge bounding said slot comprises a lip extending beyond the plane of said one wall in spaced relation to and substantially parallel with said pick-off bar. A guide member extends longitudinally within said container beneath said slot to guide the strip material through a sharp bend as it passes through said slot to cause the labels to strip therefrom, said labels being directed outwardly by said lip to lodge lightly on said pick-off bar as said strip material is withdrawn from the container. Said one wall and the wall opposite thereto are provided with a series of



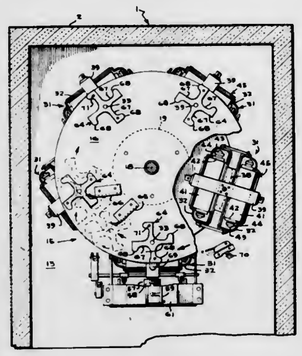
aligned slots extending perpendicular to said dispensing slot and said rolls of strip material are enclosed within cartridges, each comprising a flat container having peripheral flange portions which are removably fitted in an aligned pair of slots with the flange portions extending through said one wall and defining guides for the strip material after it has passed through said dispensing slot.

3,698,601

MAGAZINE FOR DISPENSING MACHINE

Raymond H. Sierk, White Stone, N.Y., and Raymond W. Sierk, Kinnelon, N.J., assignors to Atomatic Swank Frank Corp., New York, N.Y.

Filed July 22, 1971, Ser. No. 165,190
Int. Cl. B65h 3/40
U.S. Cl. 221—105 **12 Claims**



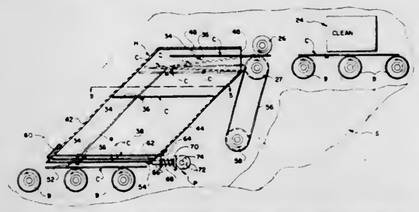
A multiple magazine turret for packaged articles to be dispensed, which is rotatable step by step to bring each magazine to a dispensing position. Each magazine includes parallel racks arranged back to back upon a pivot shaft with means to releasably hold the racks in predetermined positions. Cams are placed to cause rotation of the magazines about their pivot shafts as the turret moves step by step to move empty racks out of dispensing position and replace them with full ones. After two revolutions of the turret and depletion of all racks, the operation is stopped automatically. Each rack is tiltable from its dispensing position for loading, and the individual racks are removable from the turret and the turret is removable as a whole from a dispensing cabinet in which it is operative.

3,698,602

GRAVITY-FED STORAGE DEVICE

Oliver W. Gnage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 6, 1970, Ser. No. 52,152
Int. Cl. B65h 5/00
U.S. Cl. 221—225 **6 Claims**



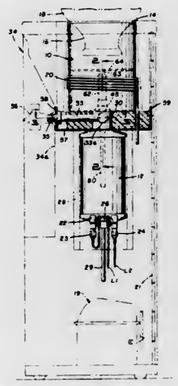
A storage device is provided in an electrophotographic apparatus which includes a storage chamber for storing and dispensing photoconductive elements or chips seriatim wherein the chips are fed from an upper receiving end of the storage compartment to a lower dispensing end thereof by gravity and are held in a substantially horizontal position as they travel from the upper chip receiving end to the lower chip dispensing end to reduce jamming. The chips are fed into the storage chamber by a pair of offset pressure rollers which hold the chips substantially horizontal until its forward end extends over a pair of guide rails attached to the side of the storage compartment so that notches in the photoconductive elements engage the rails. The storage compartment takes the form of a parallelepiped having offset upper and lower ends with sloping side walls so that the chips slide downwardly and forwardly on a cushion of air formed between the chips. The lowermost chip is fed from the storage chamber by a pusher mechanism which causes the chips to be moved forwardly off of supporting feet. A spring detent deflects the chip downwardly onto transport rollers which advance the chips through the electrophotographic apparatus.

3,698,603

WATER-DISTRIBUTING SYSTEM FOR A HOT AND COLD DRINKING WATER DISPENSER

Richard J. Radcliffe, Gahanna, Ohio, assignor to Ebco Manufacturing Company, Columbus, Ohio

Filed July 9, 1971, Ser. No. 161,052
Int. Cl. B67d 5/62
U.S. Cl. 222—146 R **6 Claims**



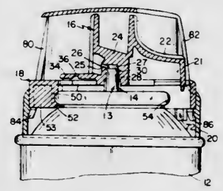
An inverted bottle-type drinking water dispenser having a pair of vertically spaced, water cooling and heating receptacles joined by a readily demountable water-distributing manifold having passages therein connecting the receptacles with a pair of externally accessible faucet valves. A central conduit interconnects the water-cooling and heating receptacles and is provided with baffle means to minimize water turbulence and thermosyphoning between the heating and cooling receptacles.

3,698,604

DISPENSING CONTROL STRUCTURE FOR PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 2, 1969, Ser. No. 863,093
Int. Cl. B65d 83/14
U.S. Cl. 222—182 **11 Claims**



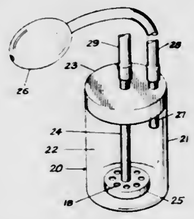
A pressurized dispensing package in which a container having a material discharge valve including a discharge aperture and a manually operable valve actuating surface is provided with a rotatable cover which has one or more wall structures, as required, to cover simultaneously both the discharge aperture and actuating surface, and structure defining one or more apertures for simultaneously exposing both. The container and cover include mutually engaging surfaces which limit the relative rotational movement of container and cover between two positions for alternating exposure and covering of the aperture and actuating surface for periods of use and non-use respectively, by rotating the cover in reverse directions. The mutually engaging surfaces are constructed to have portions co-circumferential of each other which abut one another during engagement.

3,698,605

DISCOVERY IN SOLUTION DISPENSERS

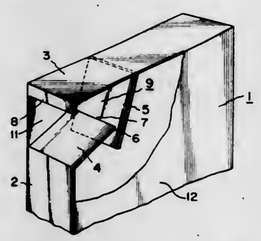
Sverre Quisling, 1240 Sherman Avenue, Madison, Wis.

Filed March 26, 1971, Ser. No. 128,346
Int. Cl. B01f 1/00
U.S. Cl. 222—190 **4 Claims**



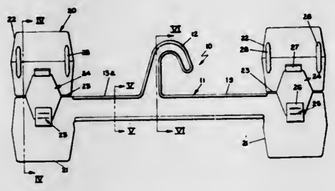
Apparatus for dispensing solution of a substantially uniform concentration. The apparatus has a flow chamber with an inlet and an outlet. A liquid solvent is admitted to the flow chamber and washes over a soluble substance which is bonded to an insoluble carrier member restrained within the flow chamber for forming a solution to be dispensed.

3,698,606
CONTAINER HAVING QUANTITATIVE MEASURING CHAMBER FOR GRANULAR MATERIAL OR THE LIKE
Katsuhiko Wakamatsu, 5-go, 10-ban, 2-chome, Momoi, Suginami-ku, Tokyo-to, Japan
Filed Oct. 21, 1969, Ser. No. 868,075
Claims priority, application Japan, Oct. 29, 1968, 43/78642
Int. Cl. G01f 11/26
U.S. Cl. 222—454 7 Claims



There is described a dispensing container particularly suitable for powdery or granular materials, whereby a predetermined amount of the content material may be dispensed at every one tilting operation of the container, such container essentially comprising a measuring chamber defined by an end of a slant wall adapted to flow the content material to said chamber, a part of an external wall of the container and a slant intercepting wall having a predetermined angle with respect to said external wall, with a space being formed between said end of the slant wall and said slant intercepting wall to provide an inlet for the content material to be introduced into said measuring chamber.

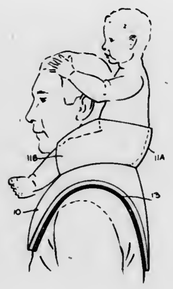
3,698,607
GARMENT CLAMPING HANGER
John H. Batts, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed March 10, 1970, Ser. No. 18,130
Int. Cl. A47j 51/14
U.S. Cl. 223—96 10 Claims



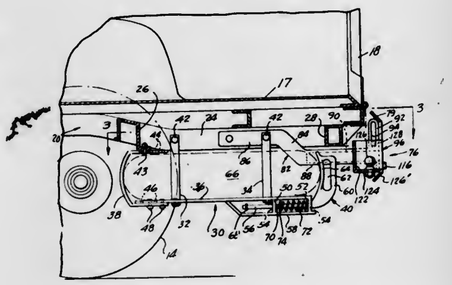
A garment hanger having an elongated body member, a hook and at least one garment gripping clamp and a latch and keeper combination for locking the clamp in closed position. The entire hanger including the body, hook, clamps, latches and keepers being so arranged that it can be molded as a single, integral part in a two-piece mold without the use of cams.

3,698,608
SHOULDER SADDLE ASSEMBLY
Clive E. Entwistle, 44 East 67th Street, New York, N.Y.
Filed July 2, 1971, Ser. No. 159,414
Int. Cl. A47d 13/02
U.S. Cl. 224—6 6 Claims

A shoulder saddle assembly which may be worn by an adult to support and carry a child or injured adult with minimal effort and without the need for the bearer to hold the feet of the passenger or for the passenger to grip the head of the bearer. The assembly is constituted by a yoke member fitting over the head of the bearer and adapted to rest on the shoulders of the bearer, the yoke including a breast plate and a back plate to afford an effective distribution of the load. Removably secured to the yoke member is a cowl-shaped saddle piece, having a curved rear wall to receive the posterior of the passenger and rolled-in side walls to accommodate the passenger's thighs.

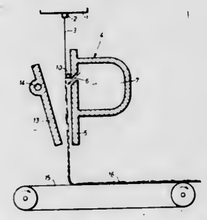


3,698,609
COMBINATION HITCH BUMPER AND SPARE TIRE CARRIER
Clifford C. Lund, Box 384, Moroni, Utah
Continuation-in-part of Ser. No. 819,396, April 25, 1969, abandoned. This application April 5, 1971, Ser. No. 131,360
Int. Cl. B62d 43/00
U.S. Cl. 224—42.05 12 Claims



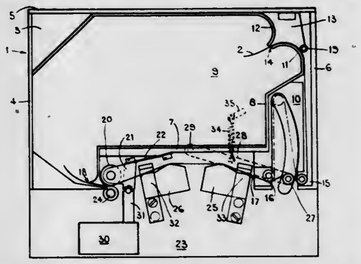
A combination hitch, bumper and spare tire carrier including a cradle formed of straps to seat a spare tire horizontally below the bed of a towing vehicle, a spring-pressed tire clamp secured to one of said straps and engaging the spare tire to hold the same in said cradle, a pair of wrap-around bumpers secured to longitudinal rails of the vehicle frame and protecting the rear corners of the towing vehicle, a hitch plate joined to and extending between said bumpers to hide and prevent access to the spare tire, said hitch plate being releasable from the bumpers and hingedly mounted to lift and turn to a raised position providing access to the spare tire for ready removal thereof in a rearward direction.
In a modified form of the invention the spring-pressed tire clamp is omitted and the tire is retained in place by the hitch plate.

3,698,610
PROCESS AND DEVICE FOR THE MANUFACTURE OF A NON-WOVEN MATTED WEB FROM SYNTHETIC YARN
Karl-Heinz Feltgen, Dormagen, and Gunther Espanion, Cologne, Mauenheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 17, 1969, Ser. No. 833,934
Claims priority, application Germany, June 22, 1968, P 17 60 713.5
Int. Cl. B65h 51/16
U.S. Cl. 226—7 8 Claims



A process and apparatus for the manufacture of a non-woven matted web from synthetic yarn is provided wherein a set of doffed filaments is deflected through an angle of about 15° to 40° by a supersonic jet.

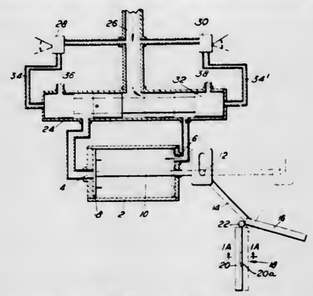
3,698,611
WEB FEEDING APPARATUS
Kenneth Frederick C. Twine, Uxbridge, England, assignor to International Computers Limited, Putney, London, England
Filed Nov. 4, 1970, Ser. No. 86,869
Claims priority, application Great Britain, Nov. 6, 1969, 54,402/69
Int. Cl. B65h 17/42
U.S. Cl. 226—50 2 Claims



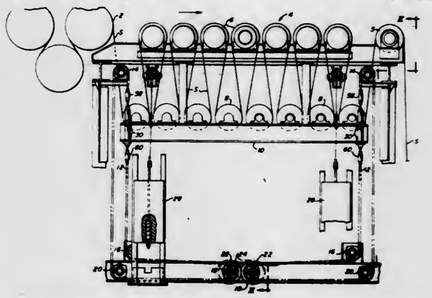
Apparatus for feeding a web of recorded medium such as plastic or paper tape has a capstan roller for feeding a web past a read/write station in a first direction and a device is positioned upstream of the station automatically to form a loop in the web when the capstan roller is disengaged from the web to move a fixed length of the web in a reverse direction past the station to permit reading or re-recording of the information on the web.

3,698,612
PNEUMATIC DEVICE FOR FORWARDING FILAMENTARY MATERIAL
James Brock, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 2, 1970, Ser. No. 77,408
Claims priority, application Great Britain, Oct. 10, 1969, 49,831/69
Int. Cl. B65h 17/32
U.S. Cl. 226—91 8 Claims

A pneumatic forwarding device suitable for automatic string-up with a running band of material, especially in processes in which the pneumatic forwarding device is reciprocatably traversed, comprises two hinged sections which normally firmly abut with each other, the plane of their abutment intersecting with the internal passageway through which a band of continuous material is forwarded, but not intersecting with a passageway through which the forwarding fluid is induced into the device. Separation and close abutment of the sections of the forwarding devices is effected automatically by means of transducers which sense the position of the forwarding device relative to the running band of material.



3,698,613
STRIP ACCUMULATOR
Howard W. Gordon, and James N. Shepard, both of Concord, Calif., assignors to United States Steel Corporation
Filed Jan. 15, 1971, Ser. No. 106,831
Int. Cl. B65h 17/42
U.S. Cl. 226—118 6 Claims

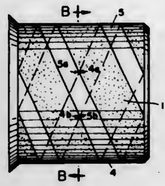


A strip accumulator including fixed rolls, a vertically movable carriage with a plurality of rolls thereon, the strip passing alternately around the fixed and carriage rolls, and a chain at each corner of the carriage for moving it vertically has novel means for leveling the carriage. The leveling means includes a female threaded member secured to each corner of the carriage, an elongated male threaded member threaded into each female member, and a rod movable with each male member having its ends connected to the ends of the associated chain.

3,698,614
GODET FOR YARN TRANSPORT AND STRETCHING APPARATUS
Bernhard Mohr; Heinz Engel, both of Kelsterbach, Germany, and James Watt Ijsbrand Heijnis, Arnhem, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.
Filed May 15, 1970, Ser. No. 37,824
Claims priority, application Germany, May 17, 1969, P 19 25 210.9; Feb. 12, 1970, P 20 06 235.5
Int. Cl. B65h 17/20
U.S. Cl. 226—193 5 Claims

A rotatable godet in apparatus for stretching and transporting yarn, thread or similar filamentary materials, said godet

having a cylindrical yarn contacting surface in which relatively large matte-chromed or roughened surface portions are

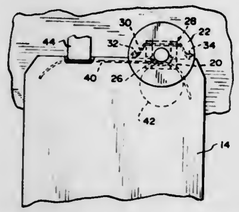


separated by two diametrically opposed and relatively narrow glossy-chromed surface bands extending longitudinally or helically along the godet circumference.

3,698,615
SYNCHRONOUS MOTOR MOUNTING SYSTEM FOR SPEED CONTROL

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 1, 1971, Ser. No. 111,573
Int. Cl. B65h *17/20*
U.S. Cl. 226—194 **5 Claims**



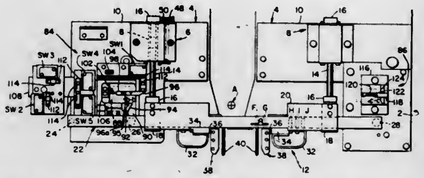
A synchronous motor mounting system is provided for supporting a drive motor so that variations in motor speed are absorbed within the mounting system to produce a substantially constant linear speed at the output shaft of the motor. The mounting system is used in a tape player to support a motor which operates to transport a magnetic tape and to substantially reduce flutter caused by drive motor speed variations. The mounting system includes a leaf spring for supporting the motor and is mechanically tuned to a resonant frequency that will minimize flutter. The motor is a slow speed motor and can be used for direct drive of the capstan shaft of the tape player without interposing gear reducing means or pulleys between the capstan shaft and motor.

3,698,616
GAGING MECHANISM FOR FASTENER ATTACHING MACHINE

William A. Erhardt, Jr., South Weymouth, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed June 23, 1971, Ser. No. 155,756
Int. Cl. A41h *37/04*
U.S. Cl. 227—3 **7 Claims**

In combination with a snap fastener attaching machine, there is an improved gaging mechanism for holding the work and transporting the work to selected positions relative to the fastener setting tools for the attachment of a plurality of fastener components in a spaced, predetermined pattern. The work transporting portion of the gage carries a key movable therewith through a keyway on a fixed section of the gage and the keyway defines a network through which the key travels to establish the spacing and pattern of the fastener components. A plurality of spaced switches which control the operation of the fastener setting tools are mounted on the gage proximate the keyway and the said switches are adapted to be sequentially, momentarily closed by the key and a switch actuator on the work moving portion on the gage as the key travels through the keyway network, whereby the fastener setting

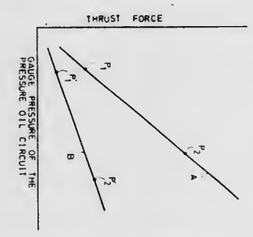


tools are automatically fired at intervals determined by the speed at which the work is moved and when the selected areas of the work to which fasteners are to be attached in the desired pattern are successively positioned at the interface of the setting tools.

3,698,617
APPARATUS FOR OPTIONALLY SELECTING THRUST FORCE APPLIED TO THE WORKPIECES IN THE FRICTION WELDING

Shigeo Fukaya, 38-1, Miyoshicho Duza Myochiaza Fukanhazama, Nishikamo-gun, Aichi-ken, and Nobuo Takagi, 50-36, Daza Ogahieaza Kamisawawatari, Kariya-shi, Aichi-ken, both of Japan

Filed Feb. 10, 1969, Ser. No. 797,772
Claims priority, application Japan, Feb. 10, 1968, 43/8492
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **9 Claims**



Apparatus for optionally selecting a first thrust force required for generating heat by the frictional contact between two workpieces and a second thrust force larger than the first thrust force for performing an upset operation during a friction welding operation. Two series of thrust force generating systems are selectively combined to actuate a hydraulic cylinder of the friction welder. In a typical embodiment, one thrust force generating system is used for generating the thrust force required for performing the upset operation while the other thrust force generating system is used for generating the thrust force required for generating heat. The above-mentioned combination of thrust forces is optionally selected by a fluid circuit comprising a plurality of electromagnet valves, pressure reducing valves and their connections.

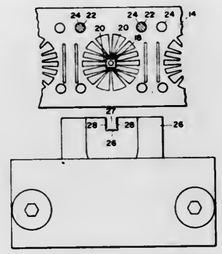
3,698,618
FACE BONDING MACHINE

Robert W. Helda, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 798,657, Feb. 12, 1969, abandoned. This application Nov. 29, 1971, Ser. No. 203,007
Int. Cl. B23k *21/00*; B23p *3/02*
U.S. Cl. 228—3 **7 Claims**

This disclosure discloses a method of bonding and a face bonding machine adapted to bond an integrated circuit die

having a plurality of electrodes thereon to a substrate having a plurality of leads. The machine has a receptacle which

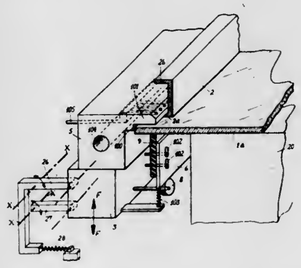


mechanically registers the die in its bonding position on top of the substrate leads.

3,698,619
DEVICE FOR THE MANUFACTURE OF AN INSULATING PANE UNIT

Michel Jacquot, Beynes, and Charles Amicel, Carrieres, Seine, both of France, assignors to Boussois Souchon Neuvesel, Paris, France

Filed July 6, 1970, Ser. No. 52,525
Claims priority, application France, July 24, 1969, 6925254
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—6 **14 Claims**



A method for forming a soldered joint between one flange of a sectional lead strip and the edge of a glass plate which has previously been metallized with tin, especially for the manufacture of an insulating pane unit formed by two glass panes separated by an intercalary U-section strip. The flange of the sectional strip is applied against the glass pane under controlled pressure, the contacting surfaces are maintained at a sufficiently high temperature to melt the tin without impairing the crystal structure of the lead and the soldered joint is then allowed to cool while the pressure is maintained until the tin has set.

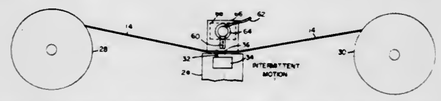
The device for carrying out the method comprises a stationary table along the edge of which is mounted a heating jaw for clamping one of the panes of the double pane unit together with the adjacent flange of the sectional strip. The jaw is provided on the one hand with a heating lip and on the other hand with a plate clamp, means being additionally provided for adjusting the relative spacing of the flange and of the plate clamp.

The method and device aforesaid are intended to increase the speed and regularity of production and to permit of automatic operation.

3,698,620
APPARATUS FOR CONNECTING LEAD PORTIONS OF A LEAD FRAME TO RESPECTIVE PADS ON A CHIP

Harry J. Geyer, Phoenix, Ariz., and Robert W. Helda, Hollywood, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed March 25, 1970, Ser. No. 22,445
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—6 **12 Claims**

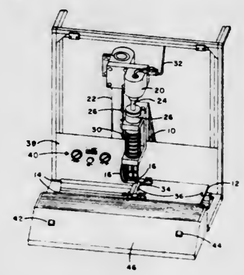


Wire bonding is eliminated in the assembly of a micro-electronic chip having bonding pads by a process involving the direct bonding of the bonding pads to the ends of respective inwardly extending leads comprising portions of a frame member. A machine is provided for properly positioning a chip with respect to a frame member and for simultaneously bonding of all leads to the ends of all the bonding pads of a semiconductor integrated circuit chip in one step. Many frame members are provided in a strip which may be supplied rolled up on a reel. After the pads on the chip are bonded to the ends of the leads of the frame member, the strip may be rolled on another reel and transported to another machine for performing another step or other steps thereon.

3,698,621
BONDING APPARATUS

Jack J. Burke, Richardson, and Joseph M. Guillot, Jr., Plano, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Oct. 27, 1970, Ser. No. 84,288
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **6 Claims**



Apparatus for automatically thermo-compression bonding of leads to microelectronic circuits thereby obviating wire bonding. Horizontally movable table means is provided beneath vertically movable bonding means with indexing means provided to automatically and sequentially move a plurality of circuits and lead frames on the table into position for bonding.

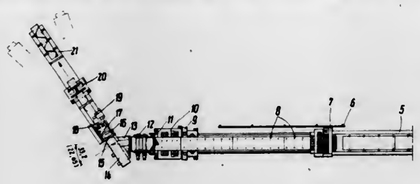
3,698,622
METHOD AND DEVICE FOR SUPPLYING A BAND MADE OF SHEET METAL PLATES TO A SPIRAL WELDED TUBE MILL

Heinz Krakow, and Carl Niedorf, both of Hamburg, Germany, assignors to Blohm & Voss AG, Hamburg-Steinwerder, Germany

Filed April 6, 1971, Ser. No. 131,737
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **5 Claims**

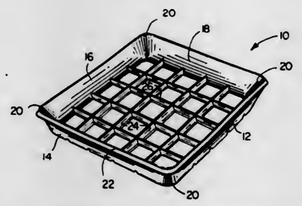
The method and device of the invention provide for supplying sheet metal plates of substantial thickness to the deforma-

tion device of a spiral welded tube mill and comprises the intermittent feeding of individual sheet metal plates to a prefabrication device which is arranged ahead of a conventional spiral weld tube mill. In this prefabrication device, the individual sheet metal plates are first welded together to form



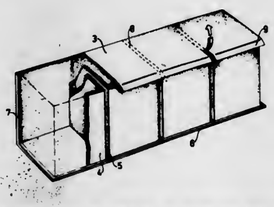
double length plates which then are connected by welding to a previously completed band comprising serially connected double length sheet metal plates whose longitudinal edges are trimmed and chamfered before being conveyed into the deformation device which forms the band into a tube and unites the abutting longitudinal edges to form a spiral weld.

3,698,623
OPEN BOTTOM MEAT CONTAINER
Kenneth D. Bixler, Huntington, N.Y., assignor to Diamond International Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,545
Int. Cl. B65d *1/34*
U.S. Cl. 229—2.5 **6 Claims**



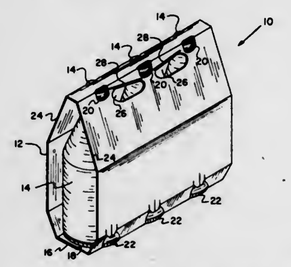
A meat container is provided formed of molded pulp which has a plurality of ribs of V-shaped cross section extending across the bottom defining a plurality of open bottom windows.

3,698,624
PACKAGING CONTAINERS OF PARALLELEPIPED SHAPE
Sven Olof Soren Stark, Sodra Sandby, Sweden, assignor to Cordotex SA, Lausanne, Switzerland
Filed June 3, 1970, Ser. No. 43,119
Claims priority, application Sweden, Aug. 13, 1969, 11242/69
Int. Cl. B65d *13/04*
U.S. Cl. 229—23 R **11 Claims**



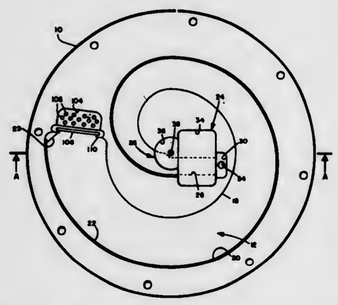
A packaging container in which an element having at least one channel-shaped portion is enclosed by a channel-shaped member thus forming one or a connected series of parallelepiped shaped containers; the edges of the element being sealed to the member. A series of containers may be separated from each other and each container may have means for facilitating the opening thereof.

3,698,625
ARTICLE CARRIER HANDLE
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Filed July 23, 1971, Ser. No. 165,541
Int. Cl. B65d *5/46, 71/00*
U.S. Cl. 229—52 B **4 Claims**



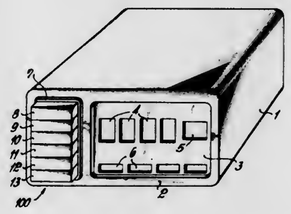
An improved carrying handle for an article carrier of the type having an opening in the upper portion thereof whereby the user inserts his fingers in the opening of the carrier in order to transport the carrier. The carrier handle comprises a pair of inclined openings which are so designed that the tab formed from the opening bridges the gap from one side of the carrier to the other side to cushion the fingers of the user against the weight of the article. The angle of the tabs also allows the weight of the carrier to be evenly distributed on the fingers of the user since the tab angle corresponds to the natural angle of the fingers in the clasped position.

3,698,626
CENTRIFUGE SEPARATOR
Payasada Kotrappa, and Max E. Light, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed May 17, 1971, Ser. No. 144,036
Int. Cl. B04b *3/00*
U.S. Cl. 233—2 **7 Claims**



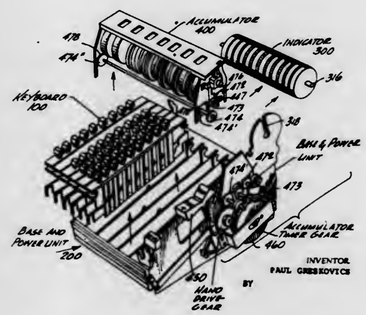
A centrifuge separator with spiral channel of expanding width from the center of the spiral, to receive material to be separated at the center of the spiral, and with means for laminarly flowing a stream of gas through the channel to carry the material therethrough and for collecting separated materials at different locations along the outer wall of the channel.

3,698,627
TAXIMETER ARRANGEMENT WITH EXCHANGEABLE CONTROL UNIT
Heinz Kelch, Buchenberg, and Eduard Schuh, Villingen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany
Filed April 13, 1971, Ser. No. 133,514
Claims priority, application Germany, April 18, 1970, P 20 28 640.7
Int. Cl. G07b *13/00*
U.S. Cl. 235—30 R **18 Claims**



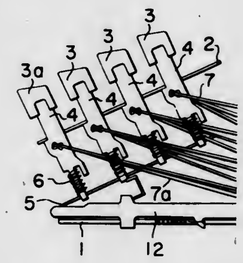
A taximeter apparatus, including distance and time measuring devices, a calculator, and an indicator, is mounted in a housing into which any one of several control units can be selectively inserted. Each control unit has plugs which engage sockets in the housing when the control unit is inserted and operative. Each control unit has different manual operating means for selecting functions of the taximeter apparatus, such as calculating different charges in accordance with different rates.

3,698,628
BUSINESS MACHINE
Paul Greskovics, Manhattan Beach, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,063
Int. Cl. G06c *29/00*
U.S. Cl. 235—60 R **8 Claims**



A cash register is provided with an accumulator and a display. On ADD cycles of the cash register, the accumulator is moved in one direction to engage the digit tape by a pair of eccentrics, and on TOTAL cycles, it is moved in another direction by another eccentric to transfer digital information to the display. Control of the eccentrics is provided by an axially movable timing gear which provides a modified geneva-type mechanical movement.

3,698,629
MECHANICAL CALCULATING APPARATUS FOR ADDING, SUBTRACTING, MULTIPLYING AND DIVIDING
Thomas K. McGourty, Aptos, Calif., assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 19, 1969, Ser. No. 851,182
Claims priority, application Japan, Aug. 20, 1968, 43/59480
Int. Cl. G06c *23/00, 11/04, 19/04*
U.S. Cl. 235—63 G **6 Claims**



A calculating machine for executing addition, subtraction, multiplication and division wherein a number set into the machine is printed as an effective number in accordance with the decimal orders of the calculating machine for visual observation in addition or subtraction characterized by the provision of a dividend introduction mechanism and by that after setting a dividend in a pin box and depressing a division ( ) key:

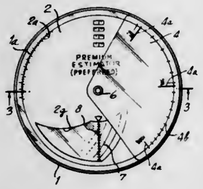
1. a type bar is moved upwardly in the first half rotation of the first rotation of a main shaft without transferring the dividend to an accumulator so that the dividend is printed in such a manner that the least significant digit of the effective number representing the first decimal order of the dividend coincides with a position of the least significant digit of an effective number in addition or subtraction;
2. in the last half of said first rotation of said main shaft, said pin box is shifted in such a manner that the most significant digit of the dividend set in said pin box may be transferred to a position of the most significant digit of a number or total in said accumulator;
3. during the second rotation of said main shaft, the dividend is opposed to into said accumulator in such a manner that the most significant digit of the dividend is transferred in the most significant digit of the number or total in said accumulator; and
4. during the second rotation of said main shaft, caution pinions are cleared and reset to zeros.

3,698,630
INSURANCE CALCULATOR
George W. Dick, Stamford, Conn., and Norman Diamond, Laurelton, N.Y., assignors to Metropolitan Life Insurance Co., New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,828
Int. Cl. G06g *1/08*
U.S. Cl. 235—78 **4 Claims**

The calculator comprises a circular background disc having a logarithmic premium scale, and a foreground disc rotatable on the background disc and having a logarithmic amount of insurance scale adapted to cooperate with the premium scale. The background disc also has one or more concentric linear age scales observable through windows in the foreground disc. The foreground disc carries index lines cooperating with the age scales. Each age scale corresponds to a different plan of insurance. A sector shaped cursor is pivotally connected to the center of the background and foreground discs and is provided on its periphery with a period of time scale which cooperates with the premium scale to indicate the amount of

premium required for selected time periods.

For more complex combinations of types of insurance, which consist essentially of a first amount of one type of insurance and a second amount of another type, with their corresponding premiums, the background scale is provided with a family of non-radial age curves which are viewable through a



window on the foreground disc. The window has a radial line calibrated in terms of percentage, to indicate the percentage of the total insurance which must be carried in one particular type of insurance. The cursor also has on its periphery a percentage scale which cooperates with the amount of insurance scale to show the value of the percentage read off the radial line.

3,698,631

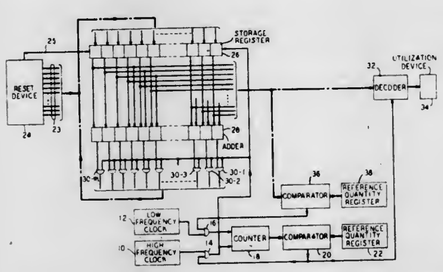
APPARATUS FOR GENERATING A LOGARITHMICALLY RELATED SERIES OF DIGITALLY CODED SIGNAL QUANTITIES

Rudolph Charles Drechsler, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 19, 1970, Ser. No. 91,113

Int. Cl. G06f *15/34, 7/385*

U.S. Cl. 235—152 **14 Claims**



By repeated application of the contents of an accumulator to an adder at both full and reduced numerical significance and reapplication of the output sum of the adder to the accumulator, the representative numerical signal stored in the accumulator is made to rise exponentially. This process is periodically interrupted to permit use of the logarithmically related digitally coded signal quantities stored in the accumulator to drive any digitally programmable utilization device.

3,698,632

FLUIDIC ADDER-SUBTRACTER UTILIZING THRESHOLD LOGIC

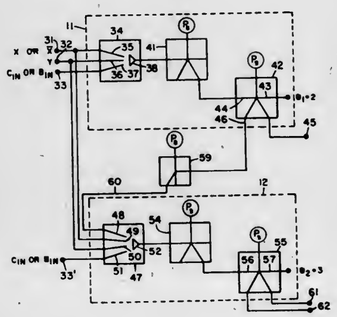
Herbert M. Eckerlin, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,469

Int. Cl. G06m *1/00*

U.S. Cl. 235—201 PF **7 Claims**

A fluidic adder-subtracter stage utilizing the principles of threshold logic. This circuit consists of two fluidic threshold gates, a first having three inputs and a second having four inputs. The two bits from the given order and the carry bit or the borrow bit from the previous order are coupled to the three first gate inputs and three of the second gate inputs. An output from the first gate is coupled to the fourth input of the second



gate. When the stage is utilized as an adder the first gate provides a carry out signal and the second gate provides a sum signal. When it is used as a subtracter, the first gate provides a borrow out signal and the second gate provides a difference signal.

3,698,633

THERMAL CONTROL ELEMENT

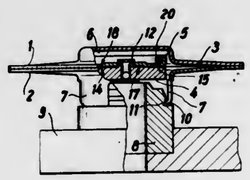
Josef Lingnau, Bremen-Borgfeld, Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co., Bremen, Germany

Filed Aug. 2, 1971, Ser. No. 168,262

Claims priority, application Germany, Aug. 1, 1970, P 20 38 344.2

Int. Cl. G05d *23/12*

U.S. Cl. 236—99 **4 Claims**



A thermal control element having a stroke membrane, a shutoff means, and a counter plate. The stroke membrane is welded to the shutoff means while the counter plate is connected to the shutoff means by rivet means. Corresponding clamping faces are provided on the shutoff means and the counter plate for clamping unwelded portions of the stroke membrane therebetween.

3,698,634

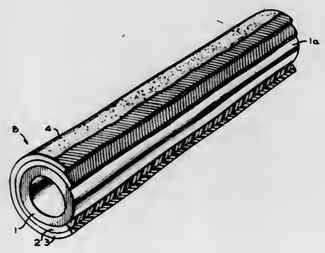
INSULATED RAIL JOINTS

William R. Hamilton, Jr., Naperville, Ill., assignor to Portec, Inc., Chicago, Ill.

Filed Oct. 2, 1968, Ser. No. 764,563

Int. Cl. E01b *11/54*

U.S. Cl. 238—152 **11 Claims**



A rail joint including insulated bushings for the joint bolts comprising a metal core having a first layer of a dielectric strengthening composition bonded thereupon and an outer bonded layer of a cold flowable dielectric composition.

3,698,635

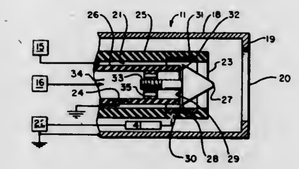
SPRAY CHARGING DEVICE

James E. Sickles, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Feb. 22, 1971, Ser. No. 117,494

Int. Cl. B05b *5/02*

U.S. Cl. 239—3 **15 Claims**



An electrostatic spray charging device wherein means in a passageway or a barrel of such device directs a jet of air between a charged electrode in the passageway and a plurality of liquid termini at an orifice within the passageway in a manner as to direct particles atomized from the plurality of termini generally away from the charged electrode and the side walls of the passageway. The charged electrode and the liquid termini are adapted to be connected to an electrical source thereby creating a potential difference between the charged electrode and the liquid termini. The potential difference therebetween provides a high intensity electric field at the liquid termini whereby particles atomized from the individual liquid termini carry a high charge-to-mass ratio. Preferably, the jet of air passing between the charged electrode and the liquid termini assists in atomizing liquid particles from the liquid termini. The charged liquid particles are attracted to and deposited upon the surface of an object or article at a particle attracting potential.

3,698,636

DEVICE FOR THE ELECTROSTATIC APPLICATION OF PROTECTIVE COATINGS WITH SYNTHETIC POWDERS BY THE USE OF SPRAY GUNS

Imre Szasz, St. Gallen, Switzerland, assignor to Graco Inc., Minneapolis, Minn.

Filed April 23, 1971, Ser. No. 136,900

Claims priority, application Germany, May 6, 1970, P 20 22 088.6

Int. Cl. B05b *5/00*

U.S. Cl. 239—15 **10 Claims**



A material coating system to apply charged materials to objects to be coated by electrostatic spray guns. The spray gun itself has a double cone-shaped deflecting member in its barrel and an adjustable collar on its barrel to change the spray pattern. An internal electrode in the material conveying tube charges the material and a wound wire ground connection attached to the gun prevents an accumulation of charge at the gun. A material storage bin with multiple venturis feeds material to the gun by suction via its conveying tube. In addition, a polarity reversing circuit allows the power source to apply different charges to sprayed materials.

3,698,637

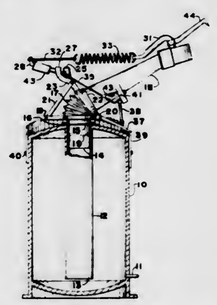
SPRAY DEVICE FOR IRRIGATION PURPOSES

Floyd W. McCullough, 4325 North Delno, Fresno, Calif.

Filed June 21, 1971, Ser. No. 154,910

Int. Cl. A01g *27/00*

U.S. Cl. 239—68 **10 Claims**

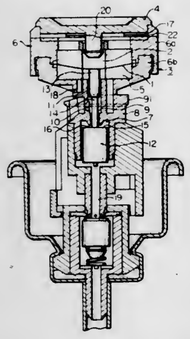


A spray device which can cover a wide variety of sized and shaped areas, and which can be easily adjusted to cover a desired area. In operation, the device stores inflowing water under pressure, and energy in the form of compressed air, in a pneumatic pressure tank and intermittently discharges the water through a nozzle at rates greater than the inflow rate. With each discharge cycle, the nozzle is automatically rotated to point in a slightly different direction and adjusted for pressure at which discharge begins, and for quantity discharged, so that the spray pattern will extend to desired boundaries. Features are incorporated which provide uniform coverage as the nozzle rotates, with progressive discharges. From a given supply source and conduit, a larger nozzle can be used, (and a larger area sprayed) than with conventional spray devices. The device is not subject to clogging from debris in the supply source and will operate satisfactorily on varying source pressure and/or throttled inflow conditions.

3,698,638
DEVICE FOR AUTOMATICALLY AND PERIODICALLY SPRAYING A PRESSURIZED LIQUID

Taisho Iketani, 4-14-6 Negata, Nakano-ku, Tokyo, Japan

Filed June 11, 1971, Ser. No. 152,236
Int. Cl. B05b 1/28
U.S. Cl. 239—75 4 Claims

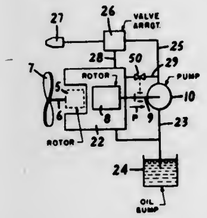


An improved device for automatically and periodically spraying a pressurized liquid comprises a spray nozzle connected to a liquid source through valve means, a heat-responsive bimetal disc for periodically actuating spraying mechanism and means for defining a chamber for containing the bimetal disc, which defining means for bimetal disc chamber is provided with a path for conducing water condensed on the outside surface of the defining means to a front portion of the spray nozzle, whereby the condensed water is blown off together with the pressurized liquid sprayed through the nozzle.

3,698,639
OIL BURNER SYSTEM WITH MOTOR DRIVEN PUMP CONTROLLING BY-PASS VALVE

Kyrre Guttorm Sjotun, Rypevej 62, Langeso pr. Nordborg, Denmark

Division of Ser. No. 727,836, May 9, 1968. This application June 29, 1970, Ser. No. 50,875
Int. Cl. B05b 9/00
U.S. Cl. 239—124 1 Claim

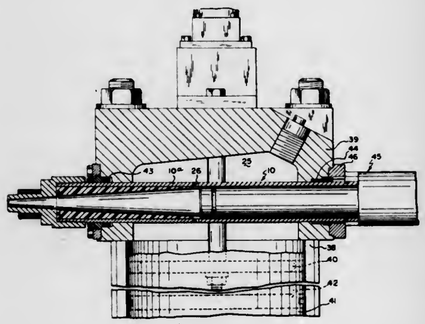


An oil burner system in which a fuel oil pump and the air blower are independently driven by a common motor having a single stator and two independently driven rotors. One rotor is connected to the pump and the other to the air blower so that the inertia of the pump drive is reduced and it comes to a stop quicker. The rotor for driving the pump is disposed in an oil-filled compartment so that it is damped. The system is provided with a by-pass valve connecting the discharge side of the pump with its suction controlled by the motor shaft which is biased to open the by-pass valve when the motor is in a deenergized condition. When the motor is energized the shaft is attracted axially electromagnetically and it closes the by-pass valve. When the motor is deenergized it opens the by-pass valve, the pump stops relatively quickly and the blower continues to blow air to ensure burning of all oil supplied from the burner and avoid cooking on the burner and elsewhere.

3,698,640
WAX INJECTION NOZZLE

Virgil V. Stanciu, Rocky River, Ohio, assignor to Tempcraft Tool & Mold, Inc., Cleveland, Ohio

Filed July 14, 1971, Ser. No. 162,480
Int. Cl. B05b 3/18
U.S. Cl. 239—187 12 Claims



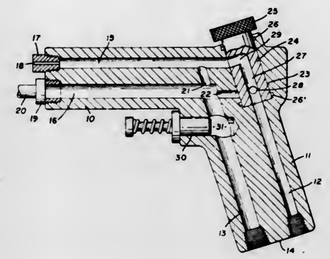
A nozzle assembly for injecting a flowable and moldable material, such as hot wax, into a die has an elongated generally cylindrical housing having a discharge nozzle at one end controlled by a valve in the housing which is frusto-conical converging toward the nozzle and seated against a complementary frusto-conical seat. The valve plug has a piston rod extending rearwardly axially of the housing and terminating in a piston housed in a tubular cylinder with pressure fluid means for causing movement of the piston to open and close the valve. An adjustable stop is provided at the rear end of the housing against which an extension of piston engages to limit opening movement of the valve. The housing is adapted to be assembled in a reservoir full of hot wax under pressure which enters through an opening in the housing when the valve is open so as to flow through the nozzle to a mold die. The complete housing is movable endwise through the hot wax reservoir to and from the die to be injected. The means for doing this comprises a piston on the housing which is encased in a tubular cylinder with means provided to apply pressure fluid against one or the other faces of this piston to move the entire housing lengthwise.

3,698,641
AIR PRESSURE AND VACUUM GUN

Vincent P. Lonardo, 5890 Salt Springs Road, Girard, Ohio

Filed Sept. 29, 1971, Ser. No. 184,803
Int. Cl. B05b 7/04
U.S. Cl. 239—434 4 Claims

An air pressure and vacuum gun incorporates a nozzle communicating with a chamber including Venturi jets arranged to direct air pressure and a liquid outwardly of the nozzle and alternately create a vacuum to return liquid therethrough.

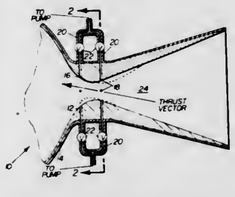


Valves in a compressed air delivery channel and a fluid connecting channel provide control of the air pressure and vacuum gun.

3,698,642
THRUST VECTOR CONTROL SYSTEM

Edward E. McCullough, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 4, 1966, Ser. No. 592,089
Int. Cl. B63h 25/46
U.S. Cl. 239—265.23 4 Claims

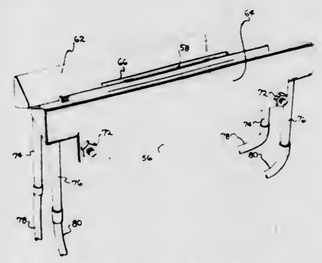


A thrust vector control system for a rocket motor wherein a pair of rows of injection ports are provided circumferentially of the nozzle for injection of fluid thereinto. Means for selectively varying the rate of flow of the fluid injected thereby creating a nonstructural, variable positioned throat to vary thereby the direction of the rocket motor thrust vector.

3,698,643
INERT GAS SHIELD FOR ATOMIC ABSORPTION OR FLAME EMISSION SPECTROMETER

John P. Cummings, and Timothy J. Gomoll, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Jan. 15, 1971, Ser. No. 106,824
Int. Cl. B05b 1/28
U.S. Cl. 239—299 1 Claim

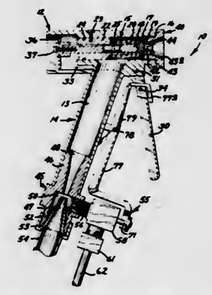


This invention relates to the use of an inert gas shield enveloping the flame of either an atomic absorption spectrometer or a flame emission spectrometer to improve the response of cations. Both the sensitivity and the precision of analysis of refractory metals and rare earth oxides are improved by the use of an inert gas shield (e.g., argon) to surround the flame in which the cations are excited. Argon gas is allowed to flow about the flame so as to form an envelope in such a manner as to stabilize the flame, retard oxidation of the ions, and increase concentration of elements in the ground state. Spatial distribution of "free atoms" in the flame has been found to depend not only upon the flame stoichiometry but also on the geometry of the flame, as well as upon a nonchemically active flame edge. The argon envelope gives improved flame geometry by reducing the flame waving and gives a nonchemically active flame edge.

3,698,644
COMBINATION ASPIRATOR AND SPRAY NOZZLE

David L. Nystuen, Bloomington, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Feb. 17, 1971, Ser. No. 116,066
Int. Cl. B05b 7/30
U.S. Cl. 239—318 6 Claims

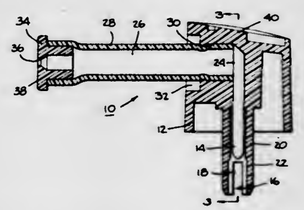


A portable hand-held spray gun having a hollow handle defining a water passageway therein, a venturi positioned in the water passageway and a product conduit line in communication with the throat of the venturi for injecting product (e.g. a liquid detergent) into the water flow. Two trigger-operated valves separately control the flow of water through the water passageway and the injection of the product into the water flow. A nozzle for forming a variable spray pattern is provided downstream of the venturi, the dimensions of the nozzle orifice and venturi throat being such that the injection rate of the product is essentially constant over a wide range of spray patterns.

3,698,645
SPRAY HEAD

Charles A. Coffey, Pinellas Park, Fla., assignor to Harris-Paint Company, Tampa, Fla.

Filed March 2, 1971, Ser. No. 120,169
Int. Cl. B05b 1/32
U.S. Cl. 239—573 7 Claims



A sprayhead for a pressurized aerosol dispenser includes an elongated expansion and mixing chamber upstream of the

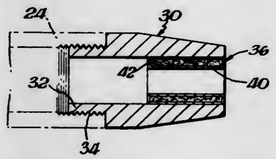
spray-forming nozzle orifice. Controlled expansion of the dispensed product and propellant mixture within the chamber enhances vaporization of the propellant, promotes uniform mixing of the vaporized propellant with the product prior to passage through the spray nozzle, and produces increased flow rates for a given nozzle orifice diameter.

3,698,646

COMPOSITE CARBON INSERT FOR GAS SHIELDED WELDING TORCH NOZZLE

William A. Robbs, Shoreham, N.Y., and Earl E. Conabee, Easton, Pa., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,039
Int. Cl. B05b *1/00*
U.S. Cl. 239—591 8 Claims



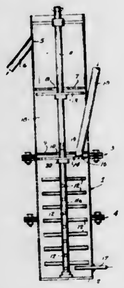
A carbon composite insert is mounted within the removable gas-conducting nozzle of a gas-shielded welding torch to prolong nozzle life and to render the inner surface thereof less adherent to weld splatter, thereby facilitating cleaning. The insert consists of a tubular base having a coating of pyrolytic carbon. The resulting composite insert exhibits enhanced physical strength and spalling resistance.

3,698,647

PROCESS FOR GRINDING PARTICULATE SOLIDS

John David Nye, Prescott, Ontario, Canada, assignor to Ferrox Iron Ltd., Prescott, Ontario, Canada

Filed Dec. 8, 1970, Ser. No. 96,127
Int. Cl. B02c *17/16*
U.S. Cl. 241—24 6 Claims



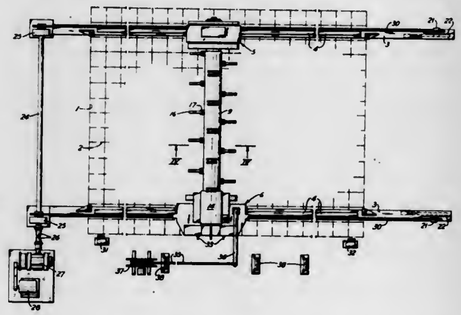
A process is described for grinding or pulverizing particulate solids. The process comprises continuously introducing a fluid dispersion of solid particles as feed into the lower portion of a vertical cylindrical vessel containing a particulate grinding medium. The grinding medium particles are initially larger than and compatible in composition with the feed particles. The dispersion is agitated with the grinding medium to effect pulverization of the solid particles and the moving agitated dispersion and grinding medium is forced upwardly against a fixed suppression plate having a central opening. At this position the mixture is centrifugally classified whereby smaller particles pass through the suppression plate opening as product and the larger particles are retained in the vessel. In this way the grinding medium particles are used until they are totally consumed with particles thereof small enough to pass through the classifier leaving the vessel as part of the product. The grinding medium particles being lost from the vessel in this manner are replaced by fresh grinding medium.

3,698,648

APPARATUS FOR CRUSHING LARGE LUMPS OF COAL AND THE LIKE

Bennie A. Rose, Mount Lebanon Township, Pa., assignor to Heyl and Patterson, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1970, Ser. No. 100,285
Int. Cl. B02c *13/02, 25/00*
U.S. Cl. 241—33 1 Claim



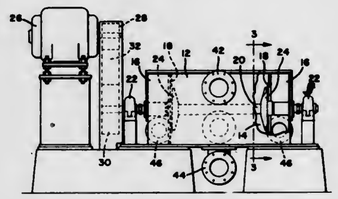
A pair of tracks are mounted beside opposite sides of a grid covering a hopper that receives coal or the like dumped from railroad cars. A horizontal shaft extends across the space between the tracks and is journaled at its ends in carriages mounted on the tracks. On one of the carriages there is means for continuously rotating the shaft that is provided with radially projecting means for striking and crushing lumps of material on the grid as the carriages are moved back and forth along the tracks.

3,698,649

SCREENING APPARATUS

William Herbert, Middletown, Ohio, assignor to The Black Clawson Company, Hamilton, Ohio

Filed Dec. 18, 1970, Ser. No. 99,553
Int. Cl. B02c *13/13*
U.S. Cl. 241—44 6 Claims



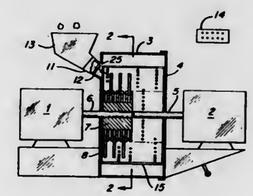
Screening and defibering apparatus which includes a chamber which is preferably, but not necessarily, rectangular in cross section, and which is subdivided into a central intake section and outwardly disposed outlet sections by a pair of spaced, parallel, foraminous walls. A slurry of the material to be treated is passed through an intake line into the intake section where it is subjected to mechanical and hydraulic shear forces by a pair of rotors, each of which is rotatably mounted in the intake section in closely spaced relationship to one of the foraminous walls. Accepted portions of the slurry pass through perforations in the foraminous walls into the outlet sections for removal through outlet lines while rejected material is bled from the intake chamber, either periodically or continuously, through a reject line. A rinse line may also be utilized, feeding into the intake chamber, to assist in purging the system.

3,698,650

APPARATUS FOR GRINDING GRAIN

Leslie Hugh Knight, c/o Robert Frayne and Co., Room 212, 1200 West Pender Street, Vancouver 1, British Columbia, Canada

Filed June 13, 1969, Ser. No. 833,104
Int. Cl. B02c *7/02*
U.S. Cl. 241—51 1 Claim



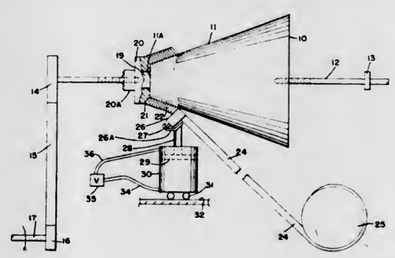
This invention generally relates to an apparatus familiarly known as hammermill used to grind grains, fodders, and gritty materials such as coal, glass and so on. This invention is a hammermill which has a high capacity and more uniform-sized output because of a plurality of counter-rotating hammers, as opposed to known uni-rotational hammermills.

3,698,651

TAPE WRAPPING ARRANGEMENT

Donald Miller, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 744,513, July 12, 1968, abandoned. This application March 1, 1971, Ser. No. 119,777
Int. Cl. B65h *81/00*
U.S. Cl. 242—7.23 7 Claims



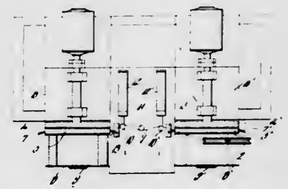
A tape wrapping arrangement requiring but a single drive means, in which tape is shingle wrapped about a rotating mandrel. Preimpregnated tape from its roll has its free end attached to a forward inclined surface of a sleeve carried by the mandrel and is fed in successive layers by a cylindrical roller. The roller is biased toward the mandrel by a double acting air cylinder of a free wheeling carriage. An adjustable knuckle structure interconnects the cylinder piston rod and the roller journal so that selected shingles angles may be wrapped.

3,698,652

CONTINUOUS WINDING APPARATUS

Kasumasa Morikawa, Ichihara-shi; Makoto Kobayashi, Nikko-shi; Hiromitsu Sato, Nikko-shi, and Jun Nakazima, Nikko-shi, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,305
Claims priority, application Japan, Nov. 4, 1968, 43/80456; Nov. 4, 1968, 43/80455; Nov. 4, 1968, 43/96022; Nov. 4, 1968, 43/96021; Nov. 4, 1968, 43/96020; Nov. 21, 1968, 43/85472; Oct. 2, 1969, 44/94050; Oct. 6, 1969, 44/95362; Oct. 6, 1969, 44/79872; Oct. 6, 1969, 44/79871; Oct. 6, 1969, 44/79873; Oct. 6, 1969, 44/79874; Oct. 7, 1969, 44/80135; Oct. 11, 1969, 44/96930; Oct. 13, 1969, 44/81669; Oct. 13, 1969, 44/81668; Oct. 14, 1969, 44/97765
Int. Cl. B65h *54/02*
U.S. Cl. 242—25 A 9 Claims



A continuous wire winding apparatus in which wire such as cable wire is wound continuously at high speed onto alternate spool means. The apparatus has two parallel spool driving shafts spaced from each other in a plane, means for driving the driving shafts, wire traversing means for traversing wire to be wound, and shifting means for shifting wire to be wound between the shafts. Spool means is removably mounted on the shafts, each spool means having flanges thereon, an end plate mounted coaxially with the spool means at one flange of the spool means, and a wire catcher projecting from the circumference of the end plate. A barrel is mounted coaxially with the spool means for having wound thereon the finishing end portion of the wire to be wound, and a cover is non-rotatably mounted around the outside circumferential surface of said barrel for preventing whipping of the free end of the wire. A wire guide means is mounted between the shafts and movable parallel to the shafts for engaging the wire being wound on one spool means and guiding it to the wire catchers on said spool means during transfer to the other spool means. Means is connected to the wire guide means for moving the wire guide means, and wire cutting means is provided adjacent the wire guide means to which the wire being shifted from one spool means to the other is guided for being cut by the guide means and said wire catcher on the one spool means. Wire extending through the traversing means and shifting means is wound on one spool means while being traversed back and forth along the spool means as the spool means is rotated on one of the shafts, and when a predetermined amount of wire has been wound, the shifting means is moved to transfer the wire to the other spool means and the wire is engaged by the wire guide means and guided to the cutting means and cut. The end portion of the cut wire on the one spool is engaged by the wire catcher and caught within the cover on the barrel.

3,698,653

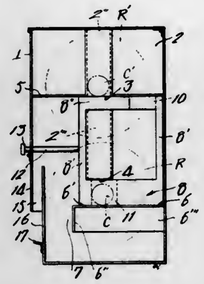
TOILET PAPER ROLL HOLDING DEVICE

Tadasu Okamura, 261 Narashino Machi 4-chome, Funabashi, Japan

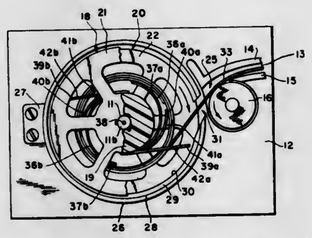
Filed May 5, 1971, Ser. No. 140,324
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 7 Claims

A toilet paper roll holding device comprising a housing; a pair of opposite and spaced vertical paper roll guide groove forming means provided within said housing; track means pro-

vided within said housing below said guide groove forming means; weir members slidably received in said track means for blocking and allowing the falling of a toilet paper roll by gravity within said housing; and a manipulation bar operatively connected to said weir members to slidably move the weir members back and forth relative to said track forming means.



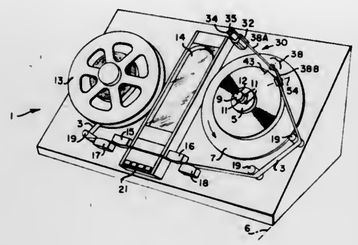
3,698,654
SELF-THREADING TAKE-UP DEVICE
Norman John Rosenburgh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 27, 1970, Ser. No. 93,205
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 **12 Claims**



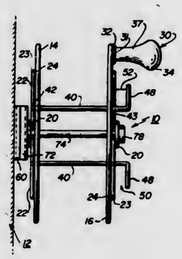
A self-threading strip take-up hub, adapted to wind thereabout web-like strips of different widths, is provided with a flexible snubber member extending from the hub for respectively securing the leading ends of such strips to the hub at a location opposite a predetermined point on the winding axis of the hub. Several pairs of flexible guide members extend from the take-up hub with each of the guide members forming a particular pair attached to the hub respectively at locations equidistant in opposite axial directions from the predetermined point on such hub axis. The guide members of a particular pair are separated by a distance slightly greater than the width of a corresponding one of the strips to guide the same for winding about the take-up hub centered on such predetermined axial point.

3,698,655
PACKING GUIDE FOR FLEXIBLE MATERIALS
David T. L. Chang, 438 College Avenue, Palo Alto, Calif.
Filed Dec. 21, 1970, Ser. No. 99,842
Int. Cl. B65h *27/00*
U.S. Cl. 242—76 **6 Claims**

A packing guide for guiding the path of a relatively moving flexible material, e.g. magnetic tape, entering a storage reel, the guide comprising an elongated arm pivotable about a given point, the arm being pivotal along a horizontal plane and vertical plane relative to the path of the flexible material; a roller mounted intermediate the terminal ends of the arm and adapted to engage the material and simultaneously apply a force component to said material along a plane substantially parallel to the path and a force component to said material along a plane substantially normal to the path.

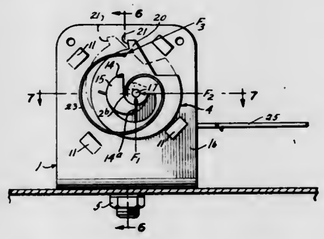


3,698,656
CORD STORAGE REEL ASSEMBLY
William C. Ballenger, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.
Filed Oct. 26, 1971, Ser. No. 192,374
Int. Cl. B65h *75/20, 75/38*
U.S. Cl. 242—106 **6 Claims**



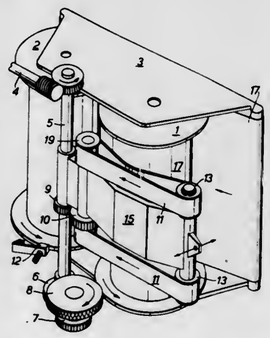
There is disclosed a reel assembly for use in connection with mounting and storing cords, such as electrical cords or the like, which comprises a pair of wheels formed of an outer ring and an inner ring, the outer and inner rings being spaced apart by a plurality of spokes, the two wheels being spaced apart and held in horizontal alignment by means of a series of four rods having the inner ends mounted on the spokes of the inner wheel and the outer ends of the rod being mounted on the spokes of the outer wheel, the outer ends of the rods extending outwardly from the spokes of the outer wheel for a short distance and being turned upwardly in the direction of the outer ring of the associated wheel forming a hook member, the four hook members cooperating to form an auxiliary reel external of the storage reel, a support plate for mounting the storage reel to a support surface, a shaft provided for mounting the reel in rotatable relation to a support surface, and mounting means for mounting the shaft to an underlying support surface.

3,698,657
INERTIA OPERATED LOCKING RETRACTOR
Horst-Guenter Kirchhoff, Luettmelland 36, 2 Hamburg 68; Peter Pfabe, Garstedter Weg 210, 2 Hamburg 61, and Gerhard Sedlmayr, Koniggratzstrasse 1, 2 Hamburg 52, all of Germany
Continuation-in-part of Ser. No. 757,357, Sept. 4, 1968, abandoned. This application Sept. 1, 1970, Ser. No. 68,744
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **2 Claims**



An inertia operated locking retractor in which angular acceleration of the spool upon which a safety belt is mounted causes a pawl to abut against a lock means in preventing further rotation of the spool and further unwinding of the safety belt therefrom.

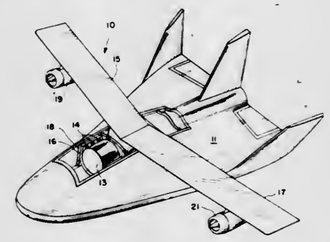
3,698,658
RECORDING APPARATUS FOR SONAR AND ECHO SOUNDING SYSTEMS
Inge Skei, 3155 Birkely, Asgardstrand, Norway
Filed Nov. 25, 1969, Ser. No. 879,917
Int. Cl. G11b *15/32*; **B65h** *17/08*
U.S. Cl. 242—192 **6 Claims**



The present invention relates to a recording apparatus for sonar and echo sounding systems, wherein a recording strip runs with constant linear velocity from an unwinding spool to a rewinding spool. The paper feed is preferably driven by driving means slipably coupled to the rewinding spool, the constant linear velocity of the paper being set by second driving means which are frictionally, but non-slipably, coupled to the recording strip roll formed on the rewinding spool.

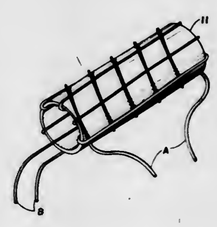
This driving arrangement allows both spools to be mounted in a common cartridge, which may be rapidly and easily inserted in and removed from the apparatus by means of a few simple, uncritical manual operations, the spools being preferably disposed symmetrically and with parallel axes in said replaceable cartridge, to allow an easy interchange of positions and working functions of the spools by simply turning the cartridge half a revolution.

3,698,659
FERRY SYSTEM
Thomas A. Blackstock, Poquoson, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 24, 1970, Ser. No. 66,206
Int. Cl. B64c *37/00*
U.S. Cl. 244—1 SS **2 Claims**



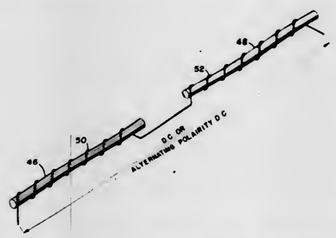
This invention relates to an auxiliary lift system to provide a means of transportation for large lifting entry vehicles.

3,698,660
VARIABLE MAGNETIC HYSTERESIS ROD SYSTEM
Frederick F. Mobley, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 7, 1970, Ser. No. 78,770
Int. Cl. B64c ; H02k *49/00*
U.S. Cl. 244—1 R **7 Claims**



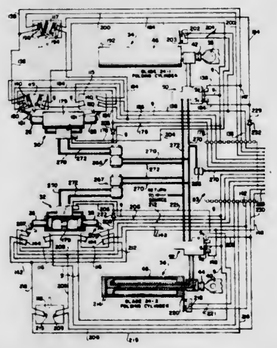
A variable magnetic hysteresis rod system capable of being controlled to provide varying amounts of hysteresis damping for a spacecraft. An elongated rod of magnetic hysteresis material is surrounded by one or more short sleeve members formed of chargeable magnetic material. Two windings are wound about the sleeve member and are energizable selectively with current pulses. One of the windings, when energized, produces a localized longitudinal magnetic field in the adjacent region of the magnetic hysteresis rod of sufficient magnitude to saturate that portion of the rod and thus cause the rod to act as a plurality of rods which collectively provide an amount of hysteresis damping different from that provided by the single rod. The second winding, when energized, destroys the effectiveness of the magnetic field produced by the first winding and thus returns the adjacent portion of the hysteresis rod to a non-saturated condition wherein the hysteresis rod again acts as a single rod, with its associated amount of hysteresis damping capability.

3,698,661
CONTROLLABLE HYSTERESIS DAMPING
Theodore Wyatt, Union Bridge, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 7, 1970, Ser. No. 78,772
Int. Cl. B64c ; H01f 21/08
U.S. Cl. 244—1 AS **15 Claims**



The invention relates generally to spacecraft attitude stabilization in which magnetic hysteresis damping rods are employed to damp rapid or relatively large oscillations of a spacecraft. In particular, the invention provides a method and means for inducing a local magnetic field within the damping rods after substantial damping of the large oscillations in order to reduce the effect of the earth's magnetic field on the rods, thus eliminating persistent low-order oscillations of the spacecraft due to continuing dipole interaction of the rods with the magnetic field of the earth. According to one embodiment of the invention, electrically conductive coils disposed around a magnetically permeable hysteresis damping rod are electrically energized, thus inducing within the rod a local magnetic field of sufficient magnitude such that the earth's field produces only a slight and substantially invariant magnetic induction in the rods.

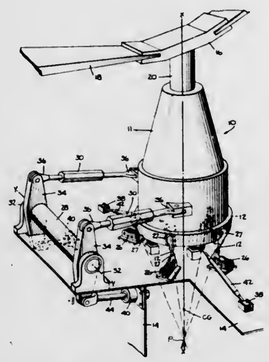
3,698,662
APPARATUS AND METHOD FOR SEQUENCING THE FOLDING AND UNFOLDING OF ROTOR BLADES IN A COMPOUND VEHICLE
Nels C. Rostad, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 12, 1970, Ser. No. 80,045
Int. Cl. B64c 27/22
U.S. Cl. 244—7 A **51 Claims**



Apparatus for simultaneously sequentially folding and unfolding rotor blades in a rotor assembly and indexing a rotor mast thereof the elements of the apparatus including a rotor mast, power servo mechanisms for indexing the mast, sequentially-operated mechanisms for engagement with means, such as pins, mounted on the mast for controlling the degree of indexing, blade folding and unfolding actuator means, additional power servo mechanisms controlling such actuator means, means for releasing and securing blades from their connections in their unfolded extended positions in order to fold them about the mast simultaneously with the indexing thereof, and a hydraulic system and electrical elements including switching means and arrangements operatively actuable for achieving operation of the apparatus, whereby the rotor blades are sequentially folded and mast indexed in one conversion sequence and sequentially unfolded and mast indexed in a reverse conversion sequence.

Methods for sequencing the folding and unfolding of rotor blades and simultaneously indexing a rotor mast are also comprehended within the scope of the invention.

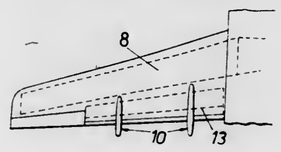
3,698,663
ROTARY WING PYLON MOUNTING SYSTEM
Rodney Worth Balke; Robert Reed Lynn, both of Arlington, and Rodney Keith Wernicke, Hurst, all of Tex., assignors to Textron, Inc., Providence, R.I.
Filed Dec. 7, 1970, Ser. No. 95,535
Int. Cl. B64c 27/00
U.S. Cl. 244—17.27 **8 Claims**



A pylon mounting system that employs four non-resilient links to support the pylon on the fuselage. The top end of each link is mounted by spherical bearings to the pylon. The bottom end of each link is mounted by spherical bearings to the fuselage. The longitudinal axes of the links intersect at a predetermined point along the mast axis below or above the normal mounting plane. The pylon is thus constrained by the four links to execute small, vibrational motions about this point of intersection. As a consequence, in-plane vibrational forces from the rotor blades are transmitted to the fuselage as an in-plane vibrational force at this point of intersection. A first moment about the center of gravity of the fuselage is created by this in-plane focused force. In addition, there are elastomeric elements between the fuselage and the pylon which provide an in-plane restoring force in response to rotor blade induced pylon vibrations. This restoring force provides a second moment about the fuselage center of gravity. The point of intersection of the links and of the spring rate of the elastomeric elements are selected such that these first and second moments tend to cancel one another.

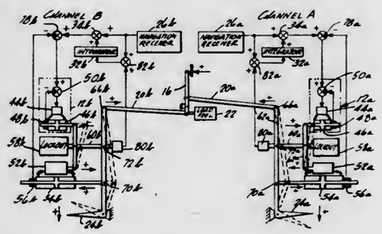
Pylon inertial reaction is enhanced because the pylon rotates about this point of intersection. Thus, isolation of the fuselage is enhanced.

3,698,664
AIRCRAFT
Kenneth Victor Bonney, Welwyn Garden City, England, assignor to Hawker Siddeley Aviation Limited, Surrey, England
Filed Jan. 11, 1971, Ser. No. 105,522
Claims priority, application Great Britain, Jan. 12, 1970, 1,476/70
Int. Cl. B64c 3/50
U.S. Cl. 244—42 DA **10 Claims**



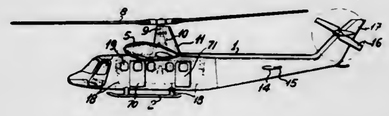
In an aircraft wing flap extending and retracting assembly, the flap is carried from a pivotal mounting on a downward extension of a main bogie that runs in a main track fixed to the trailing portion of the wing, and is additionally supported, at a position displaced in the fore-and-aft direction from the main pivot, by a support member that depends from a further pivot on the main bogie and carries a runner travelling along a incidence control track. Both the main and incidence control tracks are above the recess in which the flap is housed when retracted, and above the path followed by the flap when it extends, so that the flap is not interrupted to allow passage of either track. A tab pivoted on the flap is operated by a linkage connection to the main bogie.

3,698,665
MULTICHANNEL AUTOPILOT WITH EQUALIZATION MEANS
Robert E. Schenbeck, Los Angeles, Calif., assignor to McDonnell Douglas Corporation
Filed June 19, 1970, Ser. No. 47,741
Int. Cl. B64c 13/50
U.S. Cl. 244—77 M **3 Claims**



A multichannel automatic flight control system (AFCS) with equalization means for interfacing the two or more relatively independent channels thereof including means to sense relative imbalance between the channels and/or to sense inoperativeness in one of the channels.

3,698,666
HIGH-SPEED HELICOPTER CHARACTERIZED BY A LIFTING WING AND BY TWO ENGINES FITTED THEREON
Giancarlo Monti, Varese, Italy, assignor to Sial-Marchetti S.p.A., Varese, Italy
Filed Jan. 19, 1970, Ser. No. 4,143
Claims priority, application Italy, Jan. 24, 1969, 11961 A/69
Int. Cl. B64c 27/22
U.S. Cl. 244—7 A **7 Claims**



A helicopter with a fixed wing on each of which is located an engine has a central horizontal rotor connected to both engines, as is a tail rotor. A third rotor blade is mounted directly on the wing opposite to that of the tail rotor to blance the torque of the tail rotor.

3,698,667
SYSTEM FOR STABILIZING TORQUE BETWEEN A BALLOON AND GONDOLA
David K. Studenick, Beltsville; Allen L. Tyler, Baltimore, and Walter Squillari, Greenbelt, all of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed March 24, 1971, Ser. No. 127,618
Int. Cl. B64b 1/40
U.S. Cl. 244—32 **8 Claims**

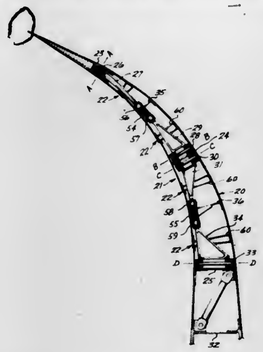


A balloon is connected to a stabilized gondola by a parachute having shroud lines. The top of the parachute is connected to the balloon via an active bearing having a motor driven in response to the output of a torque sensor connected between the shroud lines and gondola. In response to the sensed torque exceeding a predetermined level, pulses are periodically applied to the active bearing to limit the torque buildup between the balloon and gondola to a low value.

3,698,668
VARIABLE CAMBER AIRFOIL
James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed April 8, 1971, Ser. No. 132,452
Int. Cl. B64c 3/48
U.S. Cl. 244—44 **7 Claims**

A variable camber mechanism for an aerodynamic surface wherein a series of truss members are pivotally mounted on

canted hinges and arranged in a general chordwise alignment of an aerodynamic surface. When the members are actuated through a screw-drive mechanism to rotate out of alignment, they provide a chordwise contraction force which through a



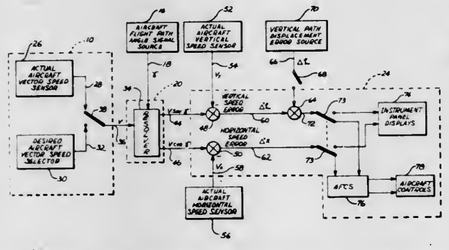
slip jointed undersurface, in the case of an airplane wing, permits the shortening of that surface relative to the upper surface and thereby provides the desired camber to the aerodynamic surface.

3,698,669

METHOD AND APPARATUS FOR CONTROLLING THE FLIGHT PATH ANGLE OF AIRCRAFT

Justin G. Miller, deceased, late of Los Angeles, Calif. (by Rita Ann Miller, administratrix), assignor to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 845,113, May 29, 1969. This application March 16, 1970, Ser. No. 19,813
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A **16 Claims**



A flight command system resolves an aircraft vector speed signal as a function of the vertical and horizontal components of a selected aircraft flight path angle to respectively produce commanded vertical and horizontal speed signals. The speed command signals are respectively compared with actual values of aircraft vertical and horizontal speeds to produce vertical and horizontal speed error signals, respectively, and the speed error signals indicate the deviation of the aircraft from the selected flight path angle. The system achieves vector speed control and flight path angle control simultaneously when the aircraft vector speed signal represents a desired aircraft vector speed. When a vertical path displacement error signal is combined with the commanded aircraft vertical speed signal, the system achieves flight path angle control along a specific path in space.

3,698,670

VERTEBRAL FRACTURE PREVENTION SYSTEM

Channing L. Ewing, Pensacola, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 17, 1970, Ser. No. 99,197
Int. Cl. B64d *25/06*
U.S. Cl. 244—122 AG **20 Claims**



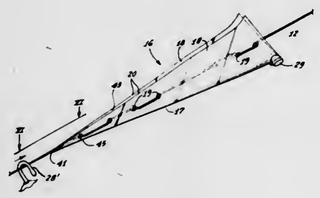
Disclosed herewith is a vertebral fracture prevention system which incorporates motor driven body restraint devices for positioning and holding a person in a safe postural position within a rapidly moving craft immediately prior to his being subjected to $+G_z$ acceleration generated by any means including forceful ejection. Also included is a resilient inflatable bag or other device that is disposed against the back of said person which is inflated or otherwise actuated in such a manner immediately prior to exposure to $+G_z$ acceleration as to cause the thoraco-lumbar region of the spinal column thereof to assume an arcuate posterial curvature due to hyperextension thereat, so as to prevent wedge fractures of the forward edges of the adjacent vertebrae thereof as a result of their being exposed to extreme anterior bending acceleration forces.

3,698,671

KITE PARACHUTE UNIT WITH AUTOMATIC EJECTOR

Walter D. Barry, 629 South Arizona Avenue, Los Angeles, Calif.

Continuation-in-part of Ser. No. 874,591, Nov. 6, 1969, abandoned. This application May 12, 1971, Ser. No. 142,522
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **7 Claims**



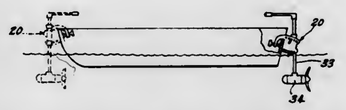
A novel kite unit including an automatic ejector along the kite line and positioned near the kite end. This unit includes a stop disc near the lower end of the kite line and a parachute unit which is movable on the kite line from the stop disc upwards to the automatic ejector where the parachute is disengaged and is brought to earth by means of gravity, the parachute spreading its canopy during descent in order to effect a slow rate of downward travel.

3,698,672

OUTBOARD MOTOR MOUNTING BRACKET

Arthur E. Gilbert, Alva, Fla., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,319
Int. Cl. B63h *21/26*
U.S. Cl. 248—4 **10 Claims**



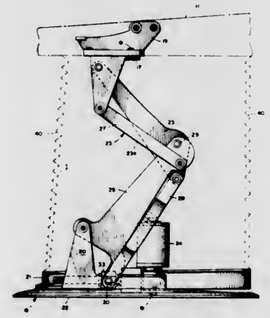
An outboard motor mounting bracket for mounting an outboard motor on either end of a boat. The bracket includes a bracket member having clamping means for clamping the bracket to either end portion of a boat and a U-shaped body portion having a plurality of apertures adapted to receive either a pivot pin or a locking bar. The bracket further includes support means for supporting an outboard motor with the support means being pivotally secured to the bracket member by means of the pivot pin being received by an aperture formed in the support means and being received by a pair of axially aligned apertures in the bracket member. Means for releasably receiving a locking bar are provided in association with the support means whereby the support means is releasably held to the bracket member and upon release from the locking bar is pivotable about the pivot pin into a plurality of attitudes with respect to the bracket member.

3,698,673

BASE FOR ADJUSTABLE CHAIRS

Robert A. Olsen, Palatine, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 16, 1971, Ser. No. 115,384
Int. Cl. A47c *1/04*
U.S. Cl. 248—421 **16 Claims**



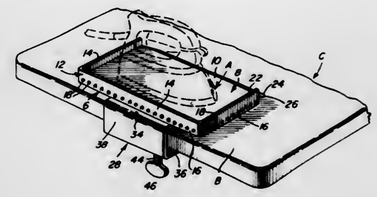
A compact base for vertically adjustable dental chairs. A linkage mechanism in the base is power operated, the motor unit and associated parts being disposed between the side members of the linkage mechanism and being substantially enclosed by such mechanism and other members of the base when the chair is in its lowered position. A one-way drive mechanism is provided, the chair traveling downwardly only under the influence of gravity when the motor is reversed. Increased safety upon lowering of the chair is thereby achieved because if the chair encounters an obstruction while moving downwardly, the applied forces will be limited to the gravity load. Such a construction also yields improved access for maintenance and assembly of the base.

3,698,674

SAFETY IRON HOLDER

Mary T. Paone, 301-A Walnut Street, Bristol, Pa.

Filed Jan. 29, 1971, Ser. No. 111,025
Int. Cl. D06f *79/02*
U.S. Cl. 248—117.6 **2 Claims**



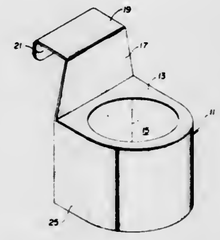
An iron rest comprising a fire resistant receiver characterized by a rectangular tray having a C-clamp by way of which it can be adjustably and detachably mounted on a transverse end of an ironing board. The tray overlies the ironing surface and has one lengthwise edge open and provided with an outstanding flange which is angled and slopes toward and rests atop the surface and provides an iron gliding and guiding ramp which facilitates sliding the iron into the receiver for temporary storage. Lower portions of the walls of the frame or rim are provided with ventilating holes.

3,698,675

PORTABLE HOLDER

Wilford J. Lerew, 317-23rd Avenue North, Minneapolis, Minn., and Kenneth T. Peckels, 1939 Fillmore Street, N.E., Minneapolis, Minn.

Filed March 8, 1971, Ser. No. 121,982
Int. Cl. A47k *1/08*
U.S. Cl. 248—311 **7 Claims**



The holder comprises a body portion including a concavity to receive a receptacle; a hanger therefrom uprising from the body portion and terminating in an offset portion to grip chair backs or the like. Cushioning and/or insulation material is received in the body from a rear opening for receiving the receptacle. The thermal insulation may comprise a non-split or a partly split block having an opening therein to accommodate various size receptacles.

3,698,676

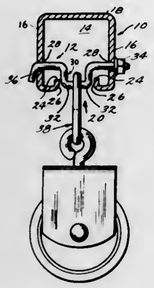
ASSEMBLY FOR STRUCTURAL FRAMING UNIT

Junius T. Moore, Jr., Charlestown, W. Va., assignor to The Moore Company, Charleston, W. Va.

Filed July 27, 1970, Ser. No. 58,636
Int. Cl. F16m *13/00*
U.S. Cl. 248—317 **7 Claims**

An improved framing unit assembly for carrying suspended loads is described. The assembly includes an elongate frame

member which is essentially hollow with a channel opening defined along one side, together with a bolt means which can be received within the hollow space of the frame member to



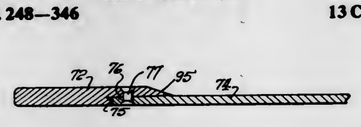
reinforce the frame member when loaded. The bolt means includes a middle section which is shaped to fit within the channel opening of the frame member so as to prevent collapse of the member in the region of its channel.

3,698,677

PALLET FOR MOVING AND SECURING CARGO

Robert Looker, Santa Monica, Calif., assignor to Satco Inc., El Segundo, Calif.

Filed Jan. 22, 1970, Ser. No. 4,882
Int. Cl. B65d *19/38*
U.S. Cl. 248—346 **13 Claims**



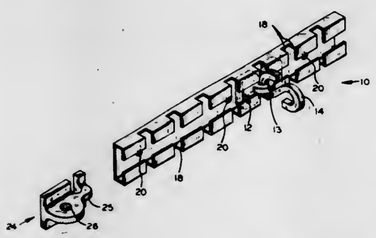
A pallet to support cargo items for movement over ball mats and roller trays is relatively thin and of light weight and of sufficient resilient flexibility to bend and bow out of its plane to accommodate itself to relatively high points of a supporting structure without permanent deformation. The invention teaches new constructions of pallet sockets for engagement by cargo anchoring fittings. Some forms of the pallet are reversible for use with either of its faces uppermost.

3,698,678

LOAD HOLDING DEVICE

Thomas S. Bowers, Lafayette, Calif., assignor to A. L. Hansen Mfg. Co., Gurnee, Ill.

Filed June 2, 1970, Ser. No. 42,736
Int. Cl. B65j *1/22*; B65d *19/00*
U.S. Cl. 248—361 R **9 Claims**



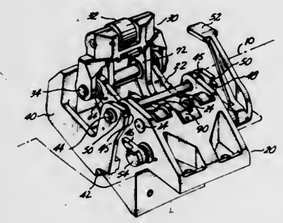
This disclosure pertains to a load holding device which is quickly and easily adjustable to a plurality of positions. The load holding device consists basically of a guide rail, or track in which a slide member or carriage is adapted for movement to a plurality of locations. The guide is provided with slots, the sides of which form an abutment. The majority of the slide member is encompassed within the guide means but a portion may protrude outwardly to enable the user to manually move the slide member to the desired location. The slide member has an opening extending through it which is adapted to be aligned with the selected slot within the guide rail. When so aligned, a hook member (an S-shaped belt attaching device or merely a piece of rope) is passed through the selected slot and the opening to attach the hook member to the slide. The foregoing fixedly locks the slide member in the selected position since the hook member abuts against the sides of the slot in the guide rail to prohibit movement thereof. The guide member may be constructed of a flat channel-shaped member or may be of a tube-like construction. In both cases, a plurality of guide rails may be used and one may be telescoped within the other in curtain rod-like fashion so that the combination slide and hook member also fixes the relative positions of the respective guide rails.

3,698,679

SEMI-AUTOMATIC RESTRAINT MECHANISM

John M. Lang, Bellevue, and Robert D. Trautman, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 11, 1970, Ser. No. 97,240
Int. Cl. B61d *45/00*
U.S. Cl. 248—361 R **11 Claims**



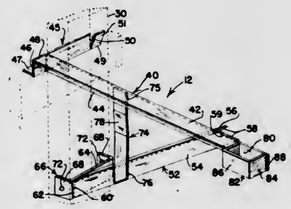
A mechanism which will allow passage of an object approaching the mechanism from a first direction but will prevent passage of an object approaching from the opposite direction. A lip member is mounted on a spring biased carrier beam which is pivotally supported on the base of the mechanism and held by releasable holding means in position to extend the lip member into the path of the object. An object which impacts the lip member from the first direction will cause the lip member to actuate a release means to allow rotation of the carrier beam away from the object. The spring biasing of the carrier beam maintains the lip member in contact with the near surface of the object, and causes the lip to return to its original position when the object moves past the mechanism. Impact loads imparted to the lip member from the opposite direction are rigidly resisted by the lip member, the carrier beam member and the holding means. The preferred embodiment involves an aircraft cargo deck mechanism which is specifically designed to be installed in a limited space envelope near the cargo door to allow movement of cargo into the aircraft but to prevent inadvertent movement back through the door. Other features of the preferred embodiment include a self-locking tiedown clamp, and a manually actuated lever for releasing the clamp and for locking the mechanism in an inoperative position below the level of the deck during unloading operations.

3,698,680

SCAFFOLD-SUPPORTING BRACKET FOR A CONCRETE WALL FORM

James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Feb. 12, 1971, Ser. No. 115,002
Int. Cl. E04g *3/08*
U.S. Cl. 249—189 **4 Claims**



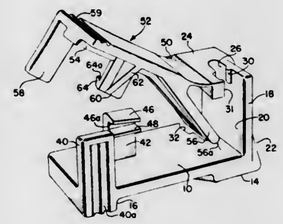
A unitary one-piece scaffold-supporting bracket for a concrete wall form, which requires no fastening devices or other concrete hardware for its installation on the form, and which automatically locks itself in position at the time it is applied to the form.

3,698,681

ON-OFF CLAMP FOR I. V. SYSTEMS

Robert L. Lacey, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 15, 1970, Ser. No. 98,247
Int. Cl. F16k *7/06*
U.S. Cl. 251—10 **7 Claims**



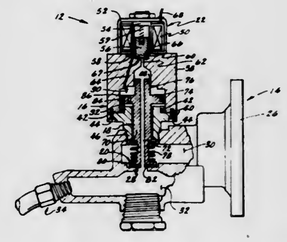
A clamp for control of fluid flow through tubing, such as in intravenous tubing systems, with a base through which the tubing is passed and releasably held in adjacency to a fixed abutment surface on the base, and with a member hingedly connected to the base and provided with a clamping member movable in unison therewith relative to the abutment surface for clamping the adjacent portion of the tubing thereagainst and closing or partially closing the same; there being provided mutually cooperating interlocking arms on the base and hinged member, respectively, for holding the same in predetermined tube clamping positions, and being relatively laterally movable to release the interlocking engagement between the arms to permit separating movement between the base and hinged member with the clamping member moving away from the abutment surface, thus releasing the constriction in the previously clamped tubing.

3,698,682

SOLENOID ACTUATED VALVE FOR ANHYDROUS AMMONIA FLOW METERS

Eugene B. Berning, Marienthal, Kans., and John E. Holmes, P.O. Box 1111, Garden City, Kans.

Filed Jan. 25, 1971, Ser. No. 109,328
Int. Cl. F16k *31/383*
U.S. Cl. 251—30 **7 Claims**



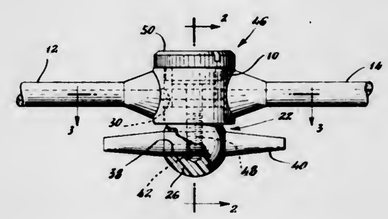
A solenoid actuated valve operator is used for controlling the flow of a normally gaseous fluid in a conduit having an internal valve seat. A housing is mountable with the conduit. A solenoid mounts with the housing. A plunger extends from the housing, which receives fluid pressure. A passageway through the plunger communicates with the solenoid and a valve closer on the extended end thereof. The core of the solenoid operates to open and close the passageway. Another passageway connects the solenoid assembly and the outside of the housing. The plunger is urged to extended position by a resiliently applied force. The solenoid actuated valve operator when mounted contacts with the valve closer the conduit valve seat. With the core member disengaged liquid fluid pressure exerts a force on the plunger overcoming the resilient force to retract the plunger and open the conduit.

3,698,683

VALVE FOR LABORATORY GLASSWARE

William M. De Angelis, Wilton, Conn., assignor to Duran Products, Inc., Norwalk, Conn.

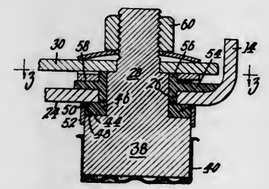
Filed June 23, 1970, Ser. No. 49,085
Int. Cl. F16k *5/04*
U.S. Cl. 251—209 **11 Claims**



A valve including a tapered glass barrel having a fluid inlet and an outlet in the wall structure thereof, receiving a rotary fluorocarbon or equivalent plug having a handle portion by which it may be turned in the barrel on its axis, having a complementally tapered portion; the plug, or the plug and the barrel together, defining a fluid passageway between the inlet and outlet when the plug is in an angularly adjusted position thereof. The construction and arrangement of the elements may be such that flow of a liquid through the valve may be visually observed. The plug, which is formed of deformable material, is provided with an axial recess within the portion thereof which is received in the barrel and opening through the smaller tapered end of the plug, providing a relatively thin-

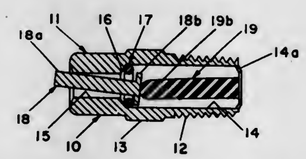
walled portion of the plug. An elastomer insert is provided in the recess and a fastener unit is provided to maintain the elements in assembled position which unit comprises a threaded shank which in assembled position is secured to the plug extending axially thereof. The fastener unit also comprises a member co-acting with the shank, overlying the end of the barrel opposite the handle portion of the plug to prevent, with the taper of the barrel and the plug, axial dislocation of the plug. The last-named fastener member is provided with an axial extension to contact and compress the elastomer insert to force it radially against the axial wall of the aforementioned plug recess, thereby expanding the plug in an axial region thereof, which is relatively flexible, to form a tight fluid seal between the plug and the barrel. The plug has frictional contact with the barrel only over a portion of that part of the plug which is received in the barrel, so as to reduce resistance to turning of the plug in the barrel by the handle portion.

3,698,684
STEM SEALING FOR VALVING
Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Worcester, Mass.
Filed Sept. 17, 1970, Ser. No. 73,095
Int. Cl. F16k *41/04*
U.S. Cl. 251—214 **10 Claims**



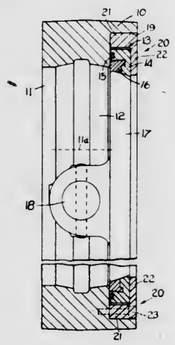
A stem seal for a valve which comprises a face seal closely held between a shoulder on the stem and the interior of the valve housing by means of a wave washer under the handle; there being a bearing for the stem, the bearing tightly engaging the exterior of the valve housing and lying under the wave washer, together with a resilient grounding clip exerting outward pressure on the stem and the face seal, and means for preventing extrusion of the face seal.

3,698,685
ANIMAL ACTUATED DRINKING VALVE
Ronald A. Lang, Madison, Wis., assignor to Waters Mfg. Co., Inc., Madison, Wis.
Filed March 8, 1971, Ser. No. 122,032
Int. Cl. A01k *7/00*; F16k *51/00*
U.S. Cl. 251—303 **1 Claim**



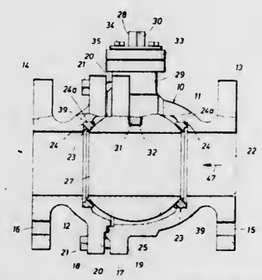
An animal actuated drinking valve having a tubular body member encasing an actuating pin with a rear flange portion which is urged forwardly by an elongate resilient biasing member to create a releasable liquid-tight seal with an O-ring in the tubular body member. In use, an animal nudges the protruding actuating stem portion of the pin causing the rear flange portion to unseat from the O-ring allowing water to flow through the valve.

3,698,686
BUTTERFLY TYPE FLUID CONTROL VALVES
William Williams, Newport, England, assignor to Serck Industries Limited, Birmingham, England
Filed Oct. 10, 1969, Ser. No. 865,317
Claims priority, application Great Britain, Oct. 15, 1968, 48,847/68
Int. Cl. F16k *1/228*
U.S. Cl. 251—306 **3 Claims**



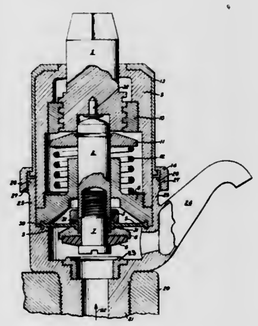
The closure vane of a butterfly valve is formed at its periphery with a part-spherical surface which is engageable with a seat ring. The seat ring is free to move in a plane perpendicular to the axis of the valve passage. The pivotal axis of the vane is offset both from the center of the spherical surface and from the axis of the valve passage, so that as the vane starts to open, its periphery lifts away from the seat ring.

3,698,687
ROTATORY VALVE HAVING ONE-PIECE SEAT CONSTRUCTION
Masaru Kitamura, Tokyo, Japan, assignor to KTM Industries, Inc., Houston, Tex.
Filed July 17, 1970, Ser. No. 55,737
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **9 Claims**



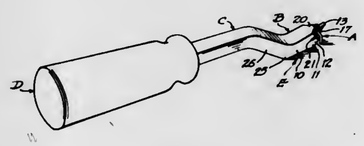
A ball valve comprising a valve casing having a flowway therethrough, a spheroidal or spherical valve element having a passageway therethrough, said valve element being rotatably mounted within said valve body whereby said passageway can be moved into and out of register with said flowway, and a pair of valve seat members disposed within said valve casing forming a space between them for said valve element, said seat members being annular and each having in cross-section a body portion and an inwardly extending flange portion, said flange portion being deformable and having opposing faces, at least a portion of which are parallel and inclined to a plane radial to the axis of said flowway so as to provide substantially tangential engagement between one of said faces of each of seat members and said valve element.

3,698,688
WATER FAUCETS
Hugo Joseph Kutz, 504 Western Avenue, Grafton, N. Dak.
Filed July 16, 1970, Ser. No. 55,310
Int. Cl. F16k *41/04*
U.S. Cl. 251—335 **4 Claims**



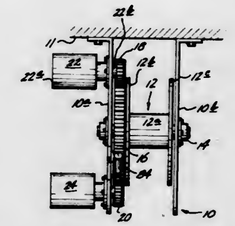
A water faucet in which the action is definitely of the poppet-valve type. The parts are sealed off from all water so that the arrangement of the parts eliminates the use of stuffing boxes, packing glands, O-rings, presently employed in faucets. Use is made of a specially designed flexible diaphragm having a formed collar at its inner and outer perimeters by means of which it can be securely anchored in position to prevent water from coming in contact with any moving portion of the faucet above said diaphragm.

3,698,689
STAPLE LIFTER WITH GRIPPING JAWS
Irvin C. Poskin, 1828½ South Robertson, Los Angeles, Calif.
Continuation-in-part of Ser. No. 863,797, Oct. 6, 1969, Pat. No. 3,583,673. This application May 24, 1971, Ser. No. 146,182
Int. Cl. B25c *1/00*
U.S. Cl. 254—28 **9 Claims**



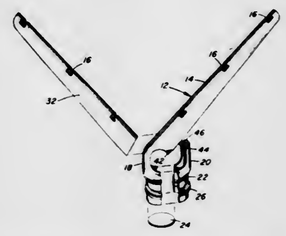
A staple-lifting tool has a pointed lower jaw adapted for insertion beneath a staple bridge and an upper jaw spaced closely above the lower jaw by a slot in which the bridge is received and closely confined substantially throughout the width of the staple by moving the tool forwardly until the flaring sides of the jaws span the width of the staple as it is drawn upwardly.

3,698,690
HYDRAULICALLY OPERATED WINCH
Robert D. Beaver, Coos Bay, Oreg., assignor to Koontz Machine & Welding, Inc., Coos Bay, Oreg.
Filed Dec. 31, 1970, Ser. No. 103,185
Int. Cl. B66d *1/00*
U.S. Cl. 254—186 **2 Claims**



A power-operated winch assembly with multiple power-driven pinion gears meshing with an driving a drive gear coaxial with the winch drum in the assembly. Each of the pinion gears is coupled to a reversible hydraulic motor. The hydraulic motors may be placed in series with each other, to obtain high speed type of operation, and in parallel with each other, to obtain a high torque type of operation.

3,698,691
FENCE BARB ARM
Thomas W. Brown, 4104 S. Creek Road East, Chattanooga, Tenn.
Filed June 16, 1971, Ser. No. 153,731
Int. Cl. E04h *17/06*
U.S. Cl. 256—11 **2 Claims**

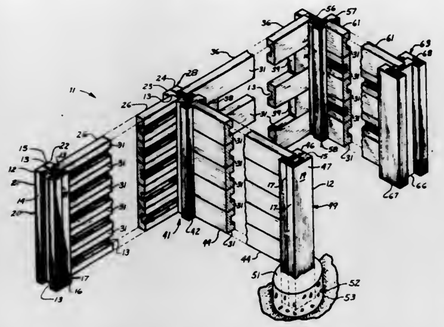


A Y-shaped barbed wire holder for attachment to the top of fence posts by means of an integral base which fits over the post. One barb arm and one half of the base if formed from from a single piece of sheet metal. The other half of the base is welded in place and an end closing disc is held in the base by an annular groove. The second barb arm is welded to the bight of the first arm.

3,698,692
MODULAR FENCE CONSTRUCTION
Clinton A. Burrows, Jr., 4441 Rand Lane, Sacramento, Calif.
Filed April 26, 1971, Ser. No. 137,236
Int. Cl. E04h *17/14*
U.S. Cl. 256—19 **9 Claims**

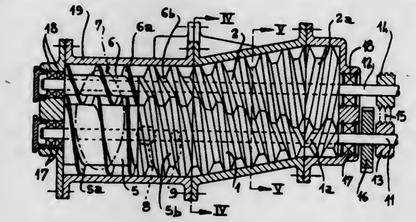
A channel member is C-shaped in cross section and has a length, width and thickness bearing a predetermined relation with respect to the width and depth of the elongated slot on one face of the channel. The slot width and depth is such that the channel can be used both as fence post and as a fence rail

with the post and rail in interlocking relation. Various orientations of the vertical fence posts provide L-shaped and T-shaped corners, and by arranging the horizontal rails so that



the slots face in suitable directions a variety of rail patterns can be formed. Spacers between adjacent rails afford an open, or corral-type, of fence and, if desired, the channel members can also be used to form a trim cap along the top of the fence.

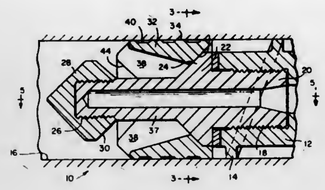
3,698,693
SCREW MIXERS
Pierre Poncet, 12 Bis rue Trarieux, Lyon, France
Filed July 26, 1971, Ser. No. 165,888
Int. Cl. B01f 7/00
U.S. Cl. 259—5 **7 Claims**



A screw mixer comprises pairs of conical screws, the screws of each pair being of opposed conicity, closely intermeshing each other and rotating in the same direction (i.e. with their threads moving in opposed direction in the intermeshing zone). The material is thus transferred from one screw to the other one and the threads of a screw have a rubbing cleaning action on those of the other screw. In a modification the threads have a substantial axial clearance and the screws are axially oscillated with respect to each other in order that the outer edge or tip of the relatively narrow plain portions or ribs of the threads of each screw of a pair may scrape the flat bottom of the relatively wide depressions or void spaces which separate the ribs of the threads of the other screw.

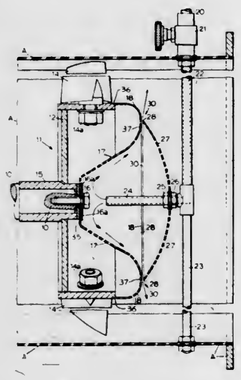
3,698,694
INJECTION APPARATUS
Hubert Zeug, Kosakenberg, and Friedrich Koch, Feldstrabe, both of Germany, assignors to Desma-Werke G.m.b.H., Uesen near Breman, Germany
Filed June 29, 1971, Ser. No. 157,977
Claims priority, application Germany, July 7, 1970, P 20 33 548.2
Int. Cl. B01f 7/08
U.S. Cl. 259—191 **11 Claims**

An injection apparatus of the kind embodying a screw reciprocably mounted in a chamber by means of which a plasticizable material is plasticized and advanced along the chamber and then ejected at the forward end thereof; characterized in that there is a device associated with the head of the



screw operable to prevent reverse flow of the plasticized material during the forward movement of the screw when effecting ejection.

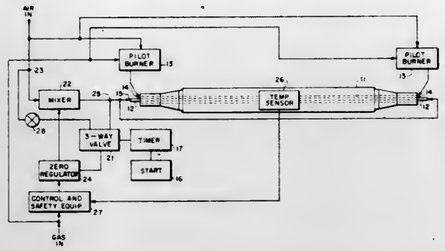
3,698,695
SPRAY GENERATOR
John S. Andrews, Glamorganshire, Wales, assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Dec. 28, 1970, Ser. No. 101,857
Claims priority, application Great Britain, April 25, 1970, 20,004/70
Int. Cl. B01f 3/04
U.S. Cl. 261—24 **4 Claims**



A spray or mist generator produces a controllable moisture content stream of gas by combining a fluid distributing component with a gas moving component in a duct.

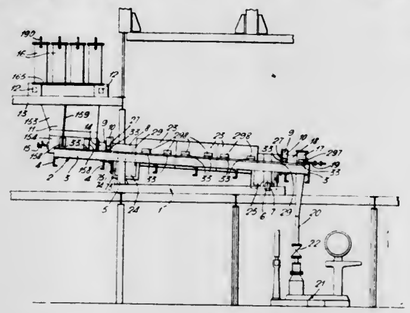
3,698,696
COMBUSTION MIXTURE CONTROL SYSTEM FOR CALENDERS
Fred W. Rauskolb, Haworth, N.J., assignor to Standard International Corporation, Andover, Mass.
Filed June 14, 1971, Ser. No. 152,633
Int. Cl. F26b 13/18
U.S. Cl. 263—6 C **7 Claims**

A combustion mixture control system for heated rolls used in calenders and embossers. This system employs a technique for sampling the air pressure and the combustion mixture pressure in conjunction with the use of a discrete timer for control of a fuel zero regulator to thereby control the composition of the combustion mixture applied to the calender roll burner. By thus controlling the amount of fuel in the



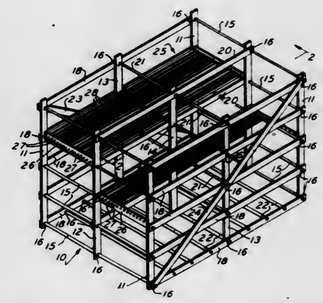
fuel/air mixture greater efficiency of operation is achieved and resonant noise often associated with initial heating is abated.

3,698,697
ROTARY KILNS
George Marshall Gillies, St. Annes, and James Edgar Littlechild, Lytham, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed April 9, 1971, Ser. No. 32,649
Claims priority, application Great Britain, April 23, 1970, 19,664/70; May 11, 1970, 22,749/70
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R **8 Claims**



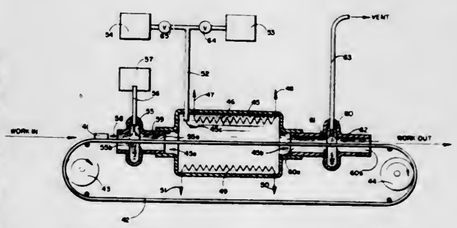
A rotary kiln comprises an inclined kiln barrel mounted on a supporting framework by upper and lower bearing members at the ends of the kiln barrel. The supporting framework is fitted with longitudinal bed plates and the upper and lower bearing members for the kiln barrel have support brackets which are fitted with bearing pads sealing on the bed plates through intermediate support members which lie in longitudinal grooves in the bed plates below the bearing pads of the support brackets for the bearing members. In the case of the lower bearing member the intermediate support members are in the form of rods lying in the longitudinal grooves of the bed plates below the bearing pads of the support brackets which are rigidly bolted to the bed plates. In the case of the upper bearing member the intermediate support members take the form of ball bearings running in the longitudinal grooves of the bed plates below the bearing pads of the support brackets. Thus the upper bearing member is free to move longitudinally with respect to the bed plates to accommodate for longitudinal thermal expansion of the kiln barrel. An inlet hopper is similarly mounted on the bed plates at the upper end of the kiln barrel by a movable support bracket at its other end. The inlet hopper connects with the kiln barrel through a slidable sealing means to accommodate for relative thermal expansion between the inlet hopper and the kiln barrel.

3,698,698
FIXTURÉ FOR HEAT TREATING FURNACES
Benjamin A. Kreider, Richboro; Charles J. Schmidt, Philadelphia, and Howard R. Martindell, Ivyland, all of Pa., assignors to Abar Corporation, Feasterville, Pa.
Filed Feb. 16, 1971, Ser. No. 114,937
Int. Cl. F27b 21/04
U.S. Cl. 263—47 R **5 Claims**



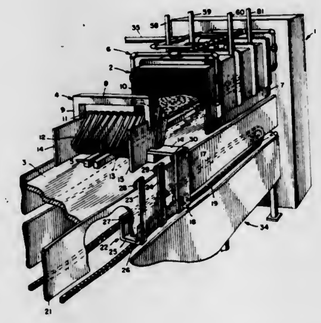
A fixture for heat treating furnaces is disclosed having a frame composed of upright bars, horizontal and diagonal bars and horizontal rods held is assembled relation by wires, of low fixture mass, the bars, rods and wires preferably being of low specific heat material, and preferably of molybdenum but alternatively of tungsten, tantalum, columbium and their alloys or of graphite, with an associated rack of the same material having horizontal ceramic tubes to support the articles to be heat treated in the furnace.

3,698,699
HOT GAS FUSION PROCESS AND APPARATUS
Julius H. Bochinski, La Habra, and John E. Linkel, Orange County, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Filed Oct. 29, 1970, Ser. No. 85,047
Int. Cl. C21d 1/00
U.S. Cl. 266—5 R **3 Claims**



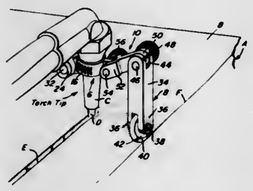
A hydrazine compound in a carrier gas wherein the hydrazine compound is transformed into its gaseous state and the gaseous hydrazine is used by processing apparatus to bond metallic materials with a soldering material, to remove film compound formation from metallic surfaces, and to minimize porous formation in soldering materials which may be attached to metallic surfaces. The hydrazine compound is transported by the gaseous carrier and heated to a temperature that vaporizes the hydrazine and is used for reacting the gaseous hydrazine with the film formation on the metals or with the soldering material thereon to achieve excellent bonding characteristics and low conductivity joints.

3,698,700
QUENCHING APPARATUS FOR EXTRUDED ARTICLES
Kurt F. Ziehm, Jr., Lantana, Fla., and James E. Markiewicz, Roselle, Ill., assignors to Precision Extrusions, Inc., Bensenville, Ill.
Filed Dec. 8, 1970, Ser. No. 96,119
Int. Cl. C21d 1/62
U.S. Cl. 266—6 S 6 Claims



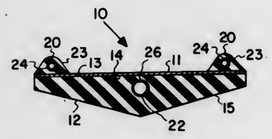
An apparatus for quenching elongated extruded metal products is provided in which the metal products are extruded directly into an elongated open ended, open bottom enclosure in which a wall of coolant is formed and wherein the construction is such that a puller for said elongated extruded metal products can engage the end of such products immediately adjacent the extrusion die and can move through said enclosure while maintaining a seal for preventing escape of the coolant during such movement.

3,698,701
CUTTING TORCH TIP GUIDE
Richard K. Straub, Beaver Falls, Pa., assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 31, 1970, Ser. No. 103,138
Int. Cl. B23k 7/10
U.S. Cl. 266—23 M 7 Claims



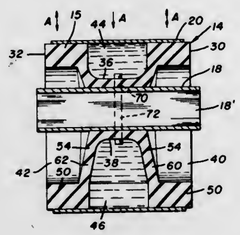
For detachable and adjustable use on and in conjunction with a commonly used tapered nozzle type torch tip, a tip supporting, lifting, lowering, and angling flame focusing self-contained guide attachment. This attachment comprises three principal component parts; namely, an adjustable collar-like tip encircling adapter, a complemental leg having a freely turnable work surface contacting wheel or disk mounted on its lower end; and a link having an inner end pivoted to said adapter and an outer end pivotally and operatively linked to an oriented upper end of said leg.

3,698,702
COMPOSITE LEAF SPRING
Merril G. Beck, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed March 5, 1971, Ser. No. 121,457
Int. Cl. F16f 1/30
U.S. Cl. 267—47 12 Claims



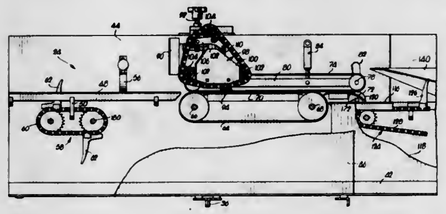
A composite leaf spring formed of two superimposed spring leaves. One of the spring leaves is a tensile member and the other is a compressive member. The tensile member is an elongate leaf formed of a flexible nonextensible material such as metal, fiberglass, fabric, etc. and the compressive member is an elastomer leaf adhered, preferably by bonding, in contiguous superimposed relation to the nonextensible leaf. The neutral axis in flexure of the composite leaf spring is preferably located either at the interface of the nonextensible and elastomer leaf or in the nonextensible leaf whereby upon flexure, only compressive stresses are introduced into the elastomer leaf.

3,698,703
DUAL RATE FLUID DAMPED ELASTOMERIC BUSHING
Gary L. Hipsher, Logansport, Ind., assignor to The General Tire & Rubber Company
Filed Nov. 23, 1970, Ser. No. 91,898
Int. Cl. F16f 9/10
U.S. Cl. 267—63 4 Claims



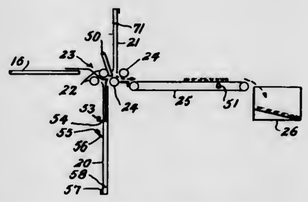
A fluid damped bushing comprises an annular rubber insert radially compressed between a pair of rigid sleeves. The curved outer surface of the insert contains a pair of radially spaced voids which co-operate with the outer sleeve to form enclosed pockets. These pockets are interconnected and are filled with a suitable fluid to provide the bushing with high damping characteristics in the radial direction through the pockets. The generally parallel and planar ends of the insert are voided around the inner sleeve to form suitable recesses. The recesses are separated from the fluid pockets by relatively thin webs which flex rather than undergo compression to provide a very low spring rate in the direction through the fluid. The radial spring rate at right angles to the pockets is considerably higher and may be as much as five times as great as the spring rate through the pockets. The inner sleeve is preferably shaped to give a highly planar surface in the direction of a high spring rate. The bushing can be used, for example, as a vibration isolator between an engine and the frame of a vehicle.

3,698,704
FOLDED NEWSPAPER OPENING MECHANISM FOR MULTIPLE SECTION INSERTING MACHINE
Warren W. Hannon, and Charles N. Hannon, both of P.O. Box 103, Olathe, Kans., assignors to W. W. Hannon by said C. N. Hannon
Filed Oct. 30, 1970, Ser. No. 85,534
Int. Cl. B65h 5/30
U.S. Cl. 270—57 12 Claims



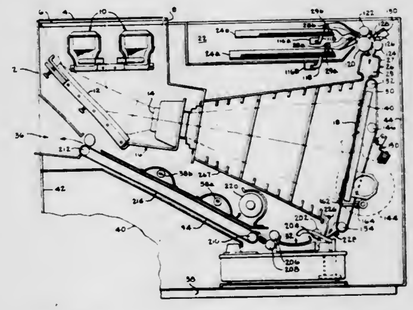
A machine for assembling a multiple section newspaper successively feeds folded outer sections onto a continuously moving conveyor for advancement beneath mechanical opening mechanism with the fold line of the section disposed to one side and the hard edges thereof leading. As each outer section passes beneath the opening mechanism, a gripper thereof cycling in a generally upright plane moves down into frictional engagement with the outer leaf of the moving section and then obliquely across the path of travel of the section as the latter continues to move, whereby the leaf is pushed in its own plane toward the fold line of the section. This action draws the leading hard edge of the upper fold of the section away from the corresponding edge of the opposing fold to thereby open the section. With the advancing section thus opened, a stationary divider is received between the folds of the section, the gripper lifts from the section to complete its cycle in preparation for the next section, and one or more feeders alongside the path of travel of the advancing outer section deliver folded inner sections beneath the divider to the outer section.

3,698,705
APPARATUS FOR FOLDING FLEXIBLE SHEETS
Rudolph Funk, Jamison, and Roger S. Funk, Holicong, both of Pa., assignors to R. Funk & Co., Inc., Doylestown, Pa.
Continuation of Ser. No. 737,934, June 18, 1968, abandoned. This application March 5, 1971, Ser. No. 121,568
Int. Cl. B65h 45/12, 45/18
U.S. Cl. 270—62 21 Claims



Apparatus which handles flexible sheets, typically blueprints or the like, for folding them, is adapted to handle sheets, not only of uniform size but also an intermix of sheets of differing sizes, and to fold them selectively, along one or more fold lines, each into a folded packet having perdetermined standardized length and width dimensions; and the apparatus comprises high-speed normally continuously-operating sheet transport means with associated sheet-folding mechanism having a plurality of elements adapted to cooperate in the folding operation, at least some of the elements being selectively rendered operative according to sheet size whereby to fold the sheet on one or more lines of fold so related as to form the sheet into a folded packet of the predetermined standardized dimensions, regardless of the initial size of the sheet; there being a programming system for such selectively operative elements, controllable, in accordance with sheet size, to select simultaneously the required group of said elements, without retarding the sheet transport means or interfering with the normal flow of work through the apparatus. Above certain sheet sizes, the folding includes certain folds at right angles to one another. At least some of the elements to be selected for operation are automatically selected by means sensing certain sheet dimensions, but manual operation is also provided for, as to certain folding functions, by devices readily accessible to and quickly actuable by an operator, and typically the programming system includes an electrical mechanism governed at least in part by interlocking switches, or the like, disposed in a removable and replaceable console. Certain parts of the apparatus may function as transport means and/or as folding means. Regardless of the number, direction and spacing of the folds, and whether or not the initial sheet configuration involves dimensions which are even multiples of the final folded packet dimensions, the packet has no external irregularities; and a certain corner of each sheet handled appears at a given external corner of the folded packet. After initial folding, the sheet, depending upon its original size, may be discharged into a receiver from a particular station, or it may be arrested at that station, without stopping the transport means, and then given one or more additional folds and transported from that station to a different receiver. Power means for the apparatus may normally operate continuously, but may be interrupted at will, and a jogging operation and/or a manual operation may be introduced.

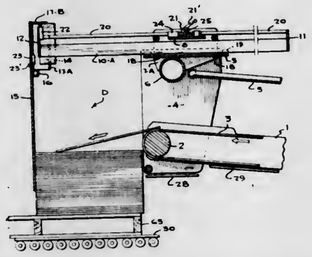
3,698,706
ELECTROSTATIC PRINTER
Steven Mihojevich, Northbrook; Arthur S. Zerfass, Elk Grove; Ralph G. Ostensen, Morton Grove; Albin F. Berggren, Jr., Des Plaines, and Ronald A. Glaser, Arlington Hts., all of Ill., assignors to SCM Corporation
Continuation of Ser. No. 821,517, Oct. 7, 1968, abandoned, which is a division of Ser. No. 463,071, June 11, 1965, Pat. No. 3,416,860. This application Feb. 24, 1971, Ser. No. 118,486
Int. Cl. B65h 5/02
U.S. Cl. 271—9 10 Claims



An electrostatic printing machine having an exposure station and an imaging station, and having copy sheet supply means for the storage of photoductive copy sheets, means for moving a copy sheet from said supply means and past the imaging station, and vacuum means for holding the copy sheet at the image station. The machine includes stop means for uncoupling drive means, and brake means for stopping the movement of the means for moving the copy sheet past the imaging station. The machine also has a plurality of copy

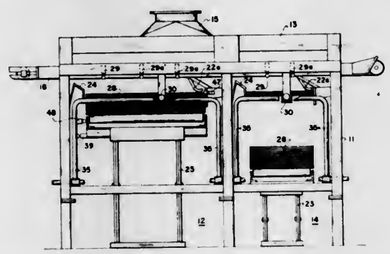
paper sheet magazines from which copy sheets may be selectively supplied.

3,698,707
SHEET STACKER AND CONTROL STACK REMOVING MEANS
Raymond L. R. Lucas, Avenue de la Republique, Prechac, France
Filed Nov. 30, 1970, Ser. No. 93,747
Claims priority, application France, Dec. 22, 1969, 6944504
Int. Cl. B65h 29/50
U.S. Cl. 271—68 **6 Claims**



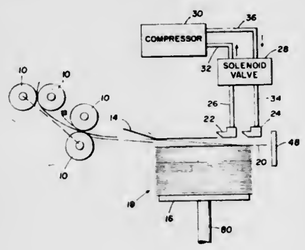
A sheet conveyor is provided for depositing sheets onto a stack with the conveyor discharging end being moved progressively upward as the stack height increases with a stop plate being positioned forward of the discharge end of the conveyor and mounted on adjustable horizontally movable arms for adjustment to the size of the sheet being stacked with the sheets being deposited on a reversible power driven conveyor and safety contact switch means being provided on the sheet conveyor and with control switch means on the discharge side of the stop plate for enabling a close spacing of successively formed sheet stacks.

3,698,708
VENEER STACKER
Philip E. Brawn, Springfield, Oreg., assignor to Carothers Sheet Metal Company, Eugene, Oreg.
Filed Jan. 18, 1971, Ser. No. 107,319
Int. Cl. B65h 29/32
U.S. Cl. 271—74 **2 Claims**



Apparatus for sorting and stacking veneer sheets comprising a vacuum infeed conveyor transporting individual sheets of veneer width-wise to a position above a scissors lift table whereupon parallel-motion knockdown arms are actuated to force the sheet loose from the vacuum conveyor and down onto the top of a pile forming on the lift. Squaring of the pile of sheets into a uniform stack is accomplished by the knockdown arms which move the forward lateral edge of the sheet up against a fixed stop acting in conjunction with a pair of actuatable even-ender pusher arms which align the longitudinal edges of the sheet. When a predetermined pile height is reached, as determined by the downward indexing of the scissors lift, the completed pile is discharged from the apparatus by an outfeed conveyor. While the pile is being discharged a pair of accumulator members are moved into position beneath the knockdown arms so as to temporarily support and retain the initial several sheets of a new pile as the scissors lift is discharged and recycled to the position where it is ready to receive the new pile in formation. A modification of the apparatus provides one or more additional bin locations adjacent the first bin location to receive and segregate the veneer sheets into stacks according to size or other criterion.

3,698,709
DOCUMENT HANDLING APPARATUS
David Heal, and James D. Parks, both of Iowa City, Iowa, assignors to Westinghouse Learning Corporation, Iowa City, Iowa
Filed Jan. 4, 1971, Ser. No. 103,415
Int. Cl. B65h 31/10
U.S. Cl. 271—88 **7 Claims**

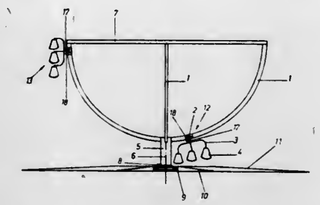


A system for offsetting the position of a selected document in a stack of similar documents as the selected document is fed into the stack. The system can be used in any apparatus where documents are serially conveyed into a stack forming mechanism for the purpose of identifying the offset document from others in the stack. The apparatus uses vacuum shoes to stop the documents in either the offset or a normal stack position, the former being used for those documents selected for identification. The vacuum shoes are also used as a stack height sensing means to control the customary vertically movable table supporting the stack.

3,698,710
MERRY-GO-ROUND
Anton Schwarzkopf, Munsterhausen/Schwaben, Germany, assignor to Firma Anton Schwarzkopf, Munsterhausen/Schwaben, Germany
Filed Aug. 5, 1970, Ser. No. 61,233
Claims priority, application Germany, June 26, 1970, P 20 31 547.3
Int. Cl. A63g 1/00, 1/34
U.S. Cl. 272—7 **18 Claims**

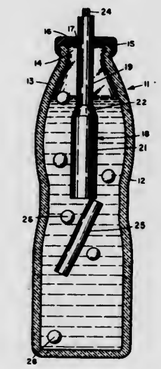
A merry-go-round has a hemispherical framework or cage rotatable about a vertical axis, the framework including a plurality of curved beams of quadrantal shape extending from a common hub at the nadir of the hemisphere to its equator defined by a circular hoop; each beam forms a guidetrack for a respective trolley having several passenger cabins suspended therefrom by universal joints. The trolleys are hoisted along their tracks, during a ride, by chains or the like which in one embodiment are controlled by a piston slidable under air pressure in the hollow beam. The framework may surround a

sphere bearing a simulated moonscape, the cabins simulating space craft on a lunar mission. A method is also disclosed of



erecting and collapsing the lunar sphere step-by-step with application of air pressure to a telescoped center post.

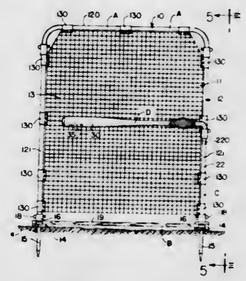
3,698,711
FLOATING BODY AMUSEMENT DEVICE
Terry S. Bullard, 6268 Hudson Avenue, Norfolk, Va.
Filed Sept. 7, 1971, Ser. No. 178,091
Int. Cl. A63f 9/06
U.S. Cl. 273—1 L **10 Claims**



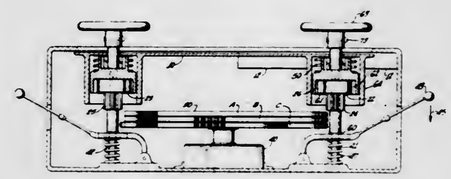
An amusement device including a transparent container substantially filled with a liquid having a cylindrical game piece immersed therein tending to float towards the upper surface thereof, and a tubular operator element operationally longitudinally moveably extending downwardly through a container opening cap element into the liquid. The operator element has a lower interior portion formed as a recess to substantially snugly receive the cylindrical game piece, and the operator element includes means to eject the game piece from the recess. The object of the device is to cause the game piece to enter the operator element recess in the shortest possible time. Substantially floatable spherical objects of the same diameter as the game piece may also be immersed in the liquid to make the objective of the device more difficult to attain.

3,698,712
BASEBALL PITCHING PRACTICE DEVICE
Vincent C. Pero, 18011 Greenfield, Detroit, Mich.
Filed Aug. 25, 1971, Ser. No. 174,656
Int. Cl. A63b 69/40
U.S. Cl. 273—26 A **4 Claims**

A readily portable easily erected and dismantled baseball pitching practice device or game including a backstop frame and net, the said frame being supported vertically on a pair of laterally spaced transverse base elements, one said base element supporting a vertically disposed stanchion spaced forwardly from said net frame onto which it is braced. A light weight hollow plastic bat is removably spring-mounted on said stanchion extending laterally therefrom parallel to but spaced forwardly of said backstop net holding said bat resiliently lateral from said stanchion at the height of the normal swing of a baseball player when at bat. The said bat normally carries in the outer ball hitting portion thereof one or more noise making devices which become audible responsive to the bat being hit by a pitched ball. The more direct the outer ball hitting portion of the bat is hit by a pitched ball, the more loud and distinct the audible response whereby the pitcher readily determines audibly when the bat is hit squarely at its ball hitting end portion, or near its handle, or merely "ticked" by a near miss. The extent to which the bat swings or oscillates after being hit by a pitched ball also is visually indicative of the accuracy of the pitch.



3,698,713
GAMETOY LOCOMOTION APPARATUS
Bruce D. Jimerson, 1815 Vallecito Drive, San Pedro, Calif.
Filed June 18, 1970, Ser. No. 47,549
Int. Cl. A63f 9/14
U.S. Cl. 273—86 E **9 Claims**

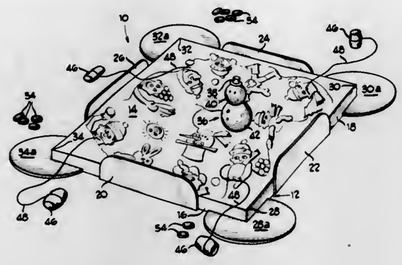


Objects having different coefficients of friction may be propelled across a common playing surface by different modes of directional vibration under the control of opposing players. If the repetition rate of the vibrational modes are also made variable, the players may command both the speed and heading of their own objects. Such a locomotion apparatus has numerous applications as a competitive gametoy.

3,698,714
PROJECTILE DISPLACING APPARATUS INCLUDING STRESSIBLE STRANDS AND MISSILES
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Feb. 25, 1971, Ser. No. 118,858
Int. Cl. A63d 3/02
U.S. Cl. 273—119 R **3 Claims**

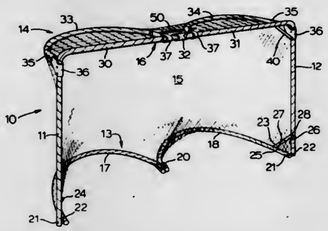
A missile-launching game of the type having a game board,

a weighted target member resting on the game board and missile members connected to the game board by elastic strands



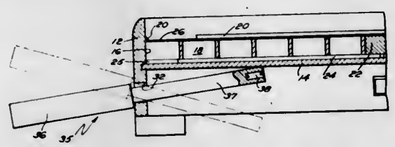
for launching the missiles towards the target by stretching the strands and releasing the missiles.

3,698,715
COLLAPSIBLE HOCKEY GOAL
Stanley Albert Charles Browning, and Glen Williams, both of Ontario, Canada, assignors to Canadian Imperial Bank of Commerce, Toronto, Ontario, Canada
Filed March 26, 1970, Ser. No. 22,827
Int. Cl. A63b *63/00*, *71/00*
U.S. Cl. 273—127 B **2 Claims**



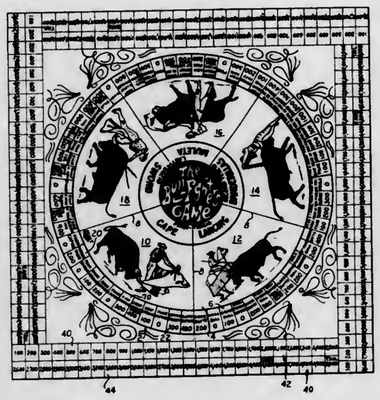
A collapsible hockey goal structure having net supports and a cross-bar which are foldable into and out of an erect position. The crossbar and net supports are each comprised of two rigid components each of which are hinged to each other and to the adjacent goal posts. When erect the various hinged components are locked into a rigid relationship.

3,698,716
BOARD GAME APPARATUS
Wilfred H. Rattey, Jr., 1 Laurel Lane, Cumberland, R.I.
Filed Feb. 1, 1971, Ser. No. 111,492
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AE **5 Claims**



A game apparatus having a game board with four vertical walls and a substantially horizontal platform spaced downwardly from the top of said walls and attached thereto to form a well into which water is poured. The grid within said well has its open network vertically oriented with the vertical height of the walls of the grid being less than the depth of said well. A plurality of spacers in the bottom of the well maintain the bottom surface of the grid in a spaced relationship from the bottom of the well and allows water poured into the well to seek its own level in each of the cells of the grid without the necessity of individually filling each cell. The horizontal platform is also positioned upwardly from the bottom of the vertical walls to form a cavity in the bottom of the playing board. In each of the vertical walls there is an aperture that communicates with the cavity and into which is inserted a playing stick having a magnet mounted at its tip. The stick is used to strike the bottom surface of the platform, and the magnet serves to recover the metallic markers when the stick is removed from the aperture. After the well has been filled with water up to a level even with the top of the grid wall members, a water absorbent playing cover sheet is placed thereon. The playing piece markers are then positioned in their respective playing areas and the game is ready to be played.

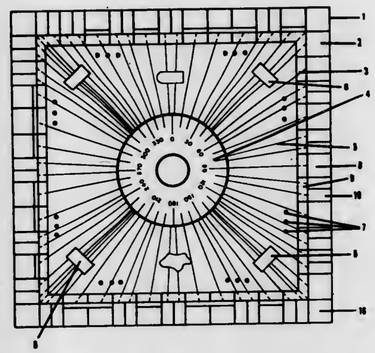
3,698,717
GAME SIMULATING A BULLFIGHT
Luis Canizares, Calle Alfredo Galvez 319, Rio Piedras, P.R.
Filed June 1, 1971, Ser. No. 148,693
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AG **6 Claims**



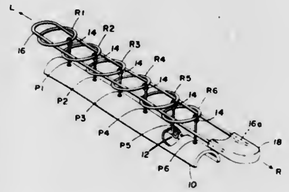
A game to be played by two, three or four persons using a game board having a circular part which is divided into five sections representing the successive stages of a conventional bullfight, these being surrounded by a circle divided into segments corresponding respectively to the five sections and extending in circular sequence from a start position, and to which each player advances his game piece in accordance with the total of numbers on thrown dice. A number of decks of cards are provided, each of which corresponds to one of the five sections, and a player may take a card from the appropriate deck when allowed to do so by the rules of the game, and must then move or act in accordance with the benefit or penalty shown by the card. Four numbered scales are provided on the game board on each of which one of the players moves a score piece to indicate his cumulative score.

3,698,718
BOARD TYPE GAME
Byron D. Kuhn, 642-A Chester Street, Norfolk, Va.
Filed June 2, 1969, Ser. No. 829,502
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 B **2 Claims**

Game apparatus comprising a game board having two parallel player courses extending around the periphery thereof, a compass rose freely rotatably mounted centrally of the board, and slots formed in the peripheral edges of the board for receiving removable inserts which bear indicia relating to the game. The apparatus further comprises cards which are drawn by players who land on specially marked areas of the player courses, and peg holes are formed in the board for receiving pegs used to keep track of turns to be lost as the result of penalties.



3,698,719
RING PUZZLE WITH QUICK RESTORATION MEANS
Louis M. Winslow, Rural Route 2, Belle Plaine,, Iowa
Filed Dec. 2, 1970, Ser. No. 94,507
Int. Cl. A63f *9/08*
U.S. Cl. 273—158 **4 Claims**

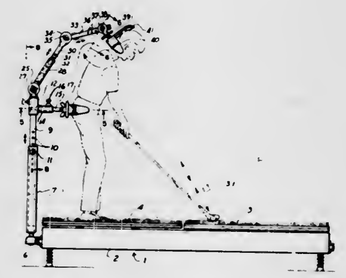


Disclosed is a puzzle of the type having a plurality of rings and posts with an elongated, closed loop threaded therethrough, the object of the puzzle being to remove the loop by an elaborate and lengthy sequence of manipulations of the rings and the loop. In order to be able easily to obviate mistakes in the solution of the puzzle or to replace the loop once it has been removed, the loop is formed with a removable portion so that it can be forthwith withdrawn and quickly rethreaded through the rings and posts.

3,698,720
GOLF BALL RETRIEVER
Austin Gudmundsen, 2016A Via Mariposa Way, Laguna Hills, Calif.
Filed Jan. 20, 1971, Ser. No. 107,995
Int. Cl. A63b *57/00*
U.S. Cl. 273—162 E **16 Claims**

A golf ball retriever comprising a cylindrical cartridge and a tine assembly being retained in the cartridge during non-use and being extended from the cartridge for use is disclosed. The tips of the tines in the retracted position form a crown which is easily gripped by the user for extending the tine assembly. The tines are generally arcuatly formed and composed of a resilient material so as to expand while being extended such that the tips of the tines slip easily about a golf ball for gripping the golf ball. Dimensions and the materials are important.

3,698,721
GOLF PRACTICE DEVICE
Albert A. Stewart, 150 Fox Meadow Road, Scarsdale, N.Y.
Filed Nov. 25, 1970, Ser. No. 92,577
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 C **7 Claims**

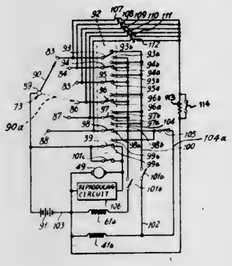


A golf practice device includes adjustable, extensible members for engaging and controlling the movement of a golfer's head and hips without interfering with motion of arms and shoulders during a swing, and includes adjustable, flexible guide members which define a correct path of swing, and provide an indication of error when the correct path of swing is not followed. The head movement control members comprise a pair of resiliently mounted padded guides which engage the golfer's cheeks and permit limited but yieldingly restrained turning movement of the golfer's head. The hip movement control members comprise a pair of curved hip guides which extend through less than a half circle and terminate at the golfer's hip joints. The golf club swing guide members are carried by brackets which are adjustably mounted on horizontal bars supported by vertical rods. The various components may be used with a platform which is adapted to tilt very slightly to give the golfer an indication of the instant when his weight shifts from one foot to the other.

3,698,722
CONTROL CIRCUIT FOR MULTIPLE TAPE CARTRIDGE PLAYING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 73,889
Int. Cl. G11b 23/12
U.S. Cl. 274—4 F 4 Claims



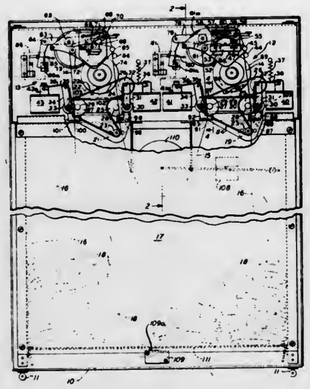
The multiple tape cartridge playing apparatus comprises a rotatable carriage on which a plurality of endless magnetic tape cartridges mounted and which is rotatably driven to selectively bring one of the cartridges into the play position, a reciprocally movable deck provided with a rotary capstan and a magnetic head for playing the cartridge brought into the play position, and deck driving means for moving the deck between a reproducing position where the capstan and the magnetic head engage the cartridge in the play position and a reproducing position where the capstan and the magnetic head are disengaged from the cartridge. A control circuit for the multiple tape cartridge playing apparatus comprises a cartridge selecting switch group for indexing the cartridge to be played, rotary switching means operable in response to rotation of the carriage, switches actuated by said deck, and solenoids. By operation of one of the switches in the cartridge selecting switch group, said deck is moved from said reproducing position to said retracted position, said carriage being rotated to bring the cartridge indexed by the switch into the play position during the time that said deck is retained in said retracted position, said deck being moved from the retracted position to the reproducing position to initiate the play of the designated cartridge after the cartridge has been brought to the play position.

3,698,723
ENDLESS LOOP TAPE RECORDER

Richard Kobler, Zug, Switzerland, and William F. Fagan, Rochelle Park, N.J., assignors to McGraw-Edison Company, Elgin, Ill.

Filed March 9, 1971, Ser. No. 122,349
Int. Cl. G11b 15/29, 23/12
U.S. Cl. 274—4 R 17 Claims

A combined dictating and transcribing machine uses an endless magnetic tape of a length sufficient for several hours recording. The machine — herein referred to as an "endless tape recorder" — comprises separate dictating and transcribing units with independent tape driving mechanisms and a single storage bin or tank below these units to receive the inner and outer runs of the tape. Each run may comprise multitudinous loops folded back and forth on itself. A tank vibrator serves to overcome friction and static effects to keep the tape loops settled in the storage bin. A safety drive control and warning system comprises a first switch operated when the inner run is drawn taut and a second switch operated when the outer run is tensioned. A feature of the invention is that as the outer run is tensioned it will pick up the looped mass or bundle of the tape then constituting the inner run to operate the

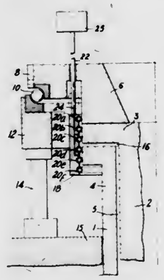


second safety switch and that when it has lifted the bundle to the top of the storage bin it operates also the first safety switch.

3,698,724
SEALING DEVICE

Robert Blachere, Meyrargues, and Michel Sauvage, Aix-en-Provence, both of France, assignors to Commissariat A L'Engergie Alomique, Paris, France

Filed Nov. 12, 1969, Ser. No. 875,623
Int. Cl. F16j 15/46; G27b 33/00
U.S. Cl. 277—34.3 6 Claims



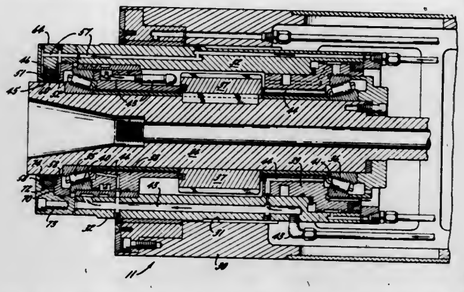
The sealing device particularly adapted to provide a pressure-tight passageway for rotating or sliding parts, comprises inflatable seals which can be easily replaced without any interruption of leak thightness. The inflatable seals are each placed in a groove of a rigid support which can be displaced longitudinally between different positions in each of which at least one seal is in contact with each part and one other is freed and can be replaced.

3,698,725
HYDROSTATIC SEAL FOR ROTARY MACHINE TOOL SPINDLES

Steven Eldor Klabunde, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Jan. 13, 1971, Ser. No. 106,156
Int. Cl. B65d 53/00; F15j 15/16; F16j 15/34
U.S. Cl. 277—74 13 Claims

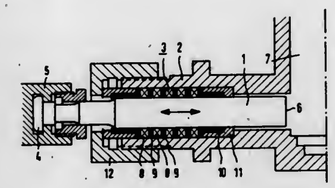
A hydrostatic seal is provided for machine tool headstocks having rotary, or rotary and translatable, tool spindles. A pressurized air film is formed between opposite sides of a thrust ring and adjacent hydrostatic seal bearings, forming a substantially frictionless seal and preventing oil leakage from around the tool spindle.



3,698,726
DEVICE FOR SEALING AND LUBRICATING RECIPROCATING MACHINE MEMBERS

Kurt Schettler, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Munchen, Germany

Filed Oct. 8, 1970, Ser. No. 79,009
Int. Cl. K16j 15/18
Claims priority, application Germany, Aug. 6, 1970, P 20 39 071.0
U.S. Cl. 277—125 4 Claims



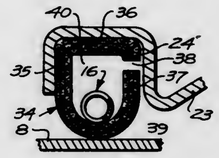
A device for sealing and molecularly lubricating a reciprocating machine member for moving liquids has a stuffing box packing having a plurality of spaced packing rings disposed tightly around the periphery of the reciprocating machine member and is comprised of polytetrafluoroethylene and a fiber mesh. Also provided are a plurality of intermediate rings made of textile mesh hardened with synthetic resin and disposed around the member. Each of these intermediate rings is positioned between a pair of next-adjacent packing rings and has an inner surface bordering the member. The inner surface of each of the intermediate rings is provided with an annular groove. A slit-like passage extends laterally through the respective packing rings for accommodating a flow of the liquid moved by the member, whereby the groove of each of the intermediate rings fills with the liquid for providing a continuous lubrication of the member.

3,698,727
DISTORTABLE SEAL RING

Fred A. Greenwald, South Gate, Calif., assignor to General Connectors Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 789,669, Jan. 8, 1969, abandoned. This application May 17, 1971, Ser. No. 144,123
Int. Cl. F16j 15/32
U.S. Cl. 277—153 14 Claims

A seal ring of essentially U-shaped or J-shaped cross section is intended to be interposed between a coupling having a radially inwardly directed wall and a conduit tube loosely received therein; wherein, the axially outer radial wall of the seal ring formed of elastomer impregnated laminations of fiber glass or similar material capable of axial distortion bears against the coupling end wall and is joined to a radially and axially inwardly curved conduit engaging a semitoroidal portion capable of axial as well as radial distortion, the interior of the seal

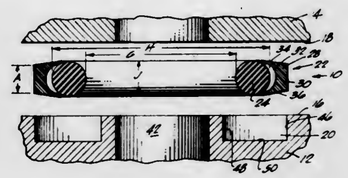


ring including the inner surface of the outer radial wall, being exposed to pressure within the coupling and conduit. Certain embodiments of the seal ring include a core of elastomeric material or a toroidal compression spring or both, and one embodiment having a radially outer cap band separated by a slit from the axially inner side of the seal ring.

3,698,728
FLUID SEALING DEVICE

James V. Walker, Redondo Beach, Calif., assignor to McDonnell Douglas Corporation

Continuation of Ser. No. 863,658, Oct. 3, 1969, abandoned. This application Jan. 7, 1971, Ser. No. 104,750
Int. Cl. F16j 15/10
U.S. Cl. 277—165 8 Claims



An improved fluid seal designed for precluding leakage of fluid between two mating surfaces. The seal includes a back-up device and a pressure loading element. The back-up device is shaped like a ring having an outer ring portion and two side flanges integral with the inner periphery of the outer ring portion and extending radially inwardly therefrom. The side flanges are spaced apart from each other to define an inwardly facing annular channel for retaining the pressure loading element. The seal may be easily installed in a groove formed in one of the mating surfaces to prevent leakage.

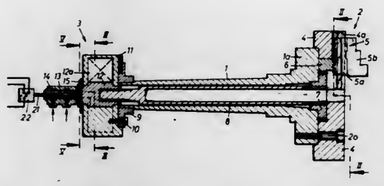
3,698,729
POWER OPERATED CLAMPING DEVICE FOR MACHINE TOOLS

Hans Scharfen, Buderich, and Josef Steinberger, Duesseldorf, both of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Duesseldorf, Germany

Filed Feb. 17, 1971, Ser. No. 116,158
Claims priority, application Germany, Feb. 19, 1970, P 20 07 509.6
Int. Cl. B23b 31/16, 31/30
U.S. Cl. 279—4 6 Claims

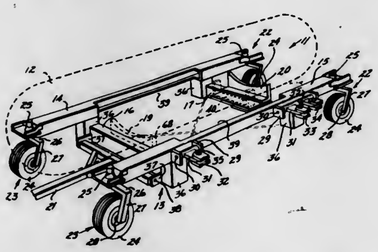
A power operated clamping device for machine tools in which a chuck body having radially moveable jaws is mounted on one end of a spindle while an oscillatory fluid motor is mounted on the other end of the spindle. Actuating blocks on the chuck body are connected to the motor and engage the

jaws and move the jaws positively when the motor is actuated. When the motor is turned beyond a certain limit, the blocks



disengage from the jaws while simultaneously a control system is actuated to prevent rotation of the spindle.

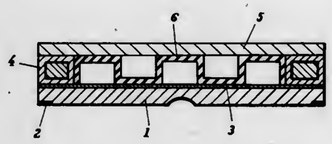
3,698,730
TANK WAGON
Clarence M. Hansen, East Lansing, Mich., assignor to Board of Trustees of Michigan State University, East Lansing, Mich.
Filed Sept. 10, 1970, Ser. No. 70,950
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 E **5 Claims**



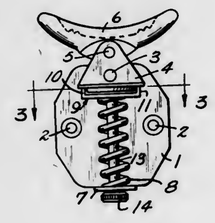
An improved tank wagon for hauling liquid and gaseous soil injectants, fumigants and fertilizers and having a selectively resilient chassis-frame torsionally absorbing shock stresses without impairing the tank support and including caster type wheels journalled in the chassis so that the wagon can be offset from a gang plow or implement, for example, and can be towed in a canted attitude parallel to the line of tractor travel. The chassis is provided with adjustable side extending arms for adjusting the chassis to a moving attitude. Journalling means are provided in the chassis for the support casters and brakes are selectively lockable on each caster so that when the tank wagon is towed along a road, for example, the casters are deactivated or suppressed in their pivoting action to allow the towing of the wagon by a fast moving vehicle from its tow bar. The tank is supported fixedly at only one point so that the tank does not overly rigidify the chassis frame.

3,698,731
MULTILAYER SKI AND METHOD FOR THE FABRICATION THEREOF
Wolf-Dieter Jost, and Karl-Gunter Moritz, both of Oberosterreich, Austria, assignors to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
Filed Dec. 9, 1969, Ser. No. 883,519
Claims priority, application Austria, Dec. 11, 1968, A 12049/68; April 11, 1969, A 3519/69
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **26 Claims**

There is disclosed a multilayered ski construction which contains at least one strip-, band- or similar shaped insert member and/or support member formed of a preferably cross-linked, elastomeric plastic material, which possesses a relative dampening of at least 8 percent, preferably 10 percent (measured in accordance with the flexural wave technique at 100 Hz). The invention also relates to the method of fabrication of such ski or the like.



3,698,732
TOE IRON FOR SAFETY SKI BINDINGS
Bernd Payrhammer, 8105 Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed June 16, 1970, Ser. No. 46,759
Claims priority, application Germany, July 23, 1969, P 19 37 479.9
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **3 Claims**

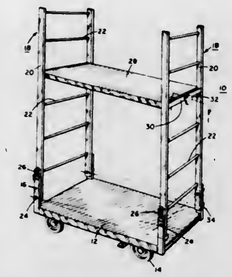


A baseplate or an intermediate plate is provided with at least one vertical pivot pin. Said pivot pin or each of said pivot pins is provided with a pivoted member, which is pivotally movable on the respective pivot pin against the force of a spring and carries a soleholder member. Said spring is disposed in a plane that is parallel to the ski. The spring extends in the longitudinal direction of the ski when the toe iron is in normal position. The spring bears at one end on an abutment which is rigid with the baseplate or intermediate plate and at its other end cooperates by means of a bridge member with the pivoted member or pivoted members. The bridge member is rotatable about the axis of the spring and has two legs, which are diametrically opposite to each other and equally spaced from the axis of the spring and bear on the pivoted member or pivoted members.

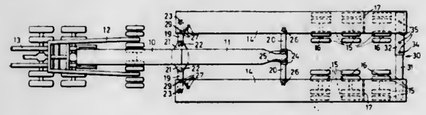
3,698,733
FREE STANDING FOLDABLE CART
Harold Isaacs, 2583 Fenwick Road, University Hts., Ohio
Filed April 22, 1971, Ser. No. 136,350
Int. Cl. B60p *9/00*
U.S. Cl. 280—33.99 T **14 Claims**

A free standing foldable cart having a rectangular base shelf with a post in each of the four corners and a pair of longitudinally spaced end frames. The posts of each end frame are pivotally connected to a corresponding post of the base shelf

for rotation of each end frame about a single axis of rotation to fold the end frames about the base shelf. In the folded position, two or more carts may be vertically stacked upon and moved about the running gear of the bottom cart.

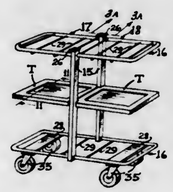


3,698,734
TRAILERS
Colin Anthony Drake, Andrew Street, Rocklea, Brisbane, Australia
Filed Feb. 22, 1971, Ser. No. 117,641
Int. Cl. B62b *11/00*
U.S. Cl. 280—34 R **1 Claim**



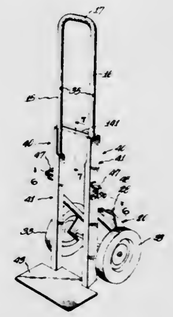
A trailer, particularly a semi-trailer for carrying heavy and wide loads, has a central longitudinal spine attachable to a towing vehicle, and two wheel-mounted side members, connected to either side of the spine by parallel-motion links and thus movable towards or from the spine, in parallelism, to narrow or widen the trailer. At the rear the side members are connected by a telescopic bumper bar with two slidably interfitted parts. The side members are held in laterally adjusted position relative to the spine by locking means associated with the parallel motion links and with the telescopic bumper bar.

3,698,735
UTILITY WHEEL-BEARING CARTS
Harold Bloomfield, and Melvin F. Roberts, both of Chicago, Ill., assignors to Bloomfield Industries, Inc., Chicago, Ill.
Filed March 8, 1971, Ser. No. 121,986
Int. Cl. B62b *3/00*
U.S. Cl. 280—47.35 **3 Claims**



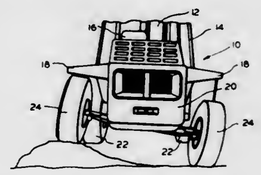
A utility wheel-bearing cart which is adapted for a wide range of uses including use in homes, restaurants, hospitals, motels, hotels, grocery stores, and the like, for transportation of various articles and merchandise, the cart comprising a plurality of horizontally disposed shelves supported in superimposed spaced relation with respect to each other, each shelf being supported at one end from a support and from which the shelf extends laterally in a horizontal plane from at least one side of the support.

3,698,736
COMBINED HAND AND TOWING TRUCKS
Robert C. Shape, Warren, Ohio, assignor to Warren Steel Specialties Corporation, Warren, Ohio
Filed Dec. 30, 1970, Ser. No. 102,598
Int. Cl. B62b *1/04*
U.S. Cl. 280—46 **5 Claims**



A combined hand and towing truck comprising a handle portion, wheels connected to the lower end of the handle portion for rolling along a ground surface, the handle portion being swingable through an arc having for its center the axis of the wheels, and means swingable with the handle portion to present a towing connection when the handle portion is in one throwover position in said arc, and to present a hand truck platform when the handle portion is in another throwover position in said arc.

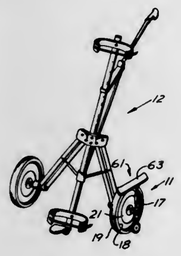
3,698,737
VEHICLE SUSPENSION
Lewis F. Grant, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 12, 1970, Ser. No. 88,749
Int. Cl. B60g *11/02*
U.S. Cl. 280—112 R **9 Claims**



A vehicular spring suspension which includes a frame supported trunnion mounted support arm extending transversely of the vehicle and connected at its opposite ends to the one ends of a pair of parallel longitudinally extending leaf springs from which are supported an axle and wheels. The mounting for the support arm includes a spherical bearing mounted on a trunnion shaft of such length that the support arm is movable in three separate directions on the shaft, viz., in articulation in

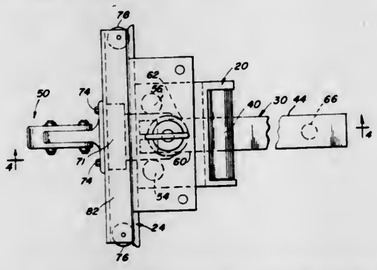
a vertical plane, in articulation in a transverse of longitudinal plane, and axially of the shaft, as well as in various combinations of said three directions of movement depending upon the nature or type of irregularity of the terrain in which the vehicle is operated.

3,698,738
GOLF CART SEAT
Norman K. Bossert, 712 Alicante Drive, Lodi, Calif.
Filed July 14, 1971, Ser. No. 162,455
Int. Cl. A47b *13/02*; B60r *27/00*
U.S. Cl. 280—150 R 7 Claims



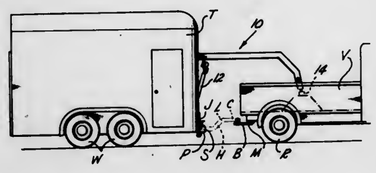
Coaxially mounted on a wheel of a cart used to carry a golfer's clubs is an outwardly projecting stub shaft on which is swingably mounted a pendulum member carrying on its lower end a mass tending gravitationally to maintain the pendulum in a vertical attitude. The pendulum includes an upwardly extending limb on which is flexibly mounted, in cantilevered manner, a seat spaced from and at least partially overlying the top of the wheel. As the golfer sits down on the seat, the seat is deflected downwardly into engagement with the top of the wheel. The top of the wheel not only supports the seat but also acts as a fulcrum causing the cantilevered seat to lift the pendulum out of contact with the stub shaft, thereby assuring that all of the golfer's weight is imposed on the wheel and none on the stub shaft.

3,698,739
EXTENDABLE SELF-ALIGNING TRAILER HITCH
Leonard W. Szymanski, Niles, and Joseph A. Slaski, Elmwood Park, both of Ill., assignors to Lift Parts Mfg., Inc., Elk Grove Township, Ill.
Filed March 4, 1971, Ser. No. 120,874
Int. Cl. B60d *7/00*
U.S. Cl. 280—478 B 9 Claims



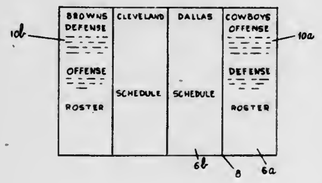
A trailer hitch for attachment to a powered vehicle to couple the vehicle to a trailer to be towed, the hitch being characterized in that it is both longitudinally shiftable and laterally swingable and includes automatic bearing means for centering and aligning the aligner bar of the hitch and automatic locking means for securing the aligner bar in its retracted position.

3,698,740
DETACHABLE GOOSE-NECK TOWING DEVICE
Eugene H. Chisholm, 10143 Avenda Maravilla, Cherry Valley, Calif., and Robert L. Stuart, 510 S. Monroe Street, Banning, Calif.
Filed Dec. 3, 1970, Ser. No. 94,675
Int. Cl. B60d *1/14*
U.S. Cl. 280—491 D 7 Claims



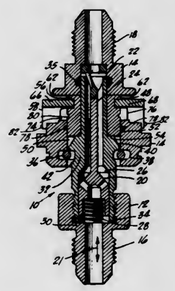
Provision is made for towing a trailer by a conventional hitch connectable to the rear bumper of a car, or by a goose-neck towing tongue having a front portion connectable to a towing vehicle between the front and rear wheels thereof. The rear portion of the tongue has depending terminal projections that are insertable in pockets in a structure on the trailer, while the tongue is disconnected and inclined rearwardly, and locked therein by swinging the tongue upwardly. Each pocket has a semi-cylindrical concavity and a sloping surface in facing relation thereto, and each projection has a mating convexity and a surface engaged by the sloping surface for locking the mating parts together. A rigid, stabilizing bar interconnects the tongue and trailer for transmitting a towing force and maintaining the tongue locked to the trailer.

3,698,741
GUIDE FOR WATCHING SPORTS
Harwood Bebbe, Jr., P.O. Box 2999, Spartanburg, S.C.
Filed Oct. 3, 1968, Ser. No. 764,877
Int. Cl. B42d *15/00*
U.S. Cl. 283—63 3 Claims



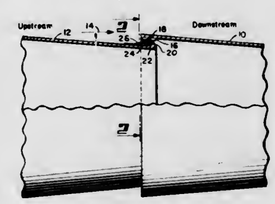
A guide for a sport such as football in which one team is on offense while the other is on defense has relatively stiff covers and leaves hinged in the covers and having creases on vertical lines. On the outer half of the front side of each sheet are printed the names of the offensive members of a particular team above the defensive members and on the back side the defensive members above the offensive members. By folding the pages inward, the members of the two teams will be shown with the defensive members of each team opposite the offensive members of the other team.

3,698,742
CONNECTOR WITH DISCONNECT WARNING INDICATOR
Harvey W. Jones, Long Beach, and Dudley A. Ryer, Jr., Westminster, both of Calif., assignors to McDonnell Douglas Corporation
Filed Nov. 23, 1970, Ser. No. 91,994
Int. Cl. F16l *29/00*, *37/28*
U.S. Cl. 285—39 8 Claims



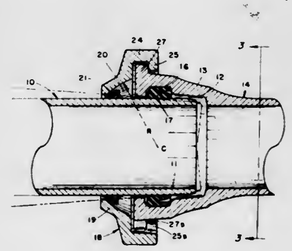
A connector assembly for allowing quick disconnecting of lines in fluid or pneumatic systems. The assembly requires the use of a special disconnect key to manually disconnect the connector portions thereof and the assembly includes means to retain the key in one portion of the connector assembly until the connector portions are reconnected, at which time the key may be removed therefrom. The key optionally includes a conspicuous warning flag so that upon inspection, it is obvious when the connector assembly is in a disconnected condition.

3,698,743
COMBUSTION LINER JOINT
Ervin J. Sweet, Trumbull; Brian W. Doyle, Shelton, and Joseph Rygelis, Monroe, all of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Jan. 28, 1971, Ser. No. 110,448
Int. Cl. F16l *53/00*
U.S. Cl. 285—41 5 Claims



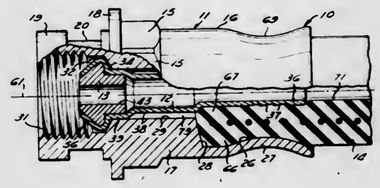
A combustion chamber liner is comprised of two telescoping sections, the leading edge of the downstream section overlapping the trailing edge of the upstream section. The end of the downstream section is provided with a plurality of peripherally spaced inwardly directed bosses. The inner peripheral surface of each of the bosses is grooved to accept a metal ring. The end of the upstream section is provided with a peripherally stepped surface having a supplemental groove, one end of which is open. The open end is closed by a spring snap ring which permits a sliding motion in only one direction. The two telescoping sections are joined by seating the ring in the groove in the downstream bosses and sliding the assembly over the snap ring, which prevents further movement between the sections. When cool, the dimensions of the upstream and downstream sections are such that there is a loose connection between the sections. However, the upstream section is subjected to more heat than the downstream section, causing it to expand to provide a tight fit.

3,698,744
AXIALLY LOCKED PIPE JOINT
William J. Bevington, West Lafayette, Ohio, assignor to Clow Corporation, Oak Brook, Ill.
Filed Jan. 6, 1971, Ser. No. 104,437
Int. Cl. F16l *17/02*
U.S. Cl. 285—111 1 Claim



A joint for cast metal pipe in which relatively telescoping, gasket-sealed spigot and bell members are locked together against axial separation by a locking collar arrangement which permits limited, universal pivoting movement or angular deflection between the spigot and bell members without interference with the sealing function of the gasket.

3,698,745
HOSE COUPLING
James E. Mundt, Mentor, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed May 3, 1971, Ser. No. 139,537
Int. Cl. F16l *33/20*
U.S. Cl. 285—256 3 Claims

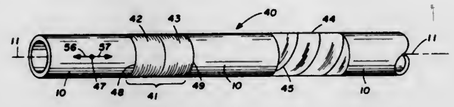


An inverted flare type hose coupling and its method of production, which includes a tubular eyelet providing at one end internal support for a hose end and at its other end a conical sealing seat for a flared tube. The seat portion of the eyelet is formed over and is supported by a conical ring assembled with the eyelet in a coupling body through an outer internally threaded end of the body.

3,698,746
CRACK ARRESTER

Rade G. Loncaric, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,296
Int. Cl. F16l 13/02
U.S. Cl. 285—286 7 Claims

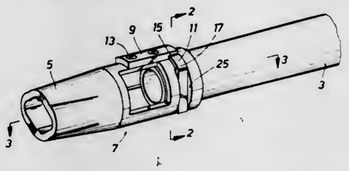


A crack arrester and a pipeline containing at least one of the same wherein the crack arrester is a cylindrical part for use in-line in a pipeline, the cylindrical part having a longitudinal impact strength substantially greater than its transverse impact strength.

3,698,747
THREADLESS CONNECTOR

Wilson Gordon Wing, P.O. Box 22283, Houston, Tex., and John Bellis Miller, III, 3402 South Shaver, #7, South Houston, Tex.

Filed April 5, 1971, Ser. No. 130,936
Int. Cl. F16l 37/24
U.S. Cl. 285—305 6 Claims



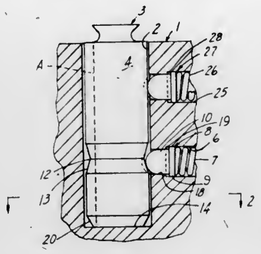
An improved connector for affixing in removable manner a choke or compensator-like device to the end of a gun barrel. The connector comprises a connector ring which is adapted to be fixedly attached to the end of the barrel and which receives thereover a connector clip which is in turn affixed to the choke or compensator device. The clip and connector ring coact with one another through a plurality of flat surfaces on the latter so that a simple rotative twist of the choke produces a snapping engagement of clip arms in certain of the ring flats. Removal of the choke is accomplished by rotation thereof so that the clip arms are caused to move out of engagement with the certain ring flats and hence out of engagement with the ring and the barrel to which it is connected.

3,698,748
MEANS FOR SECURING AN INSERT TO A BASE PIECE

Nello J. Petri, 2140 Jones, San Francisco, Calif.

Continuation-in-part of Ser. No. 122,947, March 10, 1971.
This application Feb. 28, 1972, Ser. No. 229,989
Int. Cl. F16b 12/20
U.S. Cl. 287—20.3 3 Claims

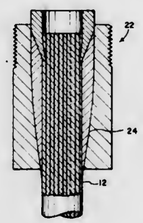
Means for removably securing an insert element to a larger base piece. The invention as disclosed solves the problem of securing an insert element, such as a punch, to a larger base piece such as a punch ring. In lieu of the usual set screw method of securing the punches to the punch ring, quick releasable means is provided for fixedly but removably securing the shank of a punch or the like within a bore in the punch ring. The cross sectional contour of the bore is formed so that the shank engages the bore at two points in cross section. The shank is forced against said two points by means of a pair of spring pressed elements, one of said elements also contributing to urging the shank against the bottom of the bore. The use of two spring pressed elements greatly contributes to the stability of shank in the bore and which stability could not be obtained by use of one spring pressed element regardless of the amount of force exerted by such element.



3,698,749
END FITTING

Edward H. Yonkers, Wilmette, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Dec. 31, 1969, Ser. No. 889,418
Int. Cl. F16b 9/00
U.S. Cl. 287—20.3 11 Claims



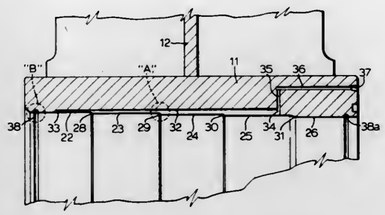
A tapered end fitting for a glass fiber rod applies a substantially uniform stress to the portion of the rod falling within the end fitting, and thus can withstand tensile loadings up to the tensile strength of the rod itself. A uniform stress distribution is achieved by designing the end fitting so that it subjects to the rod to a uniform volume strain. This, in turn, is achieved either by properly tapering the inner surface of the end fitting outer jacket, or by properly choosing the characteristics of the collect which fills the space between the rod and the outer jacket of the end fitting.

3,698,750
MEANS FOR ATTACHING A HUB TO A SHAFT

Peter de Hertel Eastcott, and James Ernest Welch, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Ontario, Canada

Filed Jan. 29, 1971, Ser. No. 110,980
Claims priority, application Canada, Oct. 7, 1970, 94981
Int. Cl. F16d 1/06
U.S. Cl. 287—52 R 9 Claims

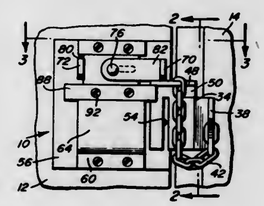
A hub-shaft configuration wherein a hub having a stepped bore is an interference fit on a shaft having a stepped periphery, preferably five steps of approximately equal axial length. To assemble or disassemble the hub and shaft, a high pressure liquid is applied between the hub and the shaft to expand the hub. A multi stepped configuration reduces the distance that shaft must travel during assembly or disassembly over that necessary for the two-step configuration of the prior art and avoids the difficulties in machining tapers.



3,698,751
SECURITY ATTACHMENT FOR CHAIN TYPE DOOR LOCK

Emanuel M. Moore, Pine Bluff, Ark., assignor to M & N Developers, Incorporated

Filed Dec. 3, 1970, Ser. No. 94,864
Int. Cl. E05c 17/30
U.S. Cl. 292—264 8 Claims



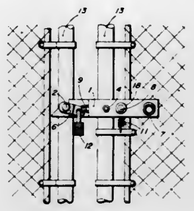
A keeper is attached to a door jamb in alignment with a retainer plate mounted on the door and a locking member engaged with the keeper and overlying the retainer plate in one position for bridging the juncture between the door and door jamb for securing the door in closed position. The locking member can also be slidably engaged with the inner edge of the retainer plate and is tethered to the keeper by a chain so that the chain will retain the door in closed position. A securing latch is movably mounted on the retainer plate and is movable into a position retaining the locking member engaged with the keeper and retainer plate with a pivotal stop member engaging the securing latch to retain it in operative relation to the locking member.

3,698,752
ROLL GATE LATCH

William F. Edwards, 3301 West Moreland Street, Phoenix, Ariz.

Filed Oct. 29, 1970, Ser. No. 85,191
Int. Cl. E05c 19/12
U.S. Cl. 292—104 4 Claims

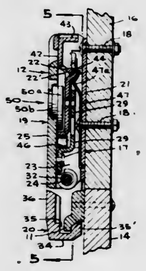
A latch for a roll gate, the device including a horizontal extending latch pin fitted through a fixed fence post, the fence post latch pin having a lock arm secured thereto and which is provided with an opening for receiving a pad lock and the invention including a latch unit supported on a gate vertical pipe, the unit including a pair of levers enjoined together, one of which is on each side of the roll gate vertical pipe and pivotable about the transverse rivet extending therethrough, one end of the levers each having a handle and the other end of the levers each being notched to fit around the fence post latch pin, one of the levers on its notched end having an opening therethrough for receiving the pad lock extending through the fence post latch pin lock arm.



3,698,753
DRAWBOLT LATCHING DEVICE

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Feb. 26, 1971, Ser. No. 119,205
Int. Cl. E05b 65/52
U.S. Cl. 292—247 16 Claims



A drawbolt latching assembly for luggage cases and the like, including a keeper and a latching assembly to be mounted on the pair of luggage case sections. The latching assembly includes a mounting plate fixed to the luggage, a drawbolt body hinged along a first pivot axis to the mounting plate for swinging movement between latching and release positions, and a U-shaped shackle pivoted to the drawbolt body along a second pivot axis which remains outwardly of the plane between the first pivot axis and the keeper at all positions of the drawbolt body. A finger operated slide member releasibly latches the drawbolt body to the mounting plate. Resilient members are stressed by rotation of the shackle to angular positions relative to the drawbolt body during releasing movement to frictionally restrain the shackle at such angular positions.

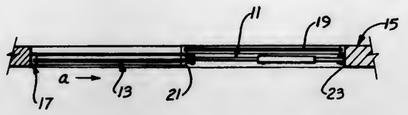
3,698,754
LOCK FOR SLIDING DOOR OR WINDOW

Lamoine E. Means, Newport Beach, Calif., assignor to PM Products, Inc., Newport Beach, Calif.

Filed Oct. 30, 1970, Ser. No. 85,456
Int. Cl. E05c 17/04
U.S. Cl. 292—262 8 Claims

A lock for use with a sliding member such as a sliding door or window comprising first and second links pivotally interconnected adjacent their inner end portions. The outer ends

of the links are pivotally connected to fixed structure and the sliding member, respectively. The links are movable to an

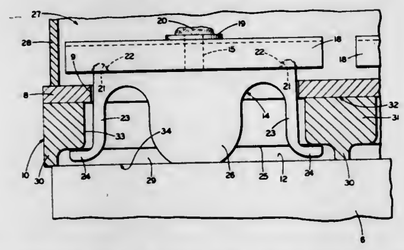


overcenter position when the slidable member is in a closed position to thereby retain the slidable member in the closed position.

3,698,755
VACUUM HEAD MAGNETIC VALVE CONSTRUCTION FOR PALLET LOADER

Gordon J. Sinclair, East Syracuse, N.Y., assignor to Diebold, Incorporated, Canton, Ohio

Filed April 29, 1971, Ser. No. 138,556
Int. Cl. B66c 1/02
U.S. Cl. 294—65 **17 Claims**



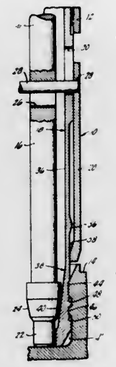
A magnetic valve vacuum head construction for pallet loaders, for hoisting, or lifting rigid, sealed cartons, packages, boxes, or cases to transfer them to or from and to load or unload them to or from pallets for palletized material handling. The vacuum head has lift plate means with a work-engaging face communicating through a series of box-like cells and a mask plate to the plenum chamber of a blower mounted on the head supplying the suction. A series of orifices in the mask plate each form airflow passages between the cells and the plenum chamber. Each valve has a magnetic metal plate of larger dimensions than those of the controlled orifice and an actuator connected to the magnetic plate formed of nonmagnetic material. The actuator extends through the orifice and normally projects below the work-engaging face of the vacuum head to engage the cartons to be hoisted for opening the magnetic valve.

3,698,756
GRIPPER DEVICE HAVING POSITIVE ENGAGING AND DISENGAGING MEANS

Malcolm D. Groves, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 8, 1969, Ser. No. 882,832
Int. Cl. B66c 1/54, 1/42
U.S. Cl. 294—96 **9 Claims**

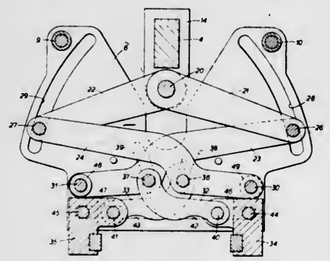
A gripper device for selectively remotely coupling and uncoupling a linearly moving driving member to a member to be driven. The gripper device fixed to the driving member has a plurality of radially flexible fingers with each finger having a gripping surface at its outer end for gripping the member to be driven. Radial movement of the fingers into and out of gripping engagement is controlled by a central locking plunger rod and an outer unlocking sliding sleeve concentric with the flexible fingers. The locking plunger rod and the unlocking sliding sleeve are interconnected for limited relative movement and have cam surfaces oriented thereon, these cam surfaces selectively engaging cam surfaces on the flexible fingers to positively move the fingers into or out of gripping engagement with the driven member upon particular longitudinal movements of the locking plunger rod and unlocking sliding sleeve.



3,698,757
LIFTING TONGS

Henry Smith, Sheffield, England, assignor to British Steel Corporation, London, England

Filed July 16, 1971, Ser. No. 163,401
Claims priority, application Great Britain, Aug. 4, 1969, 37,524/69
Int. Cl. B66c 1/00
U.S. Cl. 294—119 **10 Claims**

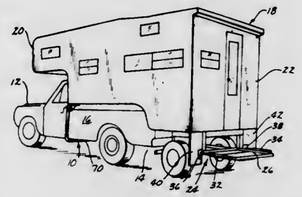


This invention relates to lifting tongs embodying pivotally linked cross arms secured in a frame and having jaws which are constrained by the frame to open and close along a common rectilinear path in response to an overhead lift. This invention avoids the drawback associated with conventional tongs in which the tongs move along an arcuate path wherein the thickness of, say, a slab which can be gripped satisfactorily with a particular jaw-opening range is limited. Further, the design in accord with this invention enables a firm grip to be obtained over the whole jaw-opening range.

3,698,758
JACK AND TIE-DOWN SYSTEM FOR A VEHICLE MOUNTED CAMPER

John N. Dodgen, Humboldt, Iowa

Division of Ser. No. 9,003, Feb. 5, 1970, Pat. No. 3,635,366.
This application July 2, 1971, Ser. No. 159,237
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC **6 Claims**

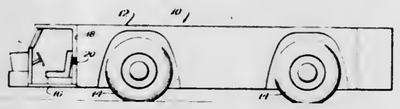


A jack and tie-down system for a vehicle mounted camper including a first pair of jacks secured to the lower front corners of the camper and a second pair of jacks secured to the rearward end of the camper. The front jacks each include a vertically movable leg portion extending downwardly therefrom. A U-shaped support member is secured to the lower ends of the two leg portions and extend therebetween. The support member serves as a stand for the front end of the camper when the camper is removed from the vehicle and also provides a means for leveling the camper when it is being used while on the vehicle. The support member extends beneath the vehicle frame and engages the same to serve as a tie-down means for the front end of the camper when the camper is on the vehicle. The second pair of jacks also have a support member extending therebetween which is adapted to engage the vehicle frame to serve as a tie-down means for the rear end of the camper when the camper is on the vehicle. The support member on the second pair of jacks also serves as a stand for the back end of the camper when the camper is removed from the vehicle and serves as a means for leveling the camper when the camper is being used while on the vehicle. In the modified form of the system, the second pair of jacks are pivotally connected to the auxiliary axle and wheel assembly which supports the rearward end of the camper. In the modified form of the embodiment, a support member does not extend between the jacks of the second pair of jacks.

3,698,759
SUPPORTING, LEVELING AND HEIGHT ADJUSTMENT MEANS

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 7, 1970, Ser. No. 52,939
Int. Cl. B62d 27/00
U.S. Cl. 296—35 R **3 Claims**

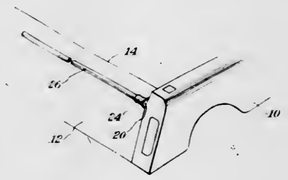


A means for supporting, leveling and adjusting the height of a sub-frame relative to a main frame including a pair of laterally spaced, vertically adjustable elements carried by the main frame and a surface formed on the sub-frame capable of engaging said elements. Selective adjustment of the vertically adjustable elements permits proper alignment of the sub-frame relative to the main frame and fastening means lock the two frames relative to each other.

3,698,760
TAIL GATE PROTECTOR AND LOAD BAR

L. B. Lane, McGregor, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,115
Int. Cl. B60j 5/10
U.S. Cl. 296—50 **4 Claims**



A horizontal elongated bar is secured by outwardly extending brackets to the top outside surface of the tail gate of a pick up truck.

3,698,761
SCREEN FOR A WINDOW-PANE OF THE REAR WINDOW OF A MOTOR-CAR

Takashi Niwa, No. 2-9-9, Shingashi, Itabashi-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 834,604, Jan. 10, 1969, abandoned, which is a continuation of Ser. No. 407,755, Oct. 30, 1964, abandoned. This application July 15, 1970, Ser. No. 55,275
Claims priority, application Japan, Nov. 5, 1963, 38/83165
U.S. Cl. 296—97 F **2 Claims**



This invention discloses a screen for a window-pane of the rear window of a motor vehicle or the like which is formed of a transparent colored sheet of synthetic resin to prevent the passage of direct sunlight and thermic rays, the formation of mist on the window-pane and the dazzle by head lights of succeeding cars at night. The screen being made of a single sheet of rather flexible and rigid synthetic resin and having the same shape and at least the same size as the extended surface of the curved window-pane, it is fitted to said window-pane in surface to surface contact adapting the entire contour thereof in strut bridging.

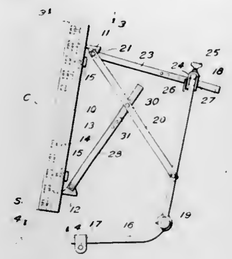
3,698,762
MOTOR CYCLE BACK RESTS

Wayne D. Gorman, 855 N. Dakota Street, Chandler, Ariz.

Filed Jan. 18, 1971, Ser. No. 107,135
Int. Cl. B62j 1/00
U.S. Cl. 297—195 **6 Claims**

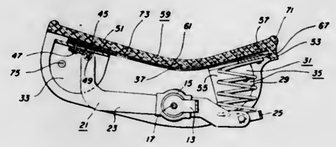
A motor cycle back rest which can be mounted by means of an articulate framework. The back rest proper can be adjusted

up or down. Further adjustment of the backrest, consisting of angle of tilt, and movement toward and away from the front of



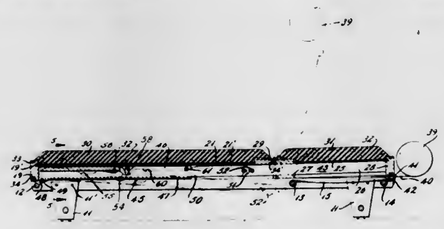
the motor cycle, is provided by the design of the framework by which it is supported.

3,698,763
BICYCLE SADDLE
George W. Worley, Bolivar, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.
Filed Oct. 26, 1970, Ser. No. 83,903
Int. Cl. B62j 1/18
U.S. Cl. 297—214 6 Claims



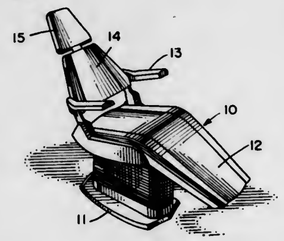
A saddle intended to be mounted on a single saddle post of a bicycle. The saddle includes a horizontally extending lower truss having usual structure for attaching the truss to the post of the bicycle, and an upper frame assembly supporting a resilient cover. The frame assembly is pivotally attached forwardly and resiliently attached rearwardly thereof to the lower truss and includes interposed leaf springs which act in conjunction with the resiliency of the cover to cushion the rider, i.e., the leaf springs contiguously engage the underneath surface of the cover, and the weight of the rider flexes both the leaf springs and the cover intermediate the length thereof.

3,698,764
CHAISE LOUNGE
Arthur J. Geddings, 205 West Broadway, Myrtle Beach, S.C.
Filed Feb. 17, 1971, Ser. No. 116,184
Int. Cl. A47c 17/16
U.S. Cl. 297—356 5 Claims



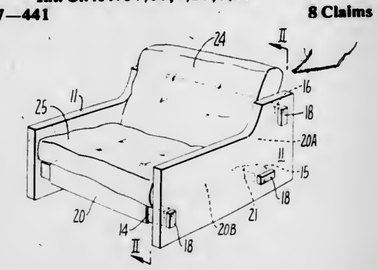
A chaise lounge having a base frame and a body mounted thereon with an extension of said body forming a backrest adjustable from a horizontal to an inclined position, and a flexible generally horizontal mounted support carried between spaced cross members beneath said backrest with an adjustable bracket for maintaining said backrest in an elevated position, and a removable covering for said body, said body being provided with dovetailed grooving along the same and said covering being retained therein by a resilient compressed insert.

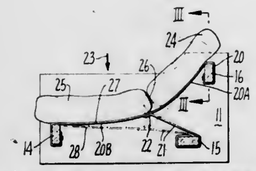
3,698,765
ADJUSTABLE HEADREST FOR DENTAL CHAIRS
Robert A. Olsen, Palatine, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Feb. 16, 1971, Ser. No. 115,385
Int. Cl. A47c 7/54; B60n 1/06
U.S. Cl. 297—396 16 Claims



An adjustable headrest particularly suitable for use in combination with dental chairs. The headrest is provided with a depending bar which is slidably received in a passage or channel within the backrest. Spring means and friction locking means within the backrest cooperate with the bar to secure it in any selected position of adjustment.

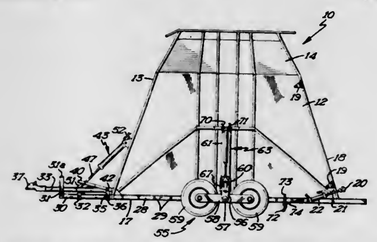
3,698,766
SLING TYPE UPHOLSTERED FURNITURE
Martin Borenstein, 2679 Mountaingate Way, Oakland, Calif.
Filed Nov. 10, 1969, Ser. No. 875,077
Int. Cl. A47c 7/00, 7/20, 5/00
U.S. Cl. 297—441 8 Claims





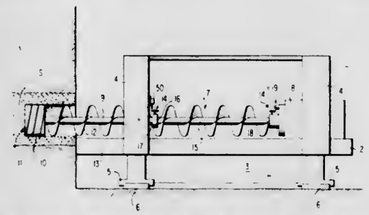
Furniture construction where the back and seat portions are a unitary fabric or other suitable flexible material loosely hung or slung between a top back rail and a front rail with no other support. However, the loose hanging of the back and seat is restrained by a piece of fabric or the like, secured at one side to a lower back rail and at its opposite side to the slung fabric adjacent a point which would otherwise be the juncture of the back with the seat, straightening the back portion of the fabric under vertical pressure on the seat portion while retaining the slung comfort of the seat portion. The slung portions are covered by unified upholstered seat and back elements which altogether simulate a piece of upholstered furniture.

3,698,767
HAYSTACK FORMING DEVICE
Howard G. Hanson, Wolverton, Minn.
Continuation-in-part of Ser. No. 881,697, Dec. 3, 1969, Pat. No. 3,596,784. This application May 19, 1971, Ser. No. 144,890
Int. Cl. B60p 1/56
U.S. Cl. 298—27 6 Claims



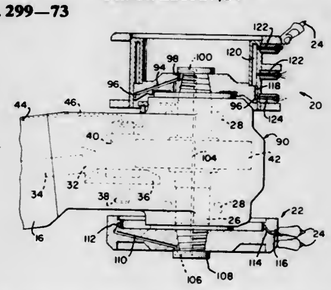
A mobile haystack forming device includes a housing supported by ground engaging wheels which are vertically shiftable between a lowered extended travel position and a raised retracted position wherein the housing is positioned from the surface of the ground. The housing has a floor structure which is forwardly movable to open the lower end of the housing and allow the haystack to be positioned upon the ground. The housing also has rear doors which are power shifted to an open position to permit the housing to be pulled forwardly away from the haystack. A hitch mechanism connects the device to the towing vehicle and is releasably locked to the floor structure when the haystack forming device is being towed, but is longitudinally shiftable relative to the floor structure in a forward direction to produce a jarring effect on the housing prior to moving the floor structure to an open condition. This facilitates release and removal of the haystack from the housing.

3,698,768
AUGER MINING MACHINE
John L. Delli-Gatti, Fairmont, W. Va., assignor to Fair-Quip Corporation, Fairmont, W. Va.
Filed June 18, 1971, Ser. No. 154,588
Int. Cl. E21c 27/20
U.S. Cl. 299—55 29 Claims



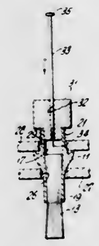
An improved auger mining machine is disclosed. The machine includes an auger string composed of a plurality of auger sections connected to each other and, at the rearward of the string, to a rotary drive means. Each connection is by means of a pin and socket joint which includes a locking means biasly mounted on the socket having associated therewith an unlocking member. A plurality of unlocking means are mounted on the machine to permit separation of one auger section from another and from the rotary drive means. The front unlocking means is pivotably mounted.

3,698,769
MINING MACHINE HAVING LIQUID SUPPLY SEALING MEANS
Michael J. Amoroso, Pittsburgh, Pa., assignor to Lee-Norse Company, Charleroi, Pa.
Filed Dec. 30, 1970, Ser. No. 102,769
Int. Cl. E21c 27/24
U.S. Cl. 299—73 9 Claims



Mining machine having a rotary mining head including a rotatable support carrying cutter supporting drum means, wherein liquid such as water is discharged through discharge outlets peripherally of the drum means. The liquid is supplied through passage means in nonrotatable supporting means and communicating passage means in the rotary mining head, leakage at the connection of such passage means being prevented by a plurality of sealing rings which encircle the support laterally spaced apart longitudinally of the latter adjacent opposite sides of such connection. Leakage past the sealing rings flows externally of the mining head, whereby such leakage is readily and quickly detectable; and means separate from the sealing rings prevent liquid leakage past the latter from flowing to the bearings mounting the support and/or to the gears through which the mining head is rotatably driven.

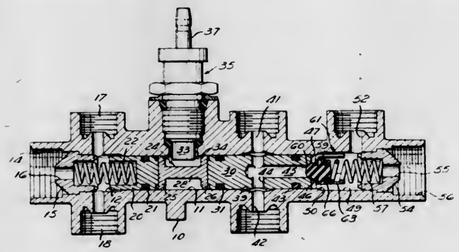
3,698,770
BRUSH MAKING APPARATUS
William James Landen, Cheshire, and Gunnar F. Lundquist, Kensington, both of Conn., assignors to The International Silver Company, Meriden, Conn.
Division of Ser. No. 884,723, Dec. 12, 1969, which is a division of Ser. No. 692,416, Dec. 21, 1967, Pat. No. 3,499,686. This application Jan. 3, 1972, Ser. No. 214,777
Int. Cl. A46d 3/04
U.S. Cl. 300—1 8 Claims



The invention contemplates a brush in which a bundle of natural brush bristles is secured to a tubular retaining ferrule having a bore open at both ends. The root ends of the bristles are assembled within the bore, with the tip ends projecting outwardly as the applicator end of the brush. A guided pin is inserted on the central axis of the bundle to radially outwardly

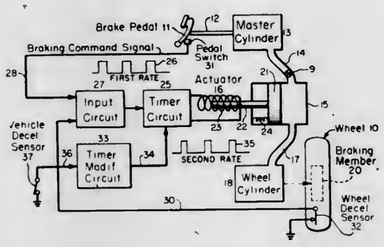
further compact the bristles in the bore, and to serve a molding function as a thermosetting resin is cured to hardness; the root ends are thereby bonded to each other and to the ferrule, and a smooth central passage is defined for pomade supply.

3,698,771
BRAKE WARNING SWITCH WITH BYPASS
Frederick D. Keady, Cleveland Heights, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed Aug. 7, 1969, Ser. No. 848,321
Int. Cl. B60t 8/26, 11/34, 17/22
U.S. Cl. 303—6 C 10 Claims



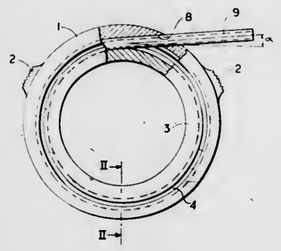
A dual pressure switch unit utilized in dual brake systems for motor vehicles includes a valving mechanism operable by a pressure differential to change the circuitry of one of the two dual systems. In a system utilizing a pressure reducing valve in the rear brakes, failure of the front brakes will operate the valve and switch unit to close the switch to actuate a signal and to bypass the pressure reducing valve to supply full pressure to the rear brakes. This valving action is produced by an opening in a central valve spool normally closed by a member which is restrained in the housing and moves away from a closed position against the opening when the valve member is moved axially by a pressure differential. Whenever the valve member is returned to a neutral position, the opening is closed to return the pressure reducing valve to the circuit.

3,698,772
BRAKE CONTROL SYSTEM FOR PULSING VEHICLE BRAKES AT VARIABLE PULSE RATES
James E. Nixon, Warren, Mich., assignor to Borg-Warner Corp., Chicago, Ill.
Filed March 18, 1970, Ser. No. 20,678
Int. Cl. B60t 8/12
U.S. Cl. 303—21 BE 20 Claims



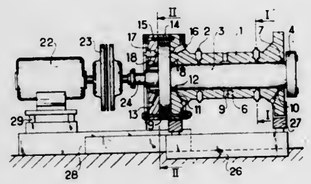
A brake control system includes an actuator which relieves and restores the braking force to a vehicle wheel in a cyclical manner under control of a timer. The timer normally operates at a first rate when it receives both a braking command signal and a wheel deceleration signal. If the vehicle deceleration exceeds a certain level, the rate of timer operation, and therefore the rate of actuator operation, is changed to a second rate to accommodate the wheel-to-road adhesion range indicated by the vehicle deceleration signal.

3,698,773
BEARINGS FOR PRECISION APPARATUS
Lennart Gunnar Oskar Dahlgren, Vastra Frolunda, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden
Filed Dec. 10, 1969, Ser. No. 883,746
Claims priority, application Sweden, April 29, 1969, 6139/69
Int. Cl. F16c 17/00, 27/06
U.S. Cl. 308—8 3 Claims



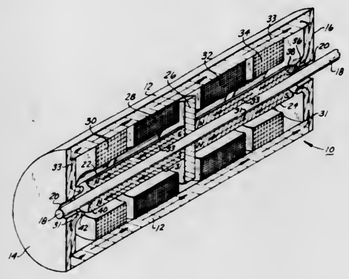
A bearing of the type which comprises an outer ring and an inner ring mounted for rotation one within the other, wherein the confronting edge portions of the rings are provided with grooves to form a channel therebetween, into which is inserted a hose of resilient material having a low coefficient of friction, the diameter of the hose being such that the hose is slightly deformed when entering the channel, to form bearing surfaces against the sides of the grooves.

3,698,774
SPINDLE ASSEMBLY AIR BEARINGS
Claude Saulgeot, Annecy, and Jean-Noel Coste, Poisy, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France
Filed May 19, 1971, Ser. No. 144,939
Claims priority, application France, May 20, 1970, 7018207
Int. Cl. F16c 19/16
U.S. Cl. 308—9 9 Claims



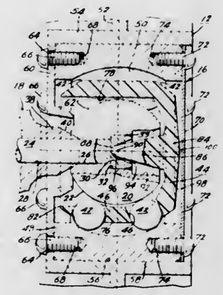
A spindle assembly includes a sleeve bearing having a number of air nozzles equi-angularly arranged about a shaft. A thrust bearing supports one end of the shaft with clearances for air support. The air nozzles generally have a frusto-conical air passage with a central bore.

3,698,775
MAGNETIC SUPPORT AND MOTOR STRUCTURE
Roswell W. Gilbert, New York, N.Y., assignor to Technical Management Services, Inc., Westfield, N.J.
Filed April 1, 1970, Ser. No. 24,665
Int. Cl. F16c 39/06
U.S. Cl. 308—10 16 Claims



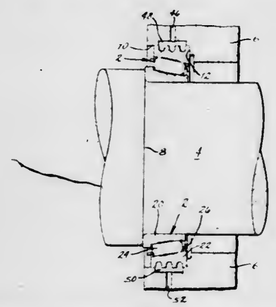
The motor has a magnetic bearing structure which suspends and holds the shaft of the motor out of contact with the shaft support structure, thus eliminating bearing lubrication and wear problems and making it possible to operate the device in a vacuum. The shaft is permanently magnetized, and a positive feedback amplifier is used together with multiple coils to control an axial magnetic field and thus maintain the shaft in a position of equilibrium between the ends of the bearing structure, and to magnetically hold the shaft against transverse movement. Rotary drive force is applied to the rotor either by conventional means such as a wound rotor driven by a stator which develops a rotating magnetic field, or by simply causing the axial magnetic field to change with changes in the relative rotational positions of the shaft and the ends of the bearing structure.

3,698,776
CENTER THRUST RETAINER FOR SPHERICAL RACE BALL BEARINGS
Bernard Litman, Wantagh, and Everett R. Silvia, both of Huntington Station, N.Y., assignors to Ambac Industries, Inc., Garden City, N.J.
Filed Nov. 15, 1971, Ser. No. 198,570
Int. Cl. F16c 31/06; G01c 19/16
U.S. Cl. 308—35 8 Claims



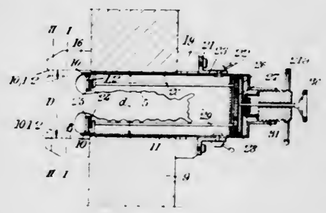
A spherical bearing assembly for gyroscopes and the like including means for minimizing the frictional effects of acceleration loads on the ball retainer. Said means includes a structural support arrangement for the retainer whereby the retainer is supported during acceleration at the center of the bearing. A cavity within the inner race extending to a point comprising the center of the bearing is adapted to receive an axial stem portion of the retainer. A tip portion of the retainer stem is adapted to seat against a spherical surface within the inner race located substantially at the bearing center. This arrangement reduces gyro precession by minimizing the frictional moments about the roll, yaw and pitch axes.

3,698,777
TAPERED ROLLER BEARING WITH MINIMUM HEAT GENERATING CHARACTERISTICS
Wyn Eugene McCoy, Canton, Ohio, assignor to The Timken Company, Canton, Ohio
Filed Dec. 8, 1970, Ser. No. 96,189
Int. Cl. F16c 33/66, 33/00
U.S. Cl. 308—187 10 Claims



A tapered roller bearing has shallow circumferentially extending grooves in the tapered raceways of its cup and cone. Those grooves prevent full line contact between the frustoconical side surfaces of the tapered rollers and the tapered raceways and this in turn reduces the elastohydrodynamic oil film. The reduction of the elastohydrodynamic oil film minimizes the generation of heat within the bearing. The cup is further provided with annular channels through which oil is circulated to dissipate heat from the bearing.

3,698,778
GLOVE MOUNTING RING DEVICE TO PERMIT OF PERFORMING OPERATIONS IN A SEALED CONTAINER
Eric Jean Townsend, Vitry, Seine, and Marcel Fortin, Maurepas, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Division of Ser. No. 655,058, July 21, 1967, Pat. No. 3,541,648. This application July 7, 1969, Ser. No. 869,982
Claims priority, application France, Aug. 1, 1966, 6671635; Aug. 1, 1966, 6671636
Int. Cl. A61g 11/00
U.S. Cl. 312—1 7 Claims



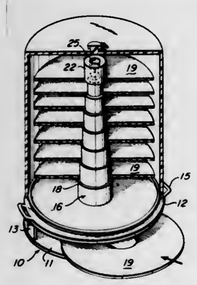
For the fixation of a flexible glove intended to permit of performing operations in a sealed container, use is made of a ring

made of ring elements hinged to one another and some of which are always located on the outline of the ring, whereas the others can be retracted inside this outline. Expansion of the ring is obtained by pushing in the outward direction the hinges between two ring elements of the second kind. Such a ring is adapted to fit in the expansible gutter-shaped edge of the deformable glove.

3,698,779
CONTAINER

Raymond W. Holmes, and Elizabeth E. Holmes, both of 481 Nunn Avenue, Wilmington, Ohio

Filed Dec. 8, 1970, Ser. No. 96,023
Int. Cl. A47f 3/14, 3/06; A47b 88/00
U.S. Cl. 312—126 **9 Claims**

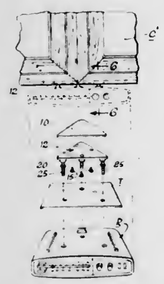


A container especially for storing, displaying and, under some conditions, shipping food and other perishable products. Preferred embodiments feature a stepped post member each step of which mounts a separable rack or tray which may have dual function. This post member is separably related to a base mounting a cap-like enclosure for the post-tray assembly. In certain embodiments the base is designed to provide a storage receptacle for the separable trays.

3,698,780
UNDER-CABINET RADIO

Edward C. Collins, Deerfield, Ill., and Eugene C. Hittle, Columbus, Ind., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,250
Int. Cl. A47b 67/02; F16f 15/00; A47f 5/00
U.S. Cl. 312—245 **6 Claims**

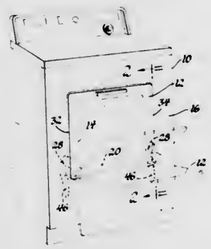


A radio receiver specially designed for support on the lower surface of a cabinet, such as a so-called hanging kitchen cabinet, in combination with mounting means therefor. Downwardly projecting pins are detachably secured to the bottom wall of the cabinet while the radio housing is provided with female means adapted to receive said pins together with manually operable means for detachably engaging said pins. Provision is made for selectively locating the radio at a predetermined elevation relative to the bottom wall of the cabinet.

3,698,781
CABINET DOOR MOUNTING

Joseph B. Dunn, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 27, 1971, Ser. No. 110,014
Int. Cl. A47b 88/00
U.S. Cl. 312—327 **2 Claims**

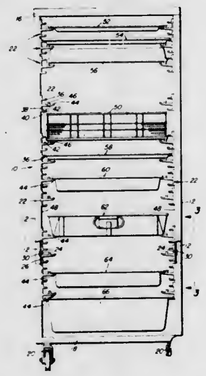


A door pivotally mounted about a horizontal axis on the front surface relative to a cabinet access opening. Sector brackets having a cam surface and retaining recesses are attached to each side of the door for movement into and out of the cabinet. Spring biased detent members are positioned on the inner side of the cabinet front surface continuously engaging the sector brackets releasably retaining the door in open positions of varying degrees so the door can be utilized as a chute, a shelf, or be moved to a non-obstructing open position. Engagement of the detent members with the cam surfaces continually urges the door closed.

3,698,782
MULTI-SHELVED SLIDE RACK

Bruno Onori, 4240 N. W. 135th Street, Miami, Fla.

Filed April 9, 1971, Ser. No. 132,654
Int. Cl. A47b 88/00
U.S. Cl. 312—350 **5 Claims**



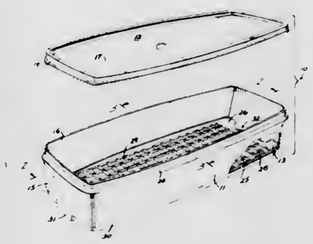
This device is a rack and a number of multi-shelved slides detachably secured thereon for supporting as many as eleven different size pans and/or trays. The rack, made generally of high tensile aluminum alloy, is rectangular in shape, and has four vertical uprights, one at each corner supporting a roof

and mounted on a base, preferably with four swivelled caster wheels on the bottom of the base for portability. It is open at least at the front, and the confronting sides of each pair of side uprights are provided with a number of suitable vertically spaced female keyhole slots in which the pan or tray supporting slides, made generally of extruded aluminum, are secured or mounted by means of male headed studs extending the backs of the slide. These studs extend from the back wall of the slides, and on the front wall of the slides, there are at least three shelves of various sizes, the middle shelf extending further than the upper and lower shelf, and the middle shelf terminates in a small upstanding ridge, and so does the bottom shelf. In addition, the middle shelf has an intermediate ridge, higher than its end ridge, but stopping short of the top shelf and further out than the end of the top shelf so that one size of tray may be supported on this middle ridge, a different size on the outer ridge, yet another size on the top shelf, which is flat, yet still another size on the bottom shelf, etc., as a result of which eleven different sizes or types of conventional pans or trays may be selectively carried by the rack. It is mainly used in the food industry, such as in restaurants, cafeterias, bakeries, etc. but also may be used in industries wherever desirable. With the slides suitably spaced on the rack, a number of different sizes of trays or pans may be used simultaneously.

3,698,783
STORAGE CONTAINER FOR CELERY OR THE LIKE

James B. Swett, Barrington, R.I., and Sidney Z. Smith, Worcester, Mass., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Jan. 28, 1970, Ser. No. 6,462
Int. Cl. B65d 25/00
U.S. Cl. 312—351 **1 Claim**



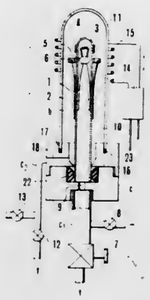
A storage container for celery or the like comprising a container adapted to be sealed to prevent ingress or egress of moisture. The container has a support particularly adapted to position the contained vegetable above the moisture which will collect in the bottom of the container. The support also positions the vegetable at areas of minimized points of contact.

3,698,784
MANUFACTURING METHOD FOR SMALL ELECTRIC LAMPS

Jituo Hamai, Tokyo, Japan, assignor to Hamai Denkyu Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed April 14, 1971, Ser. No. 133,875
Claims priority, application Japan, June 19, 1970, 45/53914; June 19, 1970, 45/53915
Int. Cl. H01j 9/18
U.S. Cl. 316—19 **4 Claims**

The present disclosure provides a new simplified method for manufacturing small electric lamps to be used within electronic equipment, particularly small electric lamps of long life and high quality, by heating from the outside of the bulb and fusing together the bulb and the bead of the bead mount attached with a filament, using equipment which can evacuate



the inside and outside of the bulb separately; electric lamps thus produced; and the manufacturing equipment.

3,698,785
MANUFACTURING METHOD FOR SMALL ELECTRIC LAMPS

Jituo Hamai, Tokyo, Japan, assignor to Hamai Denkyo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed April 14, 1971, Ser. No. 133,874
Claims priority, application Japan, June 19, 1970, 45/53916; June 19, 1970, 45/53917
Int. Cl. H01j 9/18
U.S. Cl. 316—19 **5 Claims**

The present disclosure provides a new method for manufacturing small electric lamps to be used within electronic machines, etc., particularly small electric lamps with long life and high quality, using a simplified process and equipment, e.g., by vacuum-sealing the entire filament-attached bead mount in a bulb, and then, with the bead mount set in position, heating from outside of the bulb to fuse together the bead of the bead mount and the bulb; small electric lamps thus produced; and the manufacturing equipment.

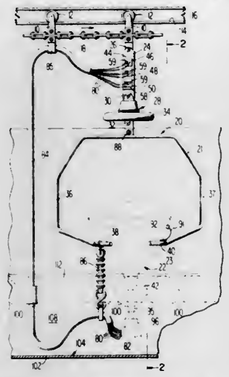
3,698,786
HIGH VOLTAGE PROCESSING OF CATHODE RAY TUBES

Edward Anthony Gronka, West Nanticoke, Pa., assignor to RCA Corporation

Filed Dec. 28, 1970, Ser. No. 101,794
Int. Cl. H01j 9/00
U.S. Cl. 316—26 **6 Claims**

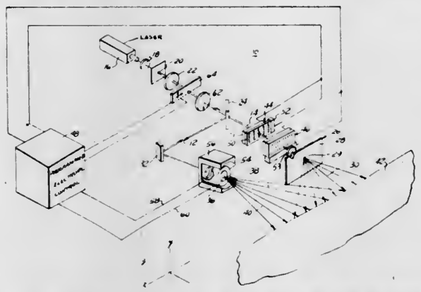
A cathode ray tube processing conveyor, comprising means for energizing the cathodes and applying a high voltage to the high voltage accelerating electrodes of the tubes, is provided with two rows of magnetic field coils of alternating polarities

mounted on opposite sides of the conveyor and adjacent to the path of the tubes therealong, for deflecting the beams and



thereby preventing damage to the screen during the application of the high voltage.

3,698,787
HOLOGRAM SYNTHESIS USING A DISPLACEABLE REFERENCE POINT SOURCE
Rolf K. Mueller, Brighton, Mich., and Emanuel Marom, Tel Aviv, Israel, assignors to The Bendix Corporation
Filed Feb. 19, 1971, Ser. No. 116,983
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 **25 Claims**

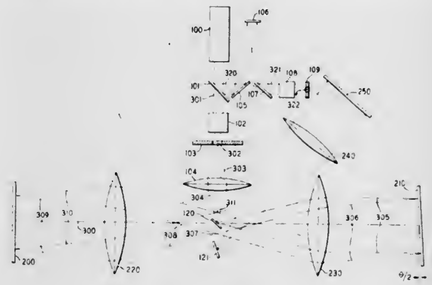


A photographic record of a hologram that will produce a three-dimensional image when illuminated with a beam of coherent laser radiation is produced synthetically by directing coherent laser light from two point sources to interfere proximate a recording film. The interference pattern produced depends on the relative positions of the two point sources. Both sources are moved according to a predetermined program to a number of different positions, with one source constrained to move in a single plane and the other along a line normal to this plane. The various interference patterns are superimposed on the recording film to form a complex hologram. The method and apparatus of this invention can be used to create images of real as well as fanciful scenes.

3,698,788
MULTIPASS INTERFEROMETER
Richard O'Regan, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 29, 1971, Ser. No. 157,927
Int. Cl. G01b 9/02; G02b 27/22
U.S. Cl. 350—3.5 **12 Claims**

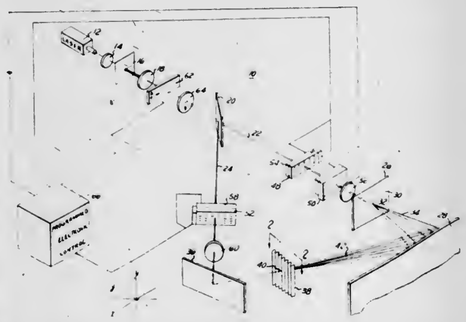
An interferometer is provided with a multipass optical cavity. In the multipass optical cavity, an object beam passes several times through the object space. The sensitivity of the interferometer is increased by a factor directly proportional to the number of passes through the object space.

The multipass cavity comprises two cavity mirrors and an arrangement of lenses. The lenses image each cavity mirror



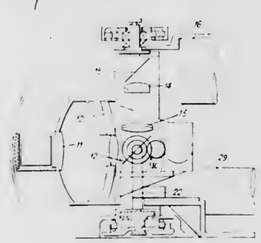
onto the other. A light ray incident on a particular point on one of the cavity mirrors returns to the same point on each subsequent pass through the cavity. The object beam is extracted from the cavity after it has made the desired number of passes. It is then combined with a reference beam to form an interference pattern or a hologram.

3,698,789
APPARATUS EMPLOYING A GRATING TO PROVIDE AND MOVE THE SOURCE OF A WAVE ENERGY DISTRIBUTION
William G. Wolber, Southfield, Mich., assignor to The Bendix Corporation
Filed Oct. 20, 1971, Ser. No. 191,002
Int. Cl. G02b 5/18, 27/38
U.S. Cl. 350—3.5 **2 Claims**



A hologram is synthesized by moving two apparent sources of diverging wave energy distributions to form different interference patterns and by superimposing these interference patterns on a recording surface. The source or apex of one diverging wave energy distribution is moved substantially in a plane. The source or apex of the other diverging distribution is moved substantially perpendicular to the recording surface by directing a thin beam of laser light to strike a blazed grating disposed substantially perpendicular to the recording surface. The grating expands the received laser beam to form a diverging wave energy distribution. The apex of this distribution is moved by deflecting the laser beam to strike different positions on the grating at different distances from the recording surface.

3,698,790
STABILIZED OPTICAL SYSTEMS
Peter John Berry, Glasgow, Scotland, assignor to Barr and Stroud Limited, Glasgow, Scotland
Filed Aug. 31, 1971, Ser. No. 176,535
Claims priority, application Great Britain, Nov. 18, 1970, 54,781/70
Int. Cl. G02b 23/02
U.S. Cl. 350—16 **8 Claims**



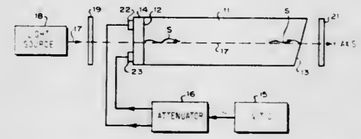
A stabilized optical system comprising a servo-stabilized platform mounted on a support for rotation about a first axis, an objective system secured to said platform, and a mirror mounted on said platform for rotation about said first axis, the reflecting surface of said mirror containing said first axis, the objective system being so located that the focal point thereof lies on said reflecting surface, and the first axis passing through said focal point, and a driving connection between the mirror and the platform whereby the angular movement of the mirror is related to that of the objective system so that a light beam received at said objective system is projected by said mirror along a second axis which is fixed in position with respect to the support.

3,698,791
DRAPE FOR OPERATING MICROSCOPE
David L. Walchle; Russell G. Smith, and James L. Geraci, all of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed April 19, 1971, Ser. No. 135,108
Int. Cl. G02b 27/00
U.S. Cl. 350—61 **21 Claims**



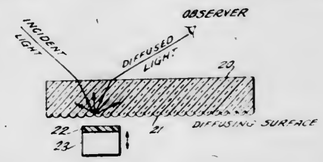
The microscope drape is fabricated from a very thin, transparent, heat-resistant plastic film which is adapted to completely house an operating microscope including its support arms whereby no air can escape from the interior of the drape except through the open end thereof which is located remote from the microscope. The drape includes an optically clear, distortion free, transparent lens and means for disposing said lens in parallel, enclosing relationship with the objective lens of the microscope. The drape also includes cylinder-defining ocular-housing extensions which include means for securing said extensions to the oculars of a microscope for precluding the escape of air from the interior of the drape by way of said extensions.

3,698,792
OPTICALLY TRANSPARENT ACOUSTIC WAVE TRANSDUCER
John A. Kusters, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 28, 1970, Ser. No. 101,632
Int. Cl. G02f 1/24
U.S. Cl. 350—149 **7 Claims**



An acoustic wave transducer mounted on the input face of a body of optically anisotropic birefringent material is provided with an electrode structure for permitting substantially unobstructed passage of a light beam through the transducer and into the body of optically anisotropic birefringent material and for producing a tangential electric field in the transducer to generate an acoustic wave that propagates collinearly with the light beam into the body of optically anisotropic birefringent material.

3,698,793
SOLID STATE DISPLAY
Jacob Tellerman, Bayside, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.
Continuation-in-part of Ser. No. 700,127, Jan. 24, 1968, abandoned. This application March 11, 1971, Ser. No. 123,132
Int. Cl. G02f 1/36; G09f 13/00; G02f 1/34
U.S. Cl. 350—160 R **21 Claims**

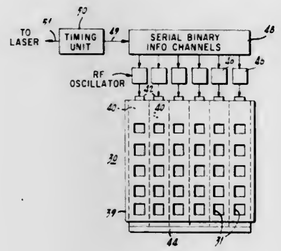


A movable element is selectively operated to press an opaque member into engagement with a selected region of a light diffusing boundary to convert such region between a light absorbing condition and a light reflecting condition. An array of movable elements can be selectively actuated to define a variety of patterns that can be presented on the illuminated side of the boundary. The movable elements may be piezoelectric or magneto-strictive elements. In one embodiment, the movable elements carry a soft black rubber surface for contact with an optical boundary defined by the rear face of a transparent glass panel. In another embodiment, the movable elements carry smooth black surfaces for contact with rubber films on the rear face of a transparent glass panel to define an optical boundary.

3,698,794
SONIC PAGE COMPOSER FOR HOLOGRAPHIC MEMORY
Gerard Argant Alphonse, Princeton, N.J., assignor to RCA Corporation
Filed Dec. 2, 1970, Ser. No. 94,245
Int. Cl. G02f 1/32
U.S. Cl. 350—161 **4 Claims**

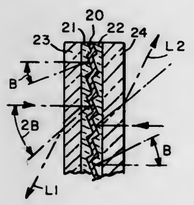
A page composer is disclosed for translating a plurality of serial electrical binary information signals to a pattern of light

on an opto-magnetic recording medium. A plurality of radio-frequency oscillators each has a control input coupled to a source of serial binary information signals, and an output coupled to an electro-mechanical transducer at one end of a respective one of a plurality of acousto-optic columns. Sonic information is thus propagated serially through the columns as information cells which contain a sonic burst to represent one



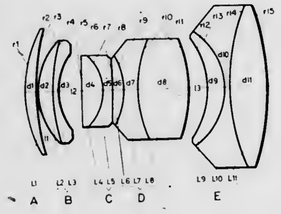
binary value, and no burst to represent the other binary value. Incident light from a source is directed through the columns at an angle with the sonic wavefronts therein to cause diffraction of the light. The source of light is pulsed when the columns are filled with serially-supplied sonic information. Cells containing a sonic burst cause a diffraction of the light passing therethrough, and cells not containing a sonic burst permit the light to pass directly therethrough.

3,698,795
DIFFRACTION GRATING WITH TWO DIFFRACTING SURFACES
Bruce K. Flint, Lancaster, Mass., assignor to Acton Research Corporation, Acton, Mass.
Filed Jan. 26, 1971, Ser. No. 109,861
Int. Cl. G02b *5/18*
U.S. Cl. 350—162 R **25 Claims**



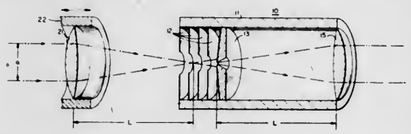
A spectral dispersion reflective grating comprises a vacuum deposited metal film with straight, parallel grooves. The film is of a thickness such that it is opaque and both its surfaces are substantially identical. The film is supported on a glassy blank or frame which permits light to be transmitted to, and reflectively diffracted from, either or both of the film surfaces. Elements on the support detachably engage a grating in the mount for use of either grooved film surface or for simultaneous use in a double monochromator. The support elements define a plane parallel to the film plane insuring that in reversible or scanning use both film surfaces will maintain a desired relation in a scanning or reversible spectrometric system. When the two film surfaces are on a single glassy blank or contained between light transmissive glassy blanks of different refractive indices, different blaze wavelengths appear outside the blanks at each side of the grating without changing the spectral dispersion.

3,698,796
OBJECTIVE CONSISTING OF FIVE LENS MEMBERS
Ludwig Bertele, Heerbrugg, Switzerland, assignor to Firma Wild Heerbrugg AG, Heerbrugg, Switzerland, a part interest
Filed March 15, 1971, Ser. No. 124,276
Claims priority, application Switzerland, March 17, 1970, 4037/70
Int. Cl. G02b *9/34, 9/60*
U.S. Cl. 350—216 **2 Claims**



An objective consisting of five lens members. The first two lens members are menisci curved towards the object, the first lens member having collective refractive power and the second lens member being composed of at least two separate lenses. The third and fourth lens members have a collective effect and consists of several individual lenses. The fifth lens member is a meniscus with dispersive refractive power, cemented from several separate lenses and curved towards the image. The invention contemplates that the third lens member includes a cemented surface curved towards the image and of stronger curvature than the other cemented surfaces in this lens member, the refractive index n_d of the lens adjoining this surface on the image side being smaller than the lens adjoining it on the object side, while the opposite relationship applies as regards the Abbe numbers γ of these lenses.

3,698,797
LASER OUTPUT ATTENUATOR
Ray B. Brown, Upper Marlboro; Frederick R. Fluhr, Oxon Hill, both of Md., and George L. Hall, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 27, 1970, Ser. No. 31,894
Int. Cl. G02f *1/30*
U.S. Cl. 350—266 **4 Claims**



This disclosure is directed to a wide range laser power attenuator which uses suitable optical lenses in combination with a pinhole and suitable absorption baffles to control a laser beam as desired. The system operates without causing any degradation of coherence and polarization properties of the laser beam.

3,698,798
REAR VIEW MIRROR FOR AUTO BUMPERS
Lawrence Bolton, Route 2, Box 63, Cody, Wyo.
Filed Feb. 11, 1971, Ser. No. 114,565
Int. Cl. B60r *1/08*
U.S. Cl. 350—307 **1 Claim**

A rear bumper mounted mirror to aid in backing a vehicle from a curb into traffic, the device comprising a mirror attached to the upper end of a rod, the lower end of the rod having a clamp unit for attachment to a rear bumper of an automotive vehicle. The mirror at the upper end of the rod is pivotably adjustable and securable in a preferred adjusted

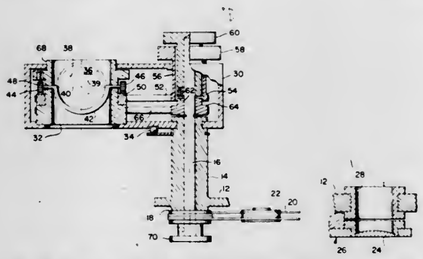


position so that a motorist can either turn his head and look into the mirror or adjust a rear vision mirror of the vehicle and without turning his head thus see the rear bumper mounted mirror.

ERRATUM

For Class 351—6 see:
Patent No. 3,698,099

3,698,799
CROSS CYLINDER FLIP MECHANISM
Richard L. Pitchford, Brockport, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed July 22, 1971, Ser. No. 165,218
Int. Cl. A61b *3/02, 3/08*
U.S. Cl. 351—28 **11 Claims**



In an ophthalmic refractor improved cross cylinder flip mechanism comprises a cross cylinder lens rotatably mounted in a loupe by means including a pinion meshed with a face gear, the latter being rotatable to achieve a flip, rotation of the face gear being actuated from a handgrip located adjacent the cylinder lens axis control knob, thereby minimizing the attention which a practitioner must give to frequent shifts of his hand from one such handgrip to the other.

3,698,800
VISUAL AND AUDIO PERCEPTION TESTING AND TRAINING APPARATUS
Frank A. Belgau, P.O. Box 936, La Porte, Tex.
Filed Feb. 16, 1971, Ser. No. 115,548
Int. Cl. A61b *3/00*; A61h *5/00*
U.S. Cl. 351—32 **4 Claims**

Visual and audio perception testing and training apparatus comprising a satellite or tracking member of hollow construction provided with sound producing means for use as a source of audio signals and also having visual target means for testing visual perception.

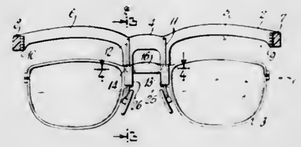
Means is provided for movably supporting the tracking member for movement along predetermined paths for visual



observation and for testing the user's audio perception.

The apparatus may include visual and audio signal producing target means and missle means for use therewith to be used for testing audio and visual perception or for amusement purposes.

3,698,801
SPECTACLES WITH ADJUSTABLE LENSES
Alan A. Masucci, 1910 University Avenue, New York, N.Y.
Filed March 31, 1971, Ser. No. 129,913
Int. Cl. G02b *7/06*
U.S. Cl. 351—55 **2 Claims**



Spectacles with adjustable lenses which include a frame with extended arms and bridge, the bridge having gear-track means for holding fast a lens chassis capable of assuming a plurality of positions relative to frame. The lens chassis includes a pair of lenses and a bridge structure supporting said lens, the bridge structure including a shaft having rotatable gears at its extremities for movement along said frame gear-track and in confinement therewith. The lens chassis permits different viewing area of the lens to be exposed when the chassis is moved along said gear-track.

3,698,802
HYDROPHILIC CONTACT LENS
Henry J. Baron, 52 S. Oakland Avenue, Sharon, Pa.
Continuation-in-part of Ser. No. 687,240, Dec. 1, 1967, abandoned, and a continuation-in-part of Ser. No. 736,124, June 11, 1968, abandoned, and a continuation-in-part of Ser. No. 736,149, June 11, 1968, abandoned. This application Dec. 29, 1969, Ser. No. 888,293
Int. Cl. G02c *7/04*
U.S. Cl. 351—160 **3 Claims**

A contact lens for use on a human eye formed from a gel-like hydrophilic polymeric material. The lens has a generally spherical concave inner surface which conforms to the curved

surface of the cornea when positioned thereon and an outer peripheral surface portion tapering from a thin edge to an in-

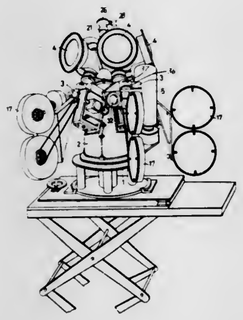


termediate point of maximum thickness and then tapering to the center of the lens.

3,698,803
CAMERA FOR TAKING HEMISPHERICAL MOTION PICTURE

Toshio Watanuki, Tokyo, Japan, assignor to The Midori-Kai Co., Ltd., Minamiku, Osaka, Japan

Filed March 15, 1971, Ser. No. 124,378
Claims priority, application Japan, Sept. 9, 1970, 45/79789; Sept. 9, 1970, 45/79790; Sept. 9, 1970, 45/79791; Sept. 9, 1970, 45/79792; Sept. 9, 1970, 45/79793
Int. Cl. G03b *37/00, 37/04*
U.S. Cl. 352—69 **5 Claims**

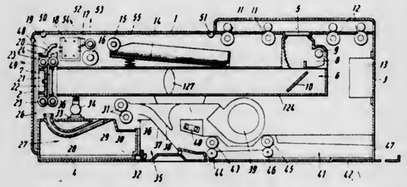


A camera for taking hemispherical motion pictures includes a plurality of cinecamera units provided with wide-angle lenses and arranged radially so that each cinecamera unit can cover within its picture angle each segment of an overall view around and above said camera. Disposed at the center of the arrangement of the cinecamera units is a center rotary shaft to be driven by a motor for synchronized rotation and carrying a main bevel gear. Each cinecamera unit has a torque delivery shaft extending toward the center rotary shaft and carrying a driven bevel bear meshing with the main bevel gear. Each cinecamera unit is further provided, on its side face, with a viewfinder for enabling the operator to view an erect image. A monitoring fish-eye lens is disposed above and centrally of the arrangement of the cinecamera units and at the image forming side of the fish-eye lens there is disposed a television camera tube which is connected to a monitoring television receiver.

3,698,804
PHOTOCOPYING MACHINE HAVING REMOVABLE MODULES

Georg Cranskens, Wedel/Holstein; Gunther Krober, Hamburg-Rahlstedt, and Richard Palm, Hamburg, all of Germany, assignors to Lumoprint Zindler KG, Hamburg, Germany

Filed April 23, 1969, Ser. No. 818,522
Claims priority, application Germany, April 26, 1968, P 17 72 296.2
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **10 Claims**

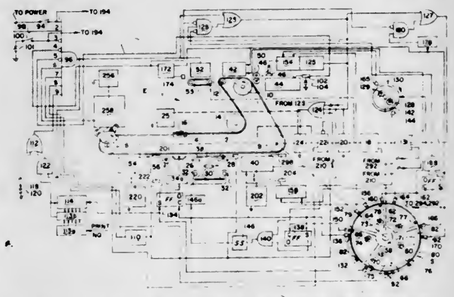


A copying apparatus is contained within a housing and includes a charging unit, a surface element for positioning individual sheets of copying paper in an exposure station, and a developing device containing developing media. A number of pairs of rollers are positioned in the housing for conveying individual sheets of copying paper through the copying apparatus. The housing includes a number of openable covers, preferably hinged to the housing, for gaining access to the interior of the apparatus. Each pair of rollers has one driven roller secured within the housing and the other roller is movably mounted within the housing. Relative to the housing, the driven rollers are spaced inwardly from the movably mounted rollers. By opening the covers on the housing, the charging units, surface element and developing device can be removed from the housing along with the movably mounted rollers associated with them for affording access to the driven rollers. The path of the copying paper through the housing has a U-shaped configuration with the legs of the U extending horizontally. By opening the covers in the housing and removing the associated parts inwardly of the cover, it is possible to gain access to the different portions of the path of the copying paper.

3,698,805
CONTROL APPARATUS FOR ELECTROPHOTOGRAPHIC APPARATUS

Lionel R. Hickey, Webster, and Frank L. Guyette, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,304
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **8 Claims**



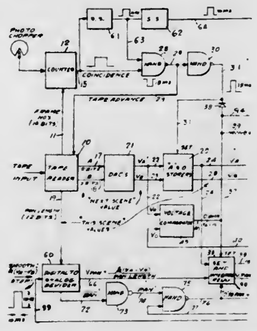
An electrophotographic copying apparatus having an electrophotographic web movable along an endless path relative

to a plurality of actuable work stations disposed along the path and wherein each of the work stations is operative when actuated to perform a work operation on the web. The apparatus includes a sequencer for sequentially producing, (a) a plurality of control signals, each such control signals for causing particular ones of the electrophotographic stations to perform work operations on the web in timed relation to web movement respectively, and (b) a count signal each time a selected station performs its operation. The apparatus further includes counter means responsive to each count signal and having a state which manifests the cumulative total number of count signals, and means responsive to a particular state of the counter means corresponding to a predetermined cumulative total number of count signals to prevent the further actuation of each work station after each station has performed a predetermined number of work operations.

3,698,806
PAN SCAN SYSTEM

Lewis P. Reitz, Jr., Palos Verdes Estates, Calif., assignor to Technicolor, Inc., Hollywood, Calif.

Filed Aug. 20, 1970, Ser. No. 65,510
Int. Cl. G03b *27/52*
U.S. Cl. 355—40 **18 Claims**



An automatic control system for changing aspect ratio in the reproduction of motion pictures, wherein the recorded images are in accordance with an anamorphic or other wide screen process, and the desired reproduction thereof is of standard size or of a different aspect ratio. A typical example is the conversion of images from movie film of one aspect ratio to images on film, video tape or the like of aspect ratio suitable for television usage. Portions of the original images are selected, and a program tape is recorded in accordance with this selection. A servo system responsive to the tape controls the reproduction, such as by a film printer. Signals from the tape are used to control the selection of the portions of original film frames and indicate a start position and an end position of the scan of the original, as well as indicate the frame length of the scan. A film gate or other device of a film printer, for example, is operated by the servo system, and is moved from position to position to select and allow exposure of the preselected portions of the original film for printing.

3,698,807
DISPLAYING AND PRINTING APPARATUS

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1971, Ser. No. 108,297
Int. Cl. G03b *13/28*
U.S. Cl. 355—45 **17 Claims**

Apparatus in which graphic information is simultaneously displayed and reproduced. Images of material on microfilm are projected toward a photoreceptor consisting of an electrostatically charged photoconductive element, to form an electrostatic latent image which is later developed. The optical path from the original material to the photoreceptor is intercepted by an image-splitting dichroic reflector or interference filter, which reflects a spectral portion of the image to a viewing screen. After passing through the reflector the unreflected spectral portion impinges on the charged photoreceptor to
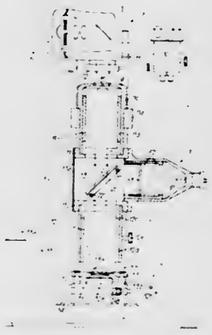


form the latent image. The reflector or filter is chosen so that the wavelength range of the light passing through it corresponds to the range of maximum sensitivity of the photoreceptor. To scan the image a shield having a slit moves laterally across the photoreceptor; adjacent to the slit and immediately preceding it is a charging unit to charge the photoreceptor before exposure.

3,698,808
OPTICAL MASKING DEVICE

Jean R. Delmas, Vanves, France, assignor to Agence Nationale De Valorisation De La Recherche (A.N.V.A.R.), Courbevoie and Centre Nationale D'Etudes Des Telecommunications (C.N.E.T.), Issey Les Moulineaux, France

Filed March 1, 1971, Ser. No. 122,630
Claims priority, application France, March 6, 1970, 7008153
Int. Cl. G03b *13/26*
U.S. Cl. 355—45 **7 Claims**



The device is intended for optically masking a photosensitive layer on a wafer by means of a mask. It comprises a first and a second lens each having a large numerical aperture and separated by a gap. A mask holder is located in the focal plane of the first lens located on its side opposite that of the gap, and a wafer holder in the focal plane of the second lens located on its side opposite that of the gap. A source of ultraviolet radiation produces a beam aligned with the first lens axis and a source of visible light produces a beam rectangular to said

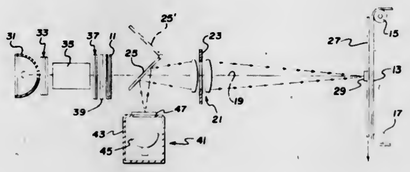
axis. A semireflecting plane member located in the gap provided between the two lenses and at 45° on the axis of the first lens transmits one of the beams and reflects the other beam along the second lens axis. A first possible arrangement is such that the semireflecting member is in a space where both beams are made of parallel rays. In another possible arrangement, a concave mirror reflecting the light transmitted through the first lens and the semireflecting member is provided. Position adjustment means are provided for shifting the wafer holder in the plane perpendicular to the second lens axis and superimposing the image of the wafer through the first and second lenses and the mask. The adjustment is effected with the aid of the visible light source, the ultra-violet light source being used for photogravure purposes.

3,698,809

AUTOMATIC ILLUMINATION CONTROL FOR PHOTOGRAPHIC PRINTING APPARATUS

James E. Harter, Webster, and Juan A. Rodriguez, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,480
Int. Cl. G03b 27/78
U.S. Cl. 355—68 **8 Claims**



Photographic printing apparatus includes a reference light source and a mirror with the mirror adapted to be moved into the normal projection path of the apparatus to reflect light from the reference light source through the printing lens and onto the print plane. A photocell in the print plane detects the light from the reference light source and effectively compares it with a reference potential to thereby control the opening of a diaphragm in the printing lens to maintain a constant illumination per unit area on the print plane.

3,698,810

METHOD AND ARRANGEMENT FOR MANUFACTURING DIFFUSION LENSES OF ARBITRARY INDICATRIX

Friedrich Bestenreiner, Gruenwald; Walter Welershausen, Ottobrunn, and Paul Janovjak, Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed March 15, 1971, Ser. No. 145,080
Claims priority, application Germany, March 14, 1970, P 20 12 191.9
Int. Cl. G03b 27/76
U.S. Cl. 355—71 **12 Claims**



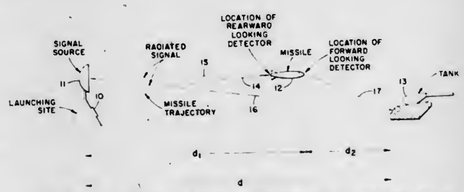
Diffusion lens with desired light intensity distribution manufactured photographically by recording an image of an illuminated diffusing lens of standard characteristic after spacial frequency filtering of the light of said lens.

3,698,811

DISTANCE RANGING SYSTEM

William M. Weil, Southfield, Mich., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Dec. 18, 1970, Ser. No. 99,429
Int. Cl. G01c 3/08; F41g 7/00
U.S. Cl. 356—5 **10 Claims**



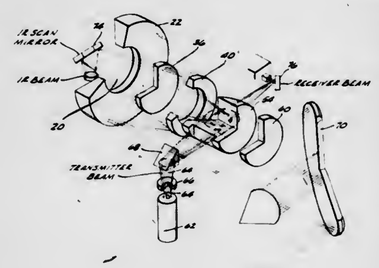
A missile is traveling from its launch point towards an intended target. A signal source, located near the launch point, radiates a train of pulses towards said missile and towards said target. Each radiated pulse is received by the missile as a pair of pulses, one received directly from the signal source and the other received after being reflected from the target. Computing means on the missile determines the difference in arrival times of the two pulses of each pair of pulses, and then, from successive ones of such determinations, computes the distance between missile and target, missile velocity and acceleration, and finally the expected arrival time of the missile at the target; said computations being updated with the reception of each succeeding pair of pulses.

3,698,812

MULTI-FUNCTION TELESCOPE

Harry Nelson, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 11, 1969, Ser. No. 849,220
Int. Cl. G01c 3/08
U.S. Cl. 356—5 **9 Claims**



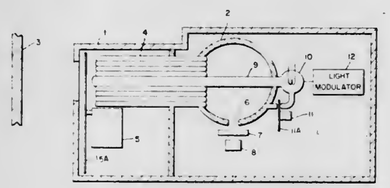
A telescope which simultaneously receives a plurality of frequency-distinguishable radiation transmissions from an object and which coaxially transmits one of said frequencies through a single aperture. The apparatus essentially consists of a double Cassegrainian telescope including an apertured primary objective reflecting mirror, an apertured secondary mirror and a filter element disposed between said mirrors for passing radiation at one of said frequencies through the aperture in the primary mirror and for reflecting radiation at a second of said frequencies through the aperture in the secondary mirror.

3,698,813

EMISSIVITY CORRECTED OPTICAL PYROMETER

Sol Aisenberg, Natick, Mass., assignor to Whittaker Corporation, Waltham, Mass.

Filed Jan. 18, 1971, Ser. No. 106,980
Int. Cl. G01j 5/52, 5/62
U.S. Cl. 356—48 **5 Claims**



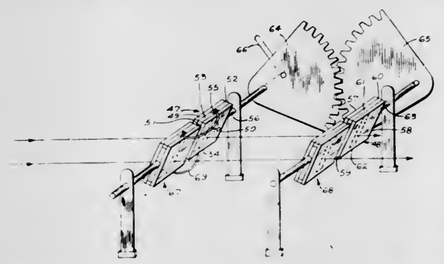
An optical pyrometer for measuring true surface temperature utilizes a spherical light integrator having a reflective internal surface. Light from the subject surface, in traveling an optical path into the spherical integrator, is modulated at a frequency f_c. The pyrometer employs an internal light source that is modulated at a frequency f_L. The modulated light from the internal source can be directed onto the subject surface to permit a measurement to be made to ascertain the reflectance of the subject surface. The reflected light from the internal source, because of its modulation f_L, is distinguishable from the light otherwise emanating from the subject surface which is modulated only at frequency f_c in traversing the optical path to the integrator. An optical filter is employed to filter the light emerging from a port in the spherical integrator and a photo-sensitive detector is disposed to have the filtered light incident upon it.

3,698,814

ABERRATION-FREE COMPENSATOR FOR USE IN WHITE LIGHT INTERFEROMETRY

John B. Clark, 3203 Runkle Street, Niles, Mich.

Filed Jan. 25, 1971, Ser. No. 109,167
Int. Cl. G01b 9/02
U.S. Cl. 356—107 **7 Claims**



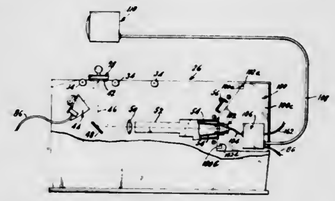
An aberration-free compensator for use in white light interferometry is provided in which anomalous fringe shifts characteristic of the difference in refractive dispersion between the two limbs of the interferometer are eliminated. The compensator is designed so that the sole difference in light paths through the compensator elements in the two limbs of the interferometer is through a fluid medium having a refractive dispersion which is substantially identical to that of the material being studied in the interferometer. Use of such a fluid medium compensator permits changing the refractive dispersion thereof without substantially rebuilding the interferometer.

3,698,815

EXPOSURE LAMP ALIGNMENT EQUIPMENT

Herbert Thomas, Miami, Fla., assignor to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed Nov. 20, 1970, Ser. No. 91,269
Int. Cl. G01j 1/100
U.S. Cl. 356—121 **43 Claims**



Apparatus for facilitating the alignment of the exposure lamps in a copying machine. A test fixture is insertable in each machine before it is fully assembled but after the exposure lamp assembly has been put in place. A series of photocell-actuated meters provides a visual indication of the light intensity pattern at the exposure window, the lamp assembly being adjusted by an operator until uniform meter readings are observed. By aligning each assembly after it is mounted in a machine, rather than pre-aligning each assembly and then placing it in a machine, misalignments which arise during assembly are eliminated. The test fixture itself includes a self-calibration unit.

3,698,816

LASER GUIDANCE SYSTEM

Milton Lutchansky, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 16, 1970, Ser. No. 72,749
Int. Cl. G01s 1/44, 3/02
U.S. Cl. 356—152 **1 Claim**



A laser guidance system utilizes two synchronized rotating laser beacons to generate desired two and three-dimensional reference curves in space. The orientation of one beacon is a prescribed function of the orientation of the other beacon and a reference curve is traced out in space as the loci of intersections of the rotating beacons. The intersections are detected so that the reference curve can be followed.

3,698,817

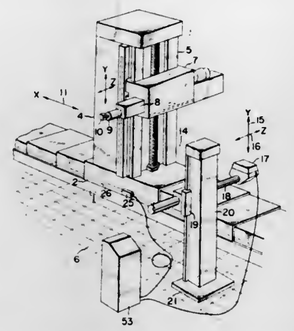
METHOD AND APPARATUS FOR MANUFACTURING REFERENCE SCALES

Kazuo Iimura; Kiyoshi Sawada, and Hiroki Kato, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 8, 1970, Ser. No. 96,211
Int. Cl. G01b 11/00
U.S. Cl. 356—156 **4 Claims**

In a method of manufacturing a reference scale for use in a machine tool or a measuring machine having a numerically

controlled positioning or position indicating device, a magnetic blank of a scale is secured to the machine, the quantity



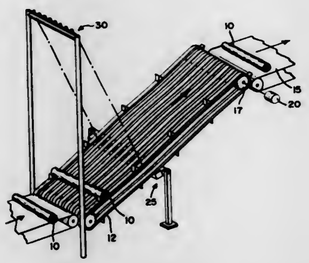
of movement of a movable member of the machine is measured by a laser beam length measuring device and the measured quantity is magnetically graduated on the blank.

3,698,818

LOG DIAMETER SCANNER INCLUDING A PLURALITY OF PHOTODETECTORS

John F. Bowker, Linnwood, and Warren H. Odegard, Seattle, both of Wash., assignors to The Black Clawson Company, Hamilton, Ohio

Filed April 27, 1971, Ser. No. 137,846
Int. Cl. G01b 11/10
U.S. Cl. 356—160 **7 Claims**



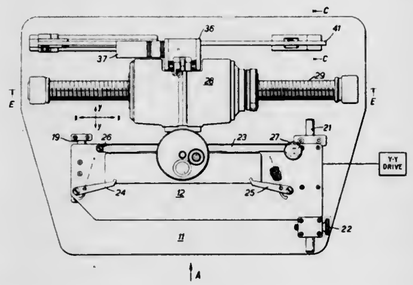
A log diameter measuring device includes a plurality of spaced apart photodetectors positioned to receive light from a corresponding number of lamps. A conveyor transports logs or veneer blocks between the photodetectors and the lamps with the log axis parallel thereto. A tachometer pulse generator attached to the conveyor supplies pulses for predetermined increments of log movement, and gate circuits are employed to gate these tachometer pulses into counters during the time that the photodetectors are darkened due to the presence of the log. One counter circuit accumulates pulses representing the average number of photodetectors darkened for each tachometer pulse and thus contains a number representing the average diameter of the log. Another counter circuit is employed to count the number of tachometer pulses which occur when all of the photodetectors are darkened, thus representing the diameter of the maximum right cylinder contained within the log. An augmenting circuit may be used to provide pulses to this last counter representing the minimum diameter of the log at any of the locations sensed by the photodetectors. A paper tape perforator is employed to record permanently the information stored in the counters for each log, and this information may then be used to determine the actual volume of useable wood entering a veneer mill.

3,698,819

SCANNING LIGHT DETECTORS

Roy Causer, Wantage; John Farren, Abingdon; Terence Leslie Jones, Wantage; Brian Leslie Taylor, Newbury, and Ronald Kerry Webster, North Oxford, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed March 5, 1970, Ser. No. 16,677
Claims priority, application Great Britain, March 7, 1969, 12,315/69
Int. Cl. G01n 21/22
U.S. Cl. 356—203 **12 Claims**



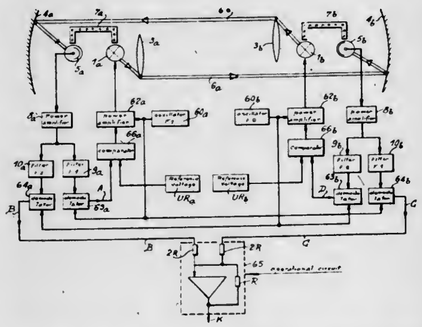
For analyzing the exposed grain density of a photographic plate, light is shone through the plate onto a detector. A stepping motor drives a temperature compensated lead screw and nut arrangement to move the plate and light/detector relatively and give an automatic position indication. The detector output pulses define a time interval inversely proportional to the light intensity falling upon the detector. Drive stepping is automatically initiated upon completion of detector read out.

3,698,820

APPARATUS FOR MEASURING THE TRANSMISSIVE POWER OF THE ATMOSPHERE EMPLOYING TWO TRANSMITTERS AND RECEIVERS

Michel Max Hanff, Bailly, and Stephane Chambolle, Paris, both of France, assignors to Compagnie des Compteurs, Paris, France

Filed Feb. 15, 1971, Ser. No. 106,672
Claims priority, application France, Jan. 19, 1970, 7001805
Int. Cl. G01n 21/22
U.S. Cl. 356—206 **6 Claims**



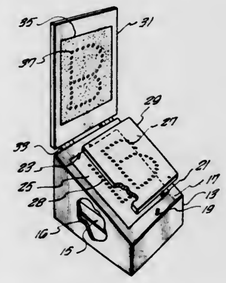
Process and device for measuring the transmissive power of the atmosphere wherein, on one hand, each transmitter is under control, so that the signals received from said transmitter by the associated respective receiver are kept at a constant value and, on the other hand, the signals having passed through the atmosphere and received from the remote transmitter, by each receiver, are applied to an operational circuit performing their half-sum, the output of which is characteristic of the transmissive power.

3,698,821

METHOD AND APPARATUS FOR INSPECTING PLATED-THROUGH PRINTED CIRCUIT BOARD HOLES

James Ekstrand, Azusa, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 19, 1971, Ser. No. 173,142
Int. Cl. G01n 21/16
U.S. Cl. 356—237 **19 Claims**



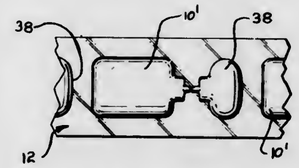
In testing plated-through holes in finished circuit boards, light from a light source is introduced into the light-conducting substrate of a printed circuit board but is prevented from entering the plated-through holes of the substrate by a hole masking template. A light detector senses light in the holes, such light having entered through a defective hole wall from the substrate. In an alternate embodiment, light from a light source is channeled into the plated-through holes in a light-conducting substrate, but prevented from entering the substrate by a substrate masking template. A light detector senses light emanating from the substrate adjacent to a hole, such light having entered the substrate, from the hole, through a defective hole wall.

3,698,822

DISPOSABLE CUVETTES FOR COLORIMETRY

Michael L. Polanyi, Webster, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 808,437, March 19, 1969, abandoned. This application Dec. 22, 1970, Ser. No. 100,810
Int. Cl. G01n 21/16
U.S. Cl. 356—246 **2 Claims**



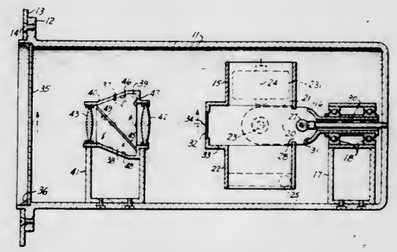
Colorimeter cuvettes in the form of sealed transparent flexible plastic envelopes containing or adapted to receive samples of substances to be colorimetrically analyzed. Means are provided for introducing sample reagents into the envelopes. Mixing of the envelope contents may be effected by kneading prior to testing and the flexibility of the cuvettes allows for adjustment of optical path lengths therethrough.

3,698,823

ATTITUDE INDICATING INSTRUMENT

Robert W. Reynolds, Los Angeles, and George P. Wight, Simi, both of Calif., assignors to Clary Corporation, San Gabriel, Calif.

Filed July 6, 1970, Ser. No. 52,383
Int. Cl. G01c 19/34
U.S. Cl. 356—250 **4 Claims**



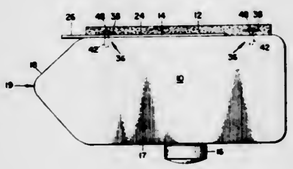
A gyroscopically controlled artificial horizon indicating device for aircraft having a light mask carried by the gimbal means of the gyroscope, the mask having a slit forming a representation of the aircraft. An image of the slit is projected onto a translucent window by an optical system including a prism effective to invert the projected image of the slit in an upright plane relative to the aircraft but does not revert such image in a lateral plane. A horizon representing line on the window provides a reference for determining the relative position of the projected image and therefore the attitude of the aircraft.

3,698,824

SPONGE HAVING A RESERVOIR FOR CLEANING LIQUID

Angelo Lorio, 161 Bleecker Street, Brooklyn, N.Y.

Filed March 22, 1971, Ser. No. 126,510
Int. Cl. A47l 13/17
U.S. Cl. 401—205 **1 Claim**

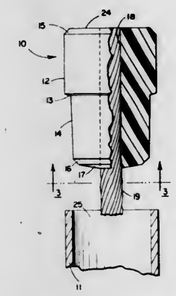


A sponge is attached to a hand-manipulated fluid reservoir and a finger-manipulated valve is disposed between the sponge and the reservoir for selectively controlling the flow of fluid. The sponge is secured to the reservoir by means of locking studs carried by straps disposed in slots provided in the sponge.

3,698,825
ARRANGEMENT FOR PREVENTING LEAKAGE FROM BALL-POINT PEN CARTRIDGES

Hartley M. Sears, Laguna Beach, and Clarence O. Schrader, Santa Ana, both of Calif., assignors to Frawley Enterprises, Inc., Los Angeles, Calif.

Filed May 21, 1971, Ser. No. 145,745
Int. Cl. B43k 7/02
U.S. Cl. 401—217 11 Claims

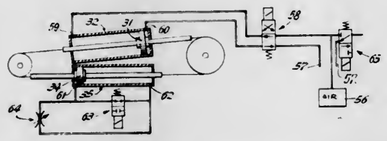


An arrangement for preventing leakage from a tubular ink cartridge including a plastic body having a frustoconical portion wedged into the end of the ink cartridge with a string extending axially through the center of the plastic body providing a plurality of small passageways, which allow air to flow into the cartridge but prevent ink from flowing outwardly, a number of the plug elements being producible simultaneously by extending a string through the cavities of a multiple-cavity mold and molding the plastic bodies around the string, with the plug elements subsequently being separated by severing the string.

3,698,826
AUTOMATIC ACTUATOR FOR A DRILLING MACHINE

Paul D. Henderson, Avon, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 10, 1971, Ser. No. 141,846
Int. Cl. B23b 47/22
U.S. Cl. 408—17 6 Claims



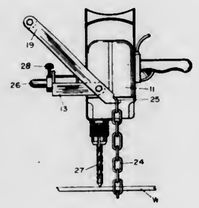
An automatic drive for the quill of a drilling-milling machine that includes an air cylinder and a chain for extending and retracting the quill carrying the drill. Controls permit cycling the drill for normal drilling, deep hole (pecking) drilling and milling operations upon command either from manual or from stored information.

3,698,827
ATTACHMENT FOR PORTABLE DRILLS

Donald G. Salfer, Route 1, New Avon Township, Minn.

Filed March 16, 1971, Ser. No. 124,811
Int. Cl. B23b 47/18
U.S. Cl. 408—92 2 Claims

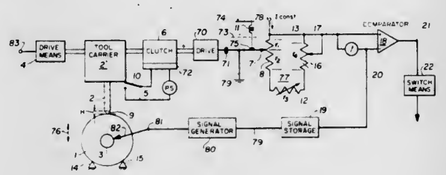
A device for applying pressure to a portable power drill for feeding the drill tool into a work piece is formed by a sleeve which can be detachably secured to the steadying handle of the drill. The sleeve is carried between a first pair of parallel lever arms which are mounted between and pivoted to a second pair of longer lever arms having a handle for applying pressure. The sleeve is mounted in apertures, formed in two spaced plates secured to and between the first pair of lever arms, for turning movement about its axis. A work piece embracing chain has one end fastened to the forward end of one of the second pair of arms and the other end adapted to be releaseably held by an upturned hook portion formed on the forward end of the other second arm.



3,698,828
APPARATUS FOR CONTROLLING A BALANCING MACHINE

Otfrid Maus, Langen; Martin Mueller, Bickenbach, and Robert Mueller, Darmstadt, all of Germany, assignors to Carl Schenck Maschinenfabrik GmbH, Postfach, Germany

Filed Oct. 26, 1970, Ser. No. 83,821
Claims priority, application Germany, Dec. 27, 1969, P 19 65 090.9
Int. Cl. B23b 39/04
U.S. Cl. 408—11 18 Claims

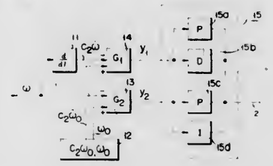


This invention relates to apparatus for controlling balancing machines and to stop the balancing operation as soon as a rotational body has been balanced by a controlled mass change either in the form of a mass removal or of a mass addition. Said control is accomplished by producing an electrical signal which is representative of the imbalance and another electrical signal which is proportional to the non-linear variation of the effect of said controlled mass change. The latter signal is produced by a two terminal parallel network including a potentiometer the tap of which is adjusted in response to the instantaneous mass change. The two terminal network is connected to means for evaluating, for example comparing, the two signals to produce a control signal which, for example through a relay, stops a tool performing said balancing operation.

3,698,829
CONTROL DEVICE FOR TURBINE GENERATORS

Moritada Kubo, and Yasuo Shinomiya, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 12, 1971, Ser. No. 105,806
Int. Cl. H02p 9/04
U.S. Cl. 415—36 2 Claims

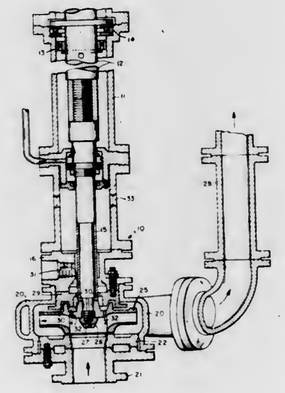


A control device for turbine generators comprising adjustment valve means disposed in a series circuit including a source of elastic fluid (compressible fluid) and a turbine generator driven by fluid supplied from the source so as to control the flow rate of fluid to the turbine; a revolution counter for measuring the number of rotations of the turbine; a circuit for differentiating the output from the revolution counter; a differential amplifier for comparing the output from the differentiation circuit with a preset reference valve and generating a resulting error valve; a second differential amplifier receiving the output of the differentiation circuit and a second reference value and generating an error value and a P.I.D. control circuit receiving the outputs from said differential amplifiers for generating a control output including to control the adjustment valve and in consequence the acceleration of the turbine.

3,698,830
VERTICAL CENTRIFUGAL SUCTION PUMP

Thomas S. Goyne, Ashland, Pa., assignor to Goyne Pump Company

Filed Feb. 2, 1971, Ser. No. 111,870
Int. Cl. F01d 11/00
U.S. Cl. 415—111 6 Claims

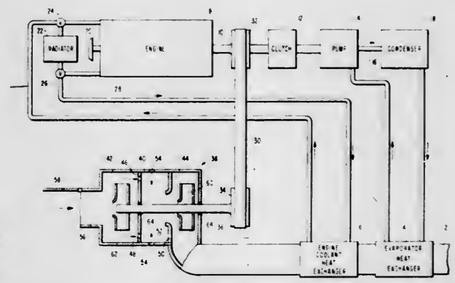


A vertical bottom suction pump for static thickners and the like having a cantilevered shaft and sealed by means of water or fluid being passed behind the impeller and out a discharge tap located above the fluid level.

3,698,831
AIR SUPPLY DEVICE FOR AIR HEATING AND COOLING SYSTEM

Wilson C. Shepheard, P.O. Box 7245, Norfolk, Va.

Filed Oct. 12, 1970, Ser. No. 79,930
Int. Cl. F01d 5/14
U.S. Cl. 415—115 1 Claim

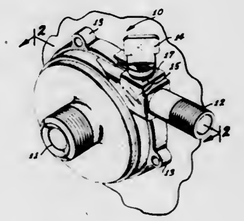


A two-stage blower is driven by a liquid-cooled engine. The first stage of the blower operates in a chamber divided from an intake plenum for the second stage by an orifice plate. For heating, a starvation damper for the first stage chamber is opened, heat is added to the air and its potential energy is reduced to substantially zero by the orifices which the air passes through to the second stage. For cooling, the starvation damper is closed, the first stage runs idle, and intake air for the second stage is drawn directly from the atmosphere to the second stage.

3,698,832
PUMP IMPELLER HOUSING WITH INTEGRAL FLOW REGULATOR

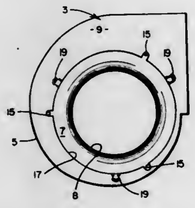
Carl Price, 17821 Twilight Lane, Encino, Calif.

Filed June 18, 1970, Ser. No. 47,460
Int. Cl. F04d 27/00, 25/06; F15d
U.S. Cl. 415—148 2 Claims



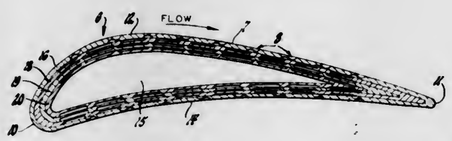
An impeller or rotor housing having an integral provision for selectively regulating the flow of fluid from a centrifugal or axial-flow fluid pump. A baffle mounted on the housing is selectively interposed and removed from the path of fluid. The baffle is sized and shaped in accordance with the design limits of the particular pump it is installed on whereby the rate of fluid flow when the baffle is in its maximum flow restricting position will be sufficient to prevent damage and erosive wear to the pump as a result of overloading the motor, heat or running dry.

3,698,833
CENTRIFUGAL FAN
Peter L. Cann, and Richard J. Duell, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed March 31, 1971, Ser. No. 129,717
Int. Cl. F04d *1/00, 29/40*
U.S. Cl. 415—201 **4 Claims**



A centrifugal fan assembly including a removable orifice ring having tabs thereon, the ring being formed from the material removed in the production of the side plate of the fan housing, the diameter of the orifice ring being substantially equal to the diameter of the opening in the side plate of the fan housing, the tabs on the orifice ring being utilized to locate the orifice ring on the side plate of the fan housing.

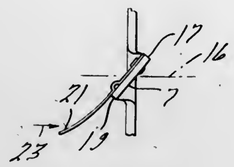
3,698,834
TRANSPIRATION COOLING
George B. Meginnis, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,110
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **11 Claims**



An airfoil such as a vane or blade intended to be cooled by transpiration of air from the interior to the exterior of the blade has an outer layer in which pores for the cooling air are defined by pits extending in from the outer and inner faces of the layer and intersecting at the bottoms of the pits, the pits being offset to provide a hole from which flow tends to proceed at an acute angle to the face. To decrease the angle between the discharge of gas and the surface of the airfoil, a control sheet underlying the outer layer has holes to supply air to the pits in the inner surface of the outer layer which are offset with respect to the pits. In one form the outer layer is composed of two laminations each having holes entirely through the laminations which are then bonded together with the holes offset to provide the general type of structure defined by the offset intersecting pits in a single sheet or lamination.

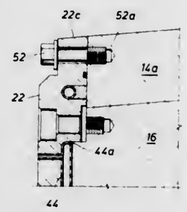
3,698,835
FAN CONSTRUCTION
John C. Kelly, 1320 Kathmar, Jackson, Mich.
Filed Feb. 1, 1971, Ser. No. 111,586
Int. Cl. F04c *29/36*
U.S. Cl. 416—132 **7 Claims**

A fan construction suitable for cooling internal combustion engines has flexible blades clamped on the inside faces of the spider arms, each blade having a hinge section in the form of a tapered bead or corrugation extending along its length with



the concave part of the bead facing the spider arm so that both longitudinal edges of the bead engage the arm over a substantial portion of the length of the blade.

3,698,836
HUB INSTALLING RETAINING AND WITHDRAWING DEVICE AND METHOD
Bernard S. Herbage, 7520 Hornwood, Apt. 904, Houston, Tex.
Filed March 9, 1970, Ser. No. 17,523
Int. Cl. B63h *1/20*
U.S. Cl. 416—146 **37 Claims**

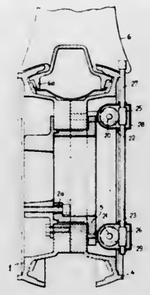


A device and method for the purpose of installing, retaining, and withdrawing a large hub on a shaft such as in ship's propeller mountings. The device comprises a backing plate which is secured to the end of a shaft by means of bolts. A hydraulic jack including an annular piston is mounted in the face of the backing plate to assist in pushing the hub on the shaft. When the hub is in place on the shaft, the bolts are tightened and sealant is injected into a sealant recess between the backing plate and the face of the tailshaft. For withdrawal of the hub, the bolts are removed from engagement with the shaft and are located on an outer flange of the backing plate to secure the backing plate to the hub. A second hydraulic jack, mounted in a recess of the backing plate adjacent the end of the shaft, is used to urge the hub backing plate assembly aftward of the tailshaft taper.

3,698,837
BLADE ANGLE SETTING DEVICE
Louis Marcellin, Lille, France, assignor to Societe Anonyme des Etablissements NEU, Lille (Nord), France
Filed July 6, 1970, Ser. No. 52,479
Claims priority, application France, Dec. 19, 1969, 6944292
Int. Cl. F04d *29/36*
U.S. Cl. 416—208 **3 Claims**

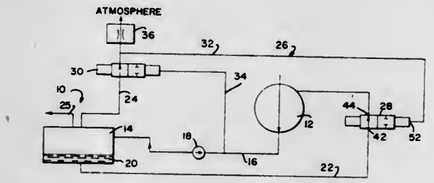
Device for adjusting in the inoperative condition the angular setting of all the blades of a helical wheel of a fan, which comprises a hub rigid with one of the two rims clamping the blade roots, said rims being adapted to revolve in relation to

each other and having their respective positions irreversibly interconnected through one or a plurality of screw-threaded rods extending through straps carried by said rims.



The rotation of said rods is obtained by means of tools engaging a radially extending shaft and connected through a swivel joint or a worm and gear drive to said rods.

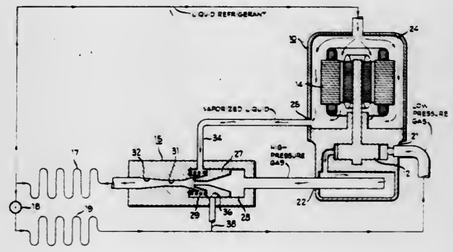
3,698,838
AUTOMATIC FLUID SUPPLY AND CONTROL MEANS
John E. Holdsworth, and Dallas M. Weir, both of Mocksville, N.C., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,479
Int. Cl. F04b *39/04, 39/06*
U.S. Cl. 417—228 **11 Claims**



For a system having a gas compressor and a compressed-gas receiver through-connected by a compressor-to-receiver discharge line and a receiver-to-compressor fluid supply line, and in which the receiver has a compressed-gas output line, an automatically-operative sub-system for controlling oil supply from the receiver to the compressor. The sub-system means include a flow-control valve signal-operative solely from fluid power, i.e., from receiver fluid pressure, to insure oil supply when the compressor starts up, and operative to insure oil supply cut-off when the compressor is halted.

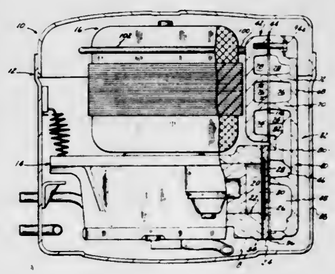
3,698,839
PRESSURE EQUALIZER FOR UNLOADING A COMPRESSOR DURING START-UP
John F. Distefano, Lyndhurst, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 14, 1970, Ser. No. 80,613
Int. Cl. F04b *49/02, 49/08*
U.S. Cl. 417—299 **6 Claims**

A pressure equalization passage, controlled by a normally open valve, intercouples the discharge outlet and suction inlet of a motor-driven compressor anytime the compressor is inoperative. With an equalized pressure across and therefore no load on the compressor, the starting torque requirement for the motor will be minimized. Upon and responsive to compressor operation, the valve closes and interrupts the passage to segregate the discharge outlet and suction inlet from each other. This is achieved by a spring-biased axially movable nozzle in the discharge line from the compressor, which nozzle serves as a movable valve member. When the compressor operates, fluid flow in the nozzle creates a pressure differential resulting in a force which moves the nozzle in opposition to its spring bias and to an operating position effective to close a vent in the equalization passage. In response to termination of fluid flow, occurring when the compressor ceases operation,



the nozzle returns to a home position under the influence of its spring bias and unblocks the vent. In one application of the invention where the compressor pumps fluid in a closed series flow path, the nozzle also functions as the nozzle section of a jet pump which entrains or syphons fluid, previously diverted from the flow path and used for compressor motor cooling, back into the discharge line.

3,698,840
COMPRESSOR MUFFLER CONSTRUCTION
Paul B. Hover, Clinton, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed May 26, 1971, Ser. No. 147,146
Int. Cl. F04b *21/00, 39/00;* **F01n** *1/08, 7/10*
U.S. Cl. 417—312 **18 Claims**

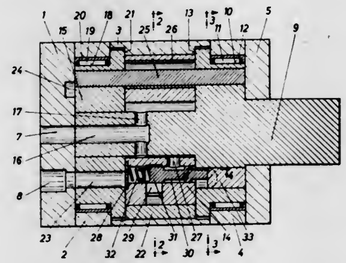


A muffler construction for a hermetic compressor wherein the muffler is made up of half-shell body and cover members connected together with their open ends facing one another and having matching ribs arranged at an acute angle to the gas flow path between the inlet and outlet of the muffler. The surfaces of the juxtaposed peripheral walls and ribs adjacent the open end of each member are coplanar. A flat sealing gasket is disposed between the members coextensive with the juxtaposed surfaces of the peripheral walls of the members. Hence, the gasket serves to space the juxtaposed surfaces of the ribs a predetermined distance apart to thereby define wide and thin flow passages successively communicating the muffler chambers formed by the transverse ribs and associated side and end walls of the members.

3,698,841
HYDRAULIC MOTOR

Gavril T. Luszig, Haledon, N.J., assignor to Webster Electric Company, Racine, Wis.

Division of Ser. No. 850,937, Aug. 18, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,186
Int. Cl. F01c 1/02; F03c 3/00; F04c 1/02
U.S. Cl. 418—61 13 Claims



Positive displacement hydraulic motor employing planetary mechanism and using pins placed in offset holes for coupling the orbiting member to the shaft; valve assemblies and control parts with inclined end faces which control the flow of fluid into and out of sets of expansible chambers, and vanes for delimiting the expansible chambers.

3,698,842
PELLETISING APPARATUS

Wilhelm Eirich, Waldorner Str. 41, and Gustav Eirich, Bahnhofstr. 19, both of Hardheim Nordbaden, Germany

Filed July 27, 1970, Ser. No. 58,433
Claims priority, application Switzerland, Aug. 6, 1969, 11936/69
Int. Cl. B29b 1/02, 5/00
U.S. Cl. 18—1 B 19 Claims

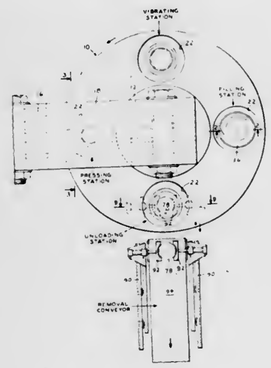
Apparatus for pelletising material of low binding power or low moisture content includes a conveyor, a spreading and compressing device, and breaking means. The material is fed onto the conveyor belt which in cooperation with the spreading and compressing device forms the material into a layer. As the material travels along on the conveyor belt it is subjected to heat exchange for solidifying the layer. Subsequently the layer is broken up into pellets.

3,698,843
HIGH PRODUCTION ISOSTATIC MOLDING DEVICE

Arnold G. Bowles, and Neil Follette, both of Warren, Pa., assignors to National Forge Company, Irvine, Pa.

Filed Feb. 24, 1971, Ser. No. 118,384
Int. Cl. B28b 3/00
U.S. Cl. 425—86 12 Claims

A high production isostatic press comprising a revolving turntable which supports elastomeric molds, each mold resting on a closure slab. The molds are filled with compactible material from a hopper while being simultaneously vibrated. The table rotates each filled mold, in turn, beneath the open end of a cylindrical, upright isostatic press. A hydraulic ram lifts each filled mold and closure slab, one at a time, from the turntable into the press where the material is compacted by fluid pumped into the press under high pressure. The closure slab seals the open end of the press during the compacting. The ram thereafter lowers the mold with its compacted material and closure slab to the turntable. The turntable

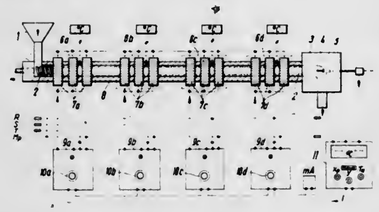


rotates the compacted material and mold to an unloading stage where the mold is lifted clear of the compact and closure slab by a set of mechanical fingers. The compact is placed upon a conveyor belt by a pair of hydraulic clamps mounted on a movable, offbearing carriage. The entire operation may be automatically or manually controlled.

3,698,844
AUTOMATIC TEMPERATURE CONTROL SYSTEM FOR EXTRUDERS FOR MOLTEN MATERIAL

Peter Grimm, Bergen-Enkheim, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 24, 1970, Ser. No. 58,010
Claims priority, application Germany, Aug. 1, 1969, P 19 39 248.4
Int. Cl. B29f 1/00
U.S. Cl. 425—144 3 Claims

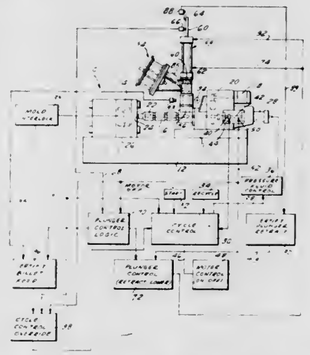


Automatic temperature control system for extruders having a plurality of heating zones which includes an electronic controller for controlling the electric heating power supplied to each zone, a temperature sensing device adapted to supply a signal to the controller representing the temperature of molten metal at the extruder head. The controller is in communication with all the heating zones and is adapted to control thyristor-type active networks associated with the respective heating zones which regulate the electric heating power supplied to each zone in a pre-set adjusted ratio.

3,698,845
PLASTICS INJECTION-MOLDING MACHINE UTILIZING PREMIXED BILLETS

Donald C. Paulson, Southington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.

Filed Oct. 22, 1969, Ser. No. 868,303
Int. Cl. B29c 3/04
U.S. Cl. 425—145 18 Claims

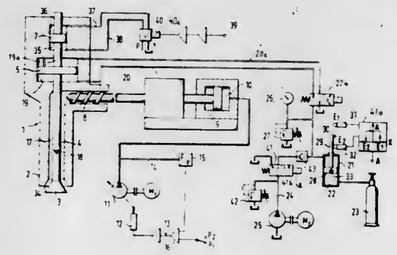


The disclosure contemplates the selective supplying of a premixed plastic article of a predetermined composition into the plasticizing or melt-producing section of a plastics injection-molding machine. Means are provided to sense the presence of a minimum amount of the article necessary to produce a predetermined quantity of melt for use in the machine and to then deliver a new premixed article into operative engagement with the plasticizing section of the machine; such delivery is so synchronized with the machine cycle as to assure that plasticizing and mold-injection phases will not be curtailed or impaired to further assure that if there is a delivery failure, the shutdown of the machine will not occur during either the plasticizing or the mold-injection phase.

3,698,846
BALANCING AND ADJUSTING ARRANGEMENT FOR AN EXTRUSION MANDREL

Volkmar Leutner, Hemmingen, Germany, assignor to Indramat, Gesellschaft fur Industrie-Rationalisierung und Automatisierung GmbH, Lohr/Main, Germany

Filed April 29, 1971, Ser. No. 138,671
Claims priority, application Germany, April 30, 1970, P 20 21 219.5
Int. Cl. B29d 23/04; B29f 3/06
U.S. Cl. 425—149 15 Claims

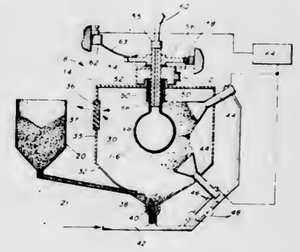


Material, particularly synthetic plastic material, extruded through an annular gap between the mouth of an extrusion head and a mandrel, exerts a forward force on the mandrel. In order to facilitate adjustment of the gap, which requires movement of the mandrel in the rearward direction, a rearward acting balancing force is applied to the mandrel, preferably produced by a pressure fluid supplied to a cylinder chamber, and acting on a balancing piston secured to the mandrel. When the balancing force is equal to the forward force, adjustment of the mandrel requires only a small force.

3,698,847
APPARATUS FOR PRODUCING HOLLOW ARTICLES

Walter R. Goodridge, Fairfield, Conn., assignor to Electrostatic Equipment Corporation, Stratford, Conn.

Division of Ser. No. 814,121, April 7, 1969. This application May 12, 1971, Ser. No. 142,460
Int. Cl. B29h 5/24
U.S. Cl. 425—174 8 Claims



A generally hollow article is produced by coating a collapsible, seamless bladder with integrable particles, integrating the particles into a unitary structure, and thereafter removing the bladder therefrom. The apparatus includes coating means to form a fluidizing mass the particles, means for acting upon the bladder to promote adhesion, and means for integrating the particles on the bladder into a hollow article. The bladder is normally non-adherent to the particles, and is comprised of at least one material that is responsive to the adhesion promoting means.

3,698,848
EXTRUSION CAN

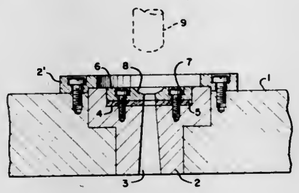
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; James G. Hunt, 85 Salem End Lane, Framingham Center, Middlesex, Mass., and Roy W. Rice, 5411 Hopark Drive, Alexandria, Fairfax Cty., Va.

Filed March 29, 1971, Ser. No. 129,073
Int. Cl. B23b 1/00
U.S. Cl. 425—176 11 Claims



An extrusion can for use in extruding ceramics under heat and pressure, characterized by a metallic, tubular wall defining a cylindrical body adapted to receive therewithin a ceramic billet to be co-extruded therewith. A particular feature of the extrusion can resides in multiple pairs of adjacent surfaces defining within the tubular wall a plurality of elongated slots extending substantially the length of the body and having deposited therein a filler of a type adapted to preclude welding of the adjacent surfaces as a co-extrusion of the can and billet is achieved.

3,698,849
INJECTION MOLDING ASSEMBLY
Jan Czerski, Crewe, England, assignor to Shell Oil Company, New York, N.Y.
Filed April 8, 1969, Ser. No. 814,365
Claims priority, application Great Britain, April 11, 1968, 17,521/68
Int. Cl. B29f 1/022
U.S. Cl. 425—247 1 Claim

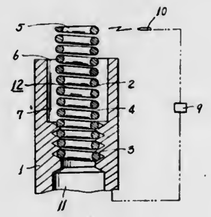


Cellular organic polymer articles are made by an injection molding method in which a foamable thermoplastic melt is injected from an extruding device through a nozzle and sprue bush into a mold, the sprue bush being thermally insulated from the injection nozzle and the nozzle being closed at a position near its outlet after the filling step and maintained in injection position throughout the molding cycle.

3,698,850
PROMOTION OF BURNING OF OIL SLICKS WITH PARTICULATE, FOAMED ALKALI METAL SILICATES
Derry D. Sparlin, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Continuation-in-part of Ser. No. 132,547, April 8, 1971, abandoned. This application March 8, 1972, Ser. No. 232,923
Int. Cl. E02b 15/04
U.S. Cl. 431—8 4 Claims

Particles of foamed water soluble and dispersible alkali metal silicates are distributed over oil slicks to absorb the oil. The oil is then burned after which the water soluble and dispersible particulate foamed alkali metal silicate particles solubilize and disperse.

3,698,851
GAS BURNER NOZZLE FOR USE IN A GAS LIGHTER
Kenjiro Goto, 28-13, 5-chome, Sakurajosui, Setagaya-ku, Tokyo, Japan
Filed Sept. 23, 1970, Ser. No. 74,613
Int. Cl. F23q 2/16
U.S. Cl. 431—266 6 Claims



A gas burner construction incorporating a cylindrical body and a spiral member. The spiral member desirably extends beyond the upper end of the cylindrical body and defines a main gas outlet. The individual coils of the spring are slightly spaced so that a portion of the gas flow passing through the spring will be forced through these spaces thereby forming, with the atmospheric air with which it becomes intermixed, a readily ignitable gas-air mixture adjacent the main gas outlet.

CHEMICAL

3,698,852
AMINO ACID/PHENYLAMINE REACTANT-DYES FOR KERATINOUS FIBERS AND LIVING HAIR
Myron Pantzer, Englewood, and Milton Feier, Tenafly, N.J., assignors to Apod Corporation, Englewood, N.J.
No Drawing. Continuation-in-part of applications Ser. No. 701,313 and Ser. No. 701,352, both Dec. 9, 1957, and Ser. No. 135,433, Sept. 1, 1961, and Ser. No. 147,123, Oct. 16, 1961. Said applications Ser. No. 135,433 and Ser. No. 147,123 are continuations-in-part of applications Ser. No. 701,350 and Ser. No. 701,351, both Dec. 9, 1957, all abandoned. This application May 27, 1965, Ser. No. 459,427
Int. Cl. A61k 7/12
U.S. Cl. 8—10.2 19 Claims

The invention relates to reactant-dyes of dihydroxyphenylalanine and/or dihydroxyphenylglycine and at least one phenylamine. It also relates to the preparation of the aforementioned dyes, compositions thereof and methods of dyeing keratinous fibers, especially living hair therewith.

3,698,853
FRAY RESISTANT CATGUT SUTURES
Barrie Alexander Wilson, Sylvania, New South Wales, Australia, assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 31, 1969, Ser. No. 873,073
Int. Cl. A61l 17/00; A63b 51/02; D01f 5/00
U.S. Cl. 8—94.11 6 Claims

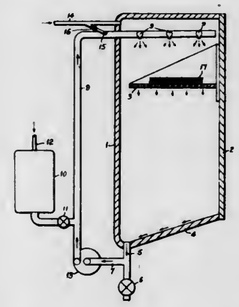
Absorbable catgut sutures prepared by twisting one or more plies or collagen split from animals intestines have an improved run-down, improved resistance to fraying, improved adhesion between the plies and better resistance to unravelling when prepared by soaking the gut strings in an aqueous gelatin solution just before twisting the plies to form the strings, particularly if the collagen is chromed before twisting.

3,698,854
PROCESS FOR PRODUCING FLAME RESISTANT ORGANIC TEXTILES
Darrell J. Donaldson, Floyd L. Normand, and George L. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed June 24, 1970, Ser. No. 49,556
Int. Cl. D06m 13/32, 13/38
U.S. Cl. 8—116 P 6 Claims

Cellulosic and other textiles are rendered flame resistant upon treatment with single-bath aqueous solutions containing tetrakis(hydroxymethyl)phosphonium chloride—or the related tetrakis(hydroxymethyl)phosphonium hydroxide, tris(hydroxymethyl)phosphine, and tris(hydroxymethyl)phosphine oxide—and cyanamide, in mole ratios of about from 1:0.5 to 1:4, respectively, and catalyzed preferably by a phosphorus-containing compound, such as phosphoric acid, ammonium phosphate, chloromethylphosphonic acid, and sodium phosphate. The solutions are applied to various fabrics by the pad-dry-cure technique,

and the treatments are found to be durable to innumerable laundering cycles. The finish contained the added quality of wrinkle resistance.

3,698,855
GARMENT DYEING PROCESS
John Anthony Sutton, Chorlton-cum-Hardy, England, assignor to Courtaulds Limited, London, England
Filed Apr. 5, 1971, Ser. No. 131,554
Int. Cl. B05c 5/00
U.S. Cl. 8—150 6 Claims



A process for dyeing a garment, or garments, which term includes garment blanks or garment panels, comprising laying out the garment, or a stack of the garments, on a shelf located within a pressure vessel and feeding, for example spraying, a heated dye liquor onto the upper surface of the garment, or of the uppermost garment, while the interior of the vessel is at superatmospheric pressure. Apparatus for carrying out the process is also described and claimed.

3,698,856
TREATMENT OF TEXTILE FIBERS
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 282,815, May 23, 1963. This application Nov. 22, 1966, Ser. No. 596,063
Int. Cl. C08f 15/18
U.S. Cl. 8—115.5 28 Claims

Acryloyl or methacryloyl chloride is co-polymerized with a fluoroalkyl ether or ester, for example, 1,1-dihydroperfluorooctyl acrylate. The copolymers are applied to textile materials, e.g., wool, to improve their properties, for example, their resistance to shrinking, and their water- and oil-repellency.

3,698,857
FIBROUS CROSSLINKED (AMINOALKYL)AMINOCHLORODEOXYCELLULOSE AND METHOD OF PREPARATION
Tyrone L. Vigo, New Orleans, and Matthew F. Margavio and Clark M. Welch, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,964
Int. Cl. D06m 13/00, 13/34, 13/54
U.S. Cl. 8—116.2 24 Claims

The preparation of cellulosic yarns and fabrics having 0.67%–11% of the cellulosic hydroxyl groups replaced by chlorine atoms, and a further 0.33%–7% of the hydroxyl groups replaced by (aminoalkyl)amino groups, in addition to appreciable cellulose crosslinking, leads to textiles of increased wrinkle resistance in the wet state, enhanced affinity for acid dyes, and increased resistance to cellulose solvents. The cellulosic textile is first converted to chlorodeoxycellulose in textile form, by reaction with thionyl chloride in dimethylformamide at 20°–30° C., and is subsequently treated with an aliphatic polyamine dissolved in a straight-chain alcohol of 3–6 carbon atoms at 90°–130° C., to replace some of the chlorine atoms by (aminoalkyl)amino groups.

3,698,858
PROCESS OF INHIBITING CORROSION IN SPENT SULFURIC ACID SLUDGE SYSTEMS
Carl E. Stromberg, Richmond, and John Reynolds, El Cerrito, Calif., assignors to Stauffer Chemical Company, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 27,555, Apr. 13, 1970. This application Oct. 6, 1971, Ser. No. 187,119
Int. Cl. C01b 17/92; C23f 11/04
U.S. Cl. 21—2.5 3 Claims

A system for reducing the corrosion rate on metals in a spent sulfuric acid sludge recovery process. This system comprises the addition of a corrosion inhibitor to spent sulfuric acid sludges, as it is pumped from a storage medium through a heat exchanger to maintain these sludges at a constant temperature. The corrosion inhibitors consist of water or water in the form of dilute fresh sulfuric acid.

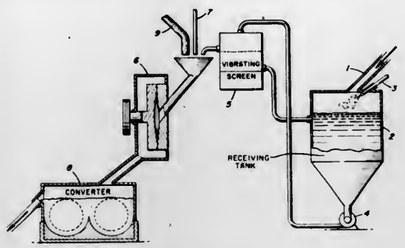
3,698,859
PROCESS FOR PREPARING A COPPER CHROMITE CATALYST
Terrance J. Velten, Glen Burnie, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed June 23, 1971, Ser. No. 156,110
Int. Cl. C01g 3/00, 37/00
U.S. Cl. 23—56 6 Claims

An active copper chromite hydrogenation catalyst is prepared in essentially a three-step process using basic copper carbonate, chromic acid, ammonium hydroxide, an ammonium carbonate. The result is the formation of a basic copper ammonium chromate intermediate which is subsequently decomposed by calcination to copper chromite. A distinct advantage of the process is that environmental contamination is minimized, with carbon dioxide being essentially the only effluent which is vented. Liquid waste by-product is essentially non-existent.

3,698,860
METHOD FOR CONVERTING SODIUM SULFIDE TO SODIUM SULFITE
Kaoru Shiba 29–22, 1-chome, Higashi Yukigaya, Ota-ku, Tokyo, Japan
Filed Oct. 28, 1969, Ser. No. 871,930
Claims priority, application Japan, Oct. 30, 1968, 43/78,788; July 25, 1969, 44/58,407
Int. Cl. C01d 5/00, 5/14
U.S. Cl. 23—129 8 Claims

A process for converting sodium sulfide in the smelt resulted from the burning of black liquor from digesters of semichemical pulp and sulfite pulp to sodium sulfite by oxidation and recovering the latter as pulp digesting chemical, which comprises mixing the smelt particles with water, adding thereto a minor amount of sodium hydroxide forming the mixture into particles and introducing

the particles into a converter packed with dry powder of sodium sulfite, sodium carbonate, etc., containing no sodium sulfide, the process being performed throughout as a wet process.



3,698,861
HYDROLYSIS OF ALUMINUM ALCOHOLATES
Peter Pascoe, Moers, Friedrich Josten, Rheinkamp-Utfort, Wilhelm Haferkamp, Moers, and Willi Lucker, Homberg, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,830
Claims priority, application Germany, Jan. 22, 1969, P 19 03 066.1
Int. Cl. C01f *7/36*
U.S. Cl. 23—143 **6 Claims**

Aluminum alcoholates especially those containing aliphatic hydrocarbon radicals of at least 4 carbon atoms are hydrolyzed in the presence of a solvent such as benzene using 3–4 moles of water per mole of alcoholate at a temperature below 80° C.

3,698,862
METHOD FOR THE STORAGE AND SHIPMENT OF WET PROCESS PHOSPHORIC ACID
Jatinder Jolly, Metairie, La., assignor to Freeport Sulphur Company, New York, N.Y.
No Drawing. Filed July 17, 1970, Ser. No. 55,944
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 23—165 **19 Claims**

The undesirable sludge which typically accumulates in shipped or stored wet process phosphoric acid is rendered flowable by the presence in the phosphoric acid of a polymer selected from the group consisting of polyacrylamides, hydrolyzed polyacrylonitriles and salts thereof, and polyethylene oxide, these polymers being present in an amount effective to render the sludge flowable. The flowability of the sludge facilitates unloading of the acid from the shipping or storage vessel in addition to providing other advantages to a shipper of the acid.

3,698,863
FIBROUS METAL FILAMENTS
John A. Roberts, North Chelmsford, and Peter R. Roberts, Groton, Mass., assignors to Brunswick Corporation
Continuation-in-part of application Ser. No. 742,010, July 2, 1968, now Patent No. 3,505,039, and a division of application Ser. No. 348,326, Mar. 2, 1964, now Patent No. 3,394,213. This application Jan. 29, 1970, Ser. No. 6,709
The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed
Int. Cl. H01b *1/02, 5/02*
U.S. Cl. 29—183.5 **28 Claims**

A metallic filament which has an effective diameter of less than 50 microns and is formed while surrounded by a subsequently removed sacrificial matrix. The filament has a preselected peripheral surface varying from substantially smooth to re-entrant and a preselected surface to volume ratio. The area of the filament also has a controlled non-uniformity along the length thereof which provides an acceptable dimensional tolerance. The metallic filament may be substantially one metal, bimetallic or tubular.

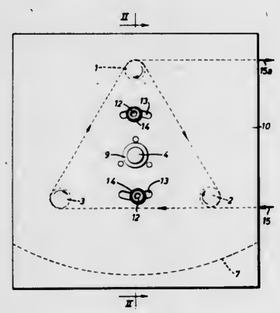
3,698,864
SYNTHESIS OF TETRAFLUOROHYDRAZINE
Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Filed May 28, 1969, Ser. No. 828,743
Int. Cl. C01b *21/52*
U.S. Cl. 23—205 **4 Claims**

This patent describes a novel process for the in situ preparation of tetrafluorohydrazine which comprises passing fluorine into an aqueous solution of an alkyl carbamate of the formula:

$$ROCNH_2$$

wherein R equals alkyl, and an oxidizing agent, and collecting the tetrafluorohydrazine reaction product.

3,698,865
METHOD AND APPARATUS FOR THE TREATMENT OF FILAMENTARY MATERIAL
Jozef Zbrzezniak, Bexleyheath, Kent, England, assignor to Morganite Research and Development Limited, London, England
Filed June 30, 1969, Ser. No. 842,432
Claims priority, application Great Britain, July 3, 1968, 31,685/68
Int. Cl. C01b *31/07;* D06c *7/04*
U.S. Cl. 23—209.1 **3 Claims**

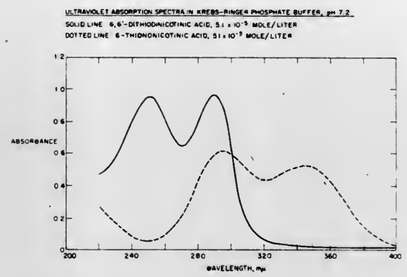


For the production of carbon filaments of high tensile strength and modulus of elasticity, a method and apparatus is provided for feeding a continuous thread of filamentary material in a helical path around a roller cage which is enclosed in a furnace for continuous pyrolysis treatment of the thread.

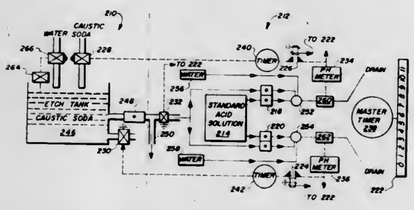
3,698,866
SPECTROPHOTOMETRIC METHOD AND REAGENTS FOR QUANTITATIVE DETERMINATION OF THIOLS
Davide R. Grassetti, Berkeley, and John F. Murray, Jr., San Lorenzo, Calif., assignors to Arequipa Foundation, San Francisco, Calif.
Application July 31, 1969, Ser. No. 850,686, which is a continuation-in-part of abandoned application Ser No. 777,005, Nov. 19, 1968. Divided and this application May 24, 1971, Ser. No. 146,556
Int. Cl. C07d *51/36;* G01n *21/06, 21/20*
U.S. Cl. 23—230 R **8 Claims**

A method for the quantitative determination of thiol presence in a sample which includes mixing the sample

with a dithiobisheterocyclic reagent, such as 6,6'-dithiodinicotinic acid, 2,2'-dithiodiquinoline or 2,2'-dithiobis-(6-methylpyrimidine). The resulting thione derivative is detected by ultraviolet spectroscopy.



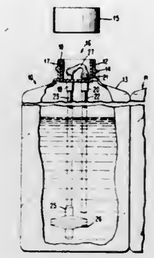
3,698,867
METHOD OF ANALYZING AND CONTROLLING ETCHANT SOLUTION CONCENTRATIONS
Ewald J. Bielefeld, Jr., Benbrook, and Maurice J. Puma, Fort Worth, Tex., assignors to General Dynamics Corporation
Original application Oct. 9, 1968, Ser. No. 766,161. Divided and this application Mar. 29, 1971, Ser. No. 129,257
Int. Cl. C23f *1/08;* G05d *11/08;* G01n *31/16*
U.S. Cl. 23—230 A **3 Claims**



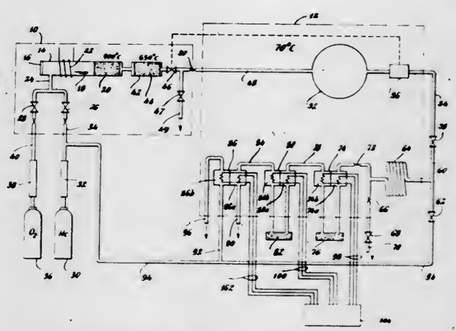
A method and apparatus for the automatic monitoring, analyzing and controlling of the etch rate and chemical concentration of a chemical milling solution responsive to pH values at first and second equivalence points for both caustic soda and inhibitor.

3,698,868
DISPENSER FOR SUPPLYING LIQUID BY SUCTION
Theodore Bilichnansky, Hopewell Junction, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Original application Feb. 11, 1970, Ser. No. 10,548. Divided and this application May 20, 1971, Ser. No. 145,147
Int. Cl. G01n *1/14*
U.S. Cl. 23—230 R **6 Claims**

A dispenser including a container body having a mouth. A permanent liquid seal across the mouth has a pair of ducts approaching the bottom of the container and opening thereinto. The ducts extend upwardly through the seal, having their upper ends spaced apart. Before use, a short length of flexible tubing interconnects the upper ends of the ducts to prevent leakage and spillage. One end of the tubing may be disconnected and then connected to a suction inlet so that the connected one of the pair of ducts becomes an aspirating tube and the other provides an air inlet. Multiple container bodies may be supported together.



3,698,869
ANALYSIS OF GASEOUS MIXTURES
Richard D. Condon, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Aug. 20, 1965, Ser. No. 481,341
Int. Cl. G01n *27/18, 31/06, 31/12*
U.S. Cl. 23—232 R **10 Claims**

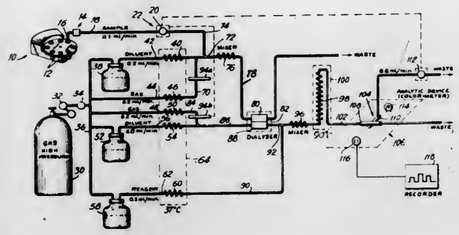


A self-integrating CHN analyzer operating at superatmospheric pressure with improved water measurement capabilities. The organic sample is burned in oxygen and the products of combustion are forced into a reservoir by a carrier gas. A portion of the reservoir contents are then permitted to escape to atmosphere through an elongated delay volume where a portion is retained and water equilibrium is established. Thereafter, carrier gas displaces the retained portion at a constant pressure head through measuring cells responsive to water, carbon dioxide, and nitrogen.

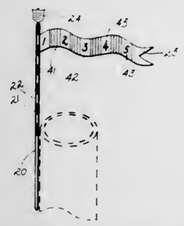
3,698,870
APPARATUS FOR PUMPING WITH VISCOSITY CONTROL
Eduard B. M. de Jong, Tilburg, Netherlands, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Continuation-in-part of application Ser. No. 712,431, Mar. 12, 1968. This application Mar. 2, 1971, Ser. No. 120,153
Int. Cl. B67d *5/54;* F04f *1/00;* G01n *31/00*
U.S. Cl. 23—253 R **10 Claims**

A pump system for sample analysis apparatus including an analytical conduit of relatviely low fluid-flow resistance and which is subject to variations in resistance and having

an end coupled to either end of a second conduit to either receive from or supply to the analytical conduit a fluid caused to flow through both conduits. The second conduit has a relatively high resistance to fluid flow, and temperature control is provided for maintaining the high resistance portion of the second conduit at a substantially constant temperature for precluding variations in the resistance thereof and in the viscosity of the fluid passing through it, so that the rate of flow along the analytical conduit is maintained substantially constant.



3,698,871
AIR POLLUTION DETECTORS
George Andrew Brennan, 7100 West Chester Pike, Upper Darby, Pa. 19082
Filed Apr. 16, 1970, Ser. No. 29,004
Int. Cl. G01n *21/04*
U.S. Cl. 23—254 R 11 Claims

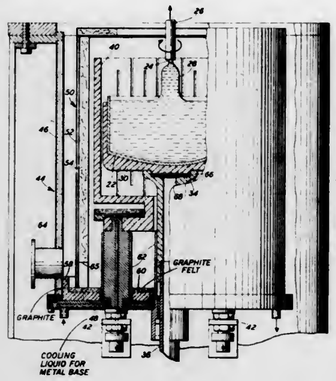


An easily seen, standardized surface, such as that of a mast, mounted in the effluent discharging from a potential source of air pollution, such as a chimney, to provide a visible surface on which can be accumulated an informative record of the condition of the effluent, since the device was installed.

3,698,872
BREAKOUT PROTECTION FOR CRYSTAL GROWERS
Raymond E. Reusser, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,567
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP 1 Claim

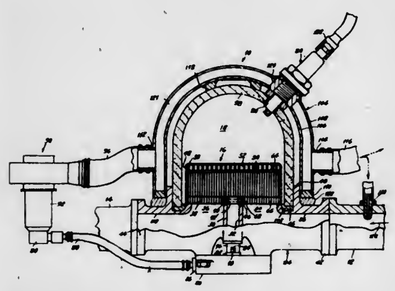
A chamber formed around a heated susceptor and crucible in a crystal grower is constructed to provide protection against molten silicon in the event of breakage of the susceptor or crucible. The bottom of the chamber has a layered construction. A fluid cooled metallic plate forms the lowermost layer of the chamber. The plate is covered by a layer of solid graphite and the solid graphite is covered by a layer of felt.

In the event of a "breakout" of molten silicon, the graphite felts absorbs the molten material and the solid graphite transfers heat from the graphite felt to the fluid cooled plate, thus rapidly cooling the mass of molten material to solidify it and prevent further spreading thereof.



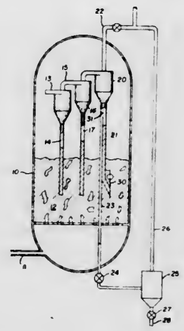
Additionally, a temperature-sensing passageway leading to the susceptor is capped at the susceptor end thereof with a disc of silicon-resistant graphite to prevent molten silicon from running into the passageway.

3,698,873
ROTARY AFTERBURNER FOR INTERNAL COMBUSTION ENGINES
Takashi Kohayakawa, Shinichi Yamamoto, and Michio Morimoto, Osaka, Japan, assignors to Daihatsu Kogyo Co., Ltd., Osaka, Japan
Filed Jan. 25, 1971, Ser. No. 109,506
Claims priority, application Japan, Jan. 31, 1970, 45/9,873
Int. Cl. F01n *3/14*
U.S. Cl. 23—277 C 5 Claims



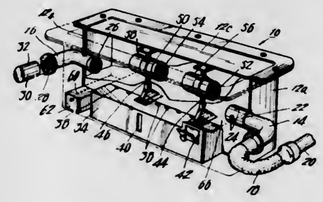
A rotary afterburner for internal combustion engines includes a rotary heat exchanger in the form of a honeycomb matrix located within a combustion chamber into which exhaust gases from the engine exhaust manifold are introduced after passing through one section of the rotating heat exchanger. The exhaust gases are burned in the combustion chamber and thence are passed through another section of the rotating heat exchanger and finally exhausted to atmosphere through an exhaust pipe.

3,698,874
DUST CONTROL APPARATUS FOR FLUIDIZED BED REACTORS
Frederick A. Zenz, Bryant Ave., Roslyn Harbor, N.Y. 11576
Filed July 23, 1970, Ser. No. 57,614
Int. Cl. B01d *45/12*; B01j *9/18*; B04c *5/30*
U.S. Cl. 23—284 9 Claims



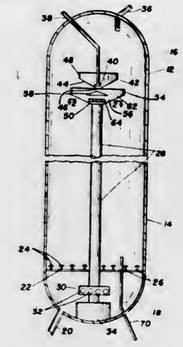
An improved system for reducing dust emission to the atmosphere from a fluidized bed reactor. The system employs cyclone separators one of which, in addition to returning separated particles to the bed through a dip-leg, is provided with means for bypassing a small part of the gas stream to a filtering system. The system reduces dust emission by subjecting part of the gas stream carrying non-separable particles as an underflow stream to a filtering operation while returning separated fines to the fluid bed.

3,698,875
DEVICE FOR CLEANING EXHAUST GAS FROM INTERNAL COMBUSTION ENGINE
Susumu Yamada, 36–15, 1-chome, Amanuma, Tokyo, Japan
Filed May 13, 1970, Ser. No. 36,714
Int. Cl. B01d *39/00, 53/02*
U.S. Cl. 23—288 F 8 Claims



A device for cleaning the exhaust gas from an internal combustion engine comprising a housing packed with powder or chips of metals, a reservoir in the housing containing a suitable emulsion which is vaporized by the heat of the exhaust gas, the contaminants such as carbon, lead, tar, etc. being trapped by the packed powder or chips and adhered thereto by the heat of the exhaust gas, cylindrical hollow bodies each having a filter having a catalytic action, the harmful gases contained in the exhaust gas being converted into harmless carbon dioxide by said filter and the vapor of the emulsion, and a storage containing therein activated carbon for removing the odour from the exhaust gas, whereby the exhaust gas is cleaned and discharged from the housing.

3,698,876
VAPOR LIQUID SEPARATION APPARATUS
Armand A. Gregoli, Somerville, and William R. Mounce, Cranbury, N.J., assignors to Cities Service Research & Development Company
Filed Dec. 17, 1970, Ser. No. 99,203
Int. Cl. B01d *50/00*; B01j *9/16*; C10g *23/00*
U.S. Cl. 23—288 E 5 Claims



Apparatus for effecting improved vapor-liquid separation in an upflow refining vessel is shown. In combination with the upflow type vessel, the apparatus comprises a centrally mounted vertical recycle conduit having a funnel shaped downcomer, a liquid drawoff pipe having a widemouth downwardly directed inlet located above the downcomer, a drawoff pan having a cone shape bottom and sidewalls rising above the level of the drawoff pipe inlet mounted between the downcomer and the inlet, and a deflector mounted within the downcomer. A set of vertically mounted vanes is positioned within the downcomer section just above the recycle conduit joint.

ERRATUM

For Class 29—183 see:
Patent No. 3,698,863

3,698,877
SINTERED CHROMIUM STEEL AND PROCESS FOR THE PREPARATION THEREOF
Kenya Motoyoshi, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Dec. 15, 1969, Ser. No. 884,897
Claims priority, application Japan, Dec. 13, 1968, 43/91,872; Mar. 12, 1969, 44/19,150; Nov. 4, 1969, 44/88,631
Int. Cl. B22f *3/12*
U.S. Cl. 29—182 16 Claims

Sintered chromium steel of high density, high strength, and high heat resistance is obtained by mixing an intermetallic compound FeCr (in the so-called sigma phase), pulverized to less than 10 microns, with iron powder and carbon powder, and if desired with other alloy powders, and by molding and sintering the thus obtained mixture.

3,698,878
SINTERED TUNGSTEN CARBIDE-BASE ALLOYS
Thomas E. Hale, Warren, Mich., assignor to General Electric Company
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,860
Int. Cl. B22f *3/24*
U.S. Cl. 29—182.7 4 Claims

Sintered tungsten carbide-base alloys containing from 40–80% by weight of an iron-base binder alloy which in

turn contains from about 5–25% by weight nickel and an amount of carbon ranging from about 0.5–2% by weight of the binder. The alloys of the invention are prepared by sintering a pressed mixture of the tungsten carbide and binder, which may then be machined or otherwise shaped in the soft as-sintered state and subsequently hardened by heat treatment to form a fully dense, strong and hard cemented carbide compact.

3,698,879

CHEVRON SHAPED ARTICLE AND A SANDWICH STRUCTURE THEREFROM

Victor Gewiss Lucien, Ville d'Avray, France, assignor to Marc Wood Societe Anonyme pour la Promotion des Echanges Techniques Internationaux, Paris, France

Filed June 9, 1955, Ser. No. 514,171

Claims priority, application France, June 10, 1954, 670,772

Int. Cl. B32b *15/00*

U.S. Cl. 29—191 **24 Claims**



1. A structural element comprising a sandwich of two cover sheets and an interposed core sheet integrally secured with the cover sheets, said core sheet being corrugated with the corrugations extending in zig-zag parallel rows and each corrugation having a crest ridge secured to one cover sheet and a valley ridge secured to the other cover sheet, said ridges terminating in a peaked edge so that the core sheet can be formed by folding from a flat sheet without stretching the material, and said corrugations having inclined planar side walls between the crest and valley ridges.

3,698,880

SOLDERABLE STAINLESS STEEL

Edwin Russell Koons, Whiteland, Ralph G. Parker, Jr., Shelbyville, and Jeffery P. Rupley, Lawrence, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Application Nov. 5, 1969, Ser. No. 871,344, now Patent No. 3,634,048, which is a division of application Ser. No. 705,372, Feb. 14, 1968, now Patent No. 3,515,950. Divided and this application Apr. 30, 1971, Ser. No. 139,205

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 **5 Claims**

Means and method for rendering solderable a stainless steel body resistant to corrosive attack from common electrolytes. The method includes the steps of covering at least one surface of a stainless steel body with layers of metal including a first metal layer selected from the group consisting of nickel, cobalt and chromium which serves as a barrier layer to the diffusion of a subsequent metal layer or layers therethrough to the stainless steel body. The subsequent metal layer is resistant to corrosive attack from common electrolytes and is solderable. The subsequent metal layer consists of silver alloyed with a noble metal selected from the group consisting of gold, palladium, platinum, rhenium and osmium. The alloy layer may be formed by covering the barrier layer with a layer of silver and then a layer of gold or one of the other metals. The layered stainless steel body is heated to a temperature below the melting point temperature of the metal layer having the lowest melting point so that the layers, with the exception of the barrier layer, diffuse into one another, thereby forming the alloy layer overlying the barrier layer which is resistant to corrosive attack from common electrolytes and is solderable. The stainless steel body is rendered solderable.

ERRATUM

For Class 29—195 see:
Patent No. 3,698,932

3,698,881

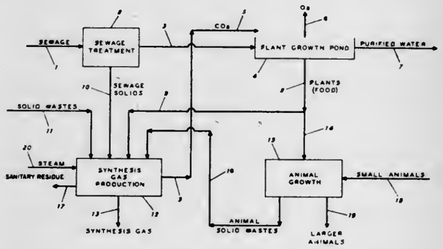
SYNTHESIS GAS PRODUCTION

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of applications Ser. No. 34,834, May 5, 1970, and Ser. No. 39,116, May 20, 1970. This application Aug. 5, 1970, Ser. No. 62,234

Int. Cl. A01h *13/00*; A23k *1/00*; C10j *3/00*

U.S. Cl. 48—209 **10 Claims**



A process for producing synthesis gas which comprises separating solid material and an aqueous stream containing inorganic nutrients from sewage, using the aqueous stream as a source of nutrients to aid in growing plants, and reacting at least a portion of the plants and at least a portion of the solid material separated from the sewage with steam in a reaction zone to produce synthesis gas. According to a preferred embodiment, a portion of the plants which are grown are fed to animals and solid wastes from the animals are used as feed for synthesis gas production.

3,698,882

CONTINUOUS PROCESS FOR THE CONVERSION OF CARBONACEOUS SOLIDS INTO PIPELINE GAS

Donald E. Garrett, Claremont, and Allan S. Sass, South Pasadena, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

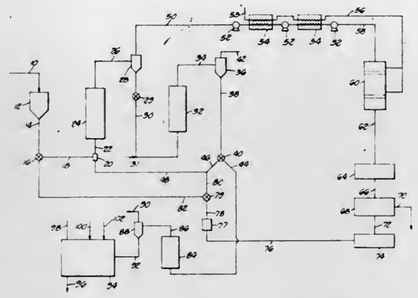
Filed Sept. 30, 1970, Ser. No. 76,700

Int. Cl. C10j *3/00, 3/46*

U.S. Cl. 48—210 **12 Claims**

Continuous process for converting particulate carbonaceous materials to pipeline gas by rapid pyrolysis and separation of the material into a volatilized hydrocarbon phase and a char solids phase followed by in-

flight compression, heating and contacting of the volatilized hydrocarbons with hydrogen to effectuate the



conversion, with the char being utilized as a raw materials source for the hydrogen.

3,698,883

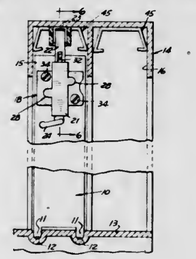
SLIDING PANEL LOCK

Joseph Di Fazio, Warren, Mich., assignor to Acorn Products Company, Detroit, Mich.

Filed Apr. 1, 1971, Ser. No. 130,179

Int. Cl. E05d *15/08*; E05f *5/06*; E05c *1/04*

U.S. Cl. 49—449 **10 Claims**



A lock for track mounted, horizontally slidable panels, formed of a one-piece housing having a box-like base, for securing to the panel, with an integral open channel slidably receiving a slide bolt, and a thin plate fitted within the base and having an integral, struck-out springy portion engaging the bolt for frictionally holding it in preset positions. A keeper having a bolt receiving socket is secured within the upper channel shaped track, and resilient trapezoidal prism shaped stops are frictionally held within the upper channel shaped track to prevent upward movement of the panel and thus removal of the panel from the track.

3,698,884

MULTIELEMENT CONDUCTIVE FACEPLATE

Robert E. Curran, Hawthorne, Glenn D. Robertson, Jr., Malibu, and Richard D. Ketchpel, Santa Barbara, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 9, 1970, Ser. No. 96,392

Int. Cl. C03b *29/00*; C03c *27/00, 29/00*

U.S. Cl. 65—43 **2 Claims**

A method of constructing a faceplate is described, which contains a multitude of closely spaced, discrete, conductive elements to permit passage of electrical signals from one side of the faceplate to the other. The faceplate is completely impermeable to gases. This method comprises placing a metal bar pattern on ribbon glass, cutting and stacking sheets of the glass, and subjecting the stack to heat and pressure. The method of construction permits the ready placement of a large number of closely spaced discrete conducting paths transversely through the faceplate making possible two-dimensional arrays of 500 or more elements per inch.

3,698,885

PROCESS FOR PRODUCING SLOW-ACTING POTASSIUM PHOSPHATE FERTILIZERS

Masao Hamamoto and Seiichi Kamo, Tokyo, and Kiyoshi Nakayama, Yokohama, Japan, assignors to Mitsubishi Chemical Industries Limited

Filed Apr. 22, 1970, Ser. No. 30,929

Claims priority, application Japan, Apr. 24, 1969, 44/31,651

Int. Cl. C05b *13/00*; C05d *9/02*

U.S. Cl. 71—1 **14 Claims**

A mixture of phosphate rock, caustic potash and phosphoric acid is calcined. The phosphate rock, caustic potash and phosphoric acid are preferably present in the molar proportion of 1.0:1.7–3.7:1.2–2.0 calculated as

$$P_2O_5:CaO:K_2O$$

respective. The mixture may also contain a boron-containing compound and/or a magnesium-containing compound.

3,698,886

1-(3 - TRIFLUOROMETHYLPHENYL) - 4,6-DIISOPROPYL - 3,5 - DIMETHYLHEXAHYDRO-1,3,5-TRIAZIN-2-ONE AS A HERBICIDE

John Paul Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 4, 1968, Ser. No. 734,217

The portion of the term of the patent subsequent to Aug. 25, 1987, has been disclaimed

Int. Cl. A01n *9/22*; C07d *55/50*

U.S. Cl. 71—93 **7 Claims**

1-(3-trifluoromethylphenyl)-4,6 - diisopropyl - 3,5 - dimethyl-hexahydro - 1,3,5 - triazin-2-one, the preparation thereof and the phytocidal use thereof.

3,698,887

UREAS AND PHYTOTOXICANTS

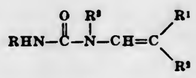
John Paul Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 737,265, Mar. 26, 1968, which is a division of application Ser. No. 523,884, Feb. 1, 1966, now Patent No. 3,399,231. This application Sept. 25, 1970, Ser. No. 75,755

Int. Cl. A01n *9/20*

U.S. Cl. 71—120 **18 Claims**

N-(1-alken-1-yl) ureas of the formula



wherein R^1, R^2 and R^3 are alkyl and R is aryl or substituted aryl, and phytotoxic use thereof.

3,698,888
METALLOTHERMIC PRODUCTION OF MAGNESIUM

Julian Miles Avery, 47 Old Orchard Road, Chestnut Hill, Mass. 02167

No Drawing. Continuation-in-part of application Ser. No. 796,214, Feb. 3, 1969, now Patent No. 3,658,509, dated Apr. 25, 1972, which is a continuation-in-part of application Ser. No. 648,856, June 26, 1967, now Patent No. 3,579,326, dated May 18, 1971. This application Apr. 6, 1970, Ser. No. 26,116
The portion of the term of the patent subsequent to Apr. 25, 1989, has been disclaimed
Int. Cl. C22b *45/00*
U.S. Cl. 75—67 11 Claims

Magnesium is produced by the metallothermic reduction of magnesium oxide in a reaction zone containing a molten slag of 0–25 percent alumina, 30–50 percent silica, 5–30 percent magnesium oxide, and the balance calcium oxide, by means of a metallic reducing agent containing 50–100 percent silicon, 0–40 percent aluminum and 0–15 percent iron, and in a reaction-condensation system containing in its vapor space inert gas at a partial pressure of 0.25–2 atmospheres.

3,698,889
NON-MAGNETISABLE STEEL

Karl Bungardt, Krefeld, Hermann Dietrich, Willich, and Gustav Lennartz and Hans-Egon Arntz, Krefeld, Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

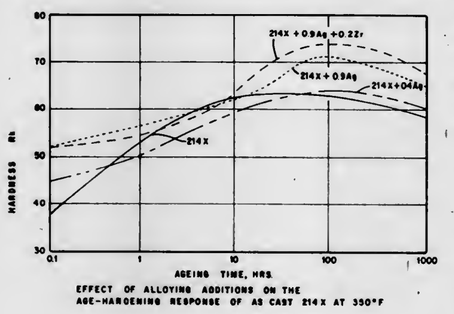
No Drawing. Filed May 24, 1971, Ser. No. 146,508
Claims priority, application Germany, June 5, 1970, P 20 27 676.0
Int. Cl. C22c *37/00, 39/54*
U.S. Cl. 75—123 7 Claims

A non-magnetisable steel which may be welded and which may be heat-treated to become resistant to intercrystalline corrosion and stress-corrosion and to have low-temperature toughness, is provided by an alloy steel containing manganese with small proportions of vanadium and possibly copper.

3,698,890
ALUMINUM ALLOY

Henry Dale Bewley, Paducah, Ky., assignor to the United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 63,457, Aug. 13, 1970. This application Dec. 9, 1971, Ser. No. 206,452
Int. Cl. C22c *21/02*
U.S. Cl. 75—147 4 Claims

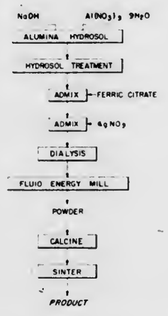


A castable, age-hardenable, aluminum-base alloy consisting essentially of, in weight percent, 3.0–4.5 magnesium, 0.6–1.8 silicon, 0.4–1.5 silver zirconium at a concentration effective to impart increased fatigue strength to the resultant alloy, and the balance aluminum.

3,698,891
METHOD FOR THE PREPARATION OF ALUMINA SILVER COMPOSITES

Arvind S. Patil, Silver Spring, and George E. Ashby, Highland, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,709
Int. Cl. B22f *1/00*
U.S. Cl. 75—206 7 Claims



Alumina ceramics containing more than one percent silver are prepared by sequentially treating an alumina hydrosol with a reducing agent and a silver salt, or vice versa. The material is treated in a fluid energy mill which is operated at a high temperature. The material is then calcined and sintered. The silver containing alumina of this invention are useful as ablative compositions.

3,698,892
METHODS OF THERMOPLASTIC XEROGRAPHY AND APPARATUS THEREFOR

John Crampton Heurtley, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Apr. 10, 1970, Ser. No. 27,310
Int. Cl. B41m *5/20;* G03g *13/22*
U.S. Cl. 96—1.1 25 Claims

Methods of thermoplastic xerography and apparatus therefor are provided in accordance with the teachings of the present invention wherein an electric field applied during the development of a photoreceptor structure, which includes a thermoplastic layer, may be relied upon to tune the quasi resonant frequency exhibited by such thermoplastic layer to a desired value and/or to force the thermoplastic layer to deform in a regular periodic manner which is exposure related.

3,698,893
METHODS OF ORGANIZED THERMOPLASTIC XEROGRAPHY AND PHOTORECEPTOR STRUCTURE THEREFOR

John C. Heurtley, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1970, Ser. No. 73,317
Int. Cl. G03g *13/22;* B41m *5/20*
U.S. Cl. 96—1.1 27 Claims

The present invention is directed to organized thermoplastic xerography techniques and more particularly to photoreceptor structure and methods of forming such photoreceptor structure so that viewable frost deformation patterns which are everywhere periodic may be formed on the surface of a thermoplastic layer using such organized thermoplastic xerography techniques. According to an embodiment of the present invention, photoreceptor structure which includes at least a photoconductive layer and an over-coated thermoplastic layer is provided in a manner such that an interface is formed therebetween. A periodic profile including a recurring geometric configuration having at least two linear sides is established at the interface between such photoconductive and thermoplastic layers so that upon charging, selective exposure and development the thermoplastic layer is forced to deform in a regular periodic manner which is exposure related.

3,698,894
PHOTOCONDUCTIVE TITANIUM DIOXIDE MATERIAL

Warren M. Foss, Metuchen, N.J., assignor to NL Industries, Inc., New York, N.Y.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,724
Int. Cl. C03g *5/00, 7/00*
U.S. Cl. 96—1.5 4 Claims

A new type of photoconductive anatase titanium dioxide composition has been produced which comprises euhedral shaped titanium dioxide particles having an average individual crystal size from 0.2 to 5.0 microns, the surface of said crystals containing a dense coating of zinc oxide in amount from 1% to 4% and containing from 0% to 1% of a dense coating of lead oxide, the percentages based on the weight of the titanium dioxide.

3,698,895
PHOTOELECTROSTATIC MEMBERS

Ronald B. Schultz, Waukegan, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 618,352, Feb. 24, 1967. This application Sept. 22, 1970, Ser. No. 74,507
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.8 9 Claims

A photoelectrostatic member (sheet materials such as paper) coated with a layer of a photoconductive insulating material such as zinc oxide dispersed in a special polyurethane resin produced from a fatty acid ester of a polyhydric alcohol, wherein the polyhydric alcohol portion of the ester contains at least two free hydroxyl radicals, and an organic polyisocyanate.

3,698,896
DIFFUSION TRANSFER FILM UNIT WITH IMPROVED DYE IMAGE RECEIVING LAYER COMPRISING A BASIC POLYMERIC MORDANT

Thomas I. Abbott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,486
Int. Cl. G03c *5/54, 5/48, 1/48*
U.S. Cl. 96—3 22 Claims

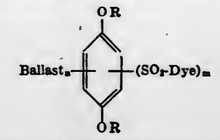
A hydrophilic colloidal overcoat layer on a dye image-receiving element is useful for providing stable dye images of high quality in a color development diffusion transfer system utilizing immobile couplers which form diffusible dyes.

3,698,897
DIFFUSION TRANSFER PROCESSES AND FILM UNITS COMPRISING COMPOUNDS WHICH ARE CLEAVABLE UPON OXIDATION IN ALKALI MEDIA TO PRODUCE DIFFUSIBLE DYES OR DYE PRECURSORS

Thomas E. Gompf, Penfield, and Kin Kwong Lum, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 6, 1971, Ser. No. 160,068
Int. Cl. G03c *1/40, 5/54, 7/00*
U.S. Cl. 96—3 21 Claims

Color, diffusion transfer photographic elements, film units and processes are described which employ dye image-providing materials which are cleavable upon oxidation in an alkaline medium to release a dye or dye precursor which diffuses to a dye image-receiving layer. The compounds have the formula:



wherein R is H or a hydrolyzable entity, *n* is 1 to 3 and *m* is 1 to 3.

3,698,898
PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING A COMPOUND WHICH IN THE PRESENCE OF ALKALI RELEASES A DIFFUSIBLE PHOTOGRAPHIC REAGENT

J. Michael Grasshoff, Hudson, and Lloyd D. Taylor, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

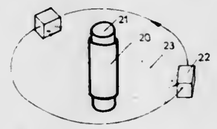
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,310
Int. Cl. G03c *5/54, 5/48, 1/34*
U.S. Cl. 96—3 31 Claims

Novel compounds which release a photographic reagent in the presence of alkali, which compounds may be defined as quinone- or naphthoquinone-methide precursors containing the photographic reagent moiety; and photographic products and processes employing the same.

3,698,899
METHOD OF MANUFACTURE OF PRINTED ARTICLES, IN PARTICULAR PRINTED KNITTED ARTICLES

Bernard Giberstein, Paris, France, assignor to Begy Societe Europeenne de Bas sans Couture, Autun (Saone-et-Loire), France

Filed Aug. 17, 1970, Ser. No. 64,428
Claims priority, application France, Aug. 27, 1969, 6929321; June 10, 1970, 7021298
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 5 Claims



A method of manufacture of printed knitted articles, hosiery, stockings, tights and the like wherein, in order to carry out the desired printing, the article is provided with a light sensitive substance at a given moment during its treatment, it is fitted on a form and subsequently subjected to photographic exposure which acts upon the said substance, and the said exposed substance is thereafter developed and fixed on the said article.

3,698,900
DIFFUSION TRANSFER PROCESS UTILIZING 2-MERCAPTO IMIDAZOLES

Edward J. Johnson, Jr., Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Continuation of abandoned application Ser. No. 698,719, Jan. 18, 1968. This application Aug. 23, 1971, Ser. No. 174,123
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 4 Claims

2-mercapto imidazoles are utilized in diffusion transfer processes to give positive transfer prints of improved quality over a broad range of processing temperatures.

3,698,901
PHOTOGRAPHIC ELEMENTS, COMPOSITIONS AND PROCESSES

Herbert S. Elins and James P. Van Meter, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 787,616, Dec. 27, 1968. This application June 25, 1971, Ser. No. 157,056
Int. Cl. G03f *7/06*
U.S. Cl. 96—33 26 Claims

In photographic elements, compositions, especially emulsions, and processes an oleophilic complex of (a) a photographic addendum, especially a silver halide developing agent, with (b) an organic, Group V element oxide, which complex has the property of releasing the photographic addendum in the presence of an alkali provides reduced desensitization, improved latent image stability and improved photographic addendum release upon contact with alkali. Photographic elements, such as lithographic plates, containing an oleophilic complex of (a) a silver halide developing agent containing at least one hydroxyl group with (b) an organic phosphine oxide and/or an organic amine oxide are especially suitable. A wide range of photographic addenda can be employed, including, for instance, developing agents, filter dyes containing hydroxyl groups, couplers containing hydroxyl groups and the like. It is believed the moieties of the described complex are hydrogen bonded together.

3,698,902
METHOD OF PRODUCING COLLOID RELIEF IMAGES

Bela Gaspar, 240 S. Oakhurst Drive, Beverly Hills, Calif. 90212

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,702
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 13 Claims

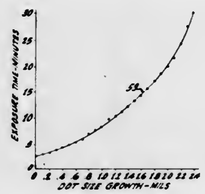
In a process for producing a colloid relief image by exposing a light sensitive colloid layer to the action of light to produce a differentially hardened colloid layer containing hardened portions which have been exposed to light and unhardened portions, the improvement which comprises removing the unhardened portions by contacting the differentially hardened colloid layer with a hot aqueous salt solution, e.g., a concentrated sodium chloride solution, to soften the unhardened portions, followed by treatment of the differentially hardened colloid layer with cold water to remove the softened unhardened portions of the colloid layer essentially as particles suspended in the water, and permitting reuse of both the hot salt solution and the cold water, following removal of the suspended particles, for further processing to provide colloid relief images as above described.

3,698,903
METHOD OF MAKING A GRADED PHOTO-PRINTING MASTER

John A. Dodd, Jr., Haddonfield, and Robert A. Geshner, Cherry Hill, N.J., assignors to RCA Corporation

Filed Jan. 24, 1969, Ser. No. 793,665
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 4 Claims

A graded dot photo-printing master is made by providing a first master comprising a multiplicity of spaced opaque dots of uniform size located in a desired pattern or array on a clear background; contact printing the first master to produce a second master comprising negative replica thereof having spaced clear areas of the same size as the dots on an opaque background; and contact printing the second master through a rotating shutter having a specially-shaped aperture for varying the time of exposure from a maximum at the center to a minimum at the outer edge, to produce a third master having spaced clear or opaque areas of graded size on an opaque or clear background, depending on the type of photographic emulsion used. When a positive type emulsion is used, to produce a third master with graded clear areas on an opaque background, that stencil is subsequently contact printed with a negative-type emulsion to produce the final graded dot master with spaced opaque dots varying in size from a maximum at the center to a minimum at the outer edge. This final master is used, with another master having a similar pattern of uniform larger-size opaque dots, to form the holes in a graded mask for a color picture tube.



3,698,904
COMPOSITION FOR DEVELOPING PHOTOPOLYMERIZABLE LITHOGRAPHIC PLATE ELEMENTS COMPRISING A DEVELOPER BASE AGENT, AN INK-RECEPTIVITY-AFFORDING AGENT AND A DESENSITIZER

Hisaaki Fukui and Taketoshi Araki, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed July 6, 1970, Ser. No. 52,728
Claims priority, application Japan, July 23, 1969, 44/57,671
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 28 Claims

Developer composition for a lithographic plate which is to be used for the photopolymerized layer obtained by exposing to actinic light a selected area of a coating of a photopolymerizable layer from a specified photosensitizing solution consisting of (I) a photopolymerizable component comprising an unsaturated polyester, at least one ethylenically unsaturated monomer, a photopolymerization initiator and a thermal polymerization inhibitor and (II) at least one solvent. Said developer composition consists of at least one developer base agent, at least one ink-receptivity affording agent, at least one desensitizer and, if necessary, at least one etching agent and enables to attain effects of ink-receptivity, densensitization and etching simultaneously with development by one time application of one solution.

3,698,905
DECORATING ANODIZED METAL WITH DYE IMBIBITION TRANSFERRED IMAGES

Warren Guy Van Dorn and James Maurice Hardenbrook, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,354
Int. Cl. G03c *5/00, 7/00;* G03f *3/04*
U.S. Cl. 96—48 R 11 Claims

Decorating anodized metals, such as aluminum, by exposing said anodized metal substrate bearing a light-sensitive layer to actinic radiation to establish a potential R_d of 0.2 to 2.2, applying a dry powder comprising a water soluble dye to the light-sensitive layer, embedding the developing powder in image-wise configuration into the light-sensitive layer, removing the developing powder from the non-image areas and molecularly imbibing and transporting said dye from the dry powder into the pores of the anodized metal in image-wise configuration by contacting said light-sensitive layer with water vapor.

3,698,906
PHOTOGRAPHIC MULTI-TONE SEPARATION PROCESS

Michael J. Kelly, Brookmont, Md. (6307 MacArthur Blvd., Apt. 1B, Bethesda, Md. 20016)

Filed June 26, 1970, Ser. No. 50,243
Int. Cl. G03c *5/06*
U.S. Cl. 96—44 40 Claims

A process for the separation of tonal bands from an original transparency having multiple tonal bands. The process includes a phase which makes a series of masks of the original tonal bands by controlled exposure through the original transparency and a phase in which a new photosensitive material is exposed through the masks and screens, or, alternatively, using the masks with light-sensitive color dyes. A final product is obtained in which the areas corresponding to the original tonal bands have a changed pictorial representation and these areas are represented by screen patterns, or, alternatively, colored bands. A specific example of the process starts with altitude charts having three tonal bands produced by the Universal Automatic Map Compilation Equipment (UNAMACE). By means of controlled exposure of the original altitude chart, a series of masks of the altitude bands are produced and the masks are then used in making a final product in which the areas corresponding to the original tonal bands are represented as screen patterns or, alternatively, as colored bands.

3,698,907
LIGHT-SENSITIVE SILVER HALIDE COLOR-PHOTOGRAPHIC MATERIAL

Shui Sato, Tokyo, Sadao Sugita, Hanno, and Tomio Nakajima and Keiji Kasai, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,141
Claims priority, application Japan, Dec. 29, 1969, 45/105,148
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R 5 Claims

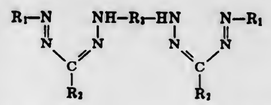
An ultraviolet absorber of the hydroxybenzotriazole type is stably incorporated into a light-sensitive silver halide color-photographic material so as to improve the resulting colored dye image in light fastness.

3,698,908
PHOTOGRAPHIC MATERIALS COMPRISING FORMAZAN DYES

Eric Macdonald, Llanbrynmair, Wales, and Frederick Campbell, Failsworth, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,123
Claims priority, application Great Britain, Feb. 19, 1970, 8,095/70
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R 2 Claims

The application describes a formazan dye of the formula:



wherein R_1 is an aryl or substituted aryl group, R_2 is an alkyl group containing up to 6 carbon atoms and R_3 is either a diphenyl or a stilbene linkage group wherein, in either group, each of the benzene nuclei is substituted with a sulphonic acid group or an alkali metal or ammonium salt thereof.

3,698,909
PHOTOGRAPHIC DYE IMAGE STABILIZER-SOLVENT

Gregory James Lestina and Max Herman Stern, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,270
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 24 Claims

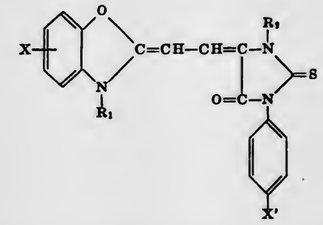
A photographic element utilizing a color coupler compound dissolved primarily in a sterically hindered phenol exemplified by a chroman - 6 - ol; a silver halide emulsion containing such a dissolved coupler compound and a method for utilizing the element or emulsion to obtain durable products having reduced bulk and good image stability to light.

3,698,910
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kaiichiro Sakazume, Shigemasa Ito, and Shui Sato, Tokyo, Eiichi Sakamoto, Hanno, and Akio Oshima, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed June 23, 1970, Ser. No. 49,182
Claims priority, application Japan, June 23, 1969, 44/48,893
Int. Cl. G03c *1/08*
U.S. Cl. 96—122 1 Claim

New dimethine merocyanine dyes containing, in addition to a thiohydantoin nucleus, two water-solubilizing groups in a single molecule was found particularly effective for sensitization of a green-light sensitive silver photographic emulsion. The dyes can be represented by the general formula



(I)

wherein R_1 is a sulfoalkyl or carboxyalkyl group which may be in salt form; R_2 is a carboxylalkyl group; X is a hydrogen or halogen atom or an alkyl or alkoxy group; and X′ is a hydrogen or chlorine atom.

ERRATUM

For Class 96—91 see:
Patent No. 3,699,000

3,698,911
PROCESS FOR THE PRODUCTION OF DRY MOLASSES FROM SUGAR-CANE OR BEET-ROOT MOLASSES

Armando Paulo Pellegrini, 1329 Rue Ouro Preto, Belo Horizonte, Brazil

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,572
Int. Cl. A23k *1/02*
U.S. Cl. 99—6 10 Claims

A process for producing dry solid molasses comprising adjusting the pH of liquid molasses to about 8–10.5 at temperatures of about 60–70° C. and drying the mixture.

3,698,912
PROCESS FOR MAKING NUTRIENT COMPOSITION
Milton Winitz, Palo Alto, Calif., assignor to Morton-Norwich Products, Inc., Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 705,299, Feb. 14, 1968. This application July 1, 1969, Ser. No. 838,338
Int. Cl. A23l *1/42*
U.S. Cl. 99—14 23 Claims

A process for making palatable nutrient compositions for human consumption which contain all of the essential amino acids plus non-essential amino acids in nutritionally balanced relationship. Aqueous solutions of acid- or enzyme-hydrolyzed proteins provide a starting point for the process.

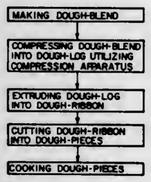
3,698,913
TREATMENT OF DISTILLED ALCOHOLIC LIQUORS
Theodore Malinin, Alexandria, Va.
(360 Atlantic Road, Key Biscayne, Fla. 33149)
No Drawing. Filed Sept. 11, 1970, Ser. No. 71,393
Int. Cl. C12f *1/00*; C12g *3/12*
U.S. Cl. 99—34 5 Claims

A method for improving and mellowing the taste of alcoholic distilled liquors and for bringing about a shift in the pH value toward the neutral range, by reducing the total ester content and total fusel oil content, involves intimately contacting the liquor with a gaseous mixture of oxygen and carbon dioxide in which the percent of carbon dioxide by volume is in the range from about 5% to about 15%.

3,698,914
METHOD OF PREPARING TEXTURED SNACK FOOD PRODUCTS
Cornelis Kortschot and Peter F. Adams, Willowdale, Ontario, Canada, assignors to Corporate Foods Limited, Toronto, Ontario, Canada
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,407
Int. Cl. A23l *1/10, 1/12*
U.S. Cl. 99—83 5 Claims

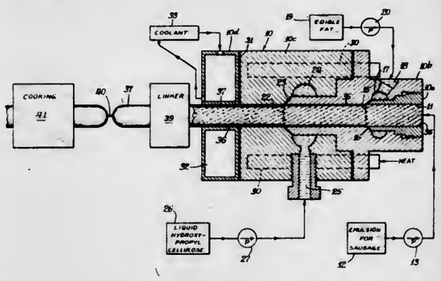
A process for the preparation of crisp snack foods wherein the food is made into a batter, which is aerated or "foamed" and cast in a thin film prior to cooking. The combination of the aeration step, together with the step of forming a film allows storage of the uncooked food for prolonged periods and rapid cooking to produce a uniform product of good quality.

3,698,915
METHOD FOR MAKING POTATO CHIP-TYPE FOOD PRODUCT
Colin F. Glasgow, Billings, Mont., assignor to Pate Foods, Inc., South Beloit, Ill.
Filed Aug. 19, 1970, Ser. No. 64,973
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 P 3 Claims



This invention relates to a method for producing a chip-type fried food product containing as a major portion thereof potato flakes which are in particulate form distributed throughout a farinaceous flour matrix. The method comprises the following steps in order: making a non-gelatinous crumbly dough-blend; loading a batch of said dough-blend into a novel dough compression apparatus for controllably compressing and de-aerating same into a non-gelatinous relatively abrasive-resistant dough-log; extruding the dough-log into an elongate dough-ribbon; cutting the dough-ribbon into relatively short dough-pieces; and cooking the non-gelatinous dough-pieces under controlled conditions to produce a non-puffy relatively compact chip-type food product.

3,698,916
CONTINUOUS SAUSAGE MANUFACTURE
Stephen T. Moreland, 789 Anita Ave., Grosse Pointe Woods, Mich. 48236
Filed June 17, 1970, Ser. No. 46,975
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 5 Claims



A sausage emulsion is pumped through a passageway. At a first location along the passageway a water barrier material is introduced about the periphery of the emulsion. At a point downstream from that location a heat liquified casing forming material is introduced about the water barrier and solidified by cooling. Thereafter, the filled casing is handled conventionally.

3,698,917
FREE FLOWING POWDER CONTAINING CONFECTIONERS' SUGAR
Wilhelm Baum and Michael Glerlichs, Dusseldorf, Germany, assignors to Henkel & Cie., GmbH, Dusseldorf, Germany
No Drawing. Continuation-in-part of application Ser. No. 587,402, Oct. 18, 1966. This application Sept. 30, 1969, Ser. No. 862,528
The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed
Int. Cl. A23l *1/00*
U.S. Cl. 99—141 9 Claims

Free-flowing powder containing powdered sugar which will not cake upon storage and a continuous process for the preparation of the said powder.

3,698,918
MANUFACTURE OF CHEESE CURD
Marie Pierre Goujard, Neuilly-sur-Seine, France, assignor to Compagnie Gervais Danone, Levallois-Perret, France
Continuation-in-part of application Ser. No. 86,616, Nov. 3, 1970, which is a continuation of abandoned application Ser. No. 619,272, Feb. 28, 1967, and a continuation-in-part of abandoned application Ser. No. 803,432, Feb. 28, 1969. This application Feb. 26, 1971, Ser. No. 119,338
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 9 Claims

The present invention relates to a proces for the manufacture of milk curd by mixing previously acidified lactic whey with concentrated milk, the acidity of the whey being between 0.5 and 2.5 and the pH of said mixture being between about 3 to about 5, the proportions of dry extract of said milk and the conditions of separation of said curd are so selected as to recover substantially as much of the whey as was used to produce curdling of the milk.

3,698,919
PREPARATION OF PLASTIC SUBSTRATES FOR ELECTROLESS PLATING AND SOLUTIONS THEREFOR
John J. Kuzmik, Torrington, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.
No Drawing. Filed Aug. 14, 1969, Ser. No. 850,249
Int. Cl. C23c *3/00*
U.S. Cl. 106—1 5 Claims

Plastic substrates, such as ABS, are prepared for electroless metal plating by treatment of the surface at a temperature of about 100° to about 175° F. with an activating solution prepared by admixing a glycol ether and an acid stannous chloride-palladium hydrosol. In the hydrosol, catalyst metal particles of colloidal or semicolloidal nature are present. A complete plating process utilizing the glycol ether activating solution is also set forth.

3,698,920
POROUS CERAMIC INSULATING MATERIAL AND METHOD OF MAKING EMPLOYING WAX
John J. Pitha, Lenox, Mass., assignor to General Electric Company
Filed Aug. 30, 1967, Ser. No. 664,452
Int. Cl. C04b *33/00*
U.S. Cl. 106—41 16 Claims

Porous insulating material suitable for forming arching gap plates of lightning arresters is made from a mixture of aluminum oxide grains of selected particle size to provide increased porosity, molten wax and powdered glass, the warm mixture being cooled at a controlled rate to produce a homogeneous mass of free-flowing particles which are thereafter pressed into desired shape and fired at elevated temperature.

3,698,921
GLASS HAVING A HIGH COEFFICIENT OF ABSORPTION FOR INFRARED RADIATION COMPRISING FERROUS OXIDE
Coenraad Maria La Grouw and Ong Tjing Gie, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Sept. 10, 1969, Ser. No. 856,824
Claims priority, application Netherlands, Sept. 14, 1968, 6813196; May 5, 1969, 6907225
Int. Cl. C03c *3/04*
U.S. Cl. 106—54 1 Claim

Glass having a high coefficient of absorption for infrared radiation which is suitable as an envelope for electronic components which are sealed by irradiation and the composition of which is situated within the following limits in percent by weight:

SiO_2	60–70
B_2O_3	0–2
Li_2O	0.5–2
Na_2O	10–16
K_2O	0–2
BaO	6–16
Al_2O_3	1–4
CaO+MgO	0–5
FeO	2–4

3,698,922
DOLOMITIC REFRACTORY
Ronald Staut, Cherry Hill, N.J., and George G. Judd, Woodville, Ohio, assignors to General Refractories Company, Philadelphia, Pa.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,040
Int. Cl. C04b *35/06*
U.S. Cl. 106—58 18 Claims

A dolomitic refractory which is produced by calcining dolomite to produce quicklime; slaking the quicklime under atmospheric pressure with at least 80 percent by weight of water until the quicklime comprises by weight on an oxide basis about 3 to 40 percent magnesium oxide; forming the slaked quicklime into a suitable refractory shape; and then sintering the shaped material to produce a refractory.

3,698,923
ALUMINA SUBSTRATES
Harold Wilbur Stetson, Newtown, Pa., and Warren Joseph Gyurk, Pluckemin, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Continuation of application Ser. No. 634,370, Apr. 27, 1967. This application May 6, 1970, Ser. No. 37,373
Int. Cl. C04b *35/10*
U.S. Cl. 106—62 5 Claims

High-alumina bodies have been produced which, in the as-fired condition, are flat, absorb no water, and have surface finishes of less than 3½ micro-inches on both sides. The method for their preparation includes steps for preparing the alumina, milling the alumina, preparing a casting slip, casting, drying and firing. Alumina bodies with such smooth surfaces are particularly useful as substrates for thin film circuits, devices, and integrated circuits.

3,698,924
SALINE RESISTANT CEMENTITIOUS BINDERS
George L. Kalousek, Lakewood, and Elton J. Benton, Denver, Colo., assignors to the United States of America as represented by the Secretary of the Interior
No Drawing. Filed May 5, 1970, Ser. No. 34,862
Int. Cl. C04b *7/02*
U.S. Cl. 106—89 4 Claims

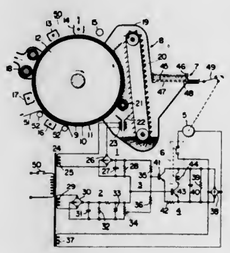
Saline corrosion of concrete at elevated temperatures is prevented by limiting the sulfate content of the cement binder to a level at which the apatite mineral ellestadite will not form.

3,698,925
APPLICATION OF COPOLYMERS OF POLYVINYL ACETALS AS A MEANS FOR PROTECTION, PRESERVATION, RESTORATION, STABILIZATION, HYDROPHOBIZATION OF PAPYRUS, PAPERS, BOOKS AND/OR MANUSCRIPTS
Karl Salz and Ladislav Skrivanek, Prague, Czechoslovakia, assignors to World Patent Development Corp.
No Drawing. Filed July 8, 1969, Ser. No. 840,048
Claims priority, application Czechoslovakia, July 12, 1968, 5,131/68
Int. Cl. B23p *7/00*; B32b *35/00*
U.S. Cl. 117—2 R 18 Claims

This invention is directed to restoration and preservation of cultural items on papyrus and/or paper (whether new or old) by impregnating same with a solvent solution of copolymers of polyvinyl acetals; or by laminating a free film of such copolymers to either or both faces of the document to be treated, with or without an interposed sheet of fine inert textile as a reinforcement; or by impregnating such document with the copolymers, then splitting the document down its median plane and then inserting a copolymer impregnated textile sheet between the split halves and reuniting the split halves. Once treated, such cultural items retain their papyrus-like and/

or paper-like qualities; yet, these cultural items have enhanced strength and color stability, are impervious to soiling, are resistant to aging, wear and mould formation and are waterproof.

3,698,926
METHOD AND APPARATUS FOR SUPPLEMENTING TONER IN ELECTROPHOTOGRAPHIC MACHINES
Masayoshi Furuichi, Tokyo, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan
Filed Nov. 10, 1970, Ser. No. 88,378
Claims priority, application Japan, Nov. 11, 1969, 44/90,612
Int. Cl. G03g *13/00*
U.S. Cl. 117—17.5 **3 Claims**



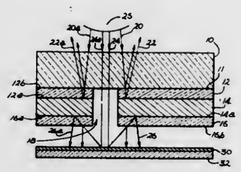
A developing agent consisting of a magnetic carrier and a non-magnetic toner is utilized for developing latent images formed by an electrophotographic machine. The percentage content of the toner in the developing agent is detected by an inductance element for supplementing the toner whereby to maintain at a constant level the percentage content of the toner contained in the developing agent.

3,698,927
FOAM STRUCTURE WITH PROTECTIVE OVERCOAT
John M. Sawyer, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,869
Int. Cl. B32b *27/40*
U.S. Cl. 117—33.3 **7 Claims**

A composite structure comprising a foam substrate having an adherent overcoat wherein the overcoat is an essentially non-cellular cured polyurethane epoxy-containing composition, substantially opaque to ultraviolet light. The invention has particular utility for the preparation of building structures, such as roofs of buildings, which are exposed to ultraviolet light from sunlight and particularly to the destructive coaction of moisture and ultraviolet light.

3,698,928
MULTILAYER ANTIREFLECTIVE ABSORPTION FILM
Eugene R. Blome, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y.
Filed Nov. 14, 1967, Ser. No. 682,842
Int. Cl. G02b *1/10*
U.S. Cl. 117—45 **1 Claim**

A multilayer antireflective absorption mask comprising a transparent substrate having a first layer of oxidized chromium with the thickness adapted to selectively absorb reflected radiation that would be sensed by the eye (e.g., 5000 to 6000 angstroms); a layer of chromium masking material having a thickness adapted to absorb radiation that would expose a photoresist (e.g., 3000 to 6000 angstroms) and a second layer of oxidized chromium having a thickness adapted to selectively absorb reflected radiation that would exposed a photoresist (e.g., 3500 to 4500 angstroms). The light otherwise reflected and



transmitted through the substrate is selectively absorbed by the first layer of oxidized chromium and the non-reflected transmitted light is absorbed by the layer interposed between the two oxidized chromium layers. Light that reaches a reflector, via transparent areas of the multilayered mask (such as a semiconductor device with a photo-resist thereon) that is reflected thereby, is selectively absorbed by the second oxidized chromium layer.

3.698,929
METALLIZING EXPANDED PLASTICS ARTICLES
Adolf Diebold, Ludwigshafen, and Matthias Marx, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed June 18, 1969, Ser. No. 834,552
Claims priority, application Germany, June 22, 1968, P 17 71 661.9
Int. Cl. B44d *1/14*
U.S. Cl. 117—71 **9 Claims**

A method of metallizing the surface of expanded plastics articles by applying a layer of a coating composition containing finely dispersed iron particles and electroless deposition of copper by treating the said layer with an acid aqueous copper salt solution, a layer of an aqueous solution or dispersion of an organic polymer containing heteroatoms being applied and dried prior to application of the iron-containing coating.

3,698,930
PROCESS FOR THE PREPARATION OF IRIDESCENT FILMS AND FILAMENTS AND THE PRODUCT SO PRODUCED
Yves Fleurquin, Oullins, and Andre Bruckmann, Tassin la Demi Lune, France, assignors to La Cellophane, Paris, France
No Drawing. Filed Nov. 18, 1968, Ser. No. 776,802
Claims priority, application France, Dec. 28, 1967, 134,042
Int. Cl. B44f *1/14*; B44d *1/16*
U.S. Cl. 117—45 **11 Claims**

A process for making iridescent films and filaments which comprises depositing on a flexible support a thin metallic layer, coating the metallized face thereof with a transparent varnish which adheres strongly thereto, drying said varnish, and depositing on the varnished face an extremely thin second metallic layer so that said second metallic layer is almost transparent to normally incident light rays while it reflects light inclined at a large angle and the products produced by said process.

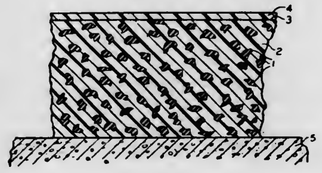
3,698,931
METHOD OF GRAFTING POLYMERIZABLE MONOMERS ONTO SUBSTRATES
Carl Horowitz, Brooklyn, N.Y., assignor to Polymer Research Corp. of America, Brooklyn, N.Y.
No Drawing. Filed June 18, 1969, Ser. No. 834,489
Int. Cl. B44d *1/12*; C03c *17/00*; C08f *1/34, 29/50*; D06d *1/00*
U.S. Cl. 117—47 R **2 Claims**

A substrate is contacted with a grafting solution containing a silver salt, a polymerizable monomer and a catalyst which is adapted to activate the monomer to polymerization by itself being activated by metallic silver. The silver ion is reduced by the substrate and forms an insoluble metallic silver deposit on the substrate. The metallic silver activates the catalyst which in turn activates the polymerization reaction so that polymerization takes place and the formed polymer is grafted onto the substrate.

3,698,932
ARTICLES HAVING A LOW FRICTION SURFACE AND PROCESS OF MAKING SAME
Sheldon W. Dean, Hamden, Conn., assignor to Olin Corporation
Filed Jan. 25, 1971, Ser. No. 109,197
Int. Cl. B23p *3/00*; B44d *1/14*
U.S. Cl. 29—195 R **12 Claims**

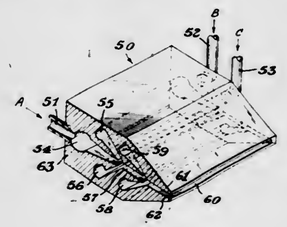
A substrate or article having a low friction surface and the process of making the same. The article consists of a metal base selected from aluminum, titanium, zirconium, tungsten, niobium, magnesium, nickel and their alloys and stainless steels. The metal base has a surface on which is formed a three layer low friction coating. The first layer adjacent the metal base comprises a metal selected from zinc, cadmium, bismuth, tin, antimony, lead, iron, copper and copper alloys. The second layer formed over the first layer comprises a metal soap or salt of the first layer and the third layer formed over the second layer comprises a fatty acid. Generally, the second layer is formed by reacting in part the first and third layers. The low friction surface provides articles such as fasteners, lamp bases, deep drawing blanks, etc. which are able to convert a greater degree of applied torque to working force than low friction surfaces comprising a metal soap or fatty acid alone.

3,698,933
COATED RESILIENT MATTING AND METHOD FOR MAKING
Robert Ernest Leeks, Reading, and Alfred John Demers, Peabody, Mass., assignors to The Borden Company, New York, N.Y.
Original application Nov. 25, 1966, Ser. No. 597,059, now Patent No. 3,562,193, dated Feb. 9, 1971. Divided and this application Mar. 31, 1970, Ser. No. 30,617
Int. Cl. B44d *1/14*; C08d *9/04*
U.S. Cl. 117—72 **4 Claims**



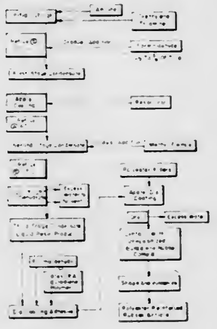
This invention relates to the method and composition produced by the steps of admixing a liquid binder of a polymer latex, elastomeric when cured, and an emulsified highly aromatic oil which is compatible with said polymer latex, combining with said binder, cured elastomeric aggregates having an average particle size less than about one inch in its greatest dimension and a curing agent for said polymer latex, applying the liquid binder and aggregates onto a surface, curing the coating, then coating the surface with a sealer being a polymer latex which is elastomeric when cured. The final cured composite is used as a covering layer on a resilent running track used in sporting events.

3,698,934
METHOD FOR MAKING HIGH BARRIER COATED PAPERS
Jacob Eichhorn and Stanley F. Roth, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application Jan. 17, 1968, Ser. No. 698,613, now Patent No. 3,560,227, dated Feb. 2, 1971. Divided and this application Sept. 1, 1970, Ser. No. 68,773
Int. Cl. B32b *27/08, 27/10*
U.S. Cl. 117—76 P **8 Claims**



A new and useful high barrier film is described along with a method for its preparation. A layered polyolefin-halohydrocarbon melt is directly extruded onto a pretreated paper substrate to obtain a novel high barrier coated paper.

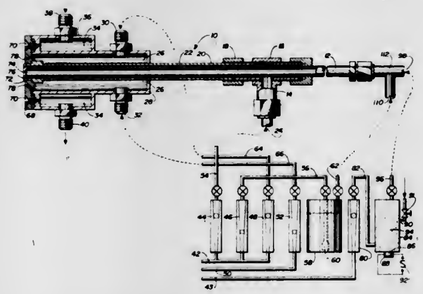
3,698,935
REINFORCING ELEMENTS FOR RUBBER
Peter A. Yurcick, South River, and Charles Tyler Bills, Metuchen, N.J., assignors to Ashland Oil, Inc., Houston, Tex.
Original application Sept. 8, 1967, Ser. No. 666,243. Divided and this application Feb. 3, 1971, Ser. No. 112,217
Int. Cl. B32b *27/36*; C09d *3/56*
U.S. Cl. 117—76 T **6 Claims**



Fiber reinforcement is coated with an aqueous mixture of rubber latex, two-stage liquid polyhydric phenol aldehyde aromatic amine resin and sufficient additional reac-

tive aldehyde to render the resin thermosetting upon reaction therewith. The resin, which is prepared prior to admixture with the latex, is preferably formed by a stepwise reaction of aniline with formaldehyde, then resorcinol, and thereafter additional formaldehyde, the last-mentioned addition of formaldehyde being in the form of an alcoholic solution. The coated fiber reinforcement is dried and then, while in contact with an unvulcanized solid rubber matrix containing curatives, is subjected to sufficient heat and pressure to vulcanize and form the rubber into a reinforced article displaying improved adhesion between the rubber and reinforcement under conditions of high temperature and dynamic stress. Particularly worthwhile results have been observed in the bonding of polyester fibers to rubber, especially in pneumatic tires reinforced with polyester cords.

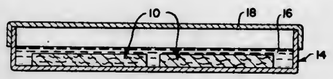
3,698,936
PRODUCTION OF VERY HIGH PURITY METAL OXIDE ARTICLES
Herbert J. Moltzan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 19, 1969, Ser. No. 886,628
Int. Cl. B44d *1/08*
U.S. Cl. 117—105.2 **12 Claims**



Very high purity metal oxide articles are produced by a process wherein a finely divided elemental metal is fluidized in a carrier gas and is intimately contacted with a vaporous combustible stream to form a reactant stream which in turn is ignited to form the metal oxide by direct oxidation of the fluidized metal compound. Vaporous metal halide can be admixed with fluidized metal to simultaneously hydrolyze the halide and oxidize the metal to the corresponding metal oxides. The ignited reactant stream is impinged on a deposition surface to form the metal oxide article of very high purity. In a preferred embodiment fluidized silicon and vaporous silicon tetra chloride are contacted with a stream of elemental hydrogen and elemental oxygen to form a resultant stream which is combusted to form a high purity silicon dioxide article on the deposition surface.

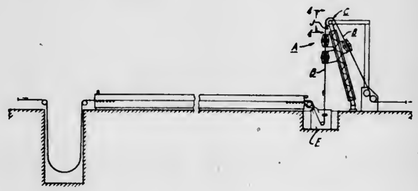
3,698,937
METHOD OF TREATING LENS POLISHING PADS
Donald O. Hoffman, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 16, 1971, Ser. No. 115,620
Int. Cl. B32b *27/12*; B44d *1/098*
U.S. Cl. 117—113 **5 Claims**

Pads of felt used for polishing lenses and the like are impregnated with an elastomeric fiber bonding material by immersion in a solution of a polyurethane in a chemical solvent to which is added a gelling ingredient to promote homogeneous impregnation of the felt by the polyurethane. Controlled periods of immersion followed



by drying and curing cycles which respectively remove solvents and cure the polyurethane in situ complete the process.

3,698,938
METHOD OF COOLING HOT DIPPED GALVANIZED, CONTINUOUSLY MOVING WORKPIECES
John T. Mayhew, Box 156, Sunset Drive, Toronto, Ohio 43964
Original application Mar. 19, 1970, Ser. No. 20,945, now Patent No. 3,611,530. Divided and this application July 27, 1971, Ser. No. 166,342
Int. Cl. C23c *1/02*
U.S. Cl. 117—114 A **4 Claims**



A process of cooling a hot dipped galvanized, continuously moving workpiece by passing the galvanized workpiece over an idler roll having a ferric oxide coating on its outer surface and directing a cooling fluid at the point of contact between the roll and surface of the galvanized workpiece. The oxide coating on the roll has little or no affinity for the galvanized coating.

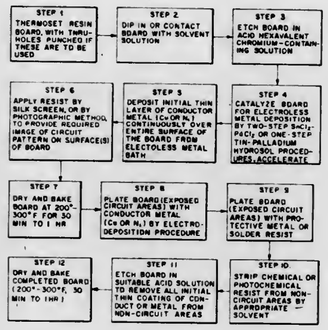
3,698,939
METHOD AND COMPOSITION OF PLATINUM PLATING
Frank H. Leaman, 1613 N. Harrison St., York, Pa. 17402
No Drawing. Filed July 9, 1970, Ser. No. 53,639
Int. Cl. C23c *3/02*
U.S. Cl. 117—130 **11 Claims**

A method is provided for the electroless platinum plating onto metals and alloys of metals more noble than copper and onto non-conductive materials by the chemical reduction of platinum from an aqueous alkaline solution containing a chloroplatinate complex.

3,698,940
METHOD OF MAKING ADDITIVE PRINTED CIRCUIT BOARDS AND PRODUCT THEREOF
Mark Mersereau, Cheshire, Harold L. Rhodenizer, Bethlehem, John J. Grunwald, New Haven, and William P. Innes, Cheshire, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.
Continuation-in-part of application Ser. No. 834,982, June 20, 1969. This application Jan. 26, 1970, Ser. No. 5,881
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **23 Claims**

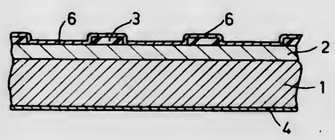
A method is disclosed for forming printed circuit boards by the additive process, in which the surface of

the substrate is contacted with a particular class of solvents, prior to electroless deposition of the metal thereon,



and at one or more points in the process the board is heated or baked.

3,698,941
METHOD OF APPLYING CONTACTS TO A SEMICONDUCTOR BODY
Dirk de Nobel and Jan A. G. de Waal, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 9, 1970, Ser. No. 70,715
Claims priority, application Netherlands, Sept. 26, 1969, 6914593
Int. Cl. B44d *1/18*; H01l *7/00*
U.S. Cl. 117—212 **8 Claims**

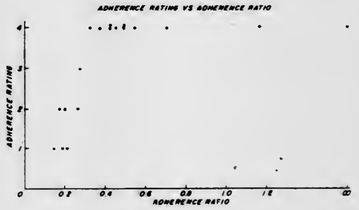


A method of locally applying a metal contact to a semiconductor surface, in which the surface is partly covered by an insulating layer, after which a metal layer is applied to the whole surface. By subjecting the metal layer in accordance with the invention to acoustic high-frequency vibrations, the metal layer is removed from the insulating layer and is left adhering to the semiconductor material. The adhesion may be improved by a thermal treatment prior to the vibration treatment.

3,698,942
NOZZLES FOR CONTINUOUS CASTING
David J. Nell, West Mifflin, and Thomas W. Lewis II, Bethel Park, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
No Drawing. Filed Oct. 30, 1967, Ser. No. 679,222
Int. Cl. C04b *41/24*
U.S. Cl. 117—123 A **3 Claims**

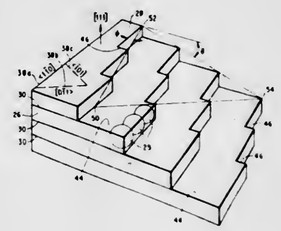
As nozzles for continuous casting, ceramically bonded zircon or zirconia partially impregnated with noncolloidal chromic oxide, zircon, or zirconia particles.

3,698,943
PROTECTIVE COATING
William R. Colantuono, Pittsburgh, Pa., assignor to Crucible Inc.
Original application May 28, 1968, Ser. No. 732,612. Divided and this application Sept. 3, 1970, Ser. No. 69,439
Int. Cl. B44d *1/34*; C23f *1/44*
U.S. Cl. 117—53 **3 Claims**



This invention relates to a method for protecting and to a protective coating for use on hot metal workpieces, particularly high-speed tool steels, to protect the surface against scaling and decarburization during elevated-temperature processing from ingot to billet. The coating consists of sodium borate, silica, and a viscosity-promoting agent, such as alumina.

3,698,944
METHOD OF OBTAINING PHASED GROWTH OF EPITAXIAL LAYERS
Lawrence Dean Dyer, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 15, 1970, Ser. No. 46,190
Int. Cl. B01j *17/28*
U.S. Cl. 117—201 **6 Claims**



Disclosed is a method of preparing substrates that have positions at which nucleation preferentially takes place during epitaxial deposition of a material having a substantially different crystal lattice structure than the substrate material. A substrate, oriented to present a preselected low index reference crystal plane, is cut along a plane having a preselected angle of inclination to the low index crystal plane, the axis of inclination also having a preselected angle with a direction of close-packed atoms in the low index crystal plane. These preselected angles are so chosen that crystal steps and kinks are formed in preselected positions along the surface of the substrate. Since nuclei preferentially form at kinks and crystal steps,

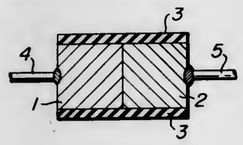
proper selection of the cutting plane enables control of the location of nuclei which are substantially in phase with one another across the substrate surface.

3,698,945

METHOD OF COATING PN JUNCTION OF SEMICONDUCTOR DEVICE WITH MIXTURE OF SiO_2 AND TiO_2

Masami Yokozawa and Hitoo Iwasa, Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Original application Nov. 13, 1968, Ser. No. 775,355, now Patent No. 3,629,666. Divided and this application July 2, 1970, Ser. No. 60,966
Claims priority, application Japan, Nov. 22, 1967, 42/75,585
Int. Cl. B44d 1/02
U.S. Cl. 117—201 **4 Claims**



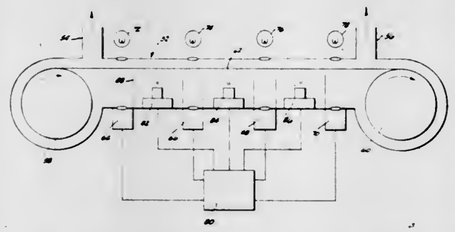
A semiconductor device with at least one PN junction and a method of manufacturing the same wherein a passivating film or a surface film for insulation is made of a chemical mixture of oxides composed of SiO_2–TiO_2 so that the breakdown voltage and electrical stability of said PN junction can be increased. This effect is based on the suppression of movement of alkali ions in said film with the mixture of oxides. The film with the mixture of oxides composed of SiO_2–TiO_2 is obtained with a method where vapors of organo-oxy-silicon compound and organo-oxy-titanium compound are led onto a substrate, which is heated and sustained at a predetermined temperature, and pyrolized on a surface of the substrate to make the film.

3,698,946

TRANSPARENT CONDUCTIVE COATING AND PROCESS THEREFOR

Alfred F. Kaspaul and Erika E. Kaspaul, Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 21, 1969, Ser. No. 878,698
Int. Cl. B44d 1/18, 1/14
U.S. Cl. 117—211 **8 Claims**



The transparent electrically-conductive coating is a composite layer comprising a first layer deposited as titanium monoxide, a second layer of noble metal and a third layer deposited as titanium monoxide, on a transparent substrate. Each of the layers is sufficiently thin to have a substantial transmissivity to optical radiation.

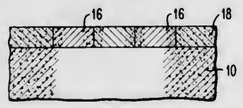
The process comprises successive in-vacuo depositions of the layers. The layers provide a conductive coating on glass or flexible polymer composition substrate which is highly transparent in the visible, ultraviolet and infrared spectrum.

3,698,947

PROCESS FOR FORMING MONOCRYSTALLINE AND POLY

Bernard M. Kemlage, Hopewell Junction, and Hans B. Pogge, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,849
Int. Cl. B44d 1/18
U.S. Cl. 117—212 **10 Claims**



A method wherein an amorphous material is initially deposited on a monocrystalline substrate and wherein subsequently selected portions of the amorphous layer are removed to expose portions of the surface of the monocrystalline substrate. A thin layer of a polycrystalline semiconductor material is deposited over the whole wafer. The remaining portions of the amorphous layer are removed including the overlying polycrystalline material. A layer of semiconductor material is deposited on the substrate under epitaxial growth conditions which will form polycrystalline material over the remaining polycrystalline regions and epitaxial material over the exposed monocrystalline regions of the substrate.

3,698,948

FABRICATION OF A SILICON-SILICON DIOXIDE INTERFACE OF PREDETERMINED SPACE CHARGE POLARITY

Frank J. Barone, Tempe, and Donald L. Tolliver, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 26, 1968, Ser. No. 748,036
Int. Cl. H01l 7/00; C23c 11/08
U.S. Cl. 117—213 **10 Claims**

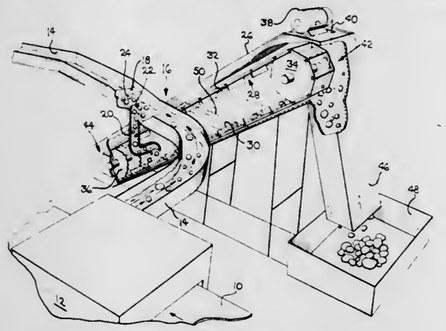
In the fabrication of a semiconductor device having a silicon-silicon dioxide interface, the polarity of the space charge region associated with the interface is predetermined by a method which begins with the step of pretreating the silicon surface with a selected reagent capable of inducing the desired space charge polarity. For example, a pretreatment with chromic acid induces a negative space charge region, whereas a pretreatment with nitric acid induces a positive charge. The interface is then formed by vapor deposition of a silicon dioxide layer on the silicon surface. The pretreatment has been found capable of inducing a predetermined charge when the interface is provided by vapor deposition, but is wholly ineffective when the interface is provided by thermal oxidation. It is well known that thermal oxidation of a silicon surface inherently produces an interface having a positive space charge region.

3,698,949

APPARATUS FOR REMOVING ROCK FROM UNSCREENED SUGAR CANE JUICE

Kenneth E. Steppe, Lambertville, Mich., and Alfred L. Webre, Jr., Marsh Harbour, Bahamas, assignors to Owens-Illinois, Inc.

Filed Nov. 27, 1970, Ser. No. 93,029
Int. Cl. C13d 3/00
U.S. Cl. 127—9 **3 Claims**



An apparatus for removing rock from raw and unscreened sugar cane juice which utilizes a dam across the bottom of a trough carrying the juice stream. The dam directs the rock to a vertical trap from which the rock is removed by a conveyor.

3,698,950

METHOD OF INHIBITING THE INVERSION OF SUCROSE IN SUGAR CANE JUICE

Alex G. Alexander, Rio Piedras, Puerto Rico, assignor to to the Commonwealth of Puerto Rico, Rio Piedras, Puerto Rico

Filed Mar. 18, 1971, Ser. No. 125,704
Int. Cl. C13d 3/00
U.S. Cl. 127—46 R **4 Claims**

Method for inhibiting the inversion of sucrose in sugar cane juice by adding sodium metasilicate to the pretreated or untreated juice.

3,698,951

SUGAR REFINING

Michael Camm Bennett, London, England, assignor to Tate & Lyle Limited, London, England

Continuation-in-part of application Ser. No. 761,738, Sept. 23, 1968. This application July 17, 1970, Ser. No. 55,723
Claims priority, application Great Britain, Sept. 29, 1967, 44,594/67
Int. Cl. C13d 3/00; C13f 1/14
U.S. Cl. 127—48 **12 Claims**

Sugar liquor is purified by adding cationic surfactants (especially long chain ammonium quaternaries) precipitating a floc. The process combines synergistically with conventional phosphatation and/or carbonatation treatment.

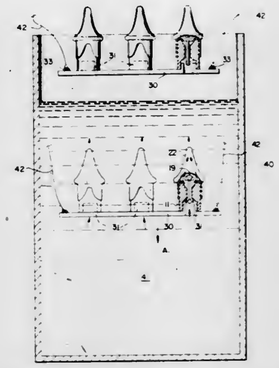
3,698,952

METHOD FOR HANDLING FEEDING DEVICES FOR YOUNG ANIMALS

Brigadier George Patrick Rose-Miller, "Barevan," Cawdor, Scotland

Filed Dec. 24, 1970, Ser. No. 101,304
Claims priority, application Great Britain, Sept. 17, 1970, 44,458/70
Int. Cl. B08b 9/00
U.S. Cl. 134—22 R **3 Claims**

A method for handling feeding devices of the type having an elongated nozzle open at its upper end and connected to a liquid feed vessel, a nipple attached to the lower end of the nozzle for delivering liquid feed to an infant animal which nurses in a standing position, and a valve device in the nozzle for controlling the downward flow of liquid. A mounting plate with at least one hollow threaded boss is used (a) to hold the nozzle securely while attaching the nipple onto the nozzle, and (b) to hold the feed device inverted while cleaning the device by dropping it downwardly through a cleaning solution such that the liquid flows through the feeding device.



3,698,953

GALVANIC CELL

Morris Eisenberg, Palo Alto, Calif., assignor to Elca Battery Company, Sunnyvale, Calif.

No Drawing. Original application Apr. 22, 1970, Ser. No. 31,021. Divided and this application May 27, 1971, Ser. No. 147,598
Int. Cl. H01m 35/02
U.S. Cl. 136—20 **13 Claims**

A galvanic cell is disclosed having a cathode comprising a mercury compound to provide active cathodic electrochemical action during cell operation and conductive powders mixed with the mercury compound to provide mass electrical conductivity through the cathode during cathodic electrochemical action. The conductive powders are coated with mercury in constructing the cathode in order that mercury in liquid form reduced from the mercury compound during cell operation rapidly and uniformly wets the mercury coated powders rather than agglomerate and thereby form means which could internally short-circuit the cell or contaminate the cell anode.

3,698,954

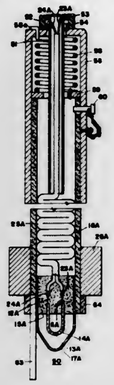
EXPENDABLE IMMERSION THERMOCOUPLE ASSEMBLY

Louis R. Jones, Jr., Abington, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Continuation of application Ser. No. 446,000, Apr. 6, 1965. This application Dec. 9, 1968, Ser. No. 796,258
Int. Cl. H01v 1/02
U.S. Cl. 136—234 **12 Claims**

An expendable immersion thermocouple assembly for measuring the temperature of a molten bath in a furnace including body structure mounted in one end of a cardboard tube. A coil of heat-insulated leadwires is electrically connected at one end to the thermocouple device. The coil is supported within the cardboard tube with the turns of the coil being in engagement with the inner wall of the cardboard tube, the leadwires having an uncoiled length several feet greater than the length of the cardboard tube for extension therebeyond an adequate dis-

tance to permit the thermocouple device to penetrate to a subsurface level of the molten bath while the opposite

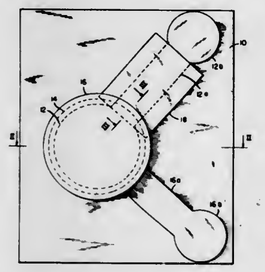


end of the leadwires is adapted for connection to a measuring circuit.

3,698,955
OXYGEN-RESPONSIVE ELECTRICAL CURRENT SUPPLY

Arnys Clifton Lilly, Jr., and Calvin O. Tiller, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 878,287, Nov. 20, 1969. This application June 15, 1970, Ser. No. 46,158
Int. Cl. G01n *27/00*; H01m *11/00*
U.S. Cl. 136—83 R **10 Claims**



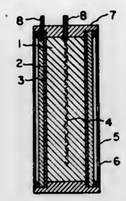
A supply providing electrical current in accordance with both load resistance and environmental oxygen concentration incorporates an electrochemical cell having an anode, a cathode and an electrolyte composed of a rare earth fluoride. A rugged miniature supply adapted for use in space-limited applications is provided by thin film deposition of the cell elements.

3,698,956
ALKALINE ELECTROLYTE-ZINC ANODE AIR-DEPOLARIZED BATTERY

Masayuki Emoto, Tokyo, and Yoshiyuki Maki, Fujisawa, Japan, assignors to Hitachi Limited, Tokyo-to, Japan

Filed July 10, 1970, Ser. No. 53,737
Claims priority, application Japan, July 14, 1969, 44/55,665
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A **4 Claims**

An air-depolarized battery of the alkaline electrolyte-zinc anode type, in which an alkaline electrolyte-zinc anode composed of amalgamated zinc powder, alkali metal electrolyte and one or more kinds of alkaline earth

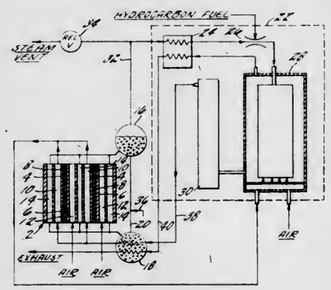


metal hydroxide in combination at a given proportion is utilized.

3,698,957
FUEL CELL SYSTEM HAVING A NATURAL CIRCULATION BOILER

Robert A. Sanderson, Wethersfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 16, 1970, Ser. No. 98,792
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 C **7 Claims**

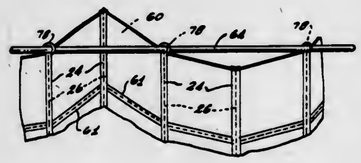


A natural circulation boiler for a fuel cell system is provided which both cools the fuel cell and provides steam for a steam reformer; the boiler is in contiguous heat exchange relationship with the fuel cell.

3,698,958
SOLAR PANEL

Clyde E. Williamson, Los Angeles, and Donald R. Baker, Lawndale, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Original application Feb. 5, 1968, Ser. No. 703,157. Divided and this application Dec. 3, 1969, Ser. No. 881,699
Int. Cl. H011 *15/02*
U.S. Cl. 136—89 **1 Claim**



A solar panel assembly composed of a number of thin film solar cells placed edge-to-edge. The solar cells are fastened along their adjacent edges by strips of tape.

3,698,959
METHOD OF FORMING MERCURIC OXIDE SHELL ON CARBON PARTICLES

Robert O. Weiss, West Milford, N.J., and Robert A. Nikitopoulos, Carmel, and Phillip B. Gunther, Hastings-on-Hudson, N.Y., assignors to P. R. Mallory & Co., Indianapolis, Ind.

No Drawing. Filed May 14, 1970, Ser. No. 37,354
Int. Cl. H01m *15/06*
U.S. Cl. 136—137 **2 Claims**

Nucleated mercuric oxide is formed on carbon particles of controlled particle size, each of which serves as a nucleus and conductive carrier for the mercuric oxide formed thereon as a sheil.

3,698,960
SOLID BATTERY ELECTROLYTE AND METHOD OF PREPARATION THEREOF

Paul H. Arbesman, Danbury, Conn., and Stanley D. James, Bethesda, and Donald L. Warburton, Fulton, Md., assignors to the United States of America as represented by the Secretary of the Navy

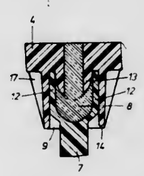
Filed June 21, 1971, Ser. No. 155,088
Int. Cl. H01m *11/00*
U.S. Cl. 136—153 **6 Claims**

A solid battery electrolyte of the formula MAg_4X_5 wherein M represents K, Rb, NH_4, Co or mixtures thereof provided that Cs is present only as a minor constituent of M, and X represents halogen is prepared by simultaneously subjecting the corresponding dry powders of MAg_4X_5 to heat and pressure. The solid electrolytes thus obtained have very low porosity.

3,698,961
SEALED BATTERY WITH SYNTHETIC RESIN CASE AND COVER

Gert Niemann, Hildesheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 21, 1971, Ser. No. 108,405
Claims priority, application Germany, Jan. 29, 1970, P 20 03 919.4; June 27, 1970, P 20 31 849.4
Int. Cl. H01m *1/02*
U.S. Cl. 136—170 **10 Claims**

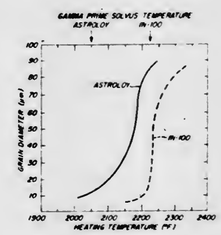


Leak-proof battery enclosure of thermoplastic synthetic resin, wherein each of the case walls has at its upper edge a pair of upwardly extending spaced-apart lips defining a groove, and the cover has walls matching those of the case. Each of the cover walls has at its lower edge a pair of downwardly extending spaced-apart lips defining a groove having along its base a projecting wedge. The distance between the lips on the cover is such that the grooves in the cover each receive both of the lips of an associated pair. The width of the wedge in the base of the grooves in the cover is such that the wedge forces the upper edges of the lips on the case apart and firmly against the inside of the lips on the cover. The cover has filling holes connecting the upper surface thereof with the groove in the cover and a sealing mass fills the continuous channel formed by the groove in the cover and the lips on the case; the sealing mass is inserted under pressure and urges the major portion of the case lips firmly against the inner faces of the cover lips, thereby sealing the cover to the case. The cover lips may have inwardly projecting beads at the lower extremities, thereby affording mechanical support against accidental removal of the cover from the case.

3,698,962
METHOD FOR PRODUCING SUPERALLOY ARTICLES BY HOT ISOSTATIC PRESSING

August Kasak, Upper St. Clair, Vernon R. Thompson, Greentree Borough, Allegheny County, and John H. Moll, Ross Township, Allegheny County, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Apr. 30, 1971, Ser. No. 139,126
Int. Cl. B22f *9/00*; C22f *1/00*
U.S. Cl. 148—11.5 F **15 Claims**

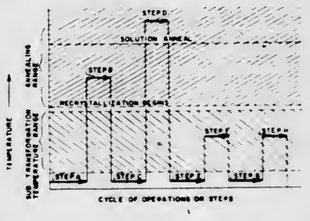


The production of superalloy articles from superalloy powders containing a dispersion of gamma prime particles and an average grain diameter of 20 microns maximum by heating the powder to a temperature at or above a selected compacting temperature but below the temperature at which the gamma prime particles dissolve and isostatically compacting the powder to a density of at least 95% prior to cooling below the selected compacting temperature.

3,698,963
ULTRAHIGH STRENGTH STEELS

John Nunes, Lexington, and Albert D. Martin, Groton, Mass., assignors to Brunswick Corporation

Filed Sept. 21, 1970, Ser. No. 73,962
Int. Cl. C21c *39/00*; C21d *7/02, 9/02*
U.S. Cl. 148—12.4 **14 Claims**



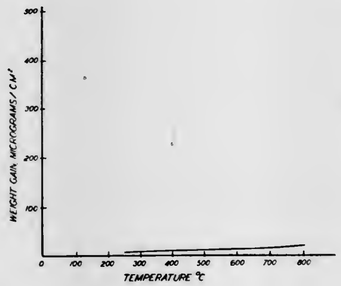
An ultrahigh strength material made from ordinary 18–8 stainless steel has a tensile strength in excess of 400,000 p.s.i. The method of producing the ultrahigh strength is accomplished by thermo-mechanical operations. The material can have any desired geometric cross section configuration and is adaptable for use as a spring material.

3,698,964

OXIDATION-RESISTANT ARTICLES OF AN IRON BASE ALLOY CONTAINING CHROMIUM AND ALUMINUM AND/OR SILICON

Elmer J. Caule, New Haven, Philip R. Sperry, North Haven, Michael J. Pryor, Woodbridge, and James A. Ford, North Haven, Conn., assignors to Olin Corporation

Original application Aug. 8, 1968, Ser. No. 751,311. Divided and this application Nov. 4, 1970, Ser. No. 86,768
Int. Cl. C22c *39/06, 39/14*
U.S. Cl. 148—31.5 6 Claims



Iron base alloys with alloying additions of chromium and aluminum and/or silicon are described which exhibit unique and unexpectedly low weight gains when exposed to oxidizing environments. One of the major advantages of the group of alloys described herein lies in their moderate cost, especially as compared to other oxidation resistant Fe-base alloys such as the various grades of stainless steel containing at least 11% chromium. The oxidation resistance is imparted to these alloys through the formation of a tenacious compact oxide film consisting essentially of oxides of the alloying additions.

3,698,965

HIGH CONDUCTIVITY, HIGH STRENGTH COPPER ALLOYS

Elmars Ence, Hamden, Conn., assignor to Olin Corporation

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,023
Int. Cl. C22c *9/06*; C22f *1/08*
U.S. Cl. 148—32.5 7 Claims

New and improved copper base alloys combining high conductivity with excellent strength, with the composition consisting essentially of from 0.2 to 4.0% iron, from 0.2 to 2.5% cobalt, from 0.01 to 0.5% phosphorus and a material selected from the group consisting of tin from 0.1 to 1.0%, magnesium from 0.1 to 1.0% and mixtures thereof, and the balance essentially copper, with the total iron plus cobalt content being from 1 to 5%.

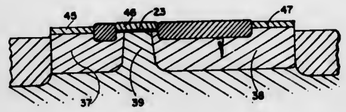
3,698,966

PROCESSES USING A MASKING LAYER FOR PRODUCING FIELD EFFECT DEVICES HAVING OXIDE ISOLATION

Ronald E. Harris, Placentia, Calif., assignor to North American Rockwell Corporation

Filed Feb. 26, 1970, Ser. No. 14,319
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 3 Claims

Oxide films and a nitride layer are selectively formed over the surface of a semiconductor wafer to define areas of the wafer in which field effect devices are to be formed. The nitride layer masks the inner oxide film as an oxide layer is formed around the masked regions to form laterally isolated semiconductor islands in which the field effect devices are to be formed.



Part of the nitride layer is then used to mask the oxide film defining the gate region of the field effect device. Conductivity regions are formed in the island by diffusion as nitride layers mask the contact regions of the field effect devices. Contacts are formed on the contact regions.

3,698,967

METHOD OF CURING PROPELLANTS CONTAINING CARBOXYL TERMINATED POLYALKADIENES USING AN ORGANIC IRON SALT

Grant Thompson and Bobby M. Wall, Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Jan. 29, 1964, Ser. No. 342,592
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 13 Claims

1. A method of producing superior cures in solid propellant compositions containing as its components a carboxyl containing hydrocarbon fuel binder, oxidizer, epoxy resin curing agent and propellant adjuvants, comprising admixing into said solid propellant composition prior to curing, a catalytic amount of an iron salt of a carboxylic acid and allowing sufficient time to elapse until a satisfactory state of cure is obtained.

3,698,968

PYROTECHNIC COMPOSITION

Duane M. Johnson, Bicknell, and Donald R. Razelton, Winslow, Ind., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 28, 1968, Ser. No. 772,067
Int. Cl. C06d *3/00*
U.S. Cl. 149—19 3 Claims

An improved pyrotechnic composition containing potassium iodate, silver iodate, a light metal and an epoxy resin binder which upon combustion yields products which are useful in artificially modifying the weather.

3,698,969

SOLID STABILIZED HYDRAZINIUM DIPERCHLORATE PROPELLANT

Marvin Fein, Westfield, Frank Loprest, Chester, and Donald G. Shaheen, Dover, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Sept. 10, 1965, Ser. No. 486,552
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 17 Claims

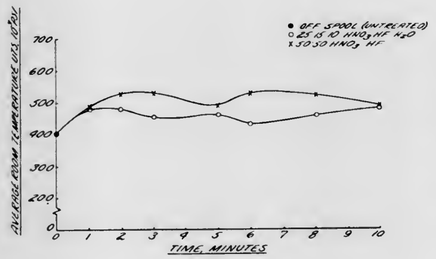
A solid propellant having hydrazinium diperchlorate as the oxidizer in a hydrocarbon fuel binder contains a stabilizing amount of a chelating agent for stabilization with respect to vibrational and thermal shock. Also included are various propellant adjuvants for additional performing characteristics.

3,698,970

METHOD OF STRENGTHENING SILICON CARBIDE COATED BORON FILAMENTS

Francis S. Galasso, Manchester, Bernarr A. Jacob, Torrington, and Jane P. Pinto, Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 21, 1970, Ser. No. 99,916
Int. Cl. C23g *1/02*; C01b *35/00*
U.S. Cl. 156—3 7 Claims



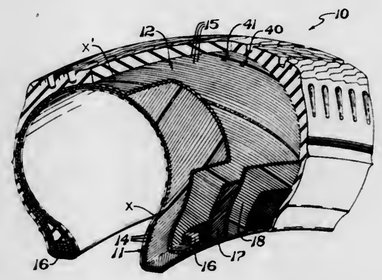
A method for increasing the strength of silicon carbide coated boron filaments comprising subjecting the filaments to an etching solution of nitric and hydrofluoric acid, the solution consisting essentially of, by volume, 10–90% HNO_3, 10–90% HF, and the remainder, if any, H_2O. Further strengthening may be obtained by subjecting the treated filament to heating in air for approximately one hour at a temperature of 900°–1150° C.

3,698,971

METHOD OF MAKING AND INSPECTING PNEUMATIC TIRES HAVING X-RAY OPAQUE CORDS

Harry P. Matthews, Miami, Okla., assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Mar. 20, 1968, Ser. No. 718,973, now Patent No. 3,511,293. Divided and this application Aug. 18, 1969, Ser. No. 850,845
Int. Cl. G01n *19/00*
U.S. Cl. 156—64 4 Claims



The method of inspecting and analyzing a tire which has built into it X-ray opaque cords which lie in the same direction as the other cords in the fabric such that an X-ray of the tire discloses cord angle, tread thickness, and other construction features.

3,698,972

METHOD OF SEALING AND INSULATING A ROOF CONSTRUCTION

James Lenzner, 123 Arizona, Waterloo, Iowa 50703

Filed Aug. 14, 1968, Ser. No. 752,597
Int. Cl. E04b *2/00*
U.S. Cl. 156—71 6 Claims

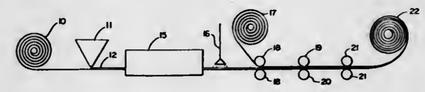
The method including spraying a cellular plastic film onto the roof structure, allowing the cellular plastic to expand to the desired thickness, and shaving the expanded plastic to provide a smooth surface suitable for the application of a built-up roof or other protective coatings. Tar, tar paper and additional tar or other protective coatings are then applied to the smooth expanded plastic. The expanded plastic is shaved by a machine having a rotatable drum and includes adjustment means for varying the thickness of the cut.

3,698,973

METHOD OF PREPARING A SOLID RESIN BACK CARPET TILE

Reuben Wisotzky, Lexington, and Richard E. Petersen, Concord, Mass., assignors to Pandel-Bradford, Inc., Lowell, Mass.

Continuation-in-part of application Ser. No. 687,608, Dec. 4, 1967, now Patent No. 3,560,284, dated Feb. 2, 1971. This application Aug. 12, 1970, Ser. No. 63,227
Int. Cl. C09j *5/08*; D05c *15/03*
U.S. Cl. 156—78 14 Claims



A tufted carpet tile having a thermoplastic resin backing is prepared by applying a heat-sensitive plastisol composition to the back of a material composed of tufted yarns in a thermoplastic base fabric, fusing the plastisol composition to bind the base fabric and tufted yarns together, and laminating the thermoplastic sheet to the plastisol layer using the plastisol layer as the source of sensible heat to melt a thin thermoplastic foam layer on the thermoplastic backing to bond the backing to the plastisol layer.

3,698,974

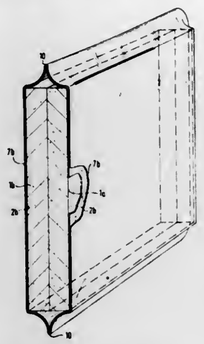
PROCESS FOR THE MANUFACTURE OF APPARATUS FOR EMITTING OF INSECTICIDAL VAPORS

Bernard Rabussier, Aventon, Jean Pierre Mandon, Poitiers, and Claude Hennart, Aubervilliers, France, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed July 7, 1969, Ser. No. 839,721
Int. Cl. B32b *32/00*
U.S. Cl. 156—87 19 Claims

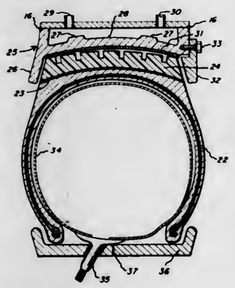
A process for the manufacture of apparatus for emitting insecticidal vapors. A fibrous absorbent mass, flat in shape, is impregnated with volatile insecticidal substance, pure or in solution. At least one of two principal external faces of the fibrous mass is adhered to a diffusion panel, and the fibrous mass and the diffusion panel are mounted

in a mounting of several elements constituted of polymeric plastic material forming together an evaporation apparatus, and a package serving for storage of the apparatus



before use, and a system of soldering between the said elements constituting the diffuser, the diffusion panel and the said package.

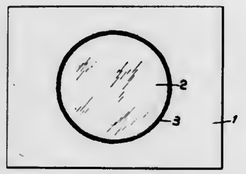
3,698,975
TIRE RETREADING METHOD
Bernard E. Hogan, Jr., 358 Carol Court, North Mankato, Minn. 56001
Filed Mar. 1, 1971, Ser. No. 119,734
Int. Cl. B29h *5/04, 17/36*
U.S. Cl. 156—96 **5 Claims**



A method and apparatus is provided for recapping of tires utilizing precured tread. The process and apparatus utilize heat applied from a curing band through the precured tread to cure the cushion gum intermediate the tread and the tire carcass, thereby bonding the two together without significant heating of the carcass sidewall. Adjustment means are provided for the band to compensate for variations in the outer diameter of the carcass being retreaded, as well as for permitting the same band to be used for flat and curved treads.

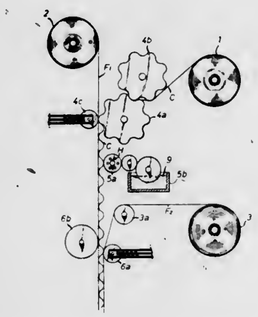
3,698,976
METHOD FOR SORTING DIE
Nelson E. Ake and Harry C. Kling, Boxford, Mass., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 19, 1971, Ser. No. 126,024
Int. Cl. B32b *31/00;* **B01j** *17/00*
U.S. Cl. 156—155 **7 Claims**

This is a method of removing unwanted die, which die are formed at the periphery of a wafer, from the remaining die which are formed within that periphery. This is accomplished by attaching the wafer to a suitable backing material using a glue which is soluble in water, alcohol or trichloroethylene. The wafer is scribed and fractured into individual die, and a ring of cement is placed



along the periphery of the wafer, which cement is not soluble in the above referred to solvents. The wafer is dipped in one of the above solvents so that the outer periphery of unwanted die stick together and the remaining die are individually removed.

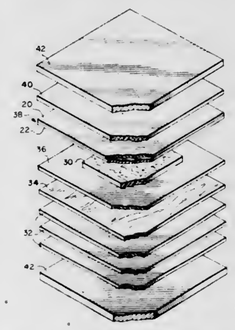
3,698,977
METHOD AND APPARATUS FOR MANUFACTURE OF CORRUGATED SYNTHETIC RESIN BOARD
Rinnosuke Susuki, Tokyo, and Hiroshi Hoshi, Narashinoshi, Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,461
Claims priority, application Japan, Dec. 17, 1968, 43/92,770
Int. Cl. B31f *1/22*
U.S. Cl. 156—210 **2 Claims**



The invention relates to a method and apparatus for manufacture of corrugated synthetic resin board from the sheets of a material consisting of polyolefin synthetic resin and a large quantity, 50 to 90%, preferably 70 to 90% of an inorganic filler such as gypsum (calcium sulfate) or calcium sulfite. The material developed by the same inventors has the properties both of paper and synthetic resin and is excellent especially in mechanical strength and resistance to water. The sheet made of said material can be fabricated into corrugated board without deteriorating any property, opposed to the conventional method and apparatus. One flat sheet is adhered to the corrugated sheet by welding or by use of hot melt type adhesives

while another flat sheet is adhered to the other side surface of said corrugated sheet by use of hot melt type adhesives.

3,698,978
REGISTERED EMBOSSED HIGH PRESSURE LAMINATES
John E. McQuade, Jr., Baltimore, Md., assignor to Esso Research and Engineering Company
Filed Apr. 22, 1969, Ser. No. 818,292
Int. Cl. B32b *31/06, 31/12, 31/22*
U.S. Cl. 156—219 **9 Claims**



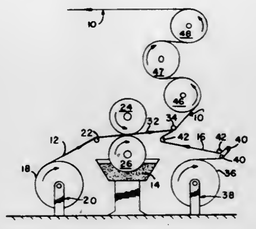
A process for the production of decorative textured and sculptured laminates having a first color and sculptured effect in one area in registry with the remainder of the laminate which has another color and a different texture.

3,698,979
METHOD OF PRODUCING LAMINATED FILM FOR PACKAGING USE
Maurice J. Gifford, Oscar E. Seiferth, and Paul E. Grindrod, Madison, Wis., assignors to Oscar Mayer & Co., Inc., Chicago, Ill.
Continuation of application Ser. No. 612,964, Jan. 31, 1967. This application June 19, 1970, Ser. No. 48,929
Int. Cl. B29c *19/00*
U.S. Cl. 156—244 **7 Claims**

A laminated film for packaging use which film has at least one lamina of a crystalline flexible polyvinylidene chloride film adhered to a lamina of chlorinated polyethylene film, the chlorinated polyethylene film having a chlorine of concentration of up to approximately 60%, by weight, with the particular chlorine concentration of from 30% to 50%, by weight, being preferred. The laminated film being formed by contacting a polyvinylidene chloride film while in a supercooled noncrystalline state with a chlorinated ethylene film and thereafter effecting crystallization of the polyvinylidene chloride film with substantially random crystal distribution throughout, such as, by heating the thus formed laminate to the crystallization temperature of the polyvinylidene chloride.

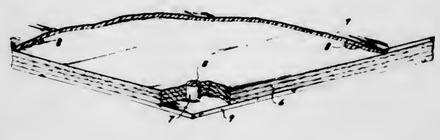
3,698,980
METHOD OF MANUFACTURE OF POLYPROPYLENE FABRIC WRAPPING MATERIAL
William P. Addison, Jr., Atlanta, Ga., assignor to Allied Products Corporation, Chicago, Ill.
Original application Apr. 6, 1970, Ser. No. 25,796, now Patent No. 3,551,267, dated Dec. 29, 1970. Divided and this application Aug. 3, 1970, Ser. No. 67,667
Int. Cl. B32b *11/06;* **D03d** *11/00;* **D21h** *1/08*
U.S. Cl. 156—282 **5 Claims**

Paper, asphalt, and fabric of woven strands of longitudinally oriented polypropylene are laminated by a continuous method in spite of the fact that the softening point of polypropylene is below the laminating temperature of the asphalt. The resulting carpet wrap is more durable,



cheaper, stronger and better looking than paper-burlap laminates used heretofore, and yet has much lower bulk density.

3,698,981
POLYESTER LAMINATE AND METHOD FOR MANUFACTURE
Frank Fekete, Monroeville, David J. Thrash, Ruffs Dale, and Leonard J. Pulman, Pittsburgh, Pa., assignors to Koppers Company, Inc.
Continuation-in-part of application Ser. No. 798,951, Feb. 13, 1969. This application July 15, 1969, Ser. No. 841,744
Int. Cl. B32b *31/04*
U.S. Cl. 156—293 **3 Claims**



The laminate is made of a core formed for example of a plurality of plies of wood, with apertures extended through the core, and having sheets of fiber reinforced polyester resin material cured under pressure at opposite faces of the core, and further having fiber reinforced polyester resin plugs infilling the apertures in the core and cured and inter-bonded with the polyester resin sheets at opposite faces of the core, thereby providing against delamination of the plies of the core.

3,698,982
METHOD FOR BONDING CURED SILOXANE RESIN SURFACES
Philip Alfred Griffin, Sully, Wales, assignor to Dow Corning Limited, London, England
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,188
Claims priority, application Great Britain, Oct. 27, 1969, 52,576/69
Int. Cl. B32b *27/16, 27/26*
U.S. Cl. 156—308 **5 Claims**

Cured silicone resin surfaces, whether supported as on glass cloth or metal, or unsupported can be bonded together by applying to one or both of the cured silicone resin surfaces a known siloxane rearrangement catalyst having an activation and decomposition temperature below about 300° C., bringing the surfaces into intimate contact with each other with the rearrangement catalyst between the surfaces and heating the assembly to activate the rearrangement catalyst.

3,698,983
METHOD OF IMPROVING THE ADHESION OF GLASS CLOTH TO RUBBER

Michael I. Bryant, High Point, and Charles E. Jones, Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

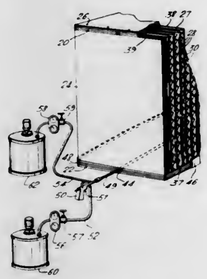
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,302
Int. Cl. C03c *25/02*
U.S. Cl. 156—308 4 Claims

A method of improving the bonding properties and other characteristics of a glass textile which comprises treating said textile with a bonding composition which comprises an aqueous mixture of a styrene-butadiene latex, 1-aza-5-alkylol-3, 7-dioxabicyclo[3.3.0]octane and a partially reacted resorcinol-formaldehyde prepolymer which is deficient in formaldehyde, drying and curing the thus treated textile.

3,698,984
METHOD OF SEALING FILTER CORES TO FRAME MEMBERS

Roger T. Goulet, Liverpool, and Ernest R. Zednik, East Syracuse, N.Y., assignors to Cambridge Filter Corporation, Syracuse, N.Y.

Original application Apr. 8, 1968, Ser. No. 719,628. Divided and this application Apr. 2, 1970, Ser. No. 29,715
Int. Cl. B29c *19/00*; B32b *31/00*
U.S. Cl. 156—293 7 Claims



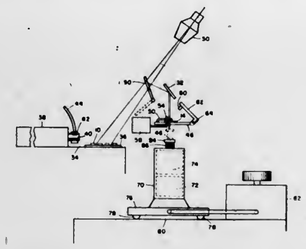
Filter having a rectangular frame, the top and bottom frame members having a central groove on their inside face extending to at least one end of the top and bottom members, a filter core within the frame having a length of sheet filter media disposed in pleated formation within the frame, with the respective end edges of the media sealed to the frame end members, and the pleated side edges of the filter embedded in a slab of sealant extending across the inside faces of each of the top and bottom frame members and filling the grooves of said top and bottom members and the method of injecting the sealant in liquid form by means of the groove.

3,698,985
HIGH SPEED MACHINE FOR BONDING FRAME LEADS TO BONDING PADS ON CIRCUIT CHIPS

Peter T. Robinson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 25, 1970, Ser. No. 22,446
Int. Cl. B32b *31/16*
U.S. Cl. 156—379 9 Claims

A machine is provided for properly positioning a chip with respect to a frame member and for simultaneously bonding all frame member lead ends to respective bonding pads of a semiconductor integrated circuit chip. The machine features a rough orientation and a close orientation of the chip to cause registering of the chip pads with the lead ends, both orientations being visual. During the orientation process, the chip pads are visible and during the close orientation process, the relative position of the chip pads and the lead ends are visible. Many sheet

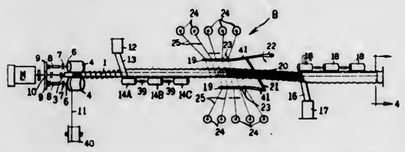


frame members are provided in strip form, said strip being supplied rolled up on a reel. As the pads on a chip are bonded to the ends of the leads, the strip may be rolled up on another reel for transportation purposes.

3,698,986
APPARATUS FOR MANUFACTURING HOSE

Akira Okmura, 7–2 Sawaragi-cho, Takatsuki, Osaka, Japan

Original application Oct. 30, 1968, Ser. No. 771,928, now Patent No. 3,607,501, dated Sept. 21, 1971. Divided and this application July 13, 1970, Ser. No. 54,516
Int. Cl. B32b *31/30*; B31c *13/00*; B65b *81/06*
U.S. Cl. 156—393 2 Claims



An apparatus for manufacturing a hose free of internal stress but having high flexibility by continuously winding a synthetic resin strip extruded from an extruder in half-molten state around a spiral member on a rotary shaft which has fully been restored by the resiliency of its own to the natural condition after having been spirally wound on the shaft.

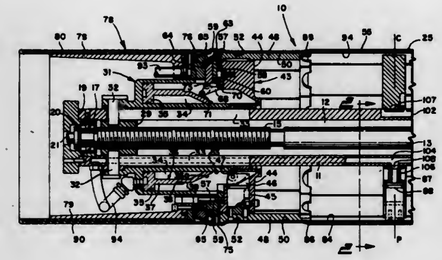
3,698,987
TIRE BUILDING DRUM

Edwin S. Woodhall and Paul F. Appleby, Cuyahoga Falls, and John W. Touchette, North Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1970, Ser. No. 99,428
Int. Cl. B29h *17/22*
U.S. Cl. 156—401 43 Claims

A tire building machine comprising an expansible drum on which tires are built. The drum includes a pair of sets of segments movable radially of the drum axis and which are covered with a rubber sleeve and are disposed between two sets of fingers which are also movable radially of the drum axis. The fingers are designed to hold a pair of wire beads concentrically of the longitudinal axis of the building drum in equidistant spaced relation from the centerplane of the drum. The segments are movable radially outwardly of the drum to form shoulders in the carcass plies on which the beads may be seated, after

which the turn-up of the plies and tie-in of the wire beads are made, and tread and sidewall are applied to complete the uncured tire. The fingers and segments have rigid material engaging surfaces. The center section of the

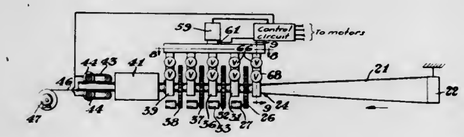


building drum intermediate the segments has a substantially rigid material supporting surface and, together with the segments, provides a firm working surface for building the tire.

3,698,988
EQUIPMENT FOR MAKING REINFORCED TUBING

Max Skobel, Edison, N.J., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 10, 1971, Ser. No. 151,679
Int. Cl. B29d *23/12*
U.S. Cl. 156—428 11 Claims



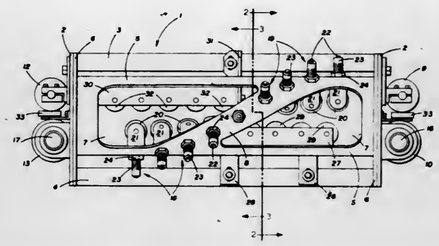
Equipment for making tubing of extruded rubber or plastic reinforced with fabric webs, on a continuous basis. A sacrifice web is transversely bowed around and pulled over a stationary cylindrical mandrel and alternate extruded layers and helical wrappings of reinforcement material are laid down on the sacrifice web which can be removed from the tubing after it is completed and cut to length.

3,698,989
MACHINE FOR LAMINATING SURFACE TEXTURED FILM ON STRIP MOLDING

Theodore Voorhees, 331 Greenacres Drive, Anderson, Calif. 96007

Continuation-in-part of application Ser. No. 865,019, Oct. 9, 1969. This application Sept. 4, 1970, Ser. No. 69,552
Int. Cl. B32b *31/04*
U.S. Cl. 156—479 2 Claims

A machine for laminating film, preferably of vinyl and surface-textured to represent an expensive wood such as walnut or mahogany, on strip molding of inexpensive wood; the machine being comprised of a frame provided with means to advance a strip of molding in a predetermined lineal path through such frame, such molding and a run of the film being simultaneously fed to the machine in fact-to-face relation; the film having pre-applied adhesive on the face thereof adjacent the molding, and a frame-mounted pressure roller assembly co-

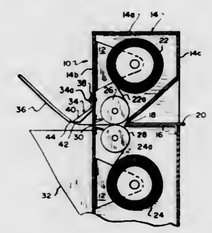


operating with advancing strip molding and film smoothly to bond the film to said molding.

3,698,990
TEAR-OFF BLADE ARRANGEMENT FOR LAMINATING MACHINE

John T. Shields, Terre Haute, Ind., assignor to Marlan Company

Filed Mar. 12, 1971, Ser. No. 123,678
Int. Cl. B26f *3/02*; B32b *31/18*
U.S. Cl. 156—522 5 Claims

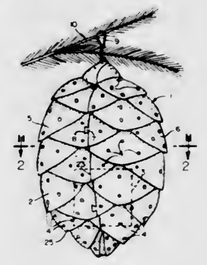


A tear-off blade arrangement for a plastic laminating machine having a cutting edge spaced from the outfeed slot of the laminator and oriented at an angle relative to the path of travel of the laminated product.

3,698,991
FRAGRANCE EMITTING ARTICLE FOR ARTIFICIAL CHRISTMAS TREES

Michael Bernard Susewitz, 18435 Garfield, Detroit, Mich. 48240

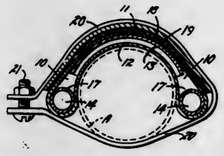
Filed Aug. 25, 1969, Ser. No. 852,545
Int. Cl. A47g *33/08*
U.S. Cl. 161—14 5 Claims



A simulated pine cone article for artificial Christmas trees. The article encloses a block of concentrated pine

essence in its interior. The article may be made of plastic with two removable sections to allow access to replace the source of pine essence.

3,698,992
WATER HEATING ATTACHMENTS FOR AUTOMOTIVE ENGINE EXHAUST PIPES
Walter R. Armand, 1320 Speer Blvd., Denver, Colo. 80204
Filed Feb. 17, 1971, Ser. No. 115,959
Int. Cl. F28d 7/10
U.S. Cl. 165—51 **2 Claims**



An elongated water jacket of inverted U-shaped cross section adapted to be externally fitted over and clamped against one side of the exhaust pipe of the engine of an automotive vehicle so as to partially enclose the pipe. The jacket being provided with two internal perforated water distributing pipes terminating in nipples which enable the jacket to be connected in series between the water jacket of the vehicle engine and a passenger-heater in the vehicle for supplying hot water heat to the passenger-heater.

3,698,993
SOUND DEADENING SHEET MATERIAL
John H. Rauh, Akron, Ohio, assignor to Sonix, Inc., Hudson, Ohio
Filed Mar. 29, 1971, Ser. No. 129,037
Int. Cl. B32b 3/26, 5/18; G10k 11/04
U.S. Cl. 161—159 **10 Claims**

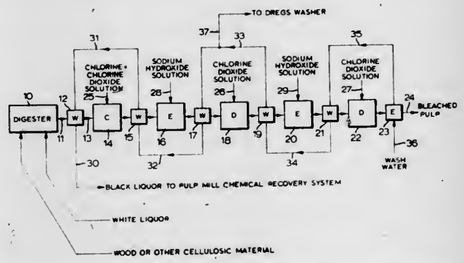


A unitary limp sheet of soft, resilient, closed cell, foamed thermoplastic polyvinyl chloride having distributed therethrough particulate matter of irregular shape, of specific gravity of 3.0 and up, and of sizes ranging from 40 to 200 mesh. The ratio, by weight, of the polyvinyl chloride to particulate matter is about 1 to 6. The particles are individually bonded to sheet material and held thereby in spaced relation to each other throughout the mass and isolated from each other by the sheet material and cellular spaces. The sheet is from ⅛ to ¼ inch thick, with a superficial thin skin on opposite faces. The skin on one face is perforated mechanically by tearing it to partially shred it and a superficial juxtaposed stratum of the body of the sheet to produce a fibrous surface on that face. The sheet is formed by placing in an extruder a mixture of the visco-elastic semi-plastic binder powder, a foaming agent powder, and the high density particles; extruding the mixture under heat by which it is melted to a flowable semi-plastic mass which immediately begins foaming. The extrusion is fed into calendar rolls and sizing rolls and therefrom passes onto a belt wherein the foaming continues until a sheet of the desired width and thickness is provided.

3,698,994
ACRYLIC SYNTHETIC FIBERS HAVING IMPROVED PROPERTIES AND PROCESS FOR PRODUCING THE SAME
Keitaro Shimoda and Isamu Obama, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 27, 1971, Ser. No. 110,293
Int. Cl. D02g 3/00; C08f 29/56
U.S. Cl. 161—178 **10 Claims**

Acrylic fibers containing streaky inclusions of 2–25% polyvinyl cyanoethyl ether of DS value between 55% and 75% having improved luster, softness, hygroscopic, and antistatic properties. Such fibers are made by wet-spinning a solution of the polyvinyl cyanoethyl ether and the acrylonitrile polymer in a common solvent, water-washing, stretching, and dry-heat drying the fibers so spun.

3,698,995
DIGESTION AND BLEACHING OF WOOD PULP FOLLOWED BY RECOVERY OF CHEMICALS AND COUNTERCURRENT FLOW OF WASH WATER
William H. Rapson, Toronto, Ontario, Canada, assignor to Electric Reduction Company of Canada, Ltd.
Continuation of abandoned application Ser. No. 695,159, Jan. 2, 1968. This application Feb. 22, 1971, Ser. No. 117,664
Claims priority, application Great Britain, Jan. 16, 1967, 2,240/67
The portion of the term of the patent subsequent to July 1, 1986, has been disclaimed
Int. Cl. D21c 3/26
U.S. Cl. 162—19 **3 Claims**



Digesting wood in a pulping liquor followed by washing, bleaching, and extracting of the pulp, and concentrating and subjecting the liquor to reducing conditions to recover chemicals, wherein at least part of the wash water obtained from washing bleached cellulosic pulp or from washing bleached and extracted cellulosic pulp is employed to wash unbleached cellulosic pulp thereby providing countercurrent flow of wash water.

ERRATUM

For Class 165—51 see:
Patent No. 3,698,992

3,698,996
METHOD OF DETECTING THE PRESENCE OF A DEFECTIVE LITHIUM-ALUMINATE TARGET IN A REACTOR
Raymond Cooperstein, 2529 Harris Ave., Richland, Wash. 99352
No Drawing. Filed Nov. 24, 1970, Ser. No. 87,369
Int. Cl. G21c 17/00
U.S. Cl. 176—19 LD **4 Claims**

The addition of a rare earth isotope which, upon neutron radiation emits gamma rays to lithium-aluminate target elements, will permit defective elements to be detected in reactors by monitoring the effluent for gamma radiation.

3,698,997
PREPARATION OF L-TYROSINE BY FERMENTATION
Katsunobu Tanaka, Kazuo Ohshima, Yoh Tokoro, and Mitsuyoshi Okii, Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,603
Claims priority, application Japan, Mar. 29, 1968, 43/20,031
Int. Cl. C12b 1/00
U.S. Cl. 195—28 R **7 Claims**

L-tyrosine is prepared by culturing a hydrocarbon assimilable microorganism which requires phenylalanine for its growth. Microorganisms of the genera Corynebacterium, Brevibacterium, Arthrobacter, etc. are particularly suitable for use in the process.

3,698,998
PROCESS FOR CULTIVATING MICRO-ORGANISMS IN THE PRESENCE OF HYDROCARBONS
René Avrillon, Maisons-Lafitte, Sigismond Franckowiak, Montesson, Claude Gatellier, Boulogne, and Georges Glikmans, Meudon-la-Foret, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France
No Drawing. Filed May 13, 1969, Ser. No. 824,256
Claims priority, application France, May 15, 1968, 151,959
Int. Cl. A23j 1/18; C12c 11/08
U.S. Cl. 195—28 **11 Claims**

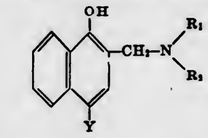
In the cultivation of micro-organisms, a liquid hydrocarbon feedstock is employed containing at least 70% by weight of linear paraffinic hydrocarbons. The growing step is conducted in the presence of a gas-containing molecular oxygen and with a nutrient aqueous medium containing: (a) assimilable nitrogen and phosphorus; (b) oligoelements such as trace amounts of copper, cobalt, iron, molybdenum and manganese compounds; (c) growth factors such as yeast, etc.; and (d) essential mineral elements such as potassium, ammonium and magnesium ions. The micro-organisms are then recovered from at least the major part of unconverted hydrocarbons, preferably by decantation, and then subjected to a maturation step in an aqueous medium similar to the nutritive aqueous medium, but deprived of at least one of the essential mineral elements.

3,698,999
FERMENTATIVE PREPARATION OF COENZYME A
Ichiro Chibata, Saita, Toshio Kakimoto, Sakai, and Takeji Shibatani and Noriyuki Nishimura, Kobe, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,367
Claims priority, application Japan, Mar. 14, 1970, 45/21,862
Int. Cl. C12d 13/00
U.S. Cl. 195—29 **12 Claims**

A coenzyme A-producing microorganism selected from the group consisting of *Sarcina lutea, Sarcina aurantiaca, Microbacterium flavum* and *Micrococcus rubens* is cultivated in a nutrient medium under aerobic conditions and in the presence of pantothenic acid, adenine and cysteine. The cultivation is preferably carried out at about 30–37° C. and at a pH of 5.0–7.0. Preferably 0.5 w./v. percent of each of pantothenic acid, adenine and cysteine are employed. Coenzyme A is recovered from the fermentation broth.

3,699,000
DIAZOTYPE PHOTOPRINTING MATERIAL
Shoji Maruyama, Sagamihara-shi, Tadashi Saito, Kawasaki-shi, and Shigeaki Yoshida and Masaru Shimada, Yokohama-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
No Drawing. Filed May 15, 1969, Ser. No. 821,968
Claims priority, application Japan, May 15, 1968, 43/32,228
Int. Cl. G03c 1/58
U.S. Cl. 96—91 **1 Claim**

Diazotype photoprinting material containing as a coupling component a compound of a general formula:



said photoprinting material giving a dense dye-image and having high preservability and being capable of using in both dry and wet development and not giving change of color of the substrate of the printed material.

3,699,001
PREPARATION OF BROMELAIN FROM PINEAPPLE STEMS
Pinnan Soong, 12, Lane 322 Ta-Tung Road, Tainan, Taiwan, Kiangsu, China
No Drawing. Filed Jan. 2, 1970, Ser. No. 427
Int. Cl. C07g 7/022
U.S. Cl. 195—66 R **10 Claims**

A practical and economical process for increasing the yield, the purity, the activity and longer shelf-life of bromelain from pineapple stems comprises extracting juice from low temperature treatment of stems, fractionally precipitating bromelain from clarified juice with organic compound and releasing bromelain precipitate with chilled oxygen compounds.

3,699,002
DEXTRAN HYDROLIZING ENZYMES
Robert G. Brown, 946 Ritchie Drive, Halifax, Nova Scotia, Canada
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,343
Claims priority, application Sweden, Mar. 11, 1969, 3,299/69
Int. Cl. C07g 7/028
U.S. Cl. 195—66 **10 Claims**

This invention relates to the manufacture of enzyme dextranase by a method which consists essentially of cultivating a microorganism that will grow on the carbon of ketodextran as its energy source in a substrate containing ketodextran. It is well known to make dextranase by cultivating a suitable microorganism on a substrate containing dextran. The essence of this invention is the substitution of ketodextran for dextran. This substitution results in very much increased yields of dextranase. The microorganism must be selected and must be one that will grow on the carbon of ketodextran as its energy source.

3,699,003

DIAGNOSTIC PREPARATION FOR THE IDENTIFICATION OF β-HEMOLYTIC STREPTOCOCCI

Donald P. Kronish, Rockaway, and Lee S. Zuriff, Parsippany, N.J., assignors to Warner-Lambert Company

Filed July 13, 1970, Ser. No. 54,277
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 8 Claims

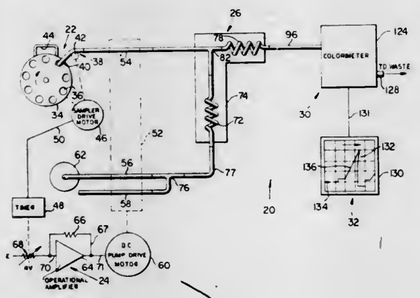
A preparation for the biochemical identification of β-hemolytic streptococci into serologic groups, e.g., groups A, B, C, D, etc., is disclosed. This preparation comprises a carrier, e.g., a bibulous strip containing a glycerol reagent band, a salicin reagent band and an esculin reagent band. In the glycerol and salicin reagent bands there are also pH indicator systems. The esculin band contains a compound which reacts with esculin breakdown products to produce a color change. These bands are separated from each other by hydrophobic barriers. In use, a quantity of the beta hemolytic streptococcus whose serological identification is to be determined is transferred onto each of the three reagent bands. A drop of saline or water is added to the salicin area and to the esculin area. The strip is placed in a tube containing 0.3 ml. of saline or water to wet the glycerol band. The reagent impregnated strip is incubated at approximately 37° C. for two to four hours. Sugar fermentation is measured by an indicator color change and esculin hydrolysis by formation of a grey-black color. Group A streptococci, which cause most of the clinical manifestations such as rheumatic fever and nephritis, are esculin negative, glycerin negative and salicin positive. Group B and C streptococci may be involved in diseases but more often are part of a normal flora in a primary isolation blood plate showing β-hemolysis. It is important to differentiate between these groups and Group A. Group D streptococci, known as enterococci, are often associated with urinary tract infection and rapid identification of these organisms is also clinically important.

3,699,004

METHOD AND APPARATUS FOR SAMPLE ANALYSIS ON A CONTINUOUS FLOW BASIS

Leonard T. Skeggs, Kirtland, Ohio, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,297
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 14 Claims



New and improved method and apparatus for the fully automatic, highly accurate quantitative analysis of a series of samples with regard to a constituent thereof on a continuous flow basis through rate reaction determination are provided and are operable through the continuous mixing of said samples and a suitable reactant in constant proportion, and the flow of the resultant sample-reactant mixtures by pumping on a continuous basis through reaction promoting means to promote the sample constituent-reactant rate reaction in such manner that different portions of each of the sample-reactant mixtures are reacted for different times to effect a differential in a characteristic of said mixtures as developed as a result of said reaction. Following this, the thusly reacted sample-reactant mixture portions are flowed through detector means for detection of said characteristic differential and resultant provision of and output signal which is indicative of the sample constituent quantity of interest. Substantially hyperbolic variation in the flow rate of each of said sample-reactant mixtures through said reaction promoting means is utilized to provide for the different sample-reactant mixture portion reaction times. As specifically disclosed herein, the method and apparatus of the invention are particularly adaptable to the analysis of a series of blood samples with regard to an enzyme constituent thereof.

3,699,005

METHOD AND ARTICLE FOR DETECTING THE FERTILE PERIOD

Raymond O. Foster, 1202 Clara St., Joliet, Ill. 60435

No Drawing. Continuation-in-part of abandoned application Ser. No. 597,547, Nov. 29, 1966. This application Aug. 26, 1970, Ser. No. 67,258
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 6 Claims

A new and rapid test method is provided for predicting and detecting the fertile period of the female. The method involves a simple rapid test for alkaline phosphatase activity in the saliva of the female. In the method the female wets a novel test implement with her saliva and the test implement will turn a detectable blue color in about one minute if an amount of alkaline phosphatase is present in the saliva sufficient to cause the color change. This amount of alkaline phosphatase is coincident with the onset of the fertile period of the female, and extends for the duration of the fertile period. The novel dry test implement consists of a dry bibulous material which has been impregnated before drying with an indoxyl phosphate and a buffer.

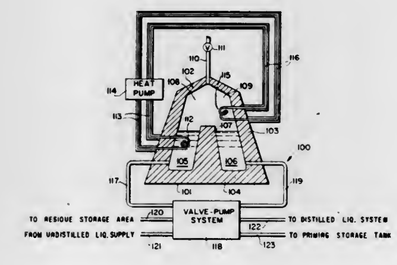
3,699,006

VACUUM STILL HAVING HEAT EXCHANGE COILS AND PARTICLE MEANS THEREWITH

James G. Hasslacher, 7010 University Drive, Richmond, Va. 23229

Filed Aug. 14, 1970, Ser. No. 63,863
Int. Cl. B01d *3/10*
U.S. Cl. 203—4 6 Claims

A method and apparatus for distilling liquids including a closed housing vertically divided into feed and distillate compartments having respectively intercommunicating evaporation and condensation chambers thereabove. A vacuum is induced in the chambers by introducing a priming charge to fill the housing and expel the free gases from a vent in the top, followed by closing the vent and discharging a portion of the priming charge. Distillation is accomplished by heating the liquid in the feed compartment to produce vapor in the evaporation chamber and by cooling the vapor transmitted to the condensation chamber to produce distillate which drips into the bottom of the distillate compartment. An irreversible heat pump may be the main source of both heat and cold. The transmission of vapor from evaporation to condensation chambers may be increased by using a ducted fan, which would also serve both to decrease the vapor pressure in the evaporation chamber and to increase the vapor pressure in the condensation chamber. To prevent the sudden formation of large amounts of vapor on the heating coils in the feed compartment, nonbuoyant spheres may be used on top of the coils and buoyant spheres may be used below the coils.



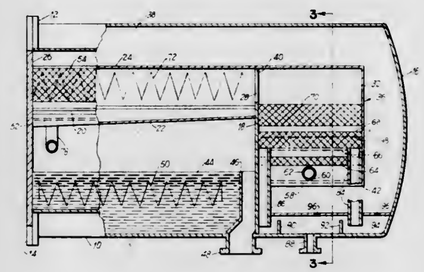
To increase the surface of the water in the evaporation chamber, jets operating by the suction of the vacuum may be used to inject the liquid into the chamber or into the feed compartment.

3,699,007

EVAPORATING-CONCENTRATING APPARATUS AND METHOD

Charles Richard Picek, Cheshire, and Cornelis van Hoek, Niantic, Conn., assignors to American Machine & Foundry Company

Continuation of abandoned application Ser. No. 825,488, May 19, 1969. This application Mar. 12, 1971, Ser. No. 123,886
Int. Cl. B01d *3/22, 47/00*
U.S. Cl. 203—40 8 Claims



The invention is for an evaporating-condensing concentrator and for a method which increases the proportion of a solute in a liquid, such as increasing the concentration of boric acid in water. The apparatus is constructed to take advantage of relatively high-velocity flows through sharp-edged orifices of the sieve plates which are used in conjunction with drowned mesh scrubbers, thereby affording an unusually low carry-over of solids and gases in the distillate while greatly reducing the space required by conventional constructions. Moreover, the apparatus and method preferably includes means and process steps for recycling or refluxing at least part of the purified concentrate as cleansing liquid.

3,699,008

PROCESS FOR THE PURIFICATION OF CRUDE PHTHALIC ANHYDRIDE BY PLURAL STAGE VACUUM DISTILLATION WITH SIDE STREAM PRODUCT RECOVERY

Dieter Brendt and Gerd Helms, Junkersdorf, and Gerhard Keunecke, Geyen, Germany, assignors to Chemiebau Dr. A. Zieren G.m.b.H. & Co. KG, Cologne-Nuengersdorf, Germany

Filed June 18, 1969, Ser. No. 834,275
Claims priority, application Germany, July 3, 1968, P 17 68 817.4
Int. Cl. B01d *3/10;* C07c *63/18*
U.S. Cl. 203—72 14 Claims

A process for the purification of phthalic anhydride from a crude oxidation product of naphthalene or o-xylene wherein the purification can be carried out by continuously fractionally distilling the crude product in two columns. The pure phthalic anhydride is withdrawn in the vapor phase in the second column between the sump and the feed point of the distillate from the first column to the second column.

3,699,009

USE OF COKE IN ELECTRODEPOSITABLE COMPOSITIONS

Joseph E. Plasynski, Arnold, and Robert D. Jerabek, Glenshaw, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,266
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 5 Claims

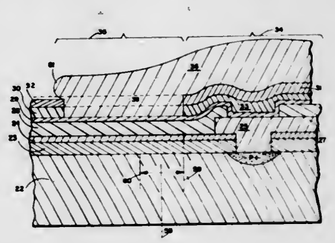
This invention relates to novel, pigmented, electrodepositable compositions. More particularly, this invention relates to the use of coke in pigmentary form to produce black, grey or dark-colored electrodepositable compositions.

3,699,010

BEAM LEAD PLATING PROCESS

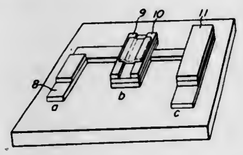
Michael T. Nash, Orange, Calif., assignor to North American Rockwell Corporation

Filed Mar. 22, 1971, Ser. No. 126,810
Int. Cl. C23b *5/48;* B23k *31/02;* B29c *17/08*
U.S. Cl. 204—15 6 Claims



A nickel (or copper) layer on the surface of a semiconductor wafer is etched to define a pattern for the cantilevered portions of beam leads. The remaining portion of the layer is not removed for providing an improved electrical conductor on the surface of the semiconductor wafer when gold beam leads are subsequently electrodeposited.

3,699,011
METHOD OF PRODUCING THIN FILM INTEGRATED CIRCUITS
Takeo Nishimura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 533,015, Mar. 9, 1966. This application Oct. 16, 1968, Ser. No. 768,089
Claims priority, application Japan, Mar. 18, 1965, 40/15,329
Int. Cl. C23b *5/48*; C23f *17/00*; H02b *1/04*
U.S. Cl. 204—15 8 Claims



A method of producing thin film integrated circuits including thin film passive and active elements, which comprises the steps of depositing an anodizable metal on one surface of an insulating substrate, anodic oxidizing the surface portion of the deposited anodizable metal into its oxide layer of a desired sheet resistivity, depositing a conducting metal over the oxide layer, etching the anodizable metal, the oxide layer and the conducting metal in a desired pattern to obtain thin film passive elements such as a resistor and a capacitor, and depositing a semiconductor material to cover two metal layers spaced from each other existing on the oxide layer to obtain a thin film active element.

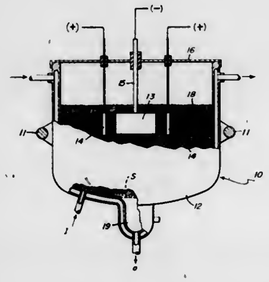
3,699,012
PROCESS FOR THE ELECTROLYTIC FORMATION OF ALUMINUM COATINGS ON METALLIC SURFACES IN MOLTEN SALT BATH
Akira Miyata, Chikayoshi Tomita, and Akio Suzuki, Tokyo, and Hideyo Okubo and Masahiko Nagakuni, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
No Drawing. Original application Nov. 9, 1965, Ser. No. 507,034, now Patent No. 3,480,521, dated Nov. 25, 1969. Divided and this application Mar. 24, 1969, Ser. No. 828,049
Claims priority, application Japan, Nov. 13, 1964, 39/63,827; Feb. 24, 1965, 40/10,330, 40/10,331
Int. Cl. C23b *5/22*
U.S. Cl. 204—29 6 Claims

Process for coating electrolytically metallic surfaces with aluminum in a molten salt bath containing aluminum chloride. The metallic surface is coated with an organic aqueous solution and then is electrolytically coated in the bath. The process results in coatings of superior smoothness and bonding strength between the surfaces.

3,699,013
METHOD OF ELECTROPLATING READILY OXIDIZABLE METALS
Akira Miyata, Hideyo Okubo, Chikayoshi Tomita, and Akio Suzuki, Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha
No Drawing. Filed Aug. 14, 1970, Ser. No. 63,938
Claims priority, application Japan, Aug. 26, 1969, 44/67,048
Int. Cl. C23b *1/00*
U.S. Cl. 204—32 R 11 Claims

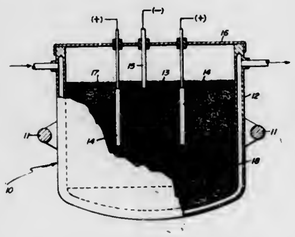
In a method of electroplating readily oxidizable metals and alloys, an article to be plated is first pickled with a mixture of nitric acid and hydrofluoric acid or a mixture of boric acid and hydrofluoric acid, immediately washed with an anhyrous organic solvent, dried by an inert gas or under vacuum, dipped in a plating bath without being exposed to the atmosphere and then after a short time electrolytically plated.

3,699,014
VIBRATORY PROCESS
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed Dec. 29, 1970, Ser. No. 102,287
Int. Cl. C23b *3/06*
U.S. Cl. 204—35 R 3 Claims



A process and apparatus for electrodeposition utilizing a liquid electrolyte wherein a very high solid to liquid volumetric ratio of small dynamically hard particles is incorporated in the system and such particles are maintained in a vibratory contact with all surfaces of the article being plated throughout the period of plating.

3,699,015
HIGH THROW POWER ELECTRODEPOSITION PROCESS
Norvell E. Wisdom, Jr., Watervliet, N.Y., assignor to Norton Company, Troy, N.Y.
Filed May 4, 1971, Ser. No. 140,143
Int. Cl. C23b *3/06*
U.S. Cl. 204—35 R 4 Claims

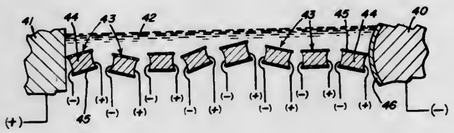


A process for electrodeposition utilizing a liquid electrolyte wherein an extremely high solid to liquid volumetric ratio of small dynamically hard particles is incorporated in the system and vibratory motion imparted to such particles is utilized to carry the electrolyte into the plating zone in contact with all surfaces of the article being plated throughout the period of plating to give an unusual improvement in the throwing power of the system.

3,699,016
BRIGHT NICKEL PLATING BATH AND PROCESS
Sidney C. Beach and Bernard P. Martin, Cleveland, Ohio, assignors to Inorganic & Metal Treating Chemicals Division, Chemetron Corporation
No Drawing. Continuation-in-part of applications Ser. No. 592,742, Nov. 8, 1966, and Ser. No. 860,008, Sept. 22, 1969, both now abandoned. This application May 20, 1971, Ser. No. 145,474
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 21 Claims

A novel class of brightening addition agents is disclosed for the electrodeposition of nickel from modified Watts type acid nickel plating baths. The novel class of addidition agents consists of symmetrical hydroxy sulfonic lower alkanoxy acetylenic derivatives produced either by the boron trifluoride or similar Lewis acid catalyzed reaction of halogenated propylene and butylene oxides with symmetrical acetylenic diols having 4, 6, or 8 carbon atoms, or by first reacting the diols with ethylene, propylene or butylene oxides and then with epichlorohydrin. In either case, the resulting brightening agents are characterized by attachment to adjacent carbon atoms of the alkanoxy group of a sulfonic and an hydroxyl radical. Plating bath solutions incorporating the novel addition agents, and plating processes employing such solutions are also enclosed.

3,699,017
POLAR ACTIVATING PARTICLES FOR ELECTRODEPOSITION PROCESS
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed May 27, 1971, Ser. No. 147,409
Int. Cl. C23b *5/48, 5/18, 5/08*
U.S. Cl. 204—49 1 Claim



An electrically-conductive mass in the form of a small particle encapsulated in a hard non-conductive outer sheath having at least one opening in such sheath permitting contact between such conductive mass and a liquid electrolyte when the particle is immersed in such electrolyte. Preferably, the conductive mass and/or the outer sheath is so formed or treated that the conductive mass does not protrude beyond the sheath at any of said openings.

3,699,018
METHOD OF ELECTRODEPOSITING CORAL COPPER ON COPPER FOIL
Clarence A. Carlson, West Salem, Wis., assignor to Northern Engraving Company
No Drawing. Filed July 12, 1971, Ser. No. 162,004
Int. Cl. C23b *5/20, 5/50*
U.S. Cl. 204—52 R 3 Claims

A process for electrodepositing coral copper on copper foil which uses a plating bath which consists essentially of copper sulfamate, sulfamic acid. sodium dihexyl sulfosuccinate and water. Utilizing this plating bath with little, if any, agitation and current densities between 75 and 140 amperes per square foot, coral, or nodularized copper can be deposited upon the copper foil.

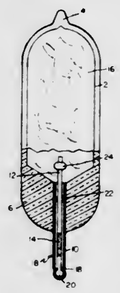
3,699,019
ELECTROLYTE FOR SELF-COLORED ANODIZATION OF ALUMINUM AND ALLOYS
Richaud Henri, Le Mans, and Michel Roussos, Lyon, France, assignors to Compagnie Pechiney, Paris, France
No Drawing. Original application Feb. 10, 1969, Ser. No. 798,122, now Patent No. 3,565,772. Divided and this application Oct. 19, 1970, Ser. No. 82,223
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 3 Claims

The self-colored anodization of aluminum and alloys of aluminum by use of an aqueous electrolyte containing sulphomaleic acid dissolved therein alone or in combination with sulphuric acid.

3,699,020
ELECTROCHEMICAL PRODUCTION OF 1,4-DIHYDRO AROMATIC COMPOUNDS
John F. Connolly, Chicago, and Robert J. Flannery, Olympia Fields, Ill., and John D. McCollum, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,466
Int. Cl. C07b *1/00, 29/06*
U.S. Cl. 204—73 26 Claims

Aromatic hydrocarbon compounds are selectively reduced electrochemically to their 1,4-dihydro derivatives in an ammoniated solvent-electrolyte system under conditions selected to effect oxidation of ammonia.

3,699,021
FULMINATING MATERIAL APPLICATION TECHNIQUE
John W. Shaffer, Williamsport, and Thomas B. McDonough, Allenwood, Pa., assignors to Sylvania Electric Products Inc.
Filed Dec. 17, 1970, Ser. No. 99,117
Int. Cl. B01k *1/00*
U.S. Cl. 204—146 5 Claims



A method of providing the primer anvil wire of a percussive-type photoflash lamp with a charge of a fulminating material in which a coating of fulminating material is applied on the anvil wire extending along its length a predetermined distance from one end thereof, the coating is dried, and then the coated end of the wire is dipped a predetermined distance into an electrolytic solution containing a colloidal thixotropic agent. This last step electrochemically strips the coating from a segment of the wire extending from the coated end thereof to thereby provide an anvil wire having a coating of fulminating material disposed on a segment of predetermined length located intermediate the ends thereof.

3,699,022
PHOTOPOLYMERIZABLE UNSATURATED POLYESTERS CONTAINING BENZOIN-ETHER, ORGANIC ACID ESTER, ORGANIC PHOSPHINE INITIATORS

Burkhard Behrens and Hermann Delius, Ahrensburg, Germany, assignors to Reichhold-Albert Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Jan. 29, 1971, Ser. No. 111,158
Claims priority, application Switzerland, Feb. 5, 1970, 1,626/70, 1,627/70; Jan. 5, 1971, 57/71, 58/71
Int. Cl. B01j *1/00;* C08d *1/00*
U.S. Cl. 204—159.15 20 Claims

This invention relates to preparations curable by UV irradiation, such as moulding, impregnating and coating compositions, of mixtures, stabilised in the usual manner, of unsaturated polyester resins and copolymerisable, monomeric compounds and photo-initiators, which optionally additionally contain polymerisation initiators and/or metal accelerators and/or paraffin or wax or wax-like substances, characterised in that they contain, as the photo-initiator, an overall combination consisting of:

(a) benzoin-ethers, and
(b) a sub-combination of at least two different compounds of trivalent phosphorus, consisting of:
(b') organic ester of phosphorous acid of general formula



(I)

wherein R_1, R_2 and R_3 can be identical or different and represent aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic radicals—but one of the radials R_1, R_2 or R_3 must always be an aromatic radical—and
(b'') of organic derivatives of phosphine of general formula



(II)

wherein R_1, R_2 and R_3 can be identical or different and represent aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic radicals—but one of the radials R_1, R_2 or R_3 must always be an aromatic radical—and the percentages by weight mentioned relate to the total weight of unsaturated polyester resin and copolymerisable monomers.

The invention relates also to a process for the preparation of shaped articles, impregnations, coatings and the like, from said preparations curable by UV irradiation, such as moulding, impregnating and coating compositions, of mixtures, stablised in the usual manner, of unsaturated polyester resins and copolymerisable, monomeric compounds and photo-initiators, which optionally additionally contain polymerisation initiators and/or metal accelerators and/or paraffin or wax or wax-like substances, characterised in that, as the photo-initiator, the said overall combination is used.

3,699,023
METHOD FOR MAKING HIGH TEMPERATURE INSULATING COMPOSITIONS AND SAID COMPOSITIONS

George A. Kuhar, Greensburg, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of application Ser. No. 340,796, Jan. 28, 1964. This application May 14, 1968, Ser. No. 729,129
Int. Cl. C08d *1/00;* C08f *1/00*
U.S. Cl. 204—159.19 6 Claims

A method for preparing a high temperature insulator comprising the steps of preparing a reaction mixture of a polyester polyol, an organo-peroxide, an organic polyisocyanate and a filler having a resistance to burning; and setting and curing the reaction mixture at a temperature no greater than about 250° F. for about 10 to 20 hours followed by subjecting the cured reaction mixture to a treatment of at least 300° F. for at least 10 hours or an ionizing radiation treatment of about 5 to about 30 megarads.

3,699,024
RADIATION POLYMERIZATION OF VINYL CARBORANES AND NOVEL PRODUCTS RESULTING THEREFROM

Theodore J. Klingen, Oxford, Miss., and John R. Wright, Batesville, Ark., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 29, 1970, Ser. No. 85,003
Int. Cl. C08f *1/16, 1/24*
U.S. Cl. 204—159.22 2 Claims

This invention relates to a method for forming an addition polymer from a vinyl carborane monomer which comprises irradiating said monomer with high-energy radiation in an oxygen-free atmosphere to a dose which will effect conversion of the monomer to a desired polymer, said monomer being selected from those described by the generic formula

where ⊖ is the carborane cage structure wherein the vinyl group is attached to one of the carbons in the carborane cage, R_1 is H or CH_3, and R_2 is H or an alkyl group, and to the polymers resulting therefrom.

3,699,025
PROCESS FOR RADIATION CROSS-LINKING UTILIZING N-HETEROCYCLIC COMPOUNDS WITH CLEAVABLE OXY SUBSTITUENTS

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Oct. 9, 1968, Ser. No. 766,288. Divided and this application Mar. 18, 1971, Ser. No. 125,834
Int. Cl. C08d *1/00;* G03c *1/68*
U.S. Cl. 204—159.14 11 Claims

Energy-sensitive compounds containing a heterocyclic nitrogen atom substituted with an —OR group are cross-linking agents for polymers having hardenable groups.

3,699,026
PHOTOPOLYMERIZATION USING N-ALKOXY HETEROCYCLIC INITIATORS

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, all % Eastman Kodak Company, Rochester, N.Y. 14650

No Drawing. Original application Oct. 9, 1968. Ser. No. 766,304, now Patent No. 3,574,622. Divided and this application July 27, 1970, Ser. No. 64,888
Int. Cl. C08d *1/00;* G03c *1/70*
U.S. Cl. 204—159.23 12 Claims

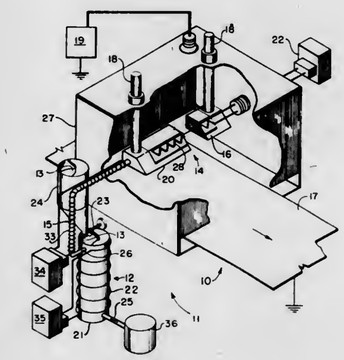
Energy-sensitive compounds containing a heterocyclic nitrogen atom substituted with an —OR group are photochemical initiators for the polymerization of vinyl monomers.

3,699,027
DEPOSITION METHOD

Emery P. Miller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Feb. 2, 1970, Ser. No. 7,589
Int. Cl. C23d *11/08;* B32b *17/06*
U.S. Cl. 204—164 22 Claims

A method for producing a metal containing deposit upon a surface of a substrate. The method includes the steps of vaporizing a matter such as water or an organometallic compound and electrostatically charging the vapors of the matter. The surface of the substrate upon which the vapors of the matter are deposited is caused to acquire an electrostatic potential which attracts and causes the electrostatically charged vapors of the matter to be deposited thereon. Prior to the deposition of the



electrostatically charged vapors of the organometallic compound upon the surface of the substrate, the surface may be heated to an elevated temperature sufficient to cause the organometallic compound vapors to decompose upon contact with the heated surface of the substrate to produce a metal containing deposit upon such surface.

An article provided by the method.

3,699,028
NON-WOVEN FABRICS BY ELECTRODEPOSITION

Robert Edward Torley, Wilton, and Richard Dale Bankert, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,875
Int. Cl. B01d *13/02;* B01k *5/00;* C23b *7/00*
U.S. Cl. 204—180 R 8 Claims

Non-woven fabric webs of fiber and binder resin are formed at one electrode of an electrolytic cell from a dilute bath of fibers and resin in aqueous suspension. Soft, pliable webs are obtained by using very dilute suspensions having less than one percent by wt. fiber and less than 0.2 percent by wt. resin in the aqueous coating bath and having one to five parts fiber per one part resin in said bath.

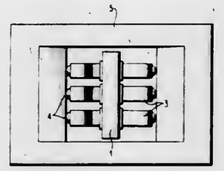
3,699,029
ANTICORROSIVE ELECTROPHORETIC COATING PROCESS

Harry F. Bell, 20 Sabra Lane, Wappingers Falls, N.Y. 12590; Donald J. Lazzarini, 909 Murray Hill Road, Binghamton, N.Y. 13903; and Lewis K. Schultz, 11 Brown Lane, Apalachin, N.Y. 13732

Filed Aug. 19, 1970, Ser. No. 65,045
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 9 Claims

Anticorrosive coatings are selectively, electrophoretically deposited on substrates, including electronic components.

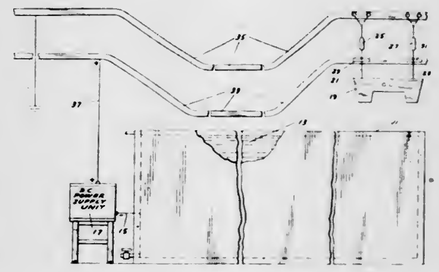
The process comprises forming a polyvinylidene-chloride-epoxy ester resin polymer suspension in water, and selectively, electrophoretically depositing the polymeric components of the suspension onto the desired portions of the electronic components. Benzotriazole is a preferred additive to inhibit corrosion. By selection of the electrophoretic deposition voltage, metal portions of the component having a formal oxidation potential below the coating voltage will have the polymer blend deposited thereon, whereas metal portions having a formal oxidation potential above the coating voltage will remain uncoated.



3,699,030
PROCESS FOR ELECTRODEPOSITING PAINT

Allan E. Gilchrist, Westlake, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 518,620, Jan. 4, 1966, now Patent No. 3,532,613, which is a continuation-in-part of application Ser. No. 375,633, June 16, 1964, now abandoned, which is a continuation-in-part of applications Ser. No. 304,297, Aug. 14, 1963, now Patent No. 3,230,162 and Ser. No. 273,270, Apr. 16, 1963, now abandoned. Said application Ser. No. 304,297 is a continuation-in-part of application Ser. No. 249,812, Jan. 7, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 186,320, Apr. 10, 1962, now Patent No. 3,351,575, and applications Ser. No. 132,303, Aug. 18, 1961, Ser. No. 183,024, Mar. 28, 1962, Ser. No. 186,496, Apr. 10 1962 Ser. No. 202,691, June 15, 1962, and Ser. No. 218,575, Aug. 22, 1962, all abandoned. Said application Ser. No. 273,270 is a continuation-in-part of said applications Ser. No. 249,812 and Ser. No. 258,913, Feb. 15, 1963, now abandoned, which in turn is a continuation-in-part of said applications Ser. No. 249,812, Ser. No. 186,320, Ser. No. 132,303, Ser. No. 183,024, Ser. No. 186,496, Ser. No. 202,691, and Ser. No. 218,575. This application Dec. 18, 1969, Ser. No. 886,278
The portion of the term of the patent subsequent to Jan. 9, 1985, has been disclaimed
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—181 4 Claims



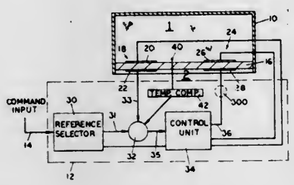
An improved process for anodic electrodeposition of paint comprises in combination the steps of limiting the infusible, particulate pigment used in the replenishment feed to an average particle size limit not substantially in excess of 2 microns, replenishing the bath at a rate that

limits the concentration of paint solids in the coating bath to the range of about 5 to about 15 weight percent thereof, limiting the immersion of the workpiece to a time in the range of about 1 to about 3 minutes while coating current is being passed through the bath and between the workpiece anode and a cathode in contact with the bath, limiting the temperature of the coating bath during coating to the range of about 20° to about 35° C., and curing the resultant deposit of paint upon the workpiece at a temperature in the range of 120° to 200° C. In one preferred embodiment, at least 95 percent of the pigment particles have particle size limit of less than 2 microns. In a second preferred embodiment, the replenishment feed is controlled so that the binder resin to pigment ratio in the replenishment feed is lower than the corresponding ratio existing in the bath being replenished.

3,699,031
ELECTROCOATING PROCESS
Brian Alfred Cooke, Knotty Green, and James Arthur Magee, Marlow Bottom, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 19, 1970, Ser. No. 38,895
Claims priority, application Great Britain, May 23, 1969, 26,428/69
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **12 Claims**

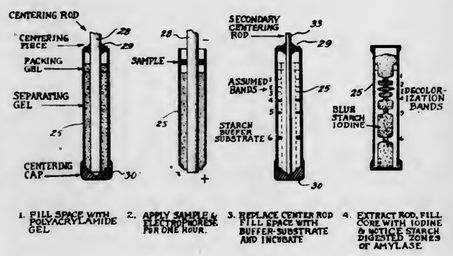
In a process of coating an electrically conductive article by electrodeposition from a dispersion of film-forming material, the coating of a surface of the article relatively inaccessible to the counter-electrode is improved by joining the adjacent region of dispersion through an ion-conducting bridge with a more accessible region. The bridge may comprise an electrolyte within a casing which is permeable to the counter-ion.

3,699,032
DEVICES FOR THE CONTROL OF AGENTS IN FLUIDS
Robert Anthony Rapp, Westerville, Ohio, assignor to The Ohio State University, Columbus, Ohio
Filed June 20, 1969, Ser. No. 835,191
Int. Cl. B01k *3/00*
U.S. Cl. 204—195 S **1 Claim**



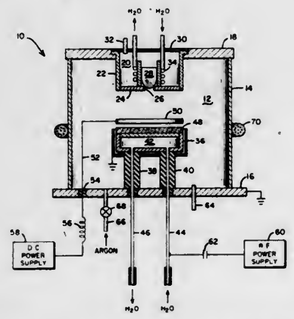
A control apparatus having a cylindrical tube at elevated temperatures having walls formed of solid electrolyte with an inner cylindrical electrode on its inner wall and a pair of outer cylindrical electrodes spaced from each other on the outer wall. The inner electrode and one outer electrode, separated by the solid electrolyte, form a galvanic measuring cell for providing a voltage proportional to the natural logarithm of the ratio of the oxygen partial pressure within the tube and the oxygen partial pressure outside of the tube. The other outer electrode, together with the inner electrode and the interposed solid electrolyte, form a pumping cell on which a voltage is impressed to cause transport of oxygen through the pumping cell by coulometric titration. This movement of oxygen effects changes in the oxygen partial pressure either inside or outside the tube as desired. A control system is electrically connected to both of the cells and has a command input for selecting the desired oxygen partial pressure for the chamber in which the oxygen activity is to be controlled. The control system provides a voltage on the pumping cell which is derived from the command input and the measuring cell voltage in order to bring the oxygen partial pressure either within or without the tube toward the desired oxygen partial pressure.

3,699,033
ELECTROPHORESIS AND ELECTROFOCUSING
Rashid A. Zeineh, 5742 W. Dakin St., Chicago, Ill. 60634
Filed Apr. 26, 1971, Ser. No. 137,490
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **4 Claims**



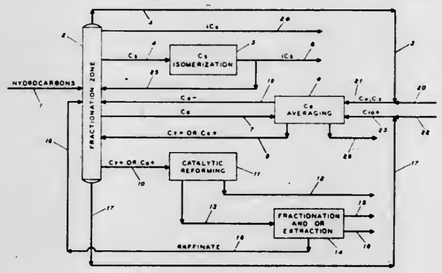
A method and apparatus for electrophoretic and electrofocusing analysis. Tubes with gel around an internal core rod or rods enable analysis of samples which are electrophoresed within the tube without removing the gel and sample from the tube.

3,699,034
METHOD FOR SPUTTER DEPOSITING DIELECTRIC MATERIALS
Stanley J. Lins, Minneapolis, and Charles J. Nelson, Rosemount, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,093
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **3 Claims**



A method for preparing a substrate for the subsequent receipt of a dielectric coating wherein the substrate to be coated is first subjected to bombardment of positive ions which cause impurities on the substrate to be dislodged, and attracted to a shutter member. After the substrate has been cleaned in this fashion, the shutter member is removed and the direction of ion travel is reversed causing the dielectric material to be sputtered onto the substrate.

3,699,035
PRODUCTION OF GASOLINE BY AVERAGING AND REFORMING
Thomas R. Hughes, Orinda, and Robert P. Sieg, Piedmont, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of applications Ser. No. 864,870 and Ser. No. 864,871, both Oct. 8, 1969. This application July 1, 1970, Ser. No. 51,459
Int. Cl. C10g *39/00*
U.S. Cl. 208—92 **10 Claims**



A process for producing gasoline from a hexane-rich hydrocarbon feed which comprises averaging hexane with one or more alkanes selected from the group consisting of propane or butanes or C_{10}^+ hydrocarbons or mixtures of the foregoing hydrocarbons to obtain at least C_7^+ hydrocarbons, and catalytically reforming the C_7^+ hydrocarbons to obtain reformate. Preferably at least a portion of the hydrocarbons averaged with the hexane is raffinate derived from extraction following the catalytic reforming step. Preferably, a portion of the n-pentane produced in hexane averaging is isomerized to isopentane.

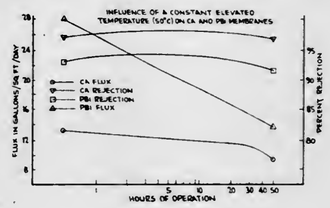
3,699,036
HYDROCRACKING NITROGEN CONTAINING FEEDSTOCKS
Robert H. Hass, Fullerton, and Cloyd P. Reeg, Orange, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,062
Int. Cl. C10g *13/02, 13/04, 13/10*
U.S. Cl. 208—111 **14 Claims**

Hydrocarbons containing substantial amounts of organo-nitrogen compounds are converted in the presence of hydrogen over a catalyst comprising alumina, aluminosilicates, or combinations thereof with silica, zirconia, magnesia and the like with or without active metal components in the presence of controlled minor amounts of added water.

3,699,037
CATALYTIC CRACKING
Richard J. Annesser and Stephen A. Balogh, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing Filed Oct. 28, 1970, Ser. No. 85,836
Int. Cl. B01j *11/68;* **C01b** *17/56;* **C01g** *11/02*
U.S. Cl. 208—120 **9 Claims**

A process for reducing the SO_2 emission from a catalytic cracking unit wherein a hydrocarbon feedstock containing organic sulfur compounds is fed to a reaction zone and contacted with cracking catalyst at a temperature in the reaction zone between 750 and 1150° F. and the cracking catalyst is then regenerated in a regeneration zone by burning coke off the cracking catalyst at a temperature between 800–1300° F. and the regenerated cracking catalyst is recycled to the reaction zone, which process comprises adding a material selected from the group consisting of calcium compounds, magnesium compounds and mixtures thereof to the catalytic cracking unit cycle at a rate at least as large as the stoichiometric rate of sulfur deposition on the cracking catalyst in the reaction zone.

3,699,038
PRODUCTION OF IMPROVED SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES
Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,846
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **21 Claims**



A process is provided for producing improved semipermeable membranes which find particular utility in the separation of components of a solution. A solution of a polybenzimidazole polymer is deposited upon a support to form a wet film, an amount of solvent is evaporated from the wet film sufficient to allow the formation of a thin layer of higher density at the exposed surface of the film, the resulting film is washed with a non-solvent for the polybenzimidazole polymer to remove residual solvent thereby forming a semipermeable polybenzimidazole membrane, and the resulting membrane is annealed by contact with an organic liquid under conditions found capable of substantially enhancing the properties of the same.

The polybenzimidazole membranes find particular utility in reverse osmosis desalination procedures. The annealing step of the present process substantially improves the performance of the membranes in such a separation.

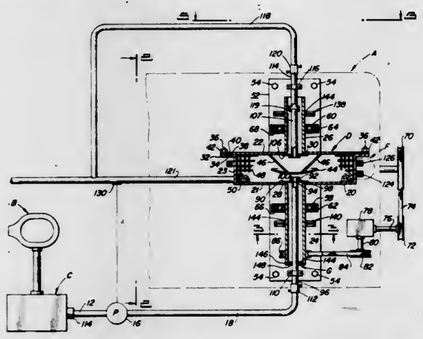
3,699,039
METHOD FOR THE REMOVAL OF COLLOIDAL SUSPENSIONS AND OTHER POLLUTANTS FROM LIQUID WASTES
Calvin Calmon, Arneys Mount Road, Birmingham, N.J. 08011; Allyn Harold Heit, 14 Thornton Place, Mount Holly, N.J. 08011; and Theodore Helfgott, P.O. Box 129, R.D. 2, Storrs, Conn. 06268
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,286
Int. Cl. C02b *1/14*
U.S. Cl. 210—28 **5 Claims**

The treatment of waste products polluted with anionic surfactants and other colloidal suspensions with abietic acid amines and derivatives thereof and subsequent filtration by short surging cycles through a compressible absorption filter medium having absorbent and or ion exchange properties.

3,699,040
METHOD FOR WASTE DISPOSAL WITH CENTRIFUGAL ACTION

James S. Reid, Hudson, Ohio, assignor to Thermason Corporation, Ann Arbor, Mich.

Continuation-in-part of application Ser. No. 81,813, Oct. 19, 1970. This application Apr. 21, 1971, Ser. No. 135,850
Int. Cl. B01d *15/06, 33/16, 35/18*
U.S. Cl. 210—32 11 Claims



An apparatus and a method for waste disposal with centrifugal action includes centrifugal vaporizing means for subjecting liquid and organic waste material to centrifugal force while vaporizing the waste material. Organic material is forced below the surface of the liquid waste material by centrifugal force. The vaporizing means is heated while centrifugal force is acting on the waste material so that substantially pure liquid is turned into vapor and substantially no organic material is carried from the vaporizing means with the vapor.

3,699,041
SURFACE MODIFIED ALUMINA HYDRATE FILLER

Freeman M. Sanderford, Dalton, Ga., and Jack C. Ray, Baton Rouge, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed June 4, 1971, Ser. No. 150,217
Int. Cl. C09k *3/28;* C09d *5/18*
U.S. Cl. 252—8.1 15 Claims

Surface modified alumina hydrate compositions are provided which are compatible with latex compositions when utilized as flame-retardant fillers. The surface modification is accomplished by treating alumina hydrate with a small but effective quantity of a surfactant comprising a mixture of ethoxylated fatty acid amides with an amino alcohol. The surface modifier alumina hydrate, even in significant quantities, is particularly suitable as filler for latex foam compositions.

3,699,042
DRILLING FLUID COMPOSITION AND PROCESS FOR DRILLING SUBTERRANEAN WELLS

William C. Browning and Billy G. Chesser, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation-in-part of application Ser. No. 47,325, June 18, 1970. This application Nov. 16, 1970, Ser. No. 89,626
Int. Cl. C10m *3/48*
U.S. Cl. 252—8.5 C 5 Claims

The present invention relates to a novel drilling fluid composition consisting essentially of (1) a macromolecular polysaccharide aqueous solution, and (2) a metal ion buffered cross-linking agent for said solution consisting essentially of (a) an organic polyelectrolyte ligand component, and (b) a metal component of the first series of the transition elements of the Periodic Table. This drilling fluid has been found to provide enhanced rheological properties without obtaining metal ion overtreatment characteristics. In a preferred form, said drilling fluid has a metal ion buffered cross-linking agent additionally containing a compound of a metal from Group II of the Periodic Table. A process for drilling a subterranean well with the present drilling fluid composition is also incorporated.

3,699,043
NITROGEN-CONTAINING p - TERT-BUTYL-STYRENE COPOLYMERS IN LUBRICANT COMPOSITIONS

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,383
Int. Cl. C10m *1/28, 1/32*
U.S. Cl. 252—50 4 Claims

High molecular weight nitrogen-containing copolymers of p-tert-butylstyrene and lubricating oil containing them.

3,699,044
PREPARATION OF FERROELECTRIC CERAMIC COMPOSITIONS

Robert G. Dosch and William M. O'Neill, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 16, 1970, Ser. No. 72,707
Int. Cl. C04b *35/00, 33/00*
U.S. Cl. 252—62.9 2 Claims

Preparation of ferroelectric ceramic, refractory oxide, compositions by mixing a metal alkoxide with a quaternary ammonium hydroxide to obtain a solution containing a soluble metal complex ion, thereafter mixing a metal salt with said solution to form a precipitate, filtering the precipitate and calcining the precipitate to said refractory oxide composition.

3,699,045
PIEZOELECTRIC CERAMIC-MATERIAL

Norio Tsubouchi, Masao Takahashi, Tomeji Ohno, and Tsuneo Akashi, Tokyo-to, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Dec. 22, 1967, Ser. No. 692,739
Claims priority, application Japan, Dec. 29, 1966, 42/971, 42/972, 42/974, 42/21,108, 42/25,273, 42/25,274, 42/49,623, 42/56,175
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 5 Claims

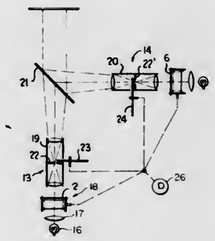
A piezoelectric ceramic material is provided consisting essentially of a solid solution of the three components $Pb(Mn_{1/3}Z_{2/3})O_3$, $PbTiO_3$ and $PbZrO_3$, wherein Z represents one element selected from the group consisting of Nb, Ta, Sb and Bi.

3,699,046
MOTION PICTURE SYSTEM

Guiseppe Midulla, Tampa, Fla., assignor to Howard L. Rose, Potomac, Md., Elmer Moon, Atlanta, Ga., Roger Early, Brandon, Fla., and William C. Rubelsky, Ronald Leacock, William P. Rubelsky, Frank Perez, Jr., Arthur S. Gibbons, and Carlos B. McDaniel, all of Tampa, Fla., fractional part interest to each

Filed Sept. 4, 1968, Ser. No. 757,423
Int. Cl. G03b *21/40*
U.S. Cl. 352—68 6 Claims

A motion picture taking and projection system employs two cameras and two projectors. The two cameras take pictures sequentially and successively in alternation with one camera taking a picture at all times. In the projection system the projectors operate sequentially and successively in alternation so that a projector is projecting an image on the screen at all times. The shutters, particularly of the projectors, are operative at the focal plane of the lens system of the projectors so that very rapid picture change-over is effected. The total system eliminates flicker due to rapid change-over strobe effects due to intermittent viewing of a main object and color changes due to black time on the screen. Further, a beam splitter is employed for filming and projecting whereby keystoning is eliminated and exact overlay of pictures is effected.



3,699,047
COOLANT SYSTEM AND CORROSION INHIBITOR AND METHOD OF USE

Ernest Q. Petrey, Jr., Randolph Township, N.J., assignor to Drew Chemical Corporation, New York, N.Y.

No Drawing. Filed May 13, 1970, Ser. No. 37,012
Int. Cl. C23f *11/10, 11/16*
U.S. Cl. 252—175 14 Claims

A cooling system corrosion inhibitor which comprises a divalent metal ion, a chelating agent, and a modified lignosulfonate polymeric material, and the process of utilizing said corrosion inhibitor.

3,699,048
PROCESS OF PREVENTING SCALE AND DEPOSIT FORMATION IN AQUEOUS SYSTEMS AND PRODUCT

Friedrich Krueger, Edingen, and Lieselotte Bauer, Bad Duerkheim, Germany, assignors to Joh. A. Benckiser GmbH Chemische Fabrik, Ludwigshafen am Rhine, Germany

No Drawing. Filed July 21, 1970, Ser. No. 56,982
Claims priority, application Germany, July 24, 1969, P 19 37 575.8
Int. Cl. C02b *5/06;* C23f *14/02*
U.S. Cl. 252—180 35 Claims

Formation of scale and incrustation in aqueous systems is prevented by the addition of a mixture composed of

(a) an amino alkylene phosphonic acid and of
(b) an acrylic or methacrylic acid polymer or a copolymer of acrylic acid and methacrylic acid, or a copolymer of acrylic acid and/or methacrylic acid with a polymerizable, ethylenically unsaturated compound, or a graft polymer of a polysaccharide and especially of starch, dextrin, and modified starch with said acrylic and/or methacrylic acid polymers and copolymers,

preferably in substoichiometric amounts calculated for the scale and hardness causing compounds present in the aqueous system.

3,699,049
PROCESS FOR MAKING SILICA ORGANOSOLS

Linda J. Pluta, North Riverside, and Peter H. Vossos, Lisle, Ill., assignors to Nalco Chemical Corporation, Chicago, Ill.

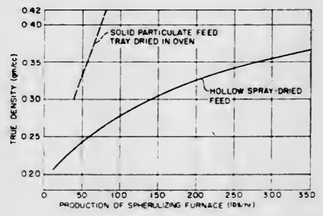
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,814
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 9 Claims

A process for making silica organosol compositions comprising from 5 to 50% by weight of silica particles as SiO_2 and from 50 to 95% of a water miscible polyhydric alcohol is disclosed. Preferably, the water miscible polyhydric alcohol is glycerol.

3,699,050
SPRAY DRIED PRODUCT FOR FEED IN THE MANUFACTURE OF HOLLOW GLASS SPHERES AND PROCESS FOR FORMING SAID SPRAY DRIED PRODUCT

Craig Henderson, Clarkson, Ontario, Canada, assignor to Emerson & Cuming, Inc., Canton, Mass.

Filed Aug. 2, 1967, Ser. No. 657,865
Int. Cl. B01j *13/00*
U.S. Cl. 252—317 6 Claims



The instant application relates to a product formed by the spray drying of an alkali borosilicate sol, which product is subsequently utilized as feed to a spherulizing furnace which produces hollow glass spheres of a diameter in a range from about 5 to 5000 microns.

3,699,051
COMPOSITIONS AND PROCESSES FOR BREAKING PETROLEUM EMULSIONS

Ronald G. Sampson, Huntington Beach, Calif., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 53,709, July 9, 1970. This application Aug. 27, 1970, Ser. No. 67,559
Int. Cl. B01d *17/04*
U.S. Cl. 252—344 11 Claims

Compositions of matter and a process for breaking water-in-oil petroleum emulsions therewith, which compositions comprise a substantially water-insoluble at least partially oil-soluble product formed by the combination of (a) a diisocyanate and a polyoxyalkylated compound and (b) polyoxyalkylated alkyl phenolformaldehyde polycondensates is disclosed.

3,699,052
CORROSION INHIBITOR COMPOSITION CONTAINING A GLYCINE, CHELATING AGENT, PHOSPHORIC OR BORIC ACID ESTER, AND A WATER SOLUBLE DIVALENT METAL SALT

Ernest Quentin Petrey, Jr., Randolph Township, and Ronald M. Werner, West Paterson, N.J., assignors to Drew Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,080
Int. Cl. C23f *11/14, 11/16*
U.S. Cl. 252—389 34 Claims

A multi-functional corrosion inhibitor which comprises a divalent metal ion, chelating agent, a trivalent

inorganic acid ester, and an amino acid or a derivative thereof, and the process of utilizing said corrosion inhibitor in a multitude of non-related applications.

3,699,053

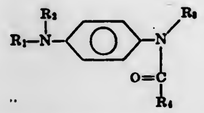
FUNCTIONAL FLUID ANTIOXIDANTS

William F. Gentit, Mohegan Lake, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,613
Int. Cl. C09k 3/02
U.S. Cl. 252—403 8 Claims

An antioxidant composition comprising a mixture of:

(A) A monoacylated phenylene diamine of the formula



wherein R_1 and R_3 can each be alkyl, cycloalkyl, aryl, aralkyl or alkaryl; R_2 can be hydrogen, alkyl, cycloalkyl, aryl, aralkyl or alkaryl; and R_4 can be hydrogen, alkyl, phenyl, substituted alkyl or substituted phenyl, and

(B) A secondary aryl amine is disclosed. These compounds show superior and unexpected high temperature antioxidant and fluid stabilizing properties with very little deposit formation when incorporated into polycarboxylate functional fluids.

3,699,054

COPPER CHROMITE HYDROGENATION CATALYST REGENERATION PROCESS

Glenn E. Organ, Bay City, and Ronald H. Wile, Kingsville, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 827,935, May 26, 1969. This application Apr. 29, 1971, Ser. No. 138,792
Int. Cl. B01j 11/02, 11/04, 11/68
U.S. Cl. 252—414 15 Claims

A spent copper chromite hydrogenation catalyst is restored to a catalytically active condition by a process which comprises (a) washing organic materials therefrom with a volatile solvent, (b) drying the washed catalyst to remove the volatile solvent therefrom, and (c) heating the washed, dried catalyst in an atmosphere comprising molecular oxygen at a controlled temperature.

3,699,055

TRIARYLPHOSPHINE, ALKYLLITHIUM, AND 1,3-DIHALOBENZENE POLYMERIZATION INITIATOR FOR CONJUGATED DIENE POLYMERIZATION

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Mar. 6, 1970, Ser. No. 17,310, now Patent No. 3,631,015. Divided and this application July 19, 1971, Ser. No. 164,097
Int. Cl. C08d 3/04; C08p 3/16
U.S. Cl. 252—431 P 8 Claims

A method of manufacturing high cis-polydienes by polymerizing a conjugated diene with an initiator prepared by reacting a triarylphosphine, an alkyllithium and a 1,3-di-halobenzene.

3,699,056

METHOD OF HALOGENATING CRYSTALLINE ALUMINOSILICATE

Shinji Takase and Tomonori Shiori, Kawasaki, Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

Filed Mar. 5, 1970, Ser. No. 16,880
Claims priority, application Japan, Mar. 5, 1969, 44/16,212
Int. Cl. B01j 11/78, 11/40
U.S. Cl. 252—442 1 Claim

Method of halogenating crystalline aluminosilicate which comprises bringing a halogenated hydrocarbon wherein the halogen is at least one member selected from the group consisting of fluorine and chlorine into contact with the crystalline aluminosilicate having openings of 6–15 A. with or without active metal components supported thereon in a flow method at a ratio of 1–1000 $cm.^3$ (stp.) of the halogenated hydrocarbon per gram of the crystalline aluminosilicate per minute in the presence of a non-reducing gas at a temperature of 160–350° C. to a halogen content of 0.01–20% by weight.

3,699,057

LUBRICATION

John J. Halko, Sr., and Andrew R. Halko, Washington Park, Del. (both % Freeland Chemical Co., 1605 McArthur Road, New Castle County Air Base, Del.)

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,225
Int. Cl. C10m 3/22, 3/04
U.S. Cl. 252—49.3 7 Claims

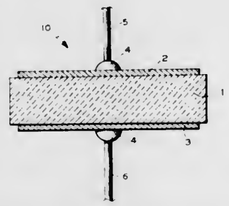
Aqueous solution of poly(ethylene oxide) of molecular weight 1,000,000 to 5,000,000 makes very effective lubricant for rubber, particularly for mounting rubber tires on drop-center metal wheels. Adding to the solution N,N-diethanol coconut fatty acid amide and N,N-diethanolamine salt of long chain fatty acid, improves it and also inhibits rusting of wheels made of ferrous metal. Isopropanol can also be present in solution and stabilizes the poly(ethylene oxide).

3,699,058

URANIUM-MODIFIED ZINC OXIDE VOLTAGE VARIABLE RESISTOR

Michio Matsuoka, Takeshi Masuyama, and Yoshio Iida, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1969, Ser. No. 866,820
Claims priority, application Japan, Oct. 22, 1968, 43/77,733
Int. Cl. H01b 1/06
U.S. Cl. 252—518 6 Claims



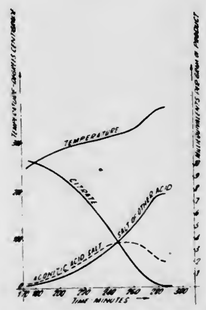
A voltage variable resistor ceramic composition consisting essentially of zinc oxide and, as an additive, uranium oxide. The uranium-modified zinc oxide voltage variable resistor has improved voltage nonlinear properties due to the further addition of bismuth oxide, calcium oxide and cobalt oxide.

3,699,059

UNSATURATED CARBOXYLIC SALT MATERIALS AND DERIVATIVES THEREOF

Fred Smeets, Tienen, Belgium, assignor to N.V. La Citrique Belge, Tienen, Belgium

Original application July 8, 1966, Ser. No. 563,816, now Patent No. 3,586,715. Divided and this application Nov. 24, 1969, Ser. No. 877,589
Claims priority, application Great Britain, July 19, 1965, 30,640/65
Int. Cl. C11d 1/12, 3/065
U.S. Cl. 252—557 7 Claims



A surface-active composition comprising a sulfonic acid ester of an unsaturated organic alkaline earth metal salt material is disclosed. The surface-active composition is produced by sulfonating a composition produced by heating an alkaline-earth metal salt of citric acid until not more than 32% by weight of the original acid salt remains and esterifying the reaction mixture with one or more monohydric alcohols of from 1 to 22 carbon atoms.

3,699,060

POLYURETHANE FOAMS PREPARED FROM OXYPROPYLATED AND HIGHER OXYALKYLATED STARCH-PHOSPHORUS-CONTAINING POLYETHERS

Stephen Fuzesi, Hamden, Conn., and Milton Lapkin, Barrington, R.I., assignors to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 735,930, Feb. 20, 1968, which is a division of application Ser. No. 457,814, May 21, 1965. This application Oct. 5, 1970, Ser. No. 78,192
Int. Cl. C08g 22/14, 22/44
U.S. Cl. 260—2.5 AR 7 Claims

Flame retardant polyurethane foams are prepared from a polyether polyol, an organic polyisocyanate, a foaming agent and a catalyst, wherein the polyether polyol is an oxyalkylated starch-phosphorus-containing polyether. The oxyalkylating compound contains at least three carbon atoms, such as propylene oxide.

3,699,061

COATING COMPOSITION CONTAINING URETHAN-MODIFIED EPOXIDIZED ESTER AND POLYCARBOXYLIC ACID MATERIAL

Arthur L. Cunningham, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,684
Int. Cl. C08g 45/12
U.S. Cl. 260—18 PT 8 Claims

A resin suitable for making a two-package coating system includes a component vehicle comprising an epoxidized fatty acid ester partially reacted with a monocarboxylic alcohol and further reacted with a polyisocyanate to form a prepolymer material. In a two-package coating system, a polycarboxylic curing agent is admixed with the urethan-modified epoxidized ester for curing the resin by reaction of the carboxyl groups with residual oxirane groups. Hard tack-free films are achieved within a short period at ambient temperature. This resin is especially adapted for making protective and decorative coatings, either clear or pigmented.

3,699,062

STABILIZED OXYMETHYLENE POLYMERS

Leon Starr, Scotch Plains, N.J., and David Jon Runyon, Hoffman Estates, Ill., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 878,916, Nov. 21, 1969. This application July 7, 1971, Ser. No. 160,557
Int. Cl. C08g 51/54
U.S. Cl. 260—18 N 12 Claims

Pigmented oxymethylene polymers are stabilized by a novel stabilizer which comprises an oxymethylene polymer antioxidant, a metal salt of non-nitrogenous organic acids and alcohols having from 2 to about 30 carbon atoms and a modified fatty acid polyamide. This unique stabilizer need only be used in very limited quantities to impart an improvement in thermal stability. A preferred composition comprises (A) a phenolic antioxidant, (B) an alkaline earth ricinoleate and (C) an anhydride modified fatty acid polyamide.

3,699,063

POLYURETHANE REACTION MIXTURE BASED ON ANHYDROUS DIAMINE-KETONE CURATIVE

Anthony S. Scheibelhoffer, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Application Aug. 22, 1969, Ser. No. 852,482, which is a division of application Ser. No. 612,347, Jan. 30, 1967. Divided and this application Jan. 14, 1971, Ser. No. 106,577
Int. Cl. C08g 22/16, 22/06
U.S. Cl. 260—18 TN 10 Claims

A polyurethane reaction mixture comprising an isocyanate terminated polyurethane and a curative therefor prepared by treating a mixture of at least one diamine having amino groups attached to non-benzenoid carbon atoms and at least one liquid ketone with a drying agent non-reactive to diamines and ketones. The invention has particular utility for increasing the set-up time for such a reaction mixture through the special treatment of the curative, where such mixtures have heretofore had limited commercial potential because of their fast set-up times.

3,699,064

CARBOXYLIC CURING AGENT

Arthur L. Cunningham, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,183
Int. Cl. C08f 21/04
U.S. Cl. 260—22 EP 10 Claims

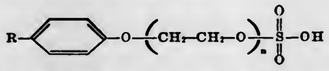
A polycarboxylic curing agent soluble in paraffinic hydrocarbon solvents, particularly suitable as curing agents for epoxide resins, obtained by simultaneously reacting a polyol having from 3 to about 6 hydroxyl groups with a cyclic acid anhydride, and an olefin oxide with at least 10 serially linked carbon atoms having an oxirane functionality of from 1 to about 1.5.

3,699,065
WATER-SOLUBLE ALKYD RESIN COMPOSITIONS
Edgar L. Clark, Fredericksburg, Va., assignor to Commercial Solvent Corporation
No Drawing. Filed Mar. 4, 1971, Ser. No. 121,160
Int. Cl. C09d 3/64, 3/66, 5/24
U.S. Cl. 260—22 R 10 Claims
A water-soluble alkyd resin composition and a 2-step process for the preparation thereof comprising the product of the reaction of an aliphatic monocarboxylic acid with di- or tripentaerythritol, which product is then reacted with phthalic anhydride to an acid number of 70–100, then neutralized. The composition is useful in the formulation of protective coatings, especially those intended for application by the electro-deposition process.

3,699,066
WATER-DISPERSED ANIONIC RESIN COMPOSITIONS STABILIZED AGAINST AGGLOMERATION
Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corp.
No Drawing. Continuation-in-part of application Ser. No. 46,477, June 15, 1970. This application Oct. 8, 1971, Ser. No. 187,889
Int. Cl. C08g 17/16, 51/60
U.S. Cl. 260—22 EP 3 Claims
A stabilizer for water-dispersible resin consisting of an alkanolamine dodecyl benzene sulfonate salt. The stabilizer provides a method of controlling relative concentrations of bath components during the electrodeposition process of coating articles with a resin.

3,699,067
ACRYLIC TERPOLYMER RESINS PLASTICIZED WITH SILICONE OILS
Charles H. Stockman, Middlesex County, Mass., assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,989
Int. Cl. C08f 45/50; B44d 1/09
U.S. Cl. 260—29.1 SB 1 Claim
Film forming acrylic resin terpolymers are found to be plasticized by the addition of silicone oils. Flexibility of the films and improvement thereof against cracking and blocking is achieved.

3,699,068
EMULSION POLYMERISATION OF VINYL CHLORIDE
John Anthony Flint and Graham John Blake, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Apr. 17, 1970, Ser. No. 29,693
Claims priority, application Great Britain, Apr. 23, 1969, 20,804/69
Int. Cl. C08f 3/30
U.S. Cl. 260—29.6 MQ 13 Claims
A process for the production of a stable aqueous vinyl chloride polymer emulsion suitable for conversion to fibers in which the polymerization is effected at a temperature below 0° C. in an aqueous medium, optionally containing at least one antifreeze, in the presence of an emulsifying agent comprising at least one soluble salt, for example an alkali metal or ammonium salt, of a sulfonic acid derivative of an alkyl phenoxy polyether alcohol, said derivative having the formula:



where R is an alkyl group of from 5 to 20 carbon atoms and *n* is a whole number of from 2 to 12.

3,699,069
COATING COMPOSITIONS AND COATED ARTICLES
Charles R. Peaker, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,876
Int. Cl. C08d 7/10; C08f 45/56, 45/60
U.S. Cl. 260—29.7 SQ 14 Claims
Coating compositions for textiles, which compositions comprise a stabilized latex containing an alkyl sulfone or alkyl sulfoxide terminated oligomeric emulsifier.

3,699,070
EPOXY COMPOSITIONS FLEXIBILIZED WITH HYDROXYL-TERMINATED POLYMERS OF CYCLIC ESTERS
John Wynstra, Somerville, and John Joseph Stevens, Jr., Highland Park, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed July 17, 1969, Ser. No. 842,730
Int. Cl. C08g 51/34
U.S. Cl. 260—31.4 EP 18 Claims
Curable compositions for insulating use, the cured products having a high degree of flexibility and superior weathering characteristics. These curable compositions comprise a polyepoxide, a curing agent therefor, and a hydroxyl-terminated polymer of a cyclic ester. The curable compositions may advantageously also contain a lactone to provide a higher degree of flexibility in the cured product.

3,699,071
HIGH MODULUS COMPOSITION COMPRISING HYDROCARBON OIL, RUBBER AND CARBON BLACK
Ivor W. Mills, Media, Glenn R. Dimeler, West Chester, and Merritt C. Kirk, Jr., Thornton, Pa., and Jackson S. Boyer, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Jan. 17, 1969, Ser. No. 792,131
Int. Cl. C08d 11/02; C08k 1/22
U.S. Cl. 260—33.6 AQ 6 Claims
A novel rubber vulcanizate comprises carbon black dispersed in rubber, such as butyl rubber, ethylene-propylene rubber, EPDM rubbers, or in mixtures of such rubbers, and as a plasticizer or extender, a petroleum hydrocarbon oil containing 45 to 85 weight percent aromatics and no more than 0.5 weight percent polar compounds. At a given level of cure, such a novel rubber composition has higher tensile strength and modulus than a similar composition wherein the hydrocarbon oil contains the same percentage of aromatics and a greater percentage of polar compounds.

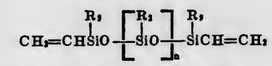
3,699,072
SILICONE ELASTOMER WITH UNPRIMED ADHESION
William H. Clark, Mount Pleasant, and William R. Hays, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed June 24, 1971, Ser. No. 156,551
Int. Cl. C08g 51/04, 31/02
U.S. Cl. 260—37 SB 11 Claims
A composition of a vinyldiorganosiloxy endblocked polydimethylsiloxane and a mixture of an organosiloxane having 5 to 20 silicon atoms per molecule and an average of at least three silicon-bonded hydrogen atoms per molecule and a modified organosiloxane having 6 to 21 silicon atoms per molecule, an average of at least two silicon-bonded hydrogen atoms per molecule and an average of at least one unit of $(RO)_3Si(CH_2)_x(CH_3)SiO$, $(RO)_3Si(CH_2)_x(CH_3)_2SiO_{0.5}$ and mixtures thereof where R is methyl, ethyl or



and x is 2 or 3 is curable to an elastomer which has improved unprimed adhesion to substrates, particularly metal substrates.

3,699,073
ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITIONS
Tadashi Wada, Kunio Itoh, Kiyoshi Imai, and Hiroshi Inomata, Annaka, Japan, assignors to Shinetsu Chemical Company
No Drawing. Filed Aug. 7, 1970, Ser. No. 62,157
Claims priority, application Japan, Aug. 15, 1969, 44/64,601
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 7 Claims
Organopolysiloxane compositions curable at room temperature and consisting of:

(1) 100 parts by weight of an organopolysiloxane having a viscosity of from 10 to 300,000 cs. at 25° C. and represented by the general formula:



(where R is the same or a different kind of monovalent hydrocarbon radical, free of aliphatic unsaturation, and n is an integer of from 8 to 1,500),

(2) from 0 to 100 parts by weight of an organosiloxane copolymer composed of:

(a) SiO_2 units, (b) $R_3SiO_{0.5}$ units and (c)

$$CH_2{=}CH(R_2)SiO_{0.5}$$

units, (where R is as previously defined, and the molecular ratio of each of the units is $(b+c)/a=0.3$–3, and $c/a=0.01$–1),

(3) from 0.01 to 200 parts by weight of an organosiloxane copolymer whose main chain is composed either of (d) RR'SiO units or of (d) RR'SiO units and (e) $R'SiO_{1.5}$ units, and is terminated with $R''(R_2SiO_{0.5})$ units, $R''OSi(R'_2)O_{0.5}$ units, or $HOSi(R'_2)O_{0.5}$ units, (where R is as previously defined, and at least 1 mole percent of R' group is of vinyl radicals, with the rest being of the same or different kind of monovalent hydrocarbons, free of aliphatic unsaturation, and R'' is either saturated or unsaturated monovalent hydrocarbon radicals, where the ratio of each of the units is $e/(d+e)\leqq 0.5$),

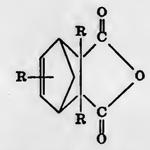
(4) an organohydrogen polysiloxane in which the total number of Si–H bonds is from 50 to 500 percent of that of vinyl radicals contained in Components (1), (2) and (3) given above and which contains at least three Si–H bonds in one molecule,

(5) from 1 to 500 parts by weight of an inorganic filler, and

(6) a catalytic amount of a platinum compound.

Such compositions have excellent processability, because they can be cured in a desired time. Therefore, they are very useful as potting or molding materials as well as coating materials on substrates.

3,699,074
POLYIMIDE PREPOLYMER MOLDING POWDERS
Hyman R. Lubowitz, Hawthorne, William P. Kendrick, Manhattan Beach, John F. Jones, Torrance, and Eugene A. Burns, Palos Verdes, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Continuation-in-part of application Ser. No. 671,973, Oct. 2, 1967. This application Aug. 21, 1970, Ser. No. 65,772
Int. Cl. C08g 20/32, 51/02, 51/10
U.S. Cl. 260—37 N 2 Claims
This invention relates to polyimide prepolymer powders and to the process for preparing same, and more specifically, to polyimide prepolymer molding powders having particles with surface areas ranging from about 1 to 800 square meters per gram. More particularly, this invention relates to molding powders prepared from polyimide prepolymers having an average molecular weight ranging from about 500 to 6,000. The prepolymers are prepared by reacting approximately stoichiometric amounts of at least one polyfunctional amine, e.g., an aromatic diamine, one or more polyfunctional anhydrides and a monoanhydride characterized by the formula:



wherein R is selected from the group consisting of hydrogen, lower alkyl radicals having 1 to 5 carbon atoms and combinations thereof.

3,699,075
SOLUBLE HIGH MOLECULAR WEIGHT POLYIMIDE
Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,935
Int. Cl. C08g 20/32
U.S. Cl. 260—49 3 Claims
This invention is directed to aromatic polycarboxylic acids, the anhydrides and isomers thereof, and more particularly, to the use of these acids and anhydrides for the preparation of thermally stable, high-molecular weight polyamides. These polyamides are thermo-oxidatively stable high-molecular weight polyimides which are comparatively soluble in organic solvents. The polyimides are obtained by reacting approximately stoichiometric amounts of the polycarboxylic acid or the anhydrides thereof with a polyfunctional compound selected from the group consisting of polyamines, diisocyanates and combinations thereof.

3,699,076
COLORED CYANOACRYLATE ADHESIVE COMPOSITIONS
William F. Thomsen and Paul T. Von Bramer, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 696,686, Jan. 10, 1968. This application Nov. 25 1970, Ser. No. 92,858
Int. Cl. C08f 1/84, 45/04
U.S. Cl. 260—41 C 14 Claims
Autopolymerizable alpha-cyanoacrylate adhesive compositions having incorporated therein disperse dyes of the anthraquinone class which have an amino group and either an aryl group on the amino group, or a phenolic type OH group on the anthraquinone ring.

3,699,077
COMBINATIONS OF PHOSPHONIUM BROMIDES AND BROMINATED AROMATIC COMPOUNDS AS FLAME-RETARDANT COMPOSITIONS FOR OLEFIN POLYMERS
Robert William Murray, Lebanon, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,305
Int. Cl. C09k 3/28
U.S. Cl. 260—45.9 R 3 Claims
Flame-retardant compositions comprising (A) a compound having the formula

$R_3\overset{+}{P}R'\cdot Br^-$ or $R_3\overset{+}{P}—CH_2CH_2—\overset{+}{P}R_3\cdot 2Br^-$

wherein R is phenyl or 2-cyanoethyl and R' is lower alkyl or 2-cyanoethyl and (B) a brominated aromatic compound containing at least 60%, by weight, of bromine, and olefin polymers containing said compositions, are disclosed.

3,699,078
POLYHYDROXAMIDES AND POLYURETHANES THEREFROM
Anthony J. Castro, Oak Park, Ill., assignor to Akzona Incorporated, Asheville, N.C.
No Drawing. Filed May 18, 1970, Ser. No. 38,561
Int. Cl. C08g *22/08, 22/44*
U.S. Cl. 260—47 CB **4 Claims**

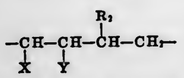
Polyalkanol arylaliphatic amides and polyurethanes obtained by reaction of such amides with polyisocyanates. The polyurethanes may be formulated for use as foams, coatings, elastomers, and adhesives. The polyurethanes produced according to this invention have excellent fire retardant properties and dimensional stability.

3,699,079
CARBON DIOXIDE-DIEPOXIDE COPOLYMERS
Peter Haynes, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Aug. 11, 1970, Ser. No. 63,031
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **10 Claims**

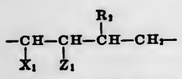
A process for copolymerizing one or more diepoxide compounds with carbon dioxide in the presence of a catalytic amount of a composite catalyst comprising an organo-metallic compound of magnesium, zinc, or cadmium, and one or more compounds from the group of polar organic nitro-, nitroso-, azoxy, amine, thiol and sulfoxide compounds and water is disclosed. The resulting products are useful in films and moldings.

3,699,080
RADIATION SENSITIVE POLYMERS
Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 39,178, May 20, 1970. This application Nov. 27, 1970, Ser. No. 93,445
Int. Cl. C08f *27/06, 27/08*
U.S. Cl. 260—47 CZ **3 Claims**

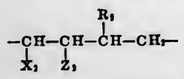
Radiation (thermal and light)-sensitive polymers are provided and are characterized by (1) a recurring unit of the formula:



wherein R_2 is lower-alkoxy or phenyl, one of X and Y is —COOR and the other is —COR_1, R is an azidosulfonylcarbanilyloxy alkylene group and R_1 is —O—dye, —NH—dye or hydroxyarylamino, or (2) a combination in the same polymer chain of recurring units having the formulae:



wherein one of X_1 and Z_1 represents —COOH and the other represents —COOR as defined above, and



wherein one of X_2 and Z_2 represents —COOH and the other represents —COR_1 as defined above. The polymers can be chemically bonded to substrates, such as those containing C—H bonds only (e.g. polyolefins), which are not normally dye receptive. The bonding is effected by exposure to appropriate radiation; the exposure can be carried out imagewise to produce an appropriate image on the substrate. Accordingly, the polymers of the invention find use in the photoresist, printing and like arts.

3,699,081
METHOD FOR STABILIZING ACRYLAMIDE
Akira Iwashita, Tamio Tsunokawa, and Masahiro Yuyama, Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Aug. 25, 1970, Ser. No. 66,864
Claims priority, application Japan, Aug. 30, 1969, 44/68,959
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **10 Claims**

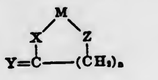
Polymerization of acrylic amides is very effectively inhibited by adding thereto at least one nitrosobenzene derivative having one methyl group at the two ortho positions with regard to the nitroso group. Said nitrosobenzene derivatives are also excellent in that they have a very small coloring activity. Said derivatives exhibit the polymerization-inhibiting effect when they are added during the preparation of acrylic amides or during the storage of the acrylic amides. The amount of said derivatives added normally ranges from 0.00001 to 0.5% by weight based on the weight of acrylic amides, but the preferred amount varies within said range depending upon the environmental conditions of acrylic amides.

3,699,082
METHOD OF PROCESSING PREFORMED POLYESTER RESINS AND CONVERTING TO COATING MATERIALS
Ernest C. Koerner, Robert T. Trice, and William W. Wareham, Fort Wayne, Ind., assignors to Phelps Dodge Magnet Wire Corporation, Fort Wayne, Ind.
No Drawing. Filed July 7, 1969, Ser. No. 839,680
Int. Cl. C08g *22/06, 20/32, 17/14*
U.S. Cl. 260—75 NK **18 Claims**

A method of processing preformed polyester resin material, said method including the steps of reacting said resin material and selectively exchanging a portion of the ester groups of said resin material for other groups, including amide and/or imide groups and/or reacting said resin material to cause either cross-linking and/or transesterification of said material. Specifically, in accordance with the method of this invention, a preformed thermoplastic linear poly (ethylene terephthalate) polyester resin material can be transformed into a thermosettable polyester resin material or polyamide-ester, polyimide-ester or polyamide-imide-ester resin materials, which may be either thermoplastic or thermosettable resin materials.

3,699,083
THIOGLYCOLATE CATALYSIS OF PREPARATION OF POLYESTERS
Yuzi Okuzumi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,510
Int. Cl. C08g *17/013*
U.S. Cl. 260—75 R **2 Claims**

Polymeric linear polyesters are prepared by subjecting at least one bis ester of a dicarboxylic acid to alcoholysis in the presence of an excess of a glycol and a catalytic amount of a compound of the general formula



where X and Y are oxygen or sulfur, Z is sulfur, *n* is 1, 2, 3 or 4, and M is a divalent metal selected from the group consisting of magnesium, calcium, strontium, barium, manganese, zinc and cadmium, with the subsequent removal of glycol.

3,699,084
CHEMICALLY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Application June 23, 1970, Ser. No. 49,207, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 157,039
Int. Cl. C08d *1/00;* **C08f** *1/10;* **C08c** *11/54*
U.S. Cl. 260—858 **14 Claims**

The invention disclosed is for a new chemically curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The chemically curable liquid polymer composition upon curing in the presence of a chemical free radical generating reagent forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,699,085
PREPARATION OF p-BENZAMIDE POLYMERS AND INTERMEDIATES THEREOF
Thomas Albert Johnson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,808
Int. Cl. C08g *20/20, 20/04*
U.S. Cl. 260—78 A **36 Claims**

A process which comprises reacting p-aminobenzoic acid or its hydrochloride with thionyl chloride in the presence of a nitrogen containing base compound at a temperature of from about —10° C. to 95° C. to prepare high molecular weight p-benzamide polymers and one or more intermediates therefor.

3,699,086
PHOTO-CROSSLINKABLE ESTERS OF β-SUBSTITUTED α-CYANACRYLIC ACIDS AND PROCESS FOR THEIR MANUFACTURE
Albrecht Moschel, Kelkheim, Taunus, Walter Luders, Neu-Isenburg, and Hartmut Steppan, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Filed Mar. 19, 1969, Ser. No. 808,640
Claims priority, application Germany, Mar. 20, 1968, P 17 70 003.7
Int. Cl. C08f *27/12*
U.S. Cl. 260—78.4 D **9 Claims**

The present invention relates to esters of β-substituted α-cyanacrylic acids obtained by the conversion of polyhydric alcohols, for example polyvinyl alcohols, with β-substituted α-cyanacrylic acid chlorides, for example benzylidene-α-cyanacetic acid chloride, with the exclusion of short wave-length light, which esters are crosslinkable on exposure to radiation. The esters are used for the manufacture of photocrosslinkable layers, coatings and shaped articles.

3,699,087
HEAT TREATMENT OF AROMATIC SULFIDE POLYMERS
Harold V. Wood and Terry D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Mar. 11, 1971, Ser. No. 123,383
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **14 Claims**

The melt flow of thermoplastic poly(arylene sulfide) resins can be decreased by heating at a temperature below the melting point of the polymer in the presence of certain melt flow modifiers, e.g., sulfur. Aromatic sulfide polymers treated in accordance with the invention retain their thermoplastic nature and can be used in a variety of industrial applications, e.g., as molding compositions.

3,699,088
COPOLYMERS OF POLYCYCLIC DIENES
Antonio Carbonaro, Alberto Greco, Gino Dall'Asta, and Nazzareno Cameli, Milan, Italy, assignors to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed Mar. 31, 1971, Ser. No. 129,972
Claims priority, application Italy, Apr. 9, 1970, 23,085/70
Int. Cl. C08f *15/40, 19/00*
U.S. Cl. 260—79.5 B **7 Claims**

3-ethylidenetricyclo[4.2.1.$0^{2,5}$]-non-7-ene is prepared by isomerizing 3-vinyltricyclo[4.2.1.$0^{2,5}$]-non-7-ene. Copolymers of this monomer are prepared by polymerization with α-olefins with reduced metal catalysts. Elastomers are obtained from ethylene, propylene and 3-ethylidenetricyclo-[4.2.1.$0^{2,5}$]-non-7-ene. These polymers are sulfur-vulcanizable at an excellent rate and the resulting products have good mechanical properties.

3,699,089
ANHYDROUS SPARINGLY CROSS-LINKED HYDROPHILIC COPOLYMERS
Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia
No Drawing. Continuation-in-part of applications Ser. No. 318,627, Oct. 24, 1963, now abandoned, Ser. No. 393,506, Sept. 1, 1964, now abandoned, Ser. No. 423,034, Jan. 4, 1965, now Patent No. 3,408,429, Ser. No. 424,065, Jan. 7, 1965, now Patent No. 3,361,858, Ser. No. 468,908, July 1, 1965 now Patent No. 3,496,-254, Ser. No. 538,978, Mar. 31, 1966, now abandoned, Ser. No. 551,873, May 23, 1966, now Patent No. 3,499,862, and Ser. No. 616,208, Feb. 15, 1967, now Patent No. 3,542,907. This application Sept. 25, 1968, Ser. No. 762,618
Claims priority, application Czechoslovakia, Sept. 7, 1963, 4,971/63
Int. Cl. C08f *15/18*
U.S. Cl. 260—86.1 **13 Claims**

A substantially anhydrous sparingly cross linked hydrophilic polymer capable of being swollen when in contact with water. The polymer consists of at least 98% by weight of a water soluble monoester of acrylic or methacrylic acid, its amides, mixtures and derivatives thereof and not more than 2% by weight of a diester of the monomers. The polymer is three dimensionally cross-linked and in the form of a xerogel or in the form of a gel into which plasticizer may be added.

3,699,090
COPOLYMERS OF N-BUTENE AND 4 METHYL PENTENE-1
Roger M. Nagel, Pennington, N.J., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Dec. 16, 1966, Ser. No. 602,130
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 **2 Claims**

Copolymers of about 85 to 99.5% n-butene and about .5 to 15% 4-methyl pentene-1 and process of preparation using a Ziegler catalyst.

3,699,091
PRODUCTION OF LARGE SURFACE AREA LIGNINS

Mitchell S. Dimitri, Charleston, S.C., and Alfred H. Nissan, Scarsdale, N.Y., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Filed Feb. 18, 1970, Ser. No. 12,433
Int. Cl. C07g *1/00*
U.S. Cl. 260—124 R 4 Claims

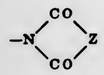
A process for making large surface area lignins which comprises interspersing a barrier material, i.e., an ammonium salt, with lignin particles to reduce coalescence during drying, and spray drying the barrier material-lignin slurry. The barrier material, preferably added in at least a 2 to 1 ratio of barrier material to lignin, is removed during spray drying to produce lignin having a relatively large surface area. Barrier materials having decomposition temperatures above the spray drying temperature require removal subsequent to spray drying.

3,699,092
THIAZOLYL-MONOAZO-TETRAHYDRO-QUINOLINE DYES

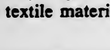
Max A. Weaver and David J. Wallace, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 11, 1967, Ser. No. 608,486
Int. Cl. C09b *29/36*
U.S. Cl. 260—155 8 Claims

Thiazolyl-azo-tetrahydroquinoline compounds, containing a cyclic group of the formula



wherein Z represents —NH—NH— or a chain of carbon atoms and at least one oxygen or sulfur atom or a group having the formula



wherein R^2 represents hydrogen or alkyl, are useful as dyes for hydrophobic textile materials.

3,699,093
PROCESS FOR PRODUCING LARGE SURFACE AREA LIGNINS

Mitchell S. Dimitri, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 806,684, Mar. 12, 1969. This application Apr. 20, 1971, Ser. No. 135,755
Int. Cl. C07g *1/00*
U.S. Cl. 260—124 R 4 Claims

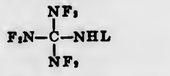
This process is directed to the use of water-immiscible, volatile organic liquids that have a boiling point above 230° F., that are not lignin solvents and form oil-in-water systems to reduce lignin particle contact during drying, thereby reducing coalescence. Such organic liquids contemplated are from the classes of compounds including aromatics, aliphatics and chlorinated hydrocarbons with aliphatic compounds being preferred. This process is useful in making lignins having extremely large surface areas, i.e., above 30 square meters per gram by emulsifying a lignin slurry with a water-immiscible volatile organic liquid having a boiling point above about 230° F., prior to drying.

3,699,094
CERTAIN NITROGEN-FLUORINE COMPOUNDS AND METHODS OF PREPARATION

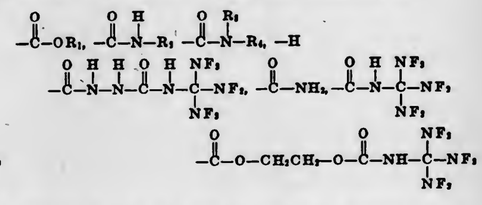
William Charles Firth, Jr., Wilton, and Simon Frank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application May 9, 1963, Ser. No. 280,492. Divided and this application Oct. 22, 1965, Ser. No. 505,308
Int. Cl. C08b *5/04*; C07c *87/22*, *103/10*
U.S. Cl. 260—221 4 Claims

1. A compound having a structural formula

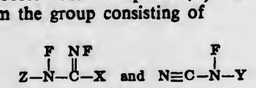


where L is selected from the group consisting of

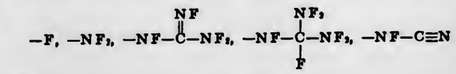


wherein R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of lower alkyl, difluoroamino substituted lower alkyl, and aryl groups.

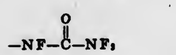
2. The process which comprises (1) reacting a reagent selected from the group consisting of



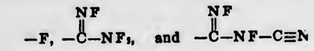
wherein —X is selected from the group consisting of



and



when Z— is F— and wherein —X is —NF—C≡N when Z— is N≡C— and wherein —Y is selected from the group consisting of



with an additive selected from the group consisting of HNCO, HNCS, and $H_2NC{\equiv}N$ to produce an adduct, and (2) reacting said adduct with a compound selected from the group consisting of a lower alkyl alcohol, an alkylene glycol, glycerol, pentaerythritol, phenol, polyvinyl alcohol, nitrocellulose, and difluoraminomethanol.

3,699,095
PROCESS FOR REACTING UNGELATINIZED STARCH WITH A MIXED CARBONIC-CARBOXYLIC ANHYDRIDE OF A POLYCARBOXYLIC ACID

Martin Melvyn Tessler, Edison, and Morton Wolf Rutenberg, North Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,122
Int. Cl. C13l *1/08*
U.S. Cl. 260—233.5 6 Claims

Inhibited, granular starch derivatives crosslinked by labile ester linkages resulting from the reaction of starch with various mixed carbonic-carboxylic anhydrides of polycarboxylic acids are described; said inhibited starch derivatives display utility in food products and other industrial applications.

3,699,096
PROCESS FOR PREPARING PENICILLIN DERIVATIVES

Helmut Wilhelm Otto Weissenburger, deceased, late of Rijswijk, Netherlands, by Ludmilla Weissenburger, nee Lubimowa, administrator, 32 Cromhoutlaan, Rijswijk, Netherlands

No Drawing. Filed Dec. 22, 1969, Ser. No. 1,829
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 13 Claims

This invention is concerned with the preparation of novel sulfonic acid addition salts of aminopenicillins that have bactericidal activity and with processes for their production.

3,699,097
PENICILLIN COMPOUNDS

Bernard J. Ludwig, North Brunswick, and Frank M. Berger and George M. Fukui, Princeton, N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

No Drawing. Filed July 19, 1968, Ser. No. 746,004
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 15 Claims

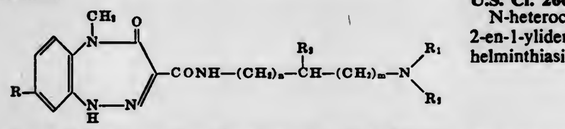
Novel α-hydroxy-β-phenoxyethyl penicillins and salts thereof. The compounds possess valuable antibacterial activity and are particularly useful in cases where hypersensitivity to presently-available penicillins may occur.

3,699,098
CARBOXAMIDES OF BENZOTRIAZEPINES

Silvano Rossi, Milan, Italy, assignor to Roussel-UCLAF, Paris, France

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,319
Claims priority, application France, Dec. 30, 1969, 6945435
Int. Cl. C07d *55/54*
U.S. Cl. 260—239.3 B 14 Claims

Novel carboxamides of 1,2,5-benzotriazepines of the formula



wherein R is selected from the group consisting of hydrogen, halogen, hydroxy, nitro and methoxy, R_1 and R_2 may be different and are alkyl of 1 to 4 carbon atoms and when taken together with the nitrogen atom to which they are attached form a heterocyclic ring which may contain another hetero atom, R_3 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, *m* and *n* have the value of 0, 1, 2, or 3 with the sum of *m* and *n* being not less than 1 and not more than 3 and their non-toxic, pharmaceutically acceptable acid addition salts and quaternary ammonium derivatives which have a vasodilatatory activity and their preparation and therapeutic use.

3,699,099
11-AMINOALKYLIDENEMORPHANTHRIDINES

Alexander E. Drukker, Milwaukee, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,355
Int. Cl. C07d *41/08*, *57/00*
U.S. Cl. 260—239 D 10 Claims

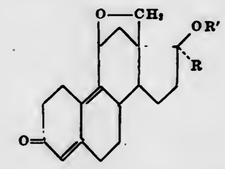
The compounds are 11-aminoalkylidenemorphanthridines which are useful as central nervous system depressants, skeletal muscle relaxants and antitremor agents. Representative of the compounds disclosed are 11-(3 - dimethylaminopropylidene)morphanthridine and 2-chloro-11(3-dimethylaminopropylidene)morphanthridine.

3,699,100
NOVEL 11β,18-EPOXY STEROIDS

Lucien Nedelec, Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,386
Claims priority, application France, Feb. 11, 1970, 7004816
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 7 Claims

Novel 11β,18-epoxy-$\Delta^{4,9}$-estradienes of the formula



I

wherein R is selected from the group consisting of hydrogen and ethynyl and R′ is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of 1 to 18 carbon atoms, lower aliphatic, arylaliphatic and heterocyclic which have anti-androgenic activity, their preparation and intermediates therefrom.

3,699,101
N-(3-HALO - 5,5-DIALKYL-CYCLOHEX-2-EN-1-YLIDENE) MORPHOLINIUM TETRAPHENYL BORATES

Gerhard H. Alt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,329
Int. Cl. C07d *87/30*
U.S. Cl. 260—247 3 Claims

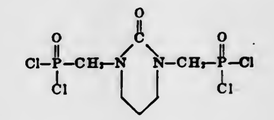
N-heterocyclic substituted (3-halo-5,5-dialkylcyclohex-2-en-1-ylidene) tetraphenyl borates for use in combating helminthiasis in animals, particularly ruminants.

3,699,102
PRODUCTION OF UREIDOMETHYLPHOSPHONYL HALIDES

Harro Petersen, Frankenthal, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,376
Int. Cl. C07d *51/18*
U.S. Cl. 260—251 P 2 Claims

The production of heterocyclic ureidomethylphosphonyl halides such as the compound



by reaction of urea compounds with phosphorus trihalides and the new ureidomethylphosphonyl halides themselves. The new products are flame retardants for surface coating agents and plastics and are valuable starting materials

for many syntheses, particularly for the production of flame retardants, auxiliaries in the surface coating and plastics field, plants protection agents and dyes.

3,699,103

PROCESS FOR THE MANUFACTURE OF 5-DESOXY-L-ARABINOSE AND NOVEL INTERMEDIATES

Joseph Kiss, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,912
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 14 Claims

A multi-step, stereo-specific synthesis of 5-desoxy-L-arabinose from the readily available and inexpensive starting materials D-glucose or D-xylose is disclosed. 5-desoxy-L-arabinose is a known building block for the manufacture of biopterin, a naturally occurring material having uses as a growth factor, an antioxidant, and as a precursor for co-factors of enzymes leading to the production of valuable amino acids such as phenylalanine, tryptophan and L-dopa. L-dopa is a valuable medicament which has recently been licensed in this country for use in the treatment of Parkinson's disease.

3,699,104

8-CHLORO-10-(1-PIPERAZINYL) - 10,11 - DIHYDRODIBENZO[b,f]THIEPIN AS A CENTRAL NERVOUS DEPRESSANT

Walter Schindler, Riehen, near Basel, Erich Schmid, Basel, and Armin Züst, Birsfelden, Basel-Land, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,904
Claims priority, application Switzerland, Feb. 21, 1968, 2,529/68; Jan. 31, 1969, 1,592/69
Int. Cl. C07d *5/70*
U.S. Cl. 260—268 TR 3 Claims

8 - chloro - 10-(1-piperazinyl)-10,11-dihydro-dibenzo-[b,f] thiepin and the pharmaceutically acceptable acid addition salts thereof have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and methods of producing a depressant effect in warm-blooded animals are provided.

3,699,105

4-[1-(ω-BENZOYLALKYL)-3-PYRROLIDINYL]-2H-1,4-BENZOXAZIN-3(4H)-ONES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed July 7, 1969, Ser. No. 839,705
Int. Cl. C07d *87/50*
U.S. Cl. 260—244 R 6 Claims

4 - [1 - (ω - benzoylalkyl) - 3 - pyrrolidinyl] - 2H-1,4-benzoxazin - 3(4H) - ones prepared by condensation of 4 - (3 - pyrrolidinyl) - 2H - 1,4 - benzoxazin - 3(4H)-ones and ω-benzoylalkyl halides. The compounds are tranquilizers.

3,699,106

6,7 BENZO-2-(4-PHENYL-1-PIPERAZINYL) BICYCLO[3.3.1]NONAN-9-ONE

Frederick Edmund Ward, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 26, 1971, Ser. No. 128,587
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 4 Claims

The isomeric axial and equatorial 6,7-benzo-2-(4-phenyl-1-piperazinyl)bicyclo [3.3.1]nonan-9-ones are novel compounds with tranquilizing activity.

3,699,107

1-[2- OR 3-[4-(10,11 - DIHYDRO-DIBENZ[b,f]-THIEPIN - 10-YL)-1-PIPERAZINYL]-ALKYL]-3-ALKYL - 2 - IMIDAZOLIDINONE DERIVATIVES

Walter Schindler, Riehen, near Basel, Erich Schmid, Basel, and Armin Züst, Basel-Land, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,954
Claims priority, application Switzerland, Feb. 21, 1968, 2,529/68; June 27, 1968, 9,626/68; Nov. 19, 1968, 17,229/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 6 Claims

Compounds of the class 1-[2- or 3-[4-(10,11-dihydro-dibenz[b,f] - thiepin-10-yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinone which can be substituted in 8-position of the dibenzo[b,f]thiepine moiety by chloro, methyl, trifluoromethyl, methoxy or methylthio and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and methods of treatment, particularly methods of inducing a depressant effect in warm-blooded animals are provided; an illustrative embodiment is 1-[2-[4-(8-chloro-10,11-dihydrodibenzo[b,f]thiepin-10-yl) - 1 - piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.

3,699,108

SUBSTITUTED POLYHALO-4-NITROPYRIDINES

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application July 3, 1969, Ser. No. 839,066, now Patent No. 3,629,281, dated Dec. 21, 1971. Divided and this application Mar. 18, 1971, Ser. No. 125,873
Int. Cl. C07d *31/14*
U.S. Cl. 260—290 HL 2 Claims

Disclosed as novel compounds are polyhalo-4-nitropyridine derivatives which are substituted in the 6-position by cyano, trifluoromethyl or methylsulfonyl groups. The compounds have utility as pesticides and are variously effective as herbicides and as active constituents of various fungicidal and bacteriocidal compositions.

3,699,109

TROPYL ESTER OF 2-PHENYL-CYCLOHEXEN-3-CARBOXYLATE

Luigi Turbanti, Via B da Padule 10, Pisa, Italy

No Drawing. Filed Oct. 2, 1968, Ser. No. 766,029
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 2 Claims

The invention provides amino esters, salts thereof and quaternary compounds thereof with alkyl halides, which compounds exhibit a high degree of antispastic activity and antiulcer activity. The invention also relates to the production of these compounds.

3,699,110

CERTAIN 1-ARYL OR ARALKYL-3-(PYRIDYL) FORMIMIDOYL-UREAS OR THIOUREAS

William D. Dixon, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 5, 1970, Ser. No. 87,332
Int. Cl. C07d *31/50, 31/40*
U.S. Cl. 260—294.8 E 9 Claims

Pyridylaminidinoureas having insecticidal properties.

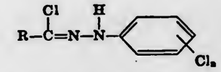
3,699,111

HALOGEN SUBSTITUTED PYRININEALDEHYDE PHENYL HYDRAZONES

Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,166
Int. Cl. C07d *31/40, 31/42*
U.S. Cl. 260—296 R 6 Claims

This invention relates to novel heterocyclic acid chloride phenylhydrazones embraced by the formula



I

wherein R is a radical selected from the group consisting of furyl, thienyl and pyridyl, each of which has from zero through three substituents selected from the group consisting of alkyl, halo and nitro, and *n* is an integer of from zero through three. These compounds are primarily useful as insecticides and miticides and also as herbicides, anti-inflammatories and anthelmintics.

3,699,112

PAPER COATING PIGMENT BINDER OF ALCOHOLIZED VINYL ACETATE-ACRYLAMIDE COPOLYMER

Kozo Konishi, Masaaki Suzui, Michio Otake, and Tatuo Maeda, Nishi Kubiki-gun, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1969, Ser. No. 806,213
Claims priority, application Japan, Mar. 18, 1968, 43/17,281; Mar. 27, 1968, 43/19,442
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA 7 Claims

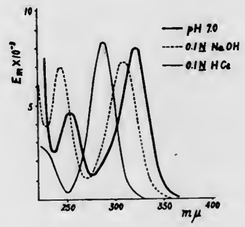
A paper coating composition having an improved fluidity and water resistance can be obtained by using as a pigment binder an alcoholysis product of vinyl acetate-acrylamide copolymer or a copolymer of vinyl acetate, acrylamide and one or more other copolymerizable monomer, or the product added with a water resistance agent without lessening the inherent characteristic of PVA.

3,699,113

PROCESS FOR PREPARING PYRIDOXINE-CYCLIC-PHOSPHATE

Masao Tanaka, Shizuoka-ken, Teruo Kishi, Tokyo-to, and Kazuyuki Mineura, Shizuoka-ken, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of abandoned application Ser. No. 744,962, July 15, 1968. This application Feb. 1, 1971, Ser. No. 111,660
Int. Cl. C07d *31/30*
U.S. Cl. 260—297 V 7 Claims



The present invention relates to preparation of pyridoxine-cyclic-phosphate by direct phosphorylation of pyridoxine or its salts with poly-phosporic acid.

3,699,114

PROCESS FOR PRODUCING SILVER SALT OF BENZOTRIAZOLE

Kinji Ohkubo, Junpei Noguchi, and Takao Masuda, Ashigara-Kamigun, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 629,963, Apr. 11, 1967. This application July 20, 1970, Ser. No. 56,521
Claims priority, application Japan, Apr. 12, 1966, 41/23,054
Int. Cl. C07d *55/04*
U.S. Cl. 260—299 16 Claims

The silver salt of benzotriazole having a particle size of less than 5 microns in length is prepared by a specific combination of solvents used for the reaction of silver nitrate and benzotriazole in solution. Silver nitrate is dissolved in solvent A which is miscible with nitric acid which might be formed by the above reaction. Solvent A may, for example, be water, dimethylformamide or dimethylsulfoxide. Benzotriazole is dissolved in solvent B which is a solvent for benzotriazole, but which does not substantially or completely dissolve the silver salt of benzotriazole. When solvent A is water, solvent B may, for example, be tricresyl phosphate, dimethoxy ethyl phthalate, di-n-butyl phthalate, diethyl sebacate, monooctyl-dibutyl phosphate, tributyl phosphate or castor oil. Where solvent A is dimethyl formamide or dimethyl sulfoxide, solvent B may, for example, be cottonseed oil, linseed oil or tsubaki oil. Solutions of silver nitrate in solvent A and benzotriazole in solvent B are mixed to form the silver salt of benzotriazole. The product is washed with washing liquid C which may, for example, be methanol, ethanol or acetone. To the reaction system there can be added a surfactant to make the size of the obtained particles uniform.

3,699,115

3-ARYL-ISOTHIAZOLE-4,5-DICARBOXYLATES

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,927
Int. Cl. C07d *91/12*
U.S. Cl. 260—302 A 7 Claims

Preparation of 3-aryl-isothiazole - 4,5 - dicarboxylates from 5-aryl-1,3,4-oxathiazol-2-ones and acetylenedicarboxylic acid esters and their use as contact broadleaf herbicides.

3,699,116

2,2'-AZINES OF 2,4-THIAZOLIDINEDIONES

Alex Meisels, Basel, and Emilio Schott, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 587,996, Oct. 20, 1966. This application Oct. 1, 1969, Ser. No. 862,936
Claims priority, application Switzerland, Oct. 29, 1965, 14,985/65; July 17, 1969, 10,911/69
Int. Cl. C07d *91/18*
U.S. Cl. 260—306.7 20 Claims

2,2'-azines of 2,4-thiazolidinediones are useful for the inhibition of the growth of tumors. An illustrative embodiment is the 2,2'-azine of 3,5-dimethyl-2,4-thiazolidinedione and 3-(2-methylallyl)-2,4-thiazolidinedione, 2,4-thiazolidinedione-2-(3-thiosemicarbazones) are useful as intermediates in their production.

3,699,117

2-[(5'-(3'-AND/OR 4'-SUBSTITUTED) ISOXAZOLYL) AMINOETHYL] - 3,4,10 - TRIOXO-1,2,3,4,4,9,9,10-OCTAHYDROANTHRACENES AND RELATED COMPOUNDS

Kenneth Butler, Old Lyme, and Lloyd H. Conover, Quaker Hill, Conn., and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Division of application Ser. No. 608,730, Jan. 12, 1967, now Patent No. 3,502,660, which is a continuation-in-part of application Ser. No. 484,723, Sept. 2, 1965, now abandoned, which is a division of application Ser. No. 209,268, July 11, 1962, now abandoned, which in turn is a continuation-in-part of application Ser. No. 133,011, Aug. 18, 1961. This application July 29, 1969, Ser. No. 845,872

Int. Cl. C07d *85/22*

U.S. Cl. 260—307.5 **7 Claims**

A multi-route process for the synthesis of tetracycline-type antibiotics involving (1) the aldol condensation of a 3,4,10 - trioxo - 1,2,3,4,4a,9,9a,10-octahydroanthracene and a 3- and/or 4-substituted-5-formylisoxazole; (2) dehydration of the aldol condensation products to a 2-[(5'-(3'- and/or 4'-substituted)isoxazolyl)methylidene] - 3,4,10-trioxo - 1,2,3,4,4a,9,9a,10 - octahydroanthracene; followed by (3) Michael addition of an amine to produce 2-[(5'-(3'- and/or 4' - substituted)isoxazolyl)substituted aminomethyl] - 3,4,10 - trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes; (4) chemical or catalytic reduction of the [(isoxazolyl)aminomethyl]-3,4,10-trioxo-octahydroanthracenes to 3-hydroxy-4,10-dioxo- and 4,10-dioxo derivatives, respectively; (5) cleavage of the isoxazole ring of the reduced compounds to the corresponding 4,10-dioxo - 1,2,3,4,4a,9,9a,10 - octahydroanthracene - 2 - [α-(amino)acetonyl-α-nitriles]; (6) followed by cyclization of 12a-deoxytetracycline or tetracycline derivatives; or, alternatively, (7) cyclization of [(isoxazolyl)aminomethyl]-4,10-dioxo-octahydroanthracenes to naphthaceno(3,2-D)isoxazoles with subsequent cleavage of the isoxazole ring to produce 12a-deoxytetracyclines; and (8) 12a-hydroxylation of a tetracycline. The intermediate compounds of the process are limited to the following classes: 2-[(5'-(3'- and/or 4'-substituted)isoxazolyl)methylidene]-3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes; 2-[5'-(3'- and/or 4'-substituted isoxazolyl)aminomethyl]-4,10 - dioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes, the 3-oxo, the 3-hydroxy, the 3-lower alkanoyloxy and the 3,4-cyclic carbonates thereof; 4,10-dioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-[α-(amino)acetonyl - α - nitriles]; and naphthaceno (3-2-D)-isoxazoles all of which are useful as bactericides and/or chelating agents.

3,699,118

REACTION PRODUCTS OF SUBSTITUTED IMIDAZOLINES AND AMINO TRI(LOWER ALKYLIDENEPHOSPHONIC ACIDS)

James E. Donham, Houston, Tex., assignor to Amoco Production Company, Tulsa, Okla.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,031

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **2 Claims**

An amino phosphonic acid is made dispersible in organic solvents to form clear solutions by reacting the acid in water solution with an imidazoline having an alkyl side chain containing at least about eight carbon atoms. The resulting reaction product is highly soluble in a wide variety of organic solvents. It is useful as a scale inhibitor, corrosion inhibitor, paraffin solvent and inhibitor, and acid retarder in oil wells. It has other uses in the oil field and outside the oil field.

3,699,119

PROCESS FOR 5 H-IMIDAZO[2,1-a]ISOINDOLES

Marcel K. Eberle, Madison, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application June 19, 1968, Ser. No. 738,121, now Patent No. 3,597,445, dated Aug. 3, 1971. Divided and this application Feb. 16, 1971, Ser. No. 115,716

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **9 Claims**

Process for preparing 5-hydroxy-5-aryl-2,3-dihydro-5H-imidazo[2,1-a]isoindoles, e.g., 5-(p-chlorophenyl)-5-hydroxy-2,3-dihydro-5H-imidazo[2,1-a]isoindole. An appropriately substituted 3-aryl phthalimidine is treated with triethyloxonium borontetrafluoride to provide an intermediate 3-ethoxy-1H-isoindole which is converted to the final product by treatment with ethyleneimine hydrotetrafluoroborate and contacting the resulting product with air or oxygen. These compounds are useful as psychic energizers and anorectics.

3,699,120

METHOD OF PRODUCING INDOLE

Jan Magnus Bakke and Harald Erik Heikman, Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,881

Claims priority, application Sweden, Oct. 30, 1969, 14,902/69

Int. Cl. C07d *27/56*

U.S. Cl. 260—319.1 **11 Claims**

Indole is produced in high yields in one single stage by contacting gaseous 2-(o-nitrophenyl)-ethanol together with a reducing gas or a mixture of reducing gas and inert gas over a hydrogenation catalyst heated to a temperature of about 200 to 400° C.

3,699,121

ANTIBIOTIC

Kei Arima, Gakuzo Tamura, Hiroshi Imanaka, Masanobu Kousaka, and Akio Fukuda, Tokyo, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd.

Continuation of application Ser. No. 440,747, Mar. 18, 1965. This application June 28, 1967, Ser. No. 649,745

Claims priority, application Japan, Mar. 25, 1964, 39/16,338

Int. Cl. A61k *21/00*

U.S. Cl. 260—326.9 **1 Claim**

3-(2-nitro-3-chlorophenyl) - 4 - chloropyrrole (called pyrrolnitrin) and methods of preparation through cultivation of *Pseudomonas pyrrocinia, Pseudomonas aeruginosa, Pseudomonas mephitica, Pseudomonas ovalis and Pseudomonas shuylkilliensis* followed by separation from the culture broth. The compound is an antibiotic, useful in the treatment of fungal diseases in warm blooded animals.

3,699,122

N-SUBSTITUTED ACYLAMIDOSULFENYL CHLORIDES AND THEIR METHOD OF PREPARATION

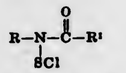
Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 12, 1970, Ser. No. 45,902

Int. Cl. C07d *27/08, 41/06, 29/22*

U.S. Cl. 260—326.5 S **5 Claims**

N-substituted acylamidosulfenyl chlorides of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms or cycloalkyl group of from 3 to 10 carbon atoms, the alkyl or cycloalkyl groups being optionally substituted with halogen atoms and R^1 is hydrogen, alkyl of from 1 to 10 carbon atoms or cycloalkyl of from 1 to 10 carbon atoms, the alkyl or cycloalkyl groups being optionally substituted with halogen atoms; with the proviso that R and R^1 may be joined to form a linear alkylene radical of 3 to 5 carbon atoms which is bound to the carbonyl and nitrogen to form a ring. The compounds are prepared by reacting N-substituted carboxamines with sulfur dichloride. The N-substituted acylamidosulfenyl chlorides are useful intermediates in the preparation of pesticides.

3,699,123

4-(3-AMINO-2-HYDROXY-PROPOXY) INDOLE DERIVATIVES

Fritz Seemann, Basel, and Franz Troxler, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

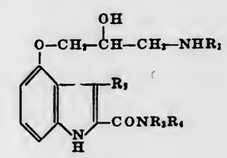
No Drawing. Filed Mar. 16, 1971, Ser. No. 124,956

Claims priority, application Switzerland, Mar. 24, 1970, 4,373/70, 4,377/70; Nov. 18, 1970, 17,036/70

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.14 R **14 Claims**

The present invention concerns novel compounds of the formula:



wherein R_1 is lower alkyl, cycloalkyl of 3 or 4 carbon atoms or phenylalkyl of at least 8 carbon atoms, the phenyl nucleus thereof being separated from the nitrogen atom by at least two alkyl carbon atoms, R_2 is hydrogen or methyl, and each of R_3 and R_4 is hydrogen or lower alkyl, or R_3 is amino, lower alkylamino, cycloalkyl of 3 or 4 carbon atoms or phenyl, and R_4 is hydrogen, or R_3 and R_4, together with the nitrogen atom to which they are bound, are 1-pyrrolidinyl, 1-piperidinyl or 1-morpholinyl, and acid addition salts thereof.

The compounds and their pharmaceutically acceptable acid addition salts have a blocking effect on the adrenergic β-receptors.

3,699,124

2-BENZOYL INDOLE DERIVATIVES

Andre Gagneux, Basel, Switzerland, and Arne Elof Brandstrom, Goteborg, and Stig Ake Ingomar Carlsson, Molnlycke, Sweden, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 22, 1969, Ser. No. 34,202

Claims priority, application Switzerland, July 23, 1968, 11,047/68

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 **6 Claims**

2-benzoyl-2-(2-tertiaryamino - ethoxy)-indole derivatives and their pharmaceutically acceptable acid addition salts, which compounds have analgesic as well as tranquilising, antianaphylactoid and antioedematous activities in mammals; pharmaceutical compositions comprising said compounds, together with a pharmaceutically acceptable diluent or carrier therefor and methods for producing analgesic, tranquilising, antianaphylactic and antioedematous effects in mammals are also provided; an illustrative embodiment is 1-ethyl-2-(p-ethoxybenzoyl)-3 - (2-diethylamino-ethoxy) - 5,6-methylenedioxy-indole.

3,699,125

1,2,3-TRISUBSTITUTED PYRROLIDINE DERIVATIVES

Suminori Umio, Kawanishi-shi, and Shizuo Maeno, Osaka-shi, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

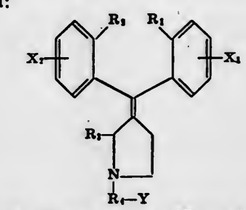
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,328

Claims priority, application Japan, Jan. 9, 1969, 44/1,788, 44/1,790, 44/1,791

Int. Cl. C07d

U.S. Cl. 260—326.81 **6 Claims**

1,2,3-trisubstituted pyrrolidine derivatives of the general formula:



wherein X_1 and X_2 are same or different hydrogen, halogen, lower alkyl or lower alkoxy; Y is hydroxy or halogen; R_1 and R_2 are hydrogen or R_1 and R_2 are bound together intervening ethylene, oxygen or sulfur; R_3 is lower alkyl; and R_4 is lower alkylene and pharmaceutically acceptable salts thereof. These compounds are useful as anti-gastoric secretion inhibiting or anti-tremor agents.

3,699,126

ANTHRAQUINONE DYESTUFFS

Karl-Heinz Peters, Cologne-Buchheim, and Rütger Neeff, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

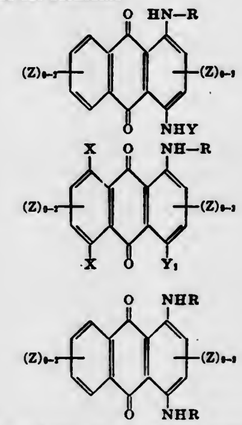
No Drawing. Filed June 25, 1969, Ser. No. 836,634

Claims priority, application Germany, June 26, 1968, P 17 68 745.5, P 17 68 756.8, P 17 68 755.7

Int. Cl. C07c *49/68*; C07d *63/04*

U.S. Cl. 260—329.2 **2 Claims**

Dyestuffs of the formulae



(I)

(II)

and

(III)

wherein Z is a substituent, one X is a member NHR and the other is hydrogen or a substituent Z, Y is an optionally substituted hydrocarbon residue or an acyl group, Y_1 is hydrogen or a substituent, and R is a moiety

CO—B—CO—NH—E

where B is a bond, saturated or unsaturated alkylene with or without hetero atoms and substituents, mono or polynuclear arylene with or without substituents, cycloalkylene with or without substituents or heteroarylene with or without substituents and E is a radical B or an aralkyl group; as well as their preparation and use as pigments the novel dyestuffs are pigment dyestuffs and free of sulfonic acid and carboxylic acid groups.

3,699,127
PLASTICIZED CYANOACRYLATE ADHESIVE COMPOSITIONS

Denis J. O'Sullivan, and Bernard J. Bolger, both of Dublin, Ireland, assignors to Loctite (Ireland), Limited, Dublin, Ireland

Filed Oct. 7, 1970, Ser. No. 78,948
Claims priority, application Ireland, Oct. 10, 1969, 1406/69
Int. Cl. C08g 51/34
U.S. Cl. 260—33.2 13 Claims

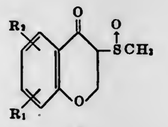
Adhesive compositions containing polymerizable esters of α-cyanoacrylic acid are imparted improved properties by incorporating therein a diaryl or an alkyl aryl ether as a bond plasticizer.

3,699,128
3-METHYLSULFINYL AND 3-METHYLSULFONYL-4-CHROMANONES

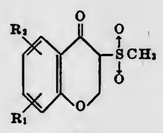
Maximilian Von Strandtmann, Rockaway; Sylvester Klutchko, Hackettstown, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 26, 1971, Ser. No. 147,184
Int. Cl. C07d 7/34
U.S. Cl. 260—345.2 8 Claims

The present invention is concerned with compounds of type I and II.



I



II

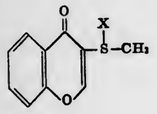
wherein R_1 and R_2 are hydrogen, halogen, hydroxy, alkoxy, alkyl, aryl, aralkyl and R_1 and R_2 taken together with the benzene ring can constitute another aromatic ring. These compounds are useful in providing symptomatic relief of allergic manifestations such as bronchial asthma.

3,699,129
3-(METHYLTHIO) CHROMONE AND S-OXIDE DERIVATIVES

Maximilian Von Strandtmann, Rockaway Township; Sylvester Klutchko, Hackettstown, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

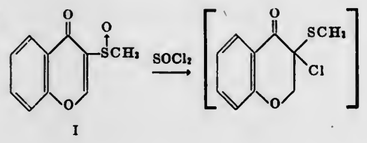
Filed July 15, 1971, Ser. No. 165,757
Int. Cl. C07d 7/34
U.S. Cl. 260—345.2 5 Claims

3-(Methylthio)chromone and S-oxide derivatives having the following structural formula are disclosed:

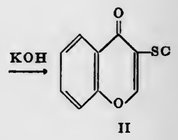


wherein X is O, O_2 or non-existant.

These compounds where X is non-existent are prepared as follows:



I



II

The S-oxides are prepared by oxidation of II or by ring closure of o-hydroxy-omega substituted acetophenone with triethylorthoformate using base catalysts.

The above compounds are useful in treating gastric hyperacidity.

3,699,130
HALO AZIDO NAPHTHALENES

Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 26, 1971, Ser. No. 147,117
Int. Cl. C07c 117/00
U.S. Cl. 260—349 3 Claims

Novel halo azido naphthalenes and dry photoimaging processes and compositions employing said naphthalenes are disclosed.

3,699,131
PROCESS FOR PRODUCING VINYL GLYCIDYL ETHER FROM LOW BOILING ALKYL VINYL ETHERS

Ting I. Wang, Newtown Square, Pa., and Glenn M. Nakaguchi, Fullerton, Calif., assignors to Atlantic Richfield Company, New York, N.Y.

Filed April 8, 1970, Ser. No. 26,793
Int. Cl. C07d 1/18
U.S. Cl. 260—348 R 7 Claims

An improved process for producing vinyl glycidyl ether by means of the transvinylation reaction comprising passing methyl vinyl ether or ethyl vinyl ether through a solution of a mercuric compound catalyst and glycidol in a high boiling solvent at atmospheric or superatmospheric pressure and moderate temperature.

3,699,132
8,9-EPOXYPERILLARTINE SWEETENERS

Edward M. Acton, Menlo Park; Morris A. Leaffer, Palo Alto, and Herbert Stone, Menlo Park, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 2, 1970, Ser. No. 69,165
Int. Cl. C07d 1/00, 1/06
U.S. Cl. 260—348 R 4 Claims

8,9-Epoxyperillartine optical isomers having good sweetness and no or moderately low bitter aftertaste characteristics, along with an increased solubility in water as compared with the corresponding perillartine precursor isomers. These epoxy derivatives are also free of the undesirable gingery-licorice taste of perillartine. The new compounds give no evidence of toxicity and can be employed in foods as synthetic sweetening ingredients.

3,699,133
PROCESS FOR THE PREPARATION OF OLEFINE OXIDES

Giuseppe Messina, Alghero; Giorgio Montorsi, and Giuseppe Caprara, both of Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed June 10, 1971, Ser. No. 151,978
Claims priority, application Italy, June 12, 1970, 25899 A/70
Int. Cl. C07d 1/08
U.S. Cl. 260—348.5 V 9 Claims

In the preparation of olefine oxides in liquid phase reaction between olefines, isobutyric aldehyde and oxygen in the presence of a catalyst, improvement in minimizing formation of isobutyric acid is achieved by using a titanium compound as the catalyst.

3,699,134
PRODUCTION OF ANTHRAQUINONE

Herbert Armbrust; Hans Juergen Sturm, both of Gruenstadt; Heinz Engelbach, Limburgerhof; Hermann Wistuba, Mannheim; Armin Stoessel, Frankenthal, and Richard Krabetz, Kirchheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed June 23, 1970, Ser. No. 49,166
Claims priority, application Germany, July 4, 1969, P 19 34 063.7; Sept. 13, 1969, P 19 46 470.1
Int. Cl. C09b 1/00
U.S. Cl. 260—369 22 Claims

Production of anthraquinone by catalytic oxidation of indans with oxygen. Anthraquinone obtainable by the process is a starting material for the production of dyes and pesticides.

3,699,135
ORGANOSILICON POLYMERIC DYES

John L. Baptista; Frederick J. Rauner, and John A. Ford, Jr., all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,046
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 7 Claims

Polymeric dyes prepared by the copolymerization of a diorganodifunctionalsilane with a derivative of anthraquinone containing two aliphatic hydroxy groups. The polymeric dyes are useful as coloring material in photoresist formulations and for other purposes.

3,699,136
PREPARATION OF CORTISONE COMPOUNDS AND PREDNISONE COMPOUNDS

Joel E. Huber, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 6, 1972, Ser. No. 215,918
Int. Cl. C07c 169/34
U.S. Cl. 260—397.45 4 Claims

Δ^4-3,11,20-Triketo steroids are iodinated in the presence of azobisisobutyronitrile to produce a mixture of unstable iodides, and the latter are treated with acylolysis reagents to produce a substantial fraction of Δ^{14}-3,11,20-triketo-21-acyloxy products.

3,699,137
PRODUCTION OF POTASSIUM TITANYL OXALATE

Erich Termin, Laufenburg, and Otto Bleh, Bergheim, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Postfach, Germany

Filed Dec. 8, 1970, Ser. No. 96,242
Claims priority, application Germany, Dec. 13, 1969, P 19 62 641.6
Int. Cl. C07f 7/28
U.S. Cl. 260—429.5 7 Claims

Process for the production of potassium titanyl oxalate which comprises heating a tetraalkyl titanate with about three times the molar amount of water and twice the molar amount of potassium hydrogen oxalate. If desired, two thirds of the water is added initially and the balance subsequently. A solvent such as an alkanol may be employed. Advantageously the reaction, distillation of volatiles, crystallization and drying are all performed in the same vessel.

3,699,138
PREPARATION OF DISTANNANES

Eugene J. Debreczeni, and Bernard G. Kushlefsky, both of Edison, N.J., assignors to M&T Chemicals, Inc., Greenwich, Conn.

Filed June 18, 1971, Ser. No. 154,702
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 5 Claims

Distannanes of the formula $R_2Sn—SnR_2$, wherein R represents a monovalent hydrocarbon radical, are prepared in high yield and purity by reacting the corresponding triorganotin halide with molten metallic sodium at elevated temperature in the absence of any solvent or diluent other than the reactants.

3,699,139
SYNTHETIC CRYSTALLINE ALUMINOSILICATE

Mae K. Rubin, Bala Cynwyd, Pa., and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation

Filed Oct. 16, 1969, Ser. No. 867,063
Int. Cl. C01b 33/28
U.S. Cl. 260—448 C 4 Claims

A novel synthetic crystalline aluminosilicate zeolite having a rigid three dimensional structure characterized by having benzyltrimethylammonium ions in the structure; method for preparing the crystalline aluminosilicate from a mixture of sodium oxide, potassium oxide, silica, alumina, water and benzyltrimethylammonium compound and organic compound conversion with a catalytically-active form of the new zeolite.

3,699,140
ORGANOSILICON COMPOUNDS

Grish Chandra; William J. Owen; Norman C. Lloyd, and Bryan E. Cooper, all of Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, England

Filed July 30, 1970, Ser. No. 59,701
Claims priority, application Great Britain, July 30, 1969, 38,158/69
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.2 N 2 Claims

Organosilicon compounds, polymers and copolymers have been prepared containing acetylenic linkages between adjacent silicon atoms. The basic compounds are defined by the general formula $R'(R_2Si)_m(C\equiv C)—(C\equiv C)—(SiR_2)_nR''$ where R' and R'' are each H, halogen, hydrocarbonoxy or $—NO_2$ as above defined, monovalent hydrocarbon or monovalent halogenohydrocarbon, *m* is 1 to 4, *n* is 0 to 4, R'' being H, alkyl, aryl or trihydrocarbylsilyl when *n* is 0. The polymers can be defined by the unit formula $(OSiR_2—C\equiv C-C\equiv C—SiR_2—)$ and may be copolymers containing units of the formula $Q_aSiO_{(4-a)/2}$ where Q is monovalent hydrocarbon or halogenohydrocarbon and *a* is 0 to 3. The novel compounds are useful as cross-linkers.

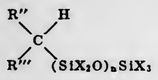
3,699,141
NOVEL PROCESS FOR MAKING HALOSILYL CARBON COMPOUNDS AND NOVEL HALOSILYL CARBON COMPOUNDS PRODUCED THEREBY

Robert A. Benkeser, W. Lafayette, Ind., and William E. Smith, Cambridge, Mass., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed March 10, 1970, Ser. No. 18,330
Int. Cl. C07f 7/04, 7/12
U.S. Cl. 260—448.2 R 36 Claims

Novel process for producing halosilyl carbon compounds by reacting, under anhydrous conditions in the presence of a tertiary amine, a trihalosilane having one silicon-bonded hydrogen atom per molecule with a carbon compound having oxygen bonded only to carbon, such as an aldehyde or ketone, to exchange the oxygen bonds with a carbon to silicon bond and a carbon to hydrogen bond. A normally liquid organic nitrile solvent which does not substantially chemically combine with the reactants or products of the process can be used.

Novel halosilyl carbon compounds having the formula:



wherein R'' is selected from the class consisting of alkaryl groups and haloalkyl groups, R''' is selected from the class consisting of hydrogen and aryl groups, X is halogen and *n* is 0 or 1. The novel compounds can be transformed by known methods into resinous siloxanes useful as, for example, potting compositions.

3,699,142
BIS (HALOSILYL) ORGANIC COMPOUNDS AND PROCESS OF MAKING SAME

Robert A. Benkeser, W. Lafayette, Ind., and William E. Smith, Cambridge, Mass., assignors to Purdue Research Foundation, Lafayette, Ind.

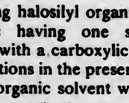
Filed March 10, 1970, Ser. No. 18,331
Int. Cl. C07f 7/04, 7/12
U.S. Cl. 260—448.2 R 39 Claims

Novel process for producing bis(halosilyl) organic compounds by reacting two moles of a trihalosilane having one silicon-bonded hydrogen atom per molecule with one mole of a carbonyl halide in the presence of a tertiary amine. A normally liquid organic nitrile solvent which does not chemically combine with the reactants or products of the process can be used.

Novel bis(halosilyl) organic compounds having the formula,

$$R^\circ CH(SiX_3)_n(SiHX_2)_{2-n}$$

wherein *n* is an integer of 1 to 2, R° is a monovalent hydrocarbon group having at least two carbon atoms, or a monovalent group of the formula,



wherein R' is selected from the class consisting of halogen atoms and R'''O—groups wherein R''' is a monovalent hydrocarbon group, and R'' is a divalent hydrocarbon group; a monovalent group of the formula,



halogen atoms; and a monovalent group of the formula R'''O—; and X is a halogen atom. The novel compounds can be converted by hydrolysis and/or condensation into resinous siloxanes useful as, for example, potting compositions.

3,699,143
NOVEL PROCESS FOR THE MANUFACTURE OF HALOSILYL ORGANIC COMPOUNDS AND NOVEL PRODUCTS MADE THEREBY

Robert A. Benkeser, and James M. Gaul, both of W. Lafayette, Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed March 10, 1970, Ser. No. 18,332
Int. Cl. C07f 7/08, 7/12
U.S. Cl. 260—448.2 R 21 Claims

Novel process for producing halosilyl organic compounds by reacting a trihalosilane having one silicon-bonded hydrogen atom per molecule with a carboxylic organic compound under anhydrous conditions in the presence of a tertiary amine. A normally liquid organic solvent which does not chemically combine with the reactants or products of the process can be used.

Novel products produced by this process are p-bromophenylmethyltrihalosilanes and dialkylphenylmethyltrihalosilanes. The novel compounds are used to make resinous siloxanes useful as, for example, potting compositions.

3,699,144
AROMATIC POLYSULFITES

Colin G. Hull, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 19, 1969, Ser. No. 859,557
Int. Cl. C07c 143/68
U.S. Cl. 260—456 P 4 Claims

The disclosure describes novel compounds, the bis-chlorosulfinate of di-(monohydroxyaryl)alkanes, and a novel method for producing aromatic polysulfites from said bis-chlorosulfinates by heating the bis-chlorosulfinate under reduced pressure whereby the bis-chlorosulfinate undergoes self-polymerization to form an aromatic polysulfite.

3,699,145
FLUORINATED OXYGEN-CONTAINING PRODUCTS AND PROCESS FOR PREPARATION THEREOF

Dario Sianesi; Adolfo Pasetti, and Costante Corti, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 650,257, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 446,292, April 7, 1965, Pat. No. 3,442,942. This application May 1, 1970, Ser. No. 31,852
Claims priority, application Italy, July 6, 1966, 15625 A/66; Dec. 16, 1966, 31193 A/66
Int. Cl. C07c 69/64
U.S. Cl. 260—463 5 Claims

Perfluorinated cyclic ethers and fluorinated linear polyethers. Prepared by photochemical reaction in liquid phase of perfluoropropylene with oxygen in presence of ultraviolet radiation.

3,699,146
SYNTHESIS OF METHYL MALVALATE AND METHYL 5,6-METHANO-5-UNDECENOATE

Walter J. Gensler, Belmont, Mass., assignor to The United States of America as represented by the Secretary of Agriculture

Filed March 31, 1970, Ser. No. 24,338
Int. Cl. C07c 61/18, 121/48, 69/74
U.S. Cl. 260—464 1 Claim

This invention relates to the preparation of methyl malvalate, methyl 5,6-methano-5-undecenoate and the preparation of some new intermediates. Malvalic acid, the major cyclopropene component in cottonseed oil, has been synthesized. When 1-chloro-7-hexadecyne reacts with diazoacetic ester in the presence of copper bronze, the ester of 1-chloro-7,8-carboxymethano-7-hexadecene is formed. Treating the corresponding acid chloride with zinc chloride causes loss of carbon monoxide. Either sodium borohydride or lithium aluminum hydride reduces the resulting cyclopropenium compound to 1-chloro-7,8-methano-7-hexadecene. Replacing the chloro group with cyano yields malvalonitrile, which can be converted to methyl malvalate. An analogous sequence of steps has been applied to 1-chloro-4-decyne to produce methyl 5,6-methano-5-undecenoate. An alternate synthesis of methyl malvalate starts by using 1-chloro-7-hexadecyne as the precursor for methyl 8-heptadecynoate. This acetylenic ester is converted to 8,9-carboxymethano-8-heptadecenoic acid, the diacid chloride of which decarbonylates selectively in the presence of metallic chlorides to form the cyclopropenium-acid chloride. After esterification the resulting cyclopropenium-ester is reduced with borohydride to methyl malvalate.

3,699,147
PROCESS FOR PREPARING NITRILES

Derk Th. A. Hulbers, Berkeley Heights, and John J. Waller, Jersey City, both of N.J., assignors to The Lummus Company, New York, N.Y.

Division of Ser. No. 548,396, May 9, 1966, Pat. No. 3,528,932. This application April 4, 1969, Ser. No. 844,684
Int. Cl. C07c 121/02, 121/32, 121/50
U.S. Cl. 260—465 C 8 Claims

A process for the production of a nitrile having three to 12 carbon atoms per molecule by contacting at a temperature of 400° to 500° C and a contact time of 10 to 0.1 seconds a gaseous mixture of hydrocarbons of three to 12 carbon atoms containing the group

$$H_3C—C_1=C_1—$$

and ammonia with an iron and arsenic containing catalyst having an atomic ratio of iron to arsenic of 1.1:1 to 10:1 prepared by adding an aqueous arsenate salt solution to an aqueous ferric salt solution, adjusting, the pH value of the resulting solution to between 0.5 and 6, evaporating and calcining the product.

3,699,148
PROCESS FOR THE SYNTHESIS OF 2-HYDROXY 4-METHYLTHIO BUTYRONITRILE

Claude Darcas; Raymond Jobert, and Charles Laviron, all of Saint-Avold, France, assignors to UGILOR, Paris, France

Filed Sept. 23, 1969, Ser. No. 860,432
Claims priority, application France, Sept. 24, 1968, 68167263
Int. Cl. C07c 121/34
U.S. Cl. 260—465.6 10 Claims

A process, either continuous or intermittent, for the synthesis of 2-hydroxy 4-methylthio butyronitrile which comprises adding an amount of methyl mercaptan to a mixture of acrolein cyanohydrin and a basic agent, said basic agent being used in an amount such that the pH of a solution obtained by diluting said mixture twenty times with distilled water is maintained between 7 and 8, said methyl mercaptan being 5 to 50 percent in excess of the stoichiometric amount relative to the cyanohydrin. The excess mercaptan is eliminated and can be recycled or reused for the continuous or intermittent process respectively.

3,699,149
PHENYL ESTERS OF T-AMCHA

Yuichi Yamamura, Osaka; Setsuro Fujii, Tokushima-shi; Atsuji Okano; Miyoshi Hirata, both of Tokyo; Yasushi Abiko, Matsudo-shi; Masato Inaoka, Funabashi-shi; Reimei Morol, Chiba-shi; Mashiro Iwamoto; Shoichi Funabashi, both of Tokyo, and Takeo Naito, Ichikawa-shi, all of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1969, Ser. No. 862,512
Claims priority, application Japan, Oct. 14, 1968, 43/74220; Dec. 12, 1968, 43/90564
Int. Cl. C07c 69/74, 69/78
U.S. Cl. 260—468 R 10 Claims

Compounds of the formula



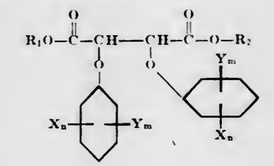
having anti-plasmin activity have been prepared.

3,699,150
ETHERS OF DICARBOXYLIC ACIDS

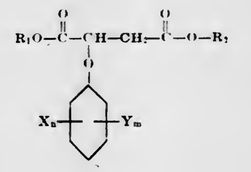
Delta W. Gier, Laurinburg, N.C., and Daniel M. Wasleski, Kansas City, Mo., assignors to Baychem Corporation, New York, N.Y.

Division of Ser. No. 675,350, Oct. 16, 1967, abandoned. This application May 22, 1970, Ser. No. 38,650
Int. Cl. C07c 79/46
U.S. Cl. 260—471 R 11 Claims

Compounds of the formulas



and



where R_1 and R_2 are hydrogen, alkyl, chloroalkyl, phenyl and alkyl phenyl, X is halogen, Y is nitro, *m* is an integer from 1 to 2 and *n* is an integer of 1 to 3 are useful as herbicides and desiccants and to a lesser extent as defoliants. For the best desiccant properties there should be a halogen in the ortho position of the chloronitrophenyl group.

3,699,151

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Bruno Cavalieri, Via Pieriombardo 25, Milan; Elvio Bellasio, Piazza IV Novembre, Albate (Como), both of Italy; Emilio Testa, San Simone Vacallo, Ticino, Switzerland, and Giulio Maffii, Via Gioberti 2, Milan, Italy

Filed Aug. 5, 1968, Ser. No. 750,009

Claims priority, application Great Britain, Aug. 14, 1967, 37,197/67

Int. Cl. C07c *69/76*; C07d *5/44*

U.S. Cl. 260—473 R **2 Claims**

A new class of derivatives of the ethyl ester of fluoroacetic acid is described and some methods for their preparation are reported. The compounds have a pharmacological interest, because of their marked antiinflammatory activity.

3,699,152

SULFUR CONTAINING ESTERS OF SUBSTITUTED HYDROXYPHENYL-ALKANOIC ACIDS

Ingenuin A. Hechenbleikner, Kenwood; John F. Hussar, Loveland; Arthur F. Koeniger, Cincinnati, and Robert E. Bresser, Sharonville, all of Ohio, assignors to Carlisle Chemical Works, Inc., Reading, Ohio

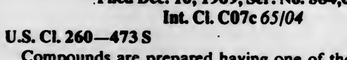
Filed Dec. 10, 1969, Ser. No. 884,016

Int. Cl. C07c *65/04*

U.S. Cl. 260—473 S **14 Claims**

Compounds are prepared having one of the following formulas:

a. $HOR_1CH_2S(CH_2)_nCOOR_4$

(b)


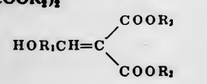
c. $HOR_1C_mH_{2m-1}(S(CH_2)_nCOOR_3)_2$

d. $(HOR_1CH_2)_2C(COOR_2)_2$

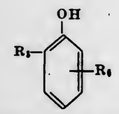
e. $HOR_1CH_2O(CH_2)_nCOOR_2$

f. $HOR_1CH_2OCH_2CH_2OOCCH_2CH_2S(CH_2)_nCOOR_3$

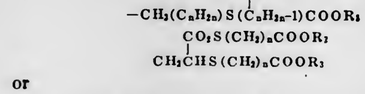
g. $HOR_1CH_2CH(COOR_2)_2$

(h)


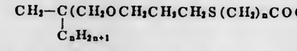
where HOR_1 is



where R_5 and R_6 are hydrogen, alkyl, cycloalkyl, aryl or aralkyl, the total carbon atoms in R_5 and R_6 is between four and 36 carbon atoms, is preferably not over 12 carbon atoms and R_6 is preferably in the ortho position, R_2 is



or



R_3 is hydrocarbyl, preferably alkyl or alkenyl, e.g., of one to 18 carbon atoms, *n* is 1 or 2, R_{14} is H or $COOR_2$, *m* is 1, 2, 3 or 4, *y* is 0 or 1, and R_4 is either R_2 or R_3 and R_{13} is hydrogen or lower alkyl. The above compounds are useful as antioxidants.

3,699,153

PREPARATION OF HYDROXYL TERMINATED POLYMERS

Alan R. Siebert, Maple Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 731,269, May 22, 1968, Pat. No. 3,551,472. This application July 2, 1970, Ser. No. 52,075

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **4 Claims**

Hydroxyl terminated polymers, useful as adhesives and caulking materials, are prepared by the reaction of carboxyl terminated polymers with a diol in the presence of an acid catalyst.

3,699,154

REACTION PRODUCTS OF WAX-ANHYDRIDE COMPOUNDS AND ALCOHOL

William J. Heintzelman, and Michael I. Naiman, both of St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 607,877, Jan. 9, 1967, Pat. No. 3,590,076, which is a continuation-in-part of Ser. No. 527,075, Feb. 14, 1966, abandoned. This application Jan. 18, 1971, Ser. No. 107,594

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 J **2 Claims**

Wax-anhydride compounds and derivatives thereof, including amides, esters, etc.; processes by which they are prepared; and uses thereof, including their use as carbon paper inks, polishes, etc.

3,699,155

SYNTHESIS OF ALLYL ESTERS WITH PALLADIUM AND PLATINUM HALIDE CATALYSTS

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 11, 1969, Ser. No. 849,183

Int. Cl. C07c *67/00*

U.S. Cl. 260—491 **9 Claims**

Preparation of allyl esters of carboxylic acids in improved yields by use of palladium and platinum halides as catalysts in the reaction between allyl halides and salts of carboxylic acids.

3,699,156

FLUORINATED CYCLIC ALCOHOL AND THEIR ESTERS

Dewey G. Holland, Allentown; Ronald C. Moyer, Sellersville; John H. Polevy, Allentown, and Robert A. Walde, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 608,510, Jan. 11, 1967, Pat. No. 3,600,433. This application Jan. 24, 1968, Ser. No. 700,029

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 H **8 Claims**

Perfluoro-cyclohexane carbonyl fluoride and perfluoro (alkyl cyclohexane) carbonyl fluorides, obtained by electrolytic fluorination, are converted to esters and reduced to the corresponding α, αdihydrocarbinol compounds. The fluorinated carbinol compounds are useful as textile treating agents, or these compounds as intermediates can be converted to polymerizable materials suitable for imparting oil and water repellency to textile fabrics and other surfaces. Examples describe the reaction of such polyfluorinated cyclic carbinols with acrylyl and methacrylyl halides to obtain these polymerizable monomers, and the formation of homopolymers, copolymers and segmented copolymers therefrom.

3,699,157

COLOR REDUCTION OF OLEFIN SULFONATES

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed April 6, 1970, Ser. No. 26,172

Int. Cl. C07c *143/16*

U.S. Cl. 260—513 R **5 Claims**

Olefin sulfonates of improved color are obtained by contacting the olefin, prior to sulfonation, with molecular oxygen at an elevated temperature.

3,699,158

SELECTIVE DEUTERATION OF TYROSINE, ASPARTIC AND GLUTAMIC ACIDS

Irving Putter, Martinsville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 25, 1969, Ser. No. 852,926

Int. Cl. C07c *101/04*

U.S. Cl. 260—519 **25 Claims**

A method for the preparation of deuterated L-tyrosine, L-aspartic acid and L-glutamic acid which comprises treating protonated L-tyrosine, L-aspartic acid or L-glutamic acid or a suitable partially deuterated analog thereof with either a deuterated inorganic acid or an alkali metal deuteroxide or alkaline earth metal deuteroxide. The products thus obtained are useful as intermediates in the preparation and study of labelled peptides, polypeptides and proteins and as a growth medium for biological investigations.

3,699,159

1,3,5-TRIHYDROXY-2,4,6-BENZENE TRICARBOXYLIC ACID AND WATER SOLUBLE SALTS THEREOF

Daniel S. Connor, and Harry Karl Krummel, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 28, 1970, Ser. No. 102,049

Int. Cl. C07c *65/04*

U.S. Cl. 260—521 R **4 Claims**

Novel compounds are provided which are 1,3,5-trihydroxy-2,4,6-benzene tricarboxylic acid and salts thereof. These compounds are useful sequestering agents.

3,699,160

PURIFICATION OF PHENYLINDANE CARBOXYLIC ACIDS BY PERMANGANATE TREATMENT OF THE SODIUM SALTS

Alfred Steltz, Jr., Flossmoor, Ill., assignor to The Standard Oil Company, Chicago, Ill.

Filed March 27, 1968, Ser. No. 716,335

Int. Cl. C07c *51/42*

U.S. Cl. 260—525 **5 Claims**

Phenylindane carboxylic acids are purified by low concentration permanganate treatment at pH upward from 10 and carbon treatment to remove at least manganous ions. The process is particularly useful for the purification of phenylindane dicarboxylic acids that are to be converted to the beta hydroxy alkyl esters from which corresponding film and fiber forming polyesters are made.

3,699,161

PROCESS FOR THE PRODUCTION OF THIOPHOSGENE

Helmut Magerlein, Erlenbach; Gerhard Meyer, Oberaburg, and Hans-Dieter Rupp, Erlenbach, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed April 15, 1971, Ser. No. 134,495

Claims priority, application Germany, April 17, 1970, P 20 18 381.7

Int. Cl. C07c *51/58*

U.S. Cl. 260—543 R **10 Claims**

Process of producing thiophosgene by reduction of trichloromethanesulfenyl chloride with hydrogen sulfide on silica gel at 120°–180°C., preferably 130°–160° C.

3,699,162

REACTION OF PHOSGENE AND CYANOGEN CHLORIDE

Hermann Hagemann, Cologne, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 731,284, May 22, 1968, Pat. No. 3,600,439. This application Dec. 15, 1969, Ser. No. 884,895

Claims priority, application Germany, Jan. 7, 1969, P 19 00 542.6The portion of the term of this patent subsequent to Aug. 17, 1988, has been disclaimed.

Int. Cl. C07c *51/58*

U.S. Cl. 260—544 C **3 Claims**

Phosgene and cyanogen chloride are reacted under pressure in the liquid phase over an activated charcoal catalyst at 100° to 250° C to produce a mixture of chlorocarbonylisocyanide and carbonyl-bis-(N-isocyanide dichloride).

3,699,163

N-SUBSTITUTED CARBAMOYL CHLORIDES AND METHOD OF PREPARATION

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 12, 1970, Ser. No. 45,901

Int. Cl. C07c *51/58*, *53/30*

U.S. Cl. 260—544 C **8 Claims**

N-alkyl-N-chlorothiocarbamoyl chlorides and their method of preparation by reacting alkyl isocyanates with sulfur dichloride. The carbamoyl chlorides are useful intermediates in the preparation of pesticides.

3,699,164

CATALYTIC HYDRATION OF NITRILES

Leonard Wolfe Fine; Ken Matsuda, both of Stamford, and James Mitchell Photis, Ridgefield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed March 13, 1970, Ser. No. 19,468

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **6 Claims**

A catalytic process for hydration of a nitrile, e.g. acrylonitrile, with water in presence of a manganese dioxide catalyst is operated to obtain improved conversion and longer catalyst life by carrying out the reaction in dilute aqueous solution of a strong acid, e.g. in aqueous solution of HNO_3 or HCl at pH below 3.0. The product is the amide, e.g. acrylamide.

3,699,165

N,N-BIS[2-HYDROXYALKYL]-2-HYDROXYETHOXYACETAMIDE AND PROCESS FOR MAKING THE SAME

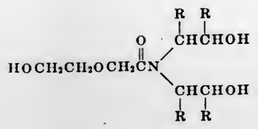
Kenneth H. Albers, and Thomas C. Snapp, Jr., both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1970, Ser. No. 41,576

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 B **12 Claims**

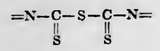
This invention relates to novel trioletheramides, i.e. N,N-bis[2-hydroxyalkyl]-2-hydroxyethoxyacetamide, having the formula



wherein each R is a member selected from the group consisting of hydrogen, methyl, and ethyl, and to a method of preparing said triolетheramides from 2-p-dioxanone and a non-heterocyclic secondary amine, preferably at a temperature of less than 60° C.

3,699,166
PROCESS FOR FORMING CARBAMYL THIOCARBAMYL DISULFIDES
Alan R. Parkinson, Harwood, near Bolton, England, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed April 22, 1970, Ser. No. 30,953
Int. Cl. C07c *153/05*
U.S. Cl. 260—567 **9 Claims**

The process for forming carbamyl thiocarbamyl disulfides and related compounds by passing a molecular oxygen oxidizing agent through a liquid reaction medium such as water, containing a thiuram monosulfide including the following structural formula



and catalytic amounts of nitrous acid. These compounds may be utilized as vulcanization accelerators.

3,699,167
1-ALKYL-4-BIS(HALOALKYL)AMINO-3,5-DINITROBENZENE
Donald W. Kaiser, New Haven, Conn., assignor to The Ansal Company, Marinette, Wis.
Filed Nov. 17, 1969, Ser. No. 877,507
Int. Cl. C07c *87/60*
U.S. Cl. 260—577 **4 Claims**

Novel 1-alkyl-4-bis(halogenoalkylene)amino-3,5-dinitrobenzene and 1-alkyl-4-bis(hydroxyalkylene)amino-3,5-dinitrobenzene derivatives are disclosed as well as the use of the halogenated compounds as pre-emergent herbicides for the elimination of broadleaf weeds and grasses. The hydroxyalkylene compounds serve as useful intermediates in the preparation of the corresponding halogenated derivatives which are active pre-emergent herbicides.

3,699,168
PREPARATION OF CERTAIN DIFLUOROAMINO COMPOUNDS
William H. Gilligan, and William E. McQuistion, both of Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 26, 1967, Ser. No. 679,289
Int. Cl. C07c *87/22, 83/00*
U.S. Cl. 260—583 NH **9 Claims**

A method for providing tris(difluoroamino)alkanes which comprises reacting difluoroamine with an unsaturated carbonyl containing compound in the presence of a catalytic amount of toluene sulfonic acid and reacting the product so formed with additional amounts of difluoroamine in the presence of a catalytic amount of concentrated sulfuric acid.

3,699,169
PROCESS FOR PREPARATION OF TERPENE FLAVORANTS
Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Delawanna, N.J.
Filed Sept. 5, 1968, Ser. No. 757,772
Claims priority, application Switzerland, Sept. 15, 1967, 13041/67
Int. Cl. C07c *45/04*
U.S. Cl. 260—604 R **2 Claims**

A process for preparing sinensal by the ozonization of beta farnesene and reduction of the ozonolysis product to obtain sinensal, which is suitable as a flavor-inparting agent of orange aroma.

3,699,170
DIMETHYL SULFOXIDE-SULFUR TRIOXIDE COMPLEX
Roy L. Whistler, Wabash Township, Tippecanoe County, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.
Division of Ser. No. 635,663, May 3, 1967, Pat. No. 3,507,855, which is a continuation-in-part of Ser. No. 575,982, Aug. 30, 1966, abandoned. This application July 22, 1969, Ser. No. 871,087
Int. Cl. C07c *142/02*
U.S. Cl. 260—607 D **1 Claim**

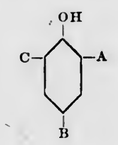
A sulfur trioxide-dimethyl sulfoxide complex containing from 1 to about 3 moles of dimethyl sulfoxide for each mole of sulfur trioxide.

3,699,171
PROCESS FOR THE OXIDATION OF ARYL ALKYL SULFOXIDES TO ARYL ALKYL SULFONES
John L. Sanderson, Medford, Oreg., and Edward W. Swift, Denver, Colo., assignors to Shell Oil Company, New York, N.Y.
Filed Aug. 28, 1970, Ser. No. 68,040
Int. Cl. C07c *147/06*
U.S. Cl. 260—607 A **14 Claims**

An aryl alkyl sulfone is produced by reacting a corresponding aryl alkyl sulfoxide with a nitrogen oxide in the presence of sulfuric acid and molecular oxygen.

3,699,172
HYDROXYMETHYL, METHYLTHIO PHENOLS
Merle E. Cisney, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Nov. 28, 1969, Ser. No. 880,908
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **2 Claims**

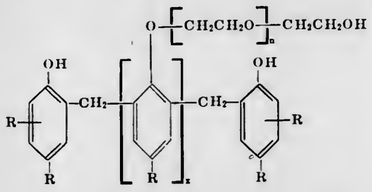
A substituted phenol having anti-oxidant properties. The phenol is substituted according to the formula



wherein A is a hydroxyalkyl having from one to about three carbon atoms, B is alkylthio having from one to about 12 carbon atoms and C is hydrogen or alkyl up to 12 carbon atoms.

3,699,173
EMULSIFIABLE POLYMERIC HINDERED PHENOLS AND THEIR USE AS STABILIZERS
Edward V. Osberg, Andover, and Walter Beck, Bedford, both of Mass., assignors to Stepan Chemical Company, Wilmington, Mass.
Filed March 22, 1971, Ser. No. 126,917
Int. Cl. C07c *43/26*
U.S. Cl. 260—613 B **8 Claims**

Water-emulsifiable hindered polymeric phenols particularly used as stabilizers in polymeric latex compositions are prepared by condensing a hindered phenol with a water-soluble or water-emulsifiable phenolic compound. Typical polymeric hindered phenols are ethoxylated polymeric alkyl-hindered phenols having the structure:



wherein R represents an ortho C_4-C_{12} alkyl group, n is a number from 10 to 80 and x is 1, 2 or 3. Such ethoxylated polymeric hindered phenols are prepared by polymerizing a dialkyl hindered phenol with ethoxylated alkyl phenol employing formaldehyde in an acid medium.

3,699,174
PROCESS FOR PREPARING DIALKOXYALKANES
Takashi Koyano, Iruma-gun, and Saburo Fukushi, Tokyo, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 691,151, Dec. 18, 1967, abandoned. This application July 28, 1969, Ser. No. 845,542
Claims priority, application Japan, Feb. 8, 1967, 42/8098
Int. Cl. C07c *43/00*
U.S. Cl. 260—615 R **5 Claims**

A process for producing dialkoxyalkanes by reacting a dihaloalkane with an aliphatic alcohol in the presence of at least one metal or metallic compound selected from the group consisting of metals and metallic compounds of Groups I–V and transition metals of Groups VI–VIII of the Periodic Table.

3,699,175
HYDROXYLATION OF AROMATICS
James Coyle, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,846
Int. Cl. C07c *37/00*
U.S. Cl. 260—621 G **2 Claims**

Aromatic hydroxyl compounds are produced by the direct transfer of oxygen from a metal ion-enediol-oxygen complex to aromatic hydrocarbons in the presence of metal ion chelating agents in a solvent under controlled conditions of hydrogen ion concentration.

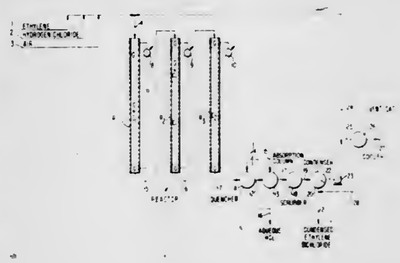
3,699,176
PROCESS FOR RECRYSTALLIZING HEXANITROSTILBENE
Leroy J. Syrop, Sepulveda, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.
Filed Oct. 2, 1970, Ser. No. 77,653
Int. Cl. C07c *79/10*
U.S. Cl. 260—645 **6 Claims**

An improved apparatus and process is provided for processing the explosive known as Hexanitrostilbene (HNS) from a form known as HNS-I into a form known as HNS-II, to provide a refined product with a unique crystal form so as to facilitate handling of the material. The process of the invention involves an improved extraction technique involving the use of a solution of acetonitrile in which HNS-I is soluble and xylene in which HNS is insoluble for refining the HNS-I into an improved type of HNS-II.

3,699,177
PREPARATION OF HALOGENATED AROMATIC COMPOUNDS
Lewis William Watts, and Philip H. Moss, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed Nov. 3, 1969, Ser. No. 873,643
Int. Cl. C07c *25/00, 25/18*
U.S. Cl. 260—649 D **1 Claim**

A process for preparing halogenated aromatic compounds by a direct vapor phase reaction of a halogen and an aromatic compound in an open tube in the absence of catalyst. Halogenated aromatic compounds are useful as electrical insulators, additives in lubricants, as fire resistant heat transfer and hydraulic fluids, and constituents in elastomers, adhesives, paints, and waxes.

3,699,178
OXYCHLORINATION PROCESS
Yoshitaka Suzuki; Atsushi Takenoue, and Hideo Kojima, all of Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Feb. 12, 1968, Ser. No. 704,662
Claims priority, application Japan, June 23, 1967, 42/39936
Int. Cl. C07c *17/02, 17/04*
U.S. Cl. 260—659 A **7 Claims**

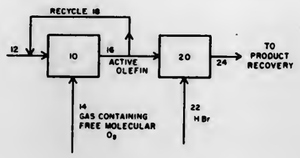


In a process for the oxychlorination of a hydrocarbon, such as ethylene using Deacon catalyst containing copper chloride in a fixed catalyst bed system, the temperature distribution can be uniformly maintained throughout the catalyst bed and the selectivity of the reaction can be increased by arranging the catalyst bearing carrier particles in such a manner that the size of the particles in the reactor at the inlet side of feed gases is larger than that of the particles at the outlet side of product gases.

3,699,179
HYDROBROMINATION OF ALPHA-OLEFINS
John P. Boyle, Moon Township, Allegheny County; Clarence R. Murphy, Allison Park, and William L. Walsh, Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sept. 9, 1969, Ser. No. 856,260
Int. Cl. C07c *17/08*
U.S. Cl. 260—663 **9 Claims**

A method is provided for reducing the air-blowing time required to activate a substantially pure alpha-olefin for reac-

tion with anhydrous hydrogen bromide to produce a primary alkyl bromide. The method involves admixing at least four



weight percent of a previously activated alpha-olefin with the substantially pure alpha-olefin prior to air-blowing.

3,699,180

ISOMERIZATION OF DIHYDRONAPHTHALENES

David R. Waywell, Lisle, Ill., and Charles T. West, Manhattan, Kans., assignors to Standard Oil Company, Chicago, Ill.

Filed May 26, 1971, Ser. No. 147,269
Int. Cl. C07c 15/24
U.S. Cl. 260—668 F 6 Claims

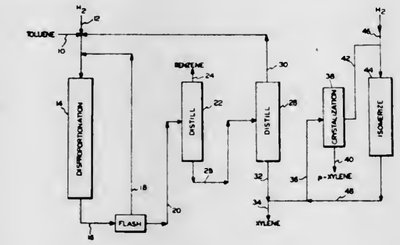
An improved method for conversion of 1,4-dihydronaphthalene to the corresponding 1,2-dihydro isomer employs as catalyst an alkali metal hydroxide in a polar solvent, preferably isopropyl alcohol. At moderate temperatures, ranging from 60° to 100° C., the 1,2-dihydro isomer is obtained directly in sufficient purity for use in the synthesis of polymers and plastic materials.

3,699,181

ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIB METALS ON MORDENITE

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil, Inc.

Filed Dec. 19, 1968, Ser. No. 785,177
Int. Cl. C07c 3/62, 11/04; C10g 23/00, 31/14
U.S. Cl. 260—672 T 11 Claims



A process for the alkyl transfer of alkyl aromatics including contacting an alkyl aromatic feed material, such as toluene, with a catalyst comprising a Group VIB metal, such as chromium, molybdenum and tungsten deposited on a synthetic mordenite base at a temperature of about 700° to 1,100° F, a pressure of about 0 to 2,000 psig, and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV, and the Rare Earth metals of the Periodic System may be added to the catalyst. Deactivated catalyst may be periodically rejuvenated by discontinuing the introduction of aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in an inert atmosphere such as air. Where toluene is the feed, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluene may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of the isomerization may be recycled to the crystallization zone.

3,699,182

SELECTIVE SEPARATION BY A CHROMATOGRAPHIC PROCESS

John Cattanach, Glassboro, N.J., assignor to Mobil Oil Corporation

Filed Dec. 5, 1969, Ser. No. 882,692
Int. Cl. C07c 7/12
U.S. Cl. 260—674 SA 11 Claims

A class of novel crystalline aluminosilicates generally identified as ZSM-5 type and having unique molecular sieving properties are utilized as selective sorbents in a chromatographic process. The effective portals in these zeolites are apparently elliptically shaped with effective major and minor axis of about 7.0 ± 0.7A and 5.0 ± 0.5A, respectively. This unique shape is utilized to provide "keyhole" molecular sieving action which is particularly useful for separating specific members of closely-related chemical compounds. A preferred embodiment is the selective separation of disubstituted hydrocarbons such as dialkyl aromatics. The process of this invention is particularly useful for separating C_8 aromatic mixtures. A particularly preferred embodiment is the separation of p-xylene from a mixture of the same with o-xylene and/or m-xylene and/or ethylbenzene.

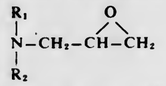
3,699,183

HIGH MOLECULAR WEIGHT POLYAMIDES WITH AN IMPROVED AFFINITY FOR ACID DYES MODIFIED WITH AMINO EPOXY COMPOUND

Karl-Heinz Hermann, Krefeld-Bockum; Schneider, Joachim, Krefeld-Uerdingen; Hans Rudolph, Krefeld-Bockum, and Gunter Nawrath, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 23, 1970, Ser. No. 5,367
Claims priority, application Germany, Feb. 1, 1969, P 19 05 102.6
Int. Cl. C08g 20/38
U.S. Cl. 260—78 L 1 Claim

Modified high-molecular weight polyamides having chemically incorporated therein 0.01 to 10 percent by weight of a basic monoepoxy compound of the general formula:



wherein R_1 and R_2, which may be different or not, each represents a C_1–C_{20} aliphatic radical selected from the group consisting of an unsubstituted radical and a substituted radical containing functional groups inert to polyamides, a cycloalkyl radical, a benzyl radical, or R_1 and R_2, together with the nitrogen atom to which they are attached, form a heterocyclic ring; are provided which polyamides show an improved affinity for acid dyes.

3,699,184

BLEND OF BLOCK COPOLYMER, ONE OF WHICH IS EPOXIDIZED

Glenn L. Taylor, Houston, Tex.; John W. Cotton, Palos Verdes Peninsula, and De Loss E. Winkler, Orinda, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 759,521, Sept. 12, 1968, Pat. No. 3,607,977. This application June 16, 1071, Ser. No. 153,835
Int. Cl. C08g 45/04; C08f 15/00, 19/00
U.S. Cl. 260—836 5 Claims

Block copolymer compositions are provided comprising hydrocarbon block polymer containing at least two monoalkenyl arene blocks and at least one conjugated diene block or hydrogenated derivatives of said polymers, combined with a second block copolymer comprising at least one monoalkenyl polymer block and at least one epoxidized conjugated diene polymer block and hydrogenated derivatives thereof. These compositions are especially useful for such purposes as adhesion to polar surfaces, improvement in weatherability and high tensile strength.

3,699,185

RUBBER-MODIFIED ACRYLIC COPOLYMER THERMOSET

Ray A. Dickie, Pleasant, and Santokh S. Labana, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,468
Int. Cl. C08g 45/04
U.S. Cl. 260—836 13 Claims

Novel thermoset materials of improved impact, strength and fatigue properties are prepared from an alpha-beta olefinically unsaturated copolymer of vinyl monomers and a crosslinking amount of particulate graded-rubber having alpha-beta olefinicunsaturation surface functionality. The graded-rubber particles have a rubbery core and a glass-like polymeric shell.

3,699,186

POLYOLEFINS MODIFIED WITH UNSATURATED GLYCIDYL COMPOUNDS AND POLYACRYLATE COMPOUNDS

Albert Schrage, East Orange, and Philip D. Readio, Sparta, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

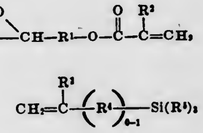
Filed March 30, 1971, Ser. No. 129,629
Int. Cl. C08g 45/04
U.S. Cl. 260—836 8 Claims

In modified polyolefin compositions prepared by reacting an olefin polymer with a polymerizable compound generally defined by

(I)

or

(II)



in the presence of an organic peroxide the melt flow may be controlled by including in the reactants a modifier comprising acrylic or methacrylic esters of diols or triols. The reaction product is particularly suitable for being reinforced with filamentary material such as glass fibers or asbestos or as a coating on metallic surfaces.

3,699,187

HOT MELT ADHESIVES COMPRISING TO ALIPHATIC DICARBOXYLIC ACID MODIFIED PHTHALIC ACID POLYESTER MIXTURES

Arno Gardziella, Witten-Rudinghausen, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 8, 1970, Ser. No. 96,236
Claims priority, application Germany, Dec. 13, 1969, P 19 62 642.7
Int. Cl. C08g 39/10
U.S. Cl. 260—860 4 Claims

A polyester-containing hot-melt adhesive for the bonding of materials, based on a phthalic acid, an aliphatic C_6 to C_{15} dicarboxylic acid, and a glycol with from two to 10 carbon atoms in the radical between the two OH groups, comprising

a. about 20 to 95 wt. percent of a polyester wherein about 5 to 20 mole percent of the dicarboxylic acid component comprises an aliphatic dicarboxylic acid, the polyester having a melting point of over about 150° C, and
b. about 5 to 80 wt. percent of a polyester wherein about 25 to 35 mole percent of the dicarboxylic acid component comprises an aliphatic dicarboxylic acid, the polyester having a melting point between about 50 and 150° C.

3,699,188

FIRE RESISTANT POLYMERS

Yutaka Kodama; Tsutomu Kodama, both of Toyama; Masao Nakabayashi, Namerikawa, and Shigekazu Komatu, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Filed March 31, 1970, Ser. No. 24,345
Claims priority, application Japan, May 19, 1969, 44/38023
Int. Cl. C09k 3/28
U.S. Cl. 260—865 3 Claims

Novel organic phosphorosilicon compounds are silicate of α-hydroxyphosphonate prepared by reacting a phosphorous acid triester, a carbonyl compound and a silicon compound containing at least one active chlorine atom and are effective as flame-retarding agent for inflammable high polymers, particularly synthetic resins, synthetic rubbers and paints.

3,699,189

POLYESTER-VINYL CHLORIDE COPOLYMER ADHESIVE

Raymond E. Downey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 10, 1969, Ser. No. 875,577
Int. Cl. B32b 27/08, 27/10; C08g 39/10
U.S. Cl. 260—873 2 Claims

A laminating adhesive is claimed containing a copolyester of 10 to 30 parts sebacic acid, 40 to 70 parts of terephthalic acid, 20 to 40 parts of neopentyl glycol and 40 to 70 parts of ethylene glycol in admixture with 50 to 150 parts of vinyl chloride/vinyl acetate copolymer, about 5 to 40 parts of a plasticizer together with a mixed aromatic-ketone solvent.

3,699,190

METHOD FOR PREPARING BLOCK COPOLYMER

Takatoshi Shimomura, Toyonaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 2, 1970, Ser. No. 86,353
Claims priority, application Japan, Nov. 20, 1969, 44/93439
Int. Cl. C08f 15/02, 19/04, 45/68
U.S. Cl. 260—877 16 Claims

A block copolymer composed of a polymer block of an anionically polymerizable conjugated vinyl compound and a polymer block of a coordination-anionically polymerizable monomer is produced by polymerizing a conjugated vinyl compound giving a stable carbanion, such as for example, a monovinyl aromatic compound, a vinylpyridine, a methacrylic acid ester, a vinylketone, or a conjugated diene, in a solvent using as a catalyst an alkali metal, an organo-lithium compound or an aromatic hydrocarbon-alkali metal complex, thereby obtaining a living polymer, treating the said living polymer with a metal halide or an organometallic halide represented by the general formula, $MR_{p-n}X_n$ (wherein M is a metal of Group II or III of Mendeleev's Periodic Table, R is a hydrocarbon residue having one to 20 carbon atoms, X is a halogen atom, p is the valency of M, and n is an arbitary number of higher than 0 but lower than 3 to synthesize a polymer containing on its chain end(s) a linkage of carbon to a metal of Group II or III of Mendeleev's Periodic Table, and then contacting a coordination-anionically polymerizable monomer with a catalyst consisting of the above-mentioned polymer and a compound of a transition metal of Group IV, V or VI of Mendeleev's Periodic Table.

Block copolymers obtained according to the above-mentioned process are white powders and can be made into various molded and shaped articles by use of such thermoplastic resin-processing means as injection molding, compression molding, blow molding, fiber extrusion or film extrusion means.

3,699,191

PROCESS FOR BLACK COPOLYMERIZATION OF POLAR MONOMERS WITH AN ORGANOLITHIUM COMPOUND AND HETEROCYCLIC SULFUR COMPOUND

Theodore F. Niemann, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 862,961, Oct. 1, 1969, Pat. No. 3,609,100. This application Feb. 17, 1971, Ser. No. 116,236

Int. Cl. C08f 15/38, 15/16, 15/22

U.S. Cl. 260—881 **7 Claims**

Polar monomers can be polymerized to obtain block copolymers by the sequential addition of the polar monomers. The polymerization is initiated with an organolithium compound in combination with a heterocyclic compound containing a sulfur heteroatom. Acrylonitrile, methacrylonitrile and alkyl acrylates and methacrylates are copolymerized to two- and three-block copolymers with an initiator system consisting of an alkyl lithium compound and a five- or six-membered heterocyclic compound or fused heterocyclic ring system derived therefrom, where the heteroatom is sulfur which may be unsubstituted or contain one or two oxygen atoms bonded thereto but external to the ring.

3,699,192

PHOSPHONIUM COMPOUNDS

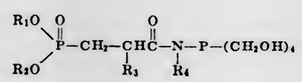
Peter A. Moretti, Cranston, R.I., assignor to U.S. Oil Company, Incorporated, East Providence, R.I.

Filed Oct. 20, 1970, Ser. No. 82,496

Int. Cl. C07f 9/38; D06m 1/100; A01n 9/36

U.S. Cl. 260—926 **7 Claims**

A di lower alkyl phosphite acrylamide or methacrylamide, preferably with formaldehyde and tetrakis (hydroxymethyl) phosphonium halide are reacted to form a compound of the formula



where R_1 and R_2 are lower alkyl R_3 is hydrogen or methyl and R_4 is hydrogen or methylol. The compounds are useful as fire retardants, particularly in textiles, paper and other forms of cellulosic fibers as well as synthetic fibers.

3,699,193

PROCESS FOR PREPARATION OF DIALKYL VINYL PHOSPHATES

Thomas M. Melton, Richmond, Va., assignor to Mobil Oil Corporation

Filed July 9, 1969, Ser. No. 840,490

Int. Cl. C07f 9/08

U.S. Cl. 260—969 **4 Claims**

In the preparation of dialkyl vinyl phosphates from trialkyl phosphites, the use of a selective saturated aliphatic hydrocarbon solvent reaction medium in which the reactants and product are soluble at reaction temperature, but in which the product is insoluble at lower temperatures enables isolation of the product by cooling and separation. Higher yields of vinyl phosphates from trialkyl phosphites are obtained, and time consuming product recovery distillation procedures are not required. Temperature conditions for the process of this invention fall within the range of 50° C to 200° C.

3,699,194

PROCESS FOR THE PRODUCTION OF DIMETHYL 1-METHYL-2-(METHYLCARBAMOYL) VINYL PHOSPHATE

George W. Gaertner, Modesto, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,705

Int. Cl. C07f 9/08

U.S. Cl. 260—969 **4 Claims**

Improved production of dimethyl 1-methyl-2-(methylcarbamoyl)vinyl phosphate by the reaction of 2-chloro-N-methylacetoacetamide with trimethyl phosphite, results from conducting the reaction in the presence of a poly-halogenated lower alkane.

3,699,195

PRODUCTION OF DIESTERS OF 2-HYDROXYETHYLPHOSPHONIC ACID

David I. Randall, and Calvin Vogel, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 7, 1969, Ser. No. 848,340

Int. Cl. C07f 9/38, 9/40

U.S. Cl. 260—970 **11 Claims**

Process for the production of diesters of 2-hydroxyethylphosphonic acid by reaction of alkali metal salts of secondary phosphites and ethylene oxide wherein the reaction is conducted in the presence of an aprotic, dipolar solvent in which the dipole moment of the solvent is 3.5 Debye units or greater. Such diesters are useful as intermediates for the production of the plant stimulant 2-chloroethylphosphonic acid.

3,699,196

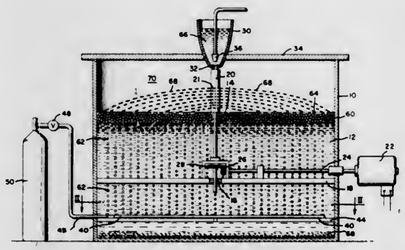
PARTICLE CASTING

John Frederick Joyce, Columbus, Ohio, and T. Stevens Daugherty, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 560,462, June 27, 1966, abandoned. This application Jan. 19, 1970, Ser. No. 4,144

Int. Cl. B22f 9/00

U.S. Cl. 264—6 **2 Claims**



In a process of cooling and solidifying molten metal particles, gas substantially free from nascent and molecular oxygen (argon, helium, nitrogen, carbon dioxide and carbon monoxide) is bubbled through a liquid, thereby creating at the surface of the liquid a layer of foam of bubbles containing some of the gas. Additional gas is retained in the space adjacent the foam. Molten metal particles are formed by being centrifugally projected through holes extending through a side wall of a rotating pot disposed within the space. The molten particles are decelerated and cooled by passing into said foam, and rupture some of the bubbles, so that the gas contained within them flows into the space. The particles then leave the foam and pass into the liquid, becoming further cooled, and are thereafter recovered solidified, substantially unoxidized, and

with a minimum of distortion, thereby being suitable for forming into strip. New gas-containing bubbles are created by bubbling additional gas through the liquid, so as to maintain the layer of foam.

3,699,197

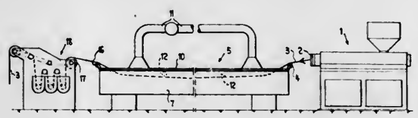
METHOD OF PRODUCING RUBBER PROFILES

Georg M. Egger, Kirchstrasse 144, 3084 Wabern, Switzerland

Continuation-in-part of Ser. No. 105,112, Jan. 8, 1971, Continuation of Ser. No. 773,745, Nov. 6, 1968, abandoned. This application April 20, 1971, Ser. No. 135,590

Int. Cl. B29c 17/02; B29n 5/01

U.S. Cl. 264—40 **5 Claims**



Method for the production of rubber profiles of predetermined cross-sectional dimensions by subjecting a vulcanizable rubber profile in the form of a continuous length to stretching, then feeding the stretched profile to a liquid heating medium to vulcanize the rubber and fix the desired cross-sectional dimensions, while automatically adjusting the speed of withdrawal of the profile from the liquid medium into relation to the feeding speed thereinto so as to maintain a substantially constant radio of withdrawal speed to feeding speed.

3,699,198

METHOD OF MAKING SHAPED ARTICLES

Keith D. Robinson, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 751,018, June 19, 1968, abandoned, which is a continuation of Ser. No. 379,078, June 30, 1964, abandoned. This application Sept. 29, 1969, Ser. No. 863,014

Int. Cl. B29c 13/04; B29h 7/03; B32b 27/12, 27/40

U.S. Cl. 264—96 **1 Claim**



This invention relates to a method of making an article having a plane of symmetry whereby a portion of the article is used as the form for building the second part of the article and the material used to build the article is a polyurethane reaction mixture, including a method of attaching fittings to said article during construction by releasably attaching the fitting to one surface of the article.

3,699,199

CONTINUOUS BLOW MOLDING PROCESS WITH REDUCTION OF LENGTH COMPENSATION

Richard MacDuff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 30, 1970, Ser. No. 102,694

Int. Cl. B29c 17/07, 7/00

U.S. Cl. 264—99 **7 Claims**



In a continuous blow molding operation, mold release of the newly formed container is facilitated by providing a conveyor adjacent to the point where the mold opens. The newly formed container is connected at one end by waste material to a previously formed container that is in the conveyor and is connected at the other end to material in a closed mold behind the mold that is opening. The conveyor haul off speed and the speed of the molds are at a relative rate which maintains a certain tension in the waste material between the previously formed container and the newly formed container and there is also tension in the material between the two molds. This tension facilitates mold release of the newly formed container upon opening of the mold. The speed of the molds is greater than the haul off speed of the conveyor by a rate which is substantially equal to the rate of reduction of length in the material between the previously formed container and the closed mold to prevent any deformity in the containers due to an excess of tension.

3,699,200

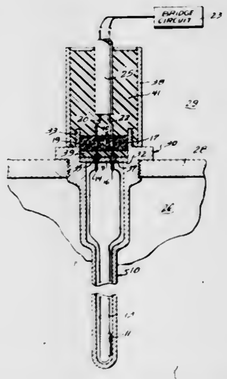
HIGH-RESISTANCE ELECTRICAL CONDUCTOR ENCAPSULATION

Richard D. Tokarz, and Joseph E. Kaveckis, both of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed March 19, 1970, Ser. No. 20,968

Int. Cl. B29d 3/00

U.S. Cl. 264—102 **1 Claim**

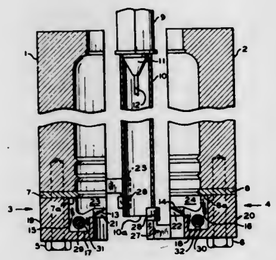


A structure for encapsulating a connector assembly so as to provide a very high resistance between the conductors and between the conductors and ground is provided. The encapsulating structure includes a combination of at least two layers of epoxy resins with at least one layer having a dehydrating agent.

3,699,201
CUTTING AND SEALING PLASTIC TUBES

Edward W. Turner, Deerfield, Mass., assignor to Phillips Petroleum Company

Division of Ser. No. 595,910, Nov. 21, 1966, Pat. No. 3,478,388. This application June 27, 1969, Ser. No. 837,128The portion of the term of this patent subsequent to July 2, 1985, has been disclaimed.
Int. Cl. B29c *17/07, 17/10*
U.S. Cl. 264—98 4 Claims

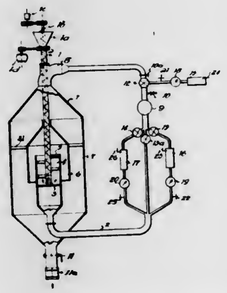


In a blow molding operation wherein a thermoplastic parison is closed off at one end and thereafter expanded by the introduction of internal fluid pressure to conform to a mold, the tube is sealed and severed by simultaneously forcing the walls of the tube together along at least three different paths which converge toward a central point. This sealing means is particularly useful in sealing thermoplastic parisons which have been cooled and thereafter reheated to a temperature near but below the crystalline melting point of the thermoplastic material.

3,699,202
MANUFACTURE OF PRESSED BOARDS

Jean-Baptiste Verbestel, Van Maerlantstraat, Kortryk, Belgium

Continuation-in-part of Ser. No. 806,217, March 11, 1969, abandoned. This application Aug. 3, 1970, Ser. No. 60,515
Claims priority, application Belgium, March 19, 1968, 56 030
Int. Cl. B29j *5/02*
U.S. Cl. 264—109 7 Claims



Gaseous reactive or polymerizable compounds and a gaseous catalyst are incorporated into lignocellulosic particles or fibers, and the compounds are reacted or polymerized in the presence of the catalyst to form a binder during hot pressing of the particles or fibers to form a board.

3,699,203
PROCESS FOR PRODUCTION OF MATRIX MOLDING BOARD

Keiji Oshima, Toyonaka; Shozo Yamada, Chigasaki; Fujio Sakurai, Fujisawa; Yoshisuke Iwasa, Sagamihara; Koichi Horiuchi; Unosuke Uchida, both of Yokohama; Teruhiko Nomura, Kamakura, and Yasushi Tominaga, Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Feb. 10, 1970, Ser. No. 10,268
Claims priority, application Japan, Feb. 15, 1969, 44/10786; Feb. 15, 1969, 44/10788; Feb. 15, 1969, 44/10787; Dec. 27, 1969, 44/10844; Dec. 27, 1969, 44/10845; Dec. 27, 1969, 44/10846; Dec. 27, 1969, 44/10847
Int. Cl. D04h *1/60*
U.S. Cl. 264—112 8 Claims

A mixture comprising fibrous materials and a thermosettable resin is refined and the refined, i.e. reduced to a fibrous condition, composition is dry-formed into a mat. The resulting mat is then compressed at 80° – 150° C. to form a base, the conditions of this treatment being such as to allow said thermosettable resin to remain uncured enough to be molded into a matrix.

The thus obtained base is made into a matrix molding board by coating over the base a molding mixture prepared from a thermosettable resin and a filler. On the other hand, the surface layer of matrix molding board may be made by sprinkling the powdery molding mixture on said mat, and if necessary, the layer on the mat is sintered at 80° – 150° C., or by applying a sheet impregnated with the molding mixture on said mat, and the thus treated mat having a surface layer thereon is compressed into a matrix molding board.

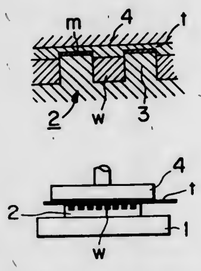
A very effective method for preventing the warp of the molded matrix is to provide a balance layer by making a layer of molding mixture on the back side of the mat or base or by applying a sheet impregnated with a thermosettable resin on the back side.

A matrix having excellent properties can be obtained by using a metal plate, net wiring or both in the molding. The metal plate used here has perforated holes or both perforated holes and grooves.

3,699,204
METHOD FOR MAKING FIN-FREE MUTLI-BORED RUBBER SHEETS

Nobuo Ogata, Kamakura, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,443
Claims priority, application Japan, May 21, 1970, 45/42909
Int. Cl. B29c *17/12*
U.S. Cl. 264—154 4 Claims

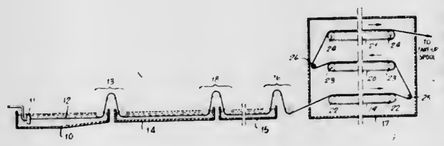


A method for making fin-free multi-bored rubber sheets by pressing a starting raw-rubber sheet against a die having a plurality of die projections. A carrier sheet, which can integrally adhere to those portions of the starting rubber sheet which are strongly pressed thereto by the free ends of the die projections, is overlaid on the starting raw-rubber sheet prior to the pressing. Thereby, upon completion of the pressing operation, the carrier sheet is separated from the starting rubber sheet, for ensuring the complete elimination of the fins at the bored portions of the rubber sheet.

3,699,205
PROCESSES OF PRODUCING STABLE FILAMENTS OF LINEAR POLYURETHANES

Timothy Victor Peters, Route 2, Rockaway Road, Lebanon, N.J.

Continuation of Ser. No. 345,976, Feb. 19, 1964, abandoned. This application April 3, 1970, Ser. No. 22,142
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 F 4 Claims

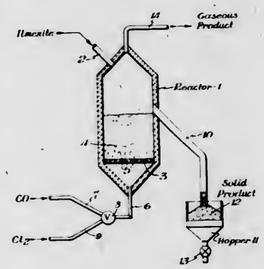


Mechanically stable wet spun linear polyurethane are produced by extruding a linear polyurethane polymer solution to form a filament, passing the formed filament through at least one extraction bath to remove solvent therefrom at sufficiently high rate to effect a draw ratio of at least 1.1 and heating the extracted filament to a temperature above the second order of transition temperature and below the melting point of the linear polyurethane of the filament for a period sufficient to substantially completely relax the longitudinal stresses contained in the filament.

3,699,206
PROCESS FOR BENEFICIATION OF TITANIFEROUS ORES

Wendell E. Dunn, Jr., Sydney, Australia, assignor to Wendell E. Dunn Inc., Sydney, Australia

Filed March 23, 1970, Ser. No. 21,686
Int. Cl. C01g *23/04, 49/10*
U.S. Cl. 423—74 12 Claims



Process for beneficiating titaniferous ores to produce essentially pure titanium dioxide comprising alternatingly contacting the ore in a gas-solids reactor with carbon monoxide for a short period of time and then with chlorine for a short period of time and then repeating the alternate carbonylation and chlorination steps at temperatures of 700 to 1,150° C. under fluidizing conditions; converting iron oxide and oxides of metals other than titanium in the ore to iron and other metal chlorides and removing same by volatilization. The titanium dioxide produced is useful as a starting material for the preparation of titanium dioxide pigment.

3,699,207
PROCESS FOR THE PURIFICATION OF CADMIUM SOLUTIONS

Wilhelm Roever; Helmut Junghanss, both of Duisburg, and Hans-Werner Kauczor, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

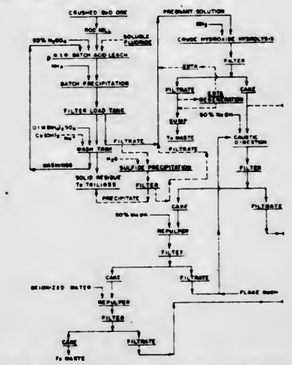
Filed May 27, 1970, Ser. No. 41,052
Claims priority, application Germany, July 11, 1969, P 19 29 661.8
Int. Cl. C22b *17/04*
U.S. Cl. 423—100 7 Claims

Process for producing cadmium solutions wherein said solution is contacted with a cation exchanger containing amino carboxylic- or imino carboxylic acid groups and wherein the ion exchanger is separated from the cadmium solution after having absorbed accompanying metals from said cadmium solution.

3,699,208
EXTRACTION OF BERYLLIUM FROM ORES

James K. Grunig; William B. Davis, both of Tucson, Ariz., and William C. Aitkenhead, Belize City, British Honduras, assignors to The Anaconda Company, New York, N.Y.

Continuation-in-part of Ser. No. 710,984, March 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 316,474, Oct. 15, 1963, Pat. No. 3,395,975. This application Dec. 21, 1970, Ser. No. 100,354
Int. Cl. C22b *59/00*
U.S. Cl. 423—132 6 Claims



The extraction and the recovery of beryllium substantially devoid of zinc and other impurities from low and medium grade acid-leachable berllium bearing ores, e.g., bertrandite, is accomplished by acid leaching at a pH below about 2 but above about 1.2, preferably between 1.3 and 1.5, and advantageously with the aid of a soluble fluoride additive to recover the beryllium in solution with relatively small dissolution of such impurities as iron and aluminum.

3,699,209
HF REMOVAL SYSTEM

Dennis J. Ward, South Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 26, 1971, Ser. No. 119,404
Int. Cl. B01d *53/34*
U.S. Cl. 423—240 10 Claims

In scrubbing systems wherein HF contained in gaseous steams is removed by scrubbing with an aqueous calcium

hydroxide system, corrosion is diminished by the addition of up to about 3 percent by weight of an alkali metal hydroxide.

3,699,210
METHOD OF GRAPHITIZING FIBERS

Robert C. Binning, Kettering; Leo P. Parts, Dayton; Robert J. Peresie, Brecksville, and Margaret L. Rodenburg, Kettering, all of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Sept. 6, 1968, Ser. No. 757,964
Int. Cl. C01b 31/07
U.S. Cl. 423—447 **6 Claims**

A method for carbonizing and/or graphitizing precursor fibers selected from the group consisting of polyacrylonitrile and aromatic polyamide fibers, wherein the fibers are pretreated with an oxygen-containing atmosphere at 180°–550° C. and thereafter heated in a laser beam in a non-oxidizing atmosphere at 700°–1,200° C. for carbonizing and at 1,200°–3,600 C. for graphitizing.

3,699,211
METHOD OF PREPARATION OF RARE EARTH (III) PHOSPHORUS DICHLORIDATES AND PHOSPHORUS DIBROMIDATES

Erhard J. Schimitschek, Garching/Munich, Germany, and John A. Trias, La Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 29, 1971, Ser. No. 110,920
Int. Cl. C22b 59/00
U.S. Cl. 423—263 **9 Claims**

A novel and desirable method of preparing a rare earth (III) phosphorus dichloridate comprises the steps of adding a rare earth trifluoroacetate to phosphorus oxychloride, refluxing the mixture and then washing the resultant percipitate under a dry atmosphere to remove excess moisture and phosphorus oxychloride. The method may also be employed in preparation of a rare earth (III) phosphorus dibromidate by the analagous steps of adding a rare earth trifluoroacetate to phosphorus oxybromide, refluxing the mixture, and finally washing the resultant precipitate under dry atmosphere to remove the excess moisture and phosphorus oxybromide. Any of the rare earths may be employed in their trifluoroacetate form except those which are radio active, and, though not limited to the preparation of neodymium (III) phosphorus dichloridate, the method is particularly desirable in that instance because of the fact that neodymium (III) phosphorus dichloridate is highly desirable in liquid laser compositions.

3,699,212
WATER SYSTEMS FOR PHOSPHATE PLANTS

Gordon F. Palm, 3503 Cleveland Heights Blvd., Lakeland, Fla.

Filed Sept. 19, 1968, Ser. No. 760,775
Int. Cl. C01b 25/18, 25/28
U.S. Cl. 423—307 **12 Claims**

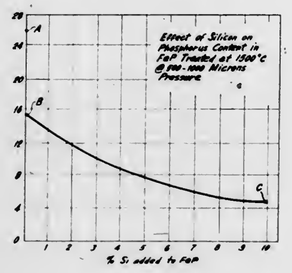
Systems for use and handling of water in phosphate plants to reduce air and stream pollution, to reduce losses, and to reduce costs. The pH^+ of water from scrubbers, condensers, filters, and the like, is adjusted by addition of ammonia for reuse in the plant. Multiple pH^+ adjusted water systems may be employed.

3,699,213
DEPHOSPHORIZATION OF FERROPHOSPHORUS

Cornelius M. Cosman, Bronxville, N.Y., and Donald O. Buker, Grand Junction, Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 888,000
Int. Cl. C01b 25/02; C22c 33/00
U.S. Cl. 423—322 **2 Claims**

A method is provided for the dephosphorization of ferrophosphorus containing about 20 to 30 percent phosphorus, with or without vanadium, chromium, nickel, manganese, etc., and the bulk of the ferrophosphorus alloy comprising essentially iron, wherein a bath of said ferrophosphorus is established containing at least one additive selected from the

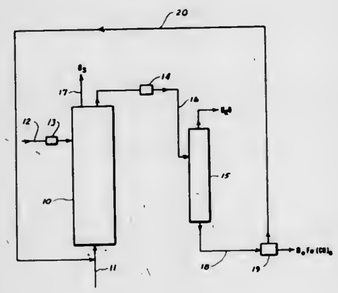


group consisting of carbon and silicon in amounts effective to reduce the solubility of phosphorus in said bath, thereby resulting in a substantial amount of phosphorus vapor which is removed and then recovered.

3,699,214
PROCESS FOR THE MANUFACTURE OF FERROCYANIDE COMPOUNDS

Jon C. Thunberg, Amherst, and James E. Philbrook, Nashua, both of N.H., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 1, 1970, Ser. No. 33,646
Int. Cl. C01c 3/12; C01b 1/07
U.S. Cl. 423—367 **5 Claims**

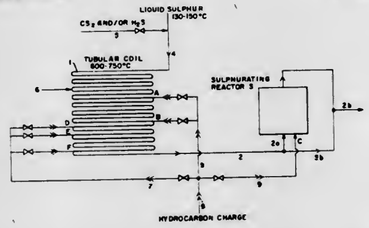


A process for the preparation of alkali metal ferrocyanides which comprises the controlled addition of hydrogen cyanide to a reaction zone containing an aqueous solution of alkali metal hydroxide carrying a suspension of finely divided metallic iron, allowing the reaction to proceed at elevated temperatures, separating the caustic solution from the iron, recovering alkali metal ferrocyanide therefrom, and returning mother liquor to the reactant zone for further reaction with hydrogen cyanide, alkali metal hydroxide, and iron, and, in a preferred version, conducting the process with a plurality of solutions which are returned to the reaction zone in sequence after recovery of the alkali ferrocyanide therefrom.

3,699,215
PRODUCTION OF CARBON DISULPHIDE FROM HYDROCARBONS

Paul Gerin, Clair du Rhone; Lucien Louat, Lyon, and Jean-Pierre Quillet, les Roches de Condrieu, all of France, assignors to Progil, Paris, France

Filed March 19, 1969, Ser. No. 808,598
Claims priority, application France, March 26, 1968, 68145513
Int. Cl. C01b 31/26
U.S. Cl. 423—443 **9 Claims**



A method for continuously producing CS_2 by reacting sulphur in the gas phase with an unsaturated aliphatic hydrocarbon, such a propylene, in sulphurating apparatus in which the sulphur circulates the hydrocarbon being injected into the apparatus at at least two points and then condensing and recovering the CS_2 therefrom. The sulphurating apparatus may include a reactor in addition to a coil within a furnace, and one of the points of injection can be to the reactor.

3,699,216
FINELY DIVIDED CARBON AND THE PREPARATION THEREOF

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 666,011, Sept. 7, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,688
Int. Cl. C01b 31/02; C09c 1/44
U.S. Cl. 423—449 **10 Claims**

The present invention comprises a finely divided carbon suitable for compounding with polymeric materials to form intermediate strength, intermediate modulus compositions, said form of carbon being prepared by a process comprising the steps of comminuting coke and contacting it with methanol, either during or after comminution and related processes.

The compositions of the present invention are useful as fillers and reinforcing agents for a wide variety of polymeric materials including natural rubber, butyl rubber, nylons, methylmethacryalates, epoxies, polyurethanes, etc. The compositions of the present invention are especially preferred for use in vulcanizable rubber compositions because of their ability to materially shorten the relative length of time required to cure such compositions to maximum tensile strength.

3,699,217
PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Gerd Schreyer, Grossauheim; Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silver Schneideanstalt vormals Roessler, Frankfurt (Main), Germany

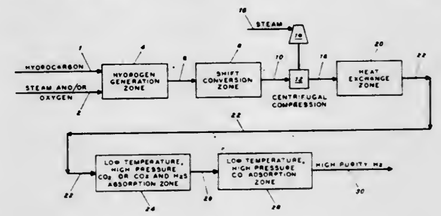
Filed March 23, 1970, Ser. No. 22,000
Claims priority, application Germany, March 22, 1969, P 19 14 739.8
Int. Cl. C01b 15/02; C07c 49/68
U.S. Cl. 423—589 **10 Claims**

Esters of trialkyl acetic acids; preferably pivalic acid, with higher alkanols, glycols, phenols or cycloalkanols are employed as solvents for the reaction carriers in the anthraquinone process for preparing hydrogen peroxide.

3,699,218
HYDROGEN MANUFACTURE

Calvin S. Smith, and William J. McLeod, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 754,031, Aug. 20, 1968, abandoned which is a continuation-in-part of Ser. No. 736,520. May 17, 1968, Pat. No. 3,618,331, and a continuation-in-part of Ser. No. 665,106, Sept. 1, 1967. abandoned. This application June 12, 1970, Ser. No. 46,564
Int. Cl. C01b 1/02, 1/26, 1/32
U.S. Cl. 423—648 **5 Claims**



Process for obtaining high purity, high pressure hydrogen wherein hydrogen-rich gas containing carbon dioxide and carbon monoxide is centrifugally compressed to high pressure, the carbon dioxide is then removed from the high pressure hydrogen-rich gas by absorption at low temperature to obtain a high pressure, low temperature hydrogen-rich gas containing carbon monoxide and then the carbon monoxide is removed from the hydrogen-rich gas by adsorption at low temperature and high pressure.

3,699,219
METHOD OF ADMINISTERING AMINO ACIDS TO CONVALESCING LIVESTOCK AND COMPOSITION THEREFOR

Arthur Carlson, Jr., Overland Park, Kans., assignor to Haver-Lockland Laboratories, Shawnee, Kans.

Continuation of Ser. No. 551,910, May 23, 1966. This application July 15, 1969, Ser. No. 545
Int. Cl. A61k 9/00, 27/00
U.S. Cl. 424—14 **8 Claims**

A method of administering amino acids to convalescing livestock. Specifically, a method of administering amino acids to livestock unable to eat a normal diet is provided whereby the amino acids may be administered as a bolus using a conventional balling gun. The amino acid-containing bolus is of a size and composition large enough to contain a significant amount of an animal's minimum daily requirement of amino acids and to disintegrate in the stomach of the animal at approximately the rate of usage thereof by the animal yet small enough to permit introduction into the throat without gagging the animal.

3,699,220
DENTIFRICE

Jan Weststrate, and Christinan Albertus Johannes Grabe, both of Amersfoort, Netherlands, assignors to N.V. Cosmetische Fabriek "Prondenta", Amersfoort, Netherlands

Filed July 10, 1970, Ser. No. 53,990
Int. Cl. A61r 7/16
U.S. Cl. 424—52 **3 Claims**

A dentifrice having anticariogenic activity is prepared by including therein a monofluophosphateand a trimetaphosphate.

3,699,221
DENTAL PREPARATIONS
Murray L. Schole, 487 Munroe Avenue, North Tarrytown, N.Y., and Richard S. Gubner, Middle Neck Road, Sands Point, Port Washington, N.Y.
Continuation-in-part of Ser. No. 778,329, Dec. 5, 1958, abandoned. This application Feb. 23, 1965, Ser. No. 434,678
Int. Cl. A61r 7/16
U.S. Cl. 424—54 14 Claims

A water-containing toothpaste comprising a substantially stable solution of a non-toxic, water-soluble ionic strontium compound selected from the class consisting of strontium salts of organic chelating agents and strontium salts of inorganic sequestering agents, said strontium compound having a stability constant lower than that of its corresponding calcium salt, and a surface-active wetting agent compatible with strontium ions in an aqueous solution, the strontium cation of the strontium compound constituting between about 3.6% and about 20.5% by weight of said toothpaste, and said toothpaste being characterized by the substantial absence of substances which precipitate said strontium.

3,699,222
PRODUCTION OF VIRAL INTERFERING SUBSTANCES
Alick Isaacs, London, England, and Jean Lindenmann, Gainesville, Fla., assignors to National Research Development Corporation, London, England
Continuation of Ser. No. 575,470, Aug. 26, 1966, abandoned, which is a continuation of Ser. No. 183,413, March 29, 1962, abandoned, which is a continuation-in-part of Ser. No. 734,106, May 9, 1958, abandoned. This application Aug. 5, 1968, Ser. No. 757,188
Claims priority, application Germany, March 11, 1958, P 10 62 391.3
Int. Cl. A61r 27/00
U.S. Cl. 424—85 4 Claims

1. Interferon.

3,699,223
ENHYGROFUNGIN AND PROCESS FOR PREPARING THE SAME
Malcolm E. Bergy; Herman Hoeksema, and LeRoy E. Johnson, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed June 13, 1969, Ser. No. 833,135
Int. Cl. A61k 21/00
U.S. Cl. 424—121 7 Claims

Antibiotic enhygrofungin producible by culturing *Streptomyces hygroscopicus* var. *enhygrus* var. nova in an aqueous nutrient medium. Enhygrofungin inhibits the growth of various fungi. For example, it is active against *Cryptococcus neoformans* and can be used to treat pigeon roosts to inhibit this fungus which has been found in pigeon droppings.

3,699,224
METHOD FOR PROMOTION OF GROWTH OF CULTURED FISH
Masaaki Yamasaki, 3, Mukomotomachi 3-chome, Amagasaki, Hyogo; Kuniyoshi Fujie, 32-349, Nampeidai, Takatsuki, Osaka, and Haruo Fukui, 520, Yamada-shimo, Suita, Osaka, all of Japan
Filed May 20, 1969, Ser. No. 826,288
Claims priority, application Japan, May 24, 1968, 43/34776
Int. Cl. A61k 21/00
U.S. Cl. 424—181 4 Claims

Rate of growth of cultured fish is increased by the use of fish food containing macrolide antibiotics.

3,699,225
CONTROL OF INSECTS AND ACARINAL WITH CERTAIN PYRIDYL-THIAZALINO PHOSPHATES AND THE CORRESPONDING PHOSPHOROTHIOATES
Kurt Gubler; Urs Meyer, both of Riehen, and Hans Ulrich Brechbuhler, Basel, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
Division of Ser. No. 762,643, Sept. 25, 1968, Pat. No. 3,535,325. This application June 23, 1970, Ser. No. 53,356
Claims priority, application Switzerland, Sept. 29, 1967, 13636/67
Int. Cl. A01n 9/36
U.S. Cl. 424—200 4 Claims

Pyridyl-(2)-phosphates and phosphorothioates are disclosed which have in 5-position at the pyridine nucleus a thiazolinyl-(2) grouping and which are insecticidal and acaricidal agents useful in the control of insects and acarinae, and more particularly of cattle ticks. Compositions containing these novel compounds, methods for controlling insects and acarinae therewith, and novel 2-hydroxy- and 2-mercapto-5-thiazolinyl-(2')-pyridines useful as intermediates in their production are also described.

3,699,226
N-ARYLSULFONYL UREA DERIVATIVES OF NITROGEN CONTAINING HETEROCYCLICS AS HYPOGLYCEMIC AGENTS
Henri Dietrich, Ariesheim, Baselland, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 735,974, June 11, 1968, Pat. No. 3,542,768, which is a continuation-in-part of Ser. No. 512,776, Dec. 9, 1965, abandoned, and a continuation-in-part of Ser. No. 596,770, Nov. 25, 1966, abandoned. This application March 2, 1970, Ser. No. 18,802
Int. Cl. A61k 27/00
U.S. Cl. 424—244 7 Claims

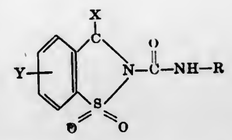
N-Arylsulfonyl urea derivatives of 5 to 8 membered saturated lactams are hypoglycemic agents.

3,699,227
PHARMACEUTICAL COMPOSITIONS OF PHENYL PYRIDYL ALKANOIC ACID AND DERIVATIVES THEREOF
Peter Doyle, and Joseph Gilbert Stacey, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 682,593, Nov. 13, 1967, Pat. No. 3,546,237. This application Aug. 5, 1970, Ser. No. 61,406
Int. Cl. A61k 27/00
U.S. Cl. 424—263 8 Claims

This disclosure relates to phenyl-pyridyl-alkanoic acids and derivatives which possess anti-inflammatory, analgesic and antipyretic activity, and which reduce the concentration of fibrinogen, cholesterol and triglycerides in blood. It also relates to processes for making said compounds, to pharmaceutical compositions, and to methods of treatment involving said compounds. A representative of said compounds is 6-(4-chlorophenyl)-2-methylpyrid-3-ylacetic acid.

3,699,228
CARBAMOYL SACCHARIN DERIVATIVES AS FUNGICIDES
Osamu Shioyama, Osaka; Seizo Mise, Ibaragi-shi, and Kikuzo Murata, Kawachinagano-shi, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan
Filed Oct. 21, 1969, Ser. No. 868,236
Claims priority, application Japan, Oct. 25, 1968, 43/77381; Sept. 9, 1969, 44/71023
Int. Cl. A01n 9/12, 9/22
U.S. Cl. 424—270 5 Claims

Carbamoyl saccharin derivatives of the formula:



wherein X signifies an oxygen atom or sulfur atom, Y signifies a hydrogen atom, halogen atom or methoxy group, and R signifies an aliphatic hydrocarbon group; aryl group; aryl group which may be substituted by a lower alkyl, alkoxy, hydroxyl, nitro, trifluoromethyl, acetyl, dialkylamino, sulfonamido or carboxy group; aralkyl group; aralkyl group which may be substituted by a halogen atom, methyl, methoxy, or nitro group; benzene sulfonyl group, benzene sulfonyl group whose benzene nucleus may be substituted by a halogen atom or methyl group, are useful as fungicides.

3,699,229
2-OXO-5-PHENYL-4-OXAZOLIDINONE AS AN ANTI-DEPRESSANT AGENT
Nicholas Peter Piotnikoff, Village of Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 18, 1970, Ser. No. 99,725
Int. Cl. A61k 27/00
U.S. Cl. 424—272 4 Claims

Covers a method of treating patients exhibiting symptoms of depression by administering to said patients a compound comprising 2-oxo-5-phenyl-4-oxazolidinone.

3,699,230
DIMETHYLISOSORBIDE SOLVENT FOR MUSCLE RELAXANT DRUGS
Robert Owens Beauchamp, Jr.; John Wesley Ward, and Bernard Vincent Franko, all of Richmond, Va., assignors to A. H. Robins Company Incorporated, Richmond, Va.
Filed March 12, 1971, Ser. No. 123,847
Int. Cl. A61k 27/10
U.S. Cl. 424—272 11 Claims

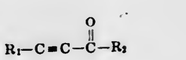
Novel compositions comprising dimethylisosorbide solutions of otherwise difficultly soluble muscle relaxant drugs and their applications are described. Additive synergism of muscle relaxant properties of the solvent and solute is disclosed.

3,699,231
METHOD FOR INHIBITING THE GROWTH OF BACTERIA USING A SYNERGISTIC MIXTURE OF SODIUM DIMETHYLDITHIOCARBAMATE AND FORMALDEHYDE
Eugene R. Werlein; John W. Hollingsworth, and Lyndon D. Pinson, all of Harris County, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed July 11, 1969, Ser. No. 841,129
Int. Cl. A01n 9/02, 9/12, 9/24
U.S. Cl. 424—286 1 Claim

A method for inhibiting microbial growth in substances and a biocidal composition therefor employing a synergistic mixture of sodium dimethyldithiocarbamate and formaldehyde.

3,699,232
PROCESS OF MILLING FUNGI WITH ACETYLENIC KETONES
Delta W. Gier, and Audra M. Calhoon, both of Albert Lea, Minn., assignors to Chemagro Corporation, New York, N.Y.
Division of Ser. No. 761,965, July 16, 1968, Pat. No. 3,592,922, which is a division of Ser. No. 675,318, Oct. 16, 1967, abandoned. This application May 26, 1970, Ser. No. 40,712
Int. Cl. A01n 9/24
U.S. Cl. 424—331 8 Claims

Compounds of the formula



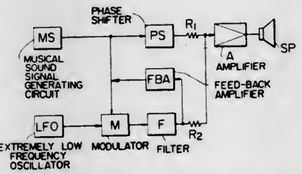
where R_1 is ethyl or phenyl and R_2 is lower alkyl are useful as fungicides. The compound 3-heptyn-5-one is particularly valuable since it is not toxic to plants.

3,699,233

TREMOLO ARRANGEMENT FOR AN ELECTRONIC MUSICAL INSTRUMENT EMPLOYING FEEDBACK OF MODULATED SIGNAL TO MODULATOR INPUT

Syoichi Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Jan. 6, 1971, Ser. No. 104,229
Claims priority, application Japan, Jan. 12, 1970, 45/3343; Jan. 23, 1970, 45/6523
Int. Cl. G10h 1/04
U.S. Cl. 84—1.22 4 Claims



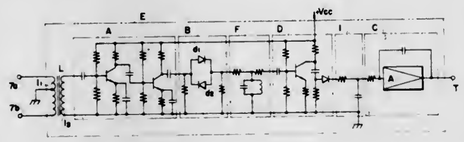
A carrier wave having a sub-audible frequency is modulated in amplitude by a modulating wave of a tone signal having an audible frequency, thereby producing a resultant modulated output signal including side band components deviated from the original tone signal frequency by a deviation amount equal to the carrier frequency. The frequency of the carrier wave is selected to be much lower than that of the modulating wave. The frequency-deviated signal thus obtained is fed back and admixed with the modulating wave to obtain a multiplicity of frequency-deviated signals. These signals are mixed with the original tone signal to produce an intricate tremolo effect.

3,699,234

MUSCULAR VOLT AGE-CONTROLLED TONE MODIFYING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed April 29, 1971, Ser. No. 138,619
Claims priority, application Japan, May 6, 1970, 45/38514; May 6, 1970, 45/38515; May 28, 1970, 45/45890; May 28, 1970, 45/45891; May 28, 1970, 45/45892; June 6, 1970, 45/49019; June 10, 1970, 45/50111; June 13, 1970, 45/51238; June 24, 1970, 45/54970; July 7, 1970, 45/59316; July 16, 1970, 45/62453
Int. Cl. G10h 1/02
U.S. Cl. 84—1.24 18 Claims



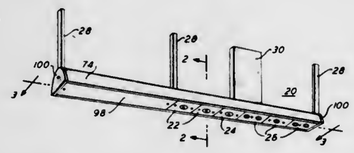
Tone modifying circuits of an electronic musical instrument such as keyers, vibrato circuit, tone coloring circuit, tremolo effect producing circuit, volume circuit and like circuits can be controlled as desired by the player in accordance with the variation of the muscular voltages produced across selected muscles of the player provided with pickup means. To this end, at least one pair of muscular voltage pickup electrodes are attached onto at least one selected portion of the player's skin under which a very low level muscular voltage is generated upon contraction of the electrode-carrying muscle. These pickup electrodes are connected to muscular voltage processing circuits to eliminate unwanted background noise components and to amplify the picked-up muscular voltage to a desired level. The processed voltage is then supplied to control terminals of the modifying circuits in the form of either pulses or DC potentials. In case a plurality of pickup electrodes are mounted on fingers of the player, various touch-responsive tone controls are possible. By summing various levels of muscular voltages obtained from a number of paired pickup electrodes arranged in different portions of the player's skin, random control of the modifying circuits can be achieved to provide tonal effects rich in variety.

3,699,235

HOSPITAL OVERHEAD SERVICE MODULE

John H. Wasson, Portage; John S. Sherry, McFarland, and John P. Kayser, Madison, all of Wis., assignors to Airco, Inc., New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,060
Int. Cl. H02g 3/08
U.S. Cl. 174—48 7 Claims



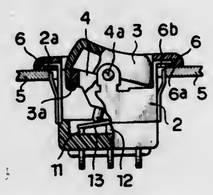
An overhead service module for use in hospital facilities to supply medical gases, vacuum and electrical services within the convenient reach of attending personnel. The module is constructed of easily assembled components and, when installed, is an elongated unit having an inverted tear drop design cross section to allow a laminar flow of air to pass downwardly past the module without seriously interrupting the smooth continuous flow.

3,699,236

SWITCH FLOURISH PLATE

Yasuo Kodaira, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed April 16, 1971, Ser. No. 134,768
Claims priority, application Japan, May 20, 1970, 45/49159
Int. Cl. H02g 3/14
U.S. Cl. 174—66 2 Claims



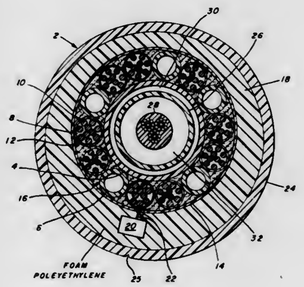
The switch flourish plate includes slots provided opposite to each other in two faces of the walls of an aperture in said flourish plate and clamping projection provided adjacent to either of said two slots. This structure permits said flourish plate to be secured to an electrical switch, without using screws, rivets or the like, by means of fitting two flanges provided on the upper portion of the electrical switch to said two slots and inclining said clamping projection in the inner side direction of the switch, thereby said flanges and the clearances, which are formed between the electrical switch and a panel to which the switch is installed, to be covered.

3,699,237

BUOYANT ELECTRIC CABLE

Thomas J. Melia, Sutton, Mass., assignor to United States Steel Corporation

Filed Feb. 10, 1971, Ser. No. 114,274
Int. Cl. H01b 7/12
U.S. Cl. 174—101.5 12 Claims



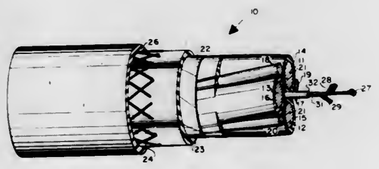
A buoyant electric cable has a core member such as a pipe for supporting a plurality of elements which are stranded around the core member. Some of said elements are electric conductors and the other elements are tubes which are adapted to receive a fluid for changing the buoyancy of the cable. An eccentric foamed jacket surrounds the stranded elements with a sensing element embedded in the thickest part of the jacket. A protective jacket is preferably provided over the outside of the foamed jacket.

3,699,238

FLEXIBLE POWER CABLE

Theodore E. Hansen, and Floyd A. Wilson, both of Marion, Ind., assignors to Anaconda Wire and Cable Company

Filed Feb. 29, 1972, Ser. No. 230,364
Int. Cl. H01b 9/00
U.S. Cl. 174—115 6 Claims



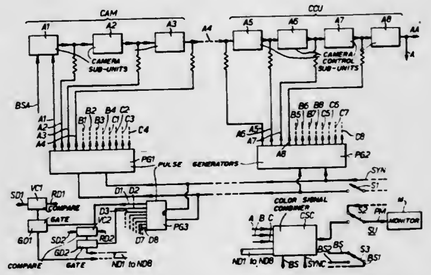
A flexible power cable for use on mining machines has a central insulated ground check strand comprising conductor wires that are wound around a stretchable tensile core.

3,699,239

TELEVISION EQUIPMENTS FOR FAULT INDICATION

Anthony Norman Heightman, Chelmsford, England, assignor to The Marconi Company Limited, London, England

Filed July 15, 1970, Ser. No. 55,145
Claims priority, application Great Britain, Aug. 7, 1969, 39,588/69
Int. Cl. H04n 9/08
U.S. Cl. 178—5.4 TE 18 Claims



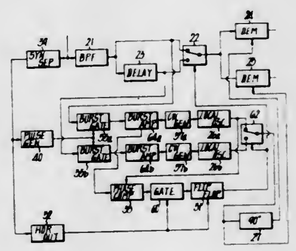
A television equipment consisting of a number of sub units includes fault indicating and locating apparatus. The fault indicating and locating apparatus comprises a display device having raster scanning in synchronism with the television equipment scanning raster and predetermined signals are applied to different equipment sub-units for different fractions of the television raster line, and field, periods. Signals that have been passed through different combinations of sub-units are applied to sub areas of the display device, each sub area of the display device representing a different sub-unit.

3,699,240

COLOR TELEVISION RECEIVER

Minoru Morio, and Hiroyuki Kimura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1970, Ser. No. 90,904
Claims priority, application Japan, Aug. 8, 1970, 45/69489; Aug. 8, 1970, 45/69490; Aug. 20, 1970, 45/72936
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 P 22 Claims

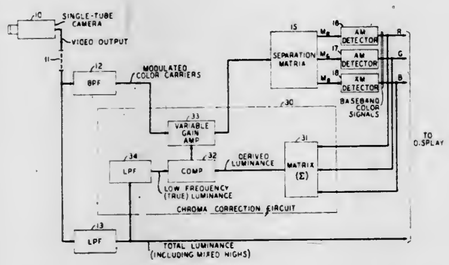


A color television receiver utilizing the chrominance information in only alternate lines of the video signal. The signal from these alternate lines is also delayed for one scanning period, normally one line period. A switching system is provided for interlacing the delayed signals with the undelayed signals to produce a composite signal equal in duration to the signal transmitted. Since the video information on adjacent lines or scans is virtually identical, this elimination and substitution is not noticed by the viewers' eye.

3,699,241
COLOR TELEVISION SYSTEM WITH AUTOMATIC CORRECTION OF CHROMA AMPLITUDES

Arthur Bertel Larsen, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J

Filed Jan. 6, 1971, Ser. No. 104,412
Int. Cl. H04n *9/04*, *9/48*
U.S. Cl. 178—5.4 AC **9 Claims**

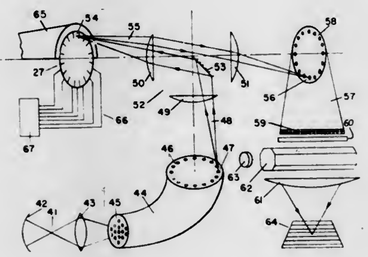


The low frequency portion of a color camera output signal is monitored and used to correct the carrier-borne color components of the composite output. The inherent redundancy of four independent video components provides the monitoring capability. A suggested embodiment utilizes a true low frequency luminance signal and the three carrier-borne color components (preferably red, green and blue). These components are detected and the resulting baseband signals are combined to yield a derived luminance signal. Comparison of the true and derived luminance produces a control signal which is fed back to vary the common factor by which all of the color components are amplified. In this manner compensation is provided for degradation of the carrier frequency (color) components, such as may be caused by loss of resolution of the camera tube or high frequency roll-off of a transmission link.

3,699,242
ELECTRO-OPTICAL DISPLAY SYSTEM

Edgar E. Price, 648 Applegrove Circle, Webster, N.Y.

Continuation-in-part of Ser. No. 789,317, Jan. 6, 1969, Pat. No. 3,567,847. This application Feb. 24, 1971, Ser. No. 118,461
Int. Cl. H04n *9/12*, *5/66*
U.S. Cl. 178—5.4 BD **18 Claims**

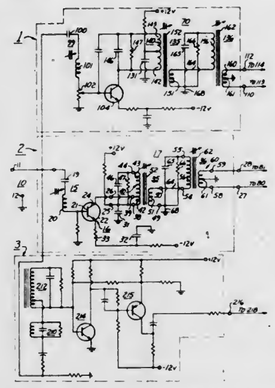


An electro-optical display system particularly for projecting an enlarged color television image on a screen in which the transmitted signals are converted into points of light modulated by a multiple Fabry-Perot interferometric or multiple electro-optical light modulator assembly.

3,699,243
SIGNAL CORRECTING APPARATUS FOR CANCELLING DIFFERENTIAL PHASE ERRORS IN COLOR VIDEO TAPE RECORDINGS

Bert H. Dann, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,646
Int. Cl. H04n *5/78*
U.S. Cl. 178—5.4 CD **16 Claims**



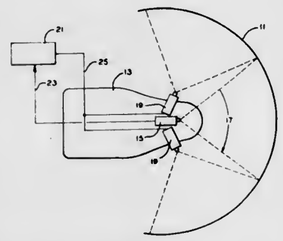
An improved apparatus for correcting effects of angular errors in chrominance sideband components of a color video signal in which the chrominance sideband components, and signals indicative of the angular errors, as well as a substantially stable reference signal, are heterodyned to redispose the chrominance sideband components about a frequency which is displaced from a picture carrier frequency by a stable frequency difference.

The disclosure also covers an improved band filter useful in the above mentioned and other apparatus.

3,699,244
APPARATUS TO MATCH THE COLOR OF A MONOCHROME DISPLAY TO AVERAGE COLOR OF AN ADJACENT FULL COLOR DISPLAY

Edwin Cohen, Binghamton, and John C. Altmiller, Kirkwood, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,843
Int. Cl. H04n *9/12*, *5/58*
U.S. Cl. 178—5.4 R **17 Claims**

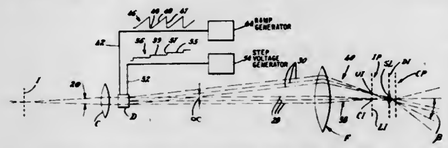


Apparatus, for use in a display system wherein a central high resolution color image is supplemented by crude monochrome display, which senses the average color in the high resolution display and adds that color to the monochrome display is shown. Two embodiments for use with projected images are described. One in which the sensed color is provided by passing the light through a C.I.E. diagram positioned by the sensed color signals to obtain a matching color and a second in which controlled amounts of light are mixed to obtain the color. An embodiment for use with a CRT displays in which the three color video signals are averaged of a line on the high resolution display and the average provided to the monochrome displays is also shown.

3,699,245
PICTORIAL SYSTEMS, HAVING HIGH RESOLUTION IMAGERY AT ALL OBJECT DISTANCES

Roderic M. Scott, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed March 11, 1970, Ser. No. 18,624
Int. Cl. H04n *3/10*
U.S. Cl. 178—6 **7 Claims**

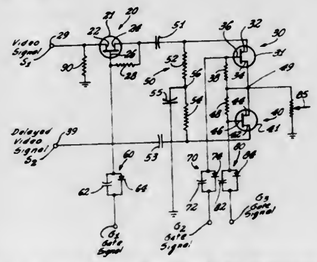


A system for obtaining a reproducable image, as for television transmission, of a reduced scale three-dimensional model, exhibits not only high angular and linear resolution, but "infinite" depth of focus. Radiation from a laser, focussed to a spot or "point" source with extremely small angular divergency is formed into a narrow beam which is then deflected by rapidly variable deviator (preferably operating on collimated radiation) to cause a desired scan pattern (e.g., a conventional line by line type of rastor). Additional optical elements cause effective magnification of the original deflection angle without destroying the generally narrow divergency of the scanning beam, as well as causing the effective center of the scanning sweep angle to be located at a point that may be moved extremely close to the model. A photosensitive detector "sees" the entire model to receive the radiation reflected from that part of the model being illuminated by the scanning beam at any given moment. By causing the final scanning beam image to be substantially at the closest point of approach of the scanning system to the model, the linear resolution at critically close distances is "maximized", while the relatively narrow final divergency angle assures high angular resolution at all operating distances. The signal generated by the detector can be processed and transmitted in a manner analogous to conventional television signals.

3,699,246
DROPOUT COMPENSATOR HAVING A SELF-BALANCING SWITCH

Frederick J. Hodge, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1970, Ser. No. 11,425
Int. Cl. H04n *5/21*, *5/78*
U.S. Cl. 178—6.6 DO **16 Claims**

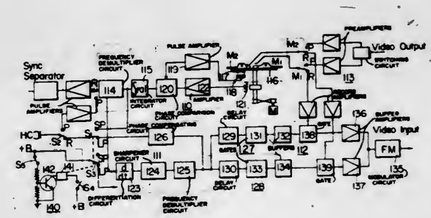


The present invention is directed to an improved dropout compensator having a self-balancing video switch that provides an output signal having substantially a constant average voltage level. The self-balancing video switch is coupled to receive a direct video signal provided by a demodulator and normally conducts the direct video signal as the dropout compensator output signal. When a dropout is detected by a dropout detector, the dropout detector applies gate signals to the self-balancing video switch. When the self-balancing video switch receives the gate signals, the switch terminates conducting the direct video signal and initiates conducting a delayed video signal as the dropout compensator output signal. The self-balancing video switch includes a balancing circuit that maintains the switch output signal at a substantially constant average voltage level when switching between the direct and the delayed video signal.

3,699,247
MULTIFUNCTIONAL VIDEO TAPE RECORDER OF HELICAL SCAN TYPE

Fumio Mashima, Osaka, Japan, assignor to Sango Electric Co., Ltd., Osaka-fu, Japan

Filed Sept. 30, 1970, Ser. No. 76,744
Claims priority, application Japan, Sept. 30, 1969, 44/78322; Sept. 30, 1969, 44/78323; Sept. 30, 1969, 44/78324
Int. Cl. G11b *5/52*, *5/56*; H04n *5/78*
U.S. Cl. 178—6.6 FS **14 Claims**



There is provided a multifunctional video tape recorder of the helical scan type capable of performing normal recording and playback, slow-motion playback with the use of a video tape recorded in normal recording, long term recording and playback, accelerated motion playback with the use of a video tape recorded in long term recording, and still reproduction with the use of a video tape recorded in normal recording, without necessitating any separate, additional devices for each of these functions. To this end, there is incorporated means for causing the rotary heads to properly trace the specific recorded tracks in spite of the change in the tape transporting speed.

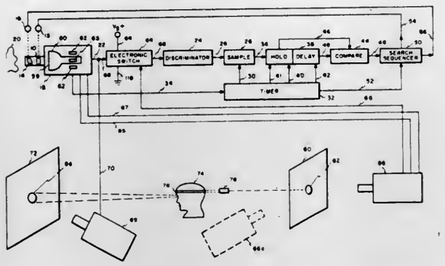
3,699,248
AUTOMATIC AREA OF INTEREST TELEVISION OPTICAL PROBE FOCUS APPARATUS

John C. McKechnie, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Continuation of Ser. No. 184,132, Sept. 27, 1971. This application Jan. 10, 1972, Ser. No. 216,676
Int. Cl. H04n *5/34*
U.S. Cl. 178—6.8 **7 Claims**

An automatic focusing apparatus for a television optical probe system wherein an automatic focus system normally responsive to output signals of a video camera to focus its lens system on a scene is held in inhibited condition by a normally closed electronic switch interrupting the passage of video electrical signals from said camera to said automatic focus system, and wherein a monitor screen is positioned for obser-

vation by a viewer and a sensor system responsive to head movement of the viewer is provided to produce electrical signals to gate the electronic switch to "on" condition to



thereby provide lens focusing of said camera only during that portion of the video scan corresponding to a limited area of the monitor on which the trainee viewer's eyes are focused.

3,699,249

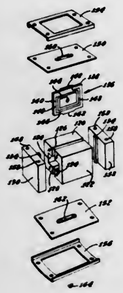
FACSIMILE SYSTEMS, TRANSCEIVERS, AND MARKING TRANSDUCERS THEREFOR

Paul J. Crane, Torrance, and Glenn A. Reese, San Pedro, both of Calif., assignors to The Magnovox Company, Torrance, Calif.

Continuation of Ser. No. 549,759, April 21, 1966, abandoned, which is a continuation of Ser. No. 176,248, Feb. 28, 1962, abandoned. This application Sept. 20, 1967, Ser. No. 669,315

Int. Cl. G01d 15/16; H04r 9/04, 9/12

U.S. Cl. 178—6.6 R **26 Claims**



This invention relates to a system for reproducing a facsimile image. The system includes a transceiver which is adapted to transmit facsimile information or to receive and record facsimile information. The transceiver includes rotary members which rotate past an arcuately disposed document to transmit the information on the document or to receive and record facsimile information on the document.

The record transducer in the transceiver includes a novel electromagnetic arrangement for recording the facsimile information on the document. This novel electromagnetic arrangement includes a thin winding which receives signals representing the facsimile information and varies the characteristics of a magnetic field in accordance with the characteristics of such signals to control the movements of a stylus.

The system constituting this invention transmits the facsimile information through telephone lines. Acoustical couplers are provided at the transmitter and at the receiver for insuring that the information can be transmitted through the telephone lines, even over long distances, and can be successfully reproduced at the receiver.

3,699,250

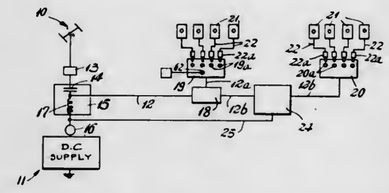
PROCESS AND SIGNAL DISTRIBUTING SYSTEM AND APPARATUS USED THEREIN

Earl L. Bunting, Westport, Conn., assignor to Bunting SteriSystems, Inc., Bridgeport, Conn.

Filed Jan. 11, 1965, Ser. No. 424,502The portion of the term of this patent subsequent to Oct. 3, 1984, has been disclaimed.

Int. Cl. H04n 5/655, 7/10

U.S. Cl. 178—6.8 **7 Claims**



The distribution of D.C. power and TV signals over a single wire coaxial cable to be uniformly divided and fed to a plurality of viewing stations in which a small television set is adjustably supported on a spring tensioned counterbalanced arm mounted on the bed or adjacent mounting bracket to provide for individual television viewing.

3,699,251

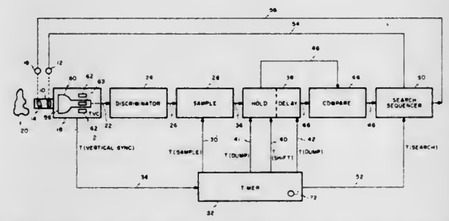
AUTOMATIC OPTICAL PROBE FOCUS APPARATUS

John C. McKechnie, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 27, 1971, Ser. No. 184,132

Int. Cl. H04n 5/34

U.S. Cl. 178—7.2 **4 Claims**



An automatic focusing device for an optical probe system based upon the phenomenon that maximum frequency of video signal above a selected gray level signal output is determinative of the precise point of the lens focus for the subject distance and in which automatic sampler and comparator means are provided to continuously sample and compare sequential video signal frequency to provide output signals for actuating servo means to adjust the lens system to precise focus.

3,699,252

PHOTOGRAPHIC SUPPORT SYSTEM

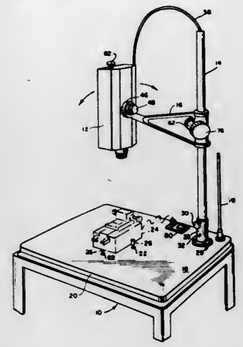
John L. Jackson, Hopkins, S.C., assignor to Technicraft, Inc. (Division of Jackson Industries, Inc.), Columbia, S.C.

Filed Jan. 6, 1971, Ser. No. 104,267

Int. Cl. H04n 5/24, 7/18

U.S. Cl. 178—7.2 **10 Claims**

A camera support system is provided which permits transmitting a correct left-to-right and rightside-up image of visual matter held by registration means on a horizontally extending support surface. A camera mounting bracket and a unique mounting means which connects the bracket to a vertically extending rod permit easy adjustment of the elevation of the camera with respect to the horizontal support surface. In a predetermined embodiment, the rod includes a vertically ex-



tending slot and the mounting means includes a drive roller including a projection that protrudes into the slot with the sides of the projection frictionally engaging the sides of the slot.

3,699,253

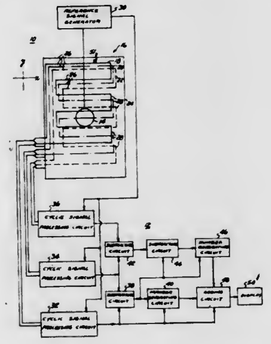
COORDINATE DETERMINING DEVICE EMPLOYING A SECOND ORDER DIFFERENCE SIGNAL TO DETERMINE APPROXIMATE CURSOR POSITION

Morris David Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed July 6, 1971, Ser. No. 159,898

Int. Cl. H04n 1/00

U.S. Cl. 178—19 **8 Claims**



Cursor position is determined by providing three signals that vary cyclically at different rates in response to cursor position. The three provided signals are used to provide two first order difference signals and one second order difference signal. The first order difference signals vary substantially slower than the three cyclic signals and thus indicate cursor position over a distance in which the cyclic signals change through more than one cycle. The second order difference signal varies at a rate substantially slower than the two first order differences and thus indicates cursor position over a distance in which the two first order signals vary through more than one cycle. A digital output signal indicating cursor position is provided by using the second order difference to form the most significant portion of the output, by using one of the first order differences to form a less significant portion, and by using one of the three cyclic signals to provide the least significant output signal.

3,699,254

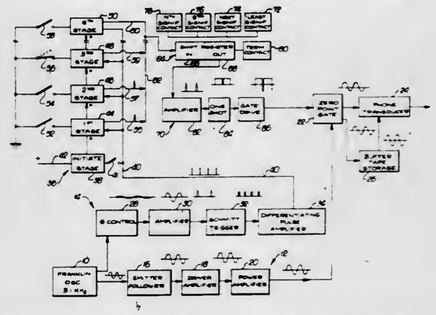
CODE TONE PULSE TRAIN DATA TRANSMITTING AND RECEIVING SYSTEM USING SINE WAVE GATING

James C. Naiken, Santa Ana, Calif., assignor to International Data Systems, Reno, Nev.

Filed Nov. 17, 1969, Ser. No. 877,208

Int. Cl. H04l 27/00

U.S. Cl. 178—66 R **4 Claims**



Method and apparatus for transmitting data through the medium of ordinary telephone lines and handsets. Character information is generated in the form of gated sine wave tone bursts of a fixed audio frequency compatible with the telephone system, wherein the character information is contained in the number of continuous sine wave cycles in each tone burst. The sharp rise and decay times normally associated with pulse transmission, and consequent ringing and interference with reserved frequency areas, are avoided by substantially zero crossover initiation and termination of each tone burst, and PDM distortion is minimized by a combination of partial modulation, substantial on time-to-off time, and optimum frequency selection for harmonic and subharmonic rejection by telephone system rolloff.

3,699,255

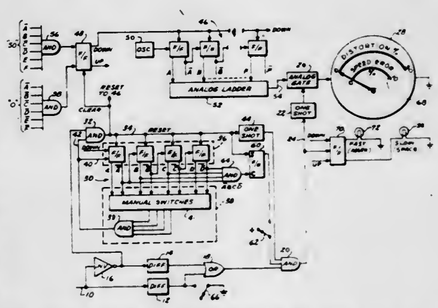
METHOD AND APPARATUS FOR MEASURING SPEED-ERROR IN A PULSE TRAIN

Jacob L. Wallace, Jr., Springfield, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed June 24, 1970, Ser. No. 49,365

Int. Cl. H04l 25/02

U.S. Cl. 178—69 M **15 Claims**



A measurement of transmission speed-error can be obtained by utilizing the present inventive concepts with conventional pulse or telegraph distortion measuring apparatus. For each character in the pulse train fed to the apparatus, a period of time is established for making measurements. The transitions which occur during this time period are measured in the normal manner and displayed. The meter or other display ap-

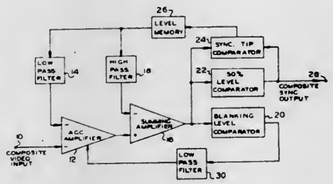
paratus is designed to divide the reading by an appropriate number in order to compensate for the cumulative effect of speed error, and an indication is also made as to whether the speed is faster or slower than normal.

3,699,256

CIRCUIT FOR ACCURATELY DETECTING THE TIME OF OCCURRENCE OF A WAVEFORM

Stephen A. Roth, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 28, 1970, Ser. No. 101,732
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 TV **10 Claims**



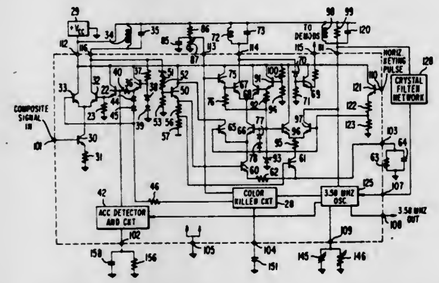
A circuit for accurately determining the time of occurrence of television synchronization pulses includes a means for establishing sync waveform tips at a first voltage value and means for controlling the amplitude of the video waveform so the blanking level achieves a second voltage value. The time of the synchronization pulse is then determined midway between these values. A pair of feedback loops are provided for substantially clamping the sync tips to the first value via a first low pass feedback circuit operating outside of the gain controlled system, and a high pass feedback circuit operating within a relatively fixed signal level environment.

3,699,257

AMPLIFIER CIRCUITS

Leopold Albert Harwood, Sommerville, and Erwin Johann Wittmann, N. Plainfield, both of N.J., assignors to RCA Corporation

Division of Ser. No. 822,887, May 8, 1969, Pat. No. 3,604,843. This application March 19, 1971, Ser. No. 126,348
Int. Cl. H04n 9/46
U.S. Cl. 178—69.5 CB **5 Claims**



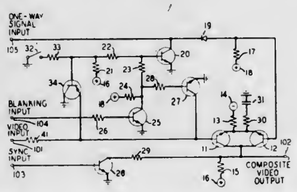
Circuitry for selectively amplifying chrominance subcarrier signal frequencies and for separating oscillatory burst therefrom in response to keying pulses includes first, second, third and fourth transistors. The first and second transistors are connected as a first switchable differential amplifier with their emitter electrodes supplied composite chrominance and burst signals and the collector electrode of the second transistor coupled to a frequency selective network from which chrominance signals are to be taken. The third and fourth transistors are connected as a second switchable differential amplifier with their emitter electrodes supplied composite chrominance and burst signals and the collector electrode of the fourth transistor coupled to a frequency selective network from which burst signals are to be taken. The second and third transistors have their joined base electrodes connected to an operating bias, an the first and fourth transistors have the keying pulses applied to their joined base electrodes.

3,699,258

VIDEO PROCESSING CIRCUIT FOR PRODUCING A COMPOSITE TELEVISION SIGNAL INCLUDING BLANKING AND SYNCHRONIZATION SIGNALS

Gabor Peter Torok, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1971, Ser. No. 157,994
Int. Cl. H04n 5/40
U.S. Cl. 178—7.2 **7 Claims**



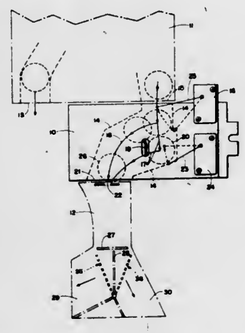
A composite video signal is produced by combining video, blanking and sync signals in an emitter coupled transistor pair that has its collectors connected together. This is achieved by applying the video signal to the first base of the transistor pair and a reference voltage to the second base of the pair. The sync is inserted at the output terminal of the circuit, the common collector junction of the transistor pair, and blanking is inserted by clamping the video input to ground in response to the blanking signal. In a second mode, where a test signal is to be used instead of the video signal, a clamp is maintained on the video signal input; while the test signal and blanking signal are combined and applied to the second base of the transistor pair in place of the reference voltage.

3,699,259

COIN SWITCH APPARATUS

Henry Allan Main, and Joseph Thompson, both of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed July 15, 1971, Ser. No. 163,012
Int. Cl. H04m 17/02
U.S. Cl. 179—6.5 **10 Claims**



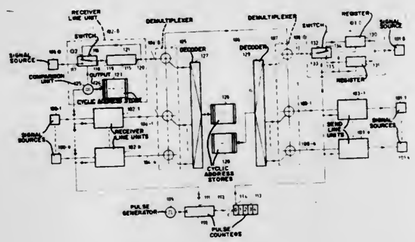
Coin switch apparatus for prepay coin actuated mechanisms, such as telephones, in which a minimum prepaid amount must be deposited before actuation of the mechanism. Where a coin deposited is equal to or more than the required minimum, the coin proceeds right through, actuating a signalling means if desired. Where two coins of a particular value must be deposited to meet the minimum amount, the first coin is held in the mechanism by a latch and a second coin will strike the first coin, be deflected and proceed through the apparatus. The coin held actuates a switch for ensuring a connection for withdrawal of the latch and release of the coin on reception of a release signal.

3,699,260

TELECOMMUNICATION SYSTEM WITH TIME DIVISION MULTIPLEX

Oscar Bernardus Philomenus Rikkert De Koe, Emmasingel, Eindhoven, and Robert Jacques Marie Verbeek, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,524
Claims priority, application Netherlands, June 24, 1970, 7009247
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS **2 Claims**



A telecommunication system with time division multiplex in which receive time multiplex transmission systems are connected to respective data stores of a group of cyclic data stores, each of which has a cycle time of one channel interval ad a plurality of store locations the number of which is at least equal to the number of channels of a time multiplex transmission system. The cyclic data stores are connected to an adjustable second-order multiplexer. The line units of the send time multiplex transmission systems are connected to an adjustable second-order demultiplexer. A connecting arrangement is connected between the adjustable second-order multiplexer and the adjustable second-order demultiplexer. Associated with the receive time multiplex transmission systems are address stores for the arbitrary association of the store locations of the cyclic data stores with the channels of the receive time multiplex transmission systems.

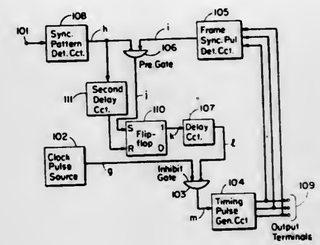
3,699,261

FRAME SYNCHRONIZING CIRCUIT FOR HIGH CLOCK FREQUENCY DIGITAL COMMUNICATION

Atsushi Tomozawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,705
Claims priority, application Japan, Nov. 27, 1969, 44/95505
Int. Cl. H04j 3/06; H04l 7/08
U.S. Cl. 179—15 BS **6 Claims**

A frame synchronizing circuit utilizes dual signal loops for inhibiting a clock pulse generator for a given time duration. The first loop includes a timing pulse generator a frame synchronous pulse detector, the set input of a bistable device an output thereof and two inhibit logic gates. The second loop control includes a synchronous pattern detector, delay means, and the reset input to the bistable device. Such dual control loop is useful in digital communication system operating at a high clock frequency in which loop delay time is not negligible.

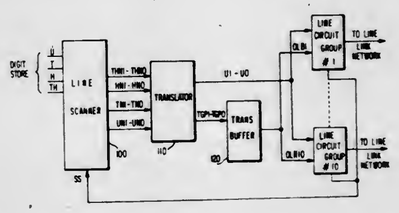


3,699,262

SCANNER AND TRANSLATOR-MARKER ARRANGEMENT FOR PBX

Ernest O. Lee, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,431
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET **12 Claims**



A line scanner and translator-marker arrangement which provides for the strapping of digit signal outputs from a scanner in selective combinations to respective line circuits so that scanning and marking automatically includes translation which is performed on a continuous basis. As a result, the arrangement provides for two-way operation; not only performing marking of the line circuits for extending calls but also in reverse operation to detect the identity of a marked line circuit without additional equipment, where said identity may be independent of the physical location of the line circuit.

3,699,263

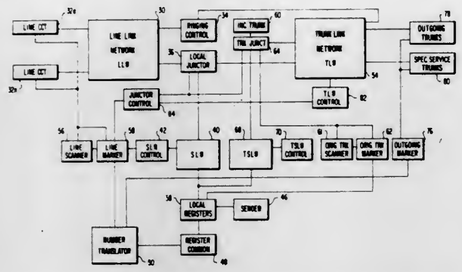
LINE SCANNER AND MARKER ARRANGEMENT USING GROUP SCANNING

Gunter F. Neumeier, and Otto Altenburger, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 23, 1970, Ser. No. 101,091
Int. Cl. H04q 3/495
U.S. Cl. 179—18 FF **26 Claims**

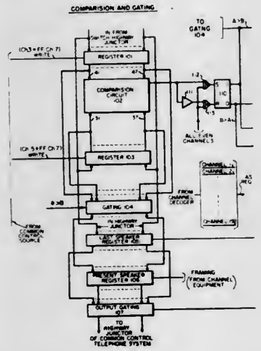
A line scanner and marker arrangement for a common control telephone system in which the line circuits are scanned in groups rather than on an individual line-by-line basis. A

request for service detected from one or more lines in a group being scanned stops the scanning on that group and initiates the scanning of the individual lines of the group. The system



may be expanded in size without changing the scanning time by scanning more than one group of lines at a time and then scanning the individual lines of the combination of groups when a request for service is detected from one or more lines.

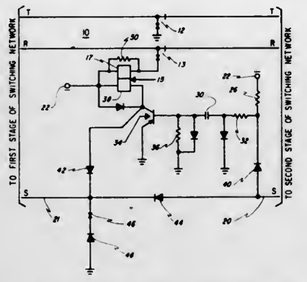
3,699,264
CONFERENCE CIRCUIT FOR PULSE CODE MODULATED TELEPHONY
Saytan G. Pitroda, Villa Park, and Bernard J. Rekiere, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed March 2, 1971, Ser. No. 120,152
Int. Cl. H04m 3/56
U.S. Cl. 179—18 BC **6 Claims**



A technique for connecting a plurality of telephone channels operated on a pulse code modulated basis, in a conference arrangement. Digital signals are not converted to analog, rather binary words are compared from the participating channels, with the largest binary number selected as the speaker.

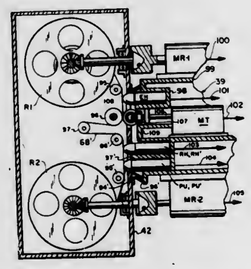
3,699,265
LINE LOCKOUT CIRCUIT
Otto Altenburger, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Continuation-in-part of Ser. No. 108,381, Jan. 21, 1971. This application June 15, 1971, Ser. No. 153,232
Int. Cl. H04m 3/08
U.S. Cl. 179—19 **11 Claims**

A lockout circuit for connection in a telephone switching exchange utilizes a lockout relay to isolate a telephone line from common switching equipment in the exchange whenever a telephone receiver and/or the connected telephone line form a closed loop path and no attempt is made to complete a call within a prescribed period. Removal of the ground con-



nection to the sleeve lead by the conventional timer in the trunk circuit energizes an operate winding of the lockout relay. The relay also has a hold winding connected through a set of its own contacts and the subscriber's line, and remains held up so long as the line loop remains closed.

3,699,266
TAPE CARTRIDGE AND TRANSDUCING MEANS THEREFORE
Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.
Continuation-in-part of Ser. No. 142,748, Aug. 28, 1961, Pat. No. 3,646,258, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Feb. 7, 1972, Ser. No. 224,131
Int. Cl. G11b 23/08, 23/12, 23/42
U.S. Cl. 179—100.2 Z **12 Claims**

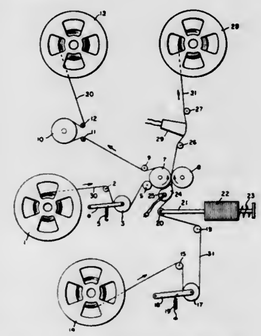


An apparatus and method for reproducing information recorded on magnetic tapes stored in a plurality of cartridges for the purpose of displaying or otherwise utilizing said information. In one form the cartridges are disposed side-by-side on a retainer which is moved with respect to a transducer to align a selected cartridge with said transducer to permit the transducing of information relative to the tape of the selected cartridge. In another form the transducer is moved past an array of cartridges and is stopped in alignment with a selected cartridge after which operative coupling is effected between the transducer and the tape of the selected cartridge. In a third form, both the array of cartridges and transducer are moved.

Means are also provided for coupling a drive means associated with the transducer to a selected tape cartridge upon alignment of the two, to effect movement of the tape in the cartridge past the transducer for scanning selected portions of the tape. The apparatus also includes remote control and automatic control elements for the means selectively positioning the cartridges and transducer and driving the tape in the selected cartridges. In yet another form, cartridges are provided which are totally enclosed to protect the tape therein

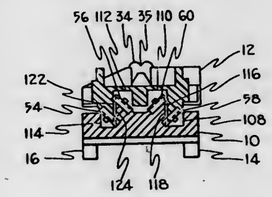
and an access door is opened to the cartridge upon aligning and coupling a selected cartridge and the transducer.

3,699,267
APPARATUS FOR COPYING MAGNETIC TAPES
Paul C. Hoell, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed March 18, 1970, Ser. No. 20,719
Int. Cl. G11b 5/86; H01v 3/04
U.S. Cl. 179—100.2 E **2 Claims**



A thermoremanent copying apparatus for copying signals recorded on magnetic tape in which the face of the copy tape having a layer of magnetic material is heated above the Curie temperature by contact with a metal block immediately prior to contacting a master tape in the nip of two rolls.

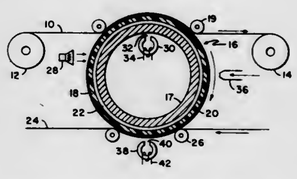
3,699,268
PHONOGRAPH PICKUP WITH SELF FORMED FEMALE RECEPTACLES
Michael Evans Miller, Marion, Ind., assignor to RCA Corporation
Division of Ser. No. 887,849, Dec. 24, 1969, Pat. No. 3,610,840. This application March 8, 1971, Ser. No. 121,633
Int. Cl. H04r 17/08; G11b 3/10
U.S. Cl. 179—100.41 K **8 Claims**



A phonograph pickup includes a case having a top section and a bottom section. A single piece elastomer member includes a stylus beam coupler, a damping block, and two interconnecting support elements mounted in the case. A transducing element is positioned on each of the support elements, with the ends of the transducing elements inserted into apertures in the beam coupler and damping block. Electrical terminals are positioned on opposing surfaces of the transducing elements. When the top and bottom case sections are secured together, female receptacles are formed. Each female receptacle includes one of the electrical terminals positioned on the transducing elements.

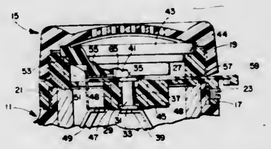
A guard member having a channel in its underside is secured to the housing. The guard member is positioned such that a predetermined force applied to the pickup stylus deflects the stylus carrying beam into the guard member channel.

3,699,269
DOUBLE TRANSFER TAPE COPY SYSTEM
Philip Smaller, 4155 Wilkie, Palo Alto, Calif.
Filed Sept. 30, 1971, Ser. No. 185,225
Int. Cl. G11b 5/86
U.S. Cl. 179—100.2 E **15 Claims**



The disclosure illustrates a method and apparatus for thermomagnetically and magnetically transferring short and long wavelength signals from a master magnetic tape to a pair of magnetizable layers of an intermediate carrier. The signal on the intermediate carrier subsequently is transferred to a copy tape either magnetically or thermomagnetically.

3,699,270
TELEPHONE DISCONNECT DEVICE
Robert S. Goodrich, 27901 South Golden Meadow Drive, Palos Verdes Peninsula, Calif.
Filed Aug. 17, 1970, Ser. No. 64,308
Int. Cl. H04m 1/19
U.S. Cl. 179—158 **13 Claims**

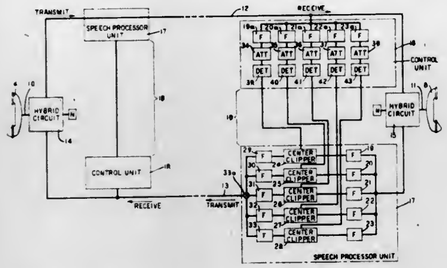


A telephone cut off device for a telephone transmitter which is an insert disposed between the mouth piece of the transmitter and the main transmitter housing. The device has contacts on one side thereof for engaging the spring contacts in the transmitter housing, the contacts extending through the device to engage the corresponding terminals on the transmitter capsule unit. A depressible means for moving one of the contacts in the device is provided to break the contact between a corresponding spring contact in the transmitter between a corresponding spring contact in the transmitter housing and corresponding terminal in the capsule unit.

3,699,271
SPEECH PROCESSOR USING MULTIBAND CONTROLLED CENTER CLIPPING
David Arthur Berkley, Red Bank; Olga Mary Mracek Mitchell, Summit, and John Robinson Pierce, Warren, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 16, 1970, Ser. No. 89,633
Int. Cl. H04b 3/24
U.S. Cl. 179—170.8 **6 Claims**

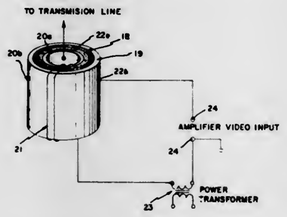
An echo suppressor for full duplex telephone circuits consists of a filter bank of contiguous band filters in the transmission path, with each filter output feeding a separate center

clipper. Each clipping level is controlled by echo signal amplitude as attenuated by the trans-hybrid loss that occurs in



the corresponding subband. The scheme permits "double-talking" while suppressing the echo component.

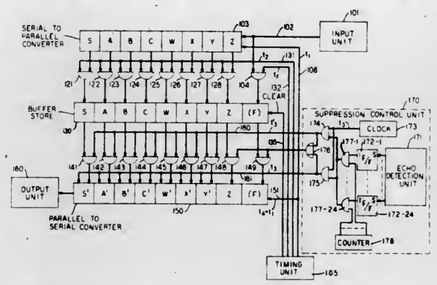
3,699,272
FILTER FOR A VIDEO AMPLIFIER
William Baird Fritz, Hershey, assignor to William Jeffrey Hudson, Jr., Hummelstown, both of, Pa. and AMP Incorporated, Harrisburg, Pa.
Filed May 12, 1971, Ser. No. 142,710
Int. Cl. H04b 3/58
U.S. Cl. 179—170 F **3 Claims**



A filter for a video amplifier of the type used to amplify a signal on a transmission line which also carries power for operating said amplifier comprises a tubular semiconductive ferrite member coated with barium titanate. An inner conductive layer is provided on the ferrite and an outer conductive layer on the barium titanate. A plurality of turns of insulated wire forms a winding which is connected to the inner conductive layer at a point which is also connected to the transmission line. The other end of the winding is connected to a power transformer for the amplifier. The video input of the amplifier is connected between the filter's outer conductive coating and the power transformer. In another embodiment, the outer and inner conductive coatings are split and the filter is connected so that an effective shunting capacitance is connected across the power transformer. Alternatively, two filters of the type including tubular ferrite members, barium titanate and conductive coatings are used.

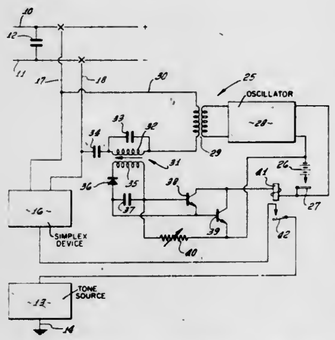
3,699,273
ECHO SUPPRESSION GATE FOR DIGITAL CODE WORDS INCLUDING NOISE INSERTION
William Lloyd Montgomery, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 24, 1970, Ser. No. 101,381
Int. Cl. H04b 3/20
U.S. Cl. 179—170.2 **10 Claims**

Apparatus for suppressing echoes in digital speech transmission systems includes a serial-to-parallel converter, a buffer store and a parallel-to-serial converter. Digital code words propagating in serial form are first converted to parallel code words. The bits of the parallel code words are then supplied to the buffer store. An echo is suppressed by clearing the buffer store of the stored bits of the digital code word representing the echo and supplying logical signals representing substan-



tially a zero amplitude signal to the parallel-to-serial converter. During the suppression of an echo code word, noise is automatically inserted into the transmission facility by allowing the logical signal in at least the last bit of the code word being suppressed to pass unaltered.

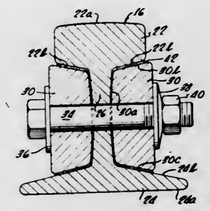
3,699,274
APPARATUS FOR IDENTIFYING TELEPHONE CABLE PAIRS
Richard L. Bennett, Saugus, Calif., assignor to Perkins Research & Mfg. Co., Canoga Park, Calif.
Filed July 22, 1971, Ser. No. 165,175
Int. Cl. H04m 3/26
U.S. Cl. 179—175 **10 Claims**



An apparatus for identifying telephone cable pairs which may be in use by the customer without disturbing service, including a tone source, a simplex device and a switch circuit working in conjunction with the simplex device using the pair capacity to operate the circuit only when the proper electrical connection is made between the tapping wires of the device and each of the pair wires.

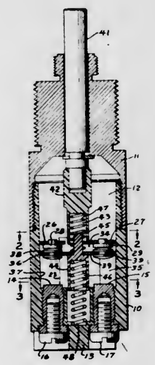
3,699,275
COMPOSITE ELECTRICAL CONDUCTOR
Cecil J. Mayo, Hillsborough, and Ronald J. Kilburg, San Carlos, both of Calif., assignors to Insul-8-Corp., San Carlos, Calif.
Filed Nov. 18, 1970, Ser. No. 90,701
Int. Cl. B60m 1/30
U.S. Cl. 191—29 **6 Claims**

A pair of aluminum bars are bolted to the web of a steel rail having a generally I-shaped cross-section. The bars are contoured to fit within the recesses formed on each side of the rail to provide good electrical contact between the aluminum and the steel and a layer of conductive grease is positioned



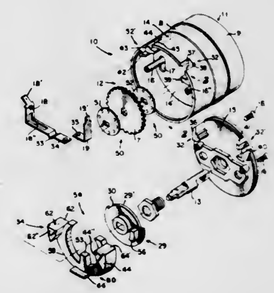
between the bar and the rail. The bars can be provided with deformable means for sealing the interface between the bar and the aluminum as the bars are drawn into engagement with the rail.

3,699,276
LINEAR PUSH PLUNGER ELECTRICAL SWITCH WITH TUBULAR SHROUD ARC PREVENTION MEANS
Namik O. Atakkaan, Buffalo Grove, Ill., assignor to Appleton Electric Company, Chicago, Ill.
Filed April 5, 1971, Ser. No. 131,370
Int. Cl. H01h 33/06, 15/10
U.S. Cl. 200—16 A **6 Claims**



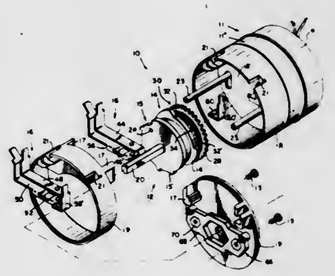
An insulated body defines a longitudinal cavity about an axis. A contact carrier moves axially within said cavity in the manner of a piston and defines compartments at opposite sides thereof. The carrier is electrically conductive and has contacts diametrically positioned. In each compartment there are two fixed contacts aligned with the movable contacts and actuating means is operatively connected to the contact carrier. This operating means includes springs at each side of the carriers and insulating members that shroud the springs as contact separation takes place in either direction.

3,699,277
TIMER WITH INTERNAL STOP MECHANISM COMPRISING ANNULAR RING STRUCTURE INTERFITTING COMPLEMENTARY HOUSING MEMBER
Paul J. Straub, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed June 11, 1971, Ser. No. 152,183
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 R **11 Claims**



A stop means is sandwiched between two members carried by a rotating shaft, the stop means cooperating with a lug carried by one of the members to limit the shaft's rotation.

3,699,278
ELECTRICAL TIMER WITH IMPROVED RESILIENT CONTACT MOUNTING AT GANGED HOUSING SECTION COMPLEMENTARY INTERFACES
Lewis E. Jones, and Daniel W. Bernhardt, both of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 28, 1970, Ser. No. 75,855
Int. Cl. H01h 7/08, 43/10, 1/28
U.S. Cl. 200—38 R **8 Claims**

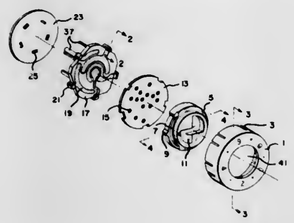


Stages of cam program means and electrical switching means responsive to the cam program means are carried in open ended housings which are disposed in axially aligned juxtaposition with the mating of projections and notches formed as part of the housings.

3,699,279
ROTARY SWITCH WITH IMPROVED PRINTED CIRCUIT CONTACT AND TERMINAL CONNECTION ARRAY

Joseph L. Lockard, and William Henry Rose, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 26, 1971, Ser. No. 119,273
Int. Cl. H01h 1/58, 19/58
U.S. Cl. 200—11 G 9 Claims

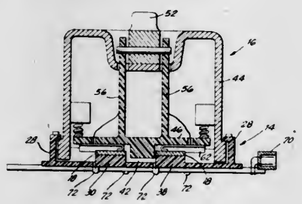


The disclosure relates to a rotary switch wherein a brush is rotatable to a predetermined number of discrete positions, each position setting up a coded output through a printed circuit by means of brushes and a code disc. The construction provides a very compact switch which is easily operated by a coin, key, finger or the like.

3,699,280
RECIPROCATING SWITCH ASSEMBLY FOR DISTRIBUTION PANELS

Reiner Mathias Hohenberger, Muehle, and Heinz Knitter, Schubler, both of Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Nov. 2, 1970, Ser. No. 85,843
Claims priority, application Germany, Oct. 31, 1969, P 19 55 020.0
Int. Cl. H01h 15/00
U.S. Cl. 200—16 A 7 Claims

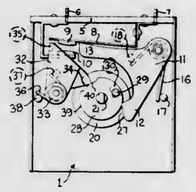


This invention relates to a device for the distribution of electrical signals from a signal source to the control members of a receiving apparatus. In accordance with the invention, there is provided a plurality of elongated fixed contact strips, each having a plurality of fixed contacts thereon. A first distributing means picks up signals from the program carrier and distributes these signals to a printed circuit board which distributes the signals to the various fixed contacts of the contact strips. A slide-contact member is slidably disposed on each of the contact strips for movement therealong, and have a plurality of slide-contacts which engage corresponding ones of the fixed contacts of the contact strips. In this manner, predetermined ones of the signals from the signal source can be selected and routed to the receiving apparatus by a second distributing means.

3,699,281
MANUAL PRESET INTERVAL TIMER WITH LATCH HOLDING MEANS FOR CONTACTS

John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.

Filed Sept. 7, 1971, Ser. No. 178,176
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 260—38 R 7 Claims

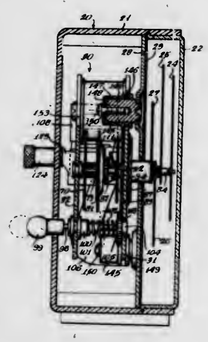


Slow or incomplete closure of manual preset interval timer contacts during the setting operation is avoided by a latch which prevents closure of the contacts until the timer knob has been turned far enough to insure complete closure of the contacts. This latch allows the contacts to assume very close proximity before releasing. This closes the contacts with a positive and rapid movement and avoids contact bounce.

3,699,282
INTERVAL TIMER HAVING MAGNETIC WALL PORTIONS

Ivar Jepson, South Duxbury, Mass.; John W. Morgan, Elmhurst, and James W. Richmond, Bensenville, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 480,578, Aug. 18, 1965, Pat. No. 3,389,452, which is a division of Ser. No. 322,218, Nov. 7, 1963, Pat. No. 3,248,867. This application July 10, 1967, Ser. No. 652,106
Int. Cl. H01h 43/18
U.S. Cl. 200—38 A 9 Claims

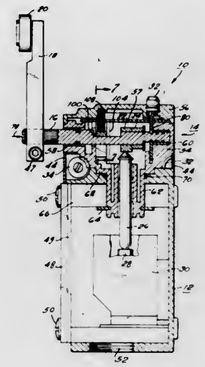


Timing device comprising a frame with magnetic wall portions and an electric motor having a rotor utilizing the magnetic wall portions for providing a flux path for flux produced by an electric winding associated with an axis displayed from the axis of the rotor.

3,699,283
ELECTRICAL LIMIT SWITCH

Martin D. Ustin, Pine Brook, N.J., assignor to Buchanan Electrical Products Corporation, Union, N.J.

Division of Ser. No. 567,172, July 22, 1966. This application Sept. 29, 1970, Ser. No. 76,567
Int. Cl. F16h 21/44
U.S. Cl. 200—47 14 Claims

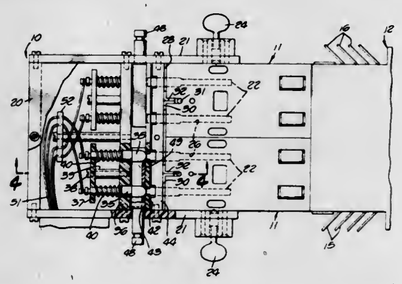


The device has an actuating arm which is rotated to actuate the switch. The position of the arm is infinitely adjustable with respect to the body of the device so as to make it possible to actuate the arm from numerous different directions. Also, the arm is adjustable, without disassembling the device, to provide three modes of switch operation; one in which the switch is operated only by clockwise rotation of the arm, a second in which only counter-clockwise arm rotation produces switch operation, and a third in which the switch is operated by rotation in either direction.

3,699,284
TAP SHOE ASSEMBLY FOR USE WITH WIRE TERMINAL STRIPS

Karl R. Anderson, Pasadena, Calif., assignor to John T. Thompson, Los Angeles and George W. Gillemot, Santa Monica, Calif.

Filed Aug. 26, 1971, Ser. No. 175,270
Int. Cl. H01r 33/30
U.S. Cl. 200—51.04 17 Claims

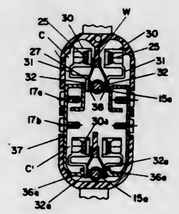


A gang connector for temporary use in making simultaneous connection to a multiplicity of pairs of conductors permanently soldered to the separate terminals of a terminal strip. The connector includes simple, positive means housed therein for making or breaking contact between any selected pair of conductors and terminals carried by the connector and readily connectable to cabling equipped with separable coupling means mateable with these terminals. The connector is specially designed with conductor prongs insertable into the test probe wells of individual line protectors customarily present on wire terminal strips. Guard strips extend along either side of these conductor prongs and include adjustable means for clamping the connector assembled to the terminal strip via its line protectors.

3,699,285
SAFETY ELECTRICAL RECEPTACLE

Ralph W. Leatherman, Vale, N.C., assignor to Glenn Bingham, Lawndale; Ken Mayhew, Cherryville; Henry Ritchie, Cleveland and Hugh Leatherman, Florence, all of, N.C., part interest to each

Continuation-in-part of Ser. No. 18,219, March 10, 1970, abandoned. This application Sept. 14, 1970, Ser. No. 72,190
Int. Cl. H01v 33/30
U.S. Cl. 200—51.09 5 Claims

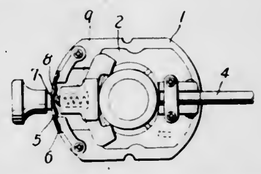


A safety electrical receptacle of the type receiving three wire grounding plugs, wherein the electrical circuit between the power supply terminal and the corresponding contact, to which the line voltage is fed, is normally open. Insertion of the grounding prong of the plug into the ground opening urges a movable portion of the corresponding contact into engagement with a fixed contact connected to the power supply terminal, thereby completing the electrical circuit from the terminal through the electrical contact elements and into the attachment plug blade. In one embodiment the grounding prong of the plug includes a tapered insulating jacket therearound to facilitate operation of the movable portion of the contact.

3,699,286
DIRECTIONAL SIGNALING MECHANISM FOR AUTOMOTIVE VEHICLE

Masaru Suzuki, Chiryu, and Yoshihiro Kawai, Nagoya, both of Japan, assignors to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed April 6, 1971, Ser. No. 131,659
Claims priority, application Japan, April 10, 1970, 45/35069
Int. Cl. H01h 3/18
U.S. Cl. 200—61.34 2 Claims



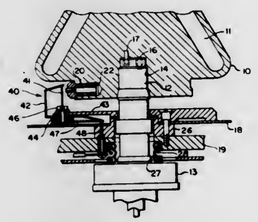
A direction signalling apparatus for a vehicle has an actuating member which is movable manually from a neutral position to one of two operating positions for indicating selectively a left-hand or a right-hand turn, or to intermediate positions between the operative positions for signaling a change of lanes. The actuating member will be returned automatically to

its neutral position from either of its intermediate positions upon release of the actuating member, but it will be returned from either of its two operating positions only upon backward rotation of the steering wheel.

3,699,287
SYSTEM FOR DETECTING EXCESSIVE CENTRIFUGE ROTOR OSCILLATIONS

Lawrence E. Stahl, San Mateo, and Lee Gropper, Santa Clara, both of Calif., assignors to Beckman Instruments, Inc.

Filed April 28, 1971, Ser. No. 138,077
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R 1 Claim

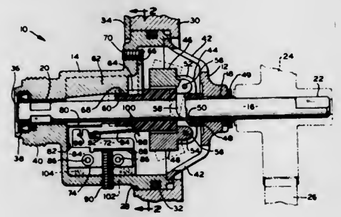


In a centrifuge including a centrifuge rotor and driving means for spinning the rotor at selected rotational speeds the improvement comprising a device for interrupting power to the driving means in the event of excessive rotor oscillations including an actuating means carried solely by the centrifuge rotor and switch means mounted in spaced relation to the lower peripheral portion of the rotor adjacent to the path of travel of the actuating means and in electrical circuit with the driving means.

3,699,288
SPEED RESPONSIVE SWITCH

Jackie E. Swoveland; Lothair Irvin, both of Hagerstown, and James A. Charles, Greens Fork, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed March 8, 1971, Ser. No. 121,952
Int. Cl. H01h *35/10*
U.S. Cl. 200—80 R 6 Claims

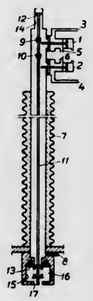


A speed responsive switch which is actuated at a first predetermined speed of rotation and deactuated at a second, but lower, pre-determined speed of rotation. A collar is urged axially by a flyweight governor and its movement is resisted by a leaf spring and the lever arm of an electrical switch which resists movement of the collar in only one direction.

3,699,289
OPERATING DEVICE FOR ELECTRIC SWITCHING APPARATUS FOR HIGH VOLTAGE

Sten Berneryd, and Hans Backskog, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 20, 1971, Ser. No. 181,872
Claims priority, application Sweden, Oct. 2, 1970, 13378/70
Int. Cl. H01h *33/42*
U.S. Cl. 200—148 R 9 Claims

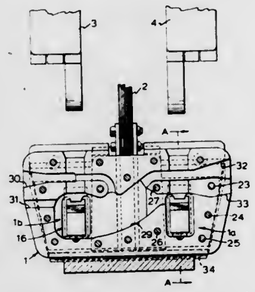


In an operating system for high voltage gas blast circuit breakers, the opening impulse is transmitted from earth to high potential by means of an insulating tension rod. A high initial acceleration of the rod is obtained by means of an electrodynamic operating device positioned at the lower end of the rod. This operating device comprises a stationary coil and an operating plate connected inductively to the coil and directly joined to the tension rod.

3,699,290
ELECTRIC CIRCUIT BREAKERS

George Caton, Ilkley, England, assignor to Yorkshire Switchgear and Engineering Co., Limited, Leeds, Yorkshire, England

Filed Oct. 18, 1971, Ser. No. 189,879
Claims priority, application Great Britain, Nov. 13, 1970, 54,152/70
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 L 10 Claims

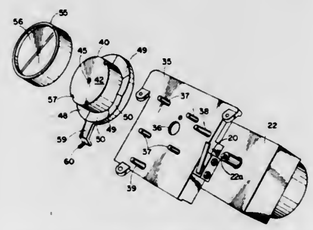


The invention concerns a fluid-immersed electric circuit breaker comprising first an second sets of fixed contacts each said set comprising a fixed main contact and a fixed arcing contact, an insulating carrier structure, a movable bridging contact carried on said insulating carrier structure and having first and second sets of movable contacts each set comprising a movable main contact and a movable arcing contact, said movable main and arcing contacts being movable to engage respective ones of said fixed main and arcing contacts, a fluid-filled arc-quenching chamber housing said movable contact sets and having a restricted outlet positioned so that under pressure of gas generated by arcing within the chamber a stream of said fluid under pressure is directed across an arcing path between one of said fixed arcing contacts and the associated one of said movable arcing contacts. In accordance with the invention the said arcing path is surrounded by at least one loop of ferromagnetic material which has been found to improve quenching of the arc.

3,699,291
APPARATUS FOR CONVERTING ROTATIONAL DISPLACEMENT INTO LINEAR DISPLACEMENT

Bernard R. Danti, Lexington, and Paul E. Brefka, Southboro, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed April 1, 1971, Ser. No. 130,193
Int. Cl. H01h *3/42*
U.S. Cl. 200—153 L 12 Claims

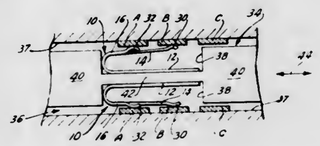


Apparatus for converting rotational displacement into linear displacement comprising a rotatable member and two sets of stationary members bearing each against one surface of said rotatable member. The rotatable member has two surfaces comprising a plurality of alternating oppositely inclined surfaces joined together to form a plurality of apices and the sets of stationary surfaces comprise posts adapted to register with one pair of oppositely inclined surfaces and one apex. For a given rotational displacement the posts contact at the same height of the inclined surfaces and the inclined surfaces are inclined in the same direction. This apparatus is useful as a means for actuating a timer to supply electrical power for a time interval while preventing accidental interruption of electrical power during the time interval.

3,699,292
SLIDABLE CONTACT MEMBER FOR MINATURE SWITCH

Masao Ohkita, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,577
Claims priority, application Japan, July 3, 1970, 45/66533
Int. Cl. H01h *1/10*
U.S. Cl. 200—166 J 4 Claims

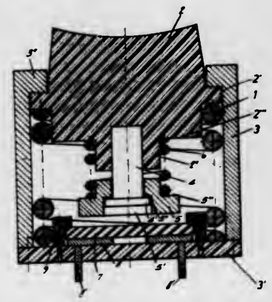


A contact member for use in a slide type miniature switch comprises an integral sheet metal body having a base portion and a plurality of resilient contact arms. The contact arms extend from the base portion to different lengths and are bent over substantially 180° and are provided at their ends with curved contact surfaces. The contact member is adapted to be received in a recess in a slide carrier whereby the contact surfaces are pressed selectively into sliding engagement with a plurality of fixed contacts mounted on the switch housing wall. The contact arms may be dimensioned to achieve either a shorting or non-shorting switch-over operation. The contact member may be conveniently fabricated from a single piece of sheet metal and is particularly suitable for mass production techniques.

3,699,293
KEY SWITCH FOR CHATTERLESS SWITCHING

Peter Portugall, Fischbach, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 31, 1970, Ser. No. 60,028
Claims priority, application Germany, Aug. 4, 1969, P 19 39 642.0
Int. Cl. H01h *1/50*
U.S. Cl. 200—166 H 10 Claims

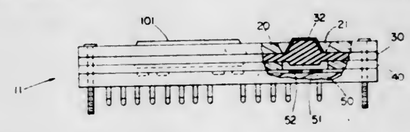


A normally open key switch for chatterless switching. The switching element is a silicone rubber part containing granular silver-plated, copper particles which normally lies in a loose relationship over a pair of separate contact plates. A compression member applies a deforming force to the switching element when the switch is actuated, causing a great decrease in effective resistivity of the switching element. The compression member is independently resiliently linked to the actuating button, permitting some button overtravel and thereby isolating the switching element from the full actuating force applied to the button.

3,699,294
KEYBOARD, DIGITAL CODING, SWITCH FOR DIGITAL LOGIC, AND LOW POWER DETECTOR SWITCHES

William B. Sudduth, Gloucester, Mass., assignor to Flex Key Corporation, Gloucester, Mass.

Continuation-in-part of Ser. No. 888,758, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 801,438, Feb. 24, 1969, abandoned. This application May 18, 1971, Ser. No. 144,453
Int. Cl. H01h *1/20*; H01h *1/50*; H01h *1/04*
U.S. Cl. 200—166 C 33 Claims



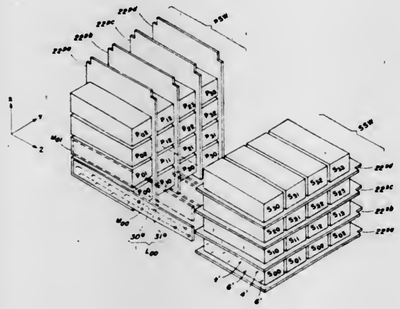
Electric switches are described in which a resilient, electrically conductive, elastomeric member is spaced adjacent but apart from contact means; among features are the elastomeric connector: of sheet form; on metal contacts as a movable contact bridge; defining a simple and durable multiple switch

array including a keyboard, a digital coding assembly and a detector; and as the means, especially with proper selection of distributed conductive particles in the elastomer for limited conductivity, of eliminating the electrical effects of bounce in solid state electronic logic circuitry and the like. Fabrication of the switch as a simple, thin compact laminate using printed circuit boards is shown using the preferred silicone elastomer and carbon filler. In preferred embodiments pressure against conductive elastomer sheet means will cause it to connect to a contact element conductively and release of pressure will cause the sheet means to disconnect. The sheet means can be used as a floating connection for one or more circuit elements, and in this form has particular application in a keyboard assembly, particularly in connection with replaceable printed circuit boards and in digital coding techniques with a single printed circuit board. Preferably, the sheet means resiliently, reversibly deforms from first to second conditions, typically engaging the contacts in the deformed or bulged condition. Preferably in one condition the sheet means takes a planar form, positioned by a spacer layer from the contacts. And preferably the contacts are elements of a printed circuit.

3,699,295
SIGNAL SWITCHING DEVICE

Takeo Shinohara, and Yoshikazu Miyamoto, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed March 24, 1971, Ser. No. 127,498
Claims priority, application Japan, March 27, 1970, 45/26379
Int. Cl. H01h *67/30*
U.S. Cl. 200—175 **1 Claim**

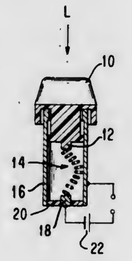


A signal switching device with a plurality of each of first and second groups of rectangular parallelopiped switching units arranged in X,Y, and Z directions. A plurality of first groups of spaced parallel conductors are disposed in said X direction in respective spaced X-Z planes of said first group units for multiply connecting of break terminals of corresponding switches in said respective first group unit stacks. A plurality of second groups of spaced parallel conductors are disposed in said Y direction in respective Y-Z planes for multiply connecting make terminals of corresponding switches of said second group units in said Y-Z planes. Input signal lines are disposed in parallel and connected to break terminals of said switches in respective first group units in said X-Z planes, while output signal lines are disposed in parallel and selectively connected to make terminals of switches of the second group units in the Y-Z planes, whereby a desired one of the input lines is connectable to a desired one of said output lines.

3,699,296
CATASTROPHICALLY BUCKLING COMPRESSION COLUMN SWITCH AND ACTUATOR

Richard H. Harris, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1971, Ser. No. 145,652
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 DB **15 Claims**

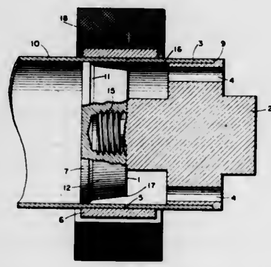


A snap-action switch and actuator are disclosed in which a resilient columnar compression member is axially loaded to the point of catastrophic buckling. In one embodiment, the column serves as both an electrical conductor and a contact. In this embodiment, it buckles into contact with another conductive member to complete a circuit. Alternatively, the buckled column may actuate a piezoelectric, optical, or other signal producing means to produce signals used for switching or to close other contacts.

3,699,297
A CENTERING PLUG FOR MAGNETIC WELDING A PLUG IN THE END OF A TUBE

Michel Grin, Varese, and Francois Marchal, Cadrezzate, both of Italy, assignors to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg

Division of Ser. No. 95,317, Dec. 4, 1970, Pat. No. 3,627,980.
This application June 10, 1971, Ser. No. 151,975
Int. Cl. B21j *5/08*
U.S. Cl. 219—9.5 **3 Claims**

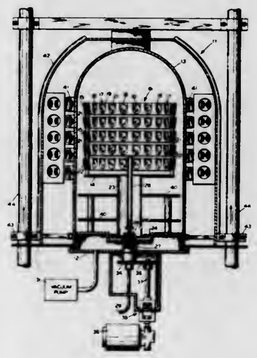


A centering device is detachably secured to the outside surface of the plug which is to be magnewelded in the end of a tube. The assembly comprising the plug and the centering device is then inserted in the tube until the outside surface of the plug reaches a position adjacent a circumferential notch on the tube. Current is then passed through a magnewelding coil surrounding the tube. The tube contracts radically, is welded onto the plug and snaps off along the notch. It is then only necessary to detach the centering member from the plug to complete the welding operation.

3,699,298
METHODS AND APPARATUS FOR HEATING AND/OR COATING ARTICLES

Thomas F. Briody, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 601,885, Dec. 15, 1966, Pat. No. 3,659,552. This application Dec. 23, 1971, Ser. No. 211,432
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.49 **7 Claims**

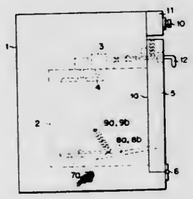


This invention relates to methods and apparatus for heating and/or coating articles and, in particular, to methods and apparatus for epitaxially depositing coatings of semiconductor material onto slices of such material. Accordingly, the general object of this invention is to provide new and improved methods and apparatus of such character.

3,699,299
HIGH FREQUENCY HEATING APPARATUS

Shiro Umezu, Kanagawa-ken; Tetsuo Hashimura, Tokyo, and Akira Sekido, Kanagawa-ken, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed May 27, 1971, Ser. No. 147,460
Claims priority, application Japan, May 30, 1970, 45/52967
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**

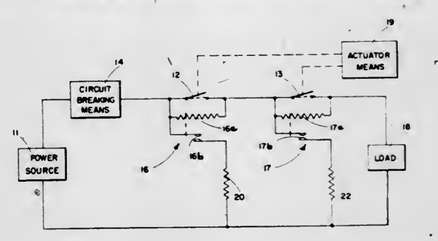


In a high frequency heating apparatus comprising a cabinet defining therein a heating chamber, a high frequency oscillator for radiating a high frequency electromagnetic wave in the heating chamber, a door mounted on the cabinet for closing the heating chamber, a door operating handle, and a locking member housed in the cabinet for locking the door in the closed position, there is provided a switch disposed in the cabinet for controlling the operation of the high frequency oscillator, and means interlocked with the handle for operating the switch to deenergize the high frequency oscillator when the locking device releases the door.

3,699,300
SYSTEM FOR DETECTING SAFETY SWITCH FAILURE

Christian E. Buerki, Fullerton, Calif., assignor to Norris Industries Inc., Los Angeles, Calif.

Filed Nov. 30, 1971, Ser. No. 203,220
Int. Cl. H05b *9/06;* **H02h** *5/04, 1/00*
U.S. Cl. 219—10.55 **7 Claims**

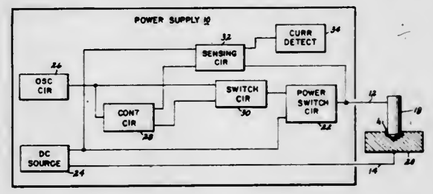


In a device such as a microwave oven, a pair of interlock switches are placed in series with the power supply to the energy generator, these switches being interlocked with the oven door which seals the microwave compartment such that when the door is opened, both switches which are in series with each other will also open to cut off the supply of power. Each of the switches has a detection circuit connected thereacross so that in the event that such switch should fail and not open when the door opens, a switch mechanism will be actuated so as to actuate circuit breaking means to interrupt the supply of power to the energy generator.

3,699,301
EDM GAP SENSING

Jerry E. Losey, Ft. Thomas, Ky., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 8, 1971, Ser. No. 196,313
Int. Cl. B23p *1/08, 1/14*
U.S. Cl. 219—69 C **5 Claims**



An apparatus is disclosed for sensing conditions in a machining gap by detecting a current flow therethrough. The normal application of low power pulses from an oscillator circuit to a power switching circuit is delayed for a predetermined period of time. During this period of time, a sensing signal is applied to the machining gap through a high resistance gap sensing circuit; and the current through the sensing circuit is detected thereby providing an accurate and reliable indicator of conditions in the machining gap.

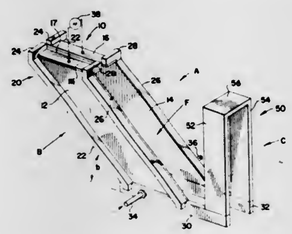
3,699,302
SINGLE TURN CHANNEL COIL

Richard A. Griffith, Garden Grove, Calif., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 24, 1971, Ser. No. 117,931
Int. Cl. H05b *5/18*
U.S. Cl. 219—10.57 **7 Claims**

A method and apparatus for inductively heating at least a portion of the length of an elongated workpiece wherein the

inductor includes a pair of parallel spaced apart conductors interconnected at one end so as to define a workpiece pass. The conductors are angularly disposed coplanar with the pass so that the workpiece is progressively preheated as it travels therethrough. Spaced from the exit area of these heating conductors is a uniforming heating conductor extending transversely around the direction of the pass over at least that portion of the element which has been progressively preheated. To



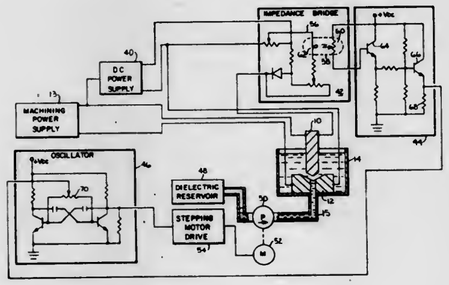
provide efficient and uniform heating, the width of the uniforming heating conductor is maintained between one to one and a half times the thickness of the element. A relationship of less than this will not provide simultaneous uniforming heating for a workpiece and a relationship of greater than this decreases the flux density such that increased electrical energy is required as well as undesirably heating the adjacent workpiece.

3,699,303

EDM PROCESS A METHOD AND APPARATUS FOR CONTROLLING THE FLOW RATE OF DIELECTRIC AS A FUNCTION OF GAP IMPEDANCE

Harry D. Kauffman, and Malcolm F. Davis, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 15, 1970, Ser. No. 80,965
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 D **7 Claims**



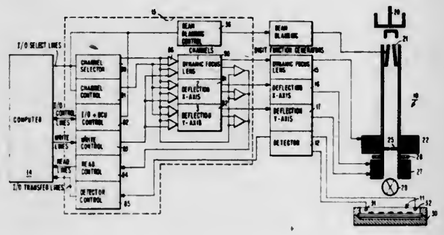
A method and apparatus for use in an EDM process for controlling the flow rate of dielectric through a machining gap as a function of the magnitude of gap impedance. An apparatus is provided for detecting variations in the magnitude of gap impedance and producing an output signal representative thereof. The variations in gap impedance are used to change the flow rate of dielectric through the gap. The flow rate may increase thus cleansing the gap of debris, or it may decrease and create a limited concentration of debris to facilitate the breakdown of the gap.

3,699,304

ELECTRON BEAM DEFLECTION CONTROL METHOD AND APPARATUS

Edwin C. Baldwin, Jr., and Warren R. Wrenner, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,889
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **7 Claims**



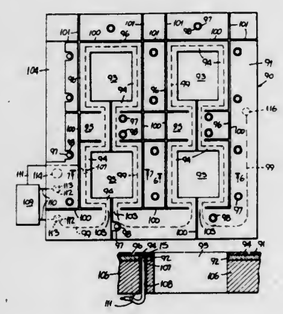
Method and apparatus for controlling the deflection of an energy beam to impinge a workpiece with improved accuracy. A computer and interface unit direct the movement of the beam over a master target to learn and record addresses of impingement areas corresponding to those on a workpiece. Differential current flow in two conductive elements is used to determine accurate location of the address. Upon the substitution of a workpiece for the master target, impingement addresses can be selected without additional corrective deflection circuits.

3,699,305

HEAT SEALING APPARATUS

John E. Reenstra, 10 Ronnie Road, Wayne, N.J., and Martin Malone, 27 Sunrise Drive, Hawthorne, N.J.

Division of Ser. No. 726,436, May 3, 1968, Pat. No. 3,617,696.
This application April 30, 1970, Ser. No. 43,627
Int. Cl. H05b *1/00*
U.S. Cl. 219—200 **8 Claims**



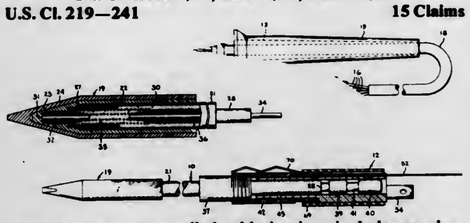
A heat sealing tray is comprised of a thin sheet of heater element material bonded to an insulating substrate and a rigid backing member. The sheet is etched out in a pattern defining a heating current path. An automatic temperature limiting control circuit is connected to the sheet. The circuit operates in full wave configuration and controls the partial cycle conduction of current through the heating path. A temperature sensor signals the circuit to remove the current through the path when a predetermined temperature is reached.

3,699,306

TEMPERATURE CONTROLLED SOLDERING IRON

Thomas Ellwood Finch, Acton, Ind., assignor to General Electric Company

Filed March 1, 1971, Ser. No. 119,498
Int. Cl. H05b *1/02*; B23k *3/04*; H01r *11/02*
U.S. Cl. 219—241 **15 Claims**



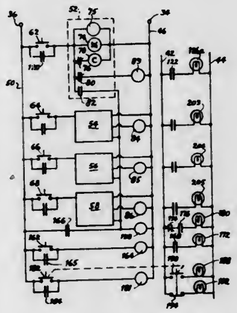
A temperature controlled soldering iron includes an elongated heater assembly with a hollow soldering tip at one end containing a heating element and a temperature sensing element which is responsive to the temperature of the tip. The heater assembly carries a plurality of longitudinally spaced exposed contacts which are connected to the terminals of the heating element and the temperature sensing element. A connector assembly detachably receives the heater assembly and includes a plurality of spring strip conductors mounted in longitudinally extending slots formed in the exterior surface of a hollow insulator into which the other end of the heater assembly extends. The spring strip conductors are captivated and secured in position on the insulator by an insulating sleeve and have terminal portions exposed beyond the end of the connector assembly and have contact portions which are detachably electrically connected to the contacts on the heater assembly when the latter is inserted into the connector assembly. The connector assembly is releasably retained in a bore of an insulating handle through which extends a power cord having conductors which are connected to the terminal portions of the spring strip conductors.

3,699,307

OVEN CONTROL

Emanuel Malkin, Louisville, Ky., assignor to Mass Feeding Corporation, Elk Grove Village, Ill.

Filed Aug. 26, 1970, Ser. No. 66,925
Int. Cl. H05b *1/02*
U.S. Cl. 219—492 **10 Claims**



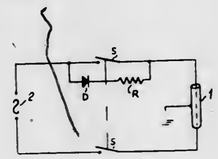
In an oven control, a plurality of individual timers are provided for controlling the heating interval of the oven. Each timer is independently selectable, and a control switch is associated with each timer for regulating the heat production rate of the oven when that timer is selected. A second control switch is associated with each timer to control the heat production rate when the oven is only half full. At the end of the timed interval, the temperature of the oven is quickly lowered to a warming temperature.

3,699,308

ELECTRICAL HEATING ELEMENTS

Eric Hutchinson, Wideopen, Newcastle upon Tyne, and Gordon Hetherington, North Shields, both of England, assignors to Thermal Syndicate Limited, Wallsend, Northumberland, England

Filed Oct. 13, 1970, Ser. No. 80,447
Claims priority, application Great Britain, Oct. 16, 1969, 50889/69
Int. Cl. H05b *3/02*
U.S. Cl. 219—546 **18 Claims**



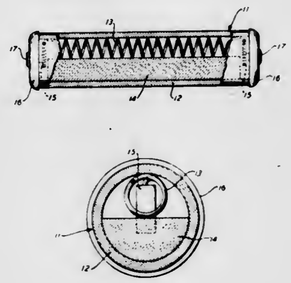
A method and apparatus for improving the "apparent" resistance of an electrical heating element of the type comprising an axial resistance element of the type comprising an axial resistance element insulated from a conducting sheath by a refractory material wherein the refractory material is subjected to an electrolysing D.C. potential applied between the element and the sheath.

3,699,309

DIRECTIONAL INFRARED HEATING ELEMENT

Richard H. Eck, 352 Pines Lake Drive East, Wayne, N.J.

Filed Dec. 3, 1970, Ser. No. 94,688
Int. Cl. H05b *3/44*
U.S. Cl. 219—553 **2 Claims**

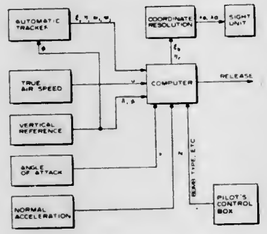


A radiant heater that provides uniform directional disposition of heat includes an elongated cylindrical tubular enclosure of heat resistant vitreous material pervious to infrared radiation, such as VYCOR. A preformed semicylindrical elongated support rod extends longitudinally in the enclosure and provides an uninterrupted generally flat support surface extending diametrically across the enclosure. A single helical resistance element of Kanthal is disposed in the portion of the enclosure not occupied by the support rod. The resistance element extends longitudinally of the support rod and enclosure and is in tangential and direct contact with the flat surface of the support. The support rod is formed of a compressed fibrous material having a low coefficient of thermal conductivity, such as a fibrous aluminum oxide and silicon dioxide composition known as FIBERFRAX.

3,699,310
ANGULAR RATE BOMBING SYSTEM

Roy D. Cole, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 6, 1970, Ser. No. 87,519
Int. Cl. G06g 7/80
U.S. Cl. 235—61.5 D 5 Claims

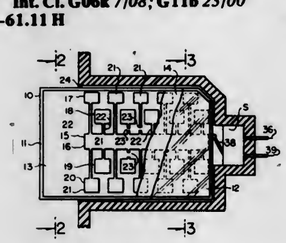


An angular rate bombing system (ARBS) which utilizes angular rate and angle measurements from an automatic target tracker, pitch and roll information from a standard vertical gyro, true airspeed data and angle of attack information to compute an azimuth lead angle to release ordnance at the correct elevation lead angle.

3,699,311
CODED CARD AND READER THEREFOR

Robert A. Dunbar, Swampscott, Mass., assignor to Remvac Systems Corporation, Woodside, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,114
Int. Cl. G06k 7/08; G11b 23/00
U.S. Cl. 235—61.11 H 6 Claims



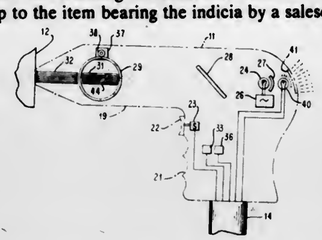
A card contains selectively connected or unconnected plates to encode bits of information. A card reader has a sending plate and a sensing plate for each bit encoded in the card, the plates of the card and the reader forming two capacitors in series to read bits of information encoded in the card. A potential impressed on the sending plate causes a charge redistribution and a momentary current flow which is sensed by a high impedance sensing circuit connected to each sensing plate, the momentary current flow and resulting voltage only being present to be sensed when the plates encoding a bit of information in the card are connected. The sending plates in the card reader and one of the plates encoding each bit of information in the card may be formed as single larger plates.

3,699,312
CODE SCANNING SYSTEM

John E. Jones, and Paul V. McEnroe, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 18, 1971, Ser. No. 125,653
Int. Cl. G06k 7/14
U.S. Cl. 235—61.11 E 10 Claims

A scanning system for reading coded indicia on merchandise for providing input data to an automated retail sales station in which the scanning mechanism is hand held in fixed relationship to the item bearing the indicia by a salesclerk or

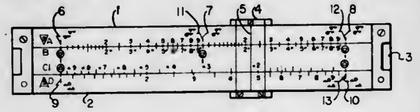


operator who is provided with an indication of a successful transfer of the data.

3,699,313
SLIDE RULE WITH OPERATIONAL GUIDANCE AND DECIMAL POINT LOCATION MEANS

Wendell Y. Huo, 6112 North Damen Avenue, Chicago, Ill.

Continuation-in-part of Ser. No. 802,830, Feb. 27, 1969, abandoned. This application May 3, 1971, Ser. No. 139,770
Int. Cl. G06g 1/02
U.S. Cl. 235—64.3 5 Claims

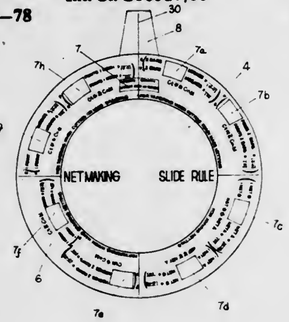


A logarithmic scale slide rule having means for readily determining operational direction and decimal location, comprising a system of oppositely facing brackets enclosing each 1 to 9.9999 scale range, and indicia symbols, whose first or second shape has one characterization to indicate the value "1" and another characterization to indicate the value of "0", said symbols being associated with certain of said brackets in such a manner as to indicate a plus or minus value whereby the sum of the values of said symbols encountered in the solution of a given problem will represent the power of 10, for the problem solution.

3,699,314
NETMAKING SLIDE RULE

Victorino T. San Antonio, 17 Engineering Street, Project 8-C, Quezon City, Philippines

Filed Oct. 28, 1970, Ser. No. 84,772
Claims priority, application Philippines, Dec. 17, 1969, 10990
Int. Cl. G06c 27/00
U.S. Cl. 235—78 10 Claims



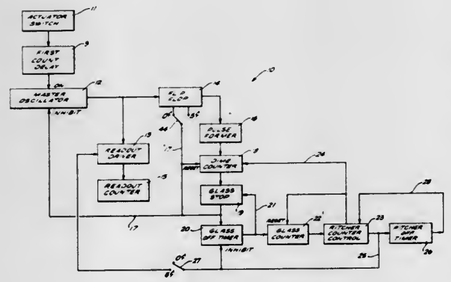
This novel slide rule is a circular calculating device which satisfactorily facilitates the mechanical application of the

processes and formulas relevant to the net-making industry. It expedites computation for such quantities like tuck-in or take up rate for actual joining of strips of netting to determine the taper angle, bar angle, half-mesh angle, line length netting dimensions, hanging coefficients in water, estimates the desired patterns for the actual cutting and braiding of netting to shape, and converts linear measures, yarn thickness numbers, etc.

3,699,315
FLUID DISPENSING MONITOR

Douglas J. Upton, 18740 Devonshire, Los Angeles, Calif.

Filed Aug. 14, 1969, Ser. No. 849,980
Int. Cl. G06m 3/00; B67d 5/22
U.S. Cl. 235—92 FL 16 Claims



A device for monitoring the volume of liquid dispensed through a valve and for indicating the equivalent monetary value of the amount of liquid dispensed even through the liquid may be dispensed in glasses and pitchers having different prices per unit volume and even though a different amount of liquid may be required to properly fill consecutive glasses or pitchers. The present fluid dispensing monitor includes a readout which indicates the monetary value of the glass or pitcher before the container is completely filled and ceases operation for a period of time sufficient to enable the glass or pitcher to be completely filled. In addition, the present monitor includes a time delay which delays incrementing of the readout after the start of the dispensing of liquid so that small amounts of liquid may be added to the glasses or pitchers after they are filled.

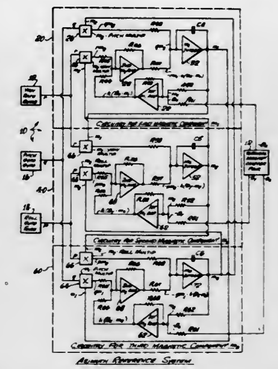
3,699,316
STRAPPED-DOWN ATTITUDE REFERENCE SYSTEM

Louis A. Lopes, Jr., Pasadena, Calif., assignor to The United States of America as represented by the Secretary of Navy

Filed May 19, 1971, Ser. No. 144,933
Int. Cl. G06g 7/78
U.S. Cl. 235—150.25 4 Claims

A "strapped-down" attitude reference system, that is one which uses three constrained rate-sensing gyros rather than free gyros. In addition, three accelerometers are used to obtain a vertical reference, and two magnetometers are used to obtain the azimuth of the reference system. The invention operates by maintaining two vectors, one aligned with the earth's gravity vector and the other with the local geomagnetic field. The components of the two vectors with respect to body-fixed orthogonal axes are continuously computed by integration of appropriate equations. Implementation of the invention is exemplified by an analog system, but may be accomplished in a digital manner.

The invention provides an attitude reference for vehicles in the earth's gravitational field, such as aircraft, tanks, sub-

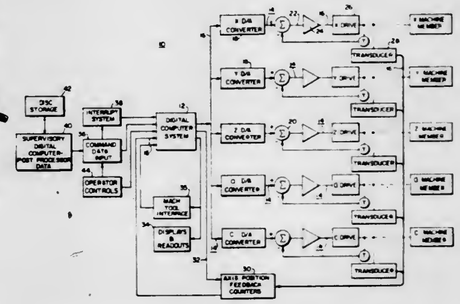


marines, and torpedoes. These vehicles undergo short term maneuvers in which the reference provided by gravity is lost because of the vehicle acceleration.

3,699,317
SAMPLED DATA NUMERICAL CONTOURING MACHINE CONTROLLER APPARATUS AND METHOD PROVIDABLE WITH ON LINE CAPABILITY FOR CONTOUR CORNERING DECELERATION AND ACCELERATION

Alan E. Middleditch, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 22, 1970, Ser. No. 39,940
Int. Cl. G05b 15/02, 21/02
U.S. Cl. 235—151.11 92 Claims

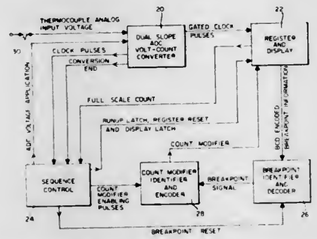


A numerical contouring controller employs ramped velocity commands for pre-corner slowdown and post-corner speedup in the relative movement between the controlled machine tool and a workpiece. The controller includes a digital computer which generates a command position trajectory. The computer operates in a closed position loop at a predetermined sampling frequency to compare accumulated position feedback data and the command position and thereby to generate command data to velocity loop controls which accurately position the machine tool slides. A program system operates the computer to make and implement the motion command determination including path speed change determinations and to make and implement nonmotion command determinations for machine tool, data input and machine operator interfacing.

3,699,318
INCREMENTAL SLOPE METHOD FOR OPTIMUM CONTINUOUS DIGITAL LINEARIZATION

Victor S. Underkoffler, Doylestown, and Richard B. White, Lansdale, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed Aug. 19, 1970, Ser. No. 64,977
Int. Cl. G06f 9/00
U.S. Cl. 235—151.1 18 Claims

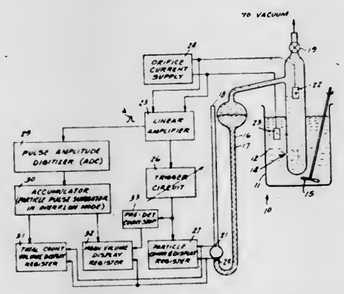


An incremental slope method for optimum continuous digital linearization is performed utilizing a programmed digital computer to determine the straight line segments best approximating a nonlinear function. By incrementing the slope of a straight line segment at each breakpoint on or near the curve of the nonlinear function, the difference between the value of the dependent variable on the function and the value of the dependent variable on the straight line segment for different slopes may be determined. By minimizing this difference and maximizing straight line segment length, the best approximating straight line segment is determined. In this manner, a linearized approximating function may be obtained for any set of data points stored in the computer corresponding to any nonlinear function such as a thermocouple curve. The straight line approximating segments with their corresponding preset values of slope and intercept are then utilized to linearize an analog-to-digital converter.

3,699,319
AVERAGE VOLUME DIGITAL COMPUTER AND DIGITAL VOLUME TOTALIZER FOR CELLS AND PARTICLES

Robert H. Berg, 196 Clinton Avenue, Elmhurst, Ill.

Filed March 10, 1971, Ser. No. 122,917
Int. Cl. G06f 15/20
U.S. Cl. 235—151.34 6 Claims

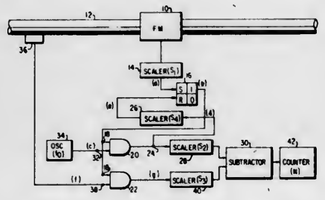


An apparatus for deriving average volume and total volume data from particles in a flow of liquid metered through an orifice includes a display of mean particle volume and total particle volume and count. The mean particle volume is the quotient of the totalized particle volume of a specific number of particles divided by that same number. The total particle volume and count provided by the same apparatus can be used to confirm the mean particle volume measurement.

3,699,320
TEMPERATURE COMPENSATED LIQUID METERING SYSTEM AND METHOD

Carl W. Zimmerman, and George V. Copland, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 20,640, March 18, 1970, and a continuation-in-part of Ser. No. 750,675, July 5, 1968, Pat. No. 3,566,685, and a continuation-in-part of Ser. No. 704,403, Feb. 9, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 106,997
Int. Cl. G01f 1/08, 1/00
U.S. Cl. 235—151.34 20 Claims

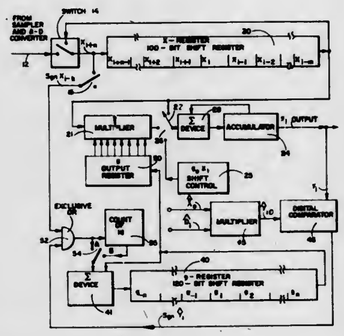


Method and apparatus for correcting a manifestation of fluid flow for variations in the temperature of the fluid to provide an indication of volume corrected to a predetermined temperature. A novel transducer is provided through the utilization of a thermistor in the shunt arm of a parallel-T oscillator.

3,699,321
AUTOMATIC ADAPTIVE EQUALIZER IMPLEMENTATION AMENABLE TO MOS

Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation

Filed April 1, 1971, Ser. No. 130,129
Int. Cl. H04b 3/04, 1/62
U.S. Cl. 235—152 11 Claims

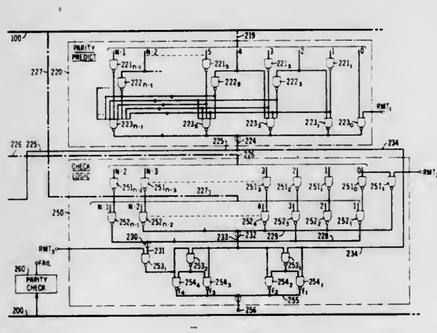


The present invention is an adaptive equalizer which utilizes a first shift register to store received signal samples and a second shift register to store gain settings. The serial output from the first shift register is parallel multiplied with the gain settings stored in the second register to achieve equalization of a received digital data transmission signal. The gain settings in the second register are updated to automatically equalize by utilizing an incremental control signal which is derived from the system's input signal and the received digital data, using cross-correlation implemented iteratively.

3,699,322
SELF-CHECKING COMBINATIONAL LOGIC COUNTER CIRCUIT

Robert Charles Dorr, Plainfield, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed April 28, 1971, Ser. No. 138,074
Int. Cl. G06f 11/10
U.S. Cl. 235—153 10 Claims

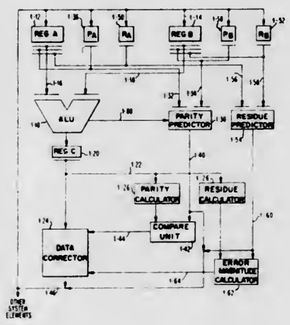


A self-checking combinational logic counter providing three predicted parity change bits. One of the bits is derived by logic independent of the counting logic, the other two bits being derived by logic dependent upon the operation of the counting logic. The three bits are compared to detect a match indicating an accurate prediction of a parity change or retention of original parity.

3,699,323
ERROR DETECTING AND CORRECTING SYSTEM AND METHOD

Harry J. Reinheimer, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,976
Int. Cl. G06f 11/10
U.S. Cl. 235—153 6 Claims

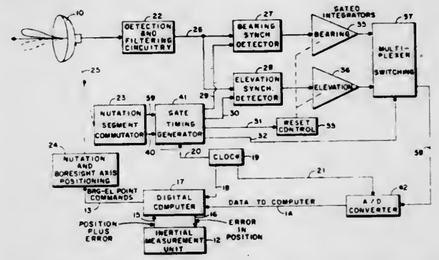


In a digital computer having both arithmetic and logical computational capabilities, an error location and correcting system is disclosed. Errors are located through the use of parity techniques and the errors thus located are corrected through the use of residue techniques.

3,699,324
ENERGY SOURCE TRACKING SYSTEM EMPLOYING DRIFT-LINE TECHNIQUE

Walter R. Iliff; John M. Holt; George E. Chadima, all of Cedar Rapids; Robert G. Brown, Ames, all of Iowa, and Collins Radio Company, Cedar Rapids, Iowa

Filed Sept. 17, 1970, Ser. No. 72,910
Int. Cl. G06f 15/50; G01s 7/46
U.S. Cl. 235—150.27 7 Claims

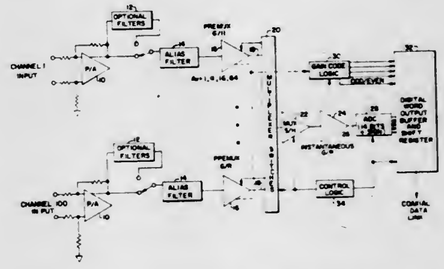


A tracking system approach which, unlike that of systems employing closed loop tracking techniques, points the boresight axis of an antenna at a computed future position of a radiating energy source. The source is allowed to drift through the conical scanning beam, during which time-energy detection measurements are made on a periodic basis. A computer receives the energy measurements and computes therefrom the equation of the best straight line corresponding to the error versus time relationship, whereupon the slope and intercept of this fitted line are utilized to compute pointing error. The system is then periodically updated on the basis of this pointing error.

3,699,325
TIME-SHARED INSTANTANEOUS GAIN-RANGING AMPLIFIER

William C. Montgomery, Jr., and Charles B. Vogel, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

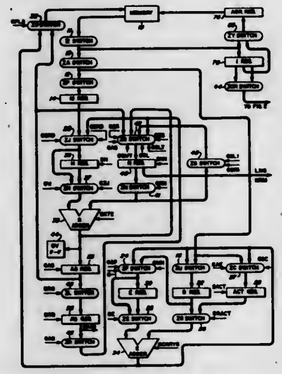
Filed Oct. 9, 1969, Ser. No. 864,998
Int. Cl. G01v 1/00; G06f 5/00
U.S. Cl. 235—154 6 Claims



One-hundred low-frequency analog signal channels having a very large dynamic range, may be amplified to at least half of full scale a 14 bit analog to digital converter without distortion by an amplifier system that includes an instantaneous gain-ranger, a preamplifier for each channel, a filter system for each channel, a premultiplexer gain-ranging amplifier for each channel, and a multiplexer. The instantaneous gain-ranger consists of a series of binary amplifier stages, threshold detecting circuitry and logic circuitry. The output is taken from the first unsaturated amplifier. The preamplified and premul-

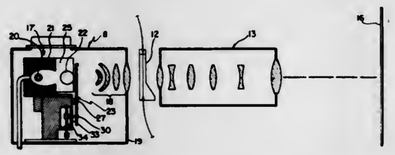
tiplexer gain-ranging amplifier are connected into the system ahead of the multiplexer and provide a sufficient signal-to-noise ratio to mask the noise introduced into the system by the multiplexer. The output of the system is typically digitized.

3,699,326
ROUNDING NUMBERS EXPRESSED IN 2'S COMPLEMENT NOTATION
Jerry L. Kindell, Phoenix, and Leonard G. Trubisky, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed May 5, 1971, Ser. No. 140,437
Int. Cl. G06f 7/38
U.S. Cl. 235—175 6 Claims



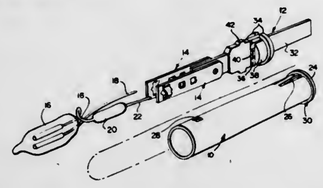
Rounding apparatus is disclosed which provides consistent rounding of positive and negative numbers in 2's complement representation for floating point operations on binary digital computers. In the disclosed embodiment of the invention, a general purpose computer is described in which apparatus is provided for performing the normal arithmetic and logical operations required for data processing. The computer is augmented by additional apparatus for modifying floating point operands so that consistent results are obtained in processing both positive and negative numbers, primarily during store operations.

3,699,327
FILM VIEWER
James R. Fagan, Columbus, Ohio, assignor to North American Rockwell Corporation
Filed July 28, 1971, Ser. No. 166,850
Int. Cl. F21v 13/04
U.S. Cl. 240—41.3 4 Claims



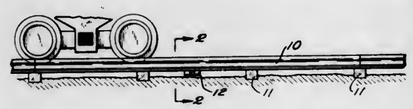
A film viewer having a radiation conversion and control device for improved image brightness and image resolution. The device comprises a elongated open sided reflector of elliptical cross-section having an elongated circular cylindrical collector lens adjacent the open side. An elongated diffuser area is position on the surface of the lens to spread the light issuing from the lens. An iris diaphragm is positioned adjacent the collector lens for controling the amount of light passing to the film to be viewed.

3,699,328
INDICATOR LIGHT ASSEMBLY
Robert T. Murray, Needham, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed May 17, 1971, Ser. No. 144,120
Int. Cl. H01r 5/10, 11/08; F21v 19/00
U.S. Cl. 240—52.1 2 Claims



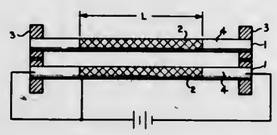
An indicator light assembly comprising a method of attaching the leads of a bulb to a terminal through the use of an arced connector portion formed in the terminal which is pressed down on the leads tightly engaging them to the terminal.

3,699,329
ELECTRO-MAGNETIC RAILWAY TRACK
Eugene M. Cybart, 10230 South McGraw Drive, Oak Creek, Wis.
Filed Dec. 16, 1970, Ser. No. 98,745
Int. Cl. B61k 7/10
U.S. Cl. 246—182 4 Claims



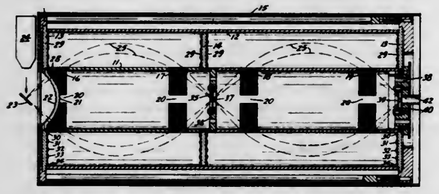
Electro-magnetic means energizing a rail of any length or an electro-magnet of appropriate length fixed laterally on a rail to slow or stop railway cars in a train marshalling or switch yard.

3,699,330
MASS FILTER ELECTRODE
Patrick F. McGinnis, Pittsford, N.Y., assignor to The Bendix Corporation
Filed Feb. 22, 1971, Ser. No. 117,599
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 DS 16 Claims



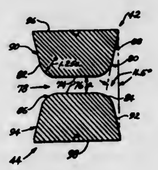
A mass filter having glass electrodes which are at least partially coated with a continuous vapor deposited or sputtered thin metallic film of predetermined thickness or thicknesses. The electrodes are arranged about a central axis and receive electrical potentials that create a time periodical electric field therebetween to separate ions having different mass-to-charge ratios.

3,699,331
DOUBLE PASS COAXIAL CYLINDER ANALYZER WITH RETARDING SPHERICAL GRIDS
Paul W. Palmberg, 50 West 93rd Street, Minneapolis, Minn.
Filed Aug. 27, 1971, Ser. No. 175,575
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 AE 7 Claims



A charged particle analyzer is provided wherein a retarding grid consisting of two spaced screen members formed of spherical sections having a concentric center located at the surface of the sample being analyzed is utilized to control the entering velocity of the charged particles into a double pass, coaxial cylinder analyzer. In a specific embodiment, the invention is utilized in an electron spectroscopy for chemical analysis (ESCA) apparatus.

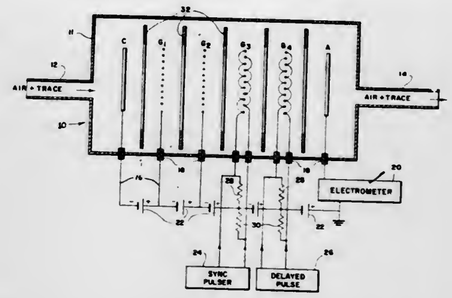
3,699,332
MAGNETIC MASS SPECTROMETER WITH SHAPED, UNIFORMLY SATURATING MAGNETIC POLES
Charles W. Hull, Sierra Madre, and Charles R. McKinney, Monrovia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed Feb. 27, 1970, Ser. No. 15,186
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 ME 16 Claims



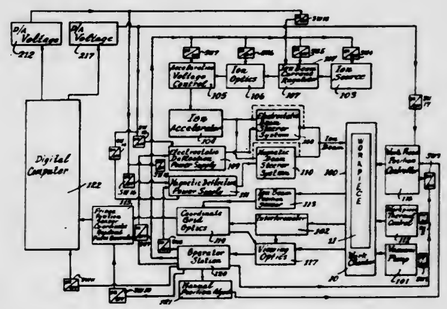
A magnetic mass spectrometer having a magnetic analyzing sector utilizing shaped magnet poles of a specific configuration so as to produce uniform magnetization of the pole material and constant flux distribution at all magnetic field strengths. The magnet poles are shaped such that the surfaces thereof conform to an exponential function. Magnetic shunts are located at a predetermined spacing from the entrance and exit end of the analyzing sector to locate the magnetic field boundary.

3,699,333
APPARATUS AND METHODS FOR SEPARATING, CONCENTRATING, DETECTING, AND MEASURING TRACE GASES
Martin J. Cohen, West Palm Beach; David I. Carroll, Lantana; Roger F. Wernlund, Lake Worth, and Wallace D. Kilpatrick, North Palm Beach, all of Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.
Filed Oct. 23, 1968, Ser. No. 777,964
Int. Cl. H01j 39/34; B01d 59/44; H01j 37/08
U.S. Cl. 250—41.9 TF 43 Claims

Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions. Positive or negative ions of the trace gas are formed by ion-molecule reactions between the molecules of the trace gas and primary ions from another source. Ions are classified by selective ion gating according to their velocity in an electric drift field.



3,699,334
APPARATUS USING A BEAM OF POSITIVE IONS FOR CONTROLLED EROSION OF SURFACES
Murray F. Cohen, Roslyn Heights, and Michael Tarasevich, Bayville, both of N.Y., assignors to Kollsman Instrument Corporation, Syosset, N.Y.
Filed June 16, 1969, Ser. No. 833,335
Int. Cl. H01j 37/28
U.S. Cl. 250—49.5 TE 6 Claims

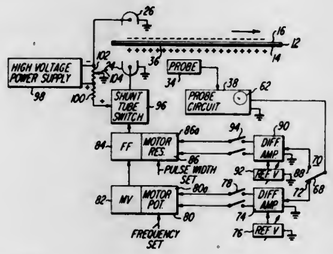


A process and apparatus for controllably eroding the surface of hard materials such as fused quartz, glass, metals and ceramics by the bombardment of the positive ions. Focused argon ions accelerated by potentials of up to 120,000 volts and with a constant beam current are controlled in direction to cause surface erosion of a workpiece to accuracies of up to one-one hundredth of a wavelength of green light. The workpiece is moved at a controlled rate in combination with the control of the beam direction to obtain a controlled erosion pattern over the surface of the workpiece. In another embodiment, an intensity modulated beam current is used. An electron beam is directed at the workpiece in a pattern which surrounds the ion beam to prevent the building up of a positive charge on the work surface. The progress of the erosion is observed and measured by an interferometer system. The movement of the ion beam and workpiece can follow a programmed automatic sequence.

3,699,335
APPARATUS FOR CHARGING A RECORDING ELEMENT WITH AN ELECTROSTATIC CHARGE OF A DESIRED AMPLITUDE

Edward Charles Giaimo, Jr., Princeton, N.J., assignor to RCA Corporation

Filed Jan. 6, 1971, Ser. No. 104,217
Int. Cl. G03g *15/02*
U.S. Cl. 250—49.5 ZC 6 Claims

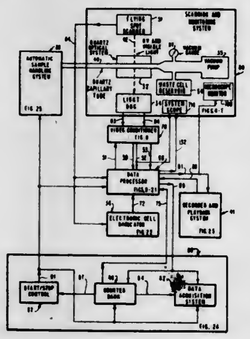


Apparatus for charging a recording element includes a corona generating device that is energized with pulses of a constant amplitude. Circuitry is provided for obtaining an error signal, if the total charge applied to the recording element tends to vary from a preset desired amplitude, and for controlling the width or the frequency of the pulses in response to the error signal to regulate the applied charge. The method of charging the surface of the recording element to a desired amplitude in a given time includes applying an electrostatic charge to the recording element in pulses and adjusting either the width or the frequency of the pulses to obtain the desired amplitude.

3,699,336
BIOLOGICAL CELL ANALYZING SYSTEM

Melvin P. Ehrlich, Roslyn Estates, L.I., N.Y.; Milton Stoller, West Hartford, Conn.; Stanley Grand, Westbury, and Robert De Cote, Flushing, both of N.Y., assignors to Hycel, Inc., Houston, Tex.

Filed Aug. 15, 1969, Ser. No. 850,547
Int. Cl. G01n *33/16*
U.S. Cl. 250—83.3 UV 30 Claims

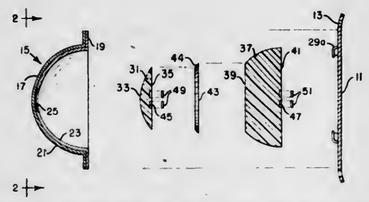


A biological cell analyzing system which is capable of automatically categorizing unstained biological cells as normal or non-normal. The cells are made to flow through a transparent tube in single file and are scanned with a mixture of ultra-violet and visible light. The cytoplasm and nucleus of each cell absorb ultra-violet radiation to different degrees, and the emergent light signal, as modulated by the scanned cells, is detected, amplified, and extended to a data processor which logically analyzes the signal from each cell on a real-time basis. The visible light signal is subtracted from the ultra-violet light signal to improve the signal/noise ratio of the latter, and to automatically cancel out non-biological debris. A number of acceptance tests are electronically performed on each cell, and if any of the tests is failed the cell is categorized as non-normal. Ambiguous conditions, resulting for example from the clumping of cells, are identified and separately counted. The system can process up to several thousand cells from a single sample during a one-minute run.

3,699,337
PERSONNEL NEUTRON DOSIMETER

John E. Hoy, North Augusta, S.C., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 16, 1971, Ser. No. 124,685
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 7 Claims

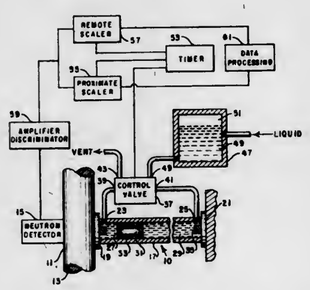


A dosimeter is disclosed for measuring the neutron dose equivalent for spectra of widely different energy distributions. A hemispherical mass of neutron moderating material is divided into two segments by a layer of thermal neutron absorbing material. Each segment has a thermal neutron detector at its base surface. Another layer of thermal neutron absorbing material covers the curved surface of the hemispherical mass but has a portion of reduced thickness at the apex. Neutrons passing through and backscattered from the wearer are monitored by one of the neutron detectors while the second detector corrects for directly impinging thermal neutrons that contribute a disproportionately small amount to dose.

3,699,338
OSCILLATING MONITOR FOR FISSILE MATERIAL

Norman P. Baumann, and Charles E. Ahlfeld, both of Aiken, S.C., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 5, 1971, Ser. No. 169,227
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 12 Claims

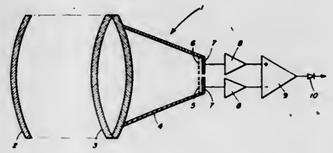


A device for monitoring fissile material has a neutron source that oscillates between a location near and a location remote from a neutron detector. The detector is adjacent to suspected fissile material and is shielded by hydrogenous material from the remote location. The detector output is transmitted to analytical instrumentation for determining prompt and delayed neutron count or the phase angle lag between measured neutron flux and the source oscillation. From these determinations, the reactivity of fissile fuel and the concentration of fissile material in deeply subcritical storage facilities can be obtained.

3,699,339
TWO-COLOR RADIOMETER

William J. Taczak, Jr., Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 7, 1971, Ser. No. 132,036
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H 8 Claims

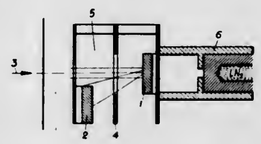


The inventive radiometer is capable of measuring the radiant energy of a target or of an event, including a transient event, in two spectral regions with identical fields of view. The invention may be used for target identification or for discriminating against false targets, such as solar radiation.

3,699,340
COMPTON SPECTROMETER HAVING PRIMARY AND SECONDARY DETECTORS WITH LOW AND HIGH ATOMIC NUMBERS, RESPECTIVELY

Harald Peter Hick, and Rudolf Pepelnik, both of Vienna, Austria, assignors to Osterreichische Studiengesellschaft fur Atomenergie G.m.b.H., Vienna, Austria

Filed Oct. 27, 1969, Ser. No. 869,734
Claims priority, application Austria, Oct. 31, 1968, A 10646/68
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 R 3 Claims



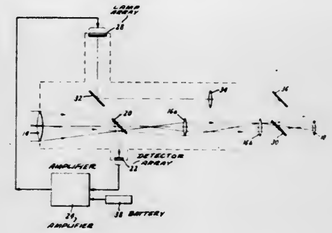
A compton spectrometer having semiconductors which intercept the primary and secondary or back scattered radiation. One of the detectors is made of a material having a low atomic number and the other detector is made of a material of high atomic number.

3,699,341
MUZZLE FLASH DETECTOR

John H. Quillinan, Ambler, and Edward F. Mackey, West Chester, both of Pa., assignors to General Electric Company

Filed Sept. 23, 1968, Ser. No. 761,624
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H 13 Claims

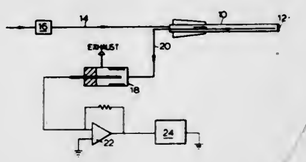
An optical sight with muzzle flash detector for providing a visual indication on the sight image of a muzzle flash of a firearm by passive detection of the IR radiation coming from the flash. A filter separates infrared radiation from the visual light coming through the sight and aims it at a fixed matrix of PbS detectors. The resulting signal activates a corresponding lamp or lamps in a lamp matrix similar to that of the detectors to form a visible light image passing through the sight so as to give an indication of the location of a firearm's muzzle flash.



3,699,342
METHOD AND APPARATUS FOR DETECTING TRACER GAS

Anthony Jenkins, and RIchard Charles Cornell, both of Fowlmere, near Royston, England, assignors to Analytical Instruments Limited, Royston, England

Filed Aug. 13, 1970, Ser. No. 63,571
Claims priority, application Great Britain, April 27, 1970, 20,180/70
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 FT 3 Claims



A method and apparatus for detecting the presence of an halogenated tracer gas, which is an electron absorber, in an environment which is itself, or comprises as a constituent, an electron absorber. The apparatus comprises an electron capture detector and the environment to be sampled is first drawn through a membrane which has a greater permeability to the tracer gas than the remainder of the environment before being carried into the detector by a carrier gas. This results in a diminution of the concentration of any electron capture agents present in the environment and which if drawn into the detector could swamp the effect of the tracer gas.

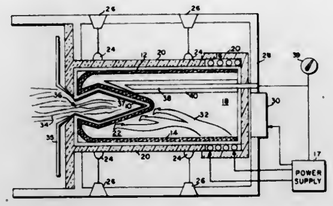
3,699,343
CONDENSATION HEATED BLACK BODY RADIATION SOURCE

Bernard Stein, Andover, Mass., and Sheridan Davis, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 19, 1969, Ser. No. 851,203
Int. Cl. H05b *1/00*
U.S. Cl. 250—85 16 Claims

An isothermal black body radiation source comprises a double reentrant radiating cavity disposed within a heat pipe. Wicking material surrounds the outer surface of the radiating cavity and the heat pipe sidewalls. Heat is supplied to the heat

pipe by an electrical winding or other suitable heating means, thereby vaporizing a working fluid. The vapors are condensed on the cavity outer walls thereby releasing their latent heat of



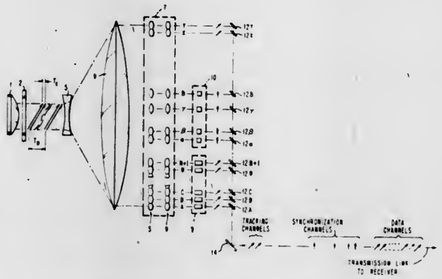
vaporization and heating the cavity wall to a uniform temperature. The cavity then radiates energy through an exit aperture. In an alternative embodiment the radiating cavity is disposed within a reflux tube.

3,699,344

OPTICAL PULSE COMMUNICATION SYSTEM USING A PSEUDO-RANDOM SEQUENCE FOR SYNCHRONIZATION

Elisabeth M. Rutz, Bethesda, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,276
Int. Cl. H04b 9/00; H04j 3/00
U.S. Cl. 250—199 **16 Claims**



In a time-division multiplexed optical communication system, a coded optical waveform is transmitted with the data sequence. The waveform follows a type of pseudo-random sequence termed an incoherent coded word. At the receiver, the coded and data sequence are demultiplexed into separate channels and combined with an identical reference sequence generated at the receiver. Each combined reference and demultiplexed pulse of the sequences is detected at an associated coincidence detector. The demultiplexing means also presents each pulse of the multiplexed beam to each coincidence detector. If the reference and demultiplexed sequences are out of synchronization, the reference sequence may combine with these unwanted pulses, thereby yielding false outputs from the detectors. The properties of the pseudo-random coded sequence are used to ensure that this situation will be noted and the false outputs ignored.

When the demultiplexed and reference sequences are in synchronization, the combined coded synchronization pulses of the demultiplexed and reference sequences are received simultaneously at their associated coincidence detectors in the synchronization channels. The outputs from the detectors are fed to a single photomultiplier-matched filter. The filter is conditioned to generate a significant output only when it receives all of the outputs from the detectors in the synchronization channels simultaneously.

If the demultiplexed and reference sequences are out of synchronization, the properties of the pseudorandom coded sequence ensure that not more than one reference and demultiplexed pulse of said coded synchronization sequence is received simultaneously at the matched filter. Under this condition, the filter will generate virtually no output.

To ensure that optical pulses of the data sequence do not combine with the synchronization sequence at the receiver, means are provided for excluding all pulses except synchronization pulses from the synchronization channels.

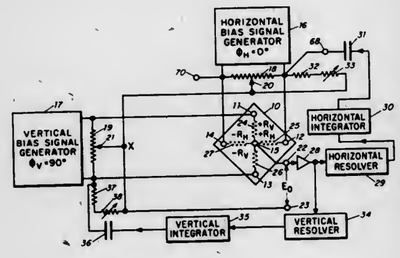
Means are also provided for initially establishing the synchronization between the received and reference sequences and also for automatically synchronizing the sequences if they are out of sync for less than the period between multiplexed pulses.

3,699,345

SENSING AND TRACKING APPARATUS

William J. Parkin, Natick, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 253,504, Jan. 23, 1963. This application Oct. 10, 1963, Ser. No. 316,203
Int. Cl. G01s 3/78
U.S. Cl. 250—203 R **7 Claims**



1. Sensing apparatus, comprising:

a radiation responsive, variable impedance detector element;

biasing means coupled to said element for providing a pair of alternating current bias signals through said element, said bias signals being in phase quadrature;

output means coupled to said element for providing an output signal indicative of position of a remote radiation source; and

balancing means coupled to said bias means and said output means for each said bias signal and including a variable reference voltage level to balance said quadrature and output signals with respect to said reference level at a plurality of selected rates.

3,699,346

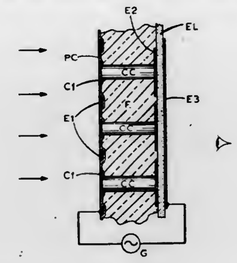
PHOTO-CONDUCTIVE IMAGE INTENSIFIERS

Mervyn Geoffrey Harwood, Bromley, and John Schofield, Coulsdon, both of England, assignors to U.S. Philips Corporation

Filed Dec. 7, 1970, Ser. No. 95,437
Claims priority, application Great Britain, Dec. 11, 1969, 60,556/69
Int. Cl. H01j 31/50
U.S. Cl. 250—213 **8 Claims**

Coupling conductors are disposed in electrical contact between the input photo-conductive layer and the output electro-luminescent layer of a photo-conductive image intensifier

panel so that the photo-conductive layer acts only to an extremely small depth of light penetration and therefore photocurrent occurs mainly at the input surface of the photo-con-



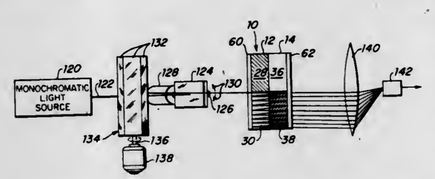
ductive layer and is then conducted directly to the electroluminescent layer, avoiding the severe attenuation of the photocurrent when it must pass through the thickness of the photoconductive layer.

3,699,347

VARIABLE ELECTRO-OPTIC FILTER AND READOUT APPARATUS

William Raymond Buchan, Lincoln, and Ralph Edward Aldrich, Woburn, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Division of Ser. No. 820,417, April 30, 1969, Pat. No. 3,612,655. This application July 6, 1971, Ser. No. 159,916
Int. Cl. G02f 1/16
U.S. Cl. 250—217 R **20 Claims**



An electro-optic filter is disclosed having a Fabry-Perot structure including an electro-optic medium whose index of refraction varies as a function of the intensity of an electric field applied to it, means for applying an electric field to the medium, and means for varying the intensity of the electric field to shift the spectral response characteristic and optimum transmissivity range of the structure.

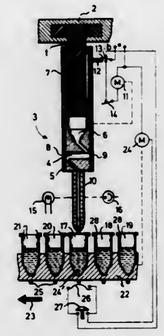
3,699,348

RADIATION SENSITIVE DEVICE FOR THE SUCCESSIVE INVESTIGATION OF SEVERAL SAMPLES

Gunther Hocherl, Aalen, Germany, assignor to Carl Zeiss-Stiftung, Wuerttemberg, Germany

Filed Aug. 6, 1971, Ser. No. 169,758
Claims priority, application Germany, Aug. 14, 1970, P 20 40 481.3
Int. Cl. G01n 21/26
U.S. Cl. 250—218 **6 Claims**

An arrangement for the successive investigation of several samples by light passing through the sample comprises a vertically disposed flow cell the upper end of which is fixedly connected to a vertical tube surrounding a fixedly mounted piston. The lower end of the flow cell has a suction nipple attached thereto which upon downward movement of the flow cell relative to the fixed piston is immersed in one of the sample vessels which are arranged on a horizontally movable conveyor so that the liquid sample therein is drawn into the flow cell which is provided in its circular wall with two diametrically opposed windows through which the measuring light is adapted to pass for impinging a photo cell. An electric motor moves the vertical tube and therewith the flow cell and suction nipple thereon upwardly and downwardly and during the up-



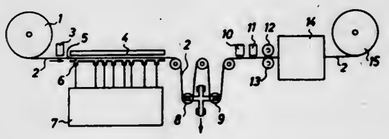
ward movement discharges the sample liquid in the flow cell into the vessel from which it was taken, whereupon the sample vessels are moved horizontally one step further until the next sample vessel comes into a position directly below the suction nipple on the flow cell.

3,699,349

ARRANGEMENT FOR DETERMINING FRAME LENGTHS ON FILM STRIPS

Rudolf Paulus, and Hans-Peter Huber, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 16, 1970, Ser. No. 81,347
Claims priority, application Germany, Oct. 22, 1969, P 19 53 014.4
Int. Cl. G01b 7/04
U.S. Cl. 250—219 FR **18 Claims**



One or more photoresistors, arranged to detect light passing through the film strip, cause varying signal voltages, the maximum voltages of which are stored and compared with the instantaneous signal voltages to produce a signal corresponding to the format of the film just examined.

3,699,350

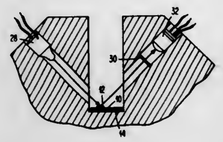
RADIANT ENERGY MARK SENSOR

Daniel O. Holdaway, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,704
Int. Cl. G02f 1/18
U.S. Cl. 250—225 **9 Claims**

The radiant energy mark sensor herein makes use of Brewster's Law and adds a polarizing screen in the light path to improve the radiant energy contrast between marks and a background. The incident beam of light strikes the background at or near Brewster's angle. A polarizing screen is

placed in the path of the reflected light. Light reflected from the background will be polarized, and the polarizing screen can null out that light. Light reflected from marks will not be polarized, and some of the light will be passed by the polarizing screen. In an alternative configuration, the polarizing screen is placed in the incident light path to control the amount of light reflected from the background and from the mark.

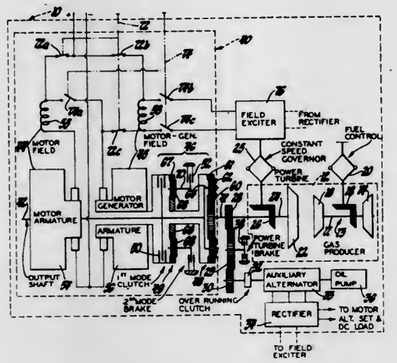


3,699,351

BI-MODAL VEHICLES WITH DRIVE MEANS FOR EXTERNAL OR SELF-PROPULSION

Albert N. Addie, La Grange Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1971, Ser. No. 168,068
Int. Cl. B60l *11/14*
U.S. Cl. 290—14 **8 Claims**



A bi-modal vehicle, such as a rail car, is provided in a preferred embodiment with a propulsion turbine and an electro-mechanical transmission arranged to drive the vehicle either from the turbine or from an external source of electrical power. The electro-mechanical transmission includes a split torque feature whereby, in the self-propelled mode, some of the turbine torque is delivered mechanically to the output shaft while the remainder passes through an electrical path including a motor and generator combination. In the external electric drive mode, both the generator and motor of the transmission are utilized as drive motors directly driving the output shaft. Numerous additional features are included.

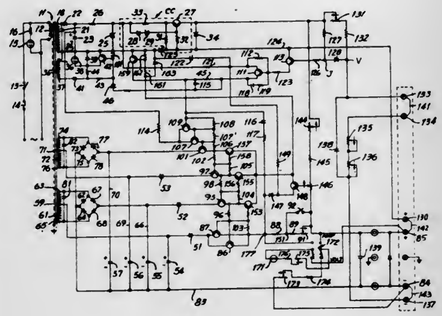
3,699,352

MULTI-RANGE REGULATED DC POWER SUPPLY

Arthur E. Silver, Wantagh, N.Y., assignor to Power Designs, Inc., Westbury, N.Y.

Filed March 8, 1971, Ser. No. 121,995
Int. Cl. H02j *1/00*
U.S. Cl. 307—75 **10 Claims**

A regulated DC power supply which has a multiplicity of unregulated DC sources and a multiplicity of electronic series resistance elements whose resistance is varied with the DC input source or load changes to maintain the voltage or current at the load at a constant level, an electronic control system being provided which automatically selects the



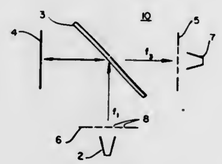
required unregulated source and the series resistance element most suited to provide the desired voltage or current at the load.

3,699,353

METHOD AND APPARATUS FOR GENERATING THIRD HARMONIC SIGNALS

George W. Bechtold, Tucker, Ga.; Vernon E. Derr, Boulder, Colo., and James C. Wiltse, Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 748,465, July 29, 1968, abandoned. This application Jan. 26, 1971, Ser. No. 109,917
Int. Cl. H02m *5/06*
U.S. Cl. 307—88.3 **6 Claims**



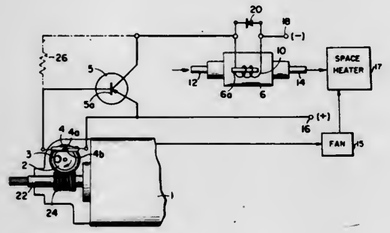
This invention relates to a method and apparatus for obtaining multiple resonant cavities that are simultaneously resonant at a fundamental frequency and its third harmonic frequency and to a metal plate beam splitter used in a resonator to separate the fundamental signal from the third harmonic signal. The beam splitter comprises a series of plates made of metal or metallized dielectric; the dielectric being plated to obtain high surface conductivity. The plates are dimensioned so as to give the desired attenuation of the fundamental frequency and are spaced relative to each other in such a manner as to mask the transverse area occupied by the field of the resonator. The beam splitter is inserted into the interaction region of a doubly resonant Fabry-Perot cavity or other cavity resonator and may be used in the microwave through submillimeter region.

3,699,354

CONTROL FOR ELECTRO-MAGNETIC PUMP

Siegfried Kofink, Zell, (Neckar), Germany, assignor to J. Eberspacher, Esslingen/Neckar, Germany

Continuation of Ser. No. 838,885, July 3, 1969, abandoned. This application Nov. 23, 1970, Ser. No. 92,916
Claims priority, application Germany, July 27, 1968, P 17 63 735.3
Int. Cl. H01h *35/00*
U.S. Cl. 307—120 **8 Claims**



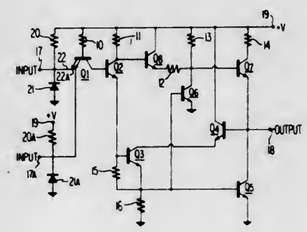
An apparatus for controlling the operation of an electromagnetic pump, particularly a fuel pump, for a device such as a combustion heater having an electric motor driven fan for the air supply to the heater includes a gear driven by the motor which drives a rotatable magnetic. The magnet is mounted so that it influences the opening and closing of a switch which is arranged in a circuit controlling the base of a transistor. The transistor is electrically connected to an actuating coil which provides the driving force for a movable piston plunger of the fuel pump. When the switch is closed by the rotation of a magnet it permits flow through the transistor circuit to the coil and actuation of the pump to provide a fuel injection which is timed to the rotation of the magnet.

3,699,355

GATE CIRCUIT

Charles Felix Madrazo, North Palm Beach; Edwin Maxwell Fulcher, and Kevin Patrick McDonagh, both of Lake Park, all of Fla., assignors to RCA Corporation

Filed March 2, 1971, Ser. No. 120,268
Int. Cl. H03k *19/34*
U.S. Cl. 307—215 **13 Claims**



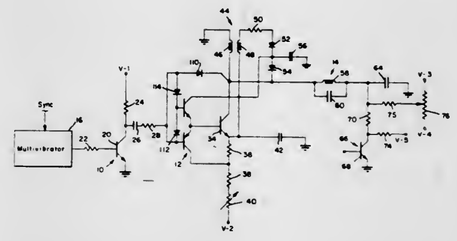
Gating circuit having a feedback network which provides output voltage clamping and medium to high speed operation. In addition, the feedback network provides transient overdrive which reduces output signal falltime.

3,699,356

RESONANT SWEEP GENERATOR

Ted W. Berwin, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 4, 1971, Ser. No. 174,572
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **14 Claims**



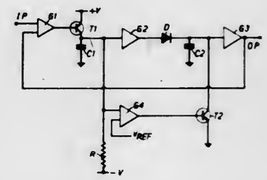
A resonant sweep generator comprising a diode for coupling a voltage source to a reactance load during a first interval of each operating cycle; a transistor for coupling the voltage source to the load during a second interval of each operating cycle; a compensation bias arrangement which provides improved sweep linearity by forward biasing the diode so as to cause the voltage levels applied to the load during the first and second intervals to be substantially equal; and a drive circuit which allows increased efficiency and speed of operation by controlling the transistor so that it does not saturate.

3,699,357

PEAK DETECTION CIRCUITS

George Howard Lloyd, Hertfordshire, England, assignor to Marconi Instruments Limited, London, England

Filed March 8, 1971, Ser. No. 121,769
Claims priority, application Great Britain, March 7, 1970, 11,031/70
Int. Cl. H03k *17/28, 17/30*
U.S. Cl. 307—235 A **8 Claims**

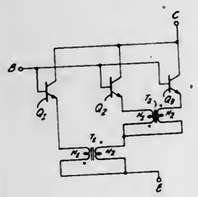


A peak detection circuit has two capacitive storage stages. The first storage stage has a fixed discharge time constant, and the second storage stage has two switchably selectable discharge time constants, one of which is less than that of the first storage stage and the other greater. During measurement of a peak level the greater time constant is used to provide an accurate measurement, but between successive measurements the lesser time constant is selected to reduce the waiting time normally required between such measurements.

3,699,358
CURRENT SHARING PARALLEL TRANSISTOR CIRCUIT

Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed June 14, 1971, Ser. No. 152,548
Int. Cl. H03k 17/56
U.S. Cl. 307—242 4 Claims

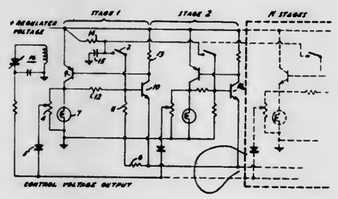


An improved circuit is provided effectively to connect a plurality of power transistors in a parallel connection for handling power levels beyond the capabilities of the individual transistors. The circuit includes a transformer intercoupling the emitters of the individual transistors for current sharing purposes, and for insuring equal current division among the individual transistors during continuous operation thereof, and during intermittent "on-off" operation thereof when the transistors are used for switching purposes.

3,699,359
ELECTRONIC LATCHING DEVICE

Rufus F. Shelby, Philadelphia, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 20, 1971, Ser. No. 135,544
Int. Cl. H03k 17/00
U.S. Cl. 307—252 K 5 Claims

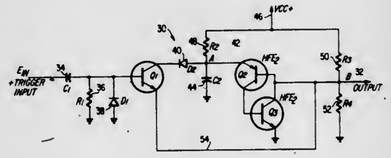


A momentary contact touch switch operates an electronic latching circuit which applies a constant direct current to a potentiometer. The potentiometer arm produces a controlled output voltage suitable for the remote electronic control of circuits having voltage sensitive variable capacitor tuning elements. A plurality of such devices operate as a touch-button tuning control with the potentiometers acting as the tuning controls to preset the touch-buttons. The voltage outputs of the potentiometers are fed through isolating diodes to a common control voltage output line so that only the potentiometer that is energized will be electrically connected to the output. All of the latching circuits are connected to a common element so that when any one circuit is actuated by a touch button, all of the others are deenergized.

3,699,360
ONE-SHOT MONOSTABLE MULTIVIBRATOR

Charles W. Ragadale, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 789,694, Jan. 8, 1069, Pat. No. 3,587,694.
This application Aug. 15, 1969, Ser. No. 850,403
Int. Cl. H03k 3/284
U.S. Cl. 307—273 7 Claims

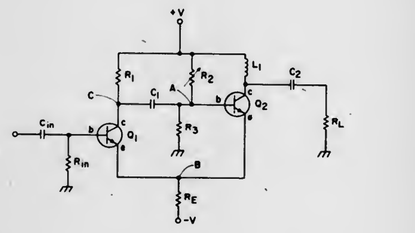


Disclosed is a one-shot multivibrator of simplified and inexpensive construction which produces a constant width output pulse and which once triggered is not affected by additional trigger pulses until after the timing cycle is completed. A charged capacitor and resistor maintain a pair of transistors conducting and the transistors change state when current flow is diverted from them through a third transistor in response to a triggering signal. The multivibrator output is connected by a negative feedback lead to the third transistor. Also disclosed is a rate monitoring portion of an electrical heart monitor incorporating the multivibrator.

3,699,361
SUB-NANOSECOND PULSE GENERATOR CIRCUIT

Brian Richard Bryden, Kanata, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Sept. 23, 1971, Ser. No. 183,178
Int. Cl. H03k 3/284, 3/29
U.S. Cl. 307—273 2 Claims

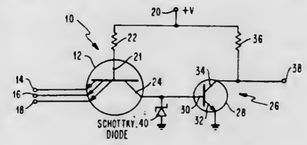


A transistorized sub-nanosecond pulse generator circuit having a pair of emitter coupled transistors in a monostable multivibrator configuration. By selecting an interstage capacitor, a collector load resistor, and a base bias or dividing resistor, in accordance with developed formulas, the operation of the transistorized pulse generator may effectively match the operation of conventional step-recovery-diode pulse generator circuits.

3,699,362
TRANSISTOR LOGIC CIRCUIT

Paul V. Jordan, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1971, Ser. No. 147,568
Int. Cl. H03k 19/34
U.S. Cl. 307—300 4 Claims

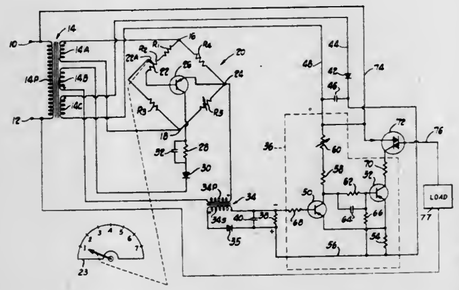


A transistor-transistor logic circuit employing a Schottky barrier diode connected across the output of the multi-emitter input transistor and the reference potential to suppress transient overshoot by controlling the voltage at the collector of the input transistor of the TTL circuit.

3,699,363
PROCESS CONTROL CIRCUITRY

George S. Roberts, Avon, Ohio, assignor to By George, Inc., Avon, Ohio

Filed Sept. 8, 1970, Ser. No. 70,204
Int. Cl. H03k 17/56
U.S. Cl. 307—308 21 Claims



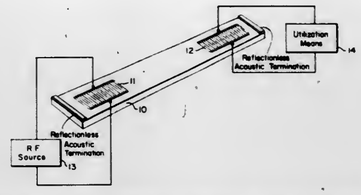
A control circuit utilizes a bridge arrangement responsive to variable resistance in one arm thereof that varies as a harmonic progression to control an external device such as a relay. An opposite arm of the bridge serves as a linear set point control for the external device that controls a process variable.

3,699,364
ACOUSTIC SURFACE WAVE DEVICE HAVING IMPROVED TRANSDUCER STRUCTURE

Henry M. Gerard, San Diego, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 4, 1971, Ser. No. 150,108
Int. Cl. H01v 7/00
U.S. Cl. 310—9.8 16 Claims

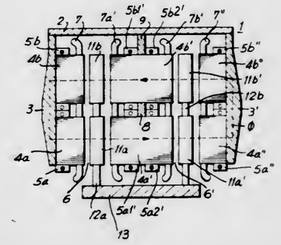
An improved transducer structure of the interdigitated electrode type is disclosed. In many microwave acoustic devices it is necessary to convert rf energy to acoustic surface wave energy and vice versa. When the acoustic medium is a piezoelectric substrate, interdigitated electrode transducers are widely employed. When such transducers are amplitude weighted, acoustic wave phase distortion of a serious nature can occur. Such phase distortion is eliminated by the use of an interdigitated transducer having dummy (i.e. non-active) electrodes disposed in the transducer pattern so as to present a substantially uniform metalization density to the propagating acoustic surface wave.



3,699,365
ELECTRODYNAMIC LINEAR MOTOR

Wilhelm Leitgeb, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Aug. 2, 1971, Ser. No. 168,111
Claims priority, application Germany, Aug. 12, 1970, P 20 40 986.3
Int. Cl. H02k 41/02
U.S. Cl. 310—12 5 Claims

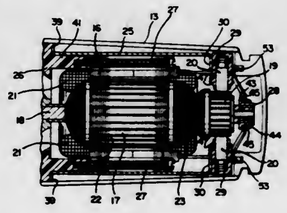


A synchronous electrodynamic motor comprises a primary part with a yoke which has lateral parts. The lamination stacks of the primary part carry a multiphase AC winding and are subdivided in height into portions which are surrounded by respective direct current excitation windings whose magnetic flux path is closed only through the lateral parts of the yoke.

3,699,366
POWER TOOL WITH MOTOR SUPPORT MEANS

John W. Wood, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

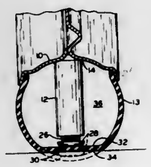
Filed June 7, 1971, Ser. No. 150,852
Int. Cl. H02k 7/14
U.S. Cl. 310—50 8 Claims



A power tool having a plastic housing containing a unitized motor assembly. The motor assembly includes a cylindrical

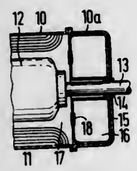
sheet metal support which provides permanently stable location of all of the functional motor parts.

3,699,367
MECHANISM FOR OBTAINING ENERGY FROM TIRE FLEXURE
Stephen E. Thomas, 13664 Ronnie Way, Saratoga, Calif.
Filed Aug. 13, 1971, Ser. No. 171,545
Int. Cl. H02k 7/18
U.S. Cl. 310—69 **4 Claims**



Located within a flexible vehicle tire is a device which has one portion corotatable with the wheel and a second portion which is reciprocated in a radial sense by the normal flexure of the tire, as the tire moves into ground engagement, is first depressed and then expands to its original condition after moving out of ground engagement. The relative radial movement which occurs between these two portions is utilized to operate an electromagnetic generator.

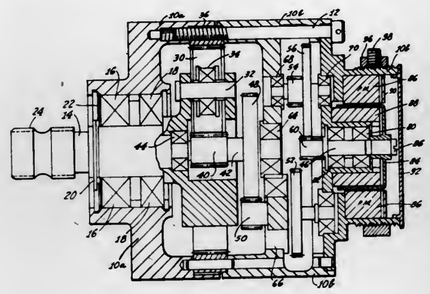
3,699,368
VENTLESS EQUIPMENT PROTECTION CASING
Kenneth Norman Palmer, Boreham Wood, England, assignor to National Reserch Development Corporation, London, England
Filed May 7, 1970, Ser. No. 35,522
Claims priority, application Great Britain, May 14, 1969, 24,633/69
Int. Cl. H02k 5/22
U.S. Cl. 310—88 **10 Claims**



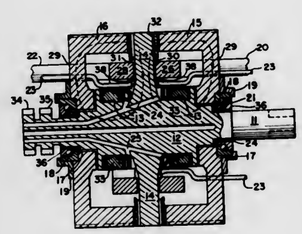
Equipment, particularly of an electrical nature, is protected against internal explosion and flame hazard by enclosing the equipment and separating the equipment space within the enclosure from an expansion space in the enclosure by a flame arrester. As an alternative, the expansion space can be defined by a body of porous foamed material in the enclosure.

3,699,369
TEMPERATURE COMPENSATED ADJUSTABLE DAMPER UNIT
Edward Hlipala, Wayne, and Arnold Schindel, Fair Lawn, both of N.J., assignors to The Singer Company
Filed June 21, 1971, Ser. No. 155,069
Int. Cl. H02k 49/04
U.S. Cl. 310—106 **3 Claims**

An adjustable damper unit is provided which exerts a restraining torque on a shaft, the torque being directly proportional to the angular velocity of the shaft. Damping is provided by a magnetic restraint on a drag cup driven through the magnetic field of a permanent magnet by planetary gears. An external adjusting ring controls the magnitude of the magnetic restraint and thereby controls the damping rate.



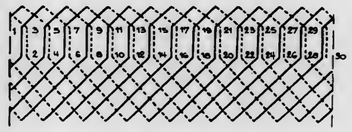
3,699,370
HOMOPOLAR GENERATOR
Deane B. Caldwell, 3908 Wythe Avenue, Richmond, Va.
Filed March 3, 1971, Ser. No. 120,617
Int. Cl. H02k 31/04
U.S. Cl. 310—178 **14 Claims**



A homopolar generator having a rotor with a disc shaped portion which rotates in a stator. A magnetic field is induced in the rotor and stator by at least one field winding which may be mounted about the rotor or on the stator or on both. A pair of annular bus bars are situated adjacent to and on opposite sides of the disc shaped portion of the rotor for collecting the generated current passing through the rotor. A liquid metal brush interfaces the disc portion of the rotor and the bus bars for an efficient conduction of current therebetween. The internal resistance of the generator is substantially reduced since the length of the current path through the disc is relatively small compared to the cross-sectional area thereof.

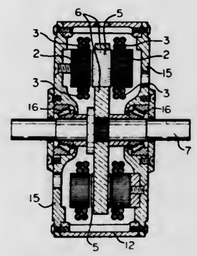
In one embodiment the field windings are mounted about the stator which windings generate a magnetic field that is cut by the rotating disc portion of the rotor thereby generating a current in the rotor which passes from one side to the other side of the disc substantially transverse to the direction of the magnetic flux lines and the rotation of the rotor. In a second embodiment the field windings are mounted about the rotor and therefore a rotating magnetic field is generated which field rotates with the rotor and cuts once each revolution of the rotor, a pair of but bars which extend through the stator thereby generating a current in the bus bars.

3,699,371
SERIES-WAVE WINDINGS FOR DYNAMO-ELECTRIC MACHINES
Jacques Henry-Baudot, Antony, France, assignor to Kollmorgen Corporation, Holyoke, Mass.
Filed April 7, 1971, Ser. No. 131,863
Claims priority, application France, April 8, 1970, 7012672
Int. Cl. H02k 3/00
U.S. Cl. 310—207 **6 Claims**



A series-wave winding for a dynamo-electric multipolar machine having at least three pairs of inductor field poles on a face of a magnetic airgap progresses by waves each covering a quadruple polar pitch of the machine.

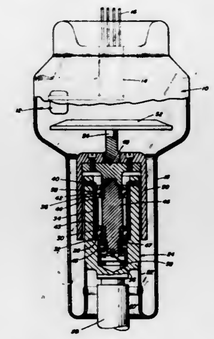
3,699,372
ROTOR FOR DYNAMO-ELECTRIC MACHINE OF THE AXIAL AIRGAP TYPE
Michio Abe, Kasugai, and Naoyuki Maeda, Inuyama, both of Japan, assignors to Tokai Cold Forming Co., Ltd., Kasugai-shi, Aichi-ken, Japan
Continuation-in-part of Ser. No. 773,738, Nov. 6, 1968. This application June 17, 1971, Ser. No. 154,183
Claims priority, application Japan, June 27, 1968, 43/44182
Int. Cl. H02k 1/00
U.S. Cl. 310—268 **6 Claims**



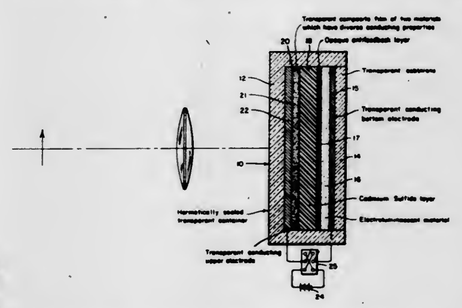
A dynamo-electric machine of the axial airgap type has a rotor comprising a plurality of wedge-shaped grain oriented core segments arranged in a circular array, each core segment having a crystallographic orientation such that the directivity of magnetic orientation thereof, in directions parallel to the rotor axis, is high at and around the inner portion of the lamination, proximate to the rotor periphery, and is low at and around the inner portion of the lamination, proximate to the rotor shaft. Preferably, the core segments are made of iron having a degree of purity of at least 99.6 percent.

3,699,373
X-RAY TUBE WITH ELECTRICALLY CONDUCTIVE BEARING BYPASS
William P. Holland, West Redding, and Robert E. Azud, Wilton, both of Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.
Filed July 2, 1971, Ser. No. 159,235
Int. Cl. H01j 35/10
U.S. Cl. 313—60 **17 Claims**

An X-ray tube of the rotating anode type having an auxiliary contact structure for providing efficient electrical conductivity in bypass relation to the support bearings, and including means for preventing generated wear particles from passing into the support bearings, thus improving support bearing life and permitting use in support bearings of materials having relatively poor electrical conductivity characteristics.

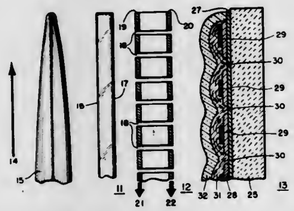


3,699,374
LIGHT ACTIVATED, HIGH RESOLUTION, FIELD SUSTAINED CONDUCTIVITY IMAGE STORAGE AND DISPLAY DEVICE
Ronald F. Scholl, Malibu, and William P. Bleha, Jr., Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 15, 1971, Ser. No. 162,887
Int. Cl. H01j 1/63
U.S. Cl. 313—94 **6 Claims**



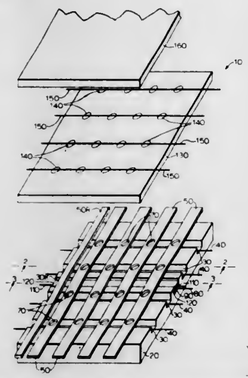
This invention provides a solid state image-storage panel, in the form of a multi-layered thin film structure, which can exhibit and retain a high resolution image momentarily impressed thereupon by light. The image can either be projected on the panel in entirety or can be recorded sequentially by a scanning light beam. The intensity of light impinging on an elemental area of the image-storage panel creates local conductivity modulations within the storage film thereof which correspond to the input image. These modulations, in turn, alter local field configurations across an electroluminescent layer disposed adjacent the storage film, thus creating a visible output image. After initial exposure, the conductivity modulations in the storage film are maintained for an extended period of time (several tens of seconds) provided that an applied electric field across the storage film continues to be maintained. This phenomenon is hereinafter referred to as "field sustained conductivity." Removal or reversal of the applied electrical field restores the storage film to its initial insulating condition, and the image-storage panel is thereby erased.

3,699,375
IMAGE DETECTOR INCLUDING SENSOR MATRIX OF FIELD EFFECT ELEMENTS
Gerhard E. Weibel, Deerfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Sept. 27, 1971, Ser. No. 184,134
Int. Cl. H01j 1/54, 31/48
U.S. Cl. 313—95 7 Claims



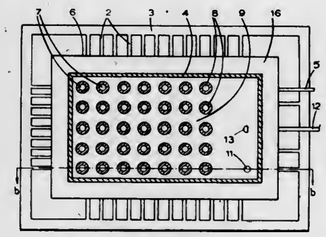
A distribution of charges is accumulated over a leaky dielectric layer in response to electrons from a microchannel plate, which amplifies the output of a photocathode layer stimulated by optical image information. Each respective element of an array of field-effect elements, coextensive with the charged dielectric and adjacent to the surface of the dielectric opposite the microchannel plate, is differently modulated in conductivity by the local field due to the local charge on the portion of the dielectric adjacent the respective element. Readout by periodic scanning of the level of conductivity of each such element results in a modulated output signal suitable for the reproduction of the optical image information in amplified form.

3,699,376
KEEP-ALIVE ELECTRODE FOR DISPLAY PANEL
Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed March 1, 1971, Ser. No. 119,494
Int. Cl. H01j 61/54, 61/04, 61/92
U.S. Cl. 313—197 2 Claims



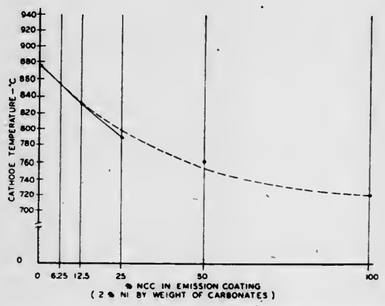
A keep-alive electrode arrangement is intended for use with a display panel which includes a slotted base plate in which a first set of electrodes is seated, with a second set being seated on or in the top surface of the base plate to form an array of first gas-filled cells. An apertured insulating plate is seated on the base plate with the second electrodes therebetween, and third electrodes are seated on the top surface of the second plate. A glass cover plate completes the panel. A keep-alive electrode arrangement comprises first and second electrodes, both seated in one of the slots in the base plate suitably insulated from each other and providing a glow area which is in communication with one of the second electrodes.

3,699,377
GLOW DISCHARGE DISPLAY DEVICE INCLUDING AN INSULATING ENVELOPE BLOCK WITH AN ARRAY OF CAVITIES THEREIN
Raymond Frederick Hall, Crawley, and Douglas Raymond Mainard, Salfords, both of England, assignors to U.S. Philips Corporation
Filed Dec. 28, 1970, Ser. No. 101,548
Claims priority, application Great Britain, Dec. 30, 1969, 63,248/69
Int. Cl. H01j 61/10, 61/30
U.S. Cl. 313—204 3 Claims



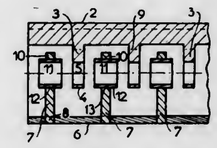
An electrical glow-discharge matrix display tube comprises an array of cavities provided in a face of a block of electrically insulating material. A glow-discharge cathode is provided at the bottom of each cavity and an anode or anodes are provided facing the open end of each cavity so as to define an array of individually addressable glow-discharge paths. The open end of each cavity is completely surrounded by an individual recess so as to reduce the electrical leakage which would otherwise occur between adjacent cavities due to sputtered material being deposited on the face of the block. The cathodes may all be electrically separated and may cooperate with a common anode, or rows of cathodes may be interconnected and cooperate with a series of strip-shaped anodes orthogonal to the cathode rows.

3,699,378
ELECTRON DISCHARGE DEVICE THERMIONIC CATHODE HAVING REDUCED OPERATING TEMPERATURE AND METHOD OF MAKING SAME
William E. Buescher, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated
Filed June 30, 1971, Ser. No. 158,157
Int. Cl. H01j 1/14
U.S. Cl. 313—346 DC 1 Claim



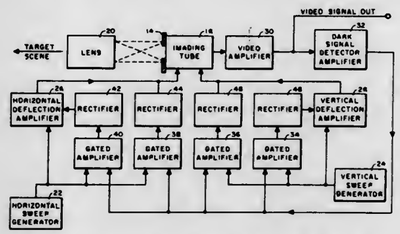
Reduction of thermionic cathode operating temperature is accomplished by the inclusion in the emissive coating of amounts of nickel coated carbonates which can ordinarily vary between more than 0 percent and up to about less than 25 percent by weight of the emissive material without adversely effecting emission. The nickel coated carbonates contain from about 2 percent to about 7 percent by weight nickel.

3,699,379
DELAY LINES
Gerard Kantorowicz, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 19, 1971, Ser. No. 107,787
Claims priority, application France, Jan. 26, 1970, 7002640
Int. Cl. H03h 7/30
U.S. Cl. 315—3.5 6 Claims



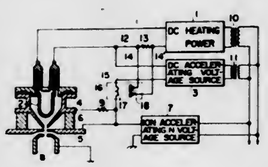
This asymmetrical interdigital delay line is constituted by two combs of triangular interleaved fingers of different dimensions, with the fingers of one comb provided near their extremities with a hole, while those of the other comb are provided near their tips with a tube of a width larger than the thickness of the fingers, the axis of the tube coinciding with the axis of the holes and that of the beam passing through the delay line in operation, this structure bringing the advantages of direct fundamental mode operation and good heat dissipation.

3,699,380
AUTOMATIC BORESIGHTING CIRCUIT
Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed April 17, 1964, Ser. No. 361,613
Int. Cl. H01j 29/70
U.S. Cl. 315—21 R 2 Claims



1. In an automatic boresighting circuit for use in an electro-optical guidance system, the combination comprising:
a. a television type imaging tube for scanning a target to be tracked,
b. means on the face of said imaging tube defining a rectangular area which is smaller than the area of the face of said tube,
c. sweep circuit means for scanning said rectangular area of said imaging tube,
d. sensing means affixed to the face of said imaging tube for sensing when the scanning action scans on the area outside said rectangular area,
e. control circuit means coupled to said sensing means and to said sweep circuit means for maintaining said scanning within said rectangular area, said control circuit including:
f. a first sawtooth wave generator for generating a vertical sweep voltage,
g. a vertical deflection amplifier coupled to said first sawtooth wave generator and to said imaging tube for controlling the amplitude of the vertical deflection voltage applied to said imaging tube.
h. a first gated amplifier having a first input coupled to the output of said sensing means, a second input coupled to said vertical sweep voltage generator and having an output,
i. a rectifier circuit coupling the output of said first gated amplifier to said vertical deflection amplifier for controlling the gain of said deflection amplifier,
j. a second gated amplifier having a first input coupled to the output of said sensing means, a second input coupled to said vertical sweep voltage generator and having an output,
k. a rectifier circuit coupling the output of said second gated amplifier to the output of said vertical deflection amplifier for supplying a dc voltage component to said vertical deflection voltage for moving the whole raster up or down,
l. a second sawtooth wave generator for generating a horizontal sweep voltage,
m. a horizontal deflection amplifier coupled to said second sawtooth wave generator and to said imaging tube for controlling the amplitude of the horizontal deflection voltage applied to said imaging tube,
n. a third gated amplifier having a first input coupled to the output of said sensing means, a second input coupled to said second sawtooth wave generator and having an output,
o. a rectifier circuit coupling the output of said third gated amplifier to said horizontal deflection amplifier for controlling the gain of said deflection amplifier,
p. a fourth gated amplifier having a first input coupled to the output of said sensing means, a second input coupled to said horizontal sweep voltage generator and having an output,
q. a rectifier circuit coupling the output of said fourth gated amplifier to the output of said horizontal deflection amplifier for supplying a dc voltage component to said horizontal deflection voltage for moving the whole raster to the right or left.

3,699,381
ION SOURCE DEVICE HAVING CONTROL MEANS FOR REDUCING FILAMENT CURRENT BELOW ITS STARTING VALUE
Toshio Kondo, Kokubunji, and Hifumi Tamura, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 11, 1971, Ser. No. 105,321
Claims priority, application Japan, Jan. 9, 1970, 45/5124
Int. Cl. H01j 33/00
U.S. Cl. 315—74 6 Claims



An ion source device of the Duoplasmatron type has a current reduction resistor in the filament circuit thereof for reducing the filament current during steady state operation thereof, and a relay adapted to normally short-circuit both terminals of the current reduction resistor, which relay is energized by a current flowing through an intermediate electrode

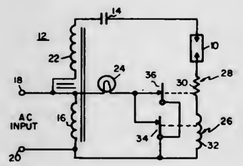
circuit so as to open both of these terminals of the resistor thereby making it possible to reduce the steady state filament current.

3,699,382

AUXILIARY LIGHTING SYSTEM FOR ARC LAMP

Anton Franke, Danvers, Mass., assignor to Sylvania Electric Products Inc.

Filed Feb. 4, 1971, Ser. No. 112,684
Int. Cl. H05b *41/46, 39/10*
U.S. Cl. 315—92 5 Claims



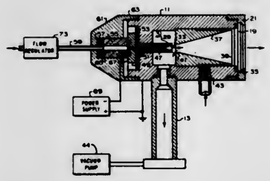
An auxiliary lighting system for a high pressure arc discharge lamp operated by a ballast having AC input terminals and output terminals for connecting the arc lamp in an operating circuit loop. A current sensing electromagnetic relay controls a standby incandescent lamp to provide illumination during the arc lamp cooling off period following a power interruption. The relay coil is series connected in the arc lamp circuit loop, and the relay contacts are serially connected with the incandescent lamp across the AC input of the ballast. A preferred embodiment further includes a current sensitive thermal relay for controlling the standby incandescent lamp to maintain a light output during the warm up period following restriking of the arc lamp.

3,699,383

FLOW-THROUGH HOLLOW CATHODE SPECTRAL LIGHT SOURCE AND METHOD OF OPERATING SAME

Robert L. Chaney, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 28, 1970, Ser. No. 101,872
Int. Cl. H01j *61/06, 61/28*
U.S. Cl. 315—111 12 Claims



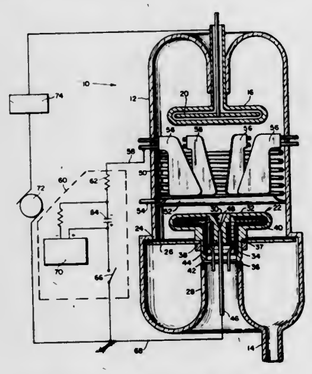
An atomic spectral lamp includes a demountable, hollow cathode, and a funnel-shaped anode adjacent to the cathode. A glow discharge plasma is established in the cathode cavity. Counterflow through the funnel-shaped anode prevents self absorption of light by atomic vapor. Gas flow through the hollow cathode at a predetermined velocity increases the intensity of light emitted from the plasma.

3,699,384

OFFSWITCHING OF LIQUID METAL ARC SWITCHING DEVICE BY INTERNAL CURRENT DIVERSION TO AN AUXILIARY ELECTRODE

Wilfried O. Eckhardt, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 7, 1971, Ser. No. 178,238
Int. Cl. H01j *7/24, 13/06*
U.S. Cl. 315—111 16 Claims



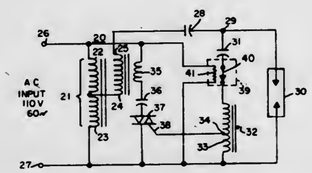
An enclosed vessel containing one or more anodes, a main cathode, one or more auxiliary cathodes, and means for maintaining a low pressure in the tube comprises a liquid-metal arc switching device. The main cathode is fed with a metal which is liquid at convenient temperatures, so that limited quantities of the metal are present and available on the cathode for arcing. The interior of the vessel is maintained at a low background pressure so that, during nonconduction, vacuum space insulation is provided between the anodes and the cathodes. Arc initiation is accomplished by any convenient initiator, and the arc runs upon the small amount of liquid metal fed at an appropriate rate to the main cathode. For arc extinction, at least one auxiliary cathode is positioned within the envelope.

3,699,385

CONTROL CIRCUIT FOR STARTING, SUSTAINING AND OPERATING ARC LAMPS

Fredrick W. Paget, Hamilton, Mass., assignor to Sylvania Electric Products, Inc.

Filed Dec. 30, 1970, Ser. No. 102,855
Int. Cl. H05b *41/14*
U.S. Cl. 315—239 13 Claims



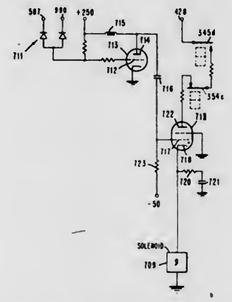
A control circuit for starting, sustaining and operating metal halide arc lamps comprising a bridged air gap ballast transformer having AC input terminals and output terminals for connection to an arc lamp. A differentiating circuit is connected across the output terminals for detecting voltage transitions in the lamp circuit and generating trigger signals in response thereto. Serially connected across the AC input terminals are a pulse winding magnetically coupled to the secondary winding of the ballast transformer, a capacitor, and a switch for discharging the capacitor through the pulse winding in response to the trigger signal from the differentiating circuit to thereby supply a voltage pulse of sufficient energy to ignite the arc lamp.

3,699,386

FIRING CIRCUIT FOR GAS DISCHARGE TUBES

John J. Lentz, 27 Hywood Place, Chappaqua, N.Y.

Division of Ser. No. 388,160, Oct. 26, 1953, Pat. No. 3,517,391. This application Feb. 11, 1970, Ser. No. 14,891
Int. Cl. H01h *47/30*; H01j *17/36*; H03b *11/08*
U.S. Cl. 315—356 5 Claims



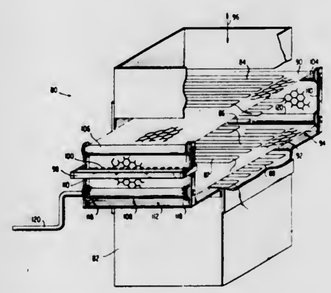
This specification describes a circuit for triggering a gas tube in response to a pulse whose magnitude may be small and whose length is indeterminate and may be short with respect to the time necessary to cause the conduction of the gas tube. The pulse is applied to the grid of a triode to cause it to conduct. The plate circuit of the triode contains an inductor which stores energy upon the application of the pulse. When the pulse ends and the triode turns off oscillations begin in a ringing circuit comprising the inductor and stray plate to ground capacitance. The energy then oscillating between the inductor and the capacitance produces a high energy pulse that triggers the gas tube.

3,699,387

IONIC WIND MACHINE

Harrison F. Edwards, 79 S. Broad Street, Norwich, N.Y.

Filed June 25, 1970, Ser. No. 49,714
Int. Cl. H05h *5/06*
U.S. Cl. 317—4 3 Claims



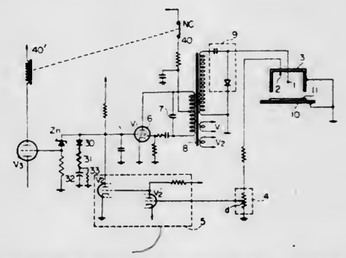
Disclosed is a wind generating machine with no moving parts. A thin corona wire is located adjacent a wire mesh and a potential gradient of from 7,000 to 20,000 volts causes air to flow in a direction from the wire toward the mesh. The air flow is voltage sensitive. Several stages may be provided and the mesh may form part of a continuous belt. A rigid self-contained assembly is provided by physically connecting the wire and mesh.

3,699,388

APPARATUS FOR ELECTROSTATIC CHARGING OF PAPER IN ELECTROPHOTOGRAPHIC REPRODUCTION

Takeshi Ukai, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 736,054, June 11, 1968. This application May 17, 1971, Ser. No. 144,182
Claims priority, application Japan, July 6, 1967, 42/43571
Int. Cl. G03g *15/02*; H01t *19/00*
U.S. Cl. 317—4 5 Claims



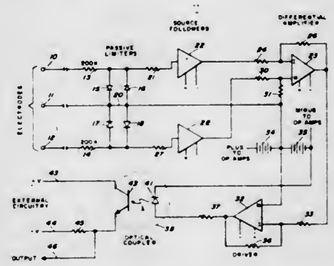
A corona discharge electrode is supplied with voltage from a high frequency power source to produce a corona discharge which strikes a sheet of reproducing paper to charge the same electrostatically. A detection electrode is positioned in the field of the corona discharge and is connected via a resistor and amplifier to the power source to control the same in accordance with the detected corona discharge to maintain the magnitude of the discharge field constant. A switch is connected in the power supply to interrupt connection thereof with the discharge electrode if a spark discharge is produced between the discharge electrode and the paper.

3,699,389

PATIENT ELECTRODE ISOLATION

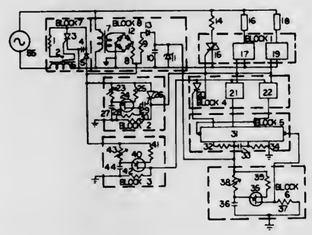
William Perry Holsinger, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filed Nov. 19, 1970, Ser. No. 90,969
Int. Cl. G08c *19/02*
U.S. Cl. 317—9 R 1 Claim



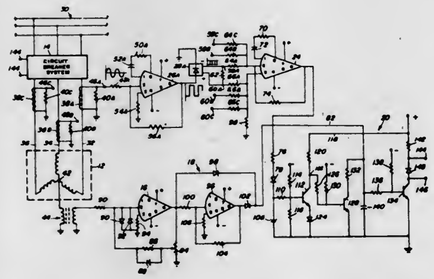
A system for preventing the inadvertent electrocution of a surgical patient through accidental coupling of probes and common equipment to ground. Isolation of the patient from ground is obtained through the use of a light emitting diode and a photo transistor in the probe circuit.

3,699,390
ELECTRONIC SEQUENTIAL SWITCH
Kenneth L. Blakeslee, 330 Glencourtney Drive, N.W., Atlanta, Ga.
Filed Sept. 23, 1971, Ser. No. 183,098
Int. Cl. H02h 3/08
U.S. Cl. 317—16 **7 Claims**



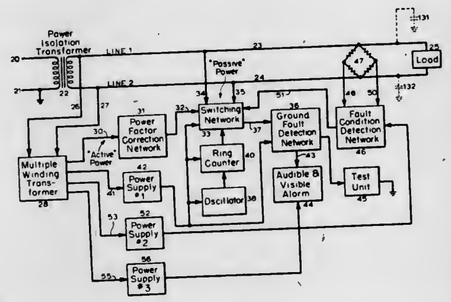
An electronic sequential switch consists of two or more alternating current power switches and associated electronic networks to produce two separately controlled power switching levels. All power switches are gated into conduction simultaneously late in each current half cycle resulting in a low average current flow in the load. Only one of the many power switches receives a conduction signal early in the half cycle and its load receives a high average current. The high average current mode is switched through the many power switches one at a time and is automatically recycled to the first power switch when the final power switch is turned off. The combined circuits provide a means for maintaining a minimum power to all loads at all times and switching a high power to a single load sequentially. Both power levels and sequence rate are adjustable.

3,699,391
REACTOR FAULT RELAY
Larry E. Eilts, Golden, Colo., assignor to The United States of America as represented by the Secretary of the Interior
Filed Sept. 2, 1971, Ser. No. 177,232
Int. Cl. H02h 3/16
U.S. Cl. 317—18 D **5 Claims**



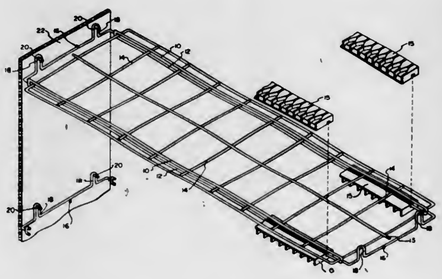
A relay for protecting three-phase, wye-connected circuits by monitoring neutral voltage. To prevent relay operation during normal unbalanced conditions, the current input to each phase is monitored, and relay operation enabled only when three currents are present.

3,699,392
GROUND FAULT DETECTION SYSTEM WITH SEQUENTIAL LINE TESTING
Joo C. Lee, 2311 Spring Hill Lane, Lindenhurst, Ill., and Charles S. Tak, 9128 Kennedy Drive, Des Plaines, Ill.
Filed Nov. 22, 1971, Ser. No. 200,708
Int. Cl. H02h 3/28
U.S. Cl. 317—18 R **15 Claims**



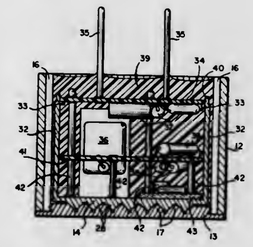
An a-c line, isolated from ground by a transformer, is continuously tested for ground faults through a switching network which sequentially completes a circuit between the a-c conductors, an apparent active power source, and a ground fault detection network. A fault condition detection network is coupled through a bridge circuit to the a-c lines, to provide an indication of a simple fault on either line, or a substantially unbalanced fault on both lines. An oscillator and ring counter arrangement continuously drives a switching network to test for individual line grounds, and balanced and unbalanced double line faults. A self-contained power supply arrangement is provided.

3,699,393
PRINTED WIRING CARD FILE
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.
Filed Aug. 2, 1971, Ser. No. 168,236
Int. Cl. H05k 7/18
U.S. Cl. 317—99 **8 Claims**



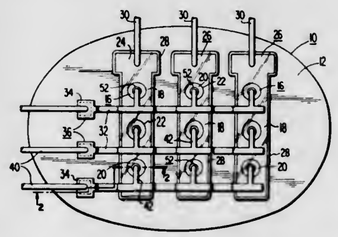
A printed wiring card file including a support and stabilization structure to which notched card guide sections may be clamped. The card guides provide vertical alignment of the printed wiring cards and the support and stabilization structure may be arranged such as to accommodate wiring cards of any desired height.

3,699,394
MODULAR CIRCUIT PACKAGE WITH ENHANCED HEAT DISSIPATION
Chester L. Schuler, Wayland, Mass., assignor to Powercube Corporation, Waltham, Mass.
Filed Nov. 1, 1971, Ser. No. 194,728
Int. Cl. H05k 7/20
U.S. Cl. 317—100 **20 Claims**



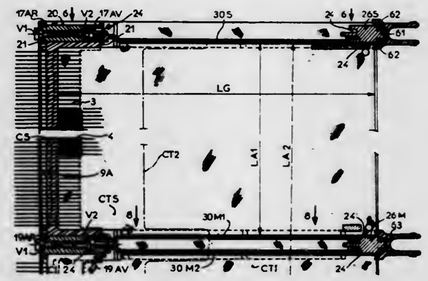
A modular electronic power circuit package having the individual circuit components mounted to a carrier which is secured to a base member. The carrier and base member provide a direct path to the chassis for dissipation of heat generated by circuit components, some of which may be physically connected to the carrier. Modular ceramic elements may be selectively utilized within the enclosure to provide physical and thermal connection and electrical insulation between the carrier and selective circuitry components. A preferred embodiment includes a housing within which one or more modular circuits and carriers may be mounted. The housing provides for various external physical mountings, and several housings (with sub-circuits) may be interconnected and mechanically secured together to form more complex power circuit combinations. The complete enclosure effectively shields against radio frequency interference while enhancing heat dissipation.

3,699,395
SEMICONDUCTOR DEVICES INCLUDING FUSIBLE ELEMENTS
Edward Joseph Boleky, Cranbury, N.J., assignor to RCA Corporation
Filed Jan. 2, 1970, Ser. No. 13
Int. Cl. H01l 19/00
U.S. Cl. 317—101 **7 Claims**



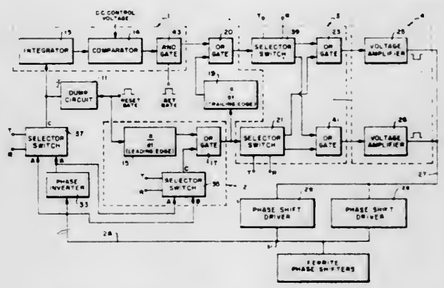
Information storing devices, such as read-only-memories, comprise an array of semiconductor components on a substrate, each component being connected into the array by first and second conductors, the first conductor being of a material well suited as an electrical conductor. e.g., aluminum, and the other well suited as a fuse, e.g., a highly doped semiconductor material. Preferably, the second conductor is disposed on a thermal insulating layer.

3,699,396
MOUNTING SYSTEM FOR PRINTED CIRCUIT BOARDS
Gerard Colaud, Epinay, Seine, and Bernard Fanene, Garges Les Gonesse, both of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France
Filed April 21, 1971, Ser. No. 136,080
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH **8 Claims**



A mounting for pluggable printed circuit boards, wherein parallel connectors comprising rows of contact elements are attached to a connection panel by back bars having rear portions affixed to the panel and front portion clamping such connectors to respective ones of the rear portions, and wherein guiding grids provide for inserting printed circuit boards into the connectors and maintaining a mutual parallel relationship between boards so inserted.

3,699,397
FLUX-DRIVER CIRCUIT FOR PHASED ARRAY
John H. Kuck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed March 30, 1971, Ser. No. 129,412
Int. Cl. H01h 47/22
U.S. Cl. 317—123 **15 Claims**

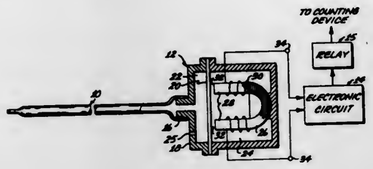


A flux driver circuit supplies a pair of control pulses to a magnetically controlled analogue microwave phase shifter used in a phased array antenna system. The flux driver circuit system first delivers a reset pulse which drives the magnetic material to saturation in one direction and then supplies a set pulse which drives the magnetic material in the opposite direction and to a predetermined desired flux level. When the radar system changes from the transmit to the receive mode and a new predetermined flux level is desired in the phase shifters, the reset-set cycle is again repeated. The level of magnetic flux in the phase shifter is controlled by a D.C. command voltage supplied to the circuit. Provision is made for reversing the polarity of the applied reset-set voltage when switching the antenna between the transmit and the receive modes.

3,699,398
SENSOR FOR VEHICULAR TRAFFIC COUNTERS

Reed A. Newmeyer, 4521 West Claremont, Glendale, Ariz.

Filed Oct. 12, 1971, Ser. No. 188,113
Int. Cl. G08b 13/10; G08g 1/02
U.S. Cl. 317—148.5 R 7 Claims

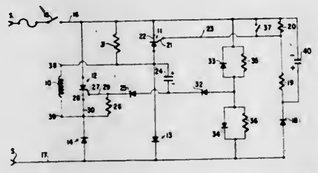


A pneumatic road tube, an electromagnetic transducer and an electronic circuit provide a vehicle sensor mechanism for use in a traffic counting system. A complex air pressure wave is produced within the tube each time a vehicle runs over the tube, the wave is sensed by the transducer which responds by producing an electric signal. The electric signal is coupled to the circuit which blanks out unwanted portions of the signal and shapes the remainder into a signal suitable for application to a counting device.

3,699,399
CIRCUITS FOR CONTROLLING SOLENOID ENERGIZATION TO REDUCE HEATING

Warren A. Barber, Martinsville, N.J., assignor to The Singer Company, New York, N.Y.

Filed Sept. 30, 1968, Ser. No. 763,501
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 B 14 Claims

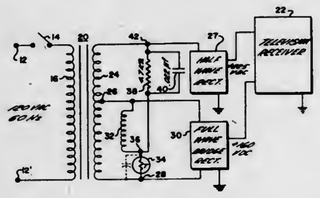


A circuit is disclosed for initially supplying full-wave rectified alternating current (A.C.) to a solenoid and, after a predetermined time, supplying automatically half-wave rectified A.C. to the solenoid to reduce the heating thereof. Two controlled rectifiers (SCR's) are connected with two diodes in a bridge configuration to supply, when both controlled rectifiers are conducting, a full-wave rectified A.C. to the solenoid. The first SCR is triggereed into conduction during each half cycle by a fixed firing signal. Pulses supplied by the collapsing magnetic field of the solenoid when the first SCR turns off in each cycle are used to charge a capacitor through a resistance connected across the gate and cathode of the second SCR thereby initially triggering the second SCR alternately with the first SCR into conduction in each cycle. However, as the capacitor charge builds up incrementally to maximum, the successive current pulses become smaller until they are insufficient to continue the triggering of the second SCR, which then turns off leaving only the first SCR conducting to supply half-wave rectified A.C. to the solenoid which is sufficient to hold its armature in but insufficient to cause abnormal heating. A diode gate controls the discharge path for the capacitor. This diode is reverse-biased by a circuit which clamps its anode to the most negative excursions of the applied A.C. voltage and prevents discharge of the capacitor until the A.C. voltage is removed, whereupon the capacitor is discharged and is thus reset for the next charging operation initiated when the A.C. is again restored. The first SCR may be replaced by a diode if low-level shut-off of the system is not desired.

3,699,400
AUTOMATIC DEGAUSSING APPARATUS FOR MINIMIZING RESIDUAL CURRENT DURING STEADY STATE OPERATION

James Courtland Marsh, Jr., Indianpolis, Ind., assignor to RCA Corporation

Filed March 8, 1971, Ser. No. 121,666
Int. Cl. H01h 47/00
U.S. Cl. 317—157.5 11 Claims

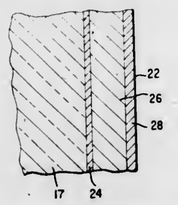


A degaussing coil structure is connected in series with a temperature dependent resistor and coupled to a source of alternating potential. A frequency dependent impedance is connected in series with the temperature dependent resistor and coupled to another source of alternating potential. When the temperature dependent resistor exhibits its steady state operating resistance, a voltage is developed at the junction of the temperature dependent resistor and degaussing coil structure which reduces the voltage gradient across the coil structure to reduce the residual current flowing through the structure.

3,699,401
PHOTOEMISSIVE ELECTRON TUBE COMPRISING A THIN FILM TRANSMISSIVE SEMICONDUCTOR PHOTOCATHODE STRUCTURE

James Joseph Tietjin, Bell Mead; Brown F. Williams, Princeton, and Chin Chun Wang, Hightstown, all of N.J., assignors to RCA Corporation

Filed May 11, 1971, Ser. No. 143,862
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 16 Claims



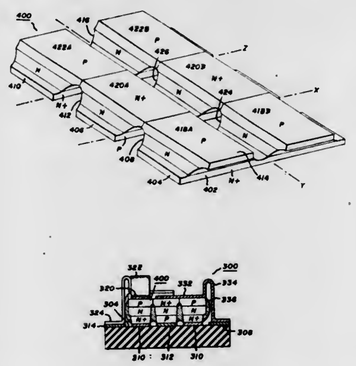
A transmissive semiconductor photocathode structure comprising a first monocrystalline epitaxial layer of silicon or germanium about 200 to 300 nanometers thick on a major surface of a transparent monocrystalline dielectric substrate. On the silicon or germanium layer is a second monocrystalline epitaxial layer of a III–V or II–VI semiconductor compound having a thickness of at least about three microns. On the second layer is a third monocrystalline epitaxial layer of a III–V semiconductor compound having an energy bandgap smaller than the second layer compound and having a thickness on the order of from about one micron to about five microns.

Also disclosed is a photoemissive electron tube utilizing the transmissive photocathode structure, with a work function reducing material deposited on the emissive surface of the third layer.

3,699,402
HYBRID CIRCUIT POWER MODULE

Joseph A. McCann, Auburn, and John D. Harnden, Jr., Schenectady, both of N.Y., assignors to General Electric Company

Filed July 27, 1970, Ser. No. 58,273
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 18 Claims

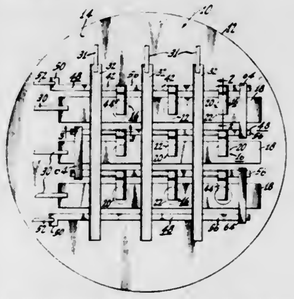


A hybrid circuit is formed on an electrically insulative, thermally conductive substrate surface with an alternating current inverter bridge having associated therewith a switching serving diode. In one form the bridge and the switch serving diode are integrated within a single semiconductive element while in another form the switch serving diode may be integrated into a thyristor semiconductive element so that the thyristor has no reverse current blocking capability.

3,699,403
FUSIBLE SEMICONDUCTOR DEVICE INCLUDING MEANS FOR REDUCING THE REQUIRED FUSING CURRENT

Edward Joseph Boleky, III, Cranbury, N.J., assignor to RCA Corporation

Filed Oct. 23, 1970, Ser. No. 83,423
Int. Cl. H01l 5/00, 11/00
U.S. Cl. 317—235 R 7 Claims

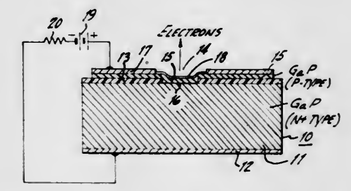


Information storing devices, such as read-only-memories, comprise an array of semiconductor components on a substrate, each component being connected into the array by a fuse. A continuous electrically resistive element is disposed on the substrate, the fuses being disposed on the element. To open-circuit selected ones of the fuses, a current is passed through the element to heat all the fuses to a temperature approaching but less than the melting point of the fuses, and a current is passed through only the selected fuses to further heat them to the fusing temperature thereof.

3,699,404
NEGATIVE EFFECTIVE ELECTRON AFFINITY EMITTERS WITH DRIFT FIELDS USING DEEP ACCEPTOR DOPING

Ralph E. Simon, Trenton, and Brown F. Williams, Princeton, both of N.J., assignors to RCA Corporation

Continuation of Ser. No. 751,862, Aug. 12, 1968, abandoned.
This application Feb. 24, 1971, Ser. No. 118,491
Int. Cl. H01l 15/00
U.S. Cl. 317—235 R 6 Claims

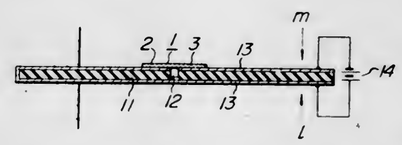


An electron emitter comprising a body of gallium phosphide having a thin surface layer of cesium. The gallium phosphide is doped with a deep acceptor such as iron. Interaction between the cesium layers and the semiconductor surface results in ionization of the deep acceptor impurities in a small region near the surface. The ionization of deep acceptors at the cesiated surface results in a graded concentration of ionized impurities through the gallium phosphide layer, which establishes an internal electric field for impelling electrons toward the cesiated emitting surface.

3,699,405
STRESS SENSITIVE SEMI-CONDUCTOR ELEMENT HAVING A REDUCE CROSS-SECTIONAL AREA

Noboru Yukami, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 843,593, July 22, 1969, abandoned.
This application Nov. 2, 1971, Ser. No. 194,996
Claims priority, application Japan, July 29, 1968, 43/54150; Nov. 20, 1968, 43/85749; April 12, 1969, 44/31819
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 4 Claims



A stress sensitive semiconductor element comprising first and second low-resistivity regions of different conductivity types formed in a common semiconductor substrate, a third region of a high resistivity the conductivity type of which is the same as that of said second region, said third region being formed in said common semiconductor substrate in contact with said first and second regions, the junction between said first region and said third region being made deeper and that

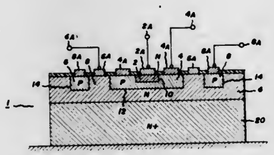
between said second region and said third region being made shallower, wherein a constricted potion is provided at the center of which substantially corresponds to the junction between said first region and said second region, and the distance from the junction between the third region and the first region to that between the third region and the second region is made substantially equal to or longer than the effective diffusion length of a carrier.

3,699,406

SEMICONDUCTOR GATE-CONTROLLED PNPN SWITCH

Thomas C. Mapother, Liverpool, and Richard L. Wilson, Baldwinsville, both of N.Y., assignors to General Electric Company

Filed Dec. 26, 1963, Ser. No. 333,478
Int. Cl. H01l 9/12, 11/10
U.S. Cl. 317—235 R **11 Claims**



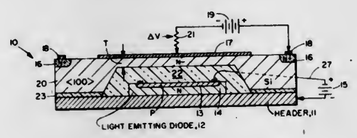
A PNPN controlled switch is provided wherein all four active regions and the three junctions therebetween terminate at a common major face of a semiconductor body. Adjacent the carrier path between emitter and collector there is provided a region of hither concentration to trap some of the carriers leaving the emitter.

3,699,407

ELECTRO-OPTICAL COUPLED-PAIR USING A SCHOTTKY BARRIER DIODE DETECTOR

Richard W. Gurtler, Mesa, and Jack L. Saltich, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 29, 1971, Ser. No. 184,819
Int. Cl. H01l 15/00
U.S. Cl. 317—235 R **9 Claims**



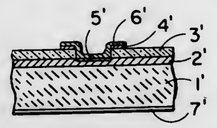
There is disclosed an electro-optical coupled pair utilizing a Schottky barrier diode detector in combination with a light source in which in the preferred embodiment the bottom portion of the Schottky barrier diode is hollowed out by anisotropically etching the wafer used for the diode to provide the hollowed-out portion with smooth inclined sidewalls over the light source for coupling light generated laterally into the wafer. Because of the anisotropic etching, the sidewalls serve to couple a much greater percentage of the generated light into the diode to produce more electron-hole pairs, and therefore more external signal. This configuration thus captures non-vertically generated light which would otherwise be lost, thus increasing the efficiency of Schottky diode detectors and the coupled pair.

3,699,408

GALLIUM-ARSENIDE SCHOTTKY BARRIER TYPE SEMICONDUCTOR DEVICE

Daizaburo Shinoda, and Masaoki Ishikawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 20, 1971, Ser. No. 108,125
Claims priority, application Japan, Jan. 23, 1970, 45/6658; Jan. 23, 1970, 45/6659
Int. Cl. H01l 3/20
U.S. Cl. 317—237 **3 Claims**



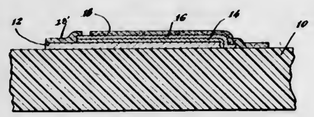
A Shottky barrier diode includes a GaAs epitaxial wafer. A Pt-Ni alloy is used as the contact metal to form the Schottky barrier, and an additional alloy layer is formed in the boundary between the Pt-Nl alloy and the GaAs wafer to increase the bonding strength between the wafer and the alloy.

3,699,409

SOLID STATE DEVICE HAVING DIELECTRIC AND SEMICONDUCTOR FILMS SANDWICHED BETWEEN ELECTRODES

Alfred E. Feuersanger, Franklin Square, and Moe S. Wassermann, Glen Head, both of N.Y., assignors to GTE Laboratories Incorporated

Filed Sept. 30, 1971, Ser. No. 185,290
Int. Cl. H01l 3/00
U.S. Cl. 317—238 **5 Claims**



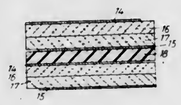
A thin film capacitor utilizes a metal base electrode formed on a substrate with an aluminum oxide film formed on the base electrode. A film of semiconducting material, preferably nickel oxide is formed on the aluminum oxide film and a metal layer formed on the semiconducting layer provides a top electrode for the capacitor. The capacitor may be formed as part of the monolithic integrated circuit or used as part of a hybrid integrated circuit.

3,699,410

SELF-HEALING ELECTRICAL CONDENSER

Helmut Maylandt, Plochingen; Herbert Forster, Grunbach, and Josef Juhasz, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 14, 1971, Ser. No. 207,884
Int. Cl. H01g 3/215
U.S. Cl. 317—258 **8 Claims**



A first and at least two second electrodes are provided, with the latter flanking the former. First dielectric separating

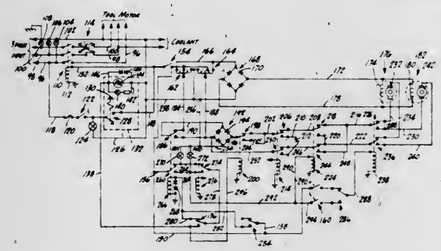
means is provided between the first electrodes and one of the second electrodes and has *n* paper strips and *m* synthetic plastic strips with *n* being a whole number excluding zero and one, and *m* being a whole number including zero and one, and with n being greater than *m*. Second dielectric separating means is provided between the first electrode and the other of the second electrodes and comprises N plastic strips and M paper strips with N being a whole number including one, M being a whole number including zero and N being greater than M. The electrodes are each applied to one side of two paper strips and the latter have uncovered sides facing one another, with the first and second dielectric separating means being electrically connected in parallel with each other.

3,699,411

AUTOMATIC CONTROL SYSTEM FOR FORMING FLUTED CUTTING TOOLS

Warner G. S. Miller, 3756 Danmont Circle, Newbury Park, Calif.

Filed July 10, 1970, Ser. No. 53,824
Int. Cl. B23q 5/28
U.S. Cl. 318—39 **3 Claims**



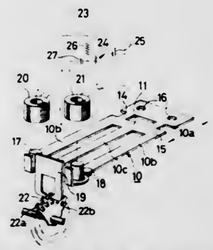
In combination with a machine for manufacturing fluted cutting tools, an automatic electronic control system which includes separate circuits for forward and reverse directions of cutting tool movement wherein a single pulse relay controls selection of either the forward or reverse direction.

3,699,412

TIMEBASE VIBRATOR ASSEMBLY

Toshikazu Hatsuse; Hiromi Ueda; Shouiti Ozawa, and Yuh Yasuda, all of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed March 26, 1971, Ser. No. 128,298
Claims priority, application Japan, March 28, 1970, 45/29846; March 31, 1970, 45/30795; Dec. 25, 1970, 45/125315
Int. Cl. H02k 7/06
U.S. Cl. 318—128 **2 Claims**



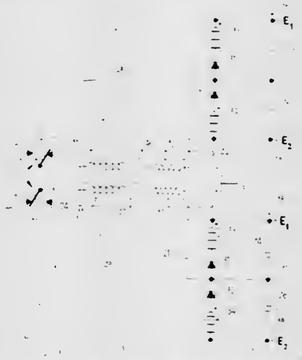
In a timebase mechanical vibrator having three parallel oscillating arms arranged in a common plane wherein the central arm oscillates in opposite phase to the two outer arms, the width of the central arm is $2a/n$ when the width of each outer arm is a and n is a positive integer greater than unity. A sensing magnet is mounted on the free end of one of the outer arms and a driving magnet is mounted on the free end of the other outer arm. A feed magnet is mounted on the free end of the central arm in magnetic cooperation with a rotatable gear wheel to intermittently advance the gear wheel.

3,699,413

POWER DRIVE CIRCUIT FOR INDUCTIVE LOADS

Claudio de Sa e Silva, and Daniel R. Cheever, both of Bozeman, Mont., assignors to Summit Engineering Corporation, Bozeman, Mont.

Filed Nov. 9, 1970, Ser. No. 88,026
Int. Cl. H02k 37/00
U.S. Cl. 318—138 **1 Claim**



A power drive circuit is described for rapidly energizing a load having a high inductance with a potential greater than that for which the load is rated, while yet protecting the load from the high current normally associated with such a high potential. The preferred circuit includes a pair of capacitors connected in series between the output terminals of the load and switching means to switch the load from across one of the capacitors to across the other to successively discharge each of the capacitors through the load while simultaneously charging the capacitor not being discharged. A diode is placed in shunt with each of the capacitors to clamp the voltage across the capacitor to a predetermined level reached by it as it discharges. In several of the described embodiments, a second source of potential is provided for maintaining current flow through the load after it has been initially energized by the capacitance discharge. The invention is further described in combination with a stepping motor with which it has found particular utility.

3,699,414

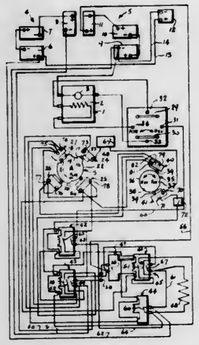
ELECTRICAL CONTROL SYSTEM

Louis Gyori, 4472 Gatineau Street, Chomedy, Quebec, Canada

Filed Oct. 15, 1971, Ser. No. 189,688
Int. Cl. H02r 7/14
U.S. Cl. 318—139 **16 Claims**

A control system for use with an electric motor which is energizable and driven through stored electrical power including first and second power sources. The control system comprises a rotatable cam which is manually operable through the action of an operator and is capable of actuating any of a plurality of successively located microswitch means in combination, and these microswitch means are connected to a plurality of solenoid actuable members containing suitable switching elements for enabling various modes of electrical power connection to the electric motor. The cam is capable of being rotated through a plurality of successive power regulating

positions by manual actuation of a motor throttle mechanism. The microswitch means located at these power regulating positions control the various solenoid actuable members in such manner as to enable operative connection of the electric motor to the two power sources to provide the proper power to the motor for achieving the desired operating speed at the selected power regulating position. The switching elements



are connected to provide an interlock circuit which prevents operation of the motor at any selected power regulating position until the cam has passed at least momentarily through each of the previous successively located power regulating positions. A manually operable forward-reverse mechanism is also provided for selectively controlling the application of power to the motor to cause either a forward or reverse rotation of the motor armature.

3,699,415

CONSTANT SPEED DRIVE UNITS FOR DRIVING DEVICES

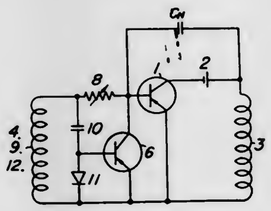
Yutaka Inoue; Tadao Hotta, and Toshihiko Ito, all of Nagoya, Japan, assignors to Aichi Clock and Electric Implement Mfg., Co., Ltd., Nagoya-shi, Japan

Filed Aug. 26, 1970, Ser. No. 67,019

Claims priority, application Japan, Sept. 10, 1969, 44/71788

Int. Cl. G05b *1/02*

U.S. Cl. 318—128 **10 Claims**



The present invention relates a constant speed device for driving means using a transistor switching effect adapted to an apparatus to obtain an uniform rate of rotation or amplitude for electric motors and electromechanical oscillators which can be sufficiently used for timepieces and instruments, and in which a relatively moving member driven by electrical means is provided, and a control member connected to the junction of a diode and a condenser.

3,699,416

DYNAMIC BRAKING OF WOUND MOTOR POLYPHASE INDUCTION MOTORS

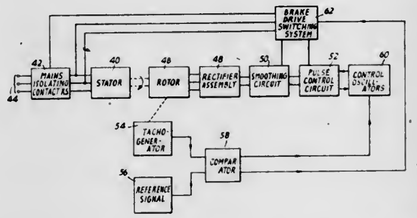
Albert Everett Sloan, and Alistair Gordon Turnbull, both of Gateshead, England, assignors to Sevcon Engineering Limited, Gateshead, Co. Durham, England

Filed July 2, 1971, Ser. No. 159,348

Claims priority, application Canada, May 7, 1971, 112415; Italy, Dec. 3, 1970, 32591/70; Switzerland, Dec. 3, 1970, 17902/70; Japan, Dec. 4, 1970, 45/106892; Germany, Dec. 4, 1970, P 20 59 842.9; France, Dec. 4, 1970, 7043758; Sweden, Dec. 3, 1970, 1640270

Int. Cl. H02p *3/22*

U.S. Cl. 318—211 **16 Claims**



A circuit for effecting dynamic braking of a wound rotor polyphase induction motor comprises rectifier means for rectifying the output of the rotor and switch means which disconnect the stator from the mains supply and connect the rectified rotor output through a d.c. chopper to one or more phase windings of the stator to effect dynamic braking of the motor. The level of direct current in the stator phase windings, and hence the degree of braking, is controlled by the d.c. chopper, which may also be employed to control the driving speed of the motor.

3,699,417

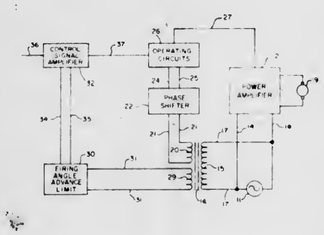
FIRING ANGLE ADVANCE LIMIT FOR THYRISTOR BRIDGE POWER AMPLIFIER

Mikel Jay Messick, Chagrin Falls, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 22, 1970, Ser. No. 83,074

Int. Cl. H02p *5/16*

U.S. Cl. 318—257 **9 Claims**



A control system for operating a direct current motor from an alternating current power source includes a power amplifier responsive to a control voltage for applying rectified operating voltage pulses to the motor, means responsive to the magnitude of the control voltage to determine the duration of the operating voltage pulses, and limit means for minimizing the magnitude of the control voltage from 170° in each half cycle of applied operating voltage to 10° in the next half cycle to limit the duration of the pulses.

3,699,418

MOTOR SPEED CONTROLLING APPARATUS

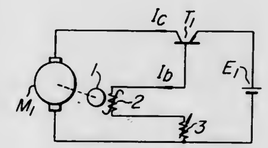
Kaoru Sasabe, Ikeda-shi, and Fujio Oda, Ashiya-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 859,724, Sept. 22, 1969, Pat. No. 3,619,751. This application April 30, 1970, Ser. No. 138,992

Claims priority, application Japan, Sept. 27, 1968, 43/70673; Sept. 27, 1968, 43/70674

Int. Cl. H02p *5/16*

U.S. Cl. 318—325 **1 Claim**



An apparatus for controlling the speed of an electric motor, wherein use is made of an element sensitive to a pressure, the electrical resistance of said element or a voltage developed thereacross being varied in accordance with the pressure imparted thereto, and a centrifugal force produced by a rotary member is imparted to said sensitive element so that the speed of said electric motor is controlled in accordance with variations in the electrical resistance of said sensitive element.

3,699,419

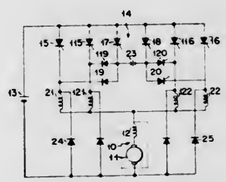
POWER THYRISTOR CHOPPER

Toshimasa Jinzenji; Kenji Ichimura, and Shoji Ito, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 11, 1970, Ser. No. 45,365

Int. Cl. H02p *5/34*

U.S. Cl. 318—341 **16 Claims**



A power thyristor chopper is generally composed of at least two main thyristors which function to repeat turn-on and turn-off in turn during each one cycle operation of the chopper. A capacitor unit is commonly combined with the main thyristors to supply a commutating discharge current for each of them in a reverse direction. There are also provided a plurality of auxiliary thyristors for charging the capacitor unit in alternative polarities from a d.c. voltage source and selectively discharging in the reverse direction through the main thyristors which are in the turn-on state. This chopper is adapted to be preferably installed on a d.c. electric car to adjust its motor voltage or a braking current flowing through its motor.

3,699,420

AUTOMATIC CONTROL SYSTEM CONTROLLING THE COURSE OF A SHIP

Walter Kundler, 157, Schilkseer Strasse, Kiel, and Gerd Hingst, 20, Rohbarg, Kiel-Ellerbek, both of Germany

Filed Oct. 19, 1970, Ser. No. 81,975

Claims priority, application Germany, Oct. 22, 1969, P 19 53 198.7

Int. Cl. G05d *1/08*

U.S. Cl. 318—588 **10 Claims**



The novel automatic control system or automatic pilot controls the course of a ship by means of

1. a gyroscopic indicator for indicating the course or true heading of the ship,
2. a reference value transmitter adjustable in accordance with the desired course angle of the ship,
3. summing means for detecting any positional disagreement of said indicator with said reference value transmitter, such disagreement representing the course error and
4. means causing the course error to control a motor-operable rudder actuator which so actuates the rudder of the ship as to reduce the course error to a minimum. For the purpose of steering the ship along a curved track, as on a winding river, means are provided for driving the reference value transmitter to change the desired course set up therein in the clockwise sense or in the anti-clockwise sense at an adjustable rate. The drive may be effected by a stepping motor actuated by electrical impulses of adjustable frequency.

3,699,421

TAPE POSITION SENSOR, OPTICAL

Samuel Stempler, Brooklyn, and Jacob Tellerman, Bayside, both of N.Y., assignors to Kollsman Instrument Corporation, Syosset, N.Y.

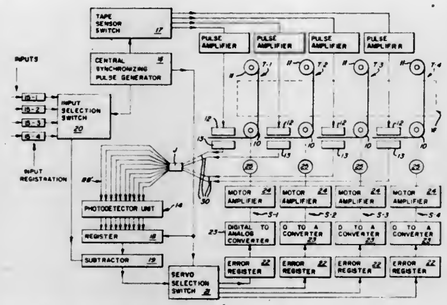
Filed Jan. 21, 1971, Ser. No. 108,460

Int. Cl. G05b *1/06*

U.S. Cl. 318—640 **11 Claims**

An indicating arrangement includes a plurality of tape display systems each including a longitudinally movable display tape having a functional scale and a coded pattern in predetermined relation thereon. Optical detection units produce digital output signals representative of the actual position of the coded pattern on the tape. An input register produces digital input signals representative of the required position of

the coded pattern on the tape. Movement of the tape is controlled by servo-positioning means that respond to the digital

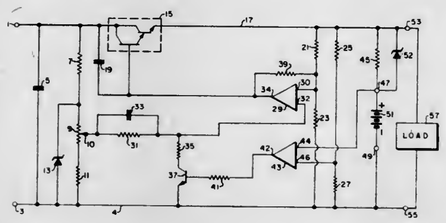


input and output signals and a central processor is connected to actuate the tape display systems in a time-sharing sequence.

ERRATUM

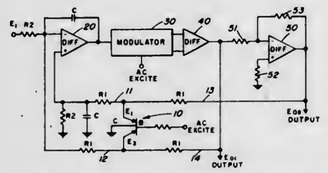
For Class 318—674 see:
Patent No. 3,699,427

3,699,422
AUTOMATIC BATTERY CHARGER
Robert L. Miller, Horsham, and David H. Higgins, Abington, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 11, 1972, Ser. No. 225,452
Int. Cl. H02j 7/02
U.S. Cl. 320—32 **8 Claims**



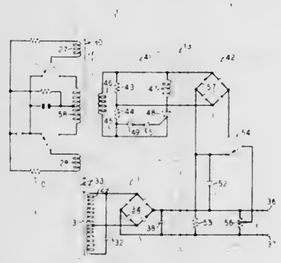
A battery charging circuit includes a first voltage divider means connected across a source of DC potential. An impedance element connects the first voltage divider to an input terminal of an first operational amplifier. Another input terminal of the first operational amplifier is connected to a second voltage divider which is connected across a series combination of a resistor and a battery to be charged. The output terminal of the first operational amplifier is connected to a current regulating device for controlling the magnitude of a charging current flowing from the DC source to a battery. When the terminal voltage of the battery is below a predetermined value, the first operational amplifier effects the flowing of the charging current of a first magnitude, sufficient to rapidly charge the battery through the current regulating device. A second operational amplifier has one input terminal connected to the point between the resistor and the battery, and its other input terminal connected to a third voltage divider. The third voltage divider is connected in parallel with the second voltage divider. The output of the second operational amplifier controls a transistor which is connected to the impedance element. When the battery charging current falls below a predetermined value, the second operational amplifier effects conduction in the transistor which, in turn, effects a change in the signal applied to the first operational amplifier from the impedance element. That change, in turn, causes the magnitude of the charging current to be reduced to a value sufficient only to substantially maintain the battery in its acquired state of charge. Thereafter, when the battery terminal voltage decreases below a predetermined value, the second operational amplifier provides an output signal which is effective to return the transistor to its initial nonconducting state whereby the first operational amplifier again effects the flow of the charging current of the first magnitude through the current regulating device, and the battery is again rapidly charged, but not overcharged.

3,699,423
D. C. TO A.C. CONVERTER WITH UNIQUE FEEDBACK DEMODULATION
Steven Morrison, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 29, 1971, Ser. No. 213,388
Int. Cl. H02m ; H03f
U.S. Cl. 321—8 R **6 Claims**



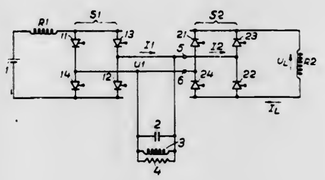
An D.C. to A.C. converter where the output A.C. signals which are 180 degrees apart are rectified in an integrated chopper and applied to a differential amplifier with the D.C. input in order to minimize sources of error. The signal from the differential amplifier is modulated in a semi-conductor modulator and applied through another differential amplifier to the output.

3,699,424
OVERVOLTAGE PROTECTION OF DC TO DC CONVERTERS USING FERRORESONANCE
Harry Patrick Hart, Whippany; Robert John Kakalec, Madison, and Ralph Walk, Parsippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 6, 1971, Ser. No. 159,793
Int. Cl. H02m 7/48
U.S. Cl. 321—11 **5 Claims**



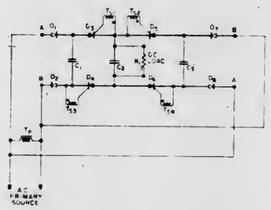
The frequency characteristic of a ferroresonant regulator is shown to have a critical jump frequency above which the output voltage of the regulator takes a sudden drop. A regulated voltage converter utilizes this discontinuity to provide automatic overvoltage protection. An inverter drives a ferroresonant regulator and a feedback loop controls the frequency of the inverter in response to output voltage. A short in the feedback loop drives the frequency above the critical jump frequency to provide automatic voltage limiting.

3,699,425
CONVERTER CONNECTIONS
Bo Hermansson, and Kjeld Thorborg, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed May 7, 1971, Ser. No. 141,173
Claims priority, application Sweden, May 28, 1970, 7335/70
Int. Cl. H02m ; G05f
U.S. Cl. 321—27 R **7 Claims**



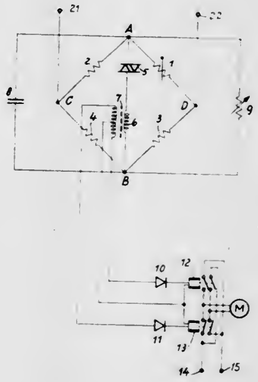
A single or multiphase converter connection includes a controlled first converter having an AC side and a DC side. A first reactor connects the DC side to a DC source. A capacitor is connected to the AC side of the first converter. A controlled current circuit is formed of a second reactor and controlled rectifiers connected to the second reactor to control the current therethrough. A control means is provided for firing said rectifiers with an adjustable delay angle so that the current circuit generates a variable capacitive current.

3,699,426
HIGH ISOLATION A.C. TO D.C. CONVERTER
Ronald M. Bauman, 415 Saratoga Drive, Cherry Hill, N.J.
Filed May 20, 1971, Ser. No. 145,364
Int. Cl. H02m 7/20
U.S. Cl. 321—27 R **5 Claims**



The invention converts alternating current (A.C.) power to direct current (D.C.) power and achieves high isolation between the A.C. source and D.C. load without the use of a high power transformer. The invention achieves high isolation by the use of capacitors, diodes, and silicon controlled rectifiers (SCR) which are so arranged that an effectively open circuit is constantly maintained between the A.C. source and the D.C. load. The invention also makes use of a small low power phasing transformer connected across the A.C. source to render the SCR's conductive or nonconductive at the appropriate times.

3,699,427
PULSE GENERATING DIRECT-CURRENT MEASURING BRIDGES
Hermann Friedrich Albrecht, Hotzum, and Karl Peter Strauss, Braunschweig, both of Germany, assignors to Rollei-Werke Franks & Heidecke, Braunschweig, Germany
Filed July 1, 1971, Ser. No. 158,956
Claims priority, application Germany, July 7, 1970, P 20 37 518.2
Int. Cl. G05b 1/01
U.S. Cl. 318—674 **7 Claims**

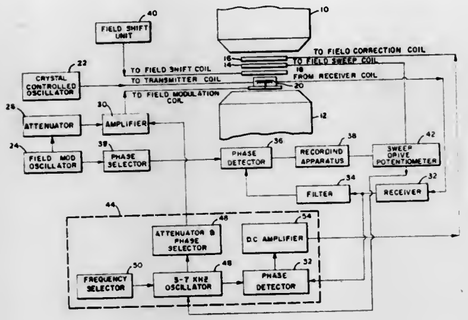


A measuring bridge regulator in which the bridge diagonal circuit has a capacitor, and also, in parallel with the capacitor, a break-through device and the primary winding of an impulse transformer. When the bridge is balanced, there is no charge on the capacitor. When imbalance occurs, a charge builds up in the capacitor, and when the difference in potential in the bridge circuit becomes sufficiently great to cause the break-through device to fire, the capacitor discharges through the primary of the impulse transformer. This creates a pulse in the secondary winding of the transformer, which pulse operates a relay to provide power for an adjusting motor in a direction to tend to restore balance to the measuring bridge.

3,699,428
NUCLEAR MAGNETIC RESONANCE SPECTROMETER SYSTEM
John Bryant Leane, Beaconsfield, and Peter Higham, High Wycombe, both of England, assignors to Perkin-Elmer Limited, Beaconsfield, England
Filed July 7, 1969, Ser. No. 839,423
Claims priority, application Great Britain, July 4, 1968, 31,954/68
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R **6 Claims**

A nuclear magnetic resonance system is provided which comprises a N.M.R. spectrometer having field modulation and an accessory means adapted to be operationally coupled to the spectrometer for providing alternatively spin decoupling or field locking facilities. The accessory means includes a variable frequency oscillator that is coupled to the field modulation means of the N.M.R. spectrometer through a variable attenuator. The variable frequency oscillator is swept in synchronism with the field modulation means so that a working sideband component exhibiting a fixed frequency is

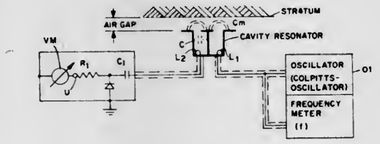
generated during this sweep. The attenuator is adjusted to attenuate the oscillatory signal to one level when the spectrometer is operated in the spin decoupling mode and to attenuate the oscillatory signal to a second level when the spectrometer is operated in the field stabilization mode.



3,699,429
A METHOD AND APPARATUS FOR TESTING GEOLOGICAL STRATA FOR IDENTIFICATION THEREOF

Walter Ratz, Gelsenkirchen, Germany, assignor to Bergwerksverband GmbH, Essen-Kray, Germany

Continuation-in-part of Ser. No. 732,730, May 28, 1968, abandoned. This application Aug. 13, 1970, Ser. No. 63,413
Int. Cl. G01v 3/08
U.S. Cl. 324—5 3 Claims



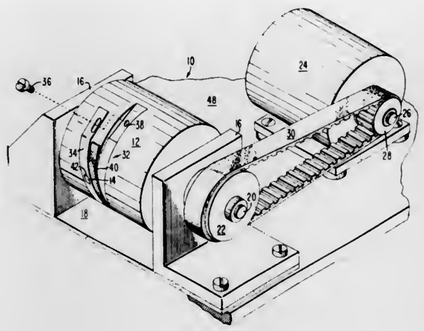
This invention relates to a method and apparatus for testing geological strata by means of a measuring system comprising a high frequency oscillatory circuit having a radiator cooperating with the test material to form a measuring capacitor influencing the resonant frequency and resonant voltage of the oscillatory circuit, the effects of a changing air gap between the radiator and the test material being taken into account.

3,699,430
ELECTROMAGNETIC READ AND WRITE HEAD TEST DEVICE AND METHOD USING A MINUTE BODY OF MAGNETIC RECORDING MATERIAL

Karlis Kruklitis, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 5, 1971, Ser. No. 112,929
Int. Cl. G01r 35/00
U.S. Cl. 324—34 R 17 Claims

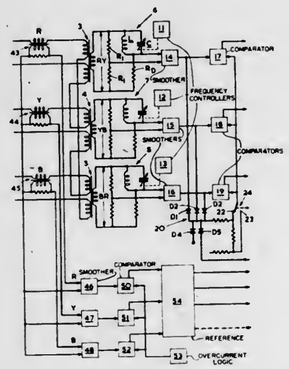
A controlled magnetic field source is provided, the source being formed of a small body of accurately shaped, magnetic recording tape precisely disposed and magnetically isolated on the periphery of a rotatable drum. A particularly singular embodiment of this invention also provides read and write head holders to contain respective read and write heads, the holders being adjustable to accurately position a preselected head track effectively adjacent the circumferential path described by the magnetic recording tape as the drum is rotated.



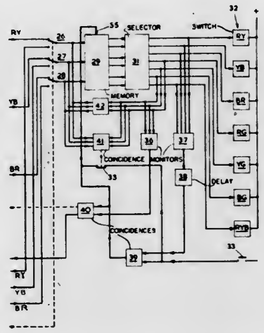
3,699,431
SELECTOR CIRCUIT FOR DETERMINING FAULTS IN POLYPHASE TRANSMISSION SYSTEMS

Eric Paddison; Christopher George Wilson, and Frederick Martin Gray, all of Stafford, England, assignors to The English Electric Company, London, England

Filed Dec. 10, 1969, Ser. No. 883,810
Claims priority, application Great Britain, Dec. 10, 1968, 58,554/68
Int. Cl. G01r 31/02
U.S. Cl. 324—51 9 Claims



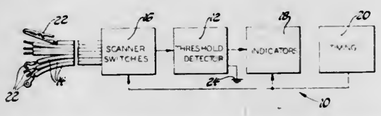
The invention provides a selector system for determining which phase or phases of a polyphase power transmission system are affected by a fault. The fault results in a fault current in the affected phase (phase-to-ground fault) or phases (phase-to-phase fault). To distinguish these changes from the existing phase currents due to normal loads, the quantities monitored are stored (phase and amplitude) and any changes in them are inspected to see whether a fault has occurred and, if so, what type of fault it is. Preferably, the "phase-to-phase" currents are the quantities monitored. The pattern of any substantial changes in these quantities establishes a fault pattern indicative of the nature of the fault. Means may also be provided for following developing faults. A measuring unit may be connected to the appropriate phase or phases following identification of the fault.



3,699,432
ELECTRICAL SHOCK HAZARD DETECTION SYSTEM WITH STATION SCANNING AND INDICATING MEANS

Verne R. Brown, Ann Arbor, Mich., assignor to Environment Metrology Corporation, Ann Arbor, Mich.

Filed June 25, 1970, Ser. No. 49,654
Int. Cl. G01r 31/02
U.S. Cl. 324—51 10 Claims



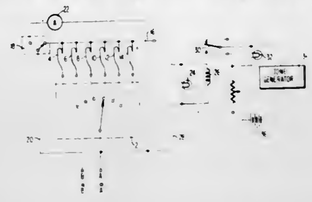
A scanning shock hazard detector comprising a plurality of flexible leads connectable to devices to be monitored, switches connecting the leads to a threshold detector, a plurality of warning lamps and a clock system for sequentially and synchronously closing the switches and enabling the warning lamps so that a current potential on one of the leads causes a lighting of the lamp associated with that lead. The lamps remain lighted until manually extinguished. A remote loudspeaker is also activated by a warning condition. The loudspeaker is quieted at the same time the lamp is extinguished.

3,699,433
SHORT CIRCUIT LOCATOR APPARATUS INCLUDING A PLURALITY OF INTERMITTENTLY OPERATED CIRCUIT BREAKERS

Raymond Peter Smith, Jr., P.O. Box 294, South Williamsport, Pa.

Filed Nov. 24, 1970, Ser. No. 92,388
Int. Cl. G01r 31/08
U.S. Cl. 324—52 6 Claims

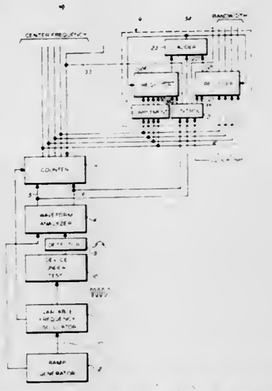
A method and apparatus for locating short circuits, primarily in a vehicle, which comprises of placing a pair of test leads across the defective fuse in a shorted circuit, the test leads being connected to a plurality of circuit breakers through a selector switch for selecting one of the circuit breakers. A relay in parallel with the selected circuit breaker operates a switch which controls a light and tone generator, such that when the circuit breaker is placed across the fuse terminals of a shorted circuit, an audible and visual signal will be generated by the tone generator and light.



3,699,434
BANDWIDTH AND CENTER FREQUENCY TESTING USING PREDETERMINED AMPLITUDE POINTS

Douglas B. Palmer, Graham, N.C., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,386
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 7 Claims



A frequency responsive device, such as a tuned amplifier, filter, etc., is tested for center frequency and bandwidth. A decreasing sweep frequency signal is applied to the device and the output detected. A waveform analyzer produces a first pulse when the detected signal reaches a predetermined amplitude and a second pulse when the detected signal falls below the predetermined amplitude. The first and second pulses trigger or operate a counter which counts the cycles of sweep frequency signal for a predetermined duration in response to each pulse. The sum in the counter is indicative of the center frequency. The count after the first pulse is multiplied by 2 and added to the complement of the sum in the counter after the second pulse to produce a remainder which is multiplied by 2 to indicate the bandwidth.

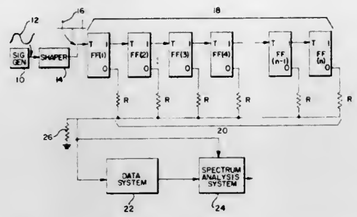
3,699,435
SIGNAL SPECTRUM GENERATOR

Robert E. Gardner, Temple Hills, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 26, 1971, Ser. No. 166,152
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 2 Claims

This invention consists of a plurality of dividers connected in series, the outputs of which are added and provide (by

Fourier series expansion of square waves) a spectrum of the harmonics of the fundamental frequency. At this comb of

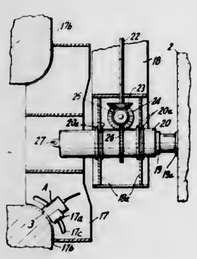


spectral lines is of precisely known frequencies and amplitudes, an entire frequency band of interest of a data system may be calibrated in a single operation.

3,699,436
REMOTELY CONTROLLABLE DEFECT DETECTOR OF ELECTRIC RESISTANCE TYPE

Hiroji Shigematsu; Tomio Yamaguchi, both of Kobe; Hisanobu Fukue, Kakogawa; Hiroshi Ogawa; Takashi Hashimoto; Kenichi Murakoshi; Susumu Suguri, all of Mito, and Tsutomu Fujimura, Tokai, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 24, 1970, Ser. No. 13,292
Int. Cl. G01r 27/08
U.S. Cl. 324—65 R **13 Claims**

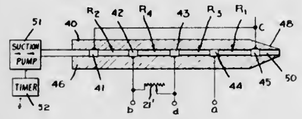


A remotely controllable defect detector, of the electric resistance type, includes a relatively elongated control rod, a guide frame supported at one end of the rod and a contact assembly including a body member supported by the frame. The body member carries a pair of spaced electric current probes for contact with spaced points of an electrically conductive object or body to be checked, to provide a flow of current through the checked body between the contact points, and the body member carries a pair of spaced voltage probes for contact with the checked body to detect the potential difference between points of the checked body. The contact assembly is preferably adjustably mounted on the guide frame, and the guide frame is adjustable relative to the control rod. Control means are provided at the end of the control rod remote from the end thereof carrying the guide frame, and are operable to adjust the contact assembly relative to the control rod. The control means may include, for example, a manually operable member connected to gearing operable to rotate the contact assembly about an axis perpendicular to the control rod. A hydraulic pressure actuator or an electromagnet may be used to press the guide frame firmly into engagement with the body to be checked.

3,699,437
BLOOD COAGULATION DETECTION METHOD AND APPARATUS

Amiram Ur, 79 North End House, Fitzjames Avenue, London, England

Filed Aug. 21, 1969, Ser. No. 863,411
Claims priority, application Great Britain, Sept. 27, 1968, 46,141/68; Oct. 2, 1968, 46,771/68; Oct. 7, 1968, 47,540/68; Oct. 30, 1968, 51,552/68
Int. Cl. G01r 27/02; G01n 33/16
U.S. Cl. 324—65 R **15 Claims**

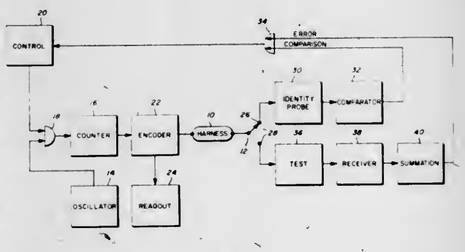


Detecting blood clotting (coagulation) and determining clotting time by comparing the electrical resistance of two parts of a liquid blood sample, one of which is treated to delay or prevent its coagulation. Time or rate of clotting is determined by the rate of change of electrical resistance or impedance of the sample falling to a minimum or substantially zero at the commencement of coagulation whereafter the comparative impedance begins to increase with time. Coagulation is detected by the incidence of minimum comparative impedance. Apparatus includes an electrical bridge measuring circuit having a test cell containing an untreated part of the blood sample in one arm of the bridge and a similar test cell in the other arm of the bridge containing the part of the sample which is treated to delay or prevent coagulation. Electrodes in each test cell place corresponding parts of the blood sample in series circuit with their respective arms of the electrical bridge.

3,699,438
APPARATUS TO VISUALLY IDENTIFY AND TEST WIRES IN A MULTI-WIRE CABLE

Larry Joe Webb, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed Aug. 21, 1970, Ser. No. 65,762
Int. Cl. G01r 31/02
U.S. Cl. 324—66 **6 Claims**

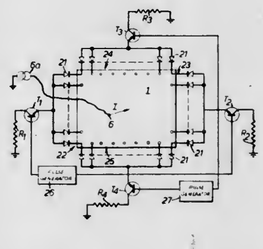


In a cable having the wires of one end prewired and the wires of the other end ready to be connected to another component, the system disclosed allows an operator to select any wire in the cable without prior marking. The system identifies the wire by clocking a counter until the circuit completed by the wire disables the counter. A readout interrogates the counter and identifies the placement of the wire to the operator. Each wire is tested for correct placement by comparison to a reference line into a logic gate for each wire of the cable and checking the sum of the outputs of the logic gates.

3,699,439
ELECTRICAL PROBE-POSITION RESPONSIVE APPARATUS AND METHOD

John A. Turner, Colchester, England, assignor to Automatic Radio Manufacturing Inc., Melrose, Mass.

Filed March 10, 1970, Ser. No. 18,174
Claims priority, application Great Britain, March 13, 1969, 13,341/69
Int. Cl. G01n 27/00
U.S. Cl. 324—71 R **12 Claims**



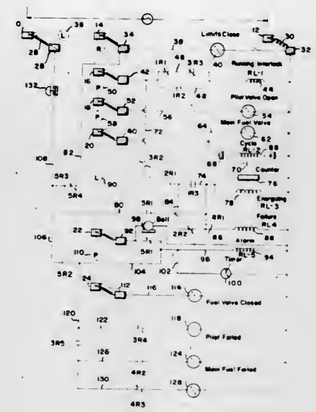
Position responsive apparatus is disclosed comprising a sheet of substantially uniform resistivity having first and second parallel, linear electrodes in electrical contact therewith. A movable, electrically conductive probe is energized from one pole of a current source whose other pole is connected to the two electrodes in parallel. Means are provided for comparing the current flowing through one electrode, when the probe is in contact with the surface, with the current flowing through the other electrode or with the total current. It is found that the ratio of the current through the first electrode to the current through the second electrode corresponds to the ratio of the distance of the probe contact point from the second electrode to the distance of the said point from the first electrode. A second pair of linear electrodes, arranged perpendicular to the first pair so as to form therewith the four sides of a square, may be provided. If the second pair of electrodes are energized, with respect to the probe, in the same manner as the first pair but alternately therewith, then x and y co-ordinates of the point of contact between the probe and the surface may be produced.

3,699,440
ANALYZER FOR SUCCESSIVELY TESTING THE CONTROL CIRCUITS OF A CONTROL PANEL

Martin L. Johnson, 7521 Cherokee Road, Richmond, Va., and Richard L. Leclercq, 532 Longstreet Avenue, Brielle, N.J.

Filed Oct. 19, 1970, Ser. No. 81,976
Int. Cl. G08b 19/00; G01r 31/00, 15/12
U.S. Cl. 324—73 **18 Claims**

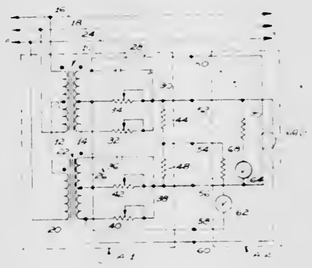
Plural indicator circuits which correspond and are connected to control circuits of a control panel are activated and de-activated as the control panel proceeds through its control sequence, and special interconnected control circuits within the unit successively activate and de-activate the indicator circuits to show the control panel circuit which failed.



3,699,441
POLYPHASE SIGNAL MONITORING SYSTEM

John R. Linders, 23609 Lake Road, Bay Village, Ohio

Filed Jan. 4, 1971, Ser. No. 103,659
Int. Cl. G01r 25/00, 23/12
U.S. Cl. 324—86 **60 Claims**

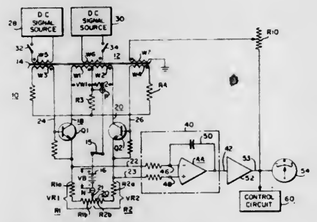


A signal monitoring system for monitoring and measuring the value of certain parameters of a polyphase alternating-current signal. The monitoring system includes a circuit arrangement for developing from a polyphase supply line a pair of signals which may be defined by a pair of phasors having common midpoints. Each of these signals is then resolved into a component signal which is shifted from the corresponding signal by a predetermined number of degrees. The values of the component signals may then be measured and compared to determine parameters, including the positive and negative phase sequence voltage, current, and power, as well as the frequency, of the polyphase alternating-current signal.

3,699,442
BI-DIRECTIONAL SIGNAL DETECTOR WITH INPUT/OUTPUT ISOLATION

John A. Riley, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,749
Int. Cl. G01r 17/02, 17/06, 33/00
U.S. Cl. 324—98 11 Claims

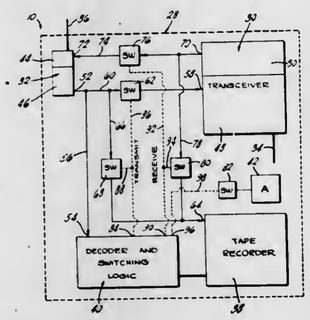


DC (direct current) signal magnitude and direction detection apparatus wherein separate signals derived from the respective primary energizing paths for alternate opposite magnetic saturation of a magnetic flux coupled oscillator, are compared to provide an indication of the magnitude and direction of net DC signal input applied to an input winding or windings of the oscillator.

3,699,443
RADIO CONTROL AND REPEATER COMMUNICATION SYSTEM

Ronald E. Weger, 3218 South Cambridge Road, Lansing, Mich.

Filed March 2, 1970, Ser. No. 15,670
Int. Cl. H04b 7/20
U.S. Cl. 325—4 16 Claims

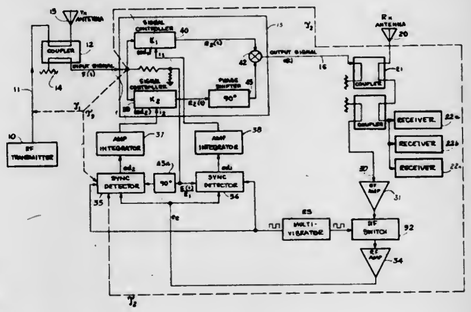


A communications system particularly adapted for use by police officers and including a portable transceiver, first and second mobile transceivers, and a recording unit. Code generator means is provided which is operatively associated with the portable transceiver. Decoding and switching means is also provided which is controlled by the code generator means and which selectively controls the first and second mobile transceivers and the recording unit. Additional auxiliary safety units may also be provided which are controlled by the code generator means and the decoding and switching means.

3,699,444
INTERFERENCE CANCELLATION SYSTEM

Rabindra N. Ghose, Los Angeles, and Walter A. Sauter, Malibu, both of Calif., assignors to American Nucleonics Corporation, Glendale, Calif.

Filed Feb. 17, 1969, Ser. No. 799,781
Int. Cl. H04b 1/56
U.S. Cl. 325—21 2 Claims

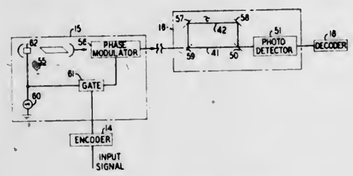


This invention relates to radio communication systems and more particularly to systems for minimizing or eliminating interference in radio receivers. The invention is more particularly directed towards the elimination of interference in radio receivers from strong adjacent transmitters having signal levels several orders of magnitude stronger than the wanted signal. This system includes means for sampling the unwanted or interference signal and linearly processing it to develop a signal that is related to the incoming signal as a relatively time invariant ratio. The system includes means for adding the derived signal to the received signal to effectively cancel the interference signal.

3,699,445
FREQUENCY SHIFT KEYED COMMUNICATION SYSTEM

Tracy Stewart Kinsel, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1970, Ser. No. 85,890
Int. Cl. H04l 27/10; H04b 9/00
U.S. Cl. 325—30 10 Claims

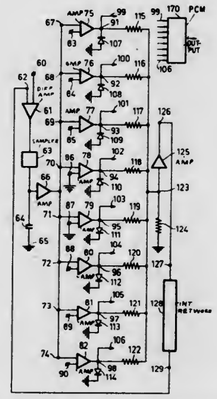


The frequency shift keying (FSK) format used in the prior art, radio frequency carrier, PCM communication systems generally comprises a train of pulsed carriers having sufficiently different frequencies so as to permit frequency separation and identification by means of either filters or frequency discriminators. At optical frequencies, however, the relatively small amount of frequency shift readily obtainable by the use of available optical devices operating on the output of a laser may not allow complete frequency separation by an amount sufficient to employ either of these conventional detection systems. In the system described herein, the received pulse train is divided into two pulse trains, one of which is delayed the equivalent of one pulse repetition period relative to the other. The two pulse trains are then coupled to a frequency mixer whose output is indicative to the frequency shift between pulses in adjacent time slots. Means are provided at either the transmitter or the receiver for converting between the standard binary-encoded signal and a differential binary encoded signal.

3,699,446
DIFFERENTIAL PULSE CODE MODULATOR SYSTEM WITH CYCLIC, DYNAMIC DECISION LEVEL CHANGING

Philippe Sainte-Beuve, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,268
Claims priority, application France, Dec. 31, 1969, 6945677
Int. Cl. H04l 27/02
U.S. Cl. 325—38 A 5 Claims

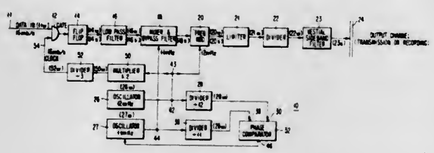


A device for the transmission of an information signal by means of pulse code modulation features a quantizing circuit controlled by a control circuit so that the decision levels of the quantizing circuit are cyclically changed between predetermined minimum and maximum values.

3,699,447
WIDEBAND FREQUENCY MODULATION COMMUNICATIONS SYSTEM

William Thomas Frost, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,039
Int. Cl. H04b 1/00
U.S. Cl. 325—45 8 Claims

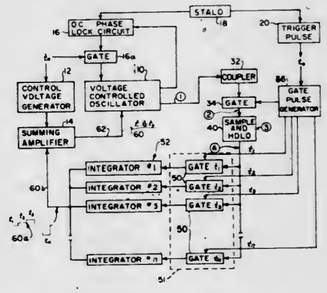


A duobinary data input having a first signal spectrum in a relatively low frequency range is fed to a mixer and bandpass filter. The mixer and bandpass filter frequency translates the first signal spectrum to obtain a second signal spectrum separated upwardly in frequency range from the first spectrum. The signal of the second spectrum frequency modulates a carrier wave having a frequency that is near to the upper frequency limit of the second spectrum, so that only a single pair of sidebands is produced by each modulating frequency component. The frequency modulated signal is then passed through a limiter, a divider, and a low pass vestigial sideband filter, respectively, so that the frequency modulated carrier is frequency translated to a third signal spectrum which occupies a bandwidth approximating the bandwidth of the first band of frequencies. This frequency translated FM carrier wave contains a constant carrier wave component and lower frequency sidebands, arranged compactly in a relatively narrow bandwidth. The output of the low pass vestigial sideband filter may be recorded on a recording medium or transmitted in a band limited channel, so that a carrier usable for clocking the duobinary encoded data is continuously present.

3,699,448
PRECISION GENERATION OF LINEAR F. M. SIGNAL

Gregory L. Martin, 4607 No. 53 Drive, Phoenix, Ariz., and Lloyd R. Blair, 1130 West Myrtle, Phoenix, Ariz.

Filed Feb. 8, 1971, Ser. No. 113,420
Int. Cl. H03b 23/00
U.S. Cl. 325—131 5 Claims

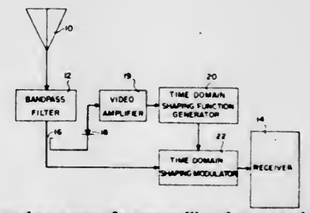


The invention achieves a linear waveform that is swept in frequency with great precision by means of a servo control that uses an error signal derived from the measurement of the actual phase of the swept frequency waveform at equal time intervals. These time intervals are chosen so the phase should be multiples of 2π at the sample times. These phase values coincide with zero crossings of the signal. If the signal amplitude is not zero, the sense of the phase errors is detected, and then sweep linearity corrections are applied in a closed loop feedback.

3,699,449
TIME DOMAIN MODULATOR FOR SPECTRUM SHAPING OF PULSED WAVEFORMS

Kenneth E. Tauscher, South Merrimack; Theodore F. Roome, Jr., Hudson, and David S. Coon, Derry, all of N.H., assignors to Sanders Associates Inc., Nashua, N.H.

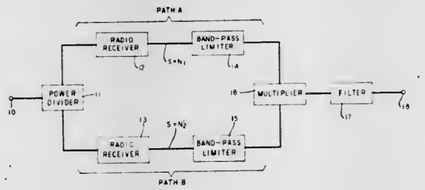
Filed Nov. 9, 1970, Ser. No. 87,719
Int. Cl. H04b 1/10
U.S. Cl. 325—324 12 Claims



A method and apparatus for controlling the spectral content of signals entering a radio frequency receiver. The frequency

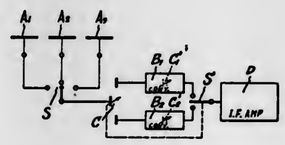
resolution of the receiver is improved by reshaping an incoming pulse waveform to a preselected pulse waveform having spectral characteristics which are defined and desirable thus permitting optimization of receiver characteristics without substantial loss of sensitivity.

3,699,450
APPARATUS FOR MEASURING LOW LEVEL POWER
Attilio Joseph Rainal, Convent, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 26, 1970, Ser. No. 67,033
Int. Cl. G01t
U.S. Cl. 325—363 **2 Claims**



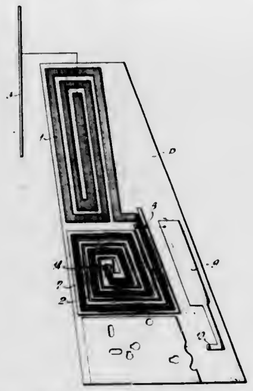
The prior art discloses a correlation receiver in which incoming energy is equally divided between two parallel paths, with the path outputs applied to a multiplier to produce an output indicative of the level of the energy. The present disclosure introduces bandpass limiters in the parallel paths, thus enabling lower levels of input energy to be measured.

3,699,451
ANTENNA SELECTION AND IMPEDANCE MATCHING APPARATUS
Tamaki Ohaski, 1629 Tanashi-shi, Tokyo, Japan
Filed Nov. 8, 1968, Ser. No. 774,394
Claims priority, application Japan, Nov. 11, 1967, 42/72253
Int. Cl. H04b 1/18
U.S. Cl. 325—368 **6 Claims**



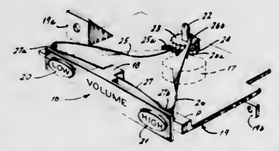
On a frame having three cranks independently adjustable by rotation, there are slidably mounted tuning members each having three setting plates corresponding to the three cranks and capable of being locked and released by a single pushbutton operation. Furthermore, there are provided a switch for switching in selectively one of a plurality of antennae, a variable element for the impedance matching of an antenna circuit including a feeder, a switch for switching in selectively one of a plurality of converters, and a variable element for the tuning of a particular converter, all of which are arranged to be moved with their respective cranks. As a result, antenna switching and band switching and frequency selection can be effected simultaneously by a single operation.

3,699,452
ACTIVE ANTENNA ARRANGEMENT FOR A PLURALITY OF FREQUENCY RANGES
Heinz Lindenmeier, Munich, and Hans-Heinrich Meinke, Gauting, both of Germany, assignors to Hans Kolbe & Co., KG, Bad Salzdetfurth, Germany
Filed Feb. 16, 1970, Ser. No. 11,569
Claims priority, application Germany, April 18, 1969, P 19 19 749.0
Int. Cl. H01q 1/26; H04b 1/18
U.S. Cl. 325—367 **13 Claims**



For each frequency range, a different signal path is provided between the antenna input and the antenna output. Each path has passive impedance elements which receive the radiant energy and a transistor. Each path may have independent noise matching between the transistor and the passive impedance elements, and/or the operating point of each transistor may be independently adjusted for each path.

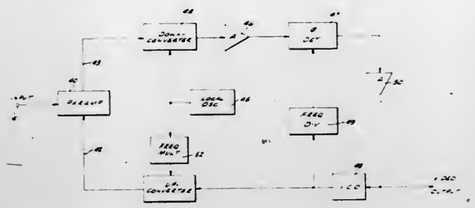
3,699,453
BI-DIRECTIONAL OPERATING MECHANISM
Arthur Berenbaum, Holland, and Robert M. McDonough, Philadelphia, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed April 29, 1971, Ser. No. 138,548
Int. Cl. H03g 3/02
U.S. Cl. 325—397 **6 Claims**



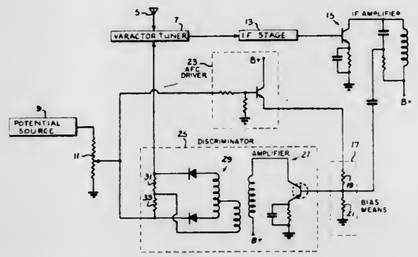
A touch-operated volume control device in which a potentiometer is adjusted by depressing either end of a deflectable key. The volume is increased, progressively, by repeatedly depressing one portion of said key and decreased, progressively, by repeatedly depressing a spaced portion of said key.

3,699,454
DEGENERATE PARAMETRIC AMPLIFIER RECEIVER
Thomas Hudspeth, Malibu, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 30, 1970, Ser. No. 7,279
Int. Cl. H03f 7/00
U.S. Cl. 325—421 **4 Claims**

A high frequency receiving system for angle modulated signals is disclosed. A degenerate parametric amplifier is combined with unique circuitry and operated in a manner which provides low-noise amplification and detection of angle modulated signals. As in the case of other degenerate parametric amplifiers the pump frequency is maintained at exactly twice the signal frequency. However, the pump and signal are combined in such a way that substantial signal carrier cancellation occurs. A high speed phase locked loop maintains the proper pump frequency and phase relationship. A residual error signal derived from the phase locked loop comprises the receiver output.



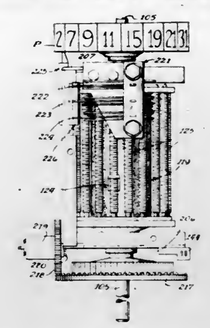
3,699,455
AUTOMATIC FREQUENCY CONTROL CIRCUITRY FOR A VARACTOR TUNER SYSTEM
William Frank Kruszewski, and Karol Siwko, both of Batavia, N.Y., assignors to GTE Sylvania Incorporated
Filed Jan. 20, 1971, Ser. No. 108,033
Int. Cl. H04b 1/16
U.S. Cl. 325—423 **10 Claims**



In a signal receiver employing a varactor tuner responsive to alterations in a potential source for effecting signal selection, an automatic frequency control (AFC) system includes a discriminator coupled to the varactor tuner and having an amplifier coupled to an IF amplifier stage and by way of a bias means to the potential source. Adjustment of the potential source to effect variations in signal selection also causes variations in amplification by the discriminator system which, in turn, varies the AFC correction applied to the varactor tuner.

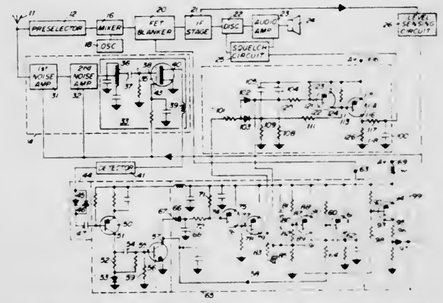
3,699,456
SOLID STATE TUNER CONTROL
Edward L. Midgley, Carol Stream, Ill., assignor to Standard Kollman Industries, Inc., Melrose Park, Ill.
Continuation-in-part of Ser. No. 839,163, July 7, 1969, Pat. No. 3,601,703. This application April 12, 1971, Ser. No. 133,265
Int. Cl. H04b 1/06
U.S. Cl. 325—455 **9 Claims**

In a television channel selector apparatus, the shiftable channel or band controlling movement of a cam follower is effected through indexed rotary movement of a set of cam elements, each cam element comprising a replaceable channel



indicating tab having a cam portion configured to position the cam follower in relation to the particular channel indicated by such tab.

3,699,457
NOISE BLANKER CIRCUIT INCLUDING RATE BIAS AND RATE SHUTOFF CIRCUITRY AND AUDIO BLANKING
Larry R. Wright, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation-in-part of Ser. No. 839,163, July 7, 1969, Pat. No. 3,601,703. This application Aug. 11, 1971, Ser. No. 170,862
Int. Cl. H04b 1/10
U.S. Cl. 325—479 **16 Claims**

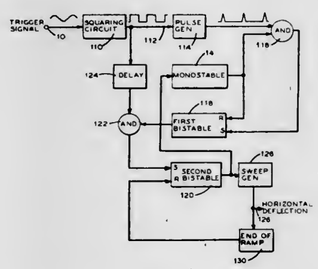


A noise blanking circuit for decreasing the impulse noise in a receiver includes a noise channel which develops blanking pulses in response to impulse noise. The noise pulses are coupled to a stage in the signal path for blanking the signals coupled therethrough to eliminate the reproduction of impulse noise. A rate shutoff circuit includes first and second timing circuits which are responsive to the repetition rate of the blanking pulses, and the duration of a series of pulses respectively, to develop a rate shutoff signal which inhibits the coupling of the blanking pulses to the blanking circuit. A rate bias circuit, coupled to the rate shutoff circuit, is responsive to the rate shutoff signal to develop a rate bias signal to maintain the gain of the noise amplifiers at a desired level. An audio blanking circuit is coupled to the rate shutoff circuit and the receiver squelch circuit and is responsive to the blanking pulses exceeding a predetermined rate and duration to develop an audio blanking pulse for inhibiting operation of the receiver audio circuitry. The audio blanking circuit further includes timing circuitry which is responsive to the blanking pulses exceeding a predetermined rate and duration to inhibit development of the audio blanking signal when the rate shutoff function is operative.

3,699,458
JITTER FREE TRIGGER CIRCUIT FOR A SAMPLING OSCILLOSCOPE

Edward Albert Martin, c/o Victoria Road, Farnborough, England, and Douglas Garde, 280 Washington Street, Woburn, Mass.

Filed March 10, 1971, Ser. No. 122,878
Claims priority, application Great Britain, March 12, 1970, 11,997/70
Int. Cl. H03k 1/00, 3/04
U.S. Cl. 328—60 1 Claim

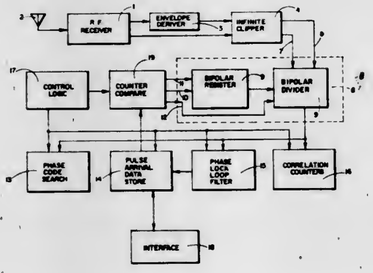


In a trigger pulse generator for an oscillator jitter is liable to occur in the trigger pulses because of uncertainties in the timing of the end of the hold-off signal relative to the instants at which a trigger signal reaches a trigger level. Jitter is eliminated by arming an output circuit when the hold-off signal ends and the trigger signal reaches the trigger level. The output circuit generates a trigger pulse, when it is armed, in response to the trigger signal delayed by a predetermined amount.

3,699,459
CIRCUIT FOR SAMPLING HIGH SPEED DATA

George A. Watson, Tustin, Calif., assignor to North American Rockwell Corporation

Filed Sept. 25, 1969, Ser. No. 861,115
Int. Cl. G01r 29/02
U.S. Cl. 328—151 4 Claims

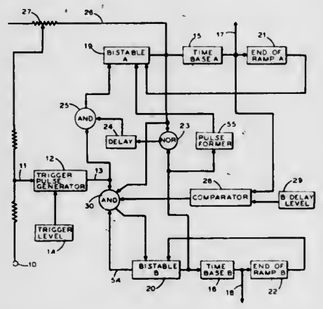


The invention is a data divider for sampling high speed data received from master and slave transmitters in a long-range navigational system for generating slower speed data which can be processed by a relatively lower speed system to determine the location of the receiver. The system also generates clock signals for the low speed system. The data is synchronized with the clock signals.

3,699,460
OSCILLOSCOPE TIME BASE CIRCUITS

Paul Vincent Marie Brigstock Trasler, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed March 25, 1971, Ser. No. 127,977
Claims priority, application Great Britain, March 25, 1970, 14,625/70
Int. Cl. H03k 4/10
U.S. Cl. 328—181 5 Claims

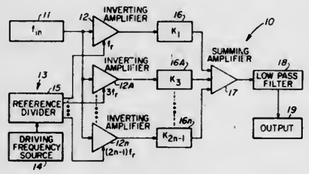


An oscilloscope time base circuit providing two time bases, both triggered from a single trigger signal. A logic circuit ensures that the time bases trigger alternately: one time base triggers when the trigger signal next reaches a predetermined value after a preset time has elapsed since the other time base triggered, and the other time base triggers when the trigger signal next reaches a predetermined value after both time bases have returned to their starting states. The trigger signal's predetermined value also alternates so that the time bases each trigger at their own predetermined value.

3,699,461
ANALOG HARMONIC REJECTING PHASE DETECTOR

Dean P. Huntsinger, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 27, 1971, Ser. No. 183,924
Int. Cl. H03d 3/02
U.S. Cl. 328—134 6 Claims



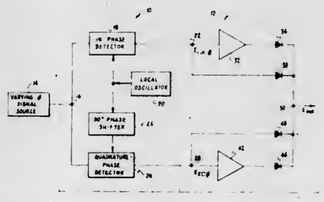
An analog harmonic rejecting phase detector with even harmonic rejection achieved through a fundamental frequency, f_r, phase detector section and rejection of the stronger odd harmonic signal content passed from the input signal through the fundamental frequency section. It includes a plurality of odd harmonic frequency phase detector sections such as $3f_r$, $5f_r$, and possibly other odd harmonic sections up to and including a $(2n-1)f_r$ odd harmonic section. The reference signals $3f_r$, $5f_r$, etc., are square waves so phase related relative to f_r as to achieve mutual cancelling with like harmonic content in the signal being passed through an invert-noninvert amplifier of the fundamental frequency section and passed to a summing amplifier. This requires an attenuator circuit after an invert-noninvert amplifier in each odd harmonic section to properly balance signal strength to the strengths of their respective

counterparts passed through the fundamental frequency section. The resulting output of the summing amplifier is so integrated through a low pass filter as to present a plus or minus output voltage indicative of the input signal, f_{in}, phase lead or lag and the magnitude of phase displacement relative to the square wave reference signal f_r.

3,699,462
CHANNEL COMBINING CIRCUIT FOR SYNCHRONOUS PHASE DETECTION SYSTEMS

James E. Kletzer, Chicago, and Joseph N. Mente, South Holland, both of Ill., assignors to The United States of America as represented by the Secretary of Navy

Filed June 1, 1971, Ser. No. 148,564
Int. Cl. H03d 3/18
U.S. Cl. 329—112 6 Claims

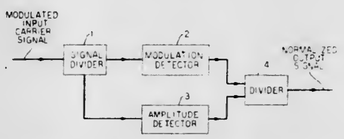


A channel combining circuit for homodyne receivers or other systems employing synchronous detection, which selects the output of either an in-phase detector or a quadrature phase detector. Each of two channels has an inverter circuit and two diodes making available at a common output terminal the most positive signal derived from either a positive or negative input signal from the detectors.

3,699,463
ERROR REDUCTION IN COMMUNICATION SYSTEMS

Julian Stone, Rumson, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1970, Ser. No. 93,769
Int. Cl. H03d 1/20
U.S. Cl. 329—145 7 Claims

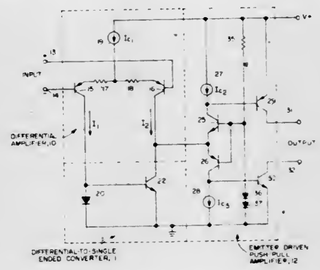


The output from a phase detector is a function of both the amplitude and phase of the input signals. Error, due to spurious amplitude modulation of the angular modulated carrier signal, is minimized by dividing the phase detector output signal by a reference signal whose instantaneous amplitude is proportional to the amplitudes of the phase detector input signals. A phase modulated, optical communication system is described. The principles of the invention are also applicable to amplitude and frequency modulated signal systems.

3,699,464
DEADBAND AMPLIFIER CIRCUIT

Don William Zobel, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 25, 1971, Ser. No. 118,844
Int. Cl. H03f 3/18, 3/68
U.S. Cl. 330—12 10 Claims

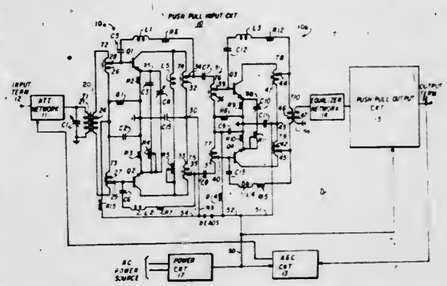


There is disclosed an amplifier with an adjustable deadband in which the common mode range is widened and in which the deadband is made easily adjustable by adjustment of the current sources coupled to the collectors of an emitter-driven push-pull output stage of the amplifier.

3,699,465
SELF-BALANCING PUSH PULL AMPLIFIER

John A. Pranke, Phoenix, Ariz., assignor to Theta-Com of California, Los Angeles, Calif.

Filed June 18, 1970, Ser. No. 47,227
Int. Cl. H03f 3/26
U.S. Cl. 330—15 8 Claims



A push pull amplifier including a circuit with an input stage and an output stage having a pair of transistors connected in push pull configuration and cross coupling networks providing negative feedback between the transistors of each pair to maintain the push pull stage in a balanced operating condition, and input and output networks for the circuit including impedance matching transformers and a push pull transformer, the networks being referenced to ground through the impedance matching transformers.

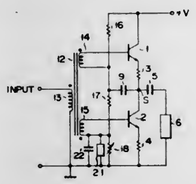
3,699,466
SINGLE ENDED PUSH-PULL AMPLIFIER

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Feb. 17, 1971, Ser. No. 115,991
Claims priority, application Japan, Feb. 26, 1970, 45/16554
Int. Cl. H03f
U.S. Cl. 330—15 10 Claims

In order to facilitate bias adjustment in a single ended push-pull amplifier comprising first and second transistors con-

nected in series between a power source and the ground, a circuit including a capacitor and load connected in series between the juncture of the first and second transistors and the ground, at least one circuit including of a plurality of resistors, one resistor being a variable one, connected in series between the power source and the ground so as to supply bias voltage to the first and second transistors, and an input transformer having first and second secondary windings so as to ac-

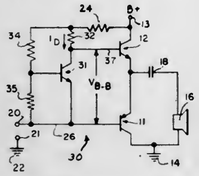


tuate upon receipt of signals the first and second transistors alternately; there is connected a DC blocking capacitor between the bias voltage supplying point included in the aforesaid resistor series circuit to the first transistor and the juncture of the first and second transistors; and voltage across the variable resistor included in the series circuit is supplied to the second transistor as bias voltage. The single variable resistor adjusts the proper operating condition.

3,699,467
BIAS CIRCUIT FOR A COMPLEMENTARY TRANSISTOR OUTPUT STAGE

Stephen Grout, Phoenix, Ariz., assignor to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,322
Int. Cl. H03f 3/18
U.S. Cl. 330—17 **6 Claims**



A bias circuit for a complementary transistor power amplifier output stage which comprises a biasing transistor having its emitter connected to the base of one of the complementary transistors and its collector connected to the base of the other of the complementary transistors. A collector resistor is in circuit with the collector of the biasing transistor and with a source of biasing potential. The input signal to the amplifier is coupled to the emitter of the biasing transistor and to the base of one of the complementary transistors. In one embodiment, a resistive divider biases the base of the biasing transistor, while in another embodiment, the base of the biasing transistor is directly connected to the source of biasing potential.

3,699,468
REGULATING AMPLIFIER

Hans-Lothar George Harmgardt, Oakville, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 8, 1971, Ser. No. 113,194
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **6 Claims**

A regulated amplifier for supplying coded tone pulses from a communication line to the filters of a multifrequency decoding detector is made using directly coupled semiconductor elements for amplification and control. The gain of the amplifier is controlled by a light sensitive cadmium sulphide input series resistor illuminated by a gallium arsenide light emitting diode driven by the control circuit. An integrating amplifier stage is used to derive a control voltage from the output of the regulated amplifier, which voltage is modified by a temperature dependent reference voltage for compensating the tem-
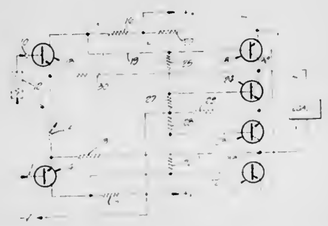


perature dependence of the light emitting diode. The control voltage is furnished to the stage that drives the light emitting diode through a coupling diode, so that a blocking voltage produced by an unregulated parallel channel of amplification-integration may be applied to the final control stage, to darken the light emitting diode and put the regulated amplifier in its minimum amplification condition when input signals are below the predetermined energy level.

3,699,469
DIFFERENTIAL AMPLIFIER

Shmuel Elazar, Ventura County, Calif., assignor to Statham Instrument, Inc., Oxnard, Calif.

Filed Jan. 2, 1970, Ser. No. 100
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **5 Claims**

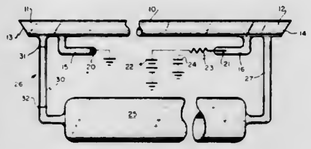


The differential amplifier circuit employs a pair of amplifier legs of similar electrical characteristics. Input signals are applied across the two legs at the base of a pair of transistors forming a first amplification stage. A further pair of output transistors are interrelated with the input amplification stage, and interconnecting the output transistors are constant current devices. Biasing voltage is applied via the constant current devices whereby common-mode signals are denied a path to the amplifier input and are effectively cancelled out to provide an output for the differential amplifier that is substantially purely related to the information signal. Another aspect is the provision of an input isolation circuit for eliminating common-mode return paths where the differential amplifier has internal voltage bias.

3,699,470
ELECTROSTATIC GAS BY-PASS FOR ION LASERS

Robert S. Witte, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed July 6, 1971, Ser. No. 159,812
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **9 Claims**

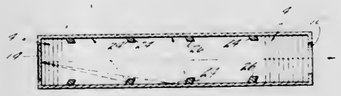


A gas ion laser having a gas reservoir and a by-pass, or connecting portion between the outer ends of the main envelope of the gas laser. Such a gas by-pass is necessary to equalize the pressure in the main discharge chamber during operation of the gas ion laser. Due to cataphoresis the gas pressure builds up at the anode, and for proper operation this pressure must be equalized. On the other hand, it is necessary to prevent the gas discharge from passing through the gas reservoir. This is accomplished by the present invention by inserting into the connecting portion of the gas reservoir between the main discharge and the reservoir an electrically conductive duct which provides a floating electric potential thereby to inhibit an electric discharge through the conductive duct.

3,699,471
STRAY RADIATION SUPPRESSION DEVICE

Richard C. Mulready, Jupiter, and Edward A. Pinsley, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 20, 1971, Ser. No. 164,363
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **4 Claims**



A series of fences are placed across the side walls of a flow channel forming the optical cavity of a gas dynamic laser which contains the gas dynamic laser flow therein and are positioned between end walls containing the laser beam mirrors and apertures. The fences are positioned lengthwise with the direction of flow and are located on each side wall of the optical cavity. They are spaced so that they will absorb and/or reflect all rays intersecting the optical cavity side walls at a grazing incidence. The invention herein described was made in the course of or under a contract with the Air Force.

3,699,472
ATHERMALLY STABLE LASER DEVICE

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

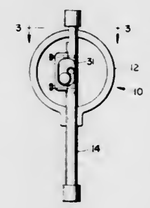
Filed March 10, 1970, Ser. No. 18,253
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **10 Claims**

Laser light generator containing a glass laser rod with a composition so chosen that the net thermal effects on the index of refraction are negated. The algebraic sum of the effects of the change in index of refraction caused by the temperature coefficient of the index of refraction, the coefficient of linear expansion, Poisson's ratio and the stress-optical effects, for light in one plane of polarization is chosen to be near zero, while remaining small but negative for the other polarization component.

3,699,473
DIAL INDICATORS

Igor L. Paul, West Peabody, Mass., assignor to B. C. Ames Company, Waltham, Mass.

Filed March 24, 1969, Ser. No. 809,552
Int. Cl. G01b 3/22
U.S. Cl. 33—172 R **4 Claims**

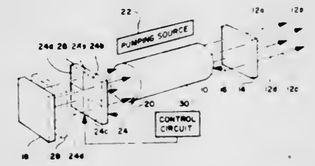


Low-friction dial indicators are provided wherein the linear motion of an indicator rod is converted to the rotary motion of the indicator needle by means of a flexible band wrapped about a cluster of rollers and connected to g guide way in which the rollers move substantially free of friction. Means are provided for pre-loading the rollers, for adjusting the sensitivity of the indicators and for providing multiple output from a single drive system.

3,699,474
MULTIPLE BEAM LASER SYSTEM

Murphy J. Landry, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 20, 1917, Ser. No. 91,478
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **7 Claims**



An optical laser system in which the active lasing medium is simultaneously pumped over the entire volume of the lasing

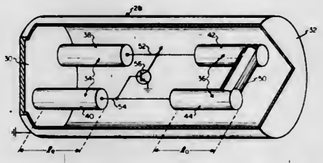
medium while providing various means for controllably generating giant pulses at different points in time by sequentially Q-switching of separate and distinct parallel volumes of the lasing medium.

3,699,475

DOUBLE-MODE TUNED MICROWAVE OSCILLATOR

Robert G. Rogers, Los Altos, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 16, 1971, Ser. No. 115,449
Int. Cl. H03b 5/18
U.S. Cl. 331—101 **15 Claims**



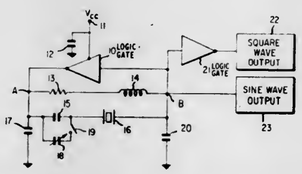
Two lengths of short circuited transmission lines that are defined by their odd and even-mode characteristics are connected to a microwave transistor to provide the external feedback network of a microwave oscillator. The feedback network may be obtained by using separate odd and even-mode transmission lines or, alternatively, the odd and even-mode transmission lines may be combined to form an extremely compact oscillator. Even when so combined, the positions of short circuits on the transmission line may be adjusted to permit frequency tuning and power peaking of the oscillator.

3,699,476

CRYSTAL CONTROLLED DIGITAL LOGIC GATE OSCILLATOR

Ronald Alfred Mancini, Palm Beach Gardens, Fla., assignor to RCA Corporation

Filed March 5, 1971, Ser. No. 121,307
Int. Cl. H03b 5/36
U.S. Cl. 331—116 R **9 Claims**



A high frequency crystal-controlled oscillator circuit which utilizes a digital logic gate in an amplifier mode of operation and produces sine or square wave output signals.

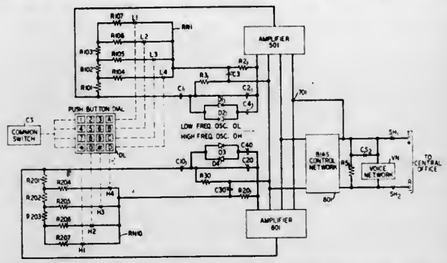
3,699,477

SIGNAL GENERATOR

Lynn J. McKell, West Lafayette, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 7, 1971, Ser. No. 178,126
Int. Cl. H03b 5/26
U.S. Cl. 331—142 **10 Claims**

A key operated signal generator comprising a pair of interconnected transistor oscillators having twin-T notch-filter feedback networks in which one resistance in each filter is variable and consists of a plurality of resistive elements arranged in a series parallel configuration. The series parallel configuration is such that when a single button of the key is actuated, at least two resistive elements are connected in series in each filter and when two buttons are actuated simultaneously, at least one resistive element is connected in series with two or more parallel resistive elements in at least one filter.

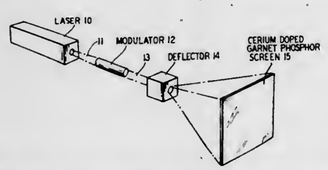


3,699,478

DISPLAY SYSTEM

Douglas A. Pinnow, Berkeley Heights, and Le Grand G. Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 26, 1969, Ser. No. 827,644
Int. Cl. H01s 3/00
U.S. Cl. 332—7.51 **8 Claims**



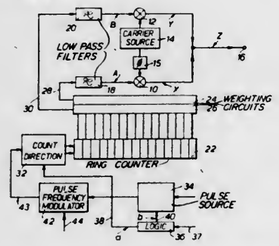
A black and white display is produced by projection using a scanning argon laser beam operating at 4,880 A and a phosphorescent screen of cerium-doped yttrium aluminum garnet which emits a broad range of frequencies centering about 5,500 A. The yellowish cast of the phosphor output is compensated by a small amount of reflected blue argon light.

3,699,479

DIFFERENTIAL PHASE SHIFT KEYING MODULATION SYSTEM

Raymond Thompson, Havant, and Ashley W. Guest, Waterlooville, both of England, assignors to The Plessey Company Limited, Ilford, England

Filed Dec. 7, 1970, Ser. No. 95,653
Claims priority, application Great Britain, Dec. 9, 1969, 59,911/69
Int. Cl. H04l 27/20
U.S. Cl. 332—16 R **8 Claims**



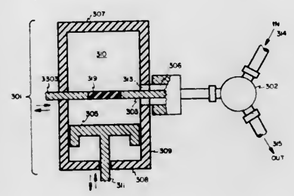
A differential phase shift keying modulating system is described, comprising two balanced modulators, one fed with a carrier frequency and the other fed with the carrier frequency phase shifted by 90°. Modulating signals, respectively produced by a ring counter driving cosine and sine weighting circuits, are respectively fed to the two balanced modulators. Since the modulator signals have a sine/cosine relationship, the resultant output of the balanced modulators has a constant amplitude and a progressively increasing phase. Data is transmitted by causing the ring counter to count up or down, according to the value of data, so as to alter the direction of phase change of the output vector, and by varying the total number of stepping pulses applied to the counter during a given period, so as to vary the extent of the phase change during that period.

3,699,480

VARIABLE RF GROUP DELAY EQUALIZER

Martin Mueller, Chelmsford, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed Dec. 15, 1969, Ser. No. 884,975
Int. Cl. H01p 7/06
U.S. Cl. 333—28 **7 Claims**



A tunable microwave phase equalizer primarily for use in satellite communication systems is disclosed comprising in combination a circulator and a two-knob tunable microwave cavity wherein one knob adjusts the resonant frequency, and the other knob adjusts the coupling. By means of the frequency adjustment a delay curve of practically constant shape and width can be moved into any 5, 10, 20 or 40 MHz band of the 6 GHz satellite range. By means of the coupling adjustment, the bandwidth is varied and with it the time delay curvature at the frequency of delay maximum to cancel third order intermodulations generally generated by the integral of the parabolic time delay curve. Second order intermodulation is eliminated by the frequency adjustment which changes the slope of the time delay curve and moves the curve away from the center frequency.

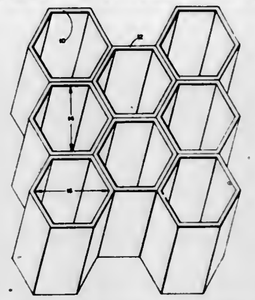
3,699,481

LOW VELOCITY HIGHLY ANISOTROPIC ELASTIC MATERIALS

Robert B. Thompson; Donald O. Thompson, both of Thousand Oaks; Edgar A. Kraut, Camarillo, and Teong C. Lim, Thousand Oaks, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed June 1, 1971, Ser. No. 148,766
Int. Cl. E04b 1/86; H03h 7/30
U.S. Cl. 333—30 R **2 Claims**

This invention discloses a class of materials having a cellular structure which is suitable to slow the movement or velocity of elastic waves therein. An example of this class of materials is a cellular phenolic honeycomb polymer in which an elastic wave has a delay time of 0.6 milliseconds per inch in contrast to a delay time of 0.005 milliseconds per inch obtained in quartz, the most widely used prior art material. By proper modification of the cellular structure parameters, that is, the thickness of the individual cell wall and the dimensions of the



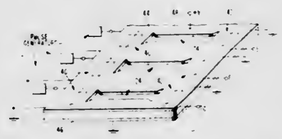
individual cell, a particular desired elastic wave velocity in a given direction can be obtained.

3,699,482

SURFACE WAVEGUIDING IN CERAMICS BY SELECTIVE POLING

Eric A. Ash, London, and Samuel C.-C. Tseng, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,179
Int. Cl. H03h 7/36, 9/30
U.S. Cl. 333—30 **10 Claims**



A surface waveguide structure and method of making same. A substrate material consisting either of a piezoelectric ceramic or ferroelectric crystal, is selectively poled by an electric field so as to form an elastic surface wave channel within the substrate structure. The electric field applied cross the substrate causes a polarization of the crystalline structure in those areas influenced by the electric field and has a negligible effect in those areas not exposed to the electric field. The free surface wave velocity is substantially increased in the polarized areas of the substrate and remains unchanged in the unpolarized regions. Poling of the substrate is accomplished by applying an electric field across a pair of electrodes which cover the upper and lower surfaces of the substrate except for a narrow region between the transmitting and receiving surface wave transducers.

The process for manufacturing the surface waveguide structure is applicable to both acoustic and optical surface waveguiding devices. Also, the polarization of the substrate may be selectively altered by subsequent application of electric fields across the body of the substrate to make switchable waveguide regions.

3,699,483

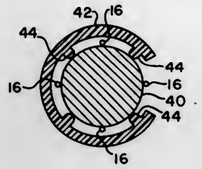
RUGGED, NARROW BANDWIDTH MECHANICAL FILTER

Wesley D. Peterson, Santa Ana, and Donovan A. Southworth, Costa Mesa, both of Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed May 26, 1971, Ser. No. 147,105
Int. Cl. H03h 7/30
U.S. Cl. 333—71 **3 Claims**

A mechanical filter includes a first plurality of active discs in spaced alignment, a second plurality of off-resonant discs

with each disc of said second plurality positioned intermediate a pair of discs of said first plurality, coupling rods selectively



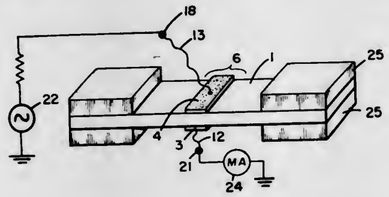
attached to said discs, housing means and support means physically contacting said second plurality of discs and supporting said filter within said housing means.

3,699,484

WIDTH EXTENSIONAL RESONATOR AND COUPLED MODE FILTER

Don A. Berlincourt, Chagrin Falls, Ohio, assignor to Vernitron Corporation, Bedford, Ohio

Filed June 24, 1970, Ser. No. 49,286
Int. Cl. H03h 9/16, 9/20
U.S. Cl. 333—72 **12 Claims**



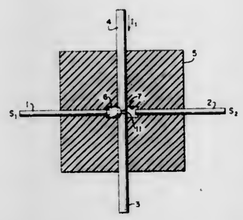
Ceramic and crystal resonators and coupled mode filters are disclosed, which operate in the width extensional mode. The operating frequency is determined primarily by the width of the plate.

3,699,485

LIQUID ARMATURE SWITCH

Michael Edward Lindenmeyer, North Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1971, Ser. No. 198,868
Int. Cl. H01h 29/02
U.S. Cl. 335—49 **4 Claims**



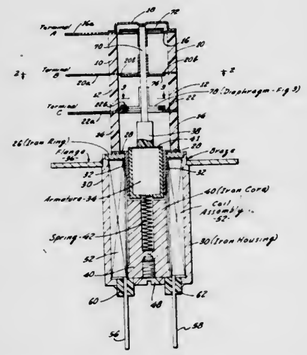
A liquid armature switch having two control electrodes mounted between two signal electrodes in a chamber is disclosed wherein the control electrodes are in constant contact with the armature and are positioned to restrain any movement of the armature which is not the result of the application of an electromagnetic switching force to the armature.

3,699,486

HIGH VOLTAGE MINIATURIZED RELAY

Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,009
Int. Cl. H01h 51/10
U.S. Cl. 335—131 **8 Claims**



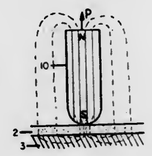
A high voltage relay is provided in which the operating components of the relay are enclosed in a sealed envelope which may be evacuated. The relay to be described is a miniaturized high voltage relay capable, for example, of operating at voltages up to 5 kilo-volts, and in conjunction with relatively high frequencies. The envelope of the relay is composed of ceramic, and the relay is capable of efficient operation in wide extremes of ambient temperatures. The relay includes a linearly movable contact which makes connection with a fixed common electrical terminal through a resilient diaphragm which is constructed to permit free linear reciprocal movement of the movable contact and yet maintain a positive electric current to the common terminal.

3,699,487

MAGNET FOR USE IN MAGNETIC THICKNESS GAUGES

Erich Steingroever, Bonn, Germany, assignor to Elektro-Physik Hans Nix and Dr. Ing. Steingroever, K.G., Koln, Germany

Filed April 13, 1971, Ser. No. 133,600
Claims priority, application Germany, Nov. 7, 1970, P 20 54 929.5
Int. Cl. H01f 7/02
U.S. Cl. 335—302 **9 Claims**



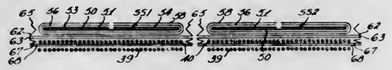
A magnet for use in a magnetic gauge for measuring the thickness of a non-magnetic layer on a ferromagnetic base is made of magnetically anisotropic material.

3,699,488

DISTRIBUTION TRANSFORMER HAVING STATIC SHIELD

Ernest A. Goodman, and Joseph P. Handerhan, both of Pittsburgh, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 28, 1972, Ser. No. 229,892
Int. Cl. H01f 15/04
U.S. Cl. 336—84 **10 Claims**



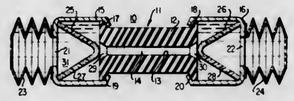
An electrical distribution transformer of the series-multiple type has a plurality of adjacent primary winding sections wound in radially superimposed helical layers of wire turns and also has a static shield for each winding section comprising a strip of aluminum-backed crepe paper disposed in overlaying relation to the outer wire turn layer and having both longitudinal edges folded over and flattened so that the aluminum is on the inside of the fold to provide minimum edge corona; a multi-layer insulation envelope wrapped around the aluminum-backed paper; a thin copper lead cold-welded to the aluminum and electrically connected to the finish wire turn of the outer layer; and a strip of insulation disposed between the static shield and the outer wire turn layer and having its longitudinal side edges folded over a short distance to position the static shield and provide a long creep path between shields of adjacent primary winding sections.

3,699,489

CURRENT LIMITING DEVICE

Yasutaka Imajyo, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed March 17, 1971, Ser. No. 125,304
Int. Cl. H01h 87/00
Claims priority, application Japan, Mar. 28, 1970, 45/25624; Mar. 28, 1970, 45/25626
U.S. Cl. 337—221 **4 Claims**



A current limiting device includes a casing containing a liquid metal sealed therein, the same being highly electrically conductive in its liquid state and highly non-conductive in its vaporized state. The casing is provided with a ceramic tube, a pair of tubular terminal caps sealingly mounted on the opposite ends of the ceramic tube and a pair of bellows secured to the ends of the terminal caps such that the inside of the bellows will communicate with the inside of the terminal caps. A buffer device is provided in the terminal caps for reducing the energy of the high vapor pressure of the vaporized liquid metal which may occur in the casing when a heavier fault current will be interrupted due to the vaporization of the liquid metal. Thus, any damage of the bellows which may result from the high vapor pressure of the vaporized liquid metal is effectively reduced.

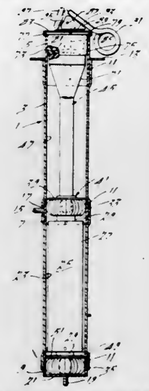
3,699,490

FUSE HOLDER

Herbert J. Macemon, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

Filed March 6, 1970, Ser. No. 17,260
Int. Cl. H01h 85/22, 85/58
U.S. Cl. 337—202 **18 Claims**

A fuse holder has a fluid-tight housing with external terminals that are internally connected to the fuse by annular coil springs. A fuse handling rod carries an expansible sleeve device at one end for connecting it to the fuse and a second expansible sleeve device at the other end for sealing the end of the housing.



3,699,491

FUSE HAVING VIBRATION DAMPING MEANS FOR PROTECTING THE FUSE LINK THEREOF

Edward A. Vrabel, and Raymond Cuzzone, both of Pittsfield, Mass., assignors to General Electric Company

Filed Oct. 7, 1971, Ser. No. 187,450
Int. Cl. H01h 85/14
U.S. Cl. 337—246 **9 Claims**

A cartridge-type current limiting fuse is provided with a mechanical damping means for mounting a fusible link in the fuse in a manner such that the link will be protected from damage due to mechanical vibration of the equipment on which it is mounted during normal operating use.

3,699,492

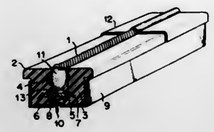
VARIABLE RESISTANCE DEVICE FOR A PORTAMENTO PERFORMANCE ON AN ELECTRONIC MUSICAL INSTRUMENT

Kenji Yoshihara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Nov. 9, 1971, Ser. No. 196,909
Claims priority, application Japan, Nov. 16, 1970, 45/113487; April 2, 1971, 46/24223; Nov. 25, 1970, 45/103460
Int. Cl. H01c 9/00
U.S. Cl. 338—69 **10 Claims**

A variable resistance device for a portamento performance on an electronic musical instrument wherein a conductive

coiled spring is held by a supporting member and an elongate resistor is so held by the supporting member as to face the coiled spring at a small space. The elongate resistor is used to determine the output frequency of a tone signal generator.

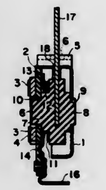


Depression of the coiled spring with player's finger causes it locally to contact the resistor, and the continuous shift of the player's finger successively varies resistance across the coiled spring and resistor, thereby providing a portamento performance.

3,699,493
LEVER-OPERATED VARIABLE RESISTOR

Shunzo Oka, Hirakata, and Akitoshi Miyashita, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 28, 1971, Ser. No. 184,369
Claims priority, application Japan, Sept. 30, 1970, 45/97559; Sept. 30, 1970, 45/97560; Oct. 13, 1970, 45/102083; Oct. 13, 1970, 45/102084; Oct. 13, 1970, 45/102085; Oct. 13, 1970, 45/102086; Oct. 13, 1970, 45/102087
Int. Cl. H01c 9/02
U.S. Cl. 338—132 **9 Claims**



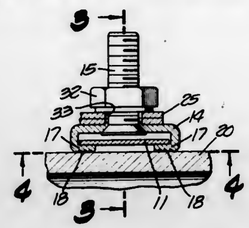
A lever-operated variable resistor comprising a case, a base plate provided at the open end of the case, a contact carrier interposed between the case and the base plate, a contactor fixed on the contact carrier, a resistance element provided on the case or the base plate and a lever provided on the side periphery of the contact carrier; in which a couple of supporting portions formed integrally with the sides of the contact carrier are fitted respectively in a couple of supporting holes formed opposite to each other in the base plate, the contactor is in contact with the resistance element, and the lever is projected through a slot formed on the side wall of the case.

3,699,494
GROUNDING CONNECTOR

John T. Thompson, 244 Loring Street, Los Angeles, Calif., and George W. Gillemot, 2331 20th Street, Santa Monica, Calif.

Filed Oct. 15, 1970, Ser. No. 80,994
Int. Cl. H01r 3/06, 13/24
U.S. Cl. 339—14 R **19 Claims**

A grounding assembly for use in completing a high strength solderless connection between conductive means and a grounding conductor supported in the earth, such as a pipe or stake. Either single or multiple solderless terminal units can be held captive adjustably along a single clamping band. The solderless terminal units can also be used alone or in multiple to provide assurance of a better and a higher capacity connection with the ground stake or pipe. These terminal units also

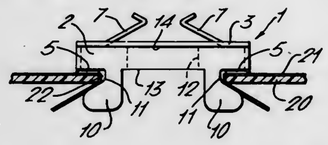


include tempered sharp edges in high pressure contact with both the ground wire and the ground stake.

3,699,495
ELECTRICAL CONNECTOR FOR VEHICLE INSTRUMENTS

Terence Robert Raynor, London, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1971, Ser. No. 111,421
Claims priority, application Great Britain, Feb. 21, 1970, 8,453/70
Int. Cl. H05k 1/02
U.S. Cl. 339—17 C **1 Claim**

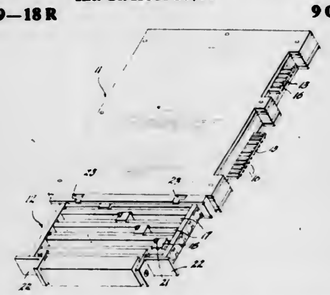


An electrical connector is disclosed and comprises a body part which is preferably formed as an extrusion and has a contact part secured thereto. The contact part has a pair of contact arms for engaging an electrical component such as a vehicle instrument and further has a pair of contact surfaces located adjacent a pair of resilient legs formed on the body part whereby the contact surfaces and the legs cooperate to engage a conductive track on an insulating panel and make electrical connection therewith.

3,699,496
SWITCHING MATRIX

Thomas Howard Witcher, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed March 25, 1968, Ser. No. 715,934
Int. Cl. H01r 25/00
U.S. Cl. 339—18 R **9 Claims**

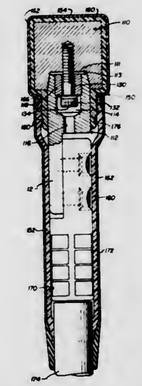


A switching matrix includes a settable matrix adapted for insertion between input and output contact boards. Sliders of insulative material, carrying knife-edged cross contacts, are secured to separate guides in the settable matrix. The cross contacts are adapted to provide an electrical connection between two conductive paths, one associated with the input contact board and one associated with the output contact board.

3,699,497
TERMINAL CONNECTOR

James Joseph Cooper, Jr., and Gary Lee Schurter, both of St. Louis, Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,339
Int. Cl. H01r 13/52
U.S. Cl. 339—60 R **7 Claims**



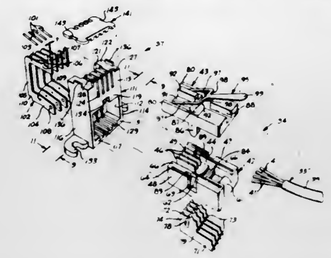
To provide a large contact area and rigid high pressure connection between a heavy power carrying terminal and a power distribution bus, capable of being thoroughly insulated with water-impervious material, a tapered or inverted frusto-conic socket is suitably machined or incised into the bus and a terminal having a similarly tapered shank is press-fitted into the socket. A clearance bore through the shank receives a bolt for connection through a receiver in the bus located beneath the conic socket. An arched washer may be used under the head of the bolt to maintain a high pressure engagement between the terminal shank and the bus during changing thermal or vibratory conditions. The entire connection area may then be jacketed with a double jacket, the jacket serving to insulate the bus and connection in a water-impervious, sealing fashion.

3,699,498
DEVICES FOR MAKING ELECTRICAL CONNECTIONS

Edwin C. Hardesty, Perry Hall, Md.; Charles L. Krumreich; Albert E. Mulberger, Jr., both of Indianapolis, Ind., and Stephen W. Walden, Merral Township, Shelby County, Ind., assignors to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J. and Western Electric Company Incorporated, New York, N.Y.

Filed April 30, 1970, Ser. No. 33,211
Int. Cl. H01r 13/62
U.S. Cl. 339—64 M **37 Claims**

Identical miniature plugs are attached to both ends of a telephone cord. The plugs are mated with miniature jacks in the handset and in the base of a telephone. A plurality of stand-up, blade terminals are positioned in spaced troughs of a housing of the plug with each of the terminals having tangs that pierce the insulation of insulated tinsel conductors of the cord placed in the troughs and pressed into engagement with the tangs by associated ribs formed in a lid of the housing which is welded ultrasonically to the housing. The mating jack has a plurality of U-shaped stand-up, blade terminals with provisions similar to the plug for making electrical contact with conductors leading into the jack. One leg of each of the U-shaped terminals of the jack is caused to engage an as-

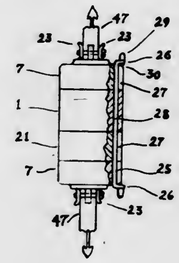


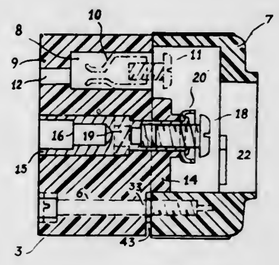
sociated one of the terminals in the plug when the plug is inserted into the jack. The plug and the jack have facilities for providing strain relief for both the cords and the individual conductors.

3,699,499
UNIVERSAL ELECTRIC CONNECTOR

Conan H. Spaderna, 404 Farmington Avenue, Hartford, Conn.

Filed March 8, 1971, Ser. No. 121,723
Int. Cl. H01r 13/54
U.S. Cl. 339—91 R **3 Claims**





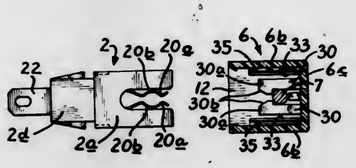
This invention relates to an electric connector comprising two electrically mating bases, called body and cap. The improvement comprises that each base is being made with more than two like, peripherally unevenly spaced cavities for holding contacts, wherein these contacts are all interchangeable brushes within the connector body and all interchangeable prongs within the cap. This allows a three or four cavity connector to be used with a two pole set as well as with a three pole set of contacts, without permitting any mismating of

poles as would occur with even spacing. This mating guard may be still improved by a new locking bolt that aligns the bases before mating. After mating the bolt secures the bases against accidental separation. The proposed use of a single type base mold, brush and prong represents the utmost in standardization of parts.

3,699,500
FUSE HOLDER ASSEMBLY

John J. Borzoni, 972 Third Ave., Des Plaines, Ill.; Edward A. Swichard, 3231 North Ellen Dr., Arlington Heights, Ill., and John A. Burek, Jr., 223 No. Warrington Rd., Des Plaines, Ill.

Filed Dec. 15, 1970, Ser. No. 98,230
Claims priority, application Germany, Dec. 19, 1969, P 19 63 648.7
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R 3 Claims

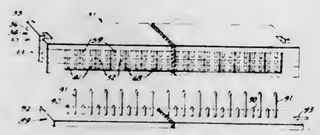


A fuse holder assembly comprising a box-like receptacle and a box-like fuse carrying cover member or insulating hood slidably telescoping over the open front end of the receptacle. The receptacle has a pair of laterally spaced apart contact clips adapted to engage the longitudinally spaced terminal portions of an elongated fuse removably carried by transversely flexible fuse retainer means in the fuse carrying cover member when the cover member is fully mounted on the receptacle. The fuse retaining means in the cover member holds the fuse more securely than the contact clips so removal of the cover member from the receptacle will pull the fuse from the contact clips.

3,699,501
CONDUCTIVE PROBE ASSEMBLY AND METHOD OF USING

Dennis J. Enright, St. Paul; Richard D. Kahabka, Burnsville, and Donald F. Miller, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 823,598, May 12, 1969, abandoned. This application Nov. 23, 1970, Ser. No. 91,780
Int. Cl. H01r *11/18*
U.S. Cl. 339—108 TP 1 Claim

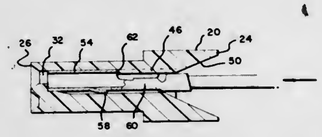


A conductive probe assembly useful in testing and, in modified form, in protecting a communications cable containing modular splice assemblies wherein each module is multiperforate to provide access to each inner contact element.

3,699,502
ELECTRICAL CONNECTOR HAVING IMPROVED CONTACT RETENTION MEANS

Clyde Thomas Carter, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 11, 1971, Ser. No. 105,208
Int. Cl. H01r *13/42, 23/10*
U.S. Cl. 339—176 M 4 Claims

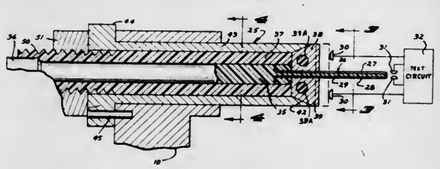


Electrical connector comprises insulating housing having contact receiving cavities extending therethrough. Each cavity has a rearwardly facing shoulder adjacent to the mating face of the housing and a forwardly facing shoulder adjacent to its rearward face of the housing these shoulders being on opposite sides of the cavity. An electrical contact terminal is located in each cavity and has a spring means thereon which is effective between the terminal and the side of the cavity on which the rearwardly facing shoulder is located so that the terminal is resiliently biased against the opposite side of the cavity. Terminal is thereby retained against forward movement by the rearwardly facing shoulder and against rearward movement by the forwardly facing shoulder. Removal of contact from the cavity is accomplished by inserting a thin tool into the contact, moving it laterally away from the side of the cavity on which the forwardly facing shoulder is located, and pulling the conductor to which the contact is secured.

3,699,503
PROBE CONSTRUCTION

Gunther Schaaf, Fridley, and Nathan R. Smith, Minneapolis, both of Minn., assignors to Ramsey Engineering Company, St. Paul, Minn.

Filed March 2, 1971, Ser. No. 120,213
Int. Cl. H01r *13/50*
U.S. Cl. 339—176 P 15 Claims



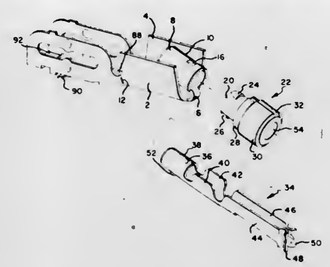
A test probe for use in machines for testing magnetic cores. The probe is clamped in chuck jaws which are used for making contact with the test circuit and which keep the total indicated run out of the probe within acceptable limits even when very small cores are being treated.

3,699,504
OPEN BARREL COAXIAL CABLE TERMINAL

John Henry Huber, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 17, 1971, Ser. No. 116,056
Int. Cl. H01r *11/08*
U.S. Cl. 339—177 R 5 Claims

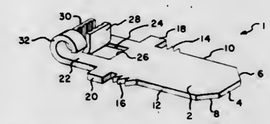
Method and apparatus for providing a coaxial cable terminal, wherein, a sleeve of dielectric material supports a coaxial cable center conductor in electrically isolated relationship with respect to a conducting sleeve. The outer conducting shield of the coaxial cable is terminated to the conducting sleeve and the center conductor of the cable is electrically connected to a terminal externally of both the conducting sleeve and the dielectric sleeve. Ears extending from the conducting sleeve are adapted for forming a crimped open barrel which encircles and retains the outer conducting shield electrically to the conducting sleeve.



3,699,505
STAKED TAB TERMINAL

Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed March 11, 1971, Ser. No. 123,318
Int. Cl. H01r *9/08*
U.S. Cl. 339—221 R 5 Claims

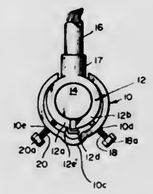


An electrical terminal in the form of a tab for mounting within a substrate and provided with serrations preventing removal of the terminal from the substrate. The terminal is further provided with a hilt for limiting insertion of the terminal. The shank of the terminal is provided with a wire barrel and an insulation support, with an aperture defined generally centrally of the terminal longitudinal axis for receiving an insertion tool. The aperture together with the hilt cooperate to align and retain the terminal in registration on the insertion tool.

3,699,506
CLAMP FOR VEHICLE STORAGE BATTERY SPRING TYPE CABLE TERMINAL

Jesse R. Hollins, One Chester Drive, Great Neck, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,352
Int. Cl. H01r *11/26*
U.S. Cl. 339—237 10 Claims

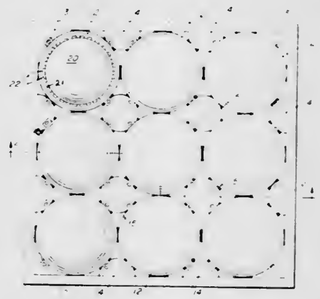


A clamp for securely locking a spring type battery cable terminal to a battery post. The clamp is bail shaped and stiff and has two ends which are turned inwardly. A concave section is located on a portion of the clamp symmetrically between the ends thereof to accommodate the manipulating tabs of the cable terminal. Two tapped openings approximately opposed to the ends of the clamp and which are symmetrically positioned with respect to the concave portion extend through the clamp and screws are threaded therethrough. In use the clamp is placed over a spring type battery cable terminal which is in engagement with a battery post. The screws are rotated in their respective openings until they tightly press against the spring legs of the terminal. As a consequence of this the ends of the clamp are urged against spaced points of the terminal remote from the screws and the terminal thereby is held in tight contact with the battery post. In another embodiment an inwardly projecting nub is used in place of one of the openings and the associated screw.

3,699,507
BAFFLE STRUCTURE FOR UNDERWATER TRANSDUCER ARRAY

Frank Massa, Cohasset, Mass., assignor to Massa Division Dynamics Corporation of America, Hingham, Mass.

Filed Aug. 5, 1970, Ser. No. 61,198
Int. Cl. G01v *1/00*
U.S. Cl. 340—8 S 8 Claims

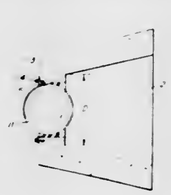


A frame supports a plurality of spherical transducers arranged in an array which combines sonic energy from the transducers into a beam pattern. The interstices between the transducers are filled with sealed capsules which increase stiffness and impedance to the passage of sound without greatly increasing the weight of the array.

3,699,508
MEANS FOR INCREASING THE ACOUSTIC POWER OUTPUT OF UNDERWATER TRANSDUCERS

Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

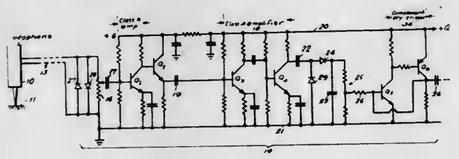
Filed Aug. 5, 1970, Ser. No. 61,199
Int. Cl. G01v *1/00*
U.S. Cl. 340—8 12 Claims

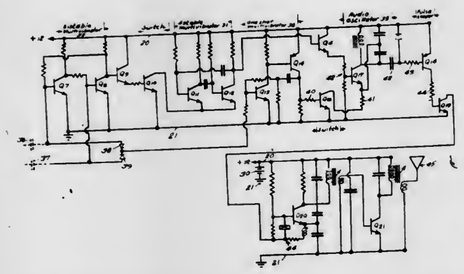


An underwater transducer is force limited and mounted in a

baffle structure which presents less than a 100 percent rho-c loading. By so reducing the radiation resistance of the acoustic impedance of the transmission medium, the acoustic output from the transducer can be increased.

3,699,509
SEISMIC SYSTEM FOR REAL-TIME REPORTING
Kenneth A. Hirschberg, Saratoga, Calif., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 21, 1969, Ser. No. 868,142The portion of the term of this patent subsequent to Nov. 25, 1986, has been disclaimed.
Int. Cl. G01v *1/16*
U.S. Cl. 340—15 **5 Claims**

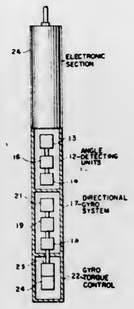




A seismic system for real-time directional reporting for providing radio signals indicating the direction and location of traffic along a path wherein two geophones positioned adjacent said path and spaced from each other are each connected to separate channels each of which includes amplifier means coupled to an integrator capacitor which in turn is coupled to a trigger circuit whereby the signals developed by the geophone are converted to a sharp trigger pulse. The output of each channel is coupled through a diode to a one-shot multivibrator whose output is coupled to a transistor switch in series with the emitter circuit of a transistor audio frequency oscillator and power supply whereby when a trigger pulse from either channel is applied to the one-shot multivibrator the audio frequency oscillator is activated for the period of the one-shot multivibrator. The trigger pulses of the channels are also connected to the inputs of a flip-flop which is set by one channel and reset by the other. The output of the flip-flop is coupled to a transistor switch in series with an astable multivibrator and the power supply whereby said astable multivibrator may be activated when the transistor switch is enabled by the flip-flop.

3,699,510
BOREHOLE DATA TRANSMISSION SYSTEM
James M. Lindsey, Houston, Tex., assignor to Sperry Sun Well Surveying Company, Sugar Land, Tex.
Filed Nov. 21, 1969, Ser. No. 879,011
Int. Cl. G01v *1/22*
U.S. Cl. 340—18 CM **35 Claims**

The particular embodiment described herein as illustrative of one form of the invention utilizes an instrument system for detecting the angular position and directional orientation of a housing within a wellbore and for generating signals indicative of such information. These signals are stored in binary form



and then coded for transmission to the surface over a conductor which also carries the power supply for the system. At the surface the signals are decoded to provide data indicative of downhole information.

3,699,511
DISPLAY RESEARCH COLLISION WARNING SYSTEM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Renwick E. Curry, 53 Tower Road, Hingham, Mass.; Laurence R. Young, 141 Grant Avenue, Newton, Mass.; Thomas Basil Smith, III, 1406 Westgate Apartment, M. I. T., Cambridge, Mass., and John Rawson, 360 Emerson Road, Hatfield, Hingham, Mass.
Filed June 25, 1971, Ser. No. 156,724
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 NA **6 Claims**

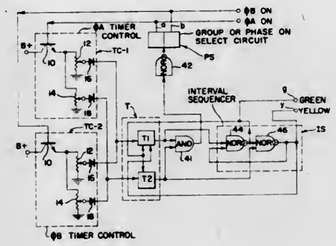


A head-up display for a PWI system is disclosed. The display consists of a plurality of strips of an electroluminescent tape secured above and below the windshield and above side windows of a cockpit. The strips are associated with elevation range and azimuth range sectors which are viewable by the pilot through the windshield or windows, and are located in the directions of these sectors. When a target is detected in any of the sectors by a corresponding detector the strip or strips associated with the particular sector are illuminated. The pilot's peripheral vision is sufficient to notice their illumination thereby enabling him to directly view the particular sector without reference to a display on the instrument panel.

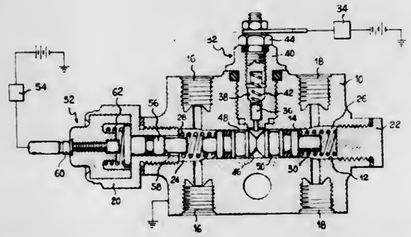
3,699,512
APPARATUS FOR ALLOCATING AND TIMING A PLURALITY OF LOAD INTERVALS
Frank W. Hill, Moline, Ill.; Peter G. Bartlett, and Larry K. Clark, both of Davenport, Iowa, assignors to E. W. Bliss Company, Canton, Ohio
Filed Aug. 20, 1968, Ser. No. 812,480
Int. Cl. G08g *1/085*
U.S. Cl. 340—41 **20 Claims**

Apparatus is disclosed herein for sequentially allocating and timing a plurality of intervals during which different loads are energized within each of a plurality of groups of such intervals.

This apparatus includes a common timer circuit associated with all of the groups and having a first timing means for timing a first interval and then providing a first interval termination signal, and second timing means for timing a second interval and then providing a second interval termination signal. The apparatus also includes a common interval sequencer circuit associated with all of the groups and having first actuator means for actuating the second timing means and second actuator means for actuating the first timing means.



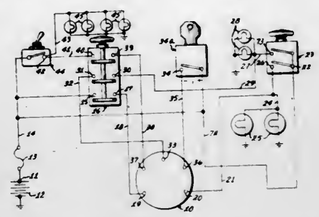
3,699,513
WARNING DEVICE FOR A SPLIT FLUID PRESSURE BRAKING SYSTEM
Philippe Nicodeme, Louveciennes, France, assignor to The Bendix Corporation, South Bend, Ind.
Filed July 15, 1971, Ser. No. 162,772
Int. Cl. B60q *1/00*; H01h *35/38*
U.S. Cl. 340—52 C **2 Claims**



A warning device for a split fluid pressure braking system, comprising a first single switch controlling the activation of stop lights of a vehicle upon build-up of pressure in at least one of the sub-system, and a second single switch controlling the activation of a warning signal device upon a differential of pressure between the two braking sub-systems.

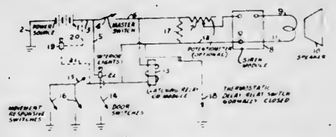
3,699,514
AUTOMATIC CONTROL OF HEADLIGHTS, TAILLIGHTS, AND WARNING FLASHER LIGHTS
Walter R. Stevens, 2294-A Pacific Avenue, Costa Mesa, Calif.
Continuation-in-part of Ser. No. 845,131, July 28, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 189,963
Int. Cl. B60q *1/04*, *1/52*
U.S. Cl. 340—60 **2 Claims**

An automatic switch actuated from engine oil pressure which when turned on, will turn on the headlights only after the engine has been started, and will turn them off after the engine has stopped; and should the engine stall, warning



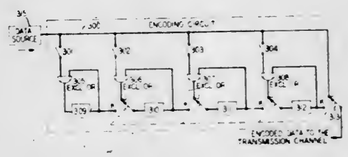
flasher lights will turn on automatically, and will continue to operate until the engine is restarted and the headlights turn on.

3,699,515
MOVEMENT RESPONSIVE ALARM SYSTEM FOR A VEHICLE
Howard James Barnett, 4433 North Stanton, Apt. 412, El Paso, Tex.
Filed Jan. 4, 1971, Ser. No. 103,698
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 **5 Claims**



An automatic alarm system which sounds an upward screaming siren produced by an electronic siren module and a speaker including movement responsive switches for activating the alarm, a latching relay to hold the siren on and a thermostatic delay relay to automatically shut it off after a predetermined length of time and then reset it.

3,699,516
FORWARD-ACTING ERROR CONTROL SYSTEM
Paul Mecklenburg, Fort Lee, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 18, 1971, Ser. No. 107,316
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **18 Claims**

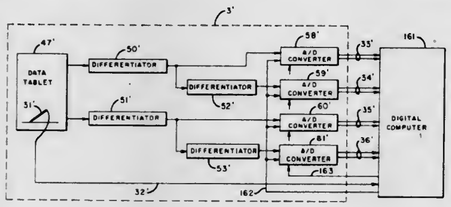


Apparatus for providing error detection and correction in data transmission systems includes a plurality of exclusive-OR circuits and delay registers. Switches responsive to control circuitry selectively apply data bits, as they are generated, to the exclusive-OR circuits and delay registers which, in turn, generate a number of partially completed check bits. As the check bits are completed in the encoder, they are inserted in the data stream. Check bits similarly generated in a decoder are, compared with the received check bits and the results of this comparison used to locate errors in the data stream. Error correction circuitry then corrects the indicated errors.

3,699,517
HANDWRITING AUTHENTICATION TECHNIQUE

James W. Dyche, Cupertino, Calif., assignor to Sylvania Electric Products Inc.

Continuation-in-part of Ser. No. 53,446, July 9, 1970, abandoned. This application Sept. 24, 1970, Ser. No. 75,135
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3 Q 19 Claims

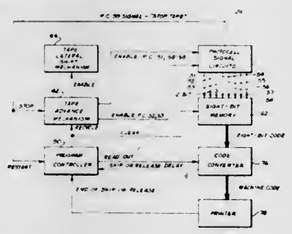


Apparatus and method for measuring and computing velocity and acceleration of a pen point and the pen-paper contacts during writing of a signature and comparing derived data with reference data obtained from several prior signatures to determine whether the real time and reference signatures were made by the same person. The variations $x(t)$ and $y(t)$ of pen point coordinates with time and pen-paper contact intervals are obtained from a graphic tablet. Differentiator circuit means derive x and y velocity and acceleration components which are converted from analog to digital form for processing in a digital moment computer. Contact interval and end of signature computers receive pen point contact signals and compute the total time duration of the signature as well as the time duration of each of the first five pen-paper contact intervals normalized to the duration of the entire signature. The outputs of the moment, contact interval, and end of signature computers are sixteen components of a real time signature vector. A reference signature vector comprised of the mean values of sixteen similar components is predetermined from a plurality of prior true signatures, the deviation of each of those mean component values from the corresponding component value in a real time signature is compared with a variation limit value for that component to determine a correlation, and an authentication decision is made based on a minimum number of such correlations.

3,699,518
METHOD AND MACHINE FOR READING HANDWRITTEN CURSIVE CHARACTERS

Maurice Leighton Greenough, and Milton L. Kuder, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of Commerce

Filed Jan. 18, 1971, Ser. No. 107,324
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 Z 2 Claims

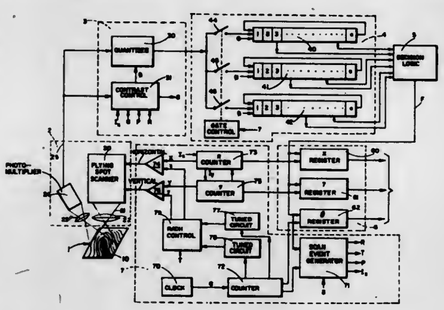


A machine for reading alphanumeric characters handwritten within preprinted guides. The guides position eight strokes (leading strokes, body strokes, head strokes, etc.) used in forming cursive characters. The machine scans the guides in sequence, producing for each guide an eight-bit code corresponding to the strokes formed in it. The eight-bit codes are converted to standard machine codes. In a detailed embodiment, the guides are serially printed on a paper tape and the machine includes a tape advance mechanism, a tape lateral shift mechanism, a light for illuminating the guide being scanned, and an array of photocells for producing the eight-bit code as the tape is advanced and shifted over the photocells. The machine also includes a program controller, memory, and code converter.

3,699,519
FINGERPRINT ANALYSIS DEVICE

Mark E. Campbell, Whittier, Calif., assignor to North American Rockwell Corporation

Filed April 30, 1971, Ser. No. 139,109
Int. Cl. G06r 9/12
U.S. Cl. 340—146.3 E 10 Claims



A fingerprint is observed, a small portion at a time, using a flying spot scanner, whose spot travels along a predetermined path at each position to provide an electrical analog signal indicative of the nature of the fingerprint at each position. The analog signal is converted into digital form and temporarily stored in a memory having a plurality of storage elements. The signal stored in the memory is constantly circulated through each of the storage elements to provide for detection of minutiae (i.e. ridge endings, bifurcations, etc.) regardless of their angular orientation. Detecting the occurrence of specified minutia is achieved by sensing the states of selected ones of the storage elements. A method is provided to utilize a finger from which the fingerprint is directly analyzed. Other means are provided to enable the fingerprint pattern to be observed directly and to make a copy of the fingerprint photographically and a combination of optical-electronic and electrostatic methods.

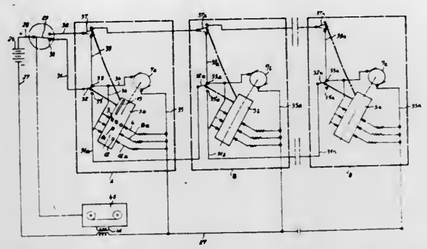
3,699,520
METHOD FOR REMOTE READING SUCCESSIVE DATA OF VARIOUS APPARATUSES AND DEVICE FOR OPERATING THE SAME

Roland Francois Edouard Frayssinoux, Paris, France, assignor to Compagnie Des Comptenes, Paris, France

Filed April 10, 1969, Ser. No. 815,169
Claims priority, application France, April 19, 1968, 68148750
Int. Cl. H04q 9/00
U.S. Cl. 340—150 23 Claims

Apparatus for remote reading successive data of various devices wherein a common line connected to a recorder joins the data sources of sub-units to successively transfer data to the common line, a signal being transmitted at the end of each reading to switch to the next sub-unit so that all the data are successively recorded.

Each sub-unit comprises registers with means to register the data, a motor for driving a member analyzing the registering means, both of them being connected to a common line and

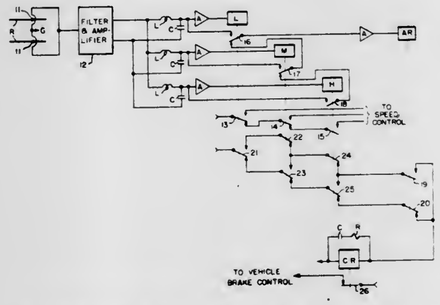


driving the switching elements, a transfer line for connecting a succeeding register after a work cycle and a recorder being connected to the common line to record the successive data.

3,699,521
DECODING SYSTEM HAVING PLURAL FREQUENCY CHANNELS

J. Donald Hughson, Macedon, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,209
Int. Cl. A04q 1/45
U.S. Cl. 340—171 A 5 Claims



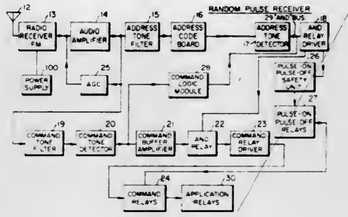
A vehicle control decoding system has been provided having a plurality of filters tuned to detect code rates for selectively actuating output relays. The decoding system includes first checking means controlled by the outputs of the filters for delivering an output in accordance with only the most restrictive code rate output of the filters and a second checking means governed by the output of the first checking means and contacts of the relays for manifesting that only one of the relays is energized at a time.

3,699,522
LOCOMOTIVE RADIO CONTROL SYSTEM WITH ADDRESS AND COMMAND SIGNALS

Robert B. Haner, Jr., Scottsville, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 20, 1966, Ser. No. 580,825
Int. Cl. H04q 11/04
U.S. Cl. 340—171 R 17 Claims

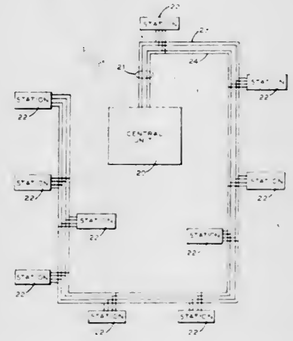
A communication system for controlling a remotely located device including a transmitter and receiver for sending and receiving address and command instruction signals with such device. The communication system further includes circuitry for detecting and determining the propriety of the address and command instruction signals. Gating circuitry is provided to conduct proper address and command instruction signals and additional circuitry is provided to produce a predetermined command instruction after improper instruction signals have been continuously received for a predetermined interval of time.



3,699,523
METHOD AND APPARATUS FOR ADDRESSING DIFFERENT DATA POINTS FROM A CENTRAL STATION

Guy Percher, Fresnes, France, assignor to Societe D'Instrumentation Schlumberger, Paris, France

Filed April 28, 1970, Ser. No. 32,686
Claims priority, application France, April 29, 1969, 6913553
Int. Cl. G08c 19/30
U.S. Cl. 340—172.5 14 Claims

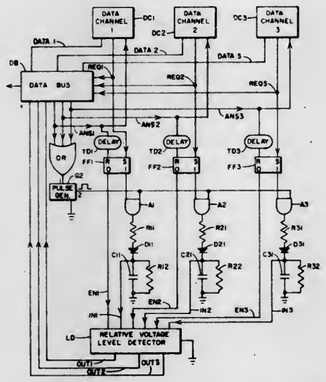


Disclosed is a method of and system for addressing plural data points variously located throughout an industrial installation or process from a central unit. The data points are grouped in stations which discriminate between a plurality of signal translating channels, for example, seven. The selection of any given data point is performed in two phases: addressing or selecting a station by transmitting from the central unit a combination of, for example, four channel signals selected from the exemplary seven channels, followed by addressing or selecting the given point by transmitting a combination of a lesser number, for example, three channel signals also selected from the exemplary seven channels. The data from the addressed point may be transmitted to the central unit either in digital form or as a frequency-modulated signal and/or the addressed point may serve as a control for a process. Both the central unit and the data points may be transceivers and communications therebetween may be transmitted by various suitable media.

3,699,524
ADAPTIVE DATA PRIORITY GENERATOR

Gayle R. Norberg, Minneapolis, Minn., assignor to Control Data Corporation, South Minneapolis, Minn.

Filed Aug. 10, 1970, Ser. No. 62,413
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 18 Claims

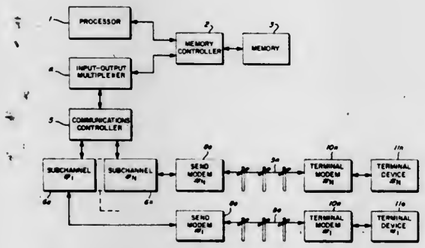


The invention comprises apparatus for assigning priority among several data channels being multiplexed into one data bus. Priority is based partly on recent usage history, and is increased for those channels having frequent recent use. Additionally, those channels which have requested, but have not received service are given continually increasing priority until service is granted.

3,699,525
USE OF CONTROL WORDS TO CHANGE CONFIGURATION AND OPERATING MODE OF A DATA COMMUNICATION SYSTEM

Aldis Klavins, Bridgeport, Conn., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Nov. 27, 1970, Ser. No. 93,229
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 11 Claims

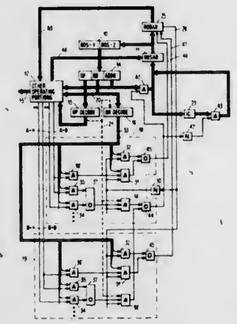


A data communication system comprising a processor, a memory, a communications controller and a plurality of terminal devices utilizes control words to select the configuration and to select the operating mode of the communication system. This system uses peripheral control words stored in memory to select the number of bits in message characters which may be used in the data communication system, to select the baud rate of the message which is received and to select a synchronous or asynchronous mode of transmission.

3,699,526
PROGRAM SELECTION BASED UPON INTRINSIC CHARACTERISTICS OF AN INSTRUCTION STREAM

James L. Iskiyan; James M. Waddell, both of Boulder, and Donald L. Way, Loveland, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 26, 1971, Ser. No. 128,424
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 14 Claims

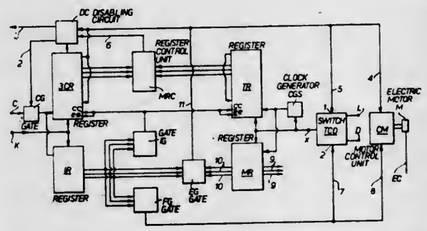


A programmable machine selects from among a plurality of branches on condition based upon intrinsic characteristics of the instruction stream in the machine. In a preferred form of the invention, an explicitly addressed machine selects from among a plurality of sets of branches on condition based upon the control memory address from which the branch instruction was fetched, such control memory address being an intrinsic characteristic. Such intrinsic characteristics may selectively include control memory addresses of other instruction words fetched from memory. An instruction decoder has plural decoder sections selectable in accordance with such intrinsic characteristics enabling one instruction word to be variably decoded in accordance with instruction stream characteristics.

3,699,527
DATA STORE EQUIPMENTS

Francis Duerden, Stortford, England, assignor to The Marconi Company Limited, London, England

Filed June 28, 1971, Ser. No. 157,112
Claims priority, application Great Britain, July 16, 1970, 34,480/70
Int. Cl. G11b 13/00; G06f 3/06
U.S. Cl. 340—172.5 13 Claims

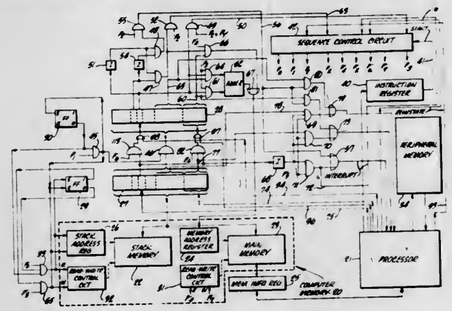


Stored data signals, identified by label signals recorded a little in advance of the data signals, are searched for at high tape speed and played off at low tape speed, identification of the label signals automatically producing the tape speed change and setting the equipment to play off the data signals. A terminating signal recorded after the data signals stops the tape and terminates the sequence. Additional apparatus facilitates the recording of data and label signals.

3,699,528
ADDRESS MANIPULATION CIRCUITRY FOR A DIGITAL COMPUTER

Carl B. Carlson, Santa Barbara; William M. McKeeman, Santa Cruz, and William C. Price, Pasadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 670,304, Sept. 25, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 11,646
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 39 Claims

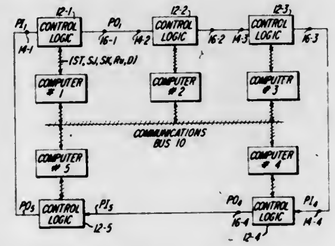


The overlay of information from the computer memory to a peripheral memory and its return to the computer memory are facilitated by a unique format for original and copy descriptors. The copy descriptors have a first field that designates either a base address or the location of its original, and a second field that designates an index. The original descriptors have a field that designates the base address. The copy descriptors are automatically generated from their originals. When a copy descriptor is retrieved, the first and second fields are added to form the absolute address if the first field is the base address. If the first field is an original descriptor location, the base address of the original descriptor and the index of the copy descriptor are added to form the absolute address. Upon overlay, the copy descriptors to be updated are sensed by comparing their base value with the base value of the array to be overlaid. They are updated by substituting the original descriptor location for the base address and the original descriptors are updated by substituting the peripheral memory address for the base address. Upon return of the overlaid information to the computer memory, only the original descriptor must be updated.

3,699,529
COMMUNICATION AMONG COMPUTERS

Billy Wesley Beyers, Greenfield, and Larry Lee Roy Tretter, Indianapolis, both of Ind., assignors to RCA Corporation

Filed Jan. 7, 1971, Ser. No. 104,626
Int. Cl. G06f 15/16; G05b 23/02
U.S. Cl. 340—172.5 3 Claims

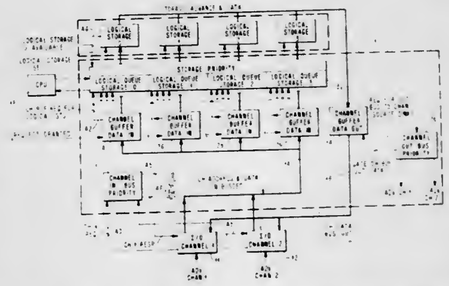


Multiple computer system in which a control signal manifestation is circulated by a single control line from one computer to the next to indicate that the computer receiving the control signal manifestation may have available to it for communication with another computer a common communications channel. If, upon receipt of a control signal manifestation, a computer desires to transmit via the channel, it "captures" the control signal manifestation. If not, or after a computer has completed its communication, it returns the control signal manifestation to the single control line for passage to the next computer.

3,699,530
INPUT/OUTPUT SYSTEM WITH DEDICATED CHANNEL BUFFERING

Robert S. Capowski, Wappingers Falls; Robert M. Unterberger, Poughkeepsie, both of N.Y., and Larry R. Horsman, Louisville, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,577
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 9 Claims



A storage control unit (SCU) for a data processing system which buffers data fetch and data store requests from input/output channels for access to low-speed high-capacity interleaved logical storage units. Multiple dedicated buffers are provided for each channel in the storage control unit (SCU) to insure that all channels have an individual receptacle to transfer data to which cannot be made unavailable due to transfers by other channels. Priority resolution of requests from channels controls the use of the in bus from the channel to the SCU independently of subsequent priority resolution for use of the main storage. Once a channel transfers its storage address and data into its assigned SCU buffer, that buffer, based on the storage address contained within it, enters storage priority for the particular logical storage unit desired. In this manner, the single queue of channel requests is rearranged into four independent request queues based on logical storage addresses.

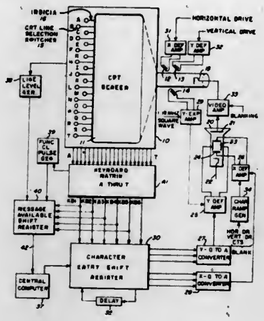
3,699,531
DIGITAL DATA SELECTION AND DISPLAY SYSTEM

Richard F. Heimann, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

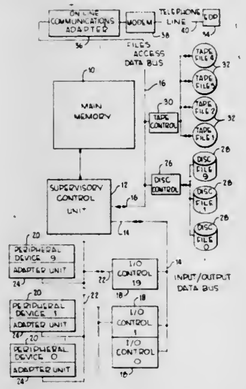
Filed March 13, 1970, Ser. No. 19,371
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 17 Claims

A real-time communications system in which a dynamic memory recirculates character address information for an entire frame of information for display in a line raster on a cathode ray tube and in which a plurality of selection switches

aligned with the individual lines of the raster permit an operator to select new frames of character information from a central memory for display and recirculation in accordance with the character information contained in the individual line selected.

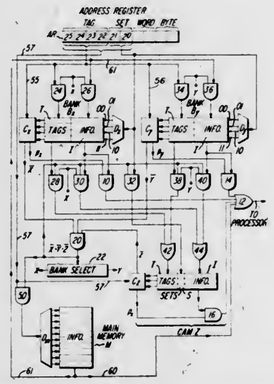


3,699,532
MULTIPROGRAMMING CONTROL FOR A DATA HANDLING SYSTEM
Harry G. Schaffer, Danville; Dan A. Nelson, Moraga, and Eleuthere Poumakis, Danville, all of Calif., assignors to The Singer Company, New York, N.Y.
Filed April 27, 1970, Ser. No. 32,243
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **14 Claims**



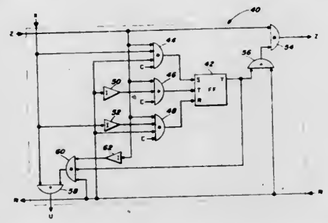
A data handling system including a plurality of groups of data originating and/or receiving devices operable asynchronously and independently with respect to each other, each group of such devices being coupled with an associated data transmission controller by means of a common data channel for buffering one unit (character) of data and providing certain basic data transmission controls for transmission of a character between an associated device and a common input/output data channel extending between the controllers and a supervisory control unit which is coupled with a main memory unit and a second data transmission channel. The second data transmission channel provides for transmission of characters between the supervisory control unit, the main memory unit and a data bank comprising a plurality of data storage or secondary data handling devices. The supervisory control unit provides the necessary elementary functional components to handle and control transmission of data between the data input/output devices and, the main memory and the data bank. The main memory unit is partitioned into a plurality of a section by means of adjustable hardware connected at each data transmission controller so as to permit only the data originating/receiving devices associated with it to communicate with an associated particular partitioned section of memory and an additional section of the memory is provided that is accessible to all partitions of the main memory unit. The supervisory control unit provides for a program stored in each particular section of the main memory unit to be executed for a predetermined period of time and then upon completion of successful branch operation in the program for a switch to performance of the program in the next section in a continuous round robbin for all sections manner. When a program instruction in one section of the main memory unit dictates performance of input/output operation a switch is made to another section but processing is suspended until the input/output operation is completed and then processing is commenced of the program instructions in the next section of the main memory unit. The supervisory control unit also includes functional components to perform certain basic arithmetic operations on the various data such as addition, subtraction, etc.

3,699,533
MEMORY SYSTEM INCLUDING BUFFER MEMORIES
Gregory Michael Hunter, Princeton, N.J., assignor to RCA Corporation
Filed Oct. 29, 1970, Ser. No. 85,190
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 **8 Claims**



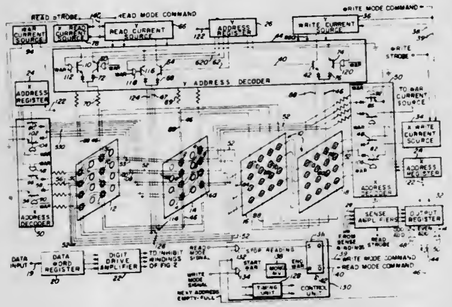
A memory system is disclosed which includes a large main memory having information block storage locations addressable by an address consisting of set and tag bits, two buffer memory banks each having storage locations addressable by the set bits for the storage of tags and associated information blocks, and a small content-addressed memory for the storage of associated tags, sets, and information blocks. Initially, all information blocks are in the main memory, and accessing an information block results in a transfer of the block with its tag to one or the other of the buffer memories at a location determined by the set bits. Later, when another information block belonging to the same set is accessed, it is stored in the other buffer memory bank. Subsequently, when a third information block of the same set is accessed, one of the information blocks is displaced from the buffer memory bank to the content-addressed memory where it is stored with its tag and set bits. The system operates so that there is a high probability that a desired information block will be present and rapidly accessible in one of the buffer memory banks or the content-addressed memory.

3,699,534
CELLULAR ARITHMETIC ARRAY
William H. Kautz, Woodside, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 15, 1970, Ser. No. 98,245
Int. Cl. G11c 9/00, 19/00; G06f 13/00
U.S. Cl. 340—172.5 **2 Claims**
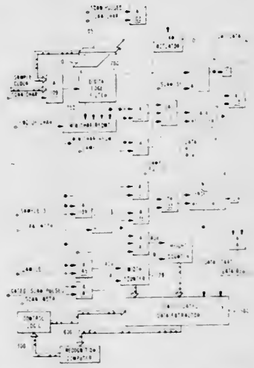


A cellular arithmetic array for use in a multiprocessor having the facility provided to either read-out, write-in, or increment by one the binary word stored in each row of the array during a single clock cycle.

3,699,535
MEMORY LOOK-AHEAD CONNECTION ARRANGEMENT FOR WRITING INTO AN UNOCCUPIED ADDRESS AND PREVENTION OF READING OUT FROM AN EMPTY ADDRESS
Stanley Frank Klein, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Feb. 1, 1971, Ser. No. 111,427
Int. Cl. G11c 11/02
U.S. Cl. 340—172.5 **17 Claims**



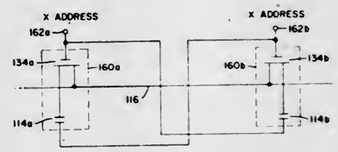
A memory interconnection or wiring arrangement which prevents a valid word in the memory from being destroyed by overwriting and also prevents an empty or obsolete memory word from being read out, thereby conserving both time and power. The arrangement involves the employment of one or two additional memory planes or additional bistable storage elements and circuitry which are used to store tag words which indicate whether a forthcoming memory address contains valid or obsolete information. In this arrangement, a tag or status indication signal is written in the additional memory elements to indicate that a word has been written into the current address location. Simultaneously, the state of a second tag or status indicating signal is read or detected to determine whether the forthcoming address location is empty or contains valid information. The detection of this tag during read out is used to determine whether the reading or writing process should continue, stop or search for another address location. The arrangement can be used with core memories, solid state memories, plated wire and thin film memories or any other device in which the interconnection or wiring between the main memory and additional storage and electronic elements can be controlled.

3,699,536
LOW COST RASTER SCANNED DATA CONSOLIDATION
David C. Roberts, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 28, 1971, Ser. No. 157,564
Int. Cl. G06k 9/06
U.S. Cl. 340—172.5 **8 Claims**



Data representing a character received from a raster scanner is simultaneously stored in a serial memory and presented to character dimension and location determining logic. After all of the data representing the character has been stored, the character dimension and location information is converted to an address for retrieving a data consolidation mask from a memory containing a plurality of masks. The data consolidation mask is stored in a second serial memory. The first serial memory and the second serial memory are recycled in synchronism to allow the contents of each to sequentially be presented to logic gates which compare the data in the first memory with the mask in the second memory to generate consolidated data representing the character.

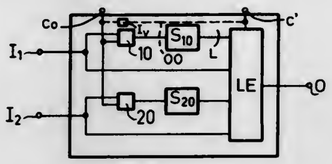
3,699,537
SINGLE-RAIL MOSFET MEMORY WITH CAPACITIVE STORAGE
Sven E. Wahlstrom, Palo Alto, Calif., assignor to Shell Oil Company, New York, N.Y.
Continuation-in-part of Ser. No. 825,257, May 16, 1969, Pat. No. 3,533,089. This application Sept. 8, 1970, Ser. No. 70,353
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R **2 Claims**



In connection with a one-device-per-bit capacitive MOSFET memory array, various topologies are disclosed for developing optimum memory storage capacitances between isolated P-regions and the fixed-potential substrate or a fixed-potential line. In particular, a fixed-potential line can be

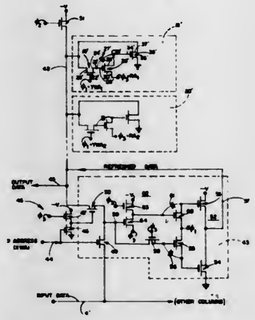
dispensed with, while retaining the improved capacitance associated therewith, by arranging the cells in pairs and cross-coupling them to one another. Particular clocking sequences and switching arrangements apposite to the cell topologies involved are also disclosed.

3,699,538
LOGICAL CIRCUIT
Hendrik Arie Van Essen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 17, 1970, Ser. No. 73,156
Claims priority, application Netherlands, Sept. 20, 1969, 6914310
Int. Cl. G11c *11/36*
U.S. Cl. 340—173 R **6 Claims**



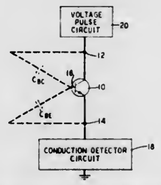
Logical circuit in an envelope having a given number of input terminals, the number of applied input signals exceeding the number of input terminals. Of the input signals applied in order of succession to an input terminal an earlier signal is stored via a gate controlled by a control-signal in a storage element so that this signal in common with a signal applied later to said input terminal becomes available at a group of logical elements of the logical circuit, in which group the signals can be processed simultaneously (FIG. 1).

3,699,539
BOOTSTRAPPED INVERTER MEMORY CELL
John R. Spence, Villa Park, Calif., assignor to North American Rockwell
Filed Dec. 16, 1970, Ser. No. 98,790
Int. Cl. G11c *11/40*, *11/24*
U.S. Cl. 340—173 R **13 Claims**



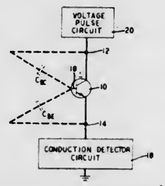
A data storage cell in a matrix of storage cells is connected to a data input/output line (or between data input/output lines) for a plurality of the data cells. During a recurring write interval, a write field effect transistor is turned on for applying a voltage potential representing a logic state to a storage capacitor from the input/output line. During a recurring precharge interval, the data line is restored to a first voltage level. During a recurring read interval, a bootstrapped field effect transistor driver is turned on (or not) by the voltage stored on the capacitor for driving a read transistor. The bootstrapped drive provides a relatively high drive voltage on the gate electrode of the read field effect transistor when the bootstrapped driver is turned on. The stored voltage (data) is inverted in the storage cell by the conduction or nonconduction of the read field effect transistor and is provided as an output on the data line. The inverted data is reinverted and rewritten into the storage cell during the recurring write interval of a data refresh cycle following the read/write cycle. If new data is to be stored, the old data is blocked and the new data is written into the data cell.

3,699,540
TWO-TERMINAL TRANSISTOR MEMORY UTILIZING COLLECTOR-BASE AVALANCHE BREAKDOWN
Dennis Joseph Lynes, Madison, and Jerry Mar, Scotch Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 31, 1970, Ser. No. 103,169
Int. Cl. G11c *11/40*
U.S. Cl. 340—173R **16 Claims**



A semiconductor memory cell containing a single transistor having an uncontacted base is operated as a two-terminal device with a voltage pulse circuit coupled to the collector and a conduction detector coupled to the emitter. Bit information is written into the cell by setting the potential of the base to one of two values, which represent respectively a "1" and a "0." A "1" is written into the cell by applying a positive polarity voltage pulse to the collector of sufficient amplitude to bias the collector-base junction to avalanche breakdown and to forward-bias the emitter-base junction, thereby causing transistor conduction. To read out information previously stored in the cell and to write a "0" into the cell, a positive polarity voltage pulse is applied to the collector; the positive pulse is of insufficient amplitude to bias the collector-base junction to avalanche breakdown.

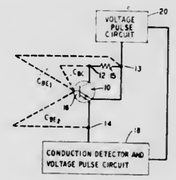
3,699,541
TWO-TERMINAL TRANSISTOR MEMORY UTILIZING EMITTER-BASE AVALANCHE BREAKDOWN
Dennis Joseph Lynes, Madison, and Jerry Mar, Scotch Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 31, 1970, Ser. No. 103,167
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **14 Claims**



A semiconductor memory cell containing a single transistor having an uncontacted base is operated as a two-terminal device with a voltage pulse circuit coupled to the collector and

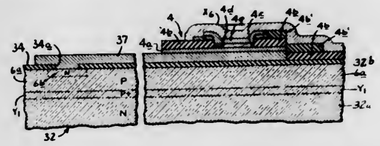
a conduction detector circuit coupled to the emitter. Bit information is written into the cell by setting the potential of the base to one of two values, which represent respectively a "1" and a "0." A "1" is written into the cell by applying a negative polarity voltage pulse to the collector of sufficient amplitude to forward bias the collector-base junction and to bias the emitter-base junction to avalanche breakdown. To read out information previously stored in the cell and to write a "0" into the cell, a positive going voltage pulse is applied to the collector.

3,699,542
TWO-TERMINAL TRANSISTOR MEMORY UTILIZING SATURATION OPERATION
Dennis Joseph Lynes, Madison, and Jerry Mar, Scotch Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 31, 1970, Ser. No. 103,166
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **12 Claims**



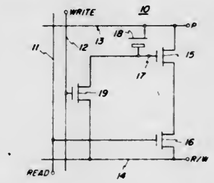
A semiconductor memory cell containing a dual emitter transistor having an uncontacted base is operated as a two-terminal device. A voltage pulse circuit connected to the first emitter, a conduction detector voltage pulse circuit is connected to the second emitter, and a resistor is connected between the first emitter and the collector. Bit information is written into the cell by setting the potential of the base of two values, which represent respectively a "1" and "0." A "1" is written into the cell by applying appropriate polarity and amplitude voltage pulses to the two emitters to bias the first emitter-base junction to avalanche breakdown and to forward bias the second emitter-base and collector-base junctions so as to cause the transistor to operate in saturation. To read out information previously stored in the cell and write a "0" into the cell, a positive going voltage pulse is applied by the voltage pulse circuit to the first emitter.

3,699,543
COMBINATION FILM DEPOSITED SWITCH UNIT AND INTEGRATED CIRCUITS
Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Continuation-in-part of Ser. Nos. 806,994, March 13, 1969, abandoned, and Ser. No. 773,013, Nov. 4, 1968, Pat. No. 3,629,863. This application Dec. 22, 1969, Ser. No. 887,076
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **31 Claims**



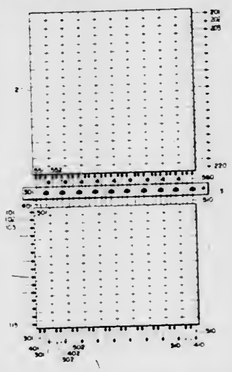
A semiconductor substrate, like a silicon chip having various doped regions forming circuit elements, has semiconductor switch-forming units deposited thereon. The integrated circuit semiconductor switch combination desirably may form a memory matrix where the substrate has spaced parallel, doped conductor-forming regions of a given conductivity type extending in spaced, generally parallel relation. Spaced parallel bands of conductive material are deposited on an insulating film on a face of the substrate and extend generally transversely of said spaced parallel conductor-forming regions of the substrate. A two terminal memory switch device is formed on the substrate adjacent each active cross-over point of the transversely extending conductors, each memory switch device including a deposited film of semiconductor memory material having spaced portions electrically coupled between the associated cross-over point.

3,699,544
THREE TRANSISTOR MEMORY CELL
Reuben E. Joynson, Scotia, and Joseph L. Mundy, Schenectady, both of N.Y., assignors to General Electric Company
Filed May 26, 1971, Ser. No. 146,969
Int. Cl. G11c *11/24*, *11/40*
U.S. Cl. 340—173 R **9 Claims**



A three transistor dynamic memory cell is disclosed utilizing a voltage controlled capacitor to enhance signal coupling in the cell. In addition, the refreshing operation is greatly enhanced due to the configuration of the cell; viz. refreshing is achieved without an inverting amplifier, several cells can be refreshed simultaneously, and refreshing can occur while other operations are performed by the same cell.

3,699,545
ADAPTABLE ASSOCIATIVE MEMORY SYSTEM
Werner Erich Kluge, Kanata, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Continuation-in-part of Ser. No. 117,591, Feb. 22, 1971, abandoned. This application Oct. 21, 1970, Ser. No. 191,260
Int. Cl. G11c *15/00*
U.S. Cl. 340—173 AM **25 Claims**



A rapid associative memory system has simultaneous inputs to many rows of an input matrix of identical subcircuits and

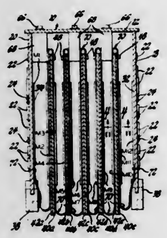
also multiple outputs connected to rows of an output matrix of another type of identical subcircuits, for simultaneously producing an output pattern. The matrix subcircuits each contain one or at most two bits of memory. The columns of the two matrices are 1-to-1 linked by circuits for quickly establishing, responding to, or erasing input-output associations. Through control circuits external to the matrix, association of a particular input pattern with a particular output pattern is accomplished by applying the output pattern to the output conductors of the output matrix during the presence of a selected input pattern. The system scans the columns of the matrices for an empty column before placing in the column memory the desired association of input and output patterns. Application of a null pattern to the output conductors during the presence of a selected input erases any previous association of that input pattern with a non-null output. The system is adapted to combine the latter step with writing in a new association for the selected input, in that case obviating the scanning operation. These changes can be made only when the system is switched from an operating to a training condition.

3,699,546

FLEXIBLE CABLE MEMORY ASSEMBLY

William E. McLean, Hales Corners, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1970, Ser. No. 93,139
Int. Cl. G11c *5/04*, *11/06*
U.S. Cl. 340—174 M **7 Claims**



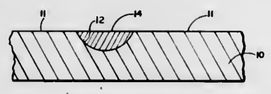
A flexible cable having top and bottom surfaces and top and bottom conductive layers embedded therebetween has affixed to the top surface thereof a plurality of core arrays having continuous drive conductors and separate sense and inhibit lines threaded therethrough to comprise sets of memory mats in a coincident current digital computer. Also affixed to the top surface of the cable and in the vicinity of different memory sets are respective electronic processing units which are terminated to the ends of the sense and inhibit lines threaded through the different mats. A memory conductor unique to each mat and comprised of paths in the top and bottom conductive layers and conductive through-holes therebetween communicates from an edge of the cable to the electronic units of each respective memory set. These memory conductors carry inhibit control signals to the respective electronic units during writing operations and sense signals from the electronic units during reading operations. Affixed to the bottom surface of the cable under each set of mats is a support plate, the bottom surface of which is mateable in heat transfer and supporting relationship with the bottom surface of an adjacent plate when the cable and plates are folded in an accordion-like manner. The edges of the alternate plates are then affixed in heat transfer and supporting relationship to encompassing structures.

3,699,547

MAGNETIC BUBBLE DOMAIN SYSTEM

John M. Owens, Newport Beach, and David M. Heinz, Orange, both of Calif., assignors to North American Rockwell Corporation

Filed March 12, 1971, Ser. No. 123,643
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **4 Claims**



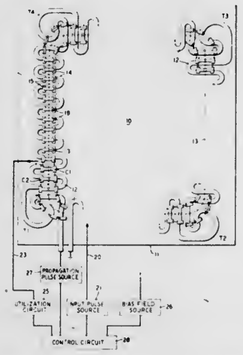
A magnetic bubble domain system having a strip or channel of film of magnetic bubble domain material associated with a supporting substrate is described. The surface of the strip of magnetic bubble domain material has a surface which is at substantially the same level as the surface of the adjacent material.

3,699,548

SINGLE WALL DOMAIN LATERAL DISPLACEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 6, 1971, Ser. No. 159,983
Int. Cl. G11c *11/14*, *9/00*
U.S. Cl. 340—174 TF **15 Claims**



The multistage rail arrangement known as the lateral displacement coding arrangement defines a pair of positions for a single wall domain in each stage of a closed loop channel. Turns in the path of a channel of this type are described which eliminate geometric distortions and consequently exhibit relatively high operating margins.

3,699,549

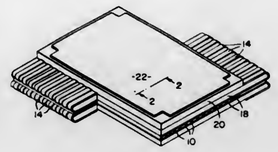
FILAMENTARY MAGNETIC MEMORY WITH ELECTROSTATIC SHIELDING

Thaddeus F. Bryzinski, West Webster, and Joseph F. Martin, Webster, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 4, 1968, Ser. No. 773,132
Int. Cl. G11c *11/14*, *5/02*
U.S. Cl. 340—174 S **1 Claim**

A filamentary magnetic memory including an array of wires coated with a film of magnetic material about one micron thick. The wires lie in parallel array essentially in a single plane. Conductive strips extend normally across the wires on both sides, forming single turn loops around them. Thin sheets

of non-magnetic, electrically conductive material are disposed between the conductive strips and the coated wires. The



sheets constitute electrostatic shields, and are preferably arranged as narrow strips in register with the conductive strips. The sheets reduce the so-called common mode noise.

3,699,550

BINARY CODED INFORMATION STORES

Robert J. Spain, Needham Heights, Mass., assignor to Compagnie Internationale Bur L'Informatique, Louveciennes, France

Filed Dec. 30, 1969, Ser. No. 889,096
Int. Cl. G11c *11/02*
U.S. Cl. 340—174 TW **27 Claims**



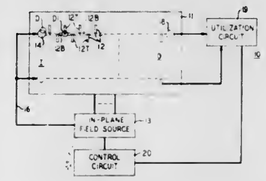
A circulating or recirculating register of binary coded information is comprised of a helical magnetic film path formed over an elongated and preferably cylindrical member with the easy magnetization axis of the film oriented substantially perpendicularly to the axis of the cylinder, and the binary values of the information bits represented as reversed orientations of the magnetization vector along the helical path. The circulation is assured by application of a rotating magnetic field, the axis of which is parallel to the length of the cylinder. The stasis or interruption of circulation when needed is assured by application of an alternating magnetic field on substantially the same axis. In a plural register store such registers are grouped and merged within the said rotating magnetic field.

3,699,551

DOMAIN PROPAGATION ARRANGEMENT

Robert Frederick Fischer, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1970, Ser. No. 82,426
Int. Cl. G11c *19/00*, *11/14*
U.S. Cl. 340—174 TF **7 Claims**



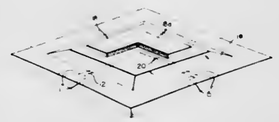
Single wall domains are moved generally in a slice of magnetic material by a magnetically soft T and bar-shaped overlay pattern on a single surface of the slice in response to a magnetic field rotating in the plane of the slice. The overlay pattern includes consecutive elements alternatively parallel to first then second orthogonal axes. Operational and manufacturing advantages are realized if overlay elements aligned with one axis are on one surface of the slice and the overlay elements aligned with the orthogonal axis are on the other, the relative positions of all elements with respect to one another in the plane of the slice being preserved otherwise.

3,699,552

MAGNETIC BUBBLE DEVICE AND METHOD OF MANUFACTURE

Raymond P. De Fabritis; Gerald Burt Fefferman, both of Parsippany; Bruce David Gesner, Dover, and Raymond John Radner, Chester, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1970, Ser. No. 102,794
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **3 Claims**



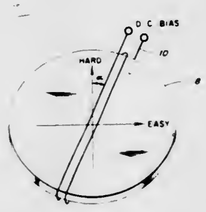
For a magnetic bubble device, circuitry and support structure is disclosed which employs a glaze layer. The glaze isolates two layers of control conductors from each other, supports a magnetic bubble crystal, houses a Hall-effect device and is transparent to allow transmission of polarized light for bubble observation and detection purposes.

3,699,553

NONDESTRUCTIVE READOUT THIN FILM MEMORY DEVICE AND METHOD THEREFOR

Henry S. Belson, Adelphi; Bernard F. DeSavage, Laurel, both of Md., and Robert S. Tebble, Wilmslow, England, assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 12, 1971, Ser. No. 114,920
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **10 Claims**



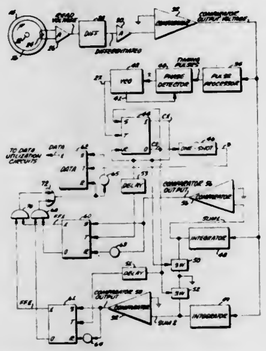
A thin film material having a rectangular hysteresis characteristic along both easy and hard axes has a small d.c. biasing field applied at a small angle to the easy axis, producing a triangular hysteresis curve when observed along an axis perpendicular to the axis of the d.c. biasing field. The two resulting stable states are of greatly different permeability, thus enabling either a.c. or pulsed d.c. nondestructive readout. Switching is achieved by applying a saturating d.c. field along the axis perpendicular to the d.c. biasing field axis in either the

positive or negative direction, and the readout field is also applied along the axis perpendicular to the d.c. biasing field axis.

3,699,554
METHOD AND APPARATUS FOR DETECTING BINARY DATA BY INTEGRATED SIGNAL POLARITY COMPARISON

William H. Jones, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed July 2, 1970, Ser. No. 51,899
Int. Cl. G11b 5/02
U.S. Cl. 340—174.1 H 7 Claims

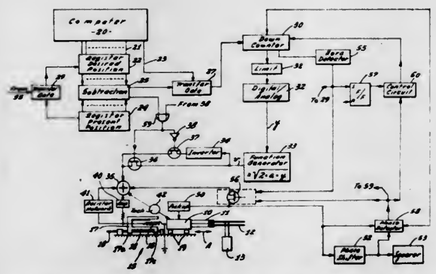


An apparatus and a method is disclosed in which binary data is retrieved from a medium on which data is stored. A read signal representative of the binary data is derived, differentiated, and integrated to obtain signals representative of the amplitude and polarity of the differentiated read signal. The integrated signals are compared to obtain the binary value of the data.

3,699,555
APPARATUS FOR RAPID ACTION DISPLACEMENT CONTROL

Wilbur E. Du Vall, Torrance, Calif., assignor to Zerox Corporation, Stamford, Conn.

Filed Oct. 23, 1970, Ser. No. 83,491
Int. Cl. G11b 21/08
U.S. Cl. 340—174.1 C 4 Claims

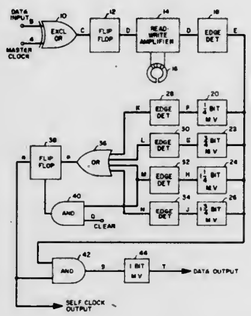


A transducer carriage for multiple, movable heads in a multiple disk file is displaced from one position to another one by a linear motor, whose stator is also mounted on a carriage for recoilless reaction to rapid acceleration/deceleration control of the motor coil. A command signal is developed to be proportionate to the square root of deceleration rate times distance to be traversed due to position change, particularly for determining the beginning of deceleration. Servo loops provide for initial acceleration control followed by the deceleration phase merging with a fine position control.

3,699,556
DIGITAL ENCODING SYSTEM WHEREIN INFORMATION IS INDICTED BY TRANSITION PLACEMENT

Shirzad Aghazadeh, Los Angeles, Calif., assignor to The Singer Company

Filed April 30, 1971, Ser. No. 139,110
Int. Cl. G11b 5/06
U.S. Cl. 340—174.1 G 6 Claims

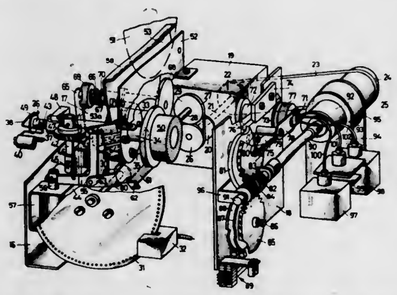


A digital, magnetic memory recording and demodulation system which doubles the bit density and thus the capacity of a memory using the phase modulation digital recording method. The normal "double pulse" phase modulation recording signal is divided so that the signal that is recorded on the magnetic medium contains a maximum of only one flux change per bit. The demodulation circuitry then senses the edges of the read-back signal, generates a self-clocking signal by the use of a bank of multivibrators that are preset to pulse for substantially one-quarter, three-quarter, one and one-quarter, and one and three-quarter bit time and, by gating the read-back signal with the self-clocking signal, reconstructs the original input signal.

3,699,557
GRAVITY FEED WITH AXIALLY MOVABLE ATTACHING MEANS

Heinz Kelch, Buchenberg, Germany, assignor to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed July 23, 1970, Ser. No. 57,706
Claims priority, application Germany, July 28, 1969, P 19 38 274.2
Int. Cl. G11b 3/62, 17/04
U.S. Cl. 340—174.1 C 13 Claims

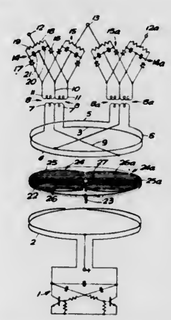


Apparatus for reproducing information which is recorded on concentric tracks of rotary disk-shaped carriers has a continuously driven motor which can be connected with a centering and rotating device for carriers and with a carriage which shifts the reproducing head into registry with a selected track of a centered carrier. The motor drives a timer wheel for generation of synchronizing pulses which are transmitted to a revolution counter. A programming circuit which receives signals from the counter and from the reproducing head controls a unit which records the reproduced information.

3,699,558
ANGULAR POSITION SENSORS

Dennis Alfred Hendley, London, England, and Sipko L. Boersma, Delft, Netherlands, assignors to Decca Limited, London, England

Filed July 13, 1970, Ser. No. 54,224
Claims priority, application Great Britain, July 14, 1969, 35,389/69
Int. Cl. G08c 19/06
U.S. Cl. 340—196 13 Claims

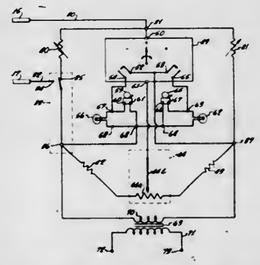


A rotatable insulating disc carries a closed grid of conductors over one part of one side and a similar but open grid over another part. An oscillator is coupled to a coil which is parallel to the disc and produces a cyclically varying but symmetrical field through the disc. Two pairs of pick-up coils sense, for respective orthogonal directions, the distortion of the field by the closed grid and detector circuits coupled to the pick-up coils provide signals representing the sine and cosine of the angular position of the disc which may carry a compass needle.

3,699,559
CONDUCTIVE FLUID CONTENT DETECTION SYSTEM

Julius H. Bochinski, Bethesda, Md., assignor to Enviro Control, Inc., Washington, D.C.

Filed Jan. 7, 1971, Ser. No. 104,595
Int. Cl. G08b 21/00; G01n 27/00
U.S. Cl. 340—236 8 Claims

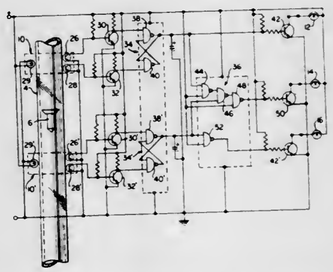


A detector assembly for measuring and monitoring quantities of particulate matter suspended in a fluid stream which is structured for injection of a flushing fluid therein. The assembly comprises a fluid sampling enclosure having electrically conductive plates which form cavities at either end of the enclosure and a conduit between these plates for passing the fluid stream. Flushing fluid is injected in the cavities, which fluid passes into the fluid stream through holes in the plates thereby maintaining the plates clean. A bridge circuit in which the plates and the fluid stream constitute an arm of the bridge is used for monitoring and measuring the change in resistance between the plates due to dissolved ions in the fluid stream, or dissolved solids therein.

3,699,560
PRECISION POSITION INDICATOR

Joseph R. J. Meunier, Xenia, and Heinrich J. Wieg, New Burlington, both of Ohio, assignors to The Bendix Corporation

Continuation of Ser. No. 691,528, Dec. 18, 1967. This application Oct. 8, 1970, Ser. No. 79,268
Int. Cl. G08b 21/00
U.S. Cl. 340—239 R 8 Claims



An arrangement for providing indicator signals corresponding to the position of a movable object along a path including a pair of spaced limit stations, each in turn comprised of a pair of photocell sensors which produce high-low output signals when shaded or unshaded, respectively, by the movable object, and which are spaced so as to be simultaneously shaded as the object moves past the limit station. Logic circuitry decodes these signals along these stations to provide a first indicator signal if the object unshades one of the sensors moving in one direction away from the other and a second indicator signal if the object unshades the sensor moving in another direction towards the other station by using the high-low signals of the other sensor at the station. The other station is similarly arranged to provide a third indicator signal in response to the high-low signals upon unshading of the outermost sensor relative to the other station by the object in moving a direction away from the other limit station and producing one of the indicator signals produced by the other limit stations upon unshading of the sensor by the object moving towards the other limit station, to thus provide an indication of the presence or absence of the movable object from the zone between the stations, and whether it is above or below the zone.

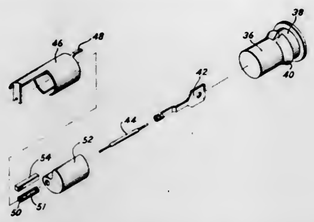
3,699,561
SHUNT ACTUATED FLUID LEVEL SENSOR

James Basil Putt, South Bend, Ind., assignor to The Bendix Corporation

Filed May 24, 1971, Ser. No. 146,338
Int. Cl. B60t 17/22
U.S. Cl. 340—244 E 7 Claims

A fluid level sensor is disclosed for use in a vehicle master cylinder or other contained volume comprising a horizontally mounted reed switch connected to appropriate indicator cir-

cuitry for warning the vehicle operator of a low fluid condition. The switch is actuated by a unique eccentric float which carries a shunt disposed between a fixed magnet and the reed switch. As the float moves with the fluid level, the shunt



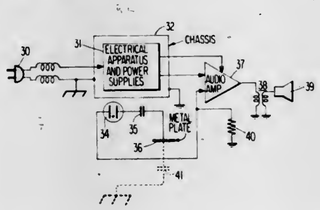
likewise moves from a first position which permits the magnetic flux from the magnet to bypass the reed switch, to a second position in which its shunting effectiveness is removed and the magnetic flux of the magnet actuates the reed switch, which in turn energizes the indicator circuit.

3,699,562

SAFETY APPARATUS FOR HOT-CHASSIS ELECTRONIC INSTRUMENTS

Gordon Emmet Kelly, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,573
Int. Cl. G01r *19/14*; G08b *21/00*
U.S. Cl. 340—253 R **3 Claims**



A safety indicator for electrical apparatus having a chassis connected to one side of the A.C. power provides a visual or audible indication. The indication is provided by means connected between the chassis and a conductive element electrically isolated from the chassis. When the element is touched by an operator with the plug coacting with the A.C. lines and with the chassis above reference potential due to the coaction, an indication is provided thus producing a warning that the plug has to be reversed.

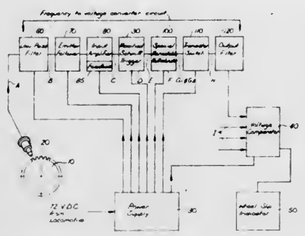
3,699,563

WHEEL SLIP DETECTOR

George R. Cass, Montreal, Quebec, Canada, assignor to Canadian National Railway Company, Montreal, Quebec, Canada

Division of Ser. No. 691,669, Nov. 21, 1967, abandoned. This application Nov. 25, 1969, Ser. No. 879,726
Int. Cl. G08b *21/00*
U.S. Cl. 340—268 **5 Claims**

The fact that one drive axle of a railway locomqtive is rotating faster than another due to 'wheel slip' of the wheels on the faster driving axle is detected by the circuitry of this invention. The rotation of each of two or more drive axles is caused to generate a cyclically varying signal which cyclic variation includes a frequency proportional to the rotational speed of the drive axle. The circuitry provides a signal whose magnitude varies as such frequency and the magnitudes of such signals are compared with each other to obtain an indication of wheel slip of an undesirable amount. A power supply and associated circuitry are provided for deriving from the locomotive supply potentials for operating the electronic circuitry of the wheel slip detector. Such power supply is arranged to eliminate the



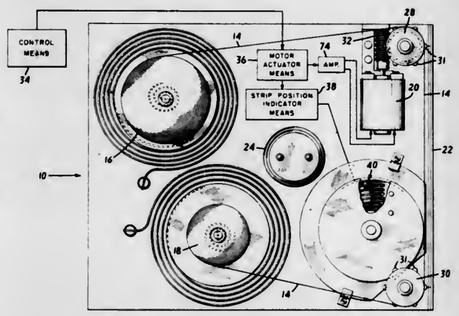
effects of voltage surges and fluctuations from the locomotive supply, to create alternating current from the direct current supply, transform such current, rectify and regulate it. Such supply is useful for the wheel slip detector circuitry and for other electrical functions.

3,699,564

DISPLAY APPARATUS

Thomas Hodge, Jr., Watchung, and Peter R. Bradie, Montvale, both of N.J., assignors to EPC & G, Inc., Plainfield, N.J., by said Hodge

Filed March 12, 1971, Ser. No. 123,791
Int. Cl. G08b *23/00*
U.S. Cl. 340—317 **1 Claim**



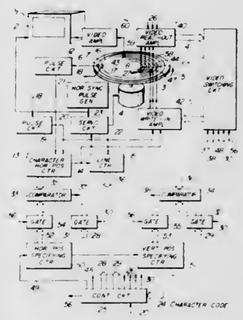
A multiplicity of modules is arranged to display a message, each module displaying one selected character that forms part of the message. Each module includes a strip of flexible material on which the characters that can be displayed are arranged in a series. The strip is wound from one spool to another under the power of a motor causing the characters to move successively through a viewing area. A strip-position-indicator presents a value of electrical resistance that corresponds, according to a predetermined code, to the position of the strip. If the resistance presented by the strip-position-indicator does not correspond to the character called for by a control means, a motor actuator causes the strip to be wound in the appropriate direction until that character is reached.

3,699,565

VIDEO GENERATOR

Hiroshi Nagai, Chigasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 3, 1971, Ser. No. 139,506
Claims priority, application Japan, May 4, 1970, 45/37518
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**



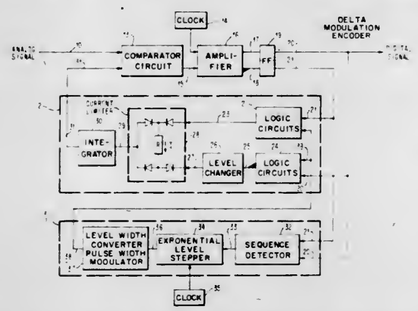
A video generator having means for selectively reading out one of many patterns recorded on a first track of a magnetic disc and repeatedly writing this pattern on a second track. The pattern at a desired position on the second track is solely read out to be written on a third track of the magnetic disc, and the video signal thus recorded on the third track is displayed on a CRT display.

3,699,566

DELTA CODER

Hans R. Schindler, Steinacherstrasse 85, Aargaw, Switzerland

Filed Oct. 16, 1970, Ser. No. 81,489
Claims priority, application France, Oct. 16, 1969, 6935813
Int. Cl. H03k *13/22*
U.S. Cl. 340—347 AD **5 Claims**



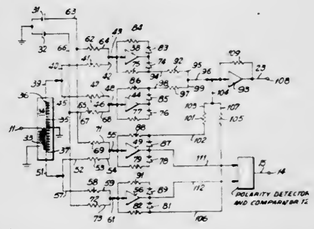
An analog to digital converter in which the instantaneous difference between each successive analog signal sample magnitude and a corresponding reference magnitude is digitally encoded. A feedback loop having non-linear reference setting means automatically increases or decreases the reference magnitude responsive to the match or mismatch condition of a predetermined number of output digital signals. The reference setting means includes the pulse width modulating of control signals in the feedback loop to provide accurate control of the non-linear reference magnitude variations. The direction of change is determined by the digital output signal polarity. However, if a predetermined succession of output digits match, then a first exponential time rate of change is used in incrementing the reference level. Otherwise, exponential incrementing occurs at a second time rate of change.

3,699,567

ANALOG CODE CONVERSION SYSTEM

Zen'iti Kiyasu, Sendai; Masao Kawashima; Shunroku Sasaki, both of Yokohama; Yukihiko Mineshima, and Shyoichi Kurita, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 644,295, June 7, 1967, abandoned. This application Dec. 9, 1970, Ser. No. 96,600
Claims priority, application Japan, June 10, 1966, 41/37404
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **5 Claims**



A code conversion system converts analog input signals to multinary code output signals. A polarity detector and comparator determines the polarity of an input signal and compares the input signal with reference signals. The polarity detector and comparator provide a multinary code output signal in accordance with the polarity and comparison. An amplitude divider divides the input signal in amplitude in a determined manner into a determined number of divided portions of equal amplitude and positions the divided portions of the input signal adjacent each other to lengthen the time duration of the divided portions. An amplifier amplifies the output signal of the amplitude divider a number of times equal to the determined number of divided portions. A time delay prevents overlap of the signal at the output of the amplifier with the signal supplied to the input of the amplitude divider. The amplitude divider, the amplifier and the time delay are connected in series circuit arrangement in a closed loop between the input of the system and the input of the polarity detector and comparator.

3,699,568

WEIGHTED LADDER TECHNIQUE

James E. Thompson, Scottsdale, and Gerald J. D'Amato, Mesa, both of Ariz., assignors to Motorola, Inc., Franklin, Ill.

Filed Dec. 21, 1970, Ser. No. 99,765
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **5 Claims**



There is disclosed a weighted ladder network for use in digital to analog converters which s characterized by faster speeds than the common R/2R and binary ladder configurations for the same total power consumption. The technique involves splitting up a conventional ladder network into two separate sections. The first section is a conventional binary ladder driven by equal current sources. The second section, however, involves weighting the resistance elements and the

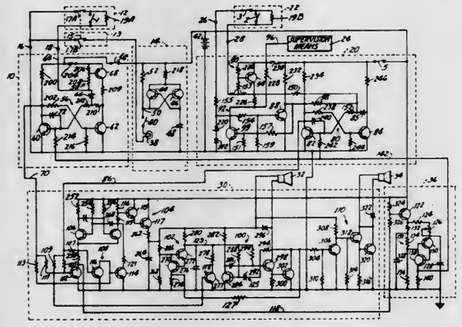
current sources in such a manner that the total resistance of the circuit is minimized.

3,699,569

SECURITY SYSTEM FOR INDICATING FIRE, INTRUSION OR THE LIKE

John H. Lee, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 839,007, July 3, 1969, abandoned. This application Jan. 28, 1972, Ser. No. 221,721
Int. Cl. G08b 19/00, 29/00
U.S. Cl. 340—409 **13 Claims**



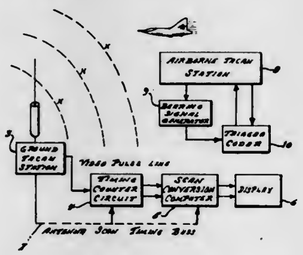
A fire-intrusion system of the type including at least one electrically continuous closed-loop for detecting the presence of an intruder and at least one electrically continuous closed-loop for detecting a fire wherein breaches in security indicative of fire and intrusion are sensed by a change in potential at a point in their respective loops. Potential sensing circuits are provided which are responsive to a changed or abnormal potential to indicate a fire, intrusion or inoperative circuit condition.

3,699,570

TACAN GROUND STATION TRACK AND DISPLAY SYSTEM

Donald W. Hanson, and Ralph W. Mifflin, both of Rome, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1970, Ser. No. 70,969
Int. Cl. G01s 9/56
U.S. Cl. 343—6 R **1 Claim**



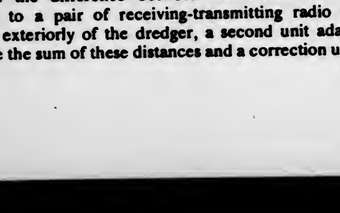
A lightweight secondary ground radar type function is achieved by modification of standard TACAN equipment. Participating aircraft range and angle information is derived at the ground station from modified aircraft to ground station TACAN signals. This eliminates the need for a separate data link. The technique comprehends triggering the airborne TACAN transponder with the received North burst and transmitting from the aircraft time coded signals which indicate bearing of the plane from the TACAN ground site. The technique permits the ground station to compute several aircraft positions and display them as a radar type of presentation.

3,699,571

INSTRUMENT LANDING SYSTEM USING A RETRODIRECTIVE SLETTEN ANTENNA RESPONSER

Lon L. Sanders, Rolling Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 30, 1970, Ser. No. 93,731
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R **10 Claims**



A radar responser (beacon) system including an interrogating airborne station which receives range and angle coded replies from an otherwise quiescent ground station. A Sletten antenna is employed at the ground station because of its relative simplicity and unique output phase relationships as a function of the angle of arrival of a received signal. The angle of arrival information of the Sletten Antenna phase relationship is transposed to audio modulation for retransmission back to the airborne unit. The interrogating pulses are "played back" to an airborne range tracker for range determination, and the Sletten antenna receive signal terminal phase relationship is reduced to the audio domain through the aforementioned modulation process. A relatively simple amplitude detection scheme at the airborne station extracts an angle analog which can be used (typically) for elevation angle information. The system is adapted for the measurement of bearing angles in lieu of elevation angles or may be duplicated for the derivation of analogs of both angular coordinates.

3,699,572

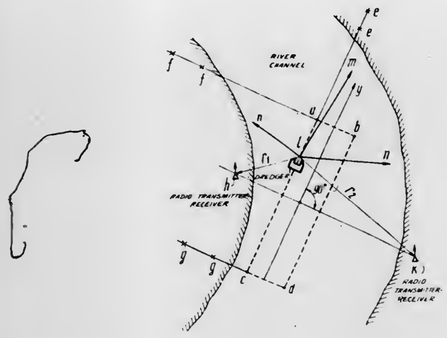
APPARATUS FOR AUTOMATICALLY CONTROLLING THE MOVEMENT OF A DREDGER ALONG A PREDETERMINED PATH FOR PERFORMING A DREDGING OPERATION AT A NAVIGABLE AREA OF A WATERWAY

Viktor Grigorievich Vlasov; Jury Sergeevich Berezentsev; Vladimir Ivanovich Mukhin, and Zhorzh Yakovlevich Kravchenko, all of Novosibirsk, U.S.S.R., assignors to Novosibirsky Institut Inzhenerov Vodnogo Transporta, Novosibirsk, U.S.S.R.

Filed Nov. 10, 1969, Ser. No. 875,122
Int. Cl. G01s 9/04
U.S. Cl. 343—7 ED **4 Claims**

An apparatus for controlling automatically the movement of a dredger along a predetermined path for performing a dredging operation at a navigable area of a waterway, comprising receiving-transmitting radio stations, a unit adapted to measure the difference between the distances from the dredger to a pair of receiving-transmitting radio stations located exteriorly of the dredger, a second unit adapted to measure the sum of these distances and a correction unit. The

apparatus features a high reliability and ensures high accuracy of controlling the progress of the dredger along the predetermined path, as well as a high accuracy of re-positioning the dredger at a spot where it had been operating prior to having been removed therefrom for letting other ships pass.

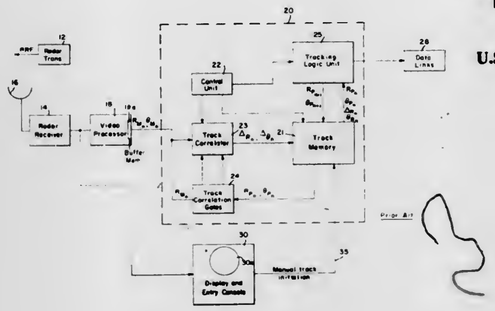


3,699,573

SYSTEM FOR AUTOMATIC INITIATION OF TARGET TRACKING IN TRACK-WHILE-SCAN RADAR

La Vern A. Andrews, Fullerton, and Donald A. Muchlinski, La Habra, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 5, 1966, Ser. No. 548,822
Int. Cl. G01s 9/14
U.S. Cl. 343—7.3 **10 Claims**



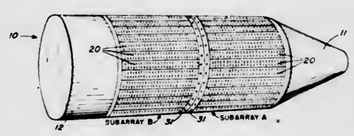
A track-while-scan radar system that initiates tracking of a target on the basis of previous position information or plots stored in the main memory of a computer. If a new plot correlates with the updated position of one of the targets, a new updated target position is stored in the main memory, and if the plot does not correlate, it is stored in a temporary memory for subsequent correlation. If the new plot correlates with the plots in the temporary memory, the plots are transferred to the computer main memory. Any plots in the temporary memory which do not correlate during a selected number of succeeding scans are cleared from that memory as they are assumed to be spurious plots.

3,699,574

SCANNED CYLINDRICAL ARRAY MONOPULSE ANTENNA

Francis J. O'Hara, and Troy E. Plunk, both of Bedford, Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 16, 1969, Ser. No. 867,101
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M **4 Claims**



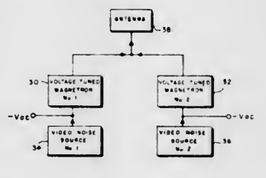
A cylindrical antenna array system having two cylindrical subarrays flush mounted on a conducting cylinder, each consisting of a plurality of linear phased arrays fed through a pair of feed rings on the conducting cylinder that has a diode switch for each linear phased array coupled through a switching network to switch one-quarter to one-third of the linear phased arrays ON in a rotating manner to scan throughout 360° around the cylinder axis, and each linear phased array having a pair of rotatable dielectric slabs behind the waveguide slots thereof with all dielectric slabs mechanically coupled to rotate in synchronism to phase the radio waves for angular direction with respect to the cylinder axis, the received signals being coupled through a magic-T junction to provide sum and difference monopulse signals of targets in sight of the antenna.

3,699,575

EXPANDABLE BANDWIDTH RADAR JAMMER

Philip H. Peters, Jr., Schenectady, and Donald A. Wilbur, Albany, both of N.Y.

Filed March 4, 1955, Ser. No. 492,326
Int. Cl. G01s 7/42; H04k 3/00
U.S. Cl. 343—18 E **9 Claims**

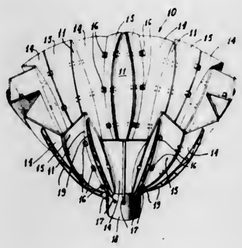


2. A system for generating radar jamming signals comprising a pair of magnetron oscillators having their outputs additively combined and each adapted to be voltage tuned for generating radio-frequency energy over a wide range of frequencies, said range being substantially the same for each magnetron, a first and second direct-current potential of given magnitude applied as respective anode voltages to each of said magnetrons whereby each of said magnetrons generates radio-frequency energy at a frequency which is substantially at the center of said range of frequencies, and means for independently varying the magnitudes of said given anode potentials in a random manner whereby the combined output from said magnetrons results in noise signals varying randomly in amplitude and frequency.

3,699,576
COLLAPSIBLE REFLECTOR

Sigurd Hoyer, Rockville, Md., assignor to Fairchild Industries, Inc.

Filed July 7, 1970, Ser. No. 52,890
Int. Cl. H01q 15/16
U.S. Cl. 343—18 B 10 Claims

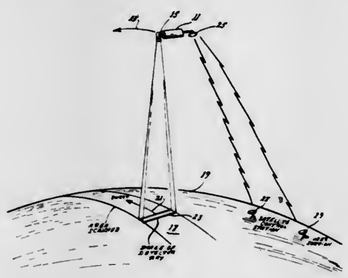


A collapsible dished paraboloid reflector having an array of petals that surround and have petals that are rotatably connected at their inner ends to a reflector hub. The array of petals comprises a series of substantially spear tip shaped or lanceolate shaped petals that alternate between semi-hour glass shaped petals. Substantially wedge shaped petals are located between and have lateral edges that are rotatably connected in edge to edge relationship to each lanceolate shaped petal and semi-hour glass shaped petal. The edges of the petals when viewed from the focal point of the fully deployed reflector substantially approximates the parabolic radial curvature of the fully deployed reflector. The lanceolate shaped petals and the semi-hour glass shaped petals are of rigid construction lengthwise so that they are not capable of flexing in a lengthwise direction whereas the wedge shaped petals are of relatively flexible construction lengthwise so that they are capable of flexing lengthwise as the reflector assembly is being deployed or collapsed. The construction of the collapsible reflector permits it to be collapsed into a compact package and permits the reflector to be deployed to present a dished rigid paraboloid shaped surface.

3,699,577
METHOD AND SYSTEM OF SURVEILLANCE PROCESSING

Paul W. Shadle, Miraleste, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 11, 1970, Ser. No. 48,761
Int. Cl. G01s 5/00
U.S. Cl. 343—112 R 3 Claims

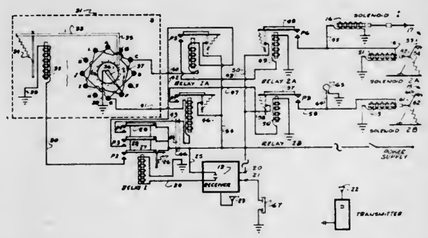


Surveillance of missile tracks is obtained by a satellite having a series of sensors that activate an image storage tube which is periodically slit scanned. The scan data is processed to determine when the length of the series of images is sufficient to represent a missile track and the information is transmitted to a ground control station and a ground user station. By transmitting signals the control station controls the threshold levels, blanking, and the data processing program. The user station combines the data from the satellite and the ground station to determine the location of the missile and predict its trajectory.

3,699,578
REMOTE RADIO WINCH CONTROL UNIT

Antonio F. Fiorentino, 2373 Cranbrook Street, Cranbrook, British Columbia, Canada

Filed Oct. 7, 1969, Ser. No. 864,308
Claims priority, application Canada, Oct. 7, 1968, 031,781
Int. Cl. H04q 7/02; H04b 7/00
U.S. Cl. 343—225 2 Claims

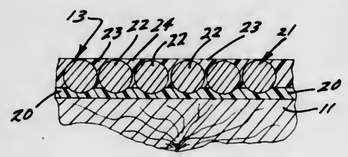


A hand-held radio frequency transmitter-receiver and drive-engine control device for remotely controlling a winch, crane or other similar winding apparatus comprising a hand-held transmitter generating an r. f. signal, a remote receiver detecting and amplifying the r. f. signal, and relays further amplifying the output from the receiver to energize selectively solenoids controlling the associated winch and winch engine to provide forward-reverse winding control of the winch and speed and power control of the winch engine.

3,699,579
AIRCRAFT ANTENNA WITH WOUND WIRE RADIATING SURFACE

Robert A. Miller, Grand Haven, Mich., assignor to R. A. Miller Industries, Inc., Grand Haven, Mich.

Continuation of Ser. No. 747,875, July 26, 1968, abandoned.
This application Jan. 15, 1971, Ser. No. 106,905
Int. Cl. H01q 1/28
U.S. Cl. 343—702 6 Claims



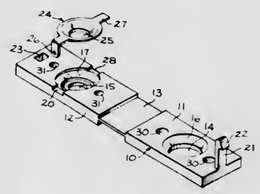
An antenna particularly adapted for use on aircraft having an elongated mast with a transmission assembly positioned therein in conventional fashion. The radiating element includes an elongated conductor such as copper wire or the like wound helically around the mast such that adjacent segments thereof lie in close abutment. The conductor is bonded to the mast by means of an electrically conductive bonding agent whereby the resultant radiating element simulates from a polarization standpoint a radiating element which has been plated or otherwise affixed to the mast in continuous sheath form. A second layer of electrically conductive bonding agent

is applied to the surface of the radiating element subsequent to winding of the conductor thereabout.

3,699,580
ANTENNA MOUNTING CLIP

Raymond S. Joseph, Portsmouth, and Julius Kemeny, Suffolk, both of Va., assignors to General Electric Company

Filed Jan. 18, 1971, Ser. No. 107,146
Int. Cl. H01q 1/24
U.S. Cl. 343—702 5 Claims



A nonconductive mounting clip, to secure an antenna to a cabinet or the like, having two nonconductive members forming a socket to receive a spherical element on the antenna. The members are interconnected at one end by a locking means and at the other end by either a locking means or a resilient hinge. A conductive contact member may be disposed between the spherical element and one of the nonconductive members to provide electrical connection from the conductive spherical element to associated circuitry.

3,699,581
LARGE AREA DEPLOYABLE SPACECRAFT ANTENNA

Charles H. Hall, Redondo Beach; Albert L. Young, Cypress, and N. Keith Young, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 25, 1970, Ser. No. 49,611
Int. Cl. H01q 1/28
U.S. Cl. 343—705 11 Claims

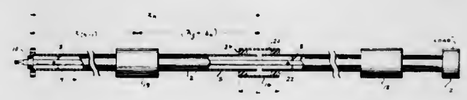


A large area deployable antenna for a spacecraft to be enclosed in a cylindrical shroud during launch. The antenna includes a reflector having a number of panels hinged edge-to-edge on hinge axes parallel to the central axis of the spacecraft body and mounting antenna elements, such as collapsible phased array elements and means for mounting at least one of the central reflector panels on the spacecraft body and for folding of the remaining panels into a stowed configuration, wherein the several panels are symmetrically arranged about the body within an envelope slightly smaller than the interior of the spacecraft shroud, and a deployed configuration, wherein the panels are located substantially in a common plane to form an antenna array which is symmetrical relative to a plane normal to the deployed reflector and containing the spacecraft body axis. The panels are releasably secured in stowed configuration during launch and unfolded to deployed configuration by spring action in orbit.

3,699,582
SLOTTED CABLE GLIDE SLOPE ANTENNA

Chester B. Watts, Jr., 6505 Pinecrest Court, Annadale, Va.

Filed Dec. 16, 1070, Ser. No. 98,594
Int. Cl. H01q 13/10
U.S. Cl. 343—739 5 Claims

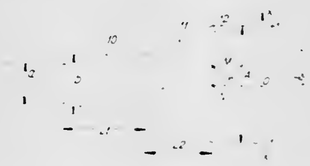


This invention relates to antennas for use in glide slope systems for the instrument landing of airplanes. The antenna disclosed here may be used, as a phase-compensating element, in an end-fire glide slope array, to control the slope angle over a desired azimuth sector. A coaxial transmission line, fed from one end, has a number of gaps in the outer conductor which leak current onto the outside surface of the line. The separation between gaps varies along the line, being chosen to give a predetermined phase distribution of the radiation current. Tuning to an assigned frequency channel may be accomplished by filling the line to a specified pressure with a gas of relatively high dielectric constant.

3,699,583
PHASE CORRECTION APPARATUS FOR CIRCULAR POLARIZATION OPERATION MONOPULSE ANTENNA HORN

Daniel Edmund Beguin, Saint-Prix, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 26, 1971, Ser. No. 166,065
Int. Cl. H01q 19/00
U.S. Cl. 343—756 3 Claims



A multimode horn arrangement with circular polarization grid inserted into the horn aperture. For multimode operation of a monopulse system the phasing section length is chosen to compensate for polarizer phase errors.

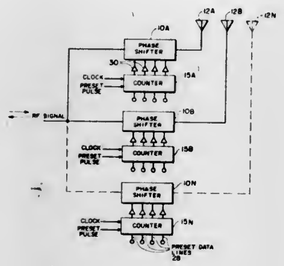
3,699,584
INSERTION PHASE CORRECTION OF PHASE SHIFTERS BY PRESETTING BINARY COUNTERS

George A. Hrivnak, and Vincent J. Organic, both of Neptune, N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 30, 1970, Ser. No. 102,748
Int. Cl. H01q 3/26; H01p 1/32
U.S. Cl. 343—854 6 Claims

This invention relates to a method of inserting into a phase shifter the necessary amount of insertion phase shift to correct for departure of phase shift from an acceptable value for that phase shifter resulting from normal inadequate production tolerances. The method involves using in the logic-driver cir-

cuit for the phase shifter a counter whose digital output determines the magnitude of the phase shift command applied to the phase shifter. The input to the counter is preset in accordance with the amount of phase shift correction determined from the phase shift measuring test to be necessary to correct for the undesired phase deviation in the manufacturing process.



3,699,585

COLLAPSIBLE HELICAL ANTENNA

Adrian O. Morrison, Tustin, Calif., assignor to North American Rockwell Corporation

Filed Dec. 17, 1970, Ser. No. 99,172
Int. Cl. H01q 1/36
U.S. Cl. 343—880 **11 Claims**



A collapsible helical antenna formed of an extensible boom made of preferably two coiled flat steel ribbons which, when uncoiled, become tubular one inside the other and formed of a helical conductor that is suspended coaxially from the boom by a plurality of rings disposed around the boom and tied together by flexible members and by tensioned members extending from the rings to the helical conductor so that, as the boom is extended, the rings slide along the boom to become separated a distance determined by the flexible members but the helical wire is still maintained coaxial with the boom.

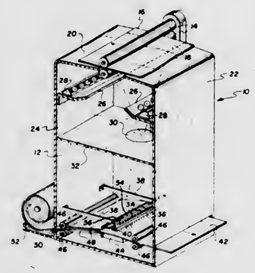
3,699,586

COPYING DEVICE INCLUDING RADIATION SENSITIVE MEMBERS ELECTRICALLY RESPONSIVE TO THE REFLECTED IMAGE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 30, 1970, Ser. No. 33,466
Int. Cl. G01d 15/06; H04n 1/30
U.S. Cl. 346—74 E **11 Claims**

A copying device in which the original is scanned by a radiation source, and the radiation reflected from the original is projected onto a plurality of radiation sensitive members electrically connected to corresponding conducting elements. The conducting elements transmit current to an electrically conducting copy paper which is sensitive to current and/or heat to form images on the copy paper. The elements conduct a varying current in proportion to the radiation impinging on the radiation sensitive members for producing a copy locally or remotely of the original on the current and/or heat sensitive copy paper.

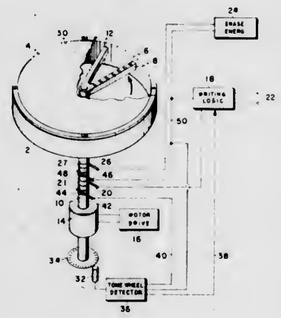


3,699,587

P.P.I. DISPLAY UTILIZING MAGNETIC RECORDING APPARATUS

William E. Currie, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 22, 1971, Ser. No. 164,987
Int. Cl. G01d 9/00, 15/12
U.S. Cl. 346—74 M **7 Claims**



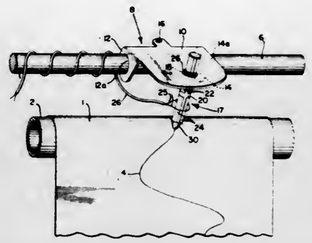
A P.P.I. type display uses a display face having a suspension of magnetically orientable and light reflective particles which are orientable between two incident light reflecting states. A rotating erasing means is used to uniformly orient the particles into the first state while a rotating recording means carrying discrete recording elements is selectively actuated to orient selected ones of the particles into the second state. The erasing means and recording means are mounted on separate arms connected together at one end to a common motor driven shaft located at the center of the display face and perpendicular thereto.

3,699,588

RECORDER FOR RECORDING ON HEAT-SENSITIVE MATERIAL

Bertil Eck Warrington, and Michael J. Cash, both of Phila., Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 28, 1970, Ser. No. 101,619
Int. Cl. G01d 15/10
U.S. Cl. 346—139 C **9 Claims**



A recording apparatus for recording on heat-sensitive material including a recording stylus having a mandrel of an electrically insulating material capable of withstanding an elevated recording temperature. Electrical conductors are deposited on the surface of the mandrel to electrically connect a source of electrical power to a deposit of resistive material across a recording material with the electrical conductors being electrically isolated from the stylus support. The mandrel is attached to a stylus support arranged to be selectively driven on a characterized recording end of the mandrel.

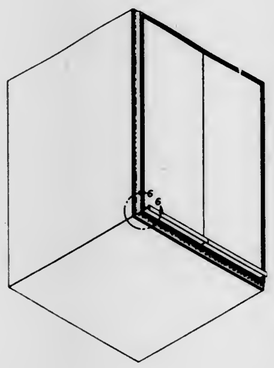
DESIGNS

OCTOBER 17, 1972

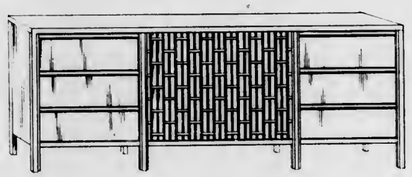
224,923
CHAIR
Robert H. Grabhorn, Indianapolis, Ind., assignor to Systematiks, Inc., Indianapolis, Ind.
Filed Feb. 8, 1971, Ser. No. 113,791
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—42



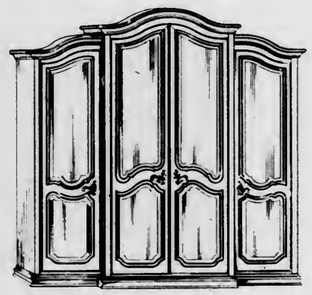
224,924
CABINET
Allen E. Inhelder, Palo Alto, Calif., assignor to J. W. Cross Co., Palo Alto, Calif.
Filed Sept. 8, 1970, Ser. No. 24,867
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127



224,925
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 13, 1970, Ser. No. 24,473
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—160



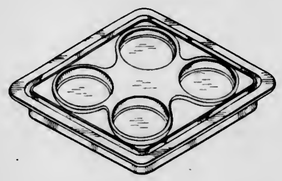
224,926
BREAKFRONT ARMOIRE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 13, 1970, Ser. No. 24,472
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—169



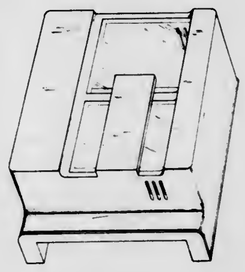
224,927
GARBAGE CAN HOLDER
Frank Arnold, Jr., 415 Lindhardt Road, Carlisle, Iowa 50047
Filed Apr. 28, 1971, Ser. No. 138,408
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



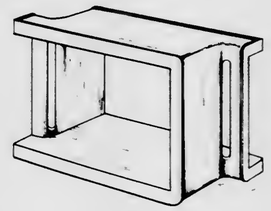
224,928
FREEZER STORAGE TRAY FOR COMESTIBLES OR THE LIKE
Robert L. Wiley, Lake Forest, Ill., assignor to SI Lite Incorporated, Chicago, Ill.
Filed Jan. 7, 1971, Ser. No. 104,841
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



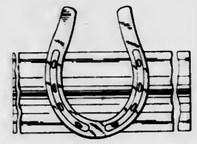
224,929
OUTER WALL CONSTRUCTION UNIT
Ralf Schuler and Ursulina Witte, Berlin, Germany, assignors to Paul M. Buenger, Frankfurt am Main, Germany
Filed Dec. 2, 1970, Ser. No. 26,244
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



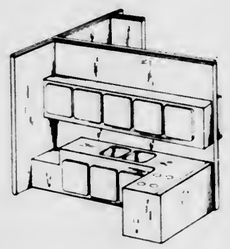
224,930
BUILDING CONSTRUCTION UNIT
Ralf Schuler and Ursulina Witte, Berlin, Germany, assignors to Paul M. Buenger, Frankfurt am Main, Germany
Filed Dec. 2, 1970, Ser. No. 26,245
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



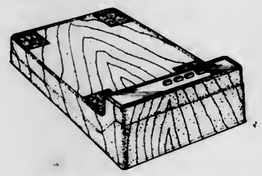
224,931
COMBINED VEHICLE BUMPER AND GUARD
Herbert C. Bonner, 13844 Anglin, Detroit, Mich. 48212
Filed July 13, 1970, Ser. No. 23,921
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



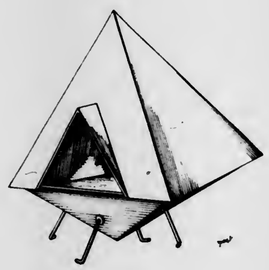
224,932
COMBINED KITCHEN-BATH AND WALL UNIT
Ralf Schuler and Ursulina Witte, Berlin, Germany, assignors to Paul M. Buenger, Frankfurt am Main, Germany
Filed Dec. 2, 1970, Ser. No. 26,246
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D34—50



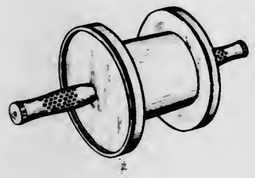
224,933
TELEPHONE ACCESSORY
Robert C. Guldstrand, 8600 Oakdale, Canoga Park, Calif. 91304
Filed May 24, 1971, Ser. No. 146,586
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



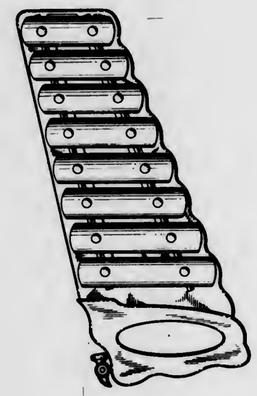
224,934
ANIMAL SHELTER
Alan E. Gilstrap, 519 Clarice Ave., Charlotte, N.C. 28204
Filed Feb. 23, 1971, Ser. No. 118,207
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



224,935
EXERCISER
Joseph A. Winger, Sarasota, Fla., assignor to Winger Enterprises, Inc., Sarasota, Fla.
Filed Nov. 26, 1969, Ser. No. 20,282
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,936
TOY XYLOPHONE
Joseph Green, Hewlett, N.Y., assignor to Joseph Green, Hewlett, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,382
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,937
SPOON OR SIMILAR ARTICLE
Marion Weeber, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Apr. 30, 1971, Ser. No. 139,314
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,938
SPOON OR SIMILAR ARTICLE
Marion Weeber, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Apr. 30, 1971, Ser. No. 139,315
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



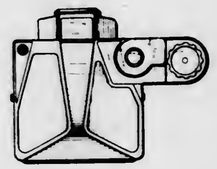
224,939
SPOON OR SIMILAR ARTICLE
Marion Weeber, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Apr. 30, 1971, Ser. No. 139,316
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,940
SPOON OR SIMILAR ARTICLE
Marion Weeber, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed May 3, 1971, Ser. No. 140,018
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,941
EYE LEVEL VIEWFINDER FOR CAMERA
Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Feb. 26, 1971, Ser. No. 119,451
Claims priority, application Japan Sept. 25, 1970
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



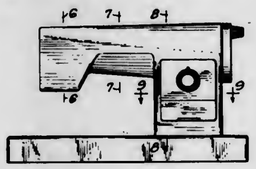
224,942
TYPEWRITER CASING
Toshiaki Funato, Nagoya, Yoshio Katsuzaki, Chita-machi, and Kazuo Ito, Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan
Filed Oct. 23, 1970, Ser. No. 25,619
Claims priority, application Japan Apr. 24, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



224,943
PORTABLE SEWING MACHINE
Marcel Fresard, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Sept. 8, 1970, Ser. No. 24,865
Claims priority, application Switzerland Mar. 20, 1970
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



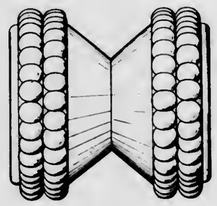
224,944
TOY SEWING MACHINE
Ronald G. Martelet, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Dec. 22, 1970, Ser. No. 26,622
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



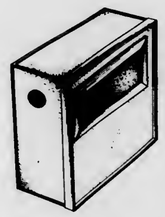
224,945
WHIRLPOOL BATH ATTACHMENT
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 21, 1970, Ser. No. 26,584
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1



224,946
MASSAGER
Jean De Ramel, 30 Boulevard Princesse-Charlotte, Monte-Carlo, France
Filed May 3, 1971, Ser. No. 140,011
Term of patent 7 years
Int. Cl. D24—*04*
U.S. Cl. D83—1



224,947
CABINET FOR MESSAGE DISPLAY PANEL
David E. Liddle, Toledo, and George W. Lambroff, Swanton, Ohio, assignors to Owens-Illinois, Inc.
Filed Dec. 22, 1970, Ser. No. 26,616
Term of patent 14 years
Int. Cl. D14—*02*; D20—*03*
U.S. Cl. D96—12



224,948
WATCH CASE
Raymond Musy, La Chaux-de-Fonds, Switzerland, assignor to S.A. Accurist, La Chaux-de-Fonds, Switzerland
Filed Oct. 19, 1970, Ser. No. 25,543
Claims priority, application Switzerland June 11, 1970
The portion of the term of the patent subsequent to July 3, 1986, has been disclaimed
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc., mesne: *See—*
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Ploinikoff, Nicholas Peter, 3,699,229.

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Abe, Michio; and Maeda, Naoyuki, to Tokai Cold Forming Co., Ltd. Rotor for dynamo-electric machine of the axial airgap type. 3,699,372, Cl. 310-268.000.

Aberg, Martin Birger. Door with sections telescopically displaceable into each other. 3,698,465, Cl. 160-222.000.

Abiko, Yasushi: *See—*
Yamamura, Yuichi; Fujii, Setsuro; Okano, Atsuji; Hirata, Miyoshi; Abiko, Yasushi; Inaoka, Masato; Noroi, Reimei; Iwamoto, Mashiro; Funabashi, Shoichi; and Kaito, Takeo, 3,699,149.

Acorn Products Company: *See—*
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Acton, Edward M.; Leafer, Morris A.; and Stone, Herbert, to Stanford Research Institute. 8,9-Epoxyperillartine sweeteners. 3,699,132, Cl. 260-348.00r.

Acton Research Corporation: *See—*
Flint, Bruce K., 3,698,795.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Muscular voltage-controlled tone modifying system for electronic musical instrument. 3,699,234, Cl. 84-1.240.

Adams, Peter F.: *See—*
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Adams, Wilbur Henry. Golden ratio playing blocks and golden rectangle frame. 3,698,122, Cl. 46-17.000.

Addie, Albert N., to General Motors Corporation. Bi-modal vehicles with drive means for external or self-propulsion. 3,699,351, Cl. 290-14.000.

Addison, William P., Jr., to Allied Products Corporation. Method of manufacture of polypropylene fabric wrapping material. 3,698,980, Cl. 156-282.000.

Addressograph-Multigraph Corporation: *See—*
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Adwest Engeering Limited: *See—*
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Paulus, Rudolf; and Huber, Hans-Peter, 3,699,349.

Aghazadeh, Shirzad, to Singer Company, The, mesne. Digital encoding system wherein information is indicted by transition placement. 3,699,556, Cl. 340-174.10g.

Ahlfeld, Charles E.: *See—*
Baumann, Norman P.; and Ahlfeld, Charles E., 3,699,338.

Aichi Clock and Electric Implement Mfg. Co., Ltd.: *See—*
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Air Products and Chemicals, Inc.: *See—*
Holland, Dewey G.; Moyer, Ronald C.; Polevy, John H.; and Walde, Robert A., 3,699,156.
Johnson, Glenn B.; and Petering, John L., 3,698,200.

Airco, Inc.: *See—*
Wasson, John H.; Sherry, John S.; and Kayser, John P., 3,699,235.

Aisenberg, Sol, to Whittaker Corporation. Emissivity corrected optical pyrometer. 3,698,813, Cl. 356-48.000.

Aisin Seiki Kabushiki Kaisha: *See—*
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Aitkenhead, William C.: *See—*
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Ake, Nelson E.; and Kling, Harry C., to International Telephone and Telegraph Corporation. Method for sorting die. 3,698,976, Cl. 156-155.000.

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Akzona Incorporated: *See—*
Castro, Anthony J., 3,699,078.
Mohr, Bernhard; Engel, Heinz; and Heijnis, James Watt Ijsbrand, 3,698,614.

Albatys, Zigmund M., to United States of America, Navy. Mortar safety device for preventing double loading. 3,698,282, Cl. 89-1.00f.

Albers, Kenneth H.; and Snapp, Thomas C., Jr., to Eastman Kodak Company. N,N-bis[2-hydroxyalkyl]2-hydroxyethoxyacetamide and process for making the same. 3,699,165, Cl. 260-561.00b.

Albertson, Robert V. Transmission belt-drive system. 3,698,256, Cl. 74-230.17e.

Albertson, Robert V. All terrain vehicle stabilizing wheels. 3,698,499, Cl. 180-6.200.

Albrecht, Hermann Friedrich; and Strauss, Karl Peter, to Rollei-Werke Franks & Heidecke. Pulse generating direct-current measuring bridges. 3,699,427, Cl. 318-674.000.

Aldrich, Ralph Edward: *See—*
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Alexander, Alex G., to Commonwealth of Puerto Rico, The. Method of inhibiting the inversion of sucrose in sugar cane juice. 3,698,950, Cl. 127-46.00r.

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Allan Pump and Supply, Inc.: *See—*
Goodwin, Orval L., 3,698,367.

Allen, Herbert, to Cameron Iron Works, Inc. Extrusion press and method. 3,698,227, Cl. 72-263.000.

Allen, Lawrence E.: *See—*
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Allied Products Corporation: *See—*
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Allinikov, Sidney, to United States of America, Air Force. Process for nondestructive inspection. 3,698,234, Cl. 73-15.000.

Allis-Chalmer Manufacturing Company: *See—*
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Allis-Chalmers Corporation: *See—*
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Allis-Chalmers Manufacturing Company: *See—*
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Berneryd, Sten; and Backskog, Hans, 3,699,289.
Hermansson, Bo; and Thorborg, Kjeld, 3,699,425.
Nilsson, Jan; and Larker, Hans, 3,698,220.

Alpers, Frederick C., to United States of America, Navy. Automatic boresighting circuit. 3,699,380, Cl. 315-21.00r.

Alphonse, Gerard Argant, to RCA Corporation. Sonic page composer for holographic memory. 3,698,794, Cl. 350-161.000.

Alps Electric Co., Ltd.: *See—*
Ohkita, Masao, 3,699,292.

Alt, Gerhard H., to Monsanto Company. N-(3-Halo-5,5 dialkylcyclohex-2-en-1-ylidene) morpholinium tetraphenyl borates. 3,699,101, Cl. 260-247.000.

Altenburger, Otto: *See—*
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Altmiller, John C.: *See—*
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Altrui, Thomas N. D. Demountable contilever storage racks. 3,698,566, Cl. 211-176.000.

Ambac Industries, Inc.: *See—*
Litman, Bernard; and Silvia, Everett R., 3,698,776.
Silvia, Everett R., 3,698,251.

Ameling, Bernhard; and Kaup, Siegfried, to Thies, B., Firma. Apparatus for wet treatment of warp-rope or board-shaped textile goods. 3,698,212, Cl. 68-178.000.

American Air Filter Company, Inc.: *See—*
Gold, Harold E.; and Smith, Ralph B., 3,698,472.

American Cyanamid Company: *See—*
Fine, Leonard Wolfe; Matsuda, Ken; and Photis, James Mitchell, 3,699,164.
Firth, William Charles, Jr.; and Frank, Simon, 3,699,094.
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American Hospital Supply Corporation: *See—*
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American Machine & Foundry Company: *See—*
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American Metal Climax, Inc.: *See—*
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American Optical Corporation: *See—*
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Amoco Production Company: *See—*
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Bruner, Peter Martin, 3,699,505.
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Anderson, Karl R., to Thompson, John T. and Gillemot, George W. Tap shoe assembly for use with wire terminal strips. 3,699,284, Cl. 200-51.040.

Anderson, Victor F., to Shell Oil Company. Bipartite tubular molded synthetic resin furniture part with internal reinforcement. 3,698,150, Cl. 52-73.000.

Andrews, John S., to Robertson, H. H., Company. Spray generator. 3,698,695, Cl. 261-24.000.

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Avery, Julian Miles. Metallothermic production of magnesium. 3,698,888, Cl. 75-67.000.

Avrillon, Rene; Franckowiak, Sigismond; Gatellier, Claude; and Glikmans, Georges, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for cultivating micro organisms in the presence of hydrocarbons. 3,698,998, Cl. 195-28.000.

Azud, Robert E.: *See—*
Holland, William P.; and Azud, Robert E., 3,699,373.

Babson, Arthur L., to Warner-Lambert Company. Filtering pipette. 3,698,561, Cl. 210-445.000.

Backskog, Hans: *See—*
Berneryd, Sten; and Backskog, Hans, 3,699,289.

Bacskai, Robert, to Chevron Research Company. Nitorgen-containing *p*-tert-butylstyrene copolymers in lubricant compositions. 3,699,043, Cl. 252-50.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Armbrust, Herbert; Sturm, Hans Juergen; Engelbach, Heinz; Wistuba, Hermann; Stoessel, Armin; and Krabetz, Richard, 3,699,134.
Diebold, Adolf; and Matthias, Marx, 3,698,929.
Petersen, Harro, 3,699,102.

Bahlberg, Reinhard, to Telefunken Patentverwertungsgesellschaft m.b.H. Method of producing a planar-transistor. 3,698,077, Cl. 29-578.000.

Bahnsen, Erwin B., to Steiner American Corporation. Continuous washing apparatus. 3,698,214, Cl. 68-205.00r.

Bailey, Jay Richard: *See—*
Frederickson, Robert Eugene; Zimmerer, John Louis; and Bailey, Jay Richard, 3,698,455.

Baily, Jennings, Jr., mesne: *See—*
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Baker, Donald R.: *See—*
Williamson, Clyde E.; and Baker, Donald R., 3,698,958.

Baker Perkins Limited: *See—*
Steels, Gordon, 3,698,309.

Baker, Ronald E.; Fogarty, Robert L.; and Slagel, Edwin C., to Goodyear Aerospace Corporation. Self sealing composite. 3,698,587, Cl. 220-9.00f.

Baker, William; Worrell, Clyde; and Banzhaf, Donald Howard. Composite beam structure and assembly. 3,698,149, Cl. 52-731.000.

Bakke, Jan Magnus; and Heikman, Harald Erik, to Aktiebolaget Bofors. Method of producing indole. 3,699,120, Cl. 260-319.100.

Baksay, Ivan. Reducing tube-wall eccentricity in tube intermediates. 3,698,229, Cl. 72-341.000.

Baldwin, Edwin C., Jr.; and Wrenner, Warren R., to International Business Machines Corporation. Electron beam deflection control method and apparatus. 3,699,304, Cl. 219-121.0eb.

Balke, Rodney Worth; Lynn, Robert Reed; and Wernicke, Rodney Keith, to Textron, Inc. Rotary wing pylon mounting system. 3,698,663, Cl. 244-17.270.

Ballast-Nedam Groep N.V.: *See—*
Wolters, Tuako Aaldrik; and Van Der Veen, Romke, 3,698,573.

Ballenger, William C., to Central Specialties Co. Cord storage reel assembly. 3,698,656, Cl. 242-106.000.

Ballentine, John W.; and Chaffin, Frank R., to Shambon, W. S., & Co. Lead screw and nut. 3,698,257, Cl. 74-424.80r.

Ballymore Company: *See—*
Dohan, William L., 3,698,511.

Balogh, Stephen A.: *See—*
Annesser, Richard J.; and Balogh, Stephen A., 3,699,037.

Balston, W. & R., (Industrial) Limited: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Cole, John Barrington; Miles, John Walter; and Griefiths, Graham Ernest, 3,698,562.

Ban, Itsuki. Control circuit for multiple tape cartridge playing apparatus. 3,698,722, Cl. 274-4.00f.

Bankert, Richard Dale: *See—*
Torley, Robert Edward; and Bankert, Richard Dale, 3,699,028.

Banks, David Dugmore: *See—*
Hindle, Thomas; and Banks, David Dugmore, 3,698,444.

Banks, Neill K., Jr.; and Standley, Mark L., to Bomco, Incorporated. Tire rim assembly. 3,698,463, Cl. 152-379.000.

Banning, J., Aktiengesellschaft: *See—*
Wieting, Eugen, 3,698,218.

Banzhaf, Donald Howard: *See—*
Baker, William; Worrell, Clyde; and Banzhaf, Donald Howard, 3,698,149.

Baptista, John L.; Rauner, Frederick J.; and Ford, John A., Jr., to Eastman Kodak Company. Organosilicon polymeric dyes. 3,699,135, Cl. 260-375.00b.

Baranowski, Frank, Jr. Fluid flow control valve. 3,698,427, Cl. 137-542.000.

Barber, Warren A., to Singer Company, The. Circuits for controlling solenoid energization to reduce heating. 3,699,399, Cl. 317-148.50b.

Barnett, Howard James. Movement responsive alarm system for a vehicle. 3,699,515, Cl. 340-65.000.

Baron, Henry J. Hydrophilic lens. 3,698,802, Cl. 351-160.000.

Barone, Frank J.; and Tolliver, Donald L., to Motorola, Inc. Fabrication of a silicon-silicon dioxide interface of predetermined space charge polarity. 3,698,948, Cl. 117-213.000.

Barr and Stroud, Limited: *See—*
Berry, Peter John, 3,698,790.

Barr, Robert Alan, to Midland Ross Corporation. Extruder, or extruder-like melting apparatus. 3,698,541, Cl. 198-214.000.

Barra, Donald P. Analog system of music notation. 3,698,277, Cl. 84-483.000.

Barrett, George M. Low pollution heat engine. 3,698,184, Cl. 60-36.000.

Barry, Walter D. Kite parachute unit with automatic ejector. 3,698,671, Cl. 244-155.00r.

Bartlett, Peter G.: *See—*
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Basmajian, Vahan V.: *See—*
Haldeman, Charles W.; and Basmajian, Vahan V., 3,698,370.

Basting, Willem J.: *See—*
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Batchelder, Charles F.: *See—*
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Batchelder Rubico, Inc.: *See—*
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Battles, Dorothy Mott: *See—*
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Batts, John H., to Batts, John Thomas, Inc. Molded garment clamp. 3,698,043, Cl. 24-84.

Batts, John H., to Batts, John Thomas, Inc. Garment clamping hanger. 3,698,607, Cl. 223-96.000.

Batts, John Thomas, Inc.: *See—*
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Batts, John H., 3,698,607.

Baucom, Keith K., to Baxter Laboratories, Inc. Recipient identification. 3,698,383, Cl. 128-2.00g.

Bauer, Lieselotte: *See—*
Krueger, Friedrich; and Bauer, Lieselotte, 3,699,048.

Bauer, Ralf, to Veb Warnowwerft. Roll-back closure assembly for large openings, especially for hatch openings of ships. 3,698,346, Cl. 114-201.000.

Baum, Wilhelm; and Gierlichs, Michael, to Henkel & Cie G.m.b.H. Free flowing powder containing confectioners sugar. 3,698,917, Cl. 99-141.000.

Bauman, Ronald M. High isolation A.C. to D.C. converter. 3,699,426, Cl. 321-27.00r.

Baumann, Norman P.; and Ahlfeld, Charles E., to United States of America, Atomic Energy Commission. Oscillating monitor for fissile material. 3,699,338, Cl. 250-83.100.

Bausch & Lomb Incorporated: *See—*
Pitchford, Richard L., 3,698,799.

Baxter Laboratories, Inc.: *See—*
Baucom, Keith K., 3,698,383.

Baychem Corporation, mesne: *See—*
Gier, Delta W.; and Wasleski, Daniel M., 3,699,150.

Beach, Sidney C.; and Martin, Bernard P., to Inorganic & Metal Treating Chemicals Division. Bright nickel plating bath and process. 3,699,016, Cl. 204-49.000.

Beane, David J.; and Gastler, John H., to United Aircraft Corporation. Afterburner combustion apparatus. 3,698,186, Cl. 60-39.72r.

Beatrice Foods Co.: *See—*
Young, Edward G., 3,698,032.

Beauchamp, Robert Owens, Jr.; Ward, John Wesley; and Franko, Bernard Vincent, to Robins, A. H., Company, Incorporated. Dimethylisosorbide solvent for muscle relaxant drugs. 3,699,230, Cl. 424-272.000.

Beaver, Robert D., to Koontz Machine & Welding, Inc. Hydraulically operated winch. 3,698,690, Cl. 254-186.000.

Bechtold, George W.; Derr, Vernon F.; and Wiltse, James C., to United States of America, Army. Method and apparatus for generating third harmonic signals. 3,699,353, Cl. 307-88.300.

Beck, Edward G., Jr., to Stolle Corporation, The. Flat sheet of metal having an elongated member secured thereto. 3,698,475, Cl. 165-171.000.

Beck, Merril G., to Lord Corporation. Composite leaf spring. 3,698,702, Cl. 267-47.000.

Beck, Walter: *See—*
Osberg, Edward V.; and Beck, Walter, 3,699,173.

Becker, Franz, to Dynamit Nobel Aktiengesellschaft. Non-metallic mine pressure fuse. 3,698,315, Cl. 102-8.000.

Beckman Instruments, Inc.: *See—*
Stahl, Lawrence E.; and Gropper, Lee, 3,699,287.

Beebe, Harwood, Jr. Guide for watching sports. 3,698,741, Cl. 283-63.000.

Beemsterboer, George L.: *See—*
Tapp, James S.; Beemsterboer, George L.; and Salyer, Ival O., 3,698,560.

Beguin, Daniel Edmund, to International Standard Electric Corporation. Phase correction apparatus for circular polarization operation monopulse antenna horn. 3,699,583, Cl. 343-756.000.

Begy Societe Europeenne de Bas sans Couture: *See—*
Giberstein, Bernard, 3,698,899.

Behrens, Burkhard; and Delius, Hermann, to Reichhold-Albert-Chemie Aktiengesellschaft. Photopolymerizable unsaturated polyesters containing benzoin-ether, organic acid ester, organic phosphine initiators. 3,699,022, Cl. 204-159.150.

Beldon, Roy A.: *See—*
Trimpe, Clarence W.; and Beldon, Roy A., 3,698,485.

Belgau, Frank A. Visual and audio perception testing and training apparatus. 3,698,800, Cl. 351-32.000.

Bell & Howell Company: *See—*
Bradt, Gordon E., 3,698,254.
Dann, Bert H., 3,699,243.
Hull, Charles W.; and McKinney, Charles R., 3,699,332.
Koeber, Henry J., 3,698,253.

Bell, Harry F.; Lazzarini, Donald J.; and Schultz, Lewis K. Anti-corrosive electrophoretic coating process. 3,699,029, Cl. 204-181.000.

Bell Telephone Laboratories, Incorporated: *See—*
Berkley, David Arthur; Mitchell, Olga Mary Mracek; and Pierce, John Robinson, 3,699,271.
Copeland, John Alexander, III, 3,699,548.
De Fabritis, Raymond P.; Fefferman, Gerald Burt; Gesner, Bruce David; and Radner, Raymond John, 3,699,552.
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Hardesty, Edwin C.; Krumreich, Charles L.; Mulbarger, Albert E., Jr.; and Walen, Stephen W., 3,699,498.
Hart, Harry Patrick; Kakalec, Robert John; and Walk, Ralph, 3,699,424.
Illig, Howard Clayton; Lehder, Wilfred Emile, Jr.; Parker, James Daniel, III; Santacroce, Alfred Michael; and Sheridan, James Arthur, 3,698,533.
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Pinnow, Douglas A.; and Van Uitert, Le Grand G., 3,699,478.
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Bellinger, S. Lawrence, to Mowbot Inc. Self-propelled random motion lawnmower. 3,698,523, Cl. 192-12.0ba.

Belson, Henry S.; De Savage, Bernard F.; and Tebble, Robert S., to United States of America, Navy. Nondestructive readout thin film memory device and method therefor. 3,699,553, Cl. 340-174.0tf.

Benckiser, Joh. A., GmbH Chemische Fabrik: *See—*
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Bendix Corporation, The: *See—*
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McGinnis, Patrick F., 3,699,330.
Meunier, Joseph R. J.; and Wieg, Heinrich J., 3,699,560.
Mueller, Rolf K.; and Emanuel, Marom, 3,698,787.
Philippe, Nicodeme, 3,699,513.
Putt, James Basil, 3,699,561.
Sulich, Janusz S., 3,698,413.
Vasek, Anthony G., 3,698,248.
Wolber, William G., 3,698,789.

Benkeser, Robert A.; and Smith, William E., to Purdue Research Foundation. Novel process for making halosilyl carbon compounds and novel halosilyl carbon compounds produced thereby. 3,699,141, Cl. 260-448.20r.

Benkeser, Robert A.; and Smith, William E., to Purdue Research Foundation. Bis (halosilyl) organic compounds and process of making same. 3,699,142, Cl. 260-448.20r.

Benkeser, Robert A.; and Gaul, James M., to Purdue Research Foundation. Novel process for the manufacture of halosilyl organic compounds and novel products made thereby. 3,699,143, Cl. 260-448.20r.

Bennett, Michael Camm, to Tate & Lyle Limited. Sugar refining. 3,698,951, Cl. 127-48.000.

Bennett, Richard L., to Perkins Research & Mfg. Co. Apparatus for identifying telephone cable pairs. 3,699,274, Cl. 179-175.000.

Benton, Elton J.: *See—*
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Bentsen, Per: *See—*
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Berenbaum, Arthur; and McDonough, Rort M., to Philco-Ford Corporation. Bi-directional operating mechanism. 3,699,453, Cl. 325-397.000.

Berezentsev, Jury Sergeevich: *See—*
Vlasov, Viktor Griogroievich; Berezentsev, Jury Sergeevich; Mukhin, Vladimir Vanovich; and Kravchenko, Zhorzh Yakovlevich, 3,699,572.

Berg, Robert H. Average volume digital computer and digital volume totalizer for cells and particles. 3,699,319, Cl. 235-151.340.

Berger, Frank M.: *See—*
Ludwig, Bernard J.; Berger, Frank M.; and Fukui, George M., 3,699,097.

Berges, Wilhelm. Friction lining for brakes, clutches and like apparatus. 3,698,526, Cl. 192-107.00m.

Berggren, Albin F., Jr.: *See—*
Mihojevich, Steven; Zerfans, Arthur S.; Ostensen, Ralph G.; Berggren, Albin F., Jr.; and Glaser, Ronald A., 3,698,706.

Bergh Bros. Co., Inc.: *See—*
Bergh, George G.; and Bergh, Robert G., 3,698,291.

Bergh, George G.; and Bergh, Robert G., to Bergh Bros. Co., Inc. Method of fabricating a covered box construction. 3,698,291, Cl. 93-5.0yr.

Bergh, Robert G.: *See—*
Bergh, George G.; and Bergh, Robert G., 3,698,291.

Bergwerksverband GmbH: *See—*
Jankowski, Alfons; Glaesmann, Otto-Ernst; and Haake, Gerhard, 3,698,196.
Ratz, Walter, 3,699,429.

Bergy, Malcolm E.; Hoeksema, Herman; and Johnson, Le Roy E., to Upjohn Company, The. Enhygrofungin and process for preparing the same. 3,699,223, Cl. 424-121.000.

Berkel G.m.b.H.: *See—*
Lohmann, Ernst, 3,698,496.

Berkley, David Arthur; Mitchell, Olga Mary Mracek; and Pierce, John Robinson, to Bell Telephone Laboratories, Incorporated. Speech processor using multiband controlled center clipping. 3,699,271, Cl. 179-170.800.

Berkovits, Rarouh V., to American Optical Corporation. Pate-scanning pacer for treatment of tachycardia. 3,698,398, Cl. 128-422.000.

Berlincourt, Don A., to Vernitron Corporation, mesne. Width extensional resonator and coupled mode filter. 3,699,484, Cl. 333-72.000.

Berner, Warren E., to General Electric Company. Process for forming low impedance ohmic attachments. 3,698,080, Cl. 29-583.000.

Berneryd, Sten; and Backskog, Hans, to Allmanna Svenska Elektriska Aktiebolaget. Operating device for electric switching apparatus for high voltage. 3,699,289, Cl. 200-148.00r.

Bernhardt, Daniel W.: *See—*
Jones, Lewis E.; and Bernhardt, Daniel W., 3,699,278.

Bernin, Victor M., to Illinois Tool Works, Inc. Solid state switch. 3,698,531, Cl. 197-98.000.

Berning, Eugene B.; and Holmes, John E. Solenoid actuated valve for anhydrous ammonia flow meters. 3,698,682, Cl. 251-30.000.

Berry, James I., to Ford Motor Company. Electronic sensor for developing a voltage signal proportional in magnitude to displacement. 3,698,250, Cl. 73-517.000.

Berry, Peter John, to Barr and Stroud, Limited. Stabilised optical systems. 3,698,790, Cl. 350-16.000.

Bertea Corporation: *See—*
York, Ray A., 3,698,264.

Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Process for preparation of terpene flavorants. 3,699,169, Cl. 260-604.00r.

Bertele, Ludwig, 1/2 to Wild Heerbrugg AG, Firma. Objective consisting of five lens members. 3,698,796, Cl. 350-216.000.

Bertin & Cie: *See—*
Croix-Marie, Francis Marie Jean, 3,698,506.

Berwin, Zoited W., to Hughes Aircraft Company. Resonant sweep generator. 3,699,356, Cl. 307-228.000.

Bestenreiner, Friedrich; Weiershausen, Walter; and Janovjak, Paul, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for manufacturing diffusion lenses of arbitrary indicatrix. 3,698,810, Cl. 355-71.000.

Bevington, William J., to Clow Corporation. Axially locked pipe joint. 3,698,744, Cl. 285-111.000.

Bewley, Henry Dale, to United States of America, Atomic Energy Commission. Aluminum alloy. 3,698,890, Cl. 75-147.000.

Beyers, Billy Wesley; and Tretter, Larry Lee Roy, to RCA Corporation. Communication among computers. 3,699,529, Cl. 340-172.500.

Bielefeld, Ewald J., Jr.; and Puma, Maurice J., to General Dynamics Corporation. Method of analyzing and controlling etchant solution concentrations. 3,698,867, Cl. 23-230.00a.

Big George, Inc.: *See—*
Roberts, George S., 3,699,363.

Bilichniansky, Theodore, to Technicon Instruments Corporation. Dispenser for supplying liquid by suction. 3,698,868, Cl. 23-23.0or.

Bills, Charles Tyler: *See—*
Yurcick, Peter A.; and Bills, Charles Tyler, 3,698,935.

Binham, Glenn: *See—*
Leatherman, Ralph W., 3,699,285.

Binning, Robert C.; Parts, Leo P.; Peresie, Robert J.; and Rodenburg, Margaret L., to Monsanto Research Corporation. Method of graphitizing fibers. 3,699,210, Cl. 23-209.300.

Bixler, Kenneth D., to Diamond International Corporation. Open bottom meat container. 3,698,623, Cl. 229-2.500.

Blachere, Robert; and Sauvage, Michel, to Commissariat a l'Energie Atomique. Sealing device. 3,698,724, Cl. 277-34.300.

Black and Decker Manufacturing Company, The: *See—*
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Black Clawson Company, The: *See—*
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Black, Svalls & Bryson, Inc.: *See—*
Wood, Loren E.; and Free, Marvin H., 3,698,598.

Black, Thomas J.; and Schmitt, Werner H., to Westermann, Werner F. Coin sorting and conveying apparatus. 3,698,537, Cl. 198-33.0aa.

Blackstock, Thomas A., to United States of America, National Aeronautics and Space Administration. Ferry system. 3,698,659, Cl. 244-1.0ss.

Blair, Lloyd R.: *See—*
Martin, Gregory L.; and Blair, Lloyd R., 3,699,448.

Blake, Darrell N. Perforating machine. 3,698,222, Cl. 72-129.000.

Blake, Graham John: *See—*
Flint, John Anthony; and Blake, Graham John, 3,699,068.

Blakeslee, Kenneth L. Electronic sequential switch. 3,699,390, Cl. 317-16.000.

Blatt, LeLand Francis; and Wiesenhofer, Frank Henry. Safety silencer air nozzle. 3,698,510, Cl. 181-36.00a.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See—*
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Termin, Erich; and Bleh, Otto, 3,699,137.

Bleha, William P., Jr.: *See—*
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Bliss, E. W., Company: *See—*
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Blohm & Voss AG: *See—*
Krakow, Heinz; and Niedorf, Carl, 3,698,622.

Blome, Eugene R., to Fairchild Camera and Instrument Corporation. Multilayer antireflective absorption film. 3,698,928, Cl. 117-45.000.

Blomgren, Evert: *See—*
Apstein, Maurice; Blomgren, Evert; Keehn, George R.; Andrews, Laurence M.; and Rabinow, Jacob, 3,698,323.

Blonsky, Joseph E., to American Pulpwood Association. Tree harvesting device and method. 3,698,457, Cl. 144-34.00r.

Bloomfield, Harold; and Roberts, Melvin F., to Bloomfield Industries, Inc. Utility wheel-bearing carts. 3,698,735, Cl. 280-47.350.

Bloomfield Industries, Inc.: *See—*
Bloomfield, Harold; and Roberts, Melvin F., 3,698,735.

Bochinski, Julius H.; and Linkel, John E., to North American Rockwell Corporation. Hot gas fusion process and apparatus. 3,698,699, Cl. 266-5.00r.

Bochinski, Julius H., to Enviro Control, Inc. Conductive fluid content detection system. 3,699,559, Cl. 340-236.000.

Bodey, Charles E.; and Cook, Robert G. Submerged pin for moving and submarine under water. 3,698,197, Cl. 61-46.000.

Boehlert, Marjorie A. Disposable feeding dish and its complementary recepticle. 3,698,594, Cl. 220-63.000.

Boeing Company, The: *See—*
Cole, James B., 3,698,668.
Lang, John M.; and Trautman, Robert D., 3,698,679.

Boersma, Sipko L.: *See—*
Hendley, Dennis Alfred; and Boersma, Sipko L., 3,699,558.

Bokeky, Edward Joseph, III, to RCA Corporation. Fusible semiconductor device including means for reducing the required fusing current. 3,699,403, Cl. 317-235.00r.

Boleky, Edward Joseph, to RCA Corporation. Semiconductor device including fusible elements. 3,699,395, Cl. 317-101.000.

Bolger, Bernard J.: *See—*
O'Sullivan, Denis J.; and Bolger, Bernard J., 3,699,127.

Bolton, Lawrence. Rear view mirror for auto bumpers. 3,698,798, Cl. 350-307.000.

Bombardier, Jerome, to Bombardier Limited. Variable speed transmission system and braking means. 3,698,497, Cl. 180-5.00r.

Bombardier Limited: *See—*
Bombardier, Jerome, 3,698,497.

Bomco, Incorporated: *See—*
Banks, Neill K., Jr.; and Standley, Mark L., 3,698,463.

Bonleitner, Wolfgang; Chvatlinsky, Kurt; and Hanke, Walter, to Olympia Werke Aktiengesellschaft. Case shift control apparatus operable by a case shift key and by type keys. 3,698,530, Cl. 197-71.000.

Bonney, Kenneth Victor, to Hawker Siddeley Aviation Limited. Aircraft. 3,698,664, Cl. 244-42.0da.

Boom, Abraham A., to Celanese Corporation. Production of improved semipermeable polybenzimidazole membranes. 3,699,038, Cl. 210-23.000.

Boone, Martin W. Boat hull. 3,698,343, Cl. 114-66.50p.

Boone, Jerry C.; and Allen, Lawrence E., to Allis-Chalmers Manufacturing Company. Automatic header height control sensed from floating crop engaging mechanism. 3,698,164, Cl. 56-10.400.

Boots, Patrick R.; and Gaddis, Kenneth W., to Scope Lock, Inc. Vehicle parking space locking device. 3,698,135, Cl. 49-35.000.

Borden Company, The: *See—*
Leeks, Robert Ernest; and Demers, Alfred John, 3,698,933.

Borenstein, Martin. Sling type upholstered furniture. 3,698,766, Cl. 297-441.

Borg-Warner Corporation: *See—*
Distefano, John F., 3,698,839.
Nixon, James E., 3,698,772.

Borzoni, John J.; Swichard, Edward A.; and Burek, John A., Jr. Fuse holder assembly. 3,699,500, Cl. 339-91.00r.

Bosch, Robert, G.m.b.H.: *See—*
Maylandt, Helmut; Forster, Herbert; and Juhasz, Josef, 3,699,410.
Niemann, Gert, 3,698,961.
Reger, Herbert; and Heinrich, Hans-Walter, 3,698,542.

Bossert, Norman K. Golf cart seat. 3,698,738, Cl. 280-150.00r.

Bossmann, Clifford W.; Kaufmann, Harland A.; and Mathes, Charles E., to National Cash Register Company, The. Method for producing a set of control detents for a business machine. 3,698,069, Cl. 29-407.000.

Bott, George: *See—*
Taylor, Arthur Sinclair; Sandhage, Ellsworth; Bott, George; and Konazewski, William, 3,698,450.

Boucek, Miroslav; and Jiskra, Miroslav, to Vyzkumny Ustav Bavlnarsky. Spinning machine and method of operating the same. 3,698,174, Cl. 57-58.950.

Bouclin, Peter, to United States of America, Navy. Vibroacoustic test method. 3,698,241, Cl. 73-69.000.

Boussois Souchon Neuvesel: *See—*
Jacquot, Michel; and Amicel, Charles, 3,698,619.

Bowers, Thomas S., to Hansen, A. L., Mfg. Co. Load holding device. 3,698,678, Cl. 248-361.000.

Bowker, John F.; and Odegard, Warren H., to Black Clawson Company, The. Log diameter scanner including a plurality of photodetectors. 3,698,818, Cl. 356-160.000.

Bowles, Arnold G.; and Follette, Neil, to National Forge Company. High production isostatic molding device. 3,698,843, Cl. 425-86.000.

Bowling, Clarence C. Containers for fixing, holding, and storage of dead insect specimen. 3,698,101, Cl. 35-20.000.

Boyer, Jackson S.: *See—*
Mills, Ivor W.; Dimeler, Glenn R.; Kirk, Merritt C., Jr.; and Boyer, Jackson S., 3,699,071.

Boyle, Donald Francis, to Motorola, Inc. Ultrasonic metallic sheet-frame bonding. 3,698,075, Cl. 29-470.100.

Boyle, John P.; Murphy, Clarence R.; and Walsh, William L., to Gulf Research & Development Company. Hydrobromination of alpha-olefins. 3,699,179, Cl. 260-663.000.

Boyles, Elmo N., to Disco Industries, Inc. Disc brake apparatus. 3,698,518, Cl. 188-72.500.

Braden, William D.; Marshall, Richard P.; Greenhorn, Richard J.; and Buser, Arnold S., to Goodyear Tire & Rubber Company, The. Apparatus for processing cured tires. 3,698,233, Cl. 73-1.00b.

Bradie, Peter R.: *See—*
Hodge, Thomas, Jr.; and Bradie, Peter R., 3,699,564.

Bradt, Gordon E., to Bell & Howell Company. Power transmission mechanism. 3,698,254, Cl. 74-143.000.

Brady, Donnie G., to Phillips Petroleum Company. Synthesis of allyl esters with palladium and platinum halide catalysts. 3,699,155, Cl. 260-491.000.

Brady, W. H., Co.: *See—*
Hueser, Elliott G.; and Muttera, William H., Jr., 3,698,296.

Brandstrom, Arne Elof: *See—*
Gagneun, Andre; Brandstrom, Arne Elof; and Carlsson, Stig Ake Ingomar, 3,699,124.

Brandt, Oscar E.; and Harris, Joseph G., to Lockheed Aircraft Corporation. Explosive system. 3,698,281, Cl. 89-1.00b.

Branson Instruments, Incorporated: *See—*
Jacke, Stanley E., 3,698,408.

Brawn, Philip E., to Carothers Sheet Metal Company. Veneer stacker. 3,698,708, Cl. 271-74.000.

Brawner, William H.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 14% each to Summer, Dale E., Rockwell, Lowell K., Rogers, Paul C., Laznibat, Nick A., Gunsalus, Claude A., 13% to Brawner, William H., 5% each to Kimmich, Gordon R., Plourde, Leonard J., Mcuire, Marcus W. and 2% to Smyth, George F. Can bodies and method and apparatus for manufacture thereof. 3,698,337, Cl. 113-120.0aa.

Brechbuhler, Hans Ulrich: *See—*
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich, 3,699,225.

Brefka, Paul E.: *See—*
Danti, Bernard R.; and Brefka, Paul E., 3,699,291.

Brendt, Dieter; Helms, Gerd; and Keunecke, Gerhard, to Chemiebau Dr. A. Zieren GmbH & Co. KG. Process for the purification of crude phthalic anhydride by plural stage vacuum distillation with side stream product recovery. 3,699,008, Cl. 203-72.

Brennan, George Andrew. Air pollution detectors. 3,698,871, Cl. 23-254.00r.

Brents, J. W. Anchor device for door frames. 3,698,146, Cl. 52-214.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Projectile displacing apparatus including stressible strands and missiles. 3,698,714, Cl. 273-119.00r.

Bresser, Robert E.: *See—*
Hechenbleikner, Ingenuin A.; Hussar, John F.; Koeniger, Arthur F.; and Bresser, Robert E., 3,699,152.

Briar, John R.: *See—*
Schlotterbeck, David L.; and Briar, John R., 3,698,204.

Bridgestone Tire Company, Limited: *See—*
Ogata, Nobuo, 3,699,204.

Briody, Thomas F., to Western Electric Company, Incorporated. Methods and apparatus for heating and/or coating articles. 3,699,298, Cl. 219-10.490.

British American Oil Company Limited, The: *See—*
Pogorski, Louis A., 3,698,588.

British Iron and Steel Research Association, The: *See—*
Reed, Geoffrey R., 3,698,152.

British Steel Corporation: *See—*
Smith, Henry, 3,698,757.

Brixius, Jacob K.; Takacs, Lawrence M.; and Van Sweringen, James P., to North American Rockwell Corporation. Filter. 3,698,161, Cl. 55-493.000.

Brock, James, to Imperial Chemical Industries Limited. Pneumatic device for forwarding filamentary material. 3,698,612, Cl. 226-91.000.

Brougham, George D. Archery bow with arrow support structure. 3,698,375, Cl. 124-24.000.

Brown, Harry H.: *See—*
United States of America, National Aeronautics and Space Administration, 3,698,385.

Brown, Ray B.; Fluhr, Frederick R.; and Hall, George L., to United States of America, Navy. Laser output attenuator. 3,698,797, Cl. 350-266.000.

Brown, Robert G.: *See—*
Iliff, Walter R.; Holt, John M.; Chadima, George E.; and Brown, Robert G., 3,699,324.

Brown, Robert G. Dextran hydrolizing enzymes. 3,699,002, Cl. 195-66.

Brown, Terry D.: *See—*
Wood, Harold V.; and Brown, Terry D., 3,699,087.

Brown, Thomas W. Fence barb arm. 3,698,691, Cl. 256-11.000.

Brown, Verne R., to Environment Metrology Corporation. Electrical shock hazard detection system with station scanning and indicating means. 3,699,432, Cl. 324-51.000.

Browning, Stanley Albert Charles; and Williams, Glen, to Canadian Imperial Bank of Commerce. Collapsible hockey goal. 3,698,715, Cl. 273-127.00b.

Browning, William C.; and Chesser, Billy G., to Milchem Incorporated. Drilling fluid composition and process for drilling subterranean wells. 3,699,042, Cl. 252-8.50c.

Brozovich, John C.: *See—*
Emmett, Robert C., Jr.; Dahlstrom, Donald A.; and Brozovich, John C., 3,698,556.

Bruckmann, Andre: *See—*
Fleurquin, Yves; and Bruckmann, Andre, 3,698,930.

Bruckner, Kurt, to Bruckner-Apparatebau Michelstadt GmbH. Treatment of continuous fabric webs. 3,698,024, Cl. 8-151.000.

Bruckner-Apparatebau Michelstadt GmbH: *See—*
Bruckner, Kurt, 3,698,024.

Bruner, Peter Martin, to AMP Incorporated. Staked tab terminal. 3,699,505, Cl. 339-221.00r.

Brunner, Adolf, to Semperit Osterreichisch-Amerikanische Gummiwerke A.G. Sandals and methods and machines for their manufacture. 3,698,108, Cl. 36-11.500.

Brunswick Corporation: *See—*
Nunes, John; and Martin, Albert D., 3,698,963.
Roberts, John A.; and Roberts, Peter R., 3,698,863.

Bryant, Michael I.; and Jones, Charles E., to Burlington Industries, Inc. Method of improving the adhesion of glass cloth to rubber. 3,698,983, Cl. 156-308.000.

Bryden, Brian Richard, to Northern Electric Company Limited. Subnanosecond pulse generator circuit. 3,699,361, Cl. 307-273.000.

Bryzinski, Thaddeus F.; and Martin, Joseph F., to Stromberg-Carlson Corporation, mesne. Filamentary magnetic memory with electrostatic shielding. 3,699,549, Cl. 340-174.00s.

Buchan, William Raymond; and Aldrich, Ralph Edward, to Itek Corporation. Variable electro-optic filter and readout apparatus. 3,699,347, Cl. 250-217.00r.

Buchanan Electrical Products Corporation: *See—*
Ustin, Martin D., 3,699,283.

Buchel, Kurt: *See—*
Schwab, Johann; Buchel, Kurt; Eder, Otto; Hascic, Wladimir; and Marek, Ludwig, 3,698,027.

Buck, Willard E.; Herbold, Robert J.; and Sherman, Randy J., to Technical Operations Incorporated. Cooling and lubrication for high speed rotating systems. 3,698,514, Cl. 184-6.400.

Buerki, Christian E., to Norris Industries Inc. System for detecting safety switch failure. 3,699,300, Cl. 219-10.550.

Buescher, William E.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Electron discharge device thermionic cathode having reduced operating temperature and method of making same. 3,699,378, Cl. 313-346.0dc.

Buker, Donald O.: *See—*
Cosman, Cornelius M.; and Buker, Donald O., 3,699,213.

Bullard, Terry S. Floating body amusement device. 3,698,711, Cl. 273-1.001.

Bungardt, Karl; Dietrich, Hermann; Lennartz, Gustav; and Arntz, Hans-Egon, to Deutsche Edelstahl-Werke Aktiengesellschaft. Non-Magnetisable steel. 3,698,889, Cl. 75-123.000.

Bunker-Ramo Corporation, The: *See—*
Hohenberg, Reiner Mathias; and Knitter, Heinz, 3,699,280.

Buntin, Henry J. Swimming, teaching and training aid. 3,698,026, Cl. 9-308.000.

Bunting, Earl L., to Bunting Steri Systems, Inc. Process and signal distributing system and apparatus used therein. 3,699,250, Cl. 178-6.800.

Bunting Steri Systems, Inc.: *See—*
Bunting, Earl L., 3,699,250.

Burek, John A., Jr.: *See—*
Borzoni, John J.; Swichard, Edward A.; and Burek, John A., Jr., 3,699,500.

Burke, Jack J.; and Guillot, Joseph M., Jr., to Collins Radio Company. Bonding apparatus. 3,698,621, Cl. 228-4.000.

Burke, William F. Tank for liquid fuel. 3,698,597, Cl. 220-86.000.

Burlington Industries, Inc.: *See—*
Bryant, Michael I.; and Jones, Charles E., 3,698,983.

Burns, Eugene A.: *See—*
Lubowitz, Hyman R.; Kendrick, William P.; Jones, John F.; and Burns, Eugene A., 3,699,074.

Burroughs Corporation: *See—*
Caras, Bernard, 3,699,376.
Carlson, Carl B.; McKeeman, William M.; and Price, William C., 3,699,528.
Ekstrand, James, 3,698,821.
Kruklitis, Karlis, 3,699,430.

Burrows, Clinton A., Jr. Modular fence construction. 3,698,692, Cl. 256-19.000.

Bus & Car Company S.A.: *See—*
Scheitel, Neal W., 3,698,464.

Buser, Arnold S.: *See—*
Braden, William D.; Marshall, Richard P.; Greenhorn, Richard J.; and Buser, Arnold S., 3,698,233.

Buske, Ervin. Pulling post base. 3,698,230, Cl. 72-386.000.

Butler, Kenneth; Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. 2-[(5'-(3'-and/or 4'-substituted) isoxazolyl) aminomethyl]-3,4,10-trioxo-1,2,3,4,4,9,9,. 3,699,117, Cl. 260-307.500.

Caldwell, Deane B. Homopolar generator. 3,699,370, Cl. 310-178.000.

Calhoon, Audra M.: *See—*
Gier, Delta W.; and Calhoon, Audra M., 3,699,232.

Calmon, Calvin; Heit, Allyn Harold; and Helfgott, Theodore. Method for the removal of colloidal suspensions and other pollutants from liquid wastes. 3,699,039, Cl. 210-28.000.

Cambridge Filter Corporation: *See—*
Goulet, Roger T.; and Zednik, Ernest R., 3,698,984.

Cameli, Nazzareno: *See—*
Carbonaro, Antonio; Greco, Alberto; Asta, Gino Dall; and Cameli, Nazzareno, 3,699,088.

Cameron Iron Works, Inc.: *See—*
Allen, Herbert, 3,698,227.

Campbell, Frederick: *See—*
MacDonald, Eric; and Campbell, Frederick, 3,698,908.

Campbell, Mark E., to North American Rockwell Corporation. Fingerprint analysis device. 3,699,519, Cl. 340-146.30e.

Campbell, William G., to Hurst Performance Inc. Rod forming process and apparatus. 3,698,228, Cl. 72-306.000.

Canadian Cane Equipment Ltd.: *See—*
Tilby, Sydney E., 3,698,459.

Canadian General Electric Company Limited: *See—*
Eastcott, Peter de Hertel; and Welch, James Ernest, 3,698,750.

Canadian Imperial Bank of Commerce: *See—*
Browning, Stanley Albert Charles; and Williams, Glen, 3,698,715.

Canadian National Railway Company: *See—*
Cass, George R., 3,699,563.

Canadian Safety Fuse Company Limited: *See—*
Welsh, David Martin, 3,698,280.

Canadn Patents and Development Limited: *See—*
Schreiber, Kurt, 3,698,133.

Canizares, Luis. Game simulating a bullfight. 3,698,717, Cl. 273-134.0ag.

Cann, Peter L.; and Duell, Richard J., to Carrier Corporation. Centrifugal fan. 3,698,833, Cl. 415-201.000.

Capowski, Robert S.; Unterberger, Robert M.; and Horsman, Larry R., to International Business Machines Corporation. Input/output system with dedicated channel buffering. 3,699,530, Cl. 340-172.500.

Caprara, Giuseppe: *See—*
Messina, Giuseppe; Montorsi, Giorgio; and Caprara, Giuseppe, 3,699,133.

Caras, Bernard, to Burroughs Corporation. Keep-alive electrode for display panel. 3,699,376, Cl. 313-197.000.

Carbonaro, Antonio; Greco, Alberto; Asta, Gino Dall; and Cameli, Nazzareno, to Goodrich, B. F., Company, The. Copolymers of polycyclic dienes. 3,699,088, Cl. 260-79.50b.

Carl Zeiss-Stiftung; a/b/a Carl Zeiss: *See—*
Hocherl, Gunther, 3,699,348.

Carlisle Chemical Works, Inc.: *See—*
Hechenbleikner, Ingenuin A.; Hussar, John F.; Koeniger, Arthur F.; and Bresser, Robert E., 3,699,152.

Carlson, Arthur, Jr., to Haver-Lockard Laboratories. Method of administering amino acids to convalescing livestock and composition therefor. 3,699,219, Cl. 424-14.000.

Carlson, Carl B.; McKeeman, William M.; and Price, William C., to Burroughs Corporation. Address manipulation circuitry for a digital computer. 3,699,528, Cl. 340-172.500.

Carlson, Clarence A., to Northern Engraving Company. Method of electrodepositing coral copper on copper foil. 3,699,018, Cl. 204-52.00r.

Carlson, Ernest C.; Howells, Arthur J., Jr.; Jennings, Marvin D.; Eastman, Donald R.; and Sheets, Edward G., to International Harvester Company. Control system for material handling equipment. 3,698,580, Cl. 214-138.00r.

Carlsson, Stig Ake Ingomar: *See—*
Gagneun, Andre; Brandstrom, Arne Elof; and Carlsson, Stig Ake Ingomar, 3,699,124.

Carothers Sheet Metal Company: *See—*
Brawn, Philip E., 3,698,708.

Carpano & Pons S.A.: *See—*
Levoin, Francis Jean Henri Raymond, 3,698,119.

Carrier Corporation: *See—*
Cann, Peter L.; and Duell, Richard J., 3,698,833.

Carroll, David I.: *See—*
Cohen, Martin J.; Carroll, David I.; Wernlund, Roger F.; and Kilpatrick, Wallace D., 3,699,333.

Carter, Clyde Thomas, to AMP Incorporated. Electrical connector having improved contact retention means. 3,699,502, Cl. 339-176.00m.

Carter-Wallace, Inc.: *See—*
Ludwig, Bernard J.; Berger, Frank M.; and Fukui, George M., 3,699,097.

Case, J. I., Company, mesne: *See—*
Lamer, Gerald P.; and Thiele, Duane L., 3,698,569.

Cash, Michael J.: *See—*
Eck, Bertil; and Cash, Michael J., 3,699,587.

Casper, Le Roy V. Balloon gun and game. 3,698,374, Cl. 124-11.000.

Cass, George R., to Canadian National Railway Company. Wheel slip detector. 3,699,563, Cl. 340-268.000.

Castro, Anthony J., to Akzona Incorporated. Polyhydroxamides and polyurethanes therefrom. 3,699,078, Cl. 260-47.0cb.

Caton, George, to Yorkshire Switchgear and Engineering Co., Limited. Electric circuit breakers. 3,699,290, Cl. 200-150.00l.

Cattanach, John, to Mobil Oil Corporation. Selective separation by a chromatographic process. 3,699,182, Cl. 260-674.0sa.

Cattaneo, Sergio, to Honeywell Information Systems Italia. Serial printer with fixed interposer. 3,698,529, Cl. 197-49.000.

Catug Corporation: *See—*
Stevens, John N., 3,698,349.

Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., to Olin Corporation. Oxidation resistant article of an iron base alloy containing chromium and aluminum and/or silicon. 3,698,964, Cl. 148-31.500.

Causer, Roy; Farren, John; Jones, Terence Leslie; Taylor, Brian Leslie; and Webster, Ronald Kerry, to United Kingdom Atomic Energy Authority. Scanning light detectors. 3,698,819, Cl. 356-203.000.

Cavalleri, Bruno; Bellasio, Elvio; Testa, Emilio; and Maffii, Giulio. Pharmacologically active compounds. 3,699,151, Cl. 260-473.00r.

Cebula, Thaddeus J.: *See—*
Little, John W.; and Cebula, Thaddeus J., 3,698,014.

Cebular, John V. Collapsible ladder device. 3,698,512, Cl. 182-164.000.

Cefilac: *See—*
Sejournet, Jacques; and Garin, Jose Ignacio Martinez, 3,698,070.

Celanese Corporation: *See—*
Boom, Abraham A., 3,699,038.
Organ, Glenn E.; and Wile, Ronald H., 3,699,054.
Starr, Leon; and Runyon, David Jon, 3,699,062.

Central Specialties Co.: *See—*
Ballenger, William C., 3,698,656.

Ceskoslovenska akademie ved: *See—*
Kolinsky, Miloslav, 3,698,439.
Wichterle, Otto, 3,699,089.

Cessna Aircraft Company, The: *See—*
Martin, Robert J., 3,698,287.
Reimer, Leonard H., 3,698,189.

Chadima, George E.: *See—*
Iliff, Walter R.; Holt, John M.; Chadima, George E.; and Brown, Robert G., 3,699,324.

Chaffin, Frank R.: *See—*
Ballentine, John W.; and Chaffin, Frank R., 3,698,257.

Chambolle, Stephane: *See—*
Hanff, Michel Max; and Chambolle, Stephane, 3,698,820.

Chandra, Grish; Owen, William J.; Lloyd, Norman C.; and Cooper, Bryan E., to Midland Silicones Limited. Organosilicon compounds. 3,699,140, Cl. 260-448.2On.

Chaney, Robert L., to Hewlett-Packard Company. Flow-through hollow cathode spectral light source and method of operating same. 3,699,383, Cl. 315-111.000.

Chang, David T. L. Packing guide for flexible materials. 3,698,655, Cl. 242-76.000.

Chapin, Richard D. Water distributing hose. 3,698,195, Cl. 61-12.000.

Charles, James A.: *See—*
Swoveland, Jackie E.; Irvin, Lothair; and Charles, James A., 3,699,288.

Chaston Medical & Surgical Products, Inc.: *See—*
Stone, Charles E., 3,698,393.

Chatourel, Pierre; and Lefebvre, Jean, to Regie Nationale des Usines Renault. Automatically operated multiple cavity die for low-pressure chill-casting. 3,698,471, Cl. 164-340.000.

Cheever, Daniel R.: *See—*
De Sa E Silva, Claudio; and Cheever, Daniel R., 3,699,413.

Chemagro Corporation: *See—*
Gier, Delta W.; and Calhoon, Audra M., 3,699,232.

Chemical Projects Limited: *See—*
Pogorski, Louis A., 3,698,588.

Chemiebau Dr. A. Zieren GmbH & Co. KG: *See—*
Brendt, Dieter; Helms, Gerd; and Keunecke, Gerhard, 3,699,008.

Cheney, Harold L., to Chevron Research Company. Orchard heater. 3,698,379, Cl. 126-59.500.

Chernow, Michael, to Monocraft, Inc. Clutch mechanism for jewelry pin. 3,698,044, Cl. 24-108.000.

Chesser, Billy G.: *See—*
Browning, William C.; and Chesser, Billy G., 3,699,042.

Chevron Reseah Company: *See—*
Kohn, Gustave K., 3,699,163.

Chevron Research Company: *See—*
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Bacskai, Robert, 3,699,043.
Cheney, Harold L., 3,698,379.
Hughes, Thomas R.; and Sieg, Robert P., 3,699,035.
Kohn, Gustave K., 3,699,122.
Smith, Calvin S.; and McLeod, William J., 3,699,218.
Sweeney, William A., 3,699,157.
White, Robert J., 3,698,881.

Chi Kai Kwok, Clyde, to Rippingille, Edward V., Jr. Fluid oscillator and pulsating dental syringe employing same. 3,698,416, Cl. 137-119.000.

Chibata, Ichiro; Kakimoto, Toshio; Shibatani, Takeji; and Nishimura, Noriyuki, to Tanabe Seiyaku Co., Ltd. Fermentative preparation of coenzyme A. 3,698,999, Cl. 195-29.000.

Chisholm, Eugene H.; and Stuart, Robert L. Detachable goose-neck towing device. 3,698,740, Cl. 280-491.00c.

Cho, Antonio. Lead sharpener. 3,698,456, Cl. 144-28.110.

Chrysler Corporation: *See—*
Hunter, William A., 3,698,160.

Chupp, John Paul, to Monsanto Company. 1-(3-Trifluoromethylphenyl)-4,6-diisopropyl-3, 5-dimethylhexahydro-1,3,5-triazin-2-one as a herbicide. 3,698,886, Cl. 71-93.000.

Chupp, John Paul, to Monsanto Company. Ureas and phytotoxicants. 3,698,887, Cl. 71-120.000.

Chvatlinsky, Kurt: *See—*
Bonleitner, Wolfgang; Chvatlinsky, Kurt; and Hanke, Walter, 3,698,530.

Ciba-Geigy AG: *See—*
Rabussier, Bernard; Mandon, Jean Pierre; and Hennart, Claude, 3,698,974.

Ciba-Geigy Corporation: *See—*
Dietrich, Henri, 3,699,226.
Gagneun, Andre; Brandstrom, Arne Elof; and Carlsson, Stig Ake Ingomar, 3,699,124.
Meisels, Alex; and Schott, Emilio, 3,699,116.

Cincinnati Milacron, Inc.: *See—*
Evans, Wendell I., 3,698,435.
Kauffman, Harry D.; and Davis, Malcolm F., 3,699,303.
Losey, Jerry E., 3,699,301.

Ciochetto, Joseph James: *See—*
Greenberger, Joseph Irwin; and Ciochetto, Joseph James, 3,698,469.

Cisney, Merle E., to Crown Zellerbach Corporation. Hydroxymethyl, methylthio phenols. 3,699,172, Cl. 260-609.00f.

Cities Service Research & Development Company: *See—*
Gregoli, Armand A.; and Mounce, William R., 3,698,876.

Citizen Wch Company Limited: *See—*
Hatsuse, Toshikazu; Ueda, Hiromi; Ozawa, Shouiti; and Yasuda, Yuh, 3,699,412.

Clark, Edgar L., to Commercial Solvent Corporation. Water-soluble alkyd resin compositions. 3,699,065, Cl. 260-22.00r.

Clark Equipment Company: *See—*
Goyarts, Wynand M.J.M., 3,698,581.
Grant, Lewis F., 3,698,737.
King, James F., 3,698,490.
Perez, Arthur, 3,698,205.

Clark, John B. Aberration-free compensator for use in white light interferometry. 3,698,814, Cl. 356-107.000.

Clark, Larry K.: *See—*
Hill, Frank W.; Bartlett, Peter G.; and Clark, Larry K., 3,699,512.

Clark, William H.; and Hays, William R., to Dow Corning Corporation. Silicone elastomer with unprimed adhesion. 3,699,072, Cl. 260-37.0sb.

Clary Corporation: *See—*
Reynolds, Robert W.; and Wight, George P., 3,698,823.

Clayton Manufacturing Company: *See—*
Cline, Edwin L., 3,698,243.

Cline, Edwin L., to Clayton Manufacturing Company. Apparatus for controlling the characteristics of fluid pressure operated friction type power absorption devices. 3,698,243, Cl. 73-135.000.

Clinkenbeard, Donald E., to Dayco Corporation. Endless power transmission belt testing means. 3,698,242, Cl. 73-[illegible]4.000.

Clow Corporation: *See—*
Bevington, William J., 3,698,744.

Cochran, David L.; Deleray, Arthur L.; and Lehman, John P., to MB Associates. Telescopic rocket. 3,698,320, Cl. 102-49.300.

Coffey, Charles A., to Harris-Paint Company. Spray head. 3,698,645, Cl. 239-573.000.

Cohen, Edwin; and Altmilier, John C., to Singer Company, The. Apparatus to match the color of a monochrome display to average color of an adjacent full color display. 3,699,244, Cl. 178-5.40r.

Cohen, Martin J.; Carroll, David I.; Wernlund, Roger F.; and Kilpatrick, Wallace D., to Gno, Franklin, Corporation. Apparatus and methods for separating, concentrating, detecting, and measuring trace gases. 3,699,333, Cl. 250-41.9tf.

Cohen, Murray F.; and Tarasevich, Michael, to Kollsman Instrument Corporation. Apparatus using a beam of positive ions for controlled erosion of surfaces. 3,699,334, Cl. 250-49.5te.

Colantuono, William R., to Crucible Inc. Protective coating. 3,698,943, Cl. 117-53.000.

Colaud, Gerard; and Fanene, Bernard, to Societe Industrielle Honeywell Bull (Societe anonyme). Mounting system for printed circuit boards. 3,699,396, Cl. 317-101.0dh.

Cole, James B., to Boeing Company, The. Variable camber airfoil. 3,698,668, Cl. 244-44.

Cole, John Barrington: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Cole, John Barrington; Miles, John Walter; and Griefiths, Graham Ernest, 3,698,562.

Cole, Roy D., to United States of America, Navy. Angular rate bombing system. 3,699,310, Cl. 235-61.50d.

Colgate-Palmolive Company: *See—*
Drukker, Alexander E., 3,699,099.

Grand, Paul S.; Falivene, Pasquale Joseph; and Furgal, Henry P., 3,698,095.
Collins, Edward C.; and Hittle, Eugene C., to Sears, Roebuck and Co. Under-cabinet radio. 3,698,780, Cl. 312-245.000.
Collins Radio Company: *See—*
Burke, Jack J.; and Guillot, Joseph M., Jr., 3,698,621.
Huntsinger, Dean P., 3,699,461.
Iliff, Walter R.; Holt, John M.; Chadima, George E.; and Brown, Robert G., 3,699,324.
Peterson, Wesley D.; and Southworth, Donovan A., 3,699,483.
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Columbia Belford Inc.: *See—*
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Columbia Broadcasting System, Inc.: *See—*
Moeser, Alan J., 3,698,128.
Combustion Engineering, Inc.: *See—*
Groves, Malcolm D., 3,698,756.
Commercial Solvent Corporation: *See—*
Clark, Edgar L., 3,699,065.
Commissariat a l'Energie Atomique: *See—*
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Conner, John R. Self-cleaning filter system. 3,698,555, Cl. 210-138.
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Connor, Daniel S.; and Krummel, Harry Karl, to Procter & Gamble Company, The. 1,3,5-Trihydroxy-2,4,6-benzene tricarboxylic acid and water soluble salts thereof. 3,699,159, Cl. 260-521.00r.
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De Graff, Peter H., to National Cash Register Company, The. Compact print head assembly with antirebounding means. 3,698,528, Cl. 197-1.000.
De Jong, Eduard B. M., to Technicon Instruments Corporation. Apparatus for pumping with viscosity control. 3,698,870, Cl. 23-253.00r.
De Koe, Oscar Bernardus Philomenus Rikkert; and Verbeek, Robert Jacques, to U.S. Philips Corporation. Telecommunication system with time division multiplex. 3,699,260, Cl. 179-15.0bs.
De Lucia, Victor E., to Torr Laboratories, Inc. High voltage miniaturized relay. 3,699,486, Cl. 335-131.000.
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Dobler, Christian D.; and Lilly, Herbert J., Jr., to Subsea Equipment Associates Limited, mesne. Fluid-swivel. 3,698,433, Cl. 137-615.000.

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Wininger, John M., Jr., 3,698,096.
Ebco Manufacturing Company: *See—*
Radcliffe, Richard J., 3,698,603.
Ebeling, Robert W., Jr., to United Aircraft Corporation. Nonsustaining hybrid propellant grain. 3,698,191, Cl. 60-220.000.
Eberle, Marcel K.; and Houlihan, William J., to Sandoz-Wander, Inc. Process for 5 H-imidazo [2,1-a] isoindoles. 3,699,119, Cl. 260-309.600.
Eberspacher, J.: *See—*
Kofink, Siegfried, 3,699,354.
Eck, Bertil; and Cash, Michael J., to Honeywell Inc. Recorder for recording on heat-sensitive material. 3,699,587, Cl. 346-139.00c.
Eck, Richard H. Directional infrared heating element. 3,699,309, Cl. 219-553.000.
Eckerlin, Herbert M., to Corning Glass Works. Fluidic adder-subtracter utilizing threshold logic. 3,698,632, Cl. 235-201.0pf.
Eckhardt, Wilfried O., to Hughes Aircraft Company. Offswitching of liquid metal arc switching device by internal current diversion to an auxiliary electrode. 3,699,384, Cl. 315-111.000.
Economics Laboratory, Inc.: *See—*
Nystuen, David L., 3,698,644.
Eder, Otto: *See—*
Schwab, Johann; Buchel, Kurt; Eder, Otto; Hascic, Wladimir; and Marek, Ludwig, 3,698,027.
Edwards, Harrison F. Ionic wind machine. 3,699,387, Cl. 317-4.000.
Edwards, Harvey R.: *See—*
Radig, Gary A.; Rowell, Cliva A., Jr.; and Edwards, Harvey R., 3,698,477.
Edwards, William F. Roll gate latch. 3,698,752, Cl. 292-104.000.
Egami, Katsusuke: *See—*
Iwaoka, Mutsuo; Takegawa, Akio; Inoue, Hiraku; Egami, Katsusuke; Nishikura, Kouiti; Yamashita, Shigeji; and Nagayasu, Tadahiro, 3,698,178.
Egger, Georg M. Method of producing rubber profiles. 3,699,197, Cl. 264-40.000.
Ehrlich, Melvin P.; Stoller, Milton; and Grand, Stanley, to Hycel, Inc. Biological cell analyzing system. 3,699,336, Cl. 250-83.3uv.
Eibe, Werner W., to Blaw-Knox Foundry & Mill Machinery, Inc. Roll changers. 3,698,226, Cl. 72-239.000.
Eichhorn, Jacob; and Roth, Stanley F., to Dow Chemical Company, The. Method for making high barrier coated papers. 3,698,934, Cl. 117-76.00p.
Eilts, Larry E., to United States of America, Interior. Reactor fault relay. 3,699,391, Cl. 317-18.00d.
Eirich, Gustav: *See—*
Eirich, Wilhelm; and Eirich, Gustav, 3,698,842.
Eirich, Wilhelm; and Eirich, Gustav. Pelletising apparatus. 3,698,842, Cl. 425-75.000.
Eisenberg, Morris, to Elca Battery Company. Galvanic cell. 3,698,953, Cl. 136-20.000.
Eisner, Steve, to Norton Company. Vibratory process. 3,699,014, Cl. 204-35.00r.
Eisner, Steve, to Norton Company. Polar activating particles for electrodeposition process. 3,699,017, Cl. 204-49.000.
Ekstrand, James, to Burroughs Corporation. Method and apparatus for inspecting plated-through printed circuit board holders. 3,698,821, Cl. 356-237.000.
Elazar, Shmuel, to Statham Instrument, Inc. Differential amplifier. 3,699,469, Cl. 330-30.00d.
Elca Battery Company: *See—*
Eisenberg, Morris, 3,698,953.
Electric Reduction Company of Canada, Ltd.: *See—*
Rapson, William H., 3,698,995.
Electrostatic Equipment Corporation: *See—*
Goodridge, Walter R., 3,698,847.

Elektro-Physik Hans Nix & Dr. Ing. Steinguever, KG: *See—*
Steingroever, Erich, 3,699,487.
Elins, Herbert S.; and Van Meter, James P., to Eastman Kodak Company. Photographic elements, compositions and processes. 3,698,901, Cl. 96-33.000.
Ellis, Gaylord O.; and Halat, John A., to Sperry Rand Corporation. Power transmission. 3,698,286, Cl. 91-486.000.
Ellis, Walter S., to Schulze & Burgess Company. Variable positioning means. 3,698,052, Cl. 29-38.00c.
Emanuel, Marom: *See—*
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Emerson & Cuming, Inc., mesne: *See—*
Henderson, Craig, 3,699,050.
Emmett, Robert C., Jr.; Dahlstrom, Donald A.; and Brozovich, John C., to Envirotech Corporation. Apparatus for steam drying filter cake. 3,698,556, Cl. 210-178.000.
Emoto, Masayuki; and Maki, Yoshiyuki, to Hitachi Limited. Alkaline-electrolyte-zinc anode air-depolarized battery. 3,698,956, Cl. 136-86.00a.
Ence, Elmars, to Olin Corporation. High conductivity, high strength copper alloys. 3,698,965, Cl. 148-32.500.
Endou, Hidehiro; and Yokota, Takashi, to Yokota Kinzoku Kogyo Co., Ltd. Curtain hanger. 3,698,034, Cl. 16-87.40r.
Energy Conversion Devices, Inc.: *See—*
Neale, Ronald G., 3,699,543.
Engel, Heinz: *See—*
Mohr, Bernhard; Engel, Heinz; and Heijnis, James Watt Ijsbrand, 3,698,614.
Engelbach, Heinz: *See—*
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English Electric Company, The: *See—*
Paddison, Eric; Wilson, Christopher George; and Gray, Frederick Martin, 3,699,431.
Enright, Dennis J.; Kahabka, Richard D.; and Miller, Donald F., to Minnesota Mining and Manufacturing Company. Conductive probe assembly and method of using. 3,699,501, Cl. 339-108.0tp.
Enroe, Paul V.: *See—*
Jones, John E.; and Enroe, Paul V., 3,699,312.
Enshu Limited: *See—*
Sakamoto, Toemon, 3,698,442.
Enterprise Brass Works: *See—*
Nelson, Lowell F., 3,698,592.
Entwistle, Clive E. Shoulder saddle assembly. 3,698,608, Cl. 224-6.000.
Enviro Control, Inc.: *See—*
Bochinski, Julius H., 3,699,559.
Environment Metrology Corporation: *See—*
Brown, Verne R., 3,699,432.
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Hodge, Thomas, Jr.; and Bradie, Peter R. (said Hodge, Thomas, Jr. assor. to), 3,699,564.
Erhardt, William A., Jr., to TRW Inc. Gaging mechanism for fastener attaching machine. 3,698,616, Cl. 227-3.000.
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Eshelman, Philip V.; Erickson, Roy O.; and Marsh, Keith D., to Holley Carburetor Company. Throttle return spring redundancy system. 3,698,372, Cl. 123-198.0b0.
Espanion, Gunther: *See—*
Feltgen, Karl-Heinz; and Espanion, Gunther, 3,698,610.
Espunes, Luis Arizmendi, to Instituto de Quimica Fisica Rocasolano. Process for the lubrication of mechanical systems subjected to very high contact pressure. 3,698,513, Cl. 184-5.000.
Esso Production Research company: *See—*
Matthews, Jamie F., Jr., 3,698,199.
Esso Research and Engineering Company: *See—*
McQuade, John E., Jr., 3,698,978.
Eubank, William J., to Irvin Industries Inc. Spring latching safety belt push type. 3,698,046, Cl. 24-230.00a.
European Atomic Energy Community (Euratom): *See—*
Grin, Michel; and Marchal, Francois, 3,699,297.
Evans, David F.: *See—*
Litvinoff, James R.; and Evans, David F., 3,698,327.
Evans, Wendell I., to Cincinnati Milacron, Inc. Multisection valve and housing therefor. 3,698,435, Cl. 137-625.180.
Evans, William L., to Du Pont de Nemours, E. I., and Company. Detonating fuse of petn-polyethylacrylate. 3,698,316, Cl. 102-27.000.
Everett, Cecil D., to Warner & Swasey Company, The, mesne. Automatic balancing device. 3,698,139, Cl. 51-237.000.
Everett, James L., III. Dynamically matched set of golf clubs. 3,698,239, Cl. 73-65.000.
Ewing, Channing L., to United States of America, Navy. Vertebral fracture prevention system. 3,698,670, Cl. 244-122.0ag.
Expandet S.A.: *See—*
Mallet, Emile, 3,698,279.
Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,698,481.
Livingston, William L., 3,698,482.
Fagan, James R., to North American Rockwell Corporation. Film viewer. 3,699,327, Cl. 240-41.300.
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Kobler, Richard; and Fagan, William F., 3,698,723.
Fair-Quip Corporation: *See—*
Delli-Gatti, John L., 3,698,768.
Fairbanks, Henry N., to Itek Corporation. Photographic processor. 3,698,306, Cl. 95-94.000.
Fairchild Camera and Instrument Corporation: *See—*
Blome, Eugene R., 3,698,928.
Fairchild Industries, Inc.: *See—*
Hoyer, Sigurd, 3,699,576.
Falivene, Pasquale Joseph: *See—*
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Hagemann, Hermann, 3,699,162.
Hermann, Karl-Heinz; Schneider, Joachim; Rudolph, Hans; and Nawrath, Gunter, 3,699,183.
Peters, Karl-Heinz; and Neeff, Rutger, 3,699,126.
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Straub, Richard K., 3,698,701.
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Farrow, Roger M.; Kimber, Anthony B.; Cole, John Barrington; Miles, John Walter; and Griefiths, Graham Ernest, to Balston, W. & R., (Industrial) Limited. Porous support core for disposable tube filter. 3,698,562, Cl. 210-488.000.
Fassler, Michael H.; and Perron, James S., to United Aircraft Corporation. Method of removing silaceous cores from nickel and cobalt super alloy castings. 3,698,467, Cl. 164-132.000.
Fastabend, Patrick A.: *See—*
Cvacho, Daniel S.; Fastabend, Patrick A.; Garriques, Alfred L.; and Jensen, Eric L., 3,698,593.
Federal Paper Board Company, Inc.: *See—*
Arneson, Edwin L., 3,698,151.
Federico, Armando; and Guarino, Henry R., to Avco Corporation. Monitoring system for physiological support systems. 3,698,381, Cl. 128-1.00r.
Feese, Glenn A.: *See—*
Crane, Paul J.; and Feese, Glenn A., 3,699,249.
Fefferman, Gerald Burt: *See—*
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Feier, Milton: *See—*
Pantzer, Myron; and Feier, Milton, 3,698,852.
Fein, Marvin; Loprest, Frank; and Shaheen, Donald G., to Thiokol Chemical Corporation. Solid stablized hydrazinium diperchlorate propellant. 3,698,969, Cl. 149-19.000.
Feiss, Rene T., to Sulzer Brothers Limited. Method for mounting a pipe in a perforated plate. 3,698,067, Cl. 29-470.100.
Fekete, Frank; Thrash, David J.; and Pulman, Leonard J., to Koppers Company, Inc. Polyester laminate and method for manufacture. 3,698,981, Cl. 156-293.000.
Feltgen, Karl-Heinz; and Espanion, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Process and device for the manufacture of a non-woven matted web from synthetic yarn. 3,698,610, Cl. 226-7.000.
Fenwick, Jay G., to Streater Industries, Inc. Display stand. 3,698,567, Cl. 211-183.000.
Fernstrom, Gustaf Harry, to Atlas Copco Aktiebolag. Feed to driving tool having band held screws. 3,698,599, Cl. 221-25.000.
Ferris, Frank Donald. Dispensing for medicaments. 3,698,390, Cl. 128-222.000.
Feuersanger, Alfred E.; and Wassermann, Moe S., to GTE Labatories Incorporated. Solid state device having dielectric and semiconductor films sandwiched between electrodes. 3,699,409, Cl. 317-238.000.
Finch, Thomas Ellwood, to General Electric Company. Temperature controlled soldering iron. 3,699,306, Cl. 219-241.000.
Finch, William L. Flare gun. 3,698,317, Cl. 102-37.400.
Fine, Leonard Wolfe; Matsuda, Ken; and Photis, James Mitchell, to American Cyanamid Company. Catalytic hydration of nitriles. 3,699,164, Cl. 260-561.00n.
Fink, Irving E. Pressure casting devices for casting hollow products. 3,698,470, Cl. 164-281.000.
Fiorentino, Antonio F. Remote radio winch control unit. 3,699,578, Cl. 343-225.000.
Firth, William Charles, Jr.; and Frank, Simon, to American Cyanamid Company. Certain nitrogen-fluorine compounds and methods of preparation. 3,699,094, Cl. 260-221.000.
Fischer, Robert Frederick, to Bell Telephone Laboratories, Incorporated. Domain propagation arrangement. 3,699,551, Cl. 340-174.0tf.
Fisher, Ivan E., to Owatonna Manufacturing Company. Reel construction with hexagonal spiders for mounting both bats and tine bars. 3,698,166, Cl. 56-220.000.

Fisher, John A., to U.S. Divers Company. Adjustable breathing gas pressure regulator. 3,698,425, Cl. 137-505.250.
Fitting, Samuel E.; and Green, Gary W., to United Aircraft Corporation. Inlet noise silencer for a jet engine. 3,698,509, Cl. 181-33.0ha.
Flannery, Robert J.: *See—*
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Fleissner, Heinz, to Vepa AG. Apparatus for the continuous gaseous treatment of textile materials. 3,698,049, Cl. 26-60.000.
Fleurquin, Yves; and Bruckmann, Andre, to La Cellophane. Process for the preparation of iridescent films and filaments and the product so produced. 3,698,930, Cl. 117-45.000.
Flex Key Corporation: *See—*
Sudduth, William B., 3,699,294.
Flint, Bruce K., to Acton Research Corporation. Diffraction grating with two diffracting surfaces. 3,698,795, Cl. 350-162.00r.
Flint, John Anthony; and Blake, Graham John, to Imperial Chemical Industries Limited. Emulsion polymerisation of vinyl chloride. 3,699,068, Cl. 260-29.600.
Flittie, William J. Feedstuff handling and apparatus. 3,698,578, Cl. 214-58.000.
Fluhr, Frederick R.: *See—*
Brown, Ray B.; Fluhr, Frederick R.; and Hall, George L., 3,698,797.
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Flynn, John F. Automatically aerated leaching field system. 3,698,194, Cl. 61-11.000.
Fogarty, Robert L.: *See—*
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Follette, Neil: *See—*
Bowles, Arnold G.; and Follette, Neil, 3,698,843.
Foote, Richard W. Label dispenser. 3,698,600, Cl. 221-70.000.
Foray Industries, Inc.: *See—*
Iwaoka, Mutsuo; Takegawa, Akio; Inoue, Hiraku; Egami, Katsusuke; Nishikura, Kouiti; Yamashita, Shigeji; and Nagayasu, Tadahiro, 3,698,178.
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Ford, John A., Jr.: *See—*
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Dickie, Ray A.; and Labana, Santokh S., 3,699,185.
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Gropp, Karl H., 3,698,366.
Forkardt, Paul, Kommanditgesellschaft: *See—*
Scharfen, Hans; and Steinberger, Josef, 3,698,729.
Forman, Willey G. Burglar alarm. 3,698,352, Cl. 116-86.000.
Forrester, Harold C.; and Tatum, Harold E., to Louisville Bedding Company. Wrap-around mechanism for the stop motion means of a multi-needle sewing machine. 3,698,335, Cl. 112-243.000.
Forster, Franz; Krusche, Alfred; and Hantelmann, Gunter, to Linde Aktiengesellschaft. Pressure-regulating valve. 3,698,415, Cl. 137-102.000.
Forster, Herbert: *See—*
Maylandt, Helmut; Forster, Herbert; and Juhasz, Josef, 3,699,410.
Fortin, Marcel: *See—*
Townsend, Eric Jean; and Fortin, Marcel, 3,698,778.
Foss, Warren M., to NL Industries, Inc. Photoconductive titanium dioxide material. 3,698,894, Cl. 96-1.500.
Foster, Raymond O. Method and article for detecting the fertile period. 3,699,005, Cl. 195-103.50r.
Foxboro Company, The: *See—*
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Francis, John P. Retractable window case structure and support therefor. 3,698,143, Cl. 52-29.000.
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Avrillon, Rene; Franckowiak, Sigismond; Gatellier, Claude; and Glikmans, Georges, 3,698,998.
Frank, Lee F., to Eastman Kodak Company. Operator responsive programmed learning apparatus. 3,698,100, Cl. 35-9.00a.
Frank, Simon: *See—*
Firth, William Charles, Jr.; and Frank, Simon, 3,699,094.
Frank, Willi; and Gengler, Gustav. Annular radiator. 3,698,473, Cl. 165-51.000.
Franko, Bernard Vincent: *See—*
Beauchamp, Robert Owens, Jr.; Ward, John Wesley; and Franko, Bernard Vincent, 3,699,230.
Franz, John E., to Monsanto Company. 3-Aryl-isothiazole-4,5-dicarboxylates. 3,699,115, Cl. 260-302.00a.
Franzel, Irwin H. Energy transmission apparatus. 3,698,397, Cl. 128-399.000.
Frawley Enterprises, Inc.: *See—*
Sears, Hartley M.; and Schrader, Clarence O., 3,698,825.
Fraysinoux, Roland Francois Edouard, to Compagnie des Compteurs. Method for remote reading successive data of various apparatuses and device for operating the same. 3,699,520, Cl. 340-150.000.
Frederickson, Robert Eugene; Zimmerer, John Louis; and Bailey, Jay Richard, to McCulloch Corporation. Vibration isolation and bumper system. 3,698,455, Cl. 143-32.00r.
Free, Marvin H.: *See—*
Wood, Loren E.; and Free, Marvin H., 3,698,598.
Freed, Jacob B.; and Reiling, Victor G., to Union Pump Company. Lined plug valve. 3,698,422, Cl. 137-375.000.
Freedman, Morris David, to Bendix Corporation, The. Coordinate determining device employing a second order difference signal to determine approximate cursor position. 3,699,253, Cl. 178-19.000.
Freeport Sulphur Company: *See—*
Jolly, Jatinder, 3,698,862.
Fremont, Howard J., to Marine Protein Corporation. Floating fish enclosure. 3,698,359, Cl. 119-3.000.
French, Robert L. Paint brush trim guide. 3,698,033, Cl. 15-246.000.
Fried, Robert. Cradiac rhythm computer device. 3,698,386, Cl. 128-2.06a.
Friedrich Maurer Soehne, Firma: *See—*
Koester, Waldemar, 3,698,292.
Fritz, William Baird; and Hudson, William Jeffrey, Jr., to AMP Incorporated. Filter for a video amplifier. 3,699,272, Cl. 179-170.00f.
Frost, William Thomas, to International Business Machines Corporation. Wideband frequency modulation communications system. 3,699,447, Cl. 325-45.000.
Fuji Photo Film Co., Ltd.: *See—*
Ohkubo, Kinji; Noguchi, Junpei; and Masuda, Takao, 3,699,114.
Fujie, Kuniyoshi: *See—*
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Fujimura, Tsutomu: *See—*
Shigematsu, Hiroji; Yamaguchi, Tomio; Fukue, Hisanobu; Ogawa, Hiroshi; Hashimoto, Takashi; Murakoshi, Kenichi; Suguri, Susumu; and Fujimura, Tsutomu, 3,699,436.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Arima, Kei; Tamura, Gakuzo; Imanaka, Hiroshi; Kousaka, Masanobu; and Fukuda, Akio, 3,699,121.
Umio, Suminori; and Maeno, Shizuo, 3,699,125.
Fujitsu Limited: *See—*
Kiyasu, Zen'Iti; Kawashima, Masao; Sasaki, Shunroku; Mineshima, Yukihiko; and Kurita, Shyoichi, 3,699,567.
Fukaya, Shigeo; and Takagi, Nobuo. Apparatus for optionally selecting thrust force applied to the workpieces in the friction welding. 3,698,617, Cl. 228-2.000.
Fukuda, Akio: *See—*
Arima, Kei; Tamura, Gakuzo; Imanaka, Hiroshi; Kousaka, Masanobu; and Fukuda, Akio, 3,699,121.
Fukue, Hisanobu: *See—*
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Fukui, Haruo: *See—*
Yamasaki, Masaaki; Fujie, Kuniyoshi; and Fukui, Haruo, 3,699,224.
Fukui, Hisaaki; and Araki, Taketoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Composition for developing photopolymerizable lithographic plate elements comprising a developer base agent, an ink-receptivity-affording agent and a desensitizer. 3,698,904, Cl. 96-48.000.
Fukuoka, Tatsuo. Footwear. 3,698,107, Cl. 36-11.500.
Fukushi, Saburo: *See—*
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Fulcher, Edwin Maxwell: *See—*
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Funk, R., & Co., Inc.: *See—*
Funk, Rudolph; and Funk, Roger S., 3,698,705.
Funk, Roger S.: *See—*
Funk, Rudolph; and Funk, Roger S., 3,698,705.
Funk, Rudolph; and Funk, Roger S., to Funk, R., & Co., Inc. Apparatus for folding flexible sheets. 3,698,705, Cl. 270-67.000.
Furgal, Henry P.: *See—*
Grand, Paul S.; Falivene, Pasquale Joseph; and Furgal, Henry P., 3,698,095.
Furuichi, Masayoshi, to Katsuragawa Denki Kabushiki Kaisha. Method and apparatus for supplementing toner in electrophotographic machines. 3,698,926, Cl. 117-17.500.
Furukawa Electric Company Limited, The: *See—*
Morikawa, Kazumasa; Kobayashi, Makoto; Sato, Hiromitsu; and Nakazima, Jun, 3,698,652.
Fuzesi, Stephen; and Lapkin, Milton, to Olin Corporation. Polyurethane foams prepared from oxypropylated and higher oxyalkylated starch-phosphorus-containing polyethers. 3,699,060, Cl. 260-2.5ar.
Gaddis, Kenneth W.: *See—*
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Gaertner, George W., to Shell Oil Company. Process for the production of dimethyl 1-methyl-2-(methylcarmoyl) vinyl phosphate. 3,699,194, Cl. 260-969.000.
GAF Corporation: *See—*
Randall, David I.; and Vogel, Calvin, 3,699,195.
Gagneun, Andre; Brandstrom, Arne Elof; and Carlsson, Stig Ake Ingomar, to Ciba-Geigy Corporation. 2-Benzoyl indole derivatives. 3,699,124, Cl. 260-326.150.
GaLasso, Francis S.; Jacob, Bernarr A.; and Pinto, Jane P., to United Aircraft Corporation. Method of strengthening silicon carbide coated boron filaments. 3,698,970, Cl. 156-3.000.
Garde, Douglas: *See—*
Martin, Edward Albert; and Garde, Douglas, 3,699,458.
Gardner, Robert E., to United States of America, Navy. Signal spectrum generator. 3,699,435, Cl. 324-57.00r.
Gardziella, Arno, to Dynamit Nobel Aktiengesellschaft. Hot melt adhesives comprising C_6 to C_{12} aliphatic dicarbolic acid modified phthalic acid polyester mixture. 3,699,187, Cl. 260-860.000.
Garin, Jose Ignacio Martinez: *See—*
Sejournet, Jacques; and Garin, Jose Ignacio Martinez, 3,698,070.
Garrett, Donald E.; and Sass, Allan S., to Occidental Petroleum Corporation. Continuous process for the conversion of carbonaceous solids into pipeline gas. 3,698,882, Cl. 48-210.000.
Garrett, William R., to Smith International, Inc. Kelly foot valve. 3,698,411, Cl. 137-71.000.
Garriott, Louis B., Jr.: *See—*
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Garriques, Alfred L.: *See—*
Cvacho, Daniel S.; Fastabend, Patrick A.; Garriques, Alfred L.; and Jensen, Eric L., 3,698,593.
Gartner, Robert. Screw drive. 3,698,258, Cl. 74-424.800.
Garzotto, Felice, to Rimar S.p.A. Machine for washing and treating with finishing agents yarns of natural, artificial and synthetic fibers wound on a reel. 3,698,211, Cl. 68-19.200.
Gasc, Jean-Claude: *See—*
Nedelec, Lucien; and Gasc, Jean-Claude, 3,699,100.
Gaspar, Bela. Method of producing colloid relief images. 3,698,902, Cl. 96-35.000.
Gastin, Darrell L., to Goodyear Tire and Rubber Company, The. Valve assembly. 3,698,428, Cl. 137-595.000.
Gastler, John H.: *See—*
Beane, David J.; and Gastler, John H., 3,698,186.
Gatellier, Claude: *See—*
Avrillon, Rene; Franckowiak, Sigismond; Gatellier, Claude; and Glikmans, Georges, 3,698,998.
Gates Rubber Company, The: *See—*
Kesinger, Donald, 3,698,131.
Gaudin, Jean Joseph, to LABAZ. Balance for blood bag. 3,698,494, Cl. 177-118.000.
Gaul, James M.: *See—*
Benkeser, Robert A.; and Gaul, James M., 3,699,143.
Geddings, Arthur J. Chaise lounge. 3,698,764, Cl. 297-356.000.
Gehlen, Hermann Walter. Amphibious vehicle. 3,698,350, Cl. 115-1.00r.
Geigy Chemical Corporation: *See—*
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich, 3,699,225.
Schindler, Walter; Schmid, Erich; and Zust, Armin, 3,699,104.
Schindler, Walter; Schmid, Erich; and Zust, Armin, 3,699,107.
General Connectors Corporation: *See—*
Greenwald, Fred A., 3,698,727.
General Dynamics Corporation: *See—*
Bielefeld, Ewald J., Jr.; and Puma, Maurice J., 3,698,867.
General Electric Company: *See—*
Ashley, Eugene; Tassie, Douglas P.; and Seemann, James M., 3,698,283.
Berner, Warren E., 3,698,080.
Finch, Thomas Ellwood, 3,699,306.
Grout, Stephen, 3,699,467.
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Joseph, Raymond S.; and Kemeny, Julius, 3,699,580.
Joynson, Reuben E.; and Mundy, Joseph L., 3,699,544.
Mapother, Thomas C.; and Wilson, Richard L., 3,699,406.
Mc Cann, Joseph A.; and Harnden, John D., Jr., 3,699,402.
Pitha, John J., 3,698,920.
Quillinan, John H.; and Mackey, Edward F., 3,699,341.
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Vrabeli, Edward A.; and Cuzzone, Raymond, 3,699,491.
General Foods Corporation: *See—*
Woodruff, George M.; Stoeckli, Oscar W.; and Shando, Joseph G., 3,698,154.
General Industries, Inc.: *See—*
Grenier, Wilfred J., 3,698,684.
General Metors Corporation: *See—*
Maginnis, George B., 3,698,834.
General Motors Corporation: *See—*
Addie, Albert N., 3,699,351.
Dunn, Joseph B., 3,698,781.
Markey, Francis J., 3,698,236.
McLean, William E., 3,699,546.
Reeves, Keith Clarkson, 3,698,259.
Schlotterbeck, David L.; and Briar, John R., 3,698,204.
Shellhause, Ronald L., 3,698,260.
General Refractories Company: *See—*
Staut, Ronald; and Judd, George G., 3,698,922.
General Signal Corporation: *See—*
Haner, Robert B., Jr., 3,699,522.
Hughson, J Donald, 3,699,521.
General Signal Corporations: *See—*
Dobrowolski, Zbigniew C., 3,698,515.
General Tire & Rubber Company, The: *See—*
Hipsher, Gary L., 3,698,703.
Gengler, Gustav: *See—*
Frank, Willi; and Gengler, Gustav, 3,698,473.
Gensler, Walter J., to United States of America, Agriculture. Synthesis of methyl malvalate and methyl 5,6-methano-5-undecenoate. 3,699,146, Cl. 260-464.000.
Gentit, William F., to Stauffer Chemical Company. Functional fluid antioxidants. 3,699,053, Cl. 252-403.000.
Geraci, James L.: *See—*
Walchle, David L.; Smith, Russell G.; and Geraci, James L., 3,698,791.
Gerard, Henry M., to Hughes Aircraft Company. Acoustic surface wave device having improved transducer structure. 3,699,364, Cl. 310-9.800.
Gericke, Otto R., to United States of America, Army. Electronic circuit for prevention of receiver paralysis in ultrasonic echo ranging. 3,698,240, Cl. 73-67.900.
Gerin, Paul; Louat, Lucien; and Quillet, Jean-Pierre, to Progil. Production of carbon disulphide from hydrocarbons. 3,699,215, Cl. 423-443.000.
Gerth, Donald L.: *See—*
Maag, Gustav A.; and Gerth, Donald L., 3,698,097.
Geshner, Robert A.: *See—*
Dodd, John A., Jr.; and Geshner, Robert A., 3,698,903.
Gesner, Bruce David: *See—*
De Fabritis, Raymond P.; Fefferman, Gerald Burt; Gesner, Bruce David; and Radner, Raymond John, 3,699,552.
Gestra-KSB Verlriebsgesellschaft mbH & Co.: *See—*
Lingnau, Josef, 3,698,633.
Geusgens, Joseph T. V. M.: *See—*
Heijnis, James W. I.; and Geusgens, Joseph T. V. M., 3,698,355.
Geyer, Harry J.: *See—*
Helda, Robert W.; and Geyer, Harry J., 3,698,074.
Geyer, Harry J.; and Helda, Robert W., to Motorola, Inc. Apparatus for connecting lead portions of a lead frame to respective pads on a chip. 3,698,620, Cl. 228-6.000.
Ghose, Rabindra N.; and Sauter, Walter A., to American Nucleonics Corporation. Interference cancellation system. 3,699,444, Cl. 325-21.000.
Giaimo, Edward Charles, Jr., to RCA Corporation. Apparatus for charging a recording element with an electrostatic charge of a desired amplitude. 3,699,335, Cl. 250-49.5zc.
Gibbons, Arthur S.: *See—*
Midulla, Guiseppe, 3,699,046.
Giberstein, Bernard, to Begy Societe Europeenne de Bas sans Couture. Method of manufacture of printed articles, in particular printed knitted articles. 3,698,899, Cl. 96-27.000.
Gibson, Earl D., to North American Rockwell Corporation. Automatic adaptive equalizer implementation amenable to MOS. 3,699,321, Cl. 235-152.000.
Giddings & Lears, Inc.: *See—*
Skabunde, Steven Eldor, 3,698,725.
Gie, Ong Tjing: *See—*
La Grouw, Coenraad Maria; and Gie, Ong Tjing, 3,698,921.
Gier, Delta W.; and Wasleski, Daniel M., to Baychem Corporation, mesne. Ethers of dicarboxylic acids. 3,699,150, Cl. 260-471.00r.
Gier, Delta W.; and Calhoon, Audra M., to Chemagro Corporation. Process of killing fungi with acetylenic ketones. 3,699,232, Cl. 424-331.000.
Gierlichs, Michael: *See—*
Baum, Wilhelm; and Gierlichs, Michael, 3,698,917.
Gifford, Maurice J.; Seiferth, Oscar E.; and Grindrod, Paul E., to Mayer, Oscar, & Co., Inc. Method of producing laminated film for packaging use. 3,698,979, Cl. 156-244.000.
Gilbert, Arthur E., to Sears, Roebuck and Co. Outboard motor mounting bracket. 3,698,672, Cl. 248-4.000.
Gilbert, Roswell W., to Technical Management Services, Inc. Magnetic support and motor structure. 3,698,775, Cl. 308-10.000.
Gilchrist, Allan E., to Ford Motor Company. Process for electrodepositing paint. 3,699,030, Cl. 204-181.000.
Gillemot, George W.: *See—*
Anderson, Karl R., 3,699,284.
Thompson, John T.; and Gillemot, George W., 3,699,494.
Gillette Company, The: *See—*
Nigro, Louis V., 3,698,604.
Gillette, Erwin H. Silage distributor. 3,698,576, Cl. 214-17.00c.
Gillies, George Marshall; and Littlechild, James, to United Kingdom Atomic Energy Authority. Rotary kilns. 3,698,697, Cl. 263-32.00r.
Gilligan, William H.; and McQuistion, William E., to United States of America, Navy. Preparation of certain difluoroamino compounds. 3,699,168, Cl. 260-583.0nh.
Givaudan Corporation: *See—*
Bertele, Erhard; and Schudel, Peter, 3,699,169.
Glaesmann, Otto-Ernst: *See—*
Jankowski, Alfons; Glaesmann, Otto-Ernst; and Haake, Gerhard, 3,698,196.
Glander, Fritz: *See—*

Matthieu, Paul; Leuchs, Ottmar; Glander, Fritz; Kuypers, Hubert; and Pelz, Diethart, 3,698,440.

Glanzsoff A.G.: *See—*
Magerlein, Helmut; Meyer, Gerhard; and Rupp, Hans-Dieter, 3,699,161.

Glaser, Ronald A.: *See—*
Mihojevich, Steven; Zerfans, Arthur S.; Ostensen, Ralph G.; Berggren, Albin F., Jr.; and Glaser, Ronald A., 3,698,706.

Glasgow, Colin F., to Pate Foods, Inc., mesne. Method for making potato chip-type food product. 3,698,915, Cl. 99-100.00p.

Glass, Marvin, & Associates: *See—*
Breslow, Jeffrey D., 3,698,714.

Glassman, Jacob A. Packages for small articles. 3,698,549, Cl. 206-63.20r.

Glikmans, Georges: *See—*
Avrillon, Rene; Franckowiak, Sigismond; Gatellier, Claude; and Glikmans, Georges, 3,698,998.

Glolok Co., Ltd.: *See—*
Lieberman, Abraham Buddy, 3,698,153.

Gnage, Oliver W., to Eastman Kodak Company. Gravity-fed storage device. 3,698,602, Cl. 221-225.000.

Gno, Franklin, Corporation: *See—*
Cohen, Martin J.; Carroll, David I.; Wernlund, Roger F.; and Kilpatrick, Wallace D., 3,699,333.

Goddard, David: *See—*
Scales, John Tracey; and Goddard, David, 3,698,017.

Golay, Marcel J. E.; and Waite, Amory H., Jr. Method and means for the water transport of liquids. 3,698,339, Cl. 114-16.00r.

Gold, Harold E.; and Smith, Ralph B., to American Air Filter Company, Inc. Thermal effect reclaim device. 3,698,472, Cl. 165-6.000.

Gomoll, Timothy J.: *See—*
Cummings, John P.; and Gomoll, Timothy J., 3,698,643.

Gompf, Thomas E.; and Lum, Kin Kwong, to Eastman Kodak Company. Diffusion transfer processes and film units comprising compounds which are cleavable upon oxidation in alkali media to produce diffusible dyes or dye precursors. 3,698,897, Cl. 96-3.000.

Goodman, Ernest A.; and Handerhan, Joseph P., to Allis-Chalmers Corporation. Distribution transforr having static shield. 3,699,488, Cl. 336-84.000.

Goodman, Martin M., to Columbia Belford Inc. Sliding structure roller assembly. 3,698,036, Cl. 16-100.000.

Goodrich, B. F., Company, The: *See—*
Carbonaro, Antonio; Greco, Alberto; Asta, Gino Dall; and Cameli, Nazzareno, 3,699,088.
Matthews, Harry P., 3,698,971.
Niemann, Theodore F., 3,699,191.
Siebert, Alan R., 3,699,153.
Stockman, Charles H., 3,699,067.

Goodrich, Robert S. Telephone disconnect device. 3,699,270, Cl. 179-158.000.

Goodridge, Walter R., to Electrostatic Equipment Corporation. Apparatus for producing hollow articles. 3,698,847, Cl. 425-174.000.

Goodwin, Orval L., to Allan Pump and Supply, Inc. Gas carburetor valve. 3,698,367, Cl. 123-120.000.

Goodyear Aerospace Corporation: *See—*
Baker, Ronald E.; Fogarty, Robert L.; and Slagel, Edwin C., 3,698,587.

Goodyear Tire & Rubber Company, The: *See—*
Braden, William D.; Marshall, Richard P.; Greenhorn, Richard J.; and Buser, Arnold S., 3,698,233.
Jacobs, Paul F., 3,698,462.
Kuhar, George A., 3,699,023.
Okuzumi, Yuzi, 3,699,083.
Parkinson, Alan R., 3,699,166.
Sawyer, John M., 3,698,927.
Scheibelhoffer, Anthony S., 3,699,063.
Woodhall, Edwin S.; Appleby, Paul F.; and Touchette, John W., 3,698,987.

Goodyear Tire and Rubber Company, The: *See—*
Crossman, Richard L., 3,698,519.
Downey, Raymond E., 3,699,189.
Gastin, Darrell L., 3,698,428.
Johnson, Ernest D., 3,698,535.
Robinson, Keith D., 3,699,198.

Gordon, George E.; and Landrum, Leon L. Baseball equipment storage rack. 3,698,563, Cl. 211-13.000.

Gordon, Howard W.; and Shepard, James N., to United States Steel Corporation. Strip accumulator. 3,698,613, Cl. 226-118.000.

Gorman, Wayne D. Motor cycle back rests. 3,698,762, Cl. 297-195.000.

Goto, Kenjiro. Gas burner nozzle for use in a gas lighter. 3,698,851, Cl. 431-266.000.

Gotshall, William W., to Marathon Oil Company. Finely divided carbon and the preparation thereof. 3,699,216, Cl. 423-449.000.

Goujard, Marie Pierre, to Compagnie Gervais Danone Hauts de Seine. Manufacture of cheese curd. 3,698,918, Cl. 99-116.000.

Goulet, Roger T.; and Zednik, Ernest R., to Cambridge Filter Corporation. Method of sealing filter cores to frame members. 3,698,984, Cl. 156-293.000.

Gouttierre, Jean, to Ateliers de Constructions Electriquer de Charleroi (ACEC). Guide beam for plural carriages equipped with driving motors. 3,698,270, Cl. 83-11.000.

Goyarts, Wynand M.J.M., to Clark Equipment Company. Van carrier vehicle. 3,698,581, Cl. 214-394.000.

Goyne Pump Company: *See—*
Goyne, Thomas S., 3,698,830.

Goyne, Thomas S., to Goyne Pump Company. Vertical centrifugal suction pump. 3,698,830, Cl. 415-111.000.

Grabe, Christiaan Albertus Johannes: *See—*
Weststrate Jan; and Grabe, Christiaan Albertus Johannes, 3,699,220.

Graber-Rogg, Inc.: *See—*
Martin, Harold B.; and Rogg, Herman O., 3,698,276.

Grace, W. R., & Co.: *See—*
Kehr, Clifton L.; and Wazolek, Walter R., 3,699,084.
Patil, Arvind S.; and Ashby, George E., 3,698,891.
Thunberg, Jon C.; and Philbrook, James E., 3,699,214.
Velten, Terrance J., 3,698,859.

Graco Inc.: *See—*
Szasz, Imre, 3,698,636.

Grakauskas, Vytautas, to Aerojet-General Corporation. Synthesis of tetrafluorohydrazine. 3,698,864, Cl. 23-205.000.

Grand, Paul S.; Falivene, Pasquale Joseph; and Furgal, Henry P., to Colgate-Palmolive Company. Fiber conditioning article. 3,698,095, Cl. 34-9.000.

Grand, Stanley: *See—*
Ehrlich, Melvin P.; Stoller, Milton; and Grand, Stanley, 3,699,336.

Grant, Lewis F., to Clark Equipment Company. Vehicle suspension. 3,698,737, Cl. 280-112.000.

Graser, Earl J., to Olinkraft, Inc. Crown-support carrier. 3,698,550, Cl. 206-65.00e.

Graser, Earl J., to Olinkraft, Inc. Article carrier handle. 3,698,625, Cl. 229-52.00b.

Grassetti, Davide R.; and Murray, John F., Jr., to Arequipa Foundation. Spectrophotometric method and reagents for quantitative determination of thiols. 3,698,866, Cl. 23-230.00r.

Grasshoff, J. Michael; and Taylor, Lloyd D., to Polaroid Corporation. Photographic products and processes employing a compound which in the presence of alkali released a diffusible photographic reagent. 3,698,898, Cl. 96-3.000.

Grassmuck, August W. T. Clutch and throttle control. 3,698,525, Cl. 192-.075.

Gray, Frederick Martin: *See—*
Paddison, Eric; Wilson, Christopher George; and Gray, Frederick Martin, 3,699,431.

Grebow, Wolfe. Animated toy. 3,698,126, Cl. 46-119.000.

Greco, Alberto: *See—*
Carbonaro, Antonio; Greco, Alberto; Asta, Gino Dall; and Cameli, Nazzareno, 3,699,088.

Greco, Thomas E. Styling valet. 3,698,404, Cl. 132-79.000.

Green, Gary W.: *See—*
Fitting, Samuel E.; and Green, Gary W., 3,698,509.

Green, Lawrence E.; and McDermott, William G., to McDermott & Green, Inc. Variable displacement holder. 3,698,132, Cl. 47-41.130.

Greenberger, Joseph Irwin; and Ciochetto, Joseph James, to United Engineering and Foundry Company. Dummy bar handling system. 3,698,469, Cl. 164-274.000.

Greenhorn, Richard J.: *See—*
Braden, William D.; Marshall, Richard P.; Greenhorn, Richard J.; and Buser, Arnold S., 3,698,233.

Greenough, Maurice Leighton; and Kuder, Milton L., to United States of America, Commerce. Method and machine for reading handwritten cursive characters. 3,699,518, Cl. 340-146.30z.

Greenwald, Fred A., to General Connectors Corporation. Distortable seal ring. 3,698,727, Cl. 277-153.000.

Gregoli, Armand A.; and Mounce, William R., to Cities Service Research & Development Company. Vapor liquid separation apparatus. 3,698,876, Cl. 23-288.00e.

Grenier, Wilfred J., to General Industries, Inc. Stem sealing for valving. 3,698,684, Cl. 251-214.000.

Greskovics, Paul, to Litton Business Systems, Inc. Business machine. 3,698,628, Cl. 235-60.00r.

Griefiths, Graham Ernest: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Cole, John Barrington; Miles, John Walter; and Griefiths, Graham Ernest, 3,698,562.

Grier, John D., to Owens-Illinois, Inc. Method for image transfer. 3,698,314, Cl. 101-426.000.

Griffin, Philip Alfred, to Dow Corning Limited. Method for bonding cured siloxane resin surface. 3,698,982, Cl. 156-308.000.

Griffith, Richard A., to Park-Ohio Industries, Inc. Single turn channel coil. 3,699,302, Cl. 219-10.570.

Grimm, Peter, to Metallgesellschaft Aktiengesellschaft. Automatic temperature control system for extruders for molten material. 3,698,844, Cl. 425-144.000.

Grin, Michel; and Marchal, Francois, to European Atomic Energy Community (Euratom). Centering plug for magnetic welding a plug in the end of a tube. 3,699,297, Cl. 219-9.500.

Grindrod, Paul E.: *See—*
Gifford, Maurice J.; Seiferth, Oscar E.; and Grindrod, Paul E., 3,698,979.

Griswold, Augustus W.; and Haritonoff, Boris W., to Keystone Micro-Scan, Inc., mesne. Variable film-width microfilm trimmer. 3,698,275, Cl. 83-481.000.

Groeber, Eugen, to Sperry Rand Corporation. Pneumatic roll device for document handling apparatus. 3,698,538, Cl. 198-33.0ad.

Grogan, Daniel R. Float-sinker. 3,698,120, Cl. 43-43.140.

Gronka, Edward Anthony, to RCA Corporation. High voltage processing of cathode ray tubes. 3,698,786, Cl. 316-26.000.

Gropp, Karl H., to Ford Motor Company. Engine spark timing control system. 3,698,366, Cl. 123-117.00a.

Gropper, Lee: *See—*
Stahl, Lawrence E.; and Gropper, Lee, 3,699,287.

Gross, Eshcol Silas. Power-operated dolly. 3,698,501, Cl. 180-8.00a.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Lateral abutment devices for vehicle windows. 3,698,136, Cl. 49-394.000.

Grotz, Norman; and Maccarone, Michael B. Pressurized dispenser. 3,698,595, Cl. 220-63.00r.

Grout, Stephen, to General Electric Company. Bias circuit for a complementary transistor output stage. 3,699,467, Cl. 330-17.000.

Groves, Malcolm D., to Combustion Engineering, Inc. Gripper device having positive engaging and disengaging means. 3,698,756, Cl. 294-96.000.

Growney, Lawrence J., to Continental Can Company, Inc. Book-type carton. 3,698,544, Cl. 206-45.110.

Grumman Aerospace Corporation: *See—*
Markow, Edward G., 3,698,461.

Grundy, Douglas; and Wills, John E., to United States of America, Navy, mesne. Drain valve having auxiliary seal. 3,698,420, Cl. 137-329.060.

Grundy, Reed H., to Westinghouse Air Brake Company. Propulsion control system for self-propelled two-car trains. 3,698,325, Cl. 105-61.000.

Grunig, James K.; Davis, William B.; and Aitkenhead, William C., to Anaconda Company, The. Extraction of beryllium from ores. 3,699,208, Cl. 423-132.000.

Grunwald, John J.: *See—*
Mersereau, Mark; Rohdenizer, Harold L.; Grunwald, John J.; and Innes, William P., 3,698,940.

GTE Automatic Electric Laboratories, Inc.: *See—*
Rogers, Robert G., 3,699,475.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Pitroda, Satyan G.; and Rekiere, Bernard J., 3,699,264.
Reimer, William A.; and Storz, Frederick G., 3,698,058.
Reimer, William A., 3,699,393.

GTE Labatories Incorporated: *See—*
Feuersanger, Alfred E.; and Wassermann, Moe S., 3,699,409.

GTE Sylvania Incorporated: *See—*
Buescher, William E.; and Kerstetter, Donald R., 3,699,378.
Kruzewski, William Frank; and Siwko, Karol, 3,699,455.

Guarino, Henry R.: *See—*
Federico, Armando; and Guarino, Henry R., 3,698,381.

Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich, to Geigy Chemical Corporation. Control of insects and acarinal with certain pyridyl-thiazoline phosphates and the corresponding phospharothioates. 3,699,225, Cl. 424-200.000.

Gubner, Richard S.: *See—*
Schole, Murry L.; and Gubner, Richard S., 3,699,221.

Gudmundsen, Austin. Golf ball retriever. 3,698,720, Cl. 273-162.00e.

Guedel, Arthur R., to Guedel Company Inc. Elbow locking device. 3,698,389, Cl. 128-77.000.

Guedel Company Inc.: *See—*
Guedel, Arthur R., 3,698,389.

Guerin, Ernest P., to Stevens, J. P., & Co., Inc. Continuous fringe cutter for fabrics woven without weft locked selvages. 3,698,447, Cl. 139-303.000.

Guest, Ashley W.: *See—*
Thompson, Raymond; and Guest, Ashley W., 3,699,479.

Guillot, Joseph M., Jr.: *See—*
Burke, Jack J.; and Guillot, Joseph M., Jr., 3,698,621.

Gulf & Western Industries, Inc.: *See—*
Missimer, Dale J., 3,698,202.

Gulf Research & Development Company: *See—*
Boyle, John P.; Murphy, Clarence R.; and Walsh, William L., 3,699,179.

Gunsalus, Claude A.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Gunther, Phillip B.: *See—*
Weiss, Robert O.; Nikitopoulos, Robert A.; and Gunther, Phillip B., 3,698,959.

Gurtler, Richard W.; and Saltich, Jack L., to Motorola, Inc. Electro-optical coupled-pair using a Schottky barrier diode detector. 3,699,407, Cl. 317-235.00r.

Guyette, Frank L.: *See—*
Hickey, Lionel R.; and Guyette, Frank L., 3,698,805.

Gyori, Louis. Electrical control system. 3,699,414, Cl. 318-139.000.

Gyurk, Warren Joseph: *See—*
Stetson, Harold Wilbur; and Gyurk, Warren Joseph, 3,698,923.

Haake, Gerhard: *See—*
Jankowski, Alfons; Glaesmann, Otto-Ernst; and Haake, Gerhard, 3,698,196.

Hadfield, Glen R. Means for consecutively gathering separated rolls of sod and continuously elevating the same to the level of an accompanying vehicle. 3,698,534, Cl. 198-9.000.

Haferkamp, Wilhelm: *See—*
Pascoe, Peter; Josten, Friedrich; Haferkamp, Wilhelm; and Lucker, Willi, 3,698,861.

Hagemann, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Reaction of phosgene and cyanogen chloride. 3,699,162, Cl. 260-544.00c.

Halat, John A.: *See—*
Ellis, Gaylord O.; and Halat, John A., 3,698,286.

Haldeman, Charles W.; and Basmajian, Vahan V., to Megatech Corporation. Transparent internal combustion engine. 3,698,370, Cl. 123-193.0cp.

Hale, Thomas E., to General Electric Company. Sintered tungsten carbide-base alloys. 3,698,878, Cl. 29-182.700.

Halgren, Phyllis Mott: *See—*
Mott, Carl W., 3,698,168.

Halko, Andrew R.: *See—*
Halko, John J., Sr.; and Halko, Andrew R., 3,699,057.

Halko, John J., Sr.; and Halko, Andrew R. Lubrication. 3,699,057, Cl. 252-49.300.

Hall, Charles H.; Young, Albert L.; and Young, N Keith, to TRW Inc. Large area deployable spacecraft antenna. 3,699,581, Cl. 343-705.000.

Hall, George L.: *See—*
Brown, Ray B.; Fluhr, Frederick R.; and Hall, George L., 3,698,797.

Hall, Lou H., to Texas Instruments, Incorporated. Method and device employing high resistivity aluminum oxide film. 3,698,071, Cl. 29-571.000.

Hall, Raymond Frederick; and Mainard, Douglas Raymond, to U.S. Philips Corporation. Glow discharge display device including an insulating envelope block with an array of cavities therein. 3,699,377, Cl. 313-204.000.

Hallberg, John E., to Industrial Propane, Inc. Diesel booster. 3,698,365, Cl. 123-121.000.

Halliburton Company: *See—*
Zimmerman, Carl W.; and Copland, George V., 3,699,319.

Hamai Demkyu Kogyo Kabushiki Kaisha: *See—*
Jituo, Hamai, 3,698,784.

Hamai Denkyo Kogyo Kabushiki Kaisha: *See—*
Hamai, Jituo, 3,698,785.

Hamai, Jituo, to Hamai Denkyo Kogyo Kabushiki Kaisha. Manufacturing method for small electric lamps. 3,698,785, Cl. 316-19.000.

Hamamoto, Masao; Kamo, Seiichi; and Nakayama, Kiyoshi, to Mitsubishi Chemical Industries Limited. Process for producing slow-acting potassium phosphate fertilizers. 3,698,885, Cl. 71-1.000.

Hamilton, William R., Jr., to Portec, Inc. Insulated rail joints. 3,698,634, Cl. 238-152.000.

Hand, Hi. Brassiere. 3,698,399, Cl. 128-483.000.

Handerhan, Joseph P.: *See—*
Goodman, Ernest A.; and Handerhan, Joseph P., 3,699,488.

Haner, Robert B., Jr., to General Signal Corporation. Locomotive radio control system with address and command signals. 3,699,522, Cl. 340-171.00r.

Hanff, Michel Max; and Chambolle, Stephane, to Compagnie des Compteurs. Apparatus for measuring the transmissive power of the atmosphere employing two transmitters and receivers. 3,698,820, Cl. 356-206.000.

Hanke, Walter: *See—*
Bonleitner, Wolfgang; Chvatlinsky, Kurt; and Hanke, Walter, 3,698,530.

Hannon, Charles N.: *See—*
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Hannon, Warren W.; and Hannon, Charles N., said Hannon, C. N., assor. to Hannon, W. N. Folded newspaper opening mechanism for multiple section inserting machine. 3,698,704, Cl. 270-57.000.

Hansen, A. L., Mfg. Co.: *See—*
Bowers, Thomas S., 3,698,678.

Hansen, Clarence M., to Michigan State University, Board of Trustees of. Tank wagon. 3,698,730, Cl. 280-5.00e.

Hansen, Theodore E.; and Wilson, Floyd A., to Anaconda Wire and Cable Company. Flexible power cable. 3,699,238, Cl. 174-115.000.

Hanson, Donald W.; and Mifflin, Ralph W., to United States of America, Air Force. Tacan ground station track and display system. 3,699,570, Cl. 343-6.00r.

Hanson, Howard G. Haystack forming device. 3,698,767, Cl. 298-27.000.

Hantelmann, Gunter: *See—*
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Hardenbrook, James Maurice: *See—*
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Hardesty, Edwin C.; Krumreich, Charles L.; Mulbarger, Albert E., Jr.; and Walen, Stephen W., to Bell Telephone Laboratories, Incorporated and Western Electric Company, Incorporated. Devices for making electrical connections. 3,699,498, Cl. 339-64.00m.

Hardoiin, Yves: *See—*
Morane, Bruno; Paoletti, Charles; and Hardoiin, Yves, 3,698,453.

Haritonoff, Boris W.: *See—*
Griswold, Augustus W.; and Haritonoff, Boris W., 3,698,275.

Harmgardt, Hans-Lothar, to Northern Electric Company, Limited. Regulating amplifier. 3,699,468, Cl. 330-29.000.

Harmon, Peter E. Speed reading machine. 3,698,103, Cl. 35-35.

Harnden, John D., Jr.: *See—*
Mc Cann, Joseph A.; and Harnden, John D., Jr., 3,699,402.

Harp, Grace E. Doll-like puppet with movable mouth. 3,698,127, Cl. 46-126.000.

Harrah, Robert S.: *See—*
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Harrah, Robert S.; and Kalsi, Manmohan Suigh, said Kalsi assor. to said Harrah, Robert S. Vibration detector. 3,698,351, Cl. 116-70.000.

Harris, John L., to Deltrol Corporation. Manual preset interval timer with latch holding means for contacts. 3,699,281, Cl. 200-38.00r.
Harris, Joseph G.: *See—*
Brandt, Oscar E.; and Harris, Joseph G., 3,698,281.
Harris, Richard H., to International Business Machines Corporation. Catzstrophirally buckling compression column switch and actuator. 3,699,296, Cl. 200-67.0db.
Harris, Ronald E., to North American Rockwell Corporation. Processes using a masking layer for producing field effect devices having oxide isolation. 3,698,966, Cl. 148-187.000.
Harris-Paint Company: *See—*
Coffey, Charles A., 3,698,645.
Hart, Elnora Mott: *See—*
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Hart, Harry Patrick; Kakalec, Robert John; and Walk, Ralph, to Bell Telephone Laboratories, Incorporated. Overvoltage protection of DC to DC converters using ferroresonace. 3,699,424, Cl. 321-11.000.
Harter, James E.; and Rodriguez, Juan A., to Eastman Kodak Company. Automatic illumination control for photographic printing apparatus. 3,698,809, Cl. 355-68.000.
Hartling, Donald C.; Joseph, Hawthorne; and Radin, William, to Mattel, Inc. Animated figure toy. 3,698,125, Cl. 46-118.000.
Hartmann & Braun Aktiengesellschaft: *See—*
Ruse, Alois, 3,698,159.
Harvey, Dennis G., to Allis-Chalmer Manufacturing Company. Spring applied disk brake and handle control for industrial truck. 3,698,504, Cl. 180-52.000.
Harvey, Donald M., to Eastman Kodak Company. Copying device including radiation sensitive members electrically responsive to the reflected image. 3,699,586, Cl. 346-74.00e.
Harwood, Leopold Albert; and Wittmann, Erwin Johann, to RCA Corporation. Amplifier circuits. 3,699,257, Cl. 178-69.5cb.
Harwood, Mervyn Geoffrey; and Schofield, John, to U.S. Philips Corporation. Photo-conductive image intensifiers. 3,699,346, Cl. 250-213.000.
Hascic, Wladimir: *See—*
Schwab, Johann; Buchel, Kurt; Eder, Otto; Hascic, Wladimir; and Marek, Ludwig, 3,698,027.
Hashimoto, Takashi: *See—*
Shigematsu, Hiroji; Yamaguchi, Tomio; Fukue, Hisanobu; Ogawa, Hiroshi; Hashimoto, Takashi; Murakoshi, Kenichi; Suguri, Susumu; and Fujimura, Tsutomu, 3,699,436.
Hashimura, Tetsuo: *See—*
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Hass, Robert H.; and Reeg, Cloyd P., to Union Oil Company of California. Hydrocracking nitrogen containing feedstocks. 3,699,036, Cl. 208-111.000.
Hasselblad, Fritz Victor: *See—*
Dahlgren, Lennart Gunnar Oskar, 3,698,773.
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Alfredsson, Alf Ingva, 3,698,305.
Hasslacher, James G. Vacuum still having heat exchange coils and particle means therewith. 3,699,006, Cl. 203-4.000.
Hasson, Harrith M. Surgical closure. 3,698,395, Cl. 128-335.000.
Hatfield, John Rawson: *See—*
National Aeronautics and Space Administrator, 3,699,511.
Hatsuse, Toshikazu; Ueda, Hiromi; Ozawa, Shouiti; and Yasuda, Yuh, to Citizen Wch Company Limited. Timebase vibrator assembly. 3,699,412, Cl. 318-128.000.
Haver-Lockard Laboratories: *See—*
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Hawley Manufacturing Corporation: *See—*
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Hawthorne, Vaughn T. Interlocking coupler. 3,698,571, Cl. 213-153.000.
Haynes, Peter, to Shell Oil Company. Carbon dioxide-diepoxide copolymers. 3,699,079, Cl. 260-47.0ep.
Hays, William R.: *See—*
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Heal, David; and Parks, James D., to Westinghouse Learning Corporation. Document handling apparatus. 3,698,709, Cl. 271-88.000.
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Hechenbleikner, Ingenuin A.; Hussar, John F.; Koeniger, Arthur F.; and Bresser, Robert E., to Carlisle Chemical Works, Inc. Sulfur containing esters of substituted hydroxyphenyl-alkanoic acids. 3,699,152, Cl. 260-473.00s.
Hecht, Charles L. Mechanical picker for strawberries. 3,698,171, Cl. 56-331.000.
Heightman, Anthony Norman, to Marconi Company Limited, The. Television equipments for fault indication. 3,699,239, Cl. 178-5.4te.
Heijnis, James W. I.; and Geusgens, Joseph T. V. M., to Aku N.V. Apparatus for coating and/or impregnating a sheet material. 3,698,355, Cl. 118-411.000.
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Heikman, Harald Erik: *See—*
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Heimann, Richard F., to Raytheon Company. Digital data selection and display system. 3,699,531, Cl. 340-172.500.
Heinrich, Hans-Walter: *See—*
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Heintzelman, William J.; and Naiman, Michael I., to Petrolite Corporation. Reaction products of wax-anhydride compounds and alcohol. 3,699,154, Cl. 260-485.00j.
Heinz, David M.: *See—*
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Heit, Allyn Harold: *See—*
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Helda, Robert W.: *See—*
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Helda, Robert W., to Motorola, Inc. Contact bonding and packaging of integrated circuits. 3,698,073, Cl. 29-577.000.
Helda, Robert W.; and Geyer, Harry J., to Motorola, Inc. Contact bonding and packaging of integrated circuits. 3,698,074, Cl. 29-626.000.
Helda, Robert W., to Motorola, Inc. Face bonding machine. 3,698,618, Cl. 228-3.000.
Heldt, Carl R. Structural toys. 3,698,123, Cl. 46-29.000.
Helfgott, Theodore: *See—*
Calmon, Calvin; Heit, Allyn Harold; and Helfgott, Theodore, 3,699,039.
Helms, Gerd: *See—*
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Helsley, Grover Cleveland, to Robins, A. H., Company, Incorporated. 4-[1-(ω-Benzoylalkyl)-3-pyrrolidinyl]-2 H-1, 4-benzoxazin-3(4H)-ones. 3,699,105, Cl. 260-244.00r.
Helton, Clyde W. Removable push rod guide for engine assembly. 3,698,060, Cl. 29-200.00p.
Henderson, Craig, to Emerson & Cuming, Inc., mesne. Spray dried product for feed in the manufacture of hollow glass spheres and process for forming said spray dried product. 3,699,050, Cl. 252-317.000.
Henderson, Paul D., to Superior Electric Company, The. Automatic actuator for a drilling machine. 3,698,826, Cl. 408-17.000.
Hendley, Dennis Alfred; and Boersma, Sipko L., to Decca Limited. Angular position sensors. 3,699,558, Cl. 340-196.000.
Henkel & Cie G.m.b.H.: *See—*
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Hennart, Claude: *See—*
Rabussier, Bernard; Mandon, Jean Pierre; and Hennart, Claude, 3,698,974.
Henning, Robert W., to Olin Corporation. Tubular magazine and dispenser therefor. 3,698,115, Cl. 42-49.00r.
Henri, Richaud; and Roussos, Michel, to Compagnie Pechiney. Electrolyte for self-colored anodization of aluminum and alloys. 3,699,019, Cl. 204-58.000.
Henry-Baudot, Jacques, to Kollmorgen Corporation. Series-wave windings for dynamo-electric machines. 3,699,371, Cl. 310-207.000.
Herbage, Bernard S. Hub installing retaining and withdrawing device and method. 3,698,836, Cl. 416-146.000.
Herbert, William, to Black Clawson Company, The. Screening apparatus. 3,698,649, Cl. 241-44.000.
Herbold, Robert J.: *See—*
Buck, Willard E.; Herbold, Robert J.; and Sherman, Randy J., 3,698,514.
Hercules Incorporated: *See—*
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Herden, Robert B., to Singer Company, The. Prismatic font accessing in phototypesetters. 3,698,297, Cl. 95-4.50r.
Hermann, Karl-Heinz; Schneider, Joachim; Rudolph, Hans; and Nawrath, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. High molecular weight polyamides with an improved affinity for acid dyes modified with amino epoxy compound. 3,699,183, Cl. 260-78.00l.
Hermansson, Bo; and Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Converter connections. 3,699,425, Cl. 321-27.00r.
Herr, John A., to Singer Company, The. Electric scissors. 3,698,086, Cl. 30-228.000.
Hertzsch, Hans B., to Deutsche Spinnereimaschinenbau Insolstadt Niederlasng der Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Can changing in strand material handling. 3,698,041, Cl. 19-159.00a.
Heseltine, Donald W.: *See—*
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Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,699,026.
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Heurtley, John Crmpton, to Xerox Corporation. Methods of thermoplastic xerography and apparatus therefor. 3,698,892, Cl. 96-1.100.
Hewlett-Packard Company: *See—*
Chaney, Robert L., 3,699,383.
Kusters, John A., 3,698,792.
Heyl and Patterson, Inc.: *See—*
Rose, Bennie A., 3,698,648.

Hick, Harald Peter; and Pepelnik, Rudolf, to Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H. Compton spectrometer having primary and secondary. 3,699,340, Cl. 250-83.3.
Hickey, Lionel R.; and Guyette, Frank L., to Eastman Kodak Company. Control apparatus for electrophotographic apparatus. 3,698,805, Cl. 355-14.000.
Higgins, David H.: *See—*
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Higham, Peter: *See—*
Leane, John Bryant; and Higham, Peter, 3,699,428.
Hill, Frank W.; Bartlett, Peter G.; and Clark, Larry K., to Bliss, E. W., Company. Apparatus for allocating and timing a plurality of load intervals. 3,699,512, Cl. 340-41.
Hill, Wayne E., to United States of America, Army. Embryo stripper. 3,698,458, Cl. 146-2.00r.
Hindle, Son and Company Limited: *See—*
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Hindle, Thomas; and Banks, David Dugmore, to Hindle, Son and Company Limited. Pneumatic picking mechanisms. 3,698,444, Cl. 139-142.000.
Hingst, Gerd: *See—*
Kundler, Walter; and Hingst, Gerd, 3,699,420.
Hipsher, Gary L., to General Tire & Rubber Company, The. Dual rate fluid damped elastomeric bushing. 3,698,703, Cl. 267-63.000.
Hirahara, Katsuji. Freeze molding slice material. 3,698,201, Cl. 62-62.000.
Hirata, Miyoshi: *See—*
Yamamura, Yuichi; Fujii, Setsuro; Okano, Atsuji; Hirata, Miyoshi; Abiko, Yasushi; Inaoka, Masato; Noroi, Reimei; Iwamoto, Mashiro; Funabashi, Shoichi; and Kaito, Takeo, 3,699,149.
Hirsch, Stanley; and Schneider, Irving, to Structural Industries, Inc. Frame construction. 3,698,114, Cl. 40-155.000.
Hirschberg, Kenneth A., to United States of America, Army, mesne. Seismic system for real-time reporting. 3,699,509, Cl. 340-15.000.
Hirschhorn, Sidney H. Rope clamps. 3,698,042, Cl. 24-19.000.
Hitachi Limited: *See—*
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Hlipala, Edward; and Schindel, Arnold, to Singer Company, The. Temperature compensated adjustable damper unit. 3,699,369, Cl. 310-106.000.
Hocherl, Gunther, to Carl Zeiss-Stiftung; a/b/a Carl Zeiss. Radiation sensitive device for the successive investigation of several samples. 3,699,348, Cl. 250-218.000.
Hodge, Frederick J., to Minnesota Mining and Manufacturing Company. Dropout compensator having a self-balancing switch. 3,699,246, Cl. 178-6.600.
Hodge, Thomas, Jr.; and Bradie, Peter R., said Hodge, Thomas, Jr. assor. to EPC & G, Inc., mesne. Display apparatus. 3,699,564, Cl. 340-317.000.
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Hoffman, Donald O., to American Optical Corporation. Method of treating lens polishing pads. 3,698,937, Cl. 117-113.000.
Hoffman, Robert N.; and Kern, Loyd R., to Atlantic Richfield Company. Drilling method and bit. 3,698,491, Cl. 175-329.000.
Hoffmann-La Roche Inc.: *See—*
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Hogan, Bernard E., Jr. Tire retreading method. 3,698,975, Cl. 156-96.000.
Hohenberg, Reiner Mathias; and Knitter, Heinz, to Bunker-Ramo Corporation, The. Reciprocating switch assembly for distribution panels. 3,699,280, Cl. 200-16.00a.
Holdaway, Daniel O., to International Business Machines Corporation. Radiant energy mark sensor. 3,699,350, Cl. 250-225.000.
Holdsworth, John E.; and Weir, Dallas M., Jr., to Ingersoll-Rand Company. Automatic fluid supply and control means. 3,698,838, Cl. 417-228.000.
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Holland, Dewey G.; Moyer, Ronald C.; Polevy, John H.; and Walde, Robert A., to Air Products and Chemicals, Inc. Fluorinated cyclic alcohol and their esters. 3,699,156, Cl. 260-486.00h.
Holland, William P.; and Azud, Robert E., to Machlett Laboratories Incorporated, The. X-ray tube with electricallp conductive bearing bypass. 3,699,373, Cl. 313-60.000.
Holley Carburetor Company: *See—*
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Hollingsworth, John W.: *See—*
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Holtz, Frederick C., Jr.; and Morrow, Hugh, III, to Crucible, Inc., mesne. Heat resistant alloys of iron, cobalt and/or nickel and articles thereof. 3,698,055, Cl. 29-180.000.
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Hoyer, Sigurd, to Fairchild Industries, Inc. Collapsible reflector. 3,699,576, Cl. 343-18.00b.
Hrivnak, George A.; and Organic, Vincent J., to United States of America, Army. Insertion phase correction of phase shifters by presetting binary counters. 3,699,584, Cl. 343-854.000.
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Huber, Joel E., to Upjohn Company, The. Preparation of cortisone compounds and prednisone compounds. 3,699,136, Cl. 260-397.450.
Huber, John Henry, to AMP Incorporated. Open barrel coaxial cable terminal. 3,699,504, Cl. 339-177.00r.
Hudson, Billy C. Investment casting apparatus. 3,698,468, Cl. 164-255.000.
Hudson, Doyle R., to Olinkraft, Inc. Automatic bag opening and filling apparatus. 3,698,451, Cl. 141-166.000.
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Hughes, Thomas R.; and Sieg, Robert P., to Chevron Research Company. Production of gasoline by averaging and reforming. 3,699,035, Cl. 208-92.000.

Hughson, J Donald, to General Signal Corporation. Decoding system having plural frequency channels. 3,699,521, Cl. 340-171.00a.

Huibers, Derk Th. A.; and Waller, John J., to Lummus Company, The. Process for preparing nitriles. 3,699,147, Cl. 260-465.00c.

Hull, Charles W.; and McKinney, Charles R., to Bell & Howell Company. Magnetic mass spectrometer with shaped, uniformly saturating magnetic poles. 3,699,332, Cl. 250-41.9me.

Hull, Colin G., to Shell Oil Company. Aromatic polysulfites. 3,699,144, Cl. 260-456.00p.

Hunsucker, Jerry Hoyt. Water-dispersed anionic resin compositions stabilized against agglomeration. 3,699,066, Cl. 260-22.0ep.

Hunt, James G.: *See—*
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Hunter, Gregory Michael, to RCA Corporation. Memory system including buffer memories. 3,699,533, Cl. 340-172.500.

Hunter, William A., to Chrysler Corporation. Motor vehicle fuel tank venting. 3,698,160, Cl. 55-385.000.

Huntsinger, Dean P., to Collins Radio Company. Analog harmonic rejecting phase detector. 3,699,461, Cl. 328-134.000.

Huo, Wendell Y. Slide rule with operational guidance and decimal point location means. 3,699,313, Cl. 235-64.300.

Hurlburt, Joseph C.; McCarty, Horace G.; and Locati, Norman C., to Sperry Rand Corporation and Omark Industries, Inc. Blade mount for belt mower. 3,698,167, Cl. 56-291.000.

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Huston, Charles W. Mason's guide for aligning building blocks. 3,698,089, Cl. 33-86.000.

Hutchinson, Eric; and Hetheringto, Gordon, to Thermal Syndicate Limited. Electrical heating elements. 3,699,308, Cl. 219-546.000.

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Hyltin, Tom M.; Kilby, Jack S.; Luecke, Gerald; and Toombs, Harold D., to Texas Instruments, Incorporated. Complex circuit array method. 3,698,082, Cl. 29-624.000.

Hymowitz, Emil W., to United States of America, Navy. Submarine snorkel camouflage method. 3,698,338, Cl. 114-15.000.

Ichimura, Kenji: *See—*
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Ideal Toy Corporation: *See—*
Amici, Francis Robert; Davis, Robert E.; and Levine, Richard, 3,698,134.

Iida, Yoshio: *See—*
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Iimura, Kazuo; Sawada, Kiyoshi; and Kato, Hiroki, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for manufacturing reference scales. 3,698,817, Cl. 356-156.000.

Iketani, Taisho. Device for automatically and periodically spraying a pressurized liquid. 3,698,638, Cl. 239-75.000.

ILC Industries, Inc.: *See—*
Redden, Robert J., 3,698,045.

Ilford Limited: *See—*
MacDonald, Eric; and Campbell, Frederick, 3,698,908.

Iliff, Walter R.; Holt, John M.; Chadima, George E.; and Brown, Robert G., to Collins Radio Company. Energy source tracking system employing drift-line technique. 3,699,324, Cl. 235-150.270.

Illig, Howard Clayton; Lehder, Wilfred Emile, Jr.; Parker, James Daniel, III; Santacroce, Alfred Michael; and Sheridan, James Arthur, to Bell Telephone Laboratories, Incorporated. Keyboard arrangement. 3,698,533, Cl. 197-100.000.

Illinois Tool Works, Inc.: *See—*
Bernin, Victor M., 3,698,531.
Lacey, Robert L., 3,698,681.

Imai, Kiyoshi: *See—*
Wada, Tadashi; Itoh, Kunio; Imai, Kiyoshi; and Inomata, Hiroshi, 3,699,073.

Imajyo, Yasutaka, to Tokyo Shibaura Electric Company, Ltd. Current limiting device. 3,699,489, Cl. 337-21.000.

Imanaka, Hiroshi: *See—*
Arima, Kei; Tamura, Gakuzo; Imanaka, Hiroshi; Kousaka, Masanobu; and Fukuda, Akio, 3,699,121.

Imperial Chemical Industries Limited: *See—*
Brock, James, 3,698,612.
Cooke, Brian Alfred; and Magee, James Arthur, 3,699,031.
Doyle, Peter; and Stacey, Joseph Gilbert, 3,699,227.
Flint, John Anthony; and Blake, Graham John, 3,699,068.

Inaoka, Masato: *See—*
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Indramat, Gesellschaft fur Industrie-Rationalisierung und Automaticierung G.m.b.H.: *See—*
Leutner, Volkmar, 3,698,846.

Industrial Propane, Inc.: *See—*
Hallberg, John E., 3,698,365.

Ingersoll-Rand Company: *See—*
Holdsworth, John E.; and Weir, Dallas M., Jr., 3,698,838.

Innes, William P.: *See—*
Mersereau, Mark; Rohdenizer, Harold L.; Grunwald, John J.; and Innes, William P., 3,698,940.

Inomata, Hiroshi: *See—*
Wada, Tadashi; Itoh, Kunio; Imai, Kiyoshi; and Inomata, Hiroshi, 3,699,073.

Inorganic & Metal Treating Chemicals Division: *See—*
Beach, Sidney C.; and Martin, Bernard P., 3,699,016.

Inoue, Hiraku: *See—*
Iwaoka, Mutsuo; Takegawa, Akio; Inoue, Hiraku; Egami, Katsusuke; Nishikura, Kouiti; Yamashita, Shigeji; and Nagayasu, Tadahiro, 3,698,178.

Inoue, Yutaka; Hotta, Tadao; and Ito, Toshihiko, to Aichi Clock and Electric Implement Mfg. Co., Ltd. Constant speed drive units for driving devices. 3,699,415, Cl. 318-128.000.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Avrillon, Rene; Franckowiak, Sigismond; Gatellier, Claude; and Glikmans, Georges, 3,698,998.

Institut organicheskoi klimii im. N.D. Zelinskogo AN SSSR: *See—*
Mikhailov, Nikolai Petrovich; Rapoport, Lev Moiseevich; and Taits, Samuil Zalmanovich, 3,698,235.

Institute of Gas Technology: *See—*
Rosenberg, Robert B.; Kweller, Esher R.; and Staats, William R., 3,698,378.

Instituto de Quimica Fisica Rocasolano: *See—*
Espunes, Luis Arizmendi, 3,698,513.

Insul-8-Corp.: *See—*
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Interlake, Inc.: *See—*
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International Computers Limited: *See—*
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International Data Systems: *See—*
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International Harvester Company: *See—*
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International Standard Electric Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
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Irvin, Lothair: *See—*
Swoveland, Jackie E.; Irvin, Lothair; and Charles, James A., 3,699,288.

Isaacs, Alick; and Lindenmann, Jean, to National Research Development Corporation. Production of viral interfering substances. 3,699,222, Cl. 424-85.000.

Isaacs, Harold. Free standing foldable cart. 3,698,733, Cl. 280-33.99t.

Ishibashi, Wataru; Nakano, Satoru; and Yokotani, Takeo, to Iwatani & Co., Ltd. Method and apparatus for incinerating waste oil. 3,698,362, Cl. 122-136.00r.

Ishigaki, Eiichi, to Ishigaki Kiko Co., Ltd. Clarifying filter press. 3,698,557, Cl. 210-225.000.

Ishigaki Kiko Co., Ltd.: *See—*
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Iskiyan, James L.; Waddell, James M.; and Way, Donald L., to International Business Machines Corporation. Program selection based upon intrinsia characteristies of an instruction stream. 3,699,526, Cl. 340-172.500.

Itek Corporation: *See—*
Buchan, William Raymond; and Aldrich, Ralph Edward, 3,699,347.
Cunha, Harold; and Kostrzewski, James A., 3,698,454.
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Ito, Shigemasa: *See—*
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Ito, Shoji: *See—*
Toshimasa, Jinzenji; Ichimura, Kenji; and Ito, Shoji, 3,699,419.

Ito, Teruyuki, to Toyoda Koki Kabushiki Kaisha. Balancing apparatus for a rotating body. 3,698,263, Cl. 74-573.000.

Ito, Toshihiko: *See—*
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Itoh, Kunio: *See—*
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Iwamoto, Mashiro: *See—*
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Iwaoka, Mutsuo; Takegawa, Akio; Inoue, Hiraku; Egami, Katsusuke; Nishikura, Kouiti; Yamashita, Shigeji; and Nagayasu, Tadahiro, to Foray Industries, Inc. Method of manufacturing textured yarn having trasverse deformities. 3,698,178, Cl. 57-157.05s.

Iwasa, Hitoo: *See—*
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Iwasa, Yoshisuke: *See—*
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Iwashita, Akira; Tsunokawa, Tamio; and Yuyama, Masahiro, to Sumitomo Chemical Company, Ltd. Method for stabilizing acrylamide. 3,699,081, Cl. 260-561.00n.

Iwatani & Co., Ltd.: *See—*
Ishibashi, Wataru; Nakano, Satoru; and Yokotani, Takeo, 3,698,362.

Jacke, Stanley E., to Branson Instruments, Incorporated. Ultrasonic processing apparatus. 3,698,408, Cl. 134-122.000.

Jackson, Donald N. Boat hulls. 3,698,342, Cl. 114-66.50r.

Jackson, John L., to Technical, Inc. Photographic support system. 3,699,252, Cl. 178-7.200.

Jacob, Bernarr A.: *See—*
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Jacob, Richard J., to Dayco Corporation. Loom picker. 3,698,443, Cl. 139-159.000.

Jacobs, Paul F., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,698,462, Cl. 152-209.000.

Jacquot, Michel; and Amicel, Charles, to Boussois Souchon Neuvesel. Device for the manufacture of an insulating pan unit. 3,698,619, Cl. 228-6.000.

James, Stanley D.: *See—*
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Jankowski, Alfons; Glaesmann, Otto-Ernst; and Haake, Gerhard, to Bergwerksverband GmbH. Method for reinforcing loose rock and coal. 3,698,196, Cl. 61-45.00b.

Janovjak, Paul: *See—*
Bestenreiner, Friedrich; Weiershausen, Walter; and Janovjak, Paul, 3,698,810.

Japan Atomic Energy Research Institute: *See—*
Shigematsu, Hiroji; Yamaguchi, Tomio; Fukue, Hisanobu; Ogawa, Hiroshi; Hashimoto, Takashi; Murakoshi, Kenichi; Suguri, Susumu; and Fujimura, Tsutomu, 3,699,436.

Jefferson Chemical Company, Inc.: *See—*
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Jenkins, Anthony; and Cornell, Richard Charles, to Analytical Instruments Limited. Method and apparatus for detecting tracer gas. 3,699,342, Cl. 250-83.6ft.

Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., to Eastman Kodak Company. Process for radiation cross-linking utilizing N-heterocyclic compounds with cleavable oxy substituents. 3,699,025, Cl. 204-159.140.

Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D. Photopolymerization using N-alkoxy heterocyclic initiators. 3,699,026, Cl. 204-159.230.

Jennings, Marvin D.: *See—*
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Jensen, Eric L.: *See—*
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Jenvey, Leslie Richard, to Adwest Engeering Limited. Power-assisted steering mechanisms for motor vehicles. 3,698,188, Cl. 60-52.00s.

Jepson, Ivar; Morgan, John W.; and Richmond, James W., to Sunbeam Corporation. Interval timer having magnetic wall portions. 3,699,282, Cl. 200-38.00a.

Jerabek, Robert D.: *See—*
Plasynski, Joseph E.; and Jerabek, Robert D., 3,699,009.

Jernigan, Albert T. Two-track vehicle. 3,698,500, Cl. 180-6.7.

Jimerson, Bruce D. Gametoy locomotion apparatus. 3,698,713, Cl. 273-86.00e.

Jiskra, Miroslav: *See—*
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Jituo, Hamai, to Hamai Demkyu Kogyo Kabushiki Kaisha. Manufacturing method for small electric lamps. 3,698,784, Cl. 316-19.000.

Jobert, Raymond: *See—*
Darcas, Claude; Jobert, Raymond; and Laviron, Charles, 3,699,148.

Johnson & Johnson: *See—*
Kalwsites, Frank, 3,698,039.

Johnson, Bennie R. Integral casket handle and base with concealed hinge. 3,698,037, Cl. 16-112.000.

Johnson, Duane M.; and Razelton, Donald R., to United States of America, Navy. Pyrotechnic composition. 3,698,968, Cl. 149-19.000.

Johnson, Edward J., Jr., to Polaroid Corporation. Diffusion transfer process utilizing 2-mercapto imidazoles. 3,698,900, Cl. 96-29.000.

Johnson, Ernest D., to Goodyear Tire and Rubber Company, The. Passenger conveyor landing. 3,698,535, Cl. 198-16.00r.

Johnson, Glenn B.; and Petering, John L., to Air Products and Chemicals, Inc. Cryogenic storage dewar. 3,698,200, Cl. 60-45.000.

Johnson, Le Roy E.: *See—*
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Johnson, Martin L.; and Leclercq, Richard L. Analyzer for successely testing the control circuits of a control panel. 3,699,440, Cl. 324-73.000.

Johnson, Thomas, to Du Pont de Nemours, E. I., and Company. Preparation of p-benzamide polymers and intermediates thereof. 3,699,085, Cl. 260-78.00a.

Johnston, Edward J., to International Harvester Company. Crop engaging tine means. 3,698,172, Cl. 56-400.000.

Johnston, Mack S.: *See—*
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Jolly, Jatinder, to Freeport Sulphur Company. Method for the storage and shipment of wet process phosphoric acid. 3,698,862, Cl. 23-165.000.

Jones, Charles, to Curtiss-Wright Corporation. Fuel combustion system for rotary piston internal combustion engines. 3,698,364, Cl. 123-8.090.

Jones, Charles E.: *See—*
Bryant, Michael I.; and Jones, Charles E., 3,698,983.

Jones, Elvira Cheatham: *See—*
Jones, John M., Jr., 3,698,038.

Jones, Harvey W.; and Ryer, Dudley A., Jr., to McDonnell Douglas Corporation. Connector with disconnect warning indicator. 3,698,742, Cl. 285-39.000.

Jones, John E.; and Enroe, Paul V., to International Business Machines Corporation. Code scanning system. 3,699,312, Cl. 235-61.11e.

Jones, John F.: *See—*
Lubowitz, Hyman R.; Kendrick, William P.; Jones, John F.; and Burns, Eugene A., 3,699,074.

Jones, John M., Jr., to Jones, Elvira Cheatham. Shellfish processing machine. 3,698,038, Cl. 17-71.000.

Jones, Lewis E.; and Bernhardt, Daniel W., to Mallory, P. R., & Co., Inc. Electrical timer with improved resilient contact mounting at ganged housing section complementory interfaces. 3,699,278, Cl. 200-38.00r.

Jones, Louis R., Jr., to Leeds & Northrup Company. Expendable immersion thermocouple assembly. 3,698,954, Cl. 136-234.000.

Jones, Terence Leslie: *See—*
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Jones, William H., to Honeywell Information Systems Inc., mesne. Method and apparatus for detecting binary data by integrated signal polarity comparison. 3,699,554, Cl. 340-174.10h.

Jones, William J., to Westinghouse Electric Corporation. Oxygen consumption rate monitor. 3,698,384, Cl. 128-2.070.

Jordan, Paul V., to International Business Machines Corporation. Transistor logic circuit. 3,699,362, Cl. 307-300.000.

Jordan, William E., to Xerox Corporation. Web sensing mechanism for tracking systems. 3,698,540, Cl. 198-202.000.

Joseph, Hawthorne: *See—*
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Joseph, Raymond S.; and Kemeny, Julius, to General Electric Company. Antenna mounting clip. 3,699,580, Cl. 343-702.000.

Joslyn Mfg. and Supply Co.: *See—*
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Jost, Wolf-Dieter; and Moritz, Karl-Gunter, to Semperit Osterreichisch-Amerikanisch Gummiwerke Aktiengesellschaft. Multilayer ski and method for the fabrication thereof. 3,698,731, Cl. 280-11.13c.

Josten, Friedrich: *See—*
Pascoe, Peter; Josten, Friedrich; Haferkamp, Wilhelm; and Lucker, Willi, 3,698,861.

Joyce, John Frederick; and Daugherty, T. Stevens, to Reynolds Metals Company. Particle casting. 3,699,196, Cl. 264-6.000.

Joynson, Reuben E.; and Mundy, Joseph L., to General Electric Company. Three transistor memory cell. 3,699,544, Cl. 340-173.00r.

Judd, George G.: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki-Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser, Donald W., to Ansul Company, The. 1-Alkyl-4-bis (haloalkyl) amino-3,5-dinitrobenzene. 3,699,167, Cl. 260-577.

Kaito, Takeo: *See—*
Yamamura, Yuichi; Fujii, Setsuro; Okano, Atsuji; Hirata, Miyoshi; Abiko, Yasushi; Inaoka, Masato; Noroi, Reimei; Iwamoto, Mashiro; Funabashi, Shoichi; and Kaito, Takeo, 3,699,149.

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Kalle Aktiengesellschaft, mesne: *See—*
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Kalousek, George L.; and Benton, Elton J., to United States of America, Interior. Saline resistant cementitious binders. 3,698,924, Cl. 106-89.000.

Kalsi, Manmohan Suigh: *See—*
Harrah, Robert S.; and Kalsi, Manmohan Suigh, 3,698,351.

Kalwaites, Frank, to Johnson & Johnson. Apparatus for spreading tows of continuous filaments into sheets. 3,698,039, Cl. 19-66.000.

KAMAG Transporttechnik GmbH, & Co.: *See—*
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Kamins, Seymour; Rosenberg, Norman; and Bentsen, Per, to CTP Industries Inc. Apparatus for automatic manufacture of handle bags. 3,698,289, Cl. 93-8.000.

Kamo, Seiichi: *See—*
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Kanou, Kimio: *See—*
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Kantorowicz, Gerard, to Thomson-CSF. Delay lines. 3,699,379, Cl. 315-3.500.

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Kasak, August; Thompson, Vernon R.; and Moll, John H., to Crucible Inc. Method for producing superalloy articles by hot isostatic pressing. 3,698,962, Cl. 148-11.50f.

Kaspaul, Alfred F.; and Kaspaul, Erika E., to Hughes Aircraft Company. Transparent conductive coating and process therefor. 3,698,946, Cl. 117-211.000.

Kaspaul, Erika E.: *See—*
Kaspaul, Alfred F.; and Kaspaul, Erika E., 3,698,946.

Kass, David. Spool and cover assembly. 3,698,546, Cl. 206-52.00w.

Katerndahl, Dean R.; Wilson, Earl D.; Macalalad, Fidel V.; and Ring, Gene C., to Abbott Laboratories. Catheter assembly for peritoneal cavity insertion. 3,698,396, Cl. 128-347.000.

Kato, Hiroki: *See—*
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Kauczor, Hans-Werner: *See—*
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Kauffman, Harry D.; and Davis, Malcolm F., to Cincinnati Milacron Inc. EDM process a method and apparatus for controlling the flow rate of dielectric as a function of gap impedance. 3,699,303, Cl. 219-69.00f.

Kaufmann, Harland A.: *See—*
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Kaugars, Girts, to Upjohn Company, The. Halogen substituted pyrininealdehyde phenyl hydrazones. 3,699,111, Cl. 260-296.00r.

Kaulins, Edward, to Timex Corporation. Contact assembly for electric watches. 3,698,179, Cl. 58-28.00r.

Kaup, Siegfried: *See—*
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Kautz, William H., to United States of America, Navy. Cellular arithmetic array. 3,699,534, Cl. 340-172.500.

Kaveckis, Joseph E.: *See—*
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Kayser, John P.: *See—*
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Keady, Frederick D., to Weatherhead Company, The. Brake warning switch with bypass. 3,698,771, Cl. 303-6.00c.

Keehn, George R.: *See—*
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Keesee, Ernest W. Edger for lawn mower. 3,698,165, Cl. 56-11.400.

Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R., & Co. Chemically curable liquid polyene-polythiol polymer composition. 3,699,084, Cl. 260-858.000.

Kelch, Heinz; and Schuh, Eduard, to Kienzle Apparate G.m.b.H. Taximeter arrangement with exchangeable control unit. 3,698,627, Cl. 235-30.00r.

Kelch, Heinz, to Kienzle Apparate G.m.b.H. Gravity feed with axially movable attaching means. 3,699,557, Cl. 340-174.10c.

Keller-Volper, Ernest. Insertable cylinder for a door lock. 3,698,216, Cl. 70-380.000.

Kelly, Gordon Emmet, to RCA Corporation. Apparatus for Hotchossis electronic instruments. 3,699,562, Cl. 340-253.00r.

Kelly, John C. Fan construction. 3,698,835, Cl. 416-132.000.

Kelly, John J. Variable indicia sign. 3,698,112, Cl. 40-96.000.

Kelly, Michael J. Photographic multi-tone separation process. 3,698,906, Cl. 96-44.000.

Kelpin, Thomas G. Aquatic harvester. 3,698,163, Cl. 56-9.000.

Kelsey Hayes Company, mesne: *See—*
Rozmus, Walter J., 3,698,438.

Kemeny, Julius: *See—*
Joseph, Raymond S.; and Kemeny, Julius, 3,699,580.

Kemlage, Bernard M.; and Pogge, Hans B., to International Business Machines Corporation. Process for forming monocrystalline and poly. 3,698,947, Cl. 117-212.000.

Kendrick, William P.: *See—*
Lubowitz, Hyman R.; Kendrick, William P.; Jones, John F.; and Burns, Eugene A., 3,699,074.

Kenrick, Joseph F. Catcher for fruits nuts, and the like. 3,698,170, Cl. 56-329.000.

Kent-Moore Corporation: *See—*
Deming, Roy, 3,698,244.

Kern, Loyd R.: *See—*
Hoffman, Robert N.; and Kern, Loyd R., 3,698,491.

Kersten, Samuel D., Jr.; Sautter, Alton F.; and Simon, John M., to Water Saver Faucet Co. Valve assembly. 3,698,421, Cl. 137-356.000.

Kerstetter, Donald R.: *See—*
Buescher, William E.; and Kerstetter, Donald R., 3,699,378.

Kesinger, Donald, to Gates Rubber Company, The. Plant cover and method. 3,698,131, Cl. 47-29.000.

Kesten, Martin; and O'Connor, Ralph Bruce, to Preston Engravers, Inc. Adjustable air eject die-cutting assembly. 3,698,271, Cl. 83-99.000.

Kesten, Martin; and O'Connor, Ralph Bruce, to Preston Engravers, Inc. Rotary air eject die-cutting assembly. 3,698,272, Cl. 83-99.000.

Ketchpel, Richard D.: *See—*
Curran, Robert E.; Robertson, Glenn D., Jr.; and Ketchpel, Richard D., 3,698,884.

Ketterer, Stanley J., to Singer Company, The. Rotating shuttle drive mechanisms. 3,698,333, Cl. 112-189.000.

Keunecke, Gerhard: *See—*
Brendt, Dieter; Helms, Gerd; and Keunecke, Gerhard, 3,699,008.

Kewanee Oil Company: *See—*
Vogt, John W.; and Schrier, Peter G., 3,698,392.

Keystone Micro-Scan, Inc., mesne: *See—*
Griswold, Augustus W.; and Haritonoff, Boris W., 3,698,275.

Kienzle Apparate G.m.b.H.: *See—*
Kelch, Heinz; and Schuh, Eduard, 3,698,627.

Kelch, Heinz, 3,699,557.

Kietzer, James E.; and Mente, Joseph N., to United States of America, Navy. Channel combining circuit for synchronous phase detection systems. 3,699,462, Cl. 329-112.000.

Kikuchi, Tomio; Yamaguchi, Hiroshi; and Arai, Kiyoyuki, to Kabushiki Kaisha. Flash photographic device for automatic exposure control cameras. 3,698,298, Cl. 95-10.0ce.

Kilburg, Ronald J.: *See—*
Mayo, Cecil J.; and Kilburg, Ronald J., 3,699,275.

Kilby, Jack S.: *See—*
Hyltin, Tom M.; Kilby, Jack S.; Luecke, Gerald; and Toombs, Harold D., 3,698,082.

Kilpatrick, Wallace D.: *See—*
Cohen, Martin J.; Carroll, David I.; Wernlund, Roger F.; and Kilpatrick, Wallace D., 3,699,333.

Kimber, Anthony B.: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Cole, John Barrington; Miles, John Walter; and Griefiths, Graham Ernest, 3,698,562.

Kimmich, Gordon R.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Kimura, Hiroyuki: *See—*
Morio, Minoru; and Kimura, Hiroyuki, 3,699,240.

Kimura, Ichiro: *See—*
Nagata, Takeo; Takasaka, Masahiro; and Kimura, Ichiro, 3,698,414.

Kindell, Jerry L.; and Trubisky, Leonard G., to Honeywell Information Systems Inc. Number numbers expressed in 2's complement notation. 3,699,326, Cl. 235-175.000.

King, James F., to Clark Equipment Company. Bulldozer mounting and controls. 3,698,490, Cl. 172-803.

Kingsley, John T., to Motorola, Inc. Method of applying leads to an integrated circuit. 3,698,076, Cl. 29-471.100.

Kingston, George W.: *See—*
Diamond, Robert F.; and Kingston, George W., 3,698,329.

Kinnan, Frank R. Vibratory earth engaging shank. 3,698,484, Cl. 172-40.000.

Kinnebrew, John E. Air reconditioning apparatus. 3,698,158, Cl. 55-227.000.

Kinney, John F. Acceleration selector unit for automobile accelerators. 3,698,261, Cl. 74-562.000.

Kinnroth, Samuel F.: *See—*
Klein, Emil, 3,698,180.

Kinsel, Tracy Stewart, to Bell Telephone Laboratories, Incorporated. Frequency shift keyed communication system. 3,699,445, Cl. 325-30.000.

Kirchhoff, Horst-Guenter; Pfabe, Peter; and Sedlmayr, Gerhard. Inertia operated locking retractor. 3,698,657, Cl. 242-107.400.

Kirk, Merritt C., Jr.: *See—*
Mills, Ivor W.; Dimeler, Glenn R.; Kirk, Merritt C., Jr.; and Boyer, Jackson S., 3,699,071.

Kishi, Teruo: *See—*
Tanaka, Masao; Kishi, Teruo; and Mineura, Kazuyuki, 3,699,113.

Kiss, Joseph, to Hoffmann-La Roche Inc. Process for the manufacture of 5-desoxy-L-arabinose and novel intermediates. 3,699,103, Cl. 260-210.00r.

Kitamura, Masaru, to KTM Industries, Inc., mesne. Rotatory valve having one piece seat construction. 3,698,687, Cl. 251-315.000.

Kiyasu, Zen'Iti; Kawashima, Masao; Sasaki, Shunroku; Mineshima, Yukihiko; and Kurita, Shyoichi, to Fujitsu Limited. Analog code conversion system. 3,699,567, Cl. 340-347.0ad.

Klavins, Aldis, to Honeywell Information Systems, Inc. Use of control words to change configuration and operating made of a data communication system. 3,699,525, Cl. 340-172.500.

Klein, Emil, 20% to Kinnroth, Samuel F. Automatic chess time indicator. 3,698,180, Cl. 58-145.00d.

Klein, Richard Ira: *See—*
Sorkin, Howard; and Klein, Richard Ira, 3,698,449.

Klein, Stanley Frank, to Raytheon Company. Memory look ahead connection arrangement for writing into an unoccupied address and prevention of reading out from an empty address. 3,699,535, Cl. 340-172.500.

Kleinschmidt, Johann O.; Walter, Heinz E.; and Holl, Helmar H., to Singer Company, The, mesne. Position signaling devices for sewing machine driving unit. 3,698,334, Cl. 112-220.000.

Kling, Harry C.: *See—*
Ake, Nelson E.; and Kling, Harry C., 3,698,976.

Klingen, Theodore J.; and Wright, John R., to United States of America, Atomic Energy Commission. Radiation polymerization of vinyl carboranes an novel productions resulting therefrom. 3,699,024, Cl. 204-159.220.

Kluge, Werner Erich, to Northern Electric Company Limited. Adaptable associative memory system. 3,699,545, Cl. 340-173.0am.

Klutchko, Sylvester: *See—*
Von Strandtmann, Maximilian; Klutchko, Sylvester; and Shavel, John, Jr., 3,699,128.
Von Strandtmann, Maximilian; Klutchko, Sylvester; and Shavel, John, Jr., 3,699,129.

Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Alkyl transfer of alkyl aromatics with group VIB metals on mordenite. 3,699,181, Cl. 260-672.00t.

Knight, Leslie Hugh. Apparatus for grinding grain. 3,698,650, Cl. 241-51.

Knight, Tom H. Bunk for a truck cab sleeping berth. 3,698,022, Cl. 5-118.000.

Knitter, Heinz: *See—*
Hohenberg, Reiner Mathias; and Knitter, Heinz, 3,699,280.

Knoos, Stellan. Method and device for hot gas engine or gas refrigeration machine. 3,698,182, Cl. 60-24.000.

Knuth, William H.: *See—*
Meriano, Albert P.; Fuller, Giles A.; and Knuth, William H., 3,698,507.

Kobayashi, Makoto: *See—*
Morikawa, Kazumasa; Kobayashi, Makoto; Sato, Hiromitsu; and Nakazima, Jun, 3,698,652.

Kobler, Richard; and Fagan, William F., to McGraw-Edison Company. Endless loop tape recorder. 3,698,723, Cl. 274-4.00r.

Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Electric shutter mechanism for a camera. 3,698,300, Cl. 95-10.0ct.

Koch, Friedrich: *See—*
Zeug, Robert; and Koch, Friedrich, 3,698,694.

Kocian, James A.: *See—*
Plattner, Robert F.; and Kocian, James A., 3,698,310.

Kodaira, Yasuo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Switch flourish plate. 3,699,236, Cl. 174-66.000.

Kodama, Tsutomu: *See—*
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Komatu, Shigekazu, 3,699,188.

Kodania, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Komatu, Shigekazu, to Toyama Chemical Co., Ltd. Fire resistant polymers. 3,699,188, Cl. 260-865.000.

Koeber, Henry J., to Bell & Howell Company. Power transmission mechanism. 3,698,253, Cl. 74-129.000.

Koeniger, Arthur F.: *See—*
Hechenbleikner, Ingenuin A.; Hussar, John F.; Koeniger, Arthur F.; and Bresser, Robert E., 3,699,152.

Koens, Jeffrey G.; and Merillat, Robert D., to International Business Machines Corporation. Validation technique for integrated circuit manufacture. 3,698,072, Cl. 29-574.000.

Koerner, Ernest C.; Trice, Robert T.; and Wareham, William W., to Phelps Dodge Magnet Wire Corporation. Method of processing preformed polyester resins and converting to coating materials. 3,699,082, Cl. 260-75.0nk.

Koester, Waldemar, to Friedrich Maurer Soehne, Firma. Expansion gap sealing device. 3,698,292, Cl. 94-18.000.

Kofink, Siegfried, to Eberspacher, J. Control for electro-magnetic pump. 3,699,354, Cl. 307-120.000.

Kohayakawa, Takashi; Yamamoto, Shinichi; and Morimoto, Michio, to Daihatsu Kogyo Co., Ltd. Rotary after burner for internal combustion engines. 3,698,873, Cl. 23-277.00c.

Kohn, Gustave K., to Chevron Research Company. N-Substituted acylamidosulfenyl chlorides and their method of preparation. 3,699,122, Cl. 260-326.50s.

Kohn, Gustave K., to Chevron Reseah Company. N-Substituted carbamoyl chlorides and method of preparation. 3,699,163, Cl. 260-544.00c.

Kohner Bros., Inc.: *See—*
Stubbmann, Albert, 3,698,252.

Kojima, Hideo: *See—*
Suzuki, Yoshitaka; Takenoue, Atsushi; and Kojima, Hideo, 3,699,178.

Kolbe, Hans, & Co., KG: *See—*
Lindenmeier, Heinz; and Meinke, Hans-Heinrich, 3,699,452.

Kolinsky, Miloslav, to Ceskoslovenska akademie ved. Distributing slide valve for laboratory purposes. 3,698,439, Cl. 137-625.480.

Kollmorgen Corporation: *See—*
Henry-Baudot, Jacques, 3,699,371.

Kollsman Instrument Corporation: *See—*
Cohen, Murray F.; and Tarasevich, Michael, 3,699,334.
Stempler, Samuel; and Tellerman, Jacob, 3,699,421.
Tellerman, Jacob, 3,698,793.

Komatu, Shigekazu: *See—*
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Komatu, Shigekazu, 3,699,188.

Kombinat Veb Pentacon Dresden Kamera- und Kinowerke: *See—*
Reimann, Hubertus; and Lindner, Fritz, 3,698,301.

Konazewski, William: *See—*
Taylor, Arthur Sinclair; Sandhage, Ellsworth; Bott, George; and Konazewski, William, 3,698,450.

Kondo, Toshio; and Tamura, Hifumi, to Hitachi, Ltd. Ion source device having control means for reducing filament current below its starting value. 3,699,381, Cl. 315-74.000.

Konishi, Kozo; Suzui, Masaaki; Otake, Michio; and Maeda, Tatuo, to Denki Kagaku Kogyo Kabushiki Kaisha. Paper coating pigment binder of alcoholized vinyl acetate-acrylamide copolymer. 3,699,112, Cl. 260-29.4ua.

Konishiroku Photo Industry Co., Ltd.: *See—*
Sakazume, Kaiichiro; Ito, Shigemasa; Sato, Shui; Sakamoto, Eiichi; and Oshima, Akio, 3,698,910.
Sato, Shui; Sugita, Sadao; Nakajima, Tomio; and Kasai, Keiji, 3,698,907.

Koons, Edwin Russell; Parker, Ralph G., Jr.; and Rupley, Jeffery P., to Mallory, P. R., & Co., Inc. Solderable stainless steel. 3,698,880, Cl. 29-195.000.

Koontz Machine & Welding, Inc.: *See—*
Beaver, Robert D., 3,698,690.

Koontz, Raymond A.; and Reese, Walter H. Protective cover structure. 3,698,409, Cl. 135-6.000.

Koppers Company, Inc.: *See—*

Fekete, Frank; Thrash, David J.; and Pulman, Leonard J., 3,698,981.
Williams, Charles H., 3,698,208.
Williams, Charles H., 3,698,436.

Kortschot, Cornelis; and Adams, Peter F., to Corporate Foods Limited. Method of preparing textured snack food product. 3,698,914, Cl. 99-83.000.

Koser, Robert F.: *See—*
Koser, Robert F.; and Messner, Jack D. (said Messner assor. to said), 3,698,575.

Koser, Robert F.; and Messner, Jack D., said Messner assor. to said Koser, Robert F. Automatically lowering unloader. 3,698,575, Cl. 214-17.0db.

Kostrzewski, James A.: *See—*
Cunha, Harold; and Kostrzewski, James A., 3,698,454.

Kotrappa, Payasada; and Light, Max E., to United States of America, Atomic Energy Commission. Centrifuge separator. 3,698,626, Cl. 233-2.000.

Kousaka, Masanobu: *See—*
Arima, Kei; Tamura, Gakuzo; Imanaka, Hiroshi; Kousaka, Masanobu; and Fukuda, Akio, 3,699,121.

Kovach, Stephen M.: *See—*
Kmecak, Ronald A.; and Kovach, Stephen M., 3,699,181.

Koyama, Mikihiro, to Honda Giken Kogyo Kabushiki Kaisha. Support of an air hose of an air cleaner of a motorcycle at its inlet opening. 3,698,503, Cl. 180-33.00r.

Koyano, Takashi; and Fukushi, Saburo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for preparing dialkoxyalkas. 3,699,174, Cl. 260-615.00r.

Krabetz, Richard: *See—*
Armbrust, Herbert; Sturm, Hans Juergen; Engelbach, Heinz; Wistuba, Hermann; Stoessel, Armin; and Krabetz, Richard, 3,699,134.

Krakow, Heinz; and Niedorf, Carl, to Blohm & Voss AG. Method and device for supplying a band made of sheet metal plates to a spiral welded tube mill. 3,698,622, Cl. 228-5.000.

Kraut, Edgar A.: *See—*
Thompson, Robert B.; Thompson, Donald O.; Kraut, Edgar A.; and Lim, Teong C., 3,699,481.

Kravchenko, Zhorzh Yakovlevich: *See—*
Vlasov, Viktor Griogroievich; Berezentsev, Jury Sergeevich; Mukhin, Vladimir Vanovich; and Kravchenko, Zhorzh Yakovlevich, 3,699,572.

Kreider, Benjamin A.; Schmidt, Charles J.; and Martindell, Howard R., to Abar Corporation. Fixture for heat treating furnaces. 3,698,698, Cl. 263-47.00r.

Kreitner, Frederick J., to Sperry Rand Corporation. Active tank stabilizer for marine vessels. 3,698,345, Cl. 114-125.000.

Krober, Gunther: *See—*
Cranskens, Georg; Krober, Gunther; and Palm, Richard, 3,698,804.

Krombach, Thomas C. Mechanics over-the-engine accessibility carrier. 3,698,330, Cl. 108-44.000.

Kronish, Donald P.; and Zuriff, Lee S., to Warner-Lambert Company. Diagnostic preparation for the identification of β-hemolytic streptococci. 3,699,003, Cl. 195-105.50r.

Krueger, Friedrich; and Bauer, Lieselotte, to Benckiser, Joh. A., GmbH Chemische Fabrik. Process of preventing scale and deposit formation in aqueous systems and product. 3,699,048, Cl. 252-180.000.

Kruklitis, Karlis, to Burroughs Corporation. Electromagnetic read and write had test device and method using a minute body of magnetic recording material. 3,699,430, Cl. 324-34.00r.

Krummel, Harry Karl: *See—*
Connor, Daniel S.; and Krummel, Harry Karl, 3,699,159.

Krumreich, Charles L.: *See—*
Hardesty, Edwin C.; Krumreich, Charles L.; Mulbarger, Albert E., Jr.; and Walen, Stephen W., 3,699,498.

Krusche, Alfred: *See—*
Forster, Franz; Krusche, Alfred; and Hantelmann, Gunter, 3,698,415.

Kruzewski, William Frank; and Siwko, Karol, to GTE Sylvania Incorporated. Automatic frequency control circuitry for a varactor tuner system. 3,699,455, Cl. 325-423.000.

KTM Industries, Inc., mesne: *See—*
Kitamura, Masaru, 3,698,687.

Kubo, Moritada; and Shinomiya, Yasuo, to Tokyo Shibaura Electric Co., Ltd. Control device for turbine generators. 3,698,829, Cl. 415-36.000.

Kuck, John H., to United States of America, Navy. Flux-driver circuit for phased array. 3,699,397, Cl. 317-123.000.

Kuder, Milton L.: *See—*
Greenough, Maurice Leighton; and Kuder, Milton L., 3,699,518.

Kuehl, Earl J.; and Kuehl, LaMay R. Purchase payment collection apparatus. 3,698,517, Cl. 186-1.00a.

Kuehl, LaMay R.: *See—*
Kuehl, Earl J.; and Kuehl, LaMay R., 3,698,517.

Kuhar, George A., to Goodyear Tire & Rubber Company, The. Method for making high temperature insulating compositions and said compositions. 3,699,023, Cl. 204-159.190.

Kuhlman Corporation: *See—*
Macemon, Herbert J., 3,699,490.

Kuhn, Byron D. Board type game. 3,698,718, Cl. 273-134.00b.

Kundler, Walter; and Hingst, Gerd. Automatic control system controlling the course of a ship. 3,699,420, Cl. 318-588.000.

Kunz, Ernst. Spinning ring for ring spinning and ring twisting frames. 3,698,176, Cl. 57-119.000.

Kurita, Shyoichi: *See—*
Kiyasu, Zen'Iti; Kawashima, Masao; Sasaki, Shunroku; Mineshima, Yukihiko; and Kurita, Shyoichi, 3,699,567.

Kursawe, Helga: *See—*
Reuschel, Konrad; Platzoder, Karl; and Kursawe, Helga, 3,698,354.

Kushlefsky, Bernard G.: *See—*
Debreczeni, Eugene J.; and Kushlefsky, Bernard G., 3,699,138.

Kusters, John A., to Hewlett-Packard Company. Optically transparent acoustic wave transducer. 3,698,792, Cl. 350-149.000.

Kutz, Aaron, to Fluidic Controls Corporation. Fluid logic module assembly with built-in manifold. 3,698,432, Cl. 137-68.000.

Kutz, Hugo Joseph. Water faucets. 3,698,688, Cl. 251-335.000.

Kuypers, Hubert: *See—*
Matthieu, Paul; Leuchs, Ottmar; Glander, Fritz; Kuypers, Hubert; and Pelz, Diethart, 3,698,440.

Kuzmik, John J., to MacDermid Incorporated. Preparation of plastic substrates for electroless plating and solutions therefor. 3,698,919, Cl. 106-1.000.

Kweller, Esher R.: *See—*
Rosenberg, Robert B.; Kweller, Esher R.; and Staats, William R., 3,698,378.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Tanaka, Katsunobu; Ohshima, Kazuo; Tokoro, Yoh; and Okii, Mitsuyoshi, 3,698,997.
Tanaka, Masao; Kishi, Teruo; and Mineura, Kazuyuki, 3,699,113.

La Cellophane: *See—*
Fleurquin, Yves; and Bruckmann, Andre, 3,698,930.

La Grouw, Coenraad Maria; and Gie, Ong Tjing, to U.S. Philips Corporation. Glass having a high coefficient of absorption for infrared radiation comprising ferrous oxide. 3,698,921, Cl. 106-54.000.

Labana, Santokh S.: *See—*
Dickie, Ray A.; and Labana, Santokh S., 3,699,185.

LABAZ: *See—*
Gaudin, Jean Joseph, 3,698,494.

Lace, Melvin A., to Motorola, Inc. Synchronous motor mounting system for speed control. 3,698,615, Cl. 226-194.000.

Lacey, Robert L., to Illinois Tool Works Inc. On-off clamp for I. V. systems. 3,698,681, Cl. 251-10.000.

Lamer, Gerald P.; and Thiele, Duane L., to Case, J. I., Company, mesne. Mobile crane with jib extension. 3,698,569, Cl. 212-144.000.

Landen, William James; and Lundquist, Gunnar F., to International Silver Company, The. Brush making apparatus. 3,698,770, Cl. 300-1.000.

Landmark, Kenneth L.; and Ashley, Allan J., to Amsted Industries Incorporated. Modular abrasive wheel assembly. 3,698,141, Cl. 51-372.000.

Landrum, Leon L.: *See—*
Gordon, George E.; and Landrum, Leon L., 3,698,563.

Landrum, Ralph A., Jr., to Amoco Production Company. Phase control of servo hydraulic vibrators. 3,698,508, Cl. 181-.00h.

Landry, B. Roger: *See—*
Martin, John E.; and Landry, B. Roger, 3,698,483.

Landry, Murphy J., to United States of America, Atomic Energy Commission. Multiple beam laser system. 3,699,474, Cl. 331-94.500.

Lane, L. B., to Lee, Raymond, Organization, Inc., The. Tail gate protector and load bar. 3,698,760, Cl. 296-50.000.

Lang, John M.; and Trautman, Robert D., to Boeing Company, The. Semi-automatic restraint mechanism. 3,698,679, Cl. 248-361.000.

Lang, Ronald A., to Waters Mfg. Co., Inc. Animal actuated drinking valve. 3,698,685, Cl. 251-303.000.

Lanphier, Edward H.: *See—*
Morin, Richard A.; and Lanphier, Edward H., 3,698,591.

Lapkin, Milton: *See—*
Fuzesi, Stephen; and Lapkin, Milton, 3,699,060.

Larker, Hans: *See—*
Nilsson, Jan; and Larker, Hans, 3,698,220.

Larsen, Arthur Bertel, to Bell Telephone Laboratories, Incorporated. Color television system with automatic correction of chroma amplitudes. 3,699,241, Cl. 178-5.4ac.

Laskey, Norman V. Hatch covers and ventilating system. 3,698,347, Cl. 114-202.000.

Launer, Wilbur A., to Union Special Machine Company. Device for tacking down the free end of a thread chain. 3,698,336, Cl. 112-252.000.

LaValle, Thomas Alvin, to Western Electric Company, Incorporated. Apparatus for forming and testing electrical components. 3,698,061, Cl. 29-203.100.

LaValle, Thomas Alvin, to Western Electric Company, Incorporated. Apparatus for winding elongated material on electrical component. 3,698,062, Cl. 29-203.00d.

Laviron, Charles: *See—*
Darcas, Claude; Jobert, Raymond; and Laviron, Charles, 3,699,148.

Laznibat, Nick A.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Lazzarini, Donald J.: *See—*
Bell, Harry F.; Lazzarini, Donald J.; and Schultz, Lewis K., 3,699,029.

Le Febvre, Clarence A., Jr., to United Aircraft Corporation. Universal joint employing a fluid bearing for a movable nozzle. 3,698,192, Cl. 60-232.000.

Leacock, Ronald: *See—*
Midulla, Guiseppe, 3,699,046.

Leafer, Morris A.: *See—*
Acton, Edward M.; Leafer, Morris A.; and Stone, Herbert, 3,699,132.

Leaman, Frank H. Method and composition of platinum plating. 3,698,939, Cl. 117-130.000.

Leane, John Bryant; and Higham, Peter, to Perkin-Elmer Limited. Nuclear magnetic resonance spectrometer system. 3,699,428, Cl. 324-.50r.

Lear Siegler, Inc.: *See—*
Miller, Justin G., 3,698,669.

Leatherman, Hugh: *See—*
Leatherman, Ralph W., 3,699,285.

Leatherman, Ralph W., 15% to Binham, Glenn, 15% to Mayhew, Ken, 30% to Ritchie, Henry and 15% to Leatherman, Hugh. Safety electrical receptacle. 3,699,285, Cl. 200-51.007.

Lecce, James G. Apparatus for feeding and maintaining neonatal piglets. 3,698,361, Cl. 119-51.110.

Leclercq, Richard L.: *See—*
Johnson, Martin L.; and Leclercq, Richard L., 3,699,440.

Lee, Ernest O., Jr., to Stromberg-Carlson Corporation. Scanner and translator-marker arrangement for PBX. 3,699,262, Cl. 179-18.0et.

Lee, John H., to Minnesota Mining and Manufacturing Company. Security system for indicating fire, intrusion or the like. 3,699,569, Cl. 340-409.000.

Lee, Joo C.; and Tak, Charles S. Ground fault detection system with sequential line testing. 3,699,392, Cl. 317-18.00r.

Lee, Raymond, Organization, Inc., The: *See—*
Lane, L. B., 3,698,760.

Lee-Norse Company: *See—*
Amoroso, Michael J., 3,698,769.

Leed & Northrup Company: *See—*
Underkoffler, Victor S.; and White, Richard B., 3,699,318.

Leeds & Northrup Company: *See—*
Jones, Louis R., Jr., 3,698,954.

Leeks, Robert Ernest; and Demers, Alfred John, to Borden Company, The. Coated resilient matting and method for making. 3,698,933, Cl. 117-72.000.

Lefebvre, Jean: *See—*
Chatourel, Pierre; and Lefebvre, Jean, 3,698,471.

Lehder, Wilfred Emile, Jr.: *See—*
Illig, Howard Clayton; Lehder, Wilfred Emile, Jr.; Parker, James Daniel, III; Santacroce, Alfred Michael; and Sheridan, James Arthur, 3,698,533.

Lehman, John P.: *See—*
Cochran, David L.; Deleray, Arthur L.; and Lehman, John P., 3,698,320.

Leitgeb, Wilhelm, to Siemens Aktiengesellschaft. Electrodynamic linear motor. 3,699,365, Cl. 310-12.000.

Lejeune, Daniel, to Compagnie Generale des Etablissement Michelin, raison Sociale Michelin & Cie. Hydraulic balance. 3,698,492, Cl. 177-1.000.

Lemelson, Jerome H. Toy vehicles. 3,698,129, Cl. 46-202.000.

Lemelson, Jerome H. Tape cartridge and transducing means therefore. 3,699,266, Cl. 179-100.20z.

Lennartz, Gustav: *See—*
Bungardt, Karl; Dietrich, Hermann; Lennartz, Gustav; and Arntz, Hans-Egon, 3,698,889.

Lentz, John J. Firing circuit for gas discharge tubes. 3,699,386, Cl. 315-356.000.

Lenzner, James. Method of sealing and insulating a roof construction. 3,698,972, Cl. 156-71.000.

Lerew, Wilford J.; and Peckels, Kenneth T. Portable holder. 3,698,675, Cl. 248-311.000.

Lestina, Gregory James; and Stern, Max Herman, to Eastman Kodak Company. Photographic dye image stabilizer-solvent. 3,698,909, Cl. 96-100.000.

Leuchs, Ottmar: *See—*
Matthieu, Paul; Leuchs, Ottmar; Glander, Fritz; Kuypers, Hubert; and Pelz, Diethart, 3,698,440.

Leutner, Volkmar, to Indramat, Gesellschaft fur Industrie-Rationalisierung und Automaticierung G.m.b.H. Balancing and adjusting arrangement for an extrusion mandrel. 3,698,846, Cl. 425-149.000.

Levine, Richard: *See—*
Amici, Francis Robert; Davis, Robert E.; and Levine, Richard, 3,698,134.

Levoin, Francis Jean Henri Raymond, to Carpano & Pons S.A. Fishing tackle. 3,698,119, Cl. 43-42.080.

Lewis, Thomas W., II: *See—*
Nell, David J.; and Lewis, Thomas W., II, 3,698,942.

Lieberman, Abraham Buddy, to Glolok Co., Ltd. Automatic loading, arranging and dispensing device for articles and including containers, pouches and the like. 3,698,153, Cl. 53-61.000.

Lifschitz, Joshus, to Sperry Rand Corporation. Method of making printed circuit armature. 3,698,079, Cl. 29-598.000.

Lift Parts Mfg., Inc.: *See—*
Szymanski, Leonard W.; and Slaski, Joseph A., 3,698,739.

Light, Max E.: *See—*
Kotrappa, Payasada; and Light, Max E., 3,698,626.

Lilly, Arnys Clifton, R.; and Tiller, Calvin O., to Morris, Philip, Incorporated. Oxygen-responsive electrical current supply. 3,698,955, Cl. 136-83.00r.

Lilly, Herbert J., Jr.: *See—*
Dobler, Christian D.; and Lilly, Herbert J., Jr., 3,698,433.

Lim, Teong C.: *See—*
Thompson, Robert B.; Thompson, Donald O.; Kraut, Edgar A.; and Lim, Teong C., 3,699,481.

Linde Aktiengesellschaft: *See—*
Forster, Franz; Krusche, Alfred; and Hantelmann, Gunter, 3,698,415.

Lindenmann, Jean: *See—*
Isaacs, Alick; and Lindenmann, Jean, 3,699,222.

Lindenmeier, Heinz; and Meinke, Hans-Heinrich, to Kolbe, Hans, & Co., KG. Active antenna arrangement for a plurality of frequency ranges. 3,699,452, Cl. 325-367.

Lindenmeyer, Michael Edward, to Bell Telephone Laboratories, Incorporated. Liquid armature switch. 3,699,485, Cl. 335-49.000.

Linders, John R. Polyphase signal monitoring system. 3,699,441, Cl. 324-86.000.

Lindner, Fritz: *See—*
Reimann, Hubertus; and Lindner, Fritz, 3,698,301.

Lindsey, James M., to Sperry Sun Well Surveying Company. Borehole data transmission system. 3,699,510, Cl. 340-18.ctm.

Lingnau, Josef, to Gestra-KSB Verlriebsgesellschaft mbH & Co. Thermal control element. 3,698,633, Cl. 236-99.000.

Linkel, John E.: *See—*
Bochinski, Julius H.; and Linkel, John E., 3,698,699.

Lins, Stanley J.; and Nelson, Charles J., to Sperry Rand Corporation. Method for sputter depositing dielectric materials. 3,699,034, Cl. 204-192.000.

Litchfield, Mason Rawleigh; and Scott, Floyd Logan, Jr., to Smith International, Inc., mesne. Mud saver valve and method. 3,698,426, Cl. 137-512.000.

Litman, Bernard; and Silvia, Everett R., to Ambac Industries, Inc. Center thrust retainer for spherical race ball bearing. 3,698,776, Cl. 308-35.000.

Little, Eric Cooper: *See—*
Stacey, Frank Donald; Rynn, John Munro William; and Little, Eric Cooper, 3,698,094.

Little, John W.; and Cebula, Thaddeus J., to Sears, Roebuck and Co. Combination jacket and hood. 3,698,014, Cl. 2-84.000.

Littlechild, James: *See—*
Gillies, George Marshall; and Littlechild, James, 3,698,697.

Litton Business Systems, Inc.: *See—*
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Litvinoff, James R.; and Evans, David F., to American Hospital Supply Corporation. Counterbalancing tabletop construction. 3,698,327, Cl. 108-2.000.

Livingston, William L., to Factory Mutual Research Corporation. Method and apparatus for fighting fire. 3,698,481, Cl. 169-16.000.

Livingston, William L., to Factory Mutual Research Corporation. Fire protection system utilizing high-capacity direct discharge nozzles. 3,698,482, Cl. 169-16.000.

Lloyd, George Howard, to Marconi Instruments Limited. Peak detection circuits. 3,699,357, Cl. 307-235.00a.

Lloyd, Norman C.: *See—*
Chandra, Grish; Owen, William J.; Lloyd, Norman C.; and Cooper, Bryan E., 3,699,140.

Locati, Norman C.: *See—*
Hurlburt, Joseph C.; McCarty, Horace G.; and Locati, Norman C., 3,698,167.

Lockard, Joseph L.; and Rose, William Henry, to AMP Incorporated. Rotary switch with improved printed circuit contact and terminal connection array. 3,699,279, Cl. 200-11.00g.

Lockett, Eugene C. Mop. 3,698,030, Cl. 15-104.940.

Lockheed Aircraft Corporation: *See—*
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Rostad, Nels C., 3,698,662.

Loctite (Ireland), Limited: *See—*
O'Sullivan, Denis J.; and Bolger, Bernard J., 3,699,127.

Logan, Henry H. Actuator. 3,698,187, Cl. 60-52.07s.

Lohmann, Ernst, to Berkel G.m.b.H. Spring balance with vertical linearizing means. 3,698,496, Cl. 177-230.000.

Lonardo, Vincent P. Air pressure and vacuum gun. 3,698,641, Cl. 239-434.000.

Loncaric, Rado G., to Atlantic Richfield Company. Crack arrester. 3,698,746, Cl. 285-286.000.

Long Manufacturing Co., Inc.: *See—*
Atkinson, Wallace E., 3,698,753.

Looker, Robert, to Satco Inc. Pallet for moving and securing cargo. 3,698,677, Cl. 248-346.000.

Lopes, Louis A., Jr., to United States of America, Navy. Strapped-down attitude reference system. 3,699,316, Cl. 235-150.250.

Loprest, Frank: *See—*
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Lord Corporation: *See—*
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L'Oreal: *See—*
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Lorio, Angelo. Sponge having a reservoir for cleaning liquid. 3,698,824, Cl. 401-205.000.

Losey, Jerry E., to Cincinnati Milacron Inc. EDM cap sensing. 3,699,301, Cl. 219-69.00c.

Louat, Lucien: *See—*
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Louisville Bedding Company: *See—*
Forrester, Harold C.; and Tatum, Harold E., 3,698,335.

Louks, Robert A. Process and apparatus for spreading granular material. 3,698,574, Cl. 214-17.0cb.

Lowe, Walter Max; and Squirrell, Frederick, to Thermo-Technical Development Limited. Gas tight isolators and valves. 3,698,429, Cl. 137-601.000.

LTV Aerospace Corporation: *See—*
Weil, William M., 3,698,811.

Lubowitz, Hyman R.; Kendrick, William P.; Jones, John F.; and Burns, Eugene A., to TRW Inc. Polyimide prepolymer molding powders. 3,699,074, Cl. 260-37.00n.

Lubowitz, Hyman R., to TRW Inc. Soluble high molecular weight polyimide. 3,699,075, Cl. 260-49.000.

Lucas, Raymond L. R. Sheet stacker and control stack removing means. 3,698,707, Cl. 271-68.000.

Lucien, Victor Gewiss, to Wood, Marc, Societe Anonyme pour la Promotion des Exchanges Techniques Internationaux. Chevron shaped article and a sandwich structure therefrom. 3,698,879, Cl. 29-191.000.

Lucker, Willi: *See—*
Pascoe, Peter; Josten, Friedrich; Haferkamp, Wilhelm; and Lucker, Willi, 3,698,861.

Luders, Walter: *See—*
Moschel, Albrecht; Luders, Walter; and Steppan, Hartmut, 3,699,086.

Ludwig, Bernard J.; Berger, Frank M.; and Fukui, George M., to Carter-Wallace, Inc. Penicillin compounds. 3,699,097, Cl. 260-239.100.

Luecke, Gerald: *See—*
Hyltin, Tom M.; Kilby, Jack S.; Luecke, Gerald; and Toombs, Harold D., 3,698,082.

Luft, Robert G., to International Harvester Company. Supporting, leveling and height adjustment means. 3,698,759, Cl. 296-35.00r.

Lum, Kin Kwong: *See—*
Gompf, Thomas E.; and Lum, Kin Kwong, 3,698,897.

Lummus Company, The: *See—*
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Lumoprint Zindler K.G.: *See—*
Cranskens, Georg; Krober, Gunther; and Palm, Richard, 3,698,804.

Lund, Clifford C. Combination hitch bumper and spare tire carrier. 3,698,609, Cl. 224-42.050.

Lundquist, Gunnar F.: *See—*
Landen, William James; and Lundquist, Gunnar F., 3,698,770.

Lusztig, Gavril T., to Webster Electric Company, Inc. Hydraulic motor. 3,698,841, Cl. 418-61.000.

Lutchansky, Milton, to Bell Telephone Laboratories, Incorporated. Laser guidance system. 3,698,816, Cl. 356-152.000.

Lynes, Dennis Joseph; and Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Two-terminal transistor memory utilizing collector-base avalanche breakdown. 3,699,540, Cl. 235-173.00r.

Lynes, Dennis Joseph; and Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Two-terminal transistor memory utilizing emitter-base avalanche breakdown. 3,699,541, Cl. 340-173.00r.

Lynes, Dennis Joseph; and Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Two-terminal transistor memory utilizing saturation operation. 3,699,542, Cl. 340-173.00r.

Lynn, Robert Reed: *See—*
Balke, Rodney Worth; Lynn, Robert Reed; and Wernicke, Rodney Keith, 3,698,663.

M & N Developers, Incorporated: *See—*
Moore, Emanuel M., 3,698,751.

M & T Chemicals, Inc.: *See—*
Debreczeni, Eugene J.; and Kushlefsky, Bernard G., 3,699,138.

Maag, Gustav A.; and Gerth, Donald L., to Procter & Gamble Company, The. Method and apparatus for treating granular material. 3,698,097, Cl. 34-9.000.

Mac Duff, Richard, to Hercules Incorporated. Continuous blow molding process with reduction of length compensation. 3,699,199, Cl. 264-99.000.

Macalalad, Fidel V.: *See—*
Katerndahl, Dean R.; Wilson, Earl D.; Macalalad, Fidel V.; and Ring, Gene C., 3,698,396.

Maccarone, Michael B.: *See—*
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MacDermid Incorporated: *See—*
Kuzmik, John J., 3,698,919.
Mersereau, Mark; Rohdenizer, Harold L.; Grunwald, John J.; and Innes, William P., 3,698,940.

MacDonald, Eric; and Campbell, Frederick, to Ilford Limited. Photographic materials comprising formazan dyes. 3,698,908, Cl. 96-84.00r.

MacDonald, Hugh D.; and Doebley, Eugene J., to United States of America, Army. Initiator booster. 3,698,183, Cl. 60-26.100.

MacDonnell, Robert W., to Unity Railway Supply Co., Inc. Shipping cover for AB type control valve. 3,698,545, Cl. 206-46.00h.

Macemon, Herbert J., to Kuhlman Corporation. Fuse holder. 3,699,490, Cl. 337-202.000.

Machlett Laboratories Incorporated, The: *See—*
Holland, William P.; and Azud, Robert E., 3,699,373.

Mack, Frank Joseph; and Simpkins, Terry John, to Drackett Company, The. Automatic toilet bowl cleaner dispenser. 3,698,021, Cl. 4-227.000.

Mackey, Edward F.: *See—*
Quillinan, John H.; and Mackey, Edward F., 3,699,341.

Mader, Horst Heinrich Georg, to Atlas Copco Aktiebolag. Pipe wrench. 3,698,266, Cl. 81-53.00a.

Madrazo, Charles Felix; Fulcher, Edwin Maxwell; and McDonagh, Kevin Patrick, to RCA Corporation. Gate circuit. 3,699,355, Cl. 307-215.000.

Maeda, Kazuo, to Mitsui Shipbuilding and Engineering Co., Ltd. Ships building method. 3,698,344, Cl. 114-77.00r.

Maeda, Naoyuki: *See—*
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Maeda, Tatuo: *See—*
Konishi, Kozo; Suzui, Masaaki; Otake, Michio; and Maeda, Tatuo, 3,699,112.

Maeno, Shizuo: *See—*
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Maffii, Giulio: *See—*
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Magee, James Arthur: *See—*
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Magerlein, Helmut; Meyer, Gerhard; and Rupp, Hans-Dieter, to Glanzsoff A.G. Process for the production of thiophosgene. 3,699,161, Cl. 260-543.00r.

Maginnis, George B., to General Metors Corporation. Transpiration cooling. 3,698,834, Cl. 416-96.000.

Magnavox Company, The: *See—*
Crane, Paul J.; and Feese, Glenn A., 3,699,249.

Mahoney, David T. Metal dilator. 3,698,391, Cl. 128-261.000.

Mail, Isaac Paul. Method for backwashing filters. 3,698,554, Cl. 210-80.

Main, Henry Allan; and Thompson, Joseph, to Northern Electric Company Limited. Coin switch apparatus. 3,699,259, Cl. 179-6.500.

Mainard, Douglas Raymond: *See—*
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Maki, Yoshiyuki: *See—*
Emoto, Masayuki; and Maki, Yoshiyuki, 3,698,956.

Malinin, Theodore. Treatment of distilled alcoholic liquors. 3,698,913, Cl. 99-34.000.

Malkin, Emanuel, to Mass Feeding Corporation. Oven control. 3,699,307, Cl. 219-492.000.

Mallet, Emile, to Expandet S.A. Expansion fastener. 3,698,279, Cl. 85-71.000.

Mallory, P. R., & Co., Inc.: *See—*
Jones, Lewis E.; and Bernhardt, Daniel W., 3,699,278.
Koons, Edwin Russell; Parker, Ralph G., Jr.; and Rupley, Jeffery P., 3,698,880.
Straub, Paul J., 3,699,277.
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Malone, Martin: *See—*
Reenstray, John E.; and Malone, Martin, 3,699,305.

Mancini, Ronald Alfred, to RCA Corporation. Crystal controlled digital logic gate oscillator. 3,699,476, Cl. 331-116.00r.

Mandon, Jean Pierre: *See—*
Rabussier, Bernard; Mandon, Jean Pierre; and Hennart, Claude, 3,698,974.

Manjikian, Serop, to United States of America, Interior, mesne. Reverse osmosis module suitable for food processing. 3,698,559, Cl. 210-321.000.

Mann, Fred A., Jr. Apparatus for treating dust mops, dust cloths, and rugs. 3,698,213, Cl. 68-205.00r.

Mannesmann Aktiengesellschaft: *See—*
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Mannix Construction Inc.: *See—*
Peppin, Richard A.; and Trottochau, Lawrence D., 3,698,324.

Mapother, Thomas C.; and Wilson, Richard L., to General Electric Company. Semonductor gate-controlled PnPn switch. 3,699,406, Cl. 317-235.00r.

Mar, Jerry: *See—*
Lynes, Dennis Joseph; and Mar, Jerry, 3,699,540.
Lynes, Dennis Joseph; and Mar, Jerry, 3,699,541.
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Marantier, Bernard. Panel mounting means and method. 3,698,148, Cl. 52-400.000.

Marathon Oil Company: *See—*
Gotshall, William W., 3,699,216.

Marcellin, Louis, to Societe Anonyme des Etablissements NEU. Blade angle setting device. 3,698,837, Cl. 416-208.000.

Marchal, Francois: *See—*
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Marconi Company Limited, The: *See—*
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Marconi Instruments Limited: *See—*
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Marek, Ludwig: *See—*
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Maremont Corporation: *See—*

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Margavio, Matthew F.: *See—*
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Marine Protein Corporation: *See—*
Fremont, Howard J., 3,698,359.

Marker, Hannes: *See—*
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Markey, Francis J., to General Motors Corporation. Fluid vaporization tester with hot air purge and method. 3,698,236, Cl. 73-17.00a.

Markiewicz, James E.: *See—*
Ziehm, Kurt F., Jr.; and Markiewicz, James E., 3,698,700.

Markow, Edward G., to Grumman Aerospace Corporation. Elastic conoid shaped wheel. 3,698,461, Cl. 152-5.000.

Marlan Company: *See—*
Shields, John T., 3,698,990.

Marrs, Richard E.: *See—*
Askew, Warren S.; and Marrs, Richard E., 3,698,479.

Marsh, James Courtland, Jr., to RCA Corporation. Automatic degaussing apparatus for minimizing residual current during steady state operation. 3,699,400, Cl. 317-157.500.

Marsh, Keith D.: *See—*
Eshelman, Philip V.; Erickson, Roy O.; and Marsh, Keith D., 3,698,372.

Marshall, James O. Sight attachment for a golf putter. 3,698,093, Cl. 33-263.000.

Marshall, Richard P.: *See—*
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Martin, Albert D.: *See—*
Nunes, John; and Martin, Albert D., 3,698,963.

Martin, Bernard P.: *See—*
Beach, Sidney C.; and Martin, Bernard P., 3,699,016.

Martin, Edward Albert; and Garde, Douglas. Jitter free trigger circuit for a sampling oscilloscope. 3,699,458, Cl. 328-60.000.

Martin, Gregory L.; and Blair, Lloyd R. Precision generation of linear F.M. signal. 3,699,448, Cl. 325-131.000.

Martin, Harold B.; and Rogg, Herman O., to Graber-Rogg, Inc. Chord organs. 3,698,276, Cl. 84-365.000.

Martin, John A.: *See—*
Dahlem, Billy J.; and Martin, John A., 3,698,572.

Martin, John E.; and Landry, B. Roger, to Temptat Corporation. Automatically resettable fire sprinkler valve. 3,698,483, Cl. 159-37.000.

Martin, Joseph F.: *See—*
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Martin, Robert J., to Cessna Aircraft Company, The. Axial piston device. 3,698,287, Cl. 91-507.000.

Martindell, Howard R.: *See—*
Kreider, Benjamin A.; Schmidt, Charles J.; and Martindell, Howard R., 3,698,698.

Maruyama, Shoji; Saito, Tadashi; Yoshida, Shigeaki; and Shimada, Masaru, to Kabushiki Kaisha Ricoh. Diazotype photoprinting material. 3,699,000, Cl. 96-91.

Mashima, Fumio, to Sanyo Electric Co., Ltd. Multifunctional video tape recorder of helical scan type. 3,699,247, Cl. 178-6.6fs.

Mass Feeding Corporation: *See—*
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Massa Division Dynamics Corporation: *See—*
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Massa, Frank, to Massa Division Dynamics Corporation. Baffle structure for underwater transducer array. 3,699,507, Cl. 340-8.00s.

Massa, Frank, to Massa Division Dynamics Corporation. Means for increasing the acoustic power output of underwater transducers. 3,699,508, Cl. 340-8.000.

Masucci, Alan A. Spectacles with adjustable lenses. 3,698,801, Cl. 351-55.000.

Masuda, Takao: *See—*
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Masuyama, Takeshi: *See—*
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Mathes, Charles E.: *See—*
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Matsuoka, Michio; Masuyama, Takeshi; and Iida, Yoshio, to Matsushita Electric Industrial Co., Ltd. Uranium-modified zinc oxide voltage variable resistor. 3,699,058, Cl. 252-518.000.

Matsura, Thomas T., to American Optical Corporation. Ophthalmoscopes. 3,698,099, Cl. 351-6.000.

Matsushita Electric Industrial Co.: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Mattel, Inc.: *See—*
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Matthews, Harry P., to Goodrich, B. F., Company, The. Method of making and inspecting pneumatic tires having X-ray opaque cords. 3,698,971, Cl. 156-64.000.

Matthews, Jamie F., Jr., to Esso Production Research company. Method and apparatus for installation of a flow line riser on an offshore structure. 3,698,199, Cl. 61-72.100.

Matthias, Marx: *See—*
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Matthieu, Paul; Leuchs, Ottmar; Glander, Fritz; Kuypers, Hubert; and Pelz, Diethart, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Thermally insulated conduit. 3,698,440, Cl. 138-149.000.

Maus, Otfrid; Mueller, Martin; and Mueller, Robert, to Schenck, Carl, Maschinenfabrik GmbH. Apparatus for controlling a balancing machine. 3,698,828, Cl. 408-11.000.

Maxwell, John: *See—*
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Mayhew, John T. Method of cooling hot dipped galvanized continuously moving workpieces. 3,698,938, Cl. 117-114.00a.

Mayhew, Ken: *See—*
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Maylandt, Helmut; Forster, Herbert; and Juhasz, Josef, to Bosch, Robert, G.m.b.H. Self-healing electrical condenser. 3,699,410, Cl. 317-258.000.

Mayo, Cecil J.; and Kilburg, Ronald J., to Insul-8-Corp. Composite electrical conductor. 3,699,275, Cl. 191-29.000.

MB Associates: *See—*
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Mc Cann, Joseph A.; and Harnden, John D., Jr., to General Electric Company. Hybrid circuit power module. 3,699,402, Cl. 317-235.00r.

Mc Collum, John D.: *See—*
Connolly, John F.; Flannery, Robert J.; and Mc Collum, John D., 3,699,020.

Mc Cullough, Edward E., to Thiokol Chemical Corporation. Thrust vector control system. 3,698,642, Cl. 239-265.230.

McCallum, Donald A., to International Harvester Company. Positive pressure feed wheel. 3,698,332, Cl. 111-77.000.

McCarty, Horace G.: *See—*
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McClure, Glenn T., to Westinghouse Air Brake Company. Tread brake apparatus. 3,698,520, Cl. 188-171.000.

McCord Corporation: *See—*
Melnyk, William, 3,698,207.

McCoy, Wyn Eugene, to Timken Company, The. Tapered roller bearing with minimum heat generating characteristics. 3,698,777, Cl. 308-187.000.

McCulloch Corporation: *See—*
Frederickson, Robert Eugene; Zimmerer, John Louis; and Bailey, Jay Richard, 3,698,455.

McCullough, Floyd W. Spray device for irrigation purposes. 3,698,637, Cl. 239-68.000.

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McDermott & Green, Inc.: *See—*
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McDermott, William G.: *See—*
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McDonagh, Kevin Patrick: *See—*
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McDonough, Thomas B.: *See—*
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McGinnis, Patrick F., to Bendix Corporation, The. Mass filter electrode. 3,699,330, Cl. 250-41.9ds.

McGourty, Thomas K., to Kabushiki Kaisha Ricoh, mesne. Mechanical calculating apparatus for adding, subtracting, multiplying and dividing. 3,698,629, Cl. 235-63.00g.

McGraw-Edison Company: *See—*
Kobler, Richard; and Fagan, William F., 3,698,723.

McGuire, Marcus W.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

McKechnie, John C., to United States of America, Navy. Automatic area of interest television optical probe focus apparatus. 3,699,248, Cl. 178-6.800.

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McKeeman, William M.: *See—*
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McKell, Lynn J., to Bell Telephone Laboratories, Incorporated. Signal generator. 3,699,477, Cl. 331-142.000.

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McLeod, William J.: *See—*
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McNamee, James P.: *See—*
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Means, Lamoine E., to P. M. Products, Inc. Lock for sliding door or window. 3,698,754, Cl. 292-262.000.
Mecklenberg, Paul, to Bell Telephone Laboratories, Incorporated. Forward-acting error control system. 3,699,516, Cl. 340-146.1aq.
Mee, John D.: *See—*
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Melnyk, William, to McCord Corporation. Accumulator. 3,698,207, Cl. 62-503.000.
Melton, Thomas M., to Mobil Oil Corporation. Process for preparation of dialkyl vinyl phosphates. 3,699,193, Cl. 260-969.000.
Mente, Joseph N.: *See—*
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Merrill, Alvin S.; and Rosenhan, Bill J., to Moroni Corporation. Open gun sights for small arms. 3,698,091, Cl. 33-233.000.
Mersereau, Mark; Rohdenizer, Harold L.; Grunwald, John J.; and Innes, William P., to MacDermid Incorporated. Method of making additive printed circuit boards and product thereof. 3,698,940, Cl. 117-212.000.
Messick, Mikel Jay, to Square D Company. Firing angle advance limit for thyristor bridge power amplifier. 3,699,417, Cl. 318-257.000.
Messina, Giuseppe; Montorsi, Giorgio; and Caprara, Giuseppe, to Montecatini Edison S.p.A. Process for the preparation of olefin oxides. 3,699,133, Cl. 260-348.50v.
Messner, Jack D.: *See—*
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Dick, George W.; and Diamond, Norman, 3,698,630.
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Midgley, Edward L., to Standard Kollman Industries, Inc. Solid state tuner ntrol. 3,699,456, Cl. 325-455.000.
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Mihojevich, Steven; Zerfans, Arthur S.; Ostensen, Ralph G.; Berggren, Albin F., Jr.; and Glaser, Ronald A., to SCM Corporation. Electrostatic printer. 3,698,706, Cl. 271-9.000.
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Miller, Darrow L., to North American Rockwell Corporation. Method of making an acoustical transducer. 3,698,051, Cl. 29-25.350.
Miller, Donald, to United States of America, Army. Projectile housing. 3,698,322, Cl. 102-56.000.
Miller, Donald, to United States of America, Army. Tape wrapping arrangement. 3,698,651, Cl. 242-7.230.
Miller, Donald F.: *See—*
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Miller, Emery P., to Ransburg Electro-Coating Corporation. Deposition method. 3,699,027, Cl. 204-164.000.
Miller, Jarrell Denver; and Whiteside, Jimmy Talmage, to Huyck Corporation. Take-up mechanisms. 3,698,446, Cl. 139-308.000.
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Miller, Justin G.; deceased (by Miller, Rita Ann; administratrix), to Lear Siegler, Inc. Method and apparatus for controlling the flight path angle of aircraft. 3,698,669, Cl. 244-77.00a.
Miller, Michael Evans, to RCA Corporation. Phonograph pickup with self formed female receptacles. 3,699,268, Cl. 179-100.41k.
Miller, R. A., Industries, Inc.: *See—*
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Miller, Rita Ann: *See—*
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Miller, Robert A., to Miller, R. A., Industries, Inc. Aircraft antenna with wound wire radiating surface. 3,699,579, Cl. 343-702.000.
Miller, Robert L.; and Higgins, David H., to Honeywell Inc. Automatic battery charger. 3,699,422, Cl. 320-32.000.
Miller, Warner G. S. Automatic control system for forming fluted cutting tools. 3,699,411, Cl. 318-39.000.
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Miyai, Masaya, to Aisin Seiki Kabushiki Kaisha. Tandem master cylinder. 3,698,190, Cl. 60-54.60e.
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Miyato, Akira; Ohkubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, to Nippon Kokan Kabushiki Kaisha. Method of electroplating readily oxidizable metals. 3,699,013, Cl. 204-32.00r.
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Curry, Renwick E.; Young, Laurence R.; Smith, Thomas Basil, III; and Hatfield, John Rawson. Display research collision warning system. 3,699,511, Cl. 340-27.0na.
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Paul, William T.; and Tracy, Wayne R., to North American Rockwell Corporation. Roller chain disconnector apparatus. 3,698,181, Cl. 59-11.000.

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Paulus, Rudolf; and Huber, Hans-Peter, to Agfa-Gevaert Aktiengesellschaft. Arrangement for determining frame lengths on film strips. 3,699,349, Cl. 250-219.0fr.

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Percher, Guy, to Societe d'Instrumentation Schlumberger. Method and apparatus for addressing different data points from a central station. 3,699,523, Cl. 340-172.500.

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Peters, Karl-Heinz; and Neeff, Rutger, to Farbenfabriken Bayer Aktiengesellschaft. Anthraquinone dyestuffs. 3,699,126, Cl. 260-329.200.

Peters, Philip H., Jr.; and Wilbur, Donald A. Expandable bandwidth radar jammer. 3,699,575, Cl. 343-18.00e.

Peters, Timothy Victor. Processes of producing stable filaments of linear polyurethanes. 3,699,205, Cl. 264-210.00f.

Petersen, Harro, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of ureidomethylphosphonyl halides. 3,699,102, Cl. 260-251.00p.

Petersen, Richard E.: *See—*
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Peterson, Henry W.: *See—*
Wyzalek, Leonard J.; and Peterson, Henry W., 3,698,476.

Peterson, Ralph M., to Peterson-Kruse, Inc. Power operated can opener. 3,698,084, Cl. 30-4.00r.

Peterson, Wesley D.; and Southworth, Donovan A., to Collins Radio Company. Rugged, narrow bandwidth mechanical filter. 3,699,483, Cl. 333-71.000.

Peterson-Kruse, Inc.: *See—*
Peterson, Ralph M., 3,698,084.

Petrey, Ernest Q., Jr., to Drew Chemical Corporation. Coolant system and corrosion inhibitor and method of use. 3,699,047, Cl. 252-175.000.

Petrey, Ernest Quentin, Jr.; and Werner, Ronald M., to Drew Chemical Corporation. Corrosion inhibitor composition containing a glycine, chelating agent, phosphoric or boric acid ester, and a water soluble divalent metal salt. 3,699,052, Cl. 252-389.000.

Petri, Nelli J. Means for securing an insert to a base piece. 3,698,748, Cl. 287-20.300.

Petro-Tex Chemical Corporation: *See—*
Nagel, Roger M., 3,699,090.

Petrolite Corporation: *See—*
Heintzelman, William J.; and Naiman, Michael I., 3,699,154.

Peytavin, Pierre, to Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies). Intermittently acting rolling mill. 3,698,225, Cl. 72-208.000.

Pfabe, Peter: *See—*
Kirchhoff, Horst-Guenter; Pfabe, Peter; and Sedlmayr, Gerhard, 3,698,657.

Pfizer Inc.: *See—*
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Phelan, Louis A. M.: *See—*
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Phelps Dodge Magnet Wire Corporation: *See—*
Koerner, Ernest C.; Trice, Robert T.; and Wareham, William W., 3,699,082.

Phelps, Rex V., to Warren Petroleum Corporation. Deep-water drilling, production and storage system. 3,698,198, Cl. 61-46.500.

Philbrook, James E.: *See—*
Thunberg, Jon C.; and Philbrook, James E., 3,699,214.

Philco-Ford Corporation: *See—*
Berenbaum, Arthur; and McDonough, Rort M., 3,699,453.
Shelby, Rufus F., 3,699,359.

Philippe, Nicodeme, to Bendix Corporation, The. Warning device for a split fluid pressure braking system. 3,699,513, Cl. 340-52.00c.

Phillip Petroleum Company: *See—*
Wood, Harold V.; and Brown, Terry D., 3,699,087.

Phillips Petroleum Company: *See—*
Brady, Donnie G., 3,699,155.
Parker, Harry W., 3,698,478.
Trepka, William J., 3,699,055.
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Photis, James Mitchell: *See—*
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Picek, Charles Richard; and van Hoek, Cornelis, to American Machine & Foundry Company. Evaporating-concentrating apparatus and method. 3,699,007, Cl. 203-40.000.

Pierce, George W. Cable claw attachment. 3,698,047, Cl. 24-238.000.

Pierce, Guy Donald; and Runft, Rudi K., to Cross Company, The. Gage head. 3,698,056, Cl. 29-201.000.

Pierce, John Robinson: *See—*
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Pilgrim, William S.: *See—*
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Pinnow, Douglas A.; and Van Uitert, Le Grand G., to Bell Telephone Laboratories, Incorporated. Display system. 3,699,478, Cl. 332-7.510.

Pinsley, Edward A.: *See—*
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Pinson, Lyndon D.: *See—*
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Pinto, Jane P.: *See—*
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Wilkinson, Bruce L., 3,699,358.

Piper, William S.; and Polak, Teodor. Electrically heated hypodermic needle. 3,698,394, Cl. 128-303.100.

Pitchford, Richard L., to Bausch & Lomb Incorporated. Cross cylinder flip mechanism. 3,698,799, Cl. 351-28.000.

Pitha, John J., to General Electric Company. Porous ceramic insulating material and method of making employing wax. 3,698,920, Cl. 106-41.000.

Pitney-Bowes, Inc.: *See—*
Du Bois, Robert Clark; Mikan, Donald G.; and Miller, Wayne H., 3,698,356.

Pitroda, Satyan G.; and Rekiere, Bernard J., to GTE Automatic Electric Laboratories, Incorporated. Conference circuit for pulse code modulated telephony. 3,699,264, Cl. 179-18.0bc.

Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Treatment of textile fibers. 3,698,856, Cl. 8-115.500.

Plastek Company: *See—*
Muhler, Joseph C., 3,698,388.

Plasynski, Joseph E.; and Jerabek, Robert D., to PPG Industries, Inc. Use of coke in electrodepositable compositions. 3,699,009, Cl. 204-181.000.

Plattner, Robert F.; and Kocian, James A., to Interlake, Inc. Strapping machine. 3,698,310, Cl. 100-4.000.

Platzoder, Karl: *See—*
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Plessey Company Limited, The: *See—*
Thompson, Raymond; and Guest, Ashley W., 3,699,479.

Plessey Handel und Investments A.G.: *See—*
Wall, Reginald Victor; and Page, Harold Rodney Sven, 3,698,238.

Ploinikoff, Nicholas Peter, to Abbott Laboratories. 2-Oxo-5-phenyl-4-oxazolidinone as an antidepressant agent. 3,699,229, Cl. 424-272.000.

Plourde, Leonard J.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Plunk, Troy E.: *See—*
O'Hara, Francis J.; and Plunk, Troy E., 3,699,574.

Pluta, Linda J.; and Vossos, Peter H., to Nalco Chemical Corporation. Process for making silica organosols. 3,699,049, Cl. 252-309.000.

Poeste, Hans-Peter: *See—*
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Pogge, Hans B.: *See—*
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Pogorski, Louis A., 55% to British American Oil Company Limited, The and 45% to Chemical Projects Limited. Thermally insulated device. 3,698,588, Cl. 220-9.00c.

Polak, Teodor: *See—*
Piper, William S.; and Polak, Teodor, 3,698,394.

Polakoqski, Stanley J.: *See—*
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Polanyi, Michael L., to American Optical Corporation. Disposable cuvettes for calorimetry. 3,698,822, Cl. 356-246.000.

Polaroid Corporation: *See—*
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,698,898.
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Polymer Research Corporation: *See—*
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Poncet, Pierre. Screw mixers. 3,698,693, Cl. 259-5.000.

Portec, Inc.: *See—*
Hamilton, William R., Jr., 3,698,634.

Portugall, Peter, to International Standard Electric Corporation. Key switch for chatterless switching. 3,699,293, Cl. 200-166.00h.

Poskin, Irvin C. Staple lifter with gripping jaws. 3,698,689, Cl. 254-28.000.

Potts, Vinson S., to Crown Cork & Seal Company, Inc. Necked-in container. 3,698,596, Cl. 220-670.000.

Poumakis, Eleuthere: *See—*
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Pranke, John A., to Theta-Com of California, mesne. Self-balancing push pull amplifier. 3,699,465, Cl. 330-15.000.

Prasse, Herbert F., to Ramsey Corporation. Method of making oil control piston rings. 3,698,054, Cl. 29-156.630.

Pratt & Whitney Inc.: *See—*
Parone, Anthony D., 3,698,090.

Pray, Lester W.; and Zerfoss, Clinton C., to Maremont Corporation. Bobbin tube delivery means. 3,698,536, Cl. 198-26.000.

Precision Extrusions, Inc.: *See—*
Ziehm, Kurt F., Jr.; and Markiewicz, James E., 3,698,700.

Preston Engravers, Inc.: *See—*
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Kesten, Martin; and O'Connor, Ralph Bruce, 3,698,272.

Price, Carl. Pump impeller housing with integral flow regulator. 3,698,832, Cl. 415-148.000.

Price, Edgar E. Electro-optical display system. 3,699,242, Cl. 178-5.4bd.

Price, William C.: *See—*
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Procter & Gamble Company, The: *See—*
Connor, Daniel S.; and Krummel, Harry Karl, 3,699,159.
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Pulliam, William D. Automatic washing apparatus. 3,698,029, Cl. 15-21.00d.
Pulman, Leonard J.: *See—*
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Puma, Maurice J.: *See—*
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Benkeser, Robert A.; and Smith, William E., 3,699,141.
Benkeser, Robert A.; and Smith, William E., 3,699,142.
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Whistler, Roy L., 3,699,170.
Putt, James Basil, to Bendix Corporation, The. Shunt actuated fluid level sensor. 3,699,561, Cl. 340-244.00e.
Putter, Irving, to Merck & Co., Inc. Selective deuteration of tyrosine, aspartic and glutamic acids. 3,699,158, Cl. 260-519.000.
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Quillinan, John H.; and Mackey, Edward F., to General Electric Company. Muzzle flash detector. 3,699,341, Cl. 250-83.30h.
Quinlan, Joseph B.; and Van Artsdalen, Earl F., to United States of America, Army. High temperature-resistant waterproof caseless primer. 3,698,319, Cl. 102-45.000.
Quisling, Sverre. Discovery in solution dispensers. 3,698,605, Cl. 222-190.000.
Rabenhorst, David W., to Hopkins, John, University, The. Fixed element rotor structures. 3,698,262, Cl. 74-572.000.
Rabinow, Jacob: *See—*
Apstein, Maurice; Blomgren, Evert; Keehn, George R.; Andrews, Laurence M.; and Rabinow, Jacob, 3,698,323.
Rabussier, Bernard; Mandon, Jean Pierre; and Hennart, Claude, to Ciba-Geigy AG. Process for the manufacture of apparatus for emitting of insecticidal vapors. 3,698,974, Cl. 156-87.000.
Radcliffe, Richard J., to Ebco Manufacturing Company. Water-distributing system for a hot and cold drinking water dispenser. 3,698,603, Cl. 222-146.00r.
Radig, Gary A.; Rowell, Cliva A., Jr.; and Edwards, Harvey R., to Cook Testing Co. Running-in tool forells. 3,698,477, Cl. 166-214.000.
Radin, William: *See—*
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Radner, Raymond John: *See—*
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Ragsdale, Charles W., to United States of America, Army. One-shot monostable multivibrator. 3,699,360, Cl. 307-273.000.
Rainal, Attilio Joseph, to Bell Telephone Laboratories, Incorporated. Apparatus for measuring low level power. 3,699,450, Cl. 325-363.000.
Raion Yushi Kabushiki Kaisha: *See—*
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Ramsay, James M., to United States of America, Navy. Method for drying articles having a low heat tolerance. 3,698,098, Cl. 34-15.000.
Ramsey Corporation: *See—*
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Ramsey Engineering Company: *See—*
Schaaf, Gunther; and Smith, Nathan R., 3,699,503.
Randall, David I.; and Vogel, Calvin, to GAF Corporation. Production of diesters of 2-hydroxyethyl phosphonic acid. 3,699,195, Cl. 260-970.000.
Ransburg Electro-Coating Corporation: *See—*
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Rapistan Incorporated: *See—*
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Rapoport, Lev Moiseevich: *See—*
Mikhailov, Nikolai Petrovich; Rapoport, Lev Moiseevich; and Taits, Samuil Zalmanovich, 3,698,235.
Rapp, Robert Anthony, to Ohio State University, The. Devices for the control of agents in fluids. 3,699,032, Cl. 204-195.00s.
Rapson, William H., to Electric Reduction Company of Canada, Ltd. Digestion and bleaching wood pulp followed by recovery of chemicals and countercurrent flow of wash water. 3,698,995, Cl. 162-19.000.
Rattey, Wilfred H., Jr. Board game apparatus. 3,698,716, Cl. 273-134.0ae.
Ratz, Walter, to Bergwerksverband GmbH. Method and apparatus for testing geological strata for identification thereof. 3,699,429, Cl. 324-5.000.
Rauh, John H., to Sonix, Inc. Sound deadening sheet material. 3,698,993, Cl. 161-159.000.
Rauner, Frederick J.: *See—*
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Rauskolb, Fred W., to Standard International Corporation. Combustion mixture control system for calenders. 3,698,696, Cl. 263-6.00c.
Ray, Jack C.: *See—*
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Ray, Jimmy C. Sleeve slitter. 3,698,085, Cl. 30-90.400.
Raynor, Terence Robert, to AMP Incorporated, mesne. Electrical connector for vehicle instruments. 3,699,495, Cl. 339-17.00c.
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Redington, Rowland W., to General Electric Company. Diode array storage system having a self-registered target and method of forming. 3,698,078, Cl. 29-578.000.
Reed, Geoffrey R., to British Iron and Steel Research Association, The. Packaging. 3,698,152, Cl. 53-27.000.
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Reger, Herbert; and Heinrich, Hans-Walter, to Bosch, Robert, G.m.b.H. Conveying arrangement. 3,698,542, Cl. 198-225.000.
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Reichardt, Theodore A. Photographic print and film processing machine. 3,698,307, Cl. 95-93.000.
Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
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Reid, James S., to Thermasan Corporation, mesne. Method for waste disposal with centrifugal action. 3,699,040, Cl. 210-32.000.
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Reimann, Hubertus; and Lindner, Fritz, to Kombinat Veb Pentacon Dresden Kamera- und Kinowerke. Apparatus for meterless exposure value indication. 3,698,301, Cl. 95-10.00c.
Reimer, Leonard H., to Cessna Aircraft Company, The. Neutral control for hydraulic transmission. 3,698,189, Cl. 60-53.00r.
Reimer, William A.; and Storz, Frederick G., to GTE Automatic Electric Laboratories, Incorporated. Apparatus for applying with clamp terminal clip of the flanged tubular type. 3,698,058, Cl. 29-203.0hc.
Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Printed wiring card file. 3,699,393, Cl. 317-99.000.
Reinheimer, Harry J., to International Business Machines Corporation. Error detecting and correcting system and method. 3,699,323, Cl. 235-153.000.
Reitz, Lewis P., Jr., to Technicolor, Inc. Pan scan system. 3,698,806, Cl. 355-40.000.
Reitzel Designs, Inc.: *See—*
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Reuschel, Konrad; Platzoder, Karl; and Kursawe, Helga, to Siemens Aktiengesellschaft. Device for indiffusing dopants into a semiconductor material. 3,698,354, Cl. 118-49.100.
Reusser, Raymond E., to Western Electric Company, Incorporated. Breakout protection for crystal growers. 3,698,872, Cl. 23-273.0sp.
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Joyce, John Frederick; and Daugherty, T. Stevens, 3,699,196.
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Richard, Yvon L.; and Wojchlwski, Charles, to Rich Tool & Die Company. Automatic punch press for flexible metal band. 3,698,273, Cl. 83-183.000.
Richards, Bernardine J.; and O'Neil, Bernadette T. Article of clothing. 3,698,015, Cl. 2-105.000.
Richardson, Gayle Darwin. Eze-Wire and cable puller. 3,698,059, Cl. 29-203.00h.
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Rieker, Justus. Ski boot. 3,698,106, Cl. 36-2.5al.
Riley, John A., to Westinghouse Electric Corporation. Bi-directional signal detector with input/output isolation. 3,699,442, Cl. 324-98.000.
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Roberts, George S., to Big George, Inc. Process control circuitry. 3,699,363, Cl. 307-308.000.
Roberts, John A.; and Roberts, Peter R., to Brunswick Corporation. Fibrous metal filaments. 3,698,863, Cl. 29-183.500.
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Rollei-Werke Franks & Heidecke: *See—*
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Rose, Bennie A., to Heyl and Patterson, Inc. Apparatus for crushing large lumps of coal and the like. 3,698,648, Cl. 241-33.000.
Rose, Howard L.: *See—*
Midulla, Guiseppe, 3,699,046.
Rose, William Henry: *See—*
Lockard, Joseph L.; and Rose, William Henry, 3,699,279.
Rose-Miller, Brigadier George Patrick. Method for handling feeding devices for young animals. 3,698,952, Cl. 134-22.00r.
Rosen, Harold A.: *See—*
Hudspeth, Thomas; and Rosen, Harold A., 3,699,454.
Rosenberg, Norman: *See—*
Kamins, Seymour; Rosenberg, Norman; and Bentsen, Per, 3,698,289.
Rosenberg, Robert B.; Kweller, Esher R.; and Staats, William R., to Institute of Gas Technology. Smooth top gas range. 3,698,378, Cl. 126-39.
Rosenburgh, Norman John, to Eastman Kodak Company. Self-threading take-up device. 3,698,654, Cl. 242-74.000.
Rosenhan, Bill J.: *See—*
Merrill, Alvin S.; and Rosenhan, Bill J., 3,698,091.
Rosenhan, Bill J., to Moroni Corporation. Illuminated gun sights for small arms. 3,698,092, Cl. 33-241.000.
Rosier, Stewart N. Fish bite signaling device. 3,698,116, Cl. 43-17.000.
Rosinski, Edward J.: *See—*
Rubin, Mae K.; and Rosinski, Edward J., 3,699,139.
Rossi, Silvano, to Roussel-UCLAF. Carboxamides of benzotriazepines. 3,699,098, Cl. 260-239.30b.
Rostad, Nels C., to Lockheed Aircraft Corporation. Apparatus and method for sequencing the folding and unfolding of rotor blades in a compound vehicle. 3,698,662, Cl. 244-7.00a.
Rotary Hoes Ltd.: *See—*
Trimpe, Clarence W.; and Beldon, Roy A., 3,698,485.
Roth, Robert Richard: *See—*
Yoder, Alfred Dean; and Roth, Robert Richard, 3,698,488.
Roth, Stanley F.: *See—*
Eichhorn, Jacob; and Roth, Stanley F., 3,698,934.
Roth, Stephen A., to Tektronix, Inc. Circuit for accurately detecting the time of occurrence of a waveform. 3,699,256, Cl. 178-69.5tv.
Roussel-UCLAF: *See—*
Nedelec, Lucien; and Gasc, Jean-Claude, 3,699,100.
Rossi, Silvano, 3,699,098.
Roussos, Michel: *See—*
Henri, Richaud; and Roussos, Michel, 3,699,019.
Rowell, Cliva A., Jr.: *See—*
Radig, Gary A.; Rowell, Cliva A., Jr.; and Edwards, Harvey R., 3,698,477.
Rowley, Kermit G., to Tenneco Oil Company. Well conduit treating apparatus. 3,698,474, Cl. 166-90.000.
Roy, Fernand. Door lock guard. 3,698,217, Cl. 70-451.000.
Rozmus, Walter J., to Kelsey Hayes Company, mesne. Valve assembly. 3,698,438, Cl. 137-625.460.
Rubelsky, William C.: *See—*
Midulla, Guiseppe, 3,699,046.
Rubelsky, William P.: *See—*
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Rubico, Jerome A.; and Batchelder, Charles F., to Batchelder Rubico, Inc. Lasting element. 3,698,105, Cl. 36-2.50r.
Rubin, Leonard R., to Engelhard Minerals & Chemicals Corporation. Method of producing a composite electrode. 3,698,050, Cl. 29-25.180.
Rubin, Mae K.; and Rosinski, Edward J., to Mobil Oil Corporation. Synthetic crystalline aluminosilicate. 3,699,139, Cl. 260-448.
Rubricius, Jeanette L. Small animal cage. 3,698,360, Cl. 119-17.000.
Rudolph, Hans: *See—*
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Ruff, Joseph N.: *See—*
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Runft, Rudi K.: *See—*
Pierce, Guy Donald; and Runft, Rudi K., 3,698,056.
Runyon, David Jon: *See—*
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Rupley, Jeffery P.: *See—*
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Rupp, Hans-Dieter: *See—*
Magerlein, Helmut; Meyer, Gerhard; and Rupp, Hans-Dieter, 3,699,161.
Ruse, Alois, to Hartmann & Braun Aktiengesellschaft. Gas analyzer and mist separator. 3,698,159, Cl. 55-257.000.
Rutenberg, Morton Wolf: *See—*
Tessler, Martin Melvyn; and Rutenberg, Morton Wolf, 3,699,095.

Ruth, Harold C.; and Thompson, James W., to A-T-O Inc., mesne. Road maintainer attachment. 3,698,487, Cl. 172-305.000.

Rutz, Elisabeth M., to International Business Machines Corporation. Optical pulse communication system using a pseudo-random sequence for synchronization. 3,699,344, Cl. 250-199.000.

Ryer, Dudley A., Jr.: *See—*
Jones, Harvey W.; and Ryer, Dudley A., Jr., 3,698,742.

Rygelis, Joseph: *See—*
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Rynn, John Munro William: *See—*
Stacey, Frank Donald; Rynn, John Munro William; and Little, Eric Cooper, 3,698,094.

Saddler, Rupen L. Cloth article provided with test tab. 3,698,016, Cl. 2-243.00r.

Sagara, Hideo, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for spirally winding strip metal. 3,698,223, Cl. 72-146.000.

Sainte-Beuve, Philippe, to U.S. Philips Corporation. Differential pulse code modulation system with clycic, dynamic decision level changing. 3,699,446, Cl. 325-38.00a.

Saito, Tadashi: *See—*
Maruyama, Shoji; Saito, Tadashi; Yoshida, Shigeaki; and Shimada, Masaru, 3,699,000.

Sakamoto, Eiichi: *See—*
Sakazume, Kaiichiro; Ito, Shigemasa; Sato, Shui; Sakamoto, Eiichi; and Oshima, Akio, 3,698,910.

Sakamoto, Toemon, to Enshu Limited. Weft controller usable for a weaving loom of weft propellent fluid jet type. 3,698,442, Cl. 139-127.00p.

Sakazume, Kaiichiro; Ito, Shigemasa; Sato, Shui; Sakamoto, Eiichi; and Oshima, Akio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 3,698,910, Cl. 96-122.000.

Sakurai, Fujio: *See—*
Oshima, Keiji; Yamada, Shozo; Sakurai, Fujio; Iwasa, Yoshisuke; Horiuchi, Koichi; Uchida, Unosuke; Nomura, Teruhiko; and Tominaga, Yasushi, 3,699,203.

Salfer, Donald C. Attachment for portable drills. 3,698,827, Cl. 408-92.000.

Saltich, Jack L.: *See—*
Gurtler, Richard W.; and Saltich, Jack L., 3,699,407.

Salyer, Ival O.: *See—*
Tapp, James S.; Beemsterboer, George L.; and Salyer, Ival O., 3,698,560.

Salz, Karl; and Skrivanek, Ladislav, to World Patent Development Corporation. Application of copolymers of polyvinyl acetals as a means for protection, preservation, restoration stabilization hydrophobization of papyrus, papers, books and or manuscripts. 3698,925, Cl. 117-2.00r.

Salzmann, Ferdinand F., to Consolidated Foods Corporation. Traverse assembly for draperies and the like. 3,698,035, Cl. 16-95.00d.

Sampson, Ronald G., to Nalco Chemical Company. Compositions and processes for breaking petroleum emulsions. 3,699,051, Cl. 252-344.

San Antonio, Victorino T. Netmaking slide rule. 3,699,314, Cl. 235-78.000.

Sanderford, Freeman M.; and Ray, Jack C., to Kaiser Aluminum & Chemical Corporation. Surface modified alumina hydrate filler. 3,699,041, Cl. 252-8.100.

Sanders Associates, Inc.: *See—*
Parkin, William J., 3,699,345.
Stein, Bernard; and Davis, Sheridan, 3,699,343.
Tauscher, Kenneth E.; Roome, Theodore F., Jr.; and Coon, David S., 3,699,449.

Sanders, Lon L., to International Telephone and Telegraph Corporation. Instrument landing system using a retrodirective sletten antenna responser. 3,699,571, Cl. 343-6.50r.

Sanderson, John L.; and Swift, Edward W., to Shell Oil Company. Process for the oxidation of aryl alkyl sulfoxides to aryl alkyl sulfones. 3,699,171, Cl. 260-607.00a.

Sanderson, Robert A., to United Aircraft Corporation. Fuel cell system having a natural circulation boiler. 3,698,957, Cl. 136-86.00c.

Sandhage, Ellsworth: *See—*
Taylor, Arthur Sinclair; Sandhage, Ellsworth; Bott, George; and Konazewski, William, 3,698,450.

Sandox Ltd.: *See—*
Seemann, Fritz; and Troxler, Franz, 3,699,123.

Sandoz-Wander, Inc.: *See—*
Eberle, Marcel K.; and Houlihan, William J., 3,699,119.

Sanford, Lloyd C., to Itek Corporation. Sensitometer apparatus. 3,698,294, Cl. 95-1.000.

Santacroce, Alfred Michael: *See—*
Illig, Howard Clayton; Lehder, Wilfred Emile, Jr.; Parker, James Daniel, III; Santacroce, Alfred Michael; and Sheridan, James Arthur, 3,698,533.

Sanyo Electric Co., Ltd.: *See—*
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Sasabe, Kaoru; and Oda, Fujio, to Matsushita Electric Industrial Co., Ltd. Motor speed controlling apparatus. 3,699,418, Cl. 318-325.000.

Sasaki, Shunroku: *See—*
Kiyasu, Zen'Iti; Kawashima, Masao; Sasaki, Shunroku; Mineshima, Yukihiko; and Kurita, Shyoichi, 3,699,567.

Sass, Allan S.: *See—*
Garrett, Donald E.; and Sass, Allan S., 3,698,882.

Satco Inc.: *See—*
Looker, Robert, 3,698,677.

Sato, Hideo; and Ito, Kunihiko, to Tokyo Shibaura Electric Co., Ltd. Automatic dishwasher. 3,698,406, Cl. 134-57.00d.

Sato, Hiromitsu: *See—*
Morikawa, Kazumasa; Kobayashi, Makoto; Sato, Hiromitsu; and Nakazima, Jun, 3,698,652.

Sato, Shui: *See—*
Sakazume, Kaiichiro; Ito, Shigemasa; Sato, Shui; Sakamoto, Eiichi; and Oshima, Akio, 3,698,910.

Sato, Shui; Sugita, Sadao; Nakajima, Tomio; and Kasai, Keiji, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color-photographic material. 3,698,907, Cl. 96-84.00r.

Sato, Takayoshi, to Kabushikikaisha Copal. Circuit for preventing false operation of an electronic camera shutter. 3,698,302, Cl. 95-10.0ct.

Saulgeot, Claude; and Coste, Jean-Noel, to Compagnie Industrielle des Telecommunications Cie. Spindle assembly air bearings. 3,698,774, Cl. 308-9.000.

Sauter, Walter A.: *See—*
Ghose, Rabindra N.; and Sauter, Walter A., 3,699,444.

Sautter, Alton F.: *See—*
Kersten, Samuel D., Jr.; Sautter, Alton F.; and Simon, John M., 3,698,421.

Sauvage, Michel: *See—*
Blachere, Robert; and Sauvage, Michel, 3,698,724.

Sawada, Kiyoshi: *See—*
Iimura, Kazuo; Sawada, Kiyoshi; and Kato, Hiroki, 3,698,817.

Sawyer, John M., to Goodyear Tire & Rubber Company, The. Foam structure with protective overcoat. 3,698,927, Cl. 117-33.300.

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Radiation sensitive polymers. 3,699,080, Cl. 260-470.000.

Saytes, Adam Eric, to Siderugica Occidental C.A. Process for the production of steel structural shapes. 3,698,224, Cl. 72-178.000.

Scales, John Tracey; and Goddard, David, to National Research Development Corporation. Prosthetic acetabular devices. 3,698,017, Cl. 3-1.000.

Scarnato, Thomas J.; and Meyer, Martin H., to International Harvester Company. Crop harvesting machine. 3,698,162, Cl. 56-1.000.

Schaaf, Gunther; and Smith, Nathan R., to Ramsey Engineering Company. Probe construction. 3,699,503, Cl. 339-176.00p.

Schaffer, Harry G.; Neilson, Dan A.; and Poumakis, Eleuthere, to Singer Company, The. Multiprogramming control for a data handling system. 3,699,532, Cl. 340-172.500.

Scharfen, Hans; and Steinberger, Josef, to Forkardt, Paul, Kommanditgesellschaft. Power operated clamping device for machine tools. 3,698,729, Cl. 279-4.000.

Scheel, John R.: *See—*
Overmyer, Robert C.; and Scheel, John R., 3,698,137.

Scheibelhoffer, Anthony S., to Goodyear Tire & Rubber Company, The. Polyurethane reaction mixture based on anhydrous diamineketone curative. 3,699,063, Cl. 260-18.0tn.

Scheitel, Neal W., to Bus & Car Company S.A. Folding door for luggage compartment of vehicles such as motor-coaches for example. 3,698,464, Cl. 160-188.000.

Schenbeck, Robert E., to McDonnell Douglas Corporation. Multichannel autopilot with equalization means. 3,698,665, Cl. 244-77.00m.

Schenck, Carl, Maschinenfabrik GmbH: *See—*
Maus, Otfrid; Mueller, Martin; and Mueller, Robert, 3,698,828.

Schettler, Kurt, to Siemens Aktiengesellschaft. Device for sealing and lubricating reciprocating machine members. 3,698,726, Cl. 277-125.000.

Schimschek, Erhard J.; and Trias, John A., to United States of America, Navy. Method of preparation of rare earth (III) phosphorus dichloridates and phosphorus dibromidates. 3,699,211, Cl. 423-263.000.

Schindel, Arnold: *See—*
Hlipala, Edward; and Schindel, Arnold, 3,699,369.

Schindler, Hans R. Delta coder. 3,699,566, Cl. 340-347.0ad.

Schindler, Walter; Schmid, Erich; and Zust, Armin, to Geigy Chemical Corporation. 8-Chloro-10-(1-piperazinyl)-10,11-dihydro-dibenzo [b,f] thiepin as a central nervous depressant. 3,699,104, Cl. 260-268.

Schindler, Walter; Schmid, Erich; and Zust, Armin, to Geigy Chemical Corporation. 1-[2-or 3-]4-(10,11-Dihydro-dibenz-[b,f]-thiepin-10-yl-1 -piperazinyl[-alkyl] 3-alkyl-2-imidazolidinone derivatives. 3,699,107, Cl. 260-268.

Schlotterbeck, David L.; and Briar, John R., to General Motors Corporation. Electronic controller for automotive air conditioning system. 3,698,204, Cl. 62-206.000.

Schmid, Erich: *See—*
Schindler, Walter; Schmid, Erich; and Zust, Armin, 3,699,104.
Schindler, Walter; Schmid, Erich; and Zust, Armin, 3,699,107.

Schmidt, Charles J.: *See—*
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Schmitt, Werner H.: *See—*
Black, Thomas J.; and Schmitt, Werner H., 3,698,537.

Schmitt, William C., to Milwaukee Facicets, Inc. Non-rise valve for faucets or the like. 3,698,418, Cl. 137-315.000.

Schneider, Irving: *See—*
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Schneider, Joachim: *See—*
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Schofield, John: *See—*

Harwood, Mervyn Geoffrey; and Schofield, John, 3,699,346.

Schole, Murry L.; and Gubner, Richard S. Dental preparations. 3,699,221, Cl. 424-54.000.

Scholl, Ronald F.; and Bleha, William P., Jr., to Hughes Aircraft Company. Light activated, high resolution, field sustained conductivity image storage and display device. 3,699,374, Cl. 313-94.000.

Schott, Emilio: *See—*
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Schott, Lawrence A. Motion transmitting mechanism. 3,698,255, Cl. 74-193.000.

Schrader, Clarence O.: *See—*
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Schrage, Albert; and Readio, Philip D., to Dart Industries Inc. Polyolefins modified with unsaturated glycidyl compounds and polyacrylate compounds. 3,699,186, Cl. 260-836.000.

Schreck, John Thomas, to AMP Incorporated. Electro formed electrical connector process. 3,698,083, Cl. 29-629.000.

Schreiber, Kurt, to Canadn Patents and Development Limited. Seed having a multiple layered coating and process for preparing same. 3,698,133, Cl. 47-57.600.

Schreyer, Gerd; Weiberg, Ottl; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of hydrogen peroxide. 3,699,217, Cl. 423-589.00n.

Schrier, Peter G.: *See—*
Vogt, John W.; and Schrier, Peter G., 3,698,392.

Schubert, William L., to International Harvester Company. I.P.T.O. brake unit. 3,698,524, Cl. 192-18.00a.

Schudel, Peter: *See—*
Bertele, Erhard; and Schudel, Peter, 3,699,169.

Schuh, Eduard: *See—*
Kelch, Heinz; and Schuh, Eduard, 3,698,627.

Schuler, Chester L., to Powercube Corporation. Modular circuit package with enhanced heat dissipation. 3,699,394, Cl. 317-100.000.

Schultz, Lewis K.: *See—*
Bell, Harry F.; Lazzarini, Donald J.; and Schultz, Lewis K., 3,699,029.

Schultz, Ronald B., to Addressograph-Multigraph Corporation. Photoelectrostatic members. 3,698,895, Cl. 96-1.800.

Schultz, Rudolf, to Deutsche Angelgerate Manufaktur (DAM) Hellmuth Kuntzi Gesellschaft mit beschrankter Haftung & Co. Device for attaching fishing reels to fishing tackles. 3,698,118, Cl. 43-22.000.

Schulze & Burgess Company: *See—*
Ellis, Walter S., 3,698,052.

Schurch, Eugen; and Storrer, Rolf, to Von Roll AG. Transport unit for overhead or suspended conveyor systems. 3,698,326, Cl. 105-156.000.

Schurter, Gary Lee: *See—*
Cooper, James Joseph, Jr.; and Schurter, Gary Lee, 3,699,497.

Schwab, Johann; Buchel, Kurt; Eder, Otto; Hascic, Wladimir; and Marek, Ludwig, to SEMPERIT Aktiengesellschaft. Manufacture of articles of footwear. 3,698,027, Cl. 12-142.000.

Schwarzbeck, John G., to Western Gear Corporation. Torque controlled power roller for conveyor system. 3,698,539, Cl. 198-127.000.

Schwarzkopf, Anton, to Schwarzkopf, Anton, Firma. Merry-go-round. 3,698,710, Cl. 272-7.000.

Schwarzkopf, Anton, Firma: *See—*
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SCM Corporation: *See—*
Mihojevich, Steven; Zerfans, Arthur S.; Ostensen, Ralph G.; Berggren, Albin F., Jr.; and Glaser, Ronald A., 3,698,706.

Scope Lock, Inc.: *See—*
Boots, Patrick R.; and Gaddis, Kenneth W., 3,698,135.

Scott, Floyd Logan, Jr.: *See—*
Litchfield, Mason Rawleigh; and Scott, Floyd Logan, Jr., 3,698,426.

Scott, Roderic M., to Perkin-Elmer Corporation, The. Pictorial systems, having high resolution imagery at all object distances. 3,699,245, Cl. 178-6.000.

Seamands, Robert E.: *See—*
Toering, Robert J.; and Seamands, Robert E., 3,698,284.

Sears, Hartley M.; and Schrader, Clarence O., to Frawley Enterprises, Inc. Arrangement for preventing leakage from ball-point pen cartridges. 3,698,825, Cl. 401-217.000.

Sears, Roebuck and Co.: *See—*
Collins, Edward C.; and Hittle, Eugene C., 3,698,780.
Gilbert, Arthur E., 3,698,672.
Little, John W.; and Cebula, Thaddeus J., 3,698,014.

Sedlmayr, Gerhard: *See—*
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Seemann, Fritz; and Troxler, Franz, to Sandox Ltd. 4-(3-amino-2-hydroxy-propoxy) indoles derivatives. 3,699,123, Cl. 260-326.14r.

Seemann, James M.: *See—*
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Seiferth, Oscar E.: *See—*
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Sejournet, Jacques; and Garin, Jose Ignacio Martinez, to Cefilac. Method of fabricating seamless steel pipes. 3,698,070, Cl. 29-527.600.

Sekido, Akira: *See—*
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SEMPERIT Aktiengesellschaft: *See—*
Schwab, Johann; Buchel, Kurt; Eder, Otto; Hascic, Wladimir; and Marek, Ludwig, 3,698,027.

Semperit Osterreichisch-Amerikanisch Gummiwerke Aktiengesellschaft: *See—*
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Semperit Osterreichisch-Amerikanische Gummiwerke A.G.: *See—*
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Serck Industries Limited: *See—*
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Sevaon Engineering Limited: *See—*
Sloan, Albert Everett; and Turnbull, Alistair Gordon, 3,699,416.

Shadle, Paul W., to United States of America, Air Force. Method and system of surveillance processing. 3,699,577, Cl. 343-112.00r.

Shaffer, John W.; and McDonough, Thomas B., to Sylvania Electric Products, Inc. Fulminating material application technique. 3,699,021, Cl. 204-146.000.

Shaheen, Donald G.: *See—*
Fein, Marvin; Loprest, Frank; and Shaheen, Donald G., 3,698,969.

Shahlin, Joseph M.; and Simone, John, to North American Rockwell Corporation. Method of providing intersitial conductors between plated memory wires. 3,698,081, Cl. 29-604.000.

Shambon, W. S., & Co.: *See—*
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Shando, Joseph G.: *See—*
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Shape, Robert C., to Warren Steel Specialties Corporation. Combined hand and towing trucks. 3,698,736, Cl. 280-46.000.

Shavel, John, Jr.: *See—*
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Von Strandtmann, Maximilian; Klutchko, Sylvester; and Shavel, John, Jr., 3,699,129.

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Shelby, Rufus F., to Philco-Ford Corporation. Electronic latching device. 3,699,359, Cl. 307-252.00k.

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Coyle, James, 3,699,175.
Czerski, Jan, 3,698,849.
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Montgomery, William C., Jr.; and Vogel, Charles B., 3,699,325.
Sanderson, John L.; and Swift, Edward W., 3,699,171.
Taylor, Glenn L.; Cotton, John W.; and Winkler, De Loss E., 3,699,184.
Wahlstrom, Sven E., 3,699,537.

Shellhause, Ronald L., to General Motors Corporation. Vehicle brake control module and pedal lever mounting and hinge means therefor. 3,698,260, Cl. 74-560.000.

Shepard, James N.: *See—*
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Shepheard, Wilson C. Air supply device for air heating and cooling system. 3,698,831, Cl. 415-115.000.

Sheridan, James Arthur: *See—*
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Sherry, John S.: *See—*
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Sherwin-Williams Company, The: *See—*
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Cunningham, Arthur L., 3,699,064.

Shettel, Ralph E. Domestic ironing board. 3,698,110, Cl. 38-107.000.

Shiba, Kaoru. Method for converting sodium sulfide to sodium sulfite. 3,698,860, Cl. 23-129.000.

Shibatani, Takeji: *See—*
Chibata, Ichiro; Kakimoto, Toshio; Shibatani, Takeji; and Nishimura, Noriyuki, 3,698,999.

Shields, John T., to Marlan Company. Tear-off blade arrangement for laminating machine. 3,698,990, Cl. 156-522.000.

Shigematsu, Hiroji; Yamaguchi, Tomio; Fukue, Hisanobu; Ogawa, Hiroshi; Hashimoto, Takashi; Murakoshi, Kenichi; Suguri, Susumu; and Fujimura, Tsutomu, to Mitsubishi Jukogyo Kabushiki Kaisha and Japan Atomic Energy Research Institute. Remotely controllable dfect detector of electric resistance type. 3,699,436, Cl. 324-65.

Shiley, Donald F. Pivoted discoid heart valve having a changing pivot axis. 3,698,018, Cl. 3-1.000.

Shimada, Masaru: *See—*
Maruyama, Shoji; Saito, Tadashi; Yoshida, Shigeaki; and Shimada, Masaru, 3,699,000.

Shimoda, Keitaro; and Obama, Isamu, to American Cyanamid Company. Acrylic synthetic fibers having improved properties and process for producing the same. 3,698,994, Cl. 161-178.000.

Shinetsu Chemical Company: *See—*

Wada, Tadashi; Itoh, Kunio; Imai, Kiyoshi; and Inomata, Hiroshi, 3,699,073.

Shinoda, Daizaburo; and Ishikawa, Masaoki, to Nippon Electric Company, Limited. Gallium-arsenide Schottky barrier type semiconductor device. 3,699,408, Cl. 317-237.000.

Shinohara, Takeo; and Miyamoto, Yoshikazu, to Nippon Electric Company, Limited. Signal switching device. 3,699,295, Cl. 200-175.000.

Shinomiya, Yasuo: *See—*
Kubo, Moritada; and Shinomiya, Yasuo, 3,698,829.

Shiori, Tomonori: *See—*
Takase, Shinji; and Shiori, Tomonori, 3,699,056.

Shioyama, Osamu; Mine, Seizo; and Murata, Kikuzo, to Nihon Nohyaku Co., Ltd. Carbamoyl saccharin derivatives as fungicides. 3,699,228, Cl. 424-270.000.

Shira, Glenn L.; and Ruff, Joseph N., to United States of America, Navy. Adaptable pyrotechnic candle with disposable folding shield. 3,698,318, Cl. 102-37.800.

Shoemaker, James C., to Symons Corporation. Scaffold-supporting bracket for a concrete wall form. 3,698,680, Cl. 249-189.000.

Shore, Daniel B., to International Harvester Company. Automatic bucket positioning device. 3,698,583, Cl. 214-764.000.

Siai-Marchetti S.p.A.: *See—*
Monti, Giancarlo, 3,698,666.

Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante, to Montecatini Edison S.p.A. Fluorinated oxygen-containing products and process for preparation thereof. 3,699,145, Cl. 260-463.000.

Sickles, James E., to Ransburg Electro-Coating Corporation. Spray charging device. 3,698,635, Cl. 239-3.000.

Siderugica Occidental C.A.: *See—*
Saytes, Adam Eric, 3,698,224.

Siebert, Alan R., to Goodrich, B. F., Company, The. Preparation of hydroxyl terminated polymers. 3,699,153, Cl. 260-484.00r.

Sieg, Robert P.: *See—*
Hughes, Thomas R.; and Sieg, Robert P., 3,699,035.

Siemens Aktiengesellschaft: *See—*
Leitgeb, Wilhelm, 3,699,365.
Reuschel, Konrad; Platzoder, Karl; and Kursawe, Helga, 3,698,354.
Schettler, Kurt, 3,698,726.

Sierk, Raymond H.; and Sierk, Raymond W., to Atomatic Swank Frank Corporation. Magazine for dispensing machine. 3,698,601, Cl. 221-105.000.

Sierk, Raymond W.: *See—*
Sierk, Raymond H.; and Sierk, Raymond W., 3,698,601.

Sigmatex AG: *See—*
Weman, Per Olaf, 3,698,048.

Sikes, John. Structural member construction for building walls. 3,698,147, Cl. 52-276.000.

Silver, Arthur E., to Power Designs, Inc. Multi-range regulated DC power supply. 3,699,352, Cl. 307-75.000.

Silvia, Everett R.: *See—*
Litman, Bernard; and Silvia, Everett R., 3,698,776.

Silvia, Everett R., to AMBAC Industries, Inc. Thrust retainer for spherical race ball bearing. 3,698,251, Cl. 74-5.00r.

Simon, John M.: *See—*
Kersten, Samuel D., Jr.; Sautter, Alton F.; and Simon, John M., 3,698,421.

Simon, Ralph E.; and Williams, Brown F., to RCS Corporation. Negative Effective electron affinity emitters with drift fields using deep acceptor doping. 3,699,404, Cl. 317-235.00r.

Simone, John: *See—*
Shahlin, Joseph M.; and Simone, John, 3,698,081.

Simpkins, Terry John: *See—*
Mack, Frank Joseph; and Simpkins, Terry John, 3,698,021.

Simpson, Lee S. Gathering apparatus. 3,698,169, Cl. 56-328.000.

Sinclair, Gordon J., to Diebold, Incorporated. Vacuum head magnetic valve construction for pallet loader. 3,698,755, Cl. 294-65.000.

Singer Company, The: *See—*
Barber, Warren A., 3,699,399.
Cohen, Edwin; and Altmiller, John C., 3,699,244.
Cowdrey, Roy M.; and Current, Wayne A., 3,698,087.
Herden, Robert B., 3,698,297.
Herr, John A., 3,698,086.
Hlipala, Edward; and Schindel, Arnold, 3,699,369.
Ketterer, Stanley J., 3,698,333.
Schaffer, Harry G.; Neilson, Dan A.; and Poumakis, Eleuthere, 3,699,532.

Singer Company, The, mesne: *See—*
Aghazadeh, Shirzad, 3,699,556.
Kleinschmidt, Johann O.; Walter, Heinz E.; and Holl, Helmar H., 3,698,334.

Singh, Balwant, to American Cyanamid Company. Halo azido naphthalenes. 3,699,130, Cl. 260-349.000.

Siwko, Karol: *See—*
Kruzewski, William Frank; and Siwko, Karol, 3,699,455.

Sjotun, Kyrre Guttorm. Oil burner system with motor driven pump controlling by-pass valve. 3,698,639, Cl. 239-124.000.

Skabunde, Steven Eldor, to Giddings & Lears, Inc. Hydrostatic seal for rotary machine tool spindles. 3,698,725, Cl. 277-74.000.

Skeggs, Leonard T. Technicon Instruments Corporation Method and apparatus for sample analysis on a continuous flow basis. 3,699,004, Cl. 195-103.50r.

Skei, Inge. Recording apparatus for sonar and echo sounding systems. 3,698,658, Cl. 242-192.000.

Skobel, Max, to Dow Corning Corporation. Equipment for making reinforced tubing. 3,698,988, Cl. 156-428.000.

Skrivanek, Ladislav: *See—*
Salz, Karl; and Skrivanek, Ladislav, 3,698,925.

Slagel, Edwin C.: *See—*
Baker, Ronald E.; Fogarty, Robert L.; and Slagel, Edwin C., 3,698,587.

Slaski, Joseph A.: *See—*
Szymanski, Leonard W.; and Slaski, Joseph A., 3,698,739.

SLI Industries: *See—*
Cox, Robert M., 3,698,437.

Sloan, Albert Everett; and Turnbull, Alistair Gordon, to Sevaon Engineering Limited. Dynamic braking of wound motor polyphase induction motors. 3,699,416, Cl. 318-211.000.

Smaller, Philip. Double transfer tape copy system. 3,699,269, Cl. 179-100.20e.

Smeets, Fred, to N. V. La Citrique Belge. Unsaturated carboxylic salt materials and derivatives thereof. 3,699,059, Cl. 252-557.000.

Smith, Anthony, to Hoover Company, The. Gas fired forced convection ovens. 3,698,377, Cl. 126-21.00a.

Smith, Bernard; and DePietro, Anthony J. Safety bottle top. 3,698,585, Cl. 215-9.000.

Smith, Calvin S.; and McLeod, William J., to Chevron Research Company. Hydrogen manufacture. 3,699,218, Cl. 423-648.000.

Smith, Dallas F., to General Electric Company. Apparatus for inserting coil side turn portions and insulators into the slots of a magnetic core. 3,698,063, Cl. 29-205.00r.

Smith, Henry, to British Steel Corporation. Lifting tongs. 3,698,757, Cl. 294-119.000.

Smith International, Inc.: *See—*
Garrett, William R., 3,698,411.

Smith International, Inc., mesne: *See—*
Litchfield, Mason Rawleigh; and Scott, Floyd Logan, Jr., 3,698,426.

Smith, Nathan R.: *See—*
Schaaf, Gunther; and Smith, Nathan R., 3,699,503.

Smith, Ralph B.: *See—*
Gold, Harold E.; and Smith, Ralph B., 3,698,472.

Smith, Raymond Peter, Jr. Short circuit locator apparatus including a plurality of intermittently operated circuit breakers. 3,699,433, Cl. 324-52.000.

Smith, Russell G.: *See—*
Walchle, David L.; Smith, Russell G.; and Geraci, James L., 3,698,791.

Smith, Sidney Z.: *See—*
Swett, James B.; and Smith, Sidney Z., 3,698,783.

Smith, Thomas Basil, III: *See—*
National Aeronautics and Space Administrator, 3,699,511.

Smith, Thomas R., to Pyramid, Inc. Document holder. 3,698,111, Cl. 40-10.00r.

Smith, Vern; Fallon, Merton R.; and Johnston, Mack S., to Republic Corporation. Keg tapping device with automatic gas shutoff valve. 3,698,417, Cl. 137-212.000.

Smith, William E.: *See—*
Benkeser, Robert A.; and Smith, William E., 3,699,141.
Benkeser, Robert A.; and Smith, William E., 3,699,142.

Smyly, Harold M., to United States of America, National Aeronautics and Space Administration. Differential pressure control. 3,698,412, Cl. 137-81.000.

Smyth, George F.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Snapp, Thomas C., Jr.: *See—*
Albers, Kenneth H.; and Snapp, Thomas C., Jr., 3,699,165.

Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert, 3,698,136.

Societe Anonyme des Etablissements NEU: *See—*
Marcellin, Louis, 3,698,837.

Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies): *See—*
Peytavin, Pierre, 3,698,225.

Societe de Conditionnement en Aluminum: *See—*
Couland, Roger, 3,698,221.

Societe d'Instrumentation Schlumberger: *See—*
Percher, Guy, 3,699,523.

Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A.: *See—* Vuaille, Andre, 3,698,369.

Societe Industrielle Honeywell Bull (Societe anonyme): *See—*
Colaud, Gerard; and Fanene, Bernard, 3,699,396.

Solartron Electronic Group Limited, The: *See—*
Trasler, Paul Vincent Marie Brigstock, 3,699,460.

Sonix, Inc.: *See—*
Rauh, John H., 3,698,993.

Sonobe, Kiyomi, to Iwaki Co., Ltd. Variable metering pump. 3,698,288, Cl. 92-13.400.

Sony Corporation: *See—*
Morio, Minoru; and Kimura, Hiroyuki, 3,699,240.

Soong, Pinnan. Preparation of bromelain from the pineapple stems. 3,699,001, Cl. 195-66.00r.

Sorenson, Judson Olbert, to Asco, Inc. Apparatus for making a display button. 3,698,065, Cl. 29-238.000.

Sorkin, Howard; and Klein, Richard Ira, to RCA Corporation. Fabrication of liquid crystal devices. 3,698,449, Cl. 141-1.000.

Southworth, Donovan A.: *See—*
Peterson, Wesley D.; and Southworth, Donovan A., 3,699,483.

Spaderna, Conan H. Universal electric connector. 3,699,499, Cl. 339-91.00r.

Spain, Robert J., to Compagnie Internationale fur l'Informatique. Binary coded information stores 3,699,550, Cl. 340-174.0tw.

Sparlin, Derry D., to Continental Oil Company. Promotion of burning of oil slicks with particulate, foamed alkali metal silicates. 3,698,850, Cl. 431-8.000.

Spence, John R., to North American Rockwell Corporation. Bootstrapped inverter memory cell. 3,699,539, Cl. 340-173.00r.

Spencer, Francis T., to West Point-Pepperell, Inc. Grid for producing an electrostatic field. 3,698,357, Cl. 118-636.

Sperry, Philip R.: *See—*
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., 3,698,964.

Sperry Rand Corporation: *See—*
Ellis, Gaylord O.; and Halat, John A., 3,698,286.
Groeber, Eugen, 3,698,538.
Hurlburt, Joseph C.; McCarty, Horace G.; and Locati, Norman C., 3,698,167.
Kreitner, Frederick J., 3,698,345.
Lifschitz, Joshua, 3,698,079.
Lins, Stanley J.; and Nelson, Charles J., 3,699,034.

Sperry Sun Well Surveying Company: *See—*
Lindsey, James M., 3,699,510.

Spicer, Lauren D. Perpetual calendar. 3,698,113, Cl. 40-113.000.

Spuhl AG: *See—*
Spuhl, Walter, 3,698,448.

Spuhl, Walter, to Spuhl AG. Apparatus for fastening the end coils of border springs of a spring construction to an elongate wire. 3,698,448, Cl. 140-3.0ca.

Square D Company: *See—*
Messick, Mikel Jay, 3,699,417.

Squillari, Walter: *See—*
Studenick, David K.; Tyler, Allen L.; and Squillari, Walter, 3,698,667.

Squirrell, Frederick: *See—*
Lowe, Walter Max; and Squirrell, Frederick, 3,698,429.

Staats, William R.: *See—*
Rosenberg, Robert B.; Kweller, Esher R.; and Staats, William R., 3,698,378.

Stacey, Frank Donald; Rynn, John Munro William; and Little, Eric Cooper, to University of Queensland, The. Tilt meter. 3,698,094, Cl. 33-366.000.

Stacey, Joseph Gilbert: *See—*
Doyle, Peter; and Stacey, Joseph Gilbert, 3,699,227.

Stahl, Lawrence E.; and Gropper, Lee, to Beckman Instruments, Inc. Detecting excessive centrifuge rotor oscillations. 3,699,287, Cl. 200-61.45r.

Staley, A. E., Manufacturing Company: *See—*
Van Dorn, Warren Guy; and Hardenbrook, James Maurice, 3,698,905.

Stanciu, Virgil V., to Tempcraft Tool & Mold, Inc. Wax injection nozzle. 3,698,640, Cl. 239-187.000.

Standard International Corporation: *See—*
Rauskolb, Fred W., 3,698,696.

Standard Kollman Industries, Inc.: *See—*
Midgley, Edward L., 3,699,456.

Standard Oil Company: *See—*
Waywell, David R.; and West, Charles T., 3,699,180.

Standard Oil Company (Indiana): *See—*
Connolly, John F.; Flannery, Robert J.; and Mc Collum, John D., 3,699,020.

Standard Oil Company, The (Indiana): *See—*
Steitz, Alfred, Jr., 3,699,160.

Standley, Mark L.: *See—*
Banks, Neill K., Jr.; and Standley, Mark L., 3,698,463.

Stanford Research Institute: *See—*
Acton, Edward M.; Leafer, Morris A.; and Stone, Herbert, 3,699,132.

Stanford, Robert M. Drive and steering mechanism for tractors. 3,698,498, Cl. 180-6.200.

Stark, Sven Olof Soren, to Cordotex SA., mesne. Packaging containers of parallelepiped shape. 3,698,624, Cl. 229-23.00r.

Starr, Leon; and Runyon, David Jon, to Celanese Corporation. Stabilized oxymethylene polymers. 3,699,062, Cl. 260-18.00n.

State for Defence, Secretary of, mesne: *See—*
Newman, Paul; and Maxwell, John, 3,698,145.

Statham Instrument, Inc.: *See—*
Elazar, Shmuel, 3,699,469.

Stauffer Chemical Company: *See—*
Gentit, William F., 3,699,053.
Stromberg, Carl E.; and Reynolds, John, 3,698,858.

Staut, Ronald; and Judd, George G., to General Refractories Company. Dolomitic refractory. 3,698,922, Cl. 106-58.000.

Steadman, Rufus F. Drill bit sharpening mechanism for use in conjunction with hand drills. 3,698,140, Cl. 51-241.00g.

Steels, Gordon, to Baker Perkins Limited. Dough laminating. 3,698,309, Cl. 99-450.100.

Stein, Bernard; and Davis, Sheridan, to Sanders Associates, Inc. Condensation heated black body radiation source. 3,699,343, Cl. 250-85.000.

Steinberger, Josef: *See—*
Scharfen, Hans; and Steinberger, Josef, 3,698,729.

Steiner American Corporation: *See—*
Bahnsen, Erwin B., 3,698,214.

Steingroever, Erich, to Elektro-Physik Hans Nix & Dr. Ing. Steingruever, KG. Magnet for use in magnetic thickness gauges. 3,699,487, Cl. 335-302.000.

Steitz, Alfred, Jr., to Standard Oil Company, The (Indiana). Purification of phenylindane carboxylic acids by permanganate treatment of the sodium salts. 3,699,160, Cl. 260-525.000.

Stempler, Samuel; and Tellerman, Jacob, to Kollsman Instrument Corporation. Tape position sensor, optical. 3,699,421, Cl. 318-640.000.

Stenzel, Donald W.: *See—*
Stenzel, Robert N.; and Stenzel, Donald W., 3,698,548.

Stenzel, Robert N.; and Stenzel, Donald W. Box for dispensing flexible sheet material. 3,698,548, Cl. 206-58.000.

Stepan Chemical Company: *See—*
Osberg, Edward V.; and Beck, Walter, 3,699,173.

Steppan, Hartmut: *See—*
Moschel, Albrecht; Luders, Walter; and Steppan, Hartmut, 3,699,086.

Steppe, Kenneth E.; and Webre, Alfred L., Jr., to Owens-Illinois, Inc. Apparatus for removing rock from unscreened sugar cane juice. 3,698,949, Cl. 127-9.000.

Stern, Max Herman: *See—*
Lestina, Gregory James; and Stern, Max Herman, 3,698,909.

Stetson, Harold Wilbur; and Gyurk, Warren Joseph, to Western Electric Copmany, Incorporated. Alumina substrates. 3,698,923, Cl. 106-62.000.

Stevens, J. P., & Co., Inc.: *See—*
Guerin, Ernest P., 3,698,447.

Stevens, John Joseph, Jr.: *See—*
Wynstra, John; and Stevens, John Joseph, Jr., 3,699,070.

Stevens, John N., to Catug Corporation. Seagoing tug and barge construction. 3,698,349, Cl. 114-235.00r.

Stevens, Walter R. Automatic control of headlights, taillights, and warning flasher lights. 3,699,514, Cl. 340-60.000.

Stewart, Albert A. Golf practice device. 3,698,721, Cl. 273-186.00c.

Stockman, Charles H., to Goodrich, B. F., Company, The. Acrylic terpolymer resins plasticized with silicone oils. 3,699,067, Cl. 260-29.1sb.

Stoeckli, Oscar W.: *See—*
Woodruff, George M.; Stoeckli, Oscar W.; and Shando, Joseph G., 3,698,154.

Stoeger Arms Corporation: *See—*
Wilhelm, Gary, 3,698,285.

Stoelting Brothers Company: *See—*
Stoelting, Carl R., 3,698,203.

Stoelting, Carl R., to Stoelting Brothers Company. Consistency control for slush freezer. 3,698,203, Cl. 62-136.000.

Stoessel, Armin: *See—*
Armbrust, Herbert; Sturm, Hans Juergen; Engelbach, Heinz; Wistuba, Hermann; Stoessel, Armin; and Krabetz, Richard, 3,699,134.

Stolle Corporation, The: *See—*
Beck, Edward G., Jr., 3,698,475.

Stoller, Milton: *See—*
Ehrlich, Melvin P.; Stoller, Milton; and Grand, Stanley, 3,699,336.

Stone, Charles E., to Chaston Medical & Surgical Products, Inc. Surgical pad. 3,698,393, Cl. 128-296.000.

Stone, Herbert: *See—*
Acton, Edward M.; Leafer, Morris A.; and Stone, Herbert, 3,699,132.

Stone, Julian, to Bell Telephone Laboratories, Incorporated. Error reduction in communication systems. 3,699,463, Cl. 329-145.000.

Storrer, Rolf: *See—*
Schurch, Eugen; and Storrer, Rolf, 3,698,326.

Storz, Frederick G.: *See—*
Reimer, William A.; and Storz, Frederick G., 3,698,058.

Stratton, Patrick Joseph. Post anchor. 3,698,144, Cl. 52-99.000.

Straub, Paul J., to Mallory, P. R., & Co., Inc. Timer with internal stop mechanism comprising annular ring structure interfitting complementary housing members. 3,699,277, Cl. 200-38.00r.

Straub, Richard K., to Farbenfabriken Bayer Aktiengesellschaft. Cutting torch tip guide. 3,698,701, Cl. 266-23.00m.

Strauss, Karl Peter: *See—*
Albrecht, Hermann Friedrich; and Strauss, Karl Peter, 3,699,427.

Streater Industries, Inc.: *See—*
Fenwick, Jay G., 3,698,567.

Stromberg, Carl E.; and Reynolds, John, to Stauffer Chemical Company. Process of inhibiting corrosion in spent sulfuric acid sludge systems. 3,698,858, Cl. 21-2.500.

Stromberg-Carlson Corporation: *See—*
Altenburger, Otto, 3,699,265.
Lee, Ernest O., Jr., 3,699,262.
Neumeier, Gunter F.; and Altenburger, Otto, 3,699,263.

Stromberg-Carlson Corporation, mesne: *See—*
Bryzinski, Thaddeus F.; and Martin, Joseph F., 3,699,549.

Structural Industries, Inc.: *See—*
Hirsch, Stanley; and Schneider, Irving, 3,698,114.

Stuart, Robert L.: *See—*
Chisholm, Eugene H.; and Stuart, Robert L., 3,698,740.

Stubbmann, Albert, to Kohner Bros., Inc. Escapement mechanism. 3,698,252, Cl. 74-1.500.

Stuber, Fred A.: *See—*

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,699,080.

Studenick, David K.; Tyler, Allen L.; and Squillari, Walter, to United States of America, National Aeronautics and Space Administration. System for stabilizing torque between a balloon and gondola. 3,698,667, Cl. 244-32.000.

Sturm, Hans Juergen: *See—*
Armbrust, Herbert; Sturm, Hans Juergen; Engelbach, Heinz; Wistuba, Hermann; Stoessel, Armin; and Krabetz, Richard, 3,699,134.

Subsea Equipment Associates Limited, mesne: *See—*
Dobler, Christian D.; and Lilly, Herbert J., Jr., 3,698,433.
Morgan, George W., 3,698,348.

Sudduth, William B., to Flex Key Corporation. Keyboard, digital coding, switch for digital logic, and low power detector switches. 3,699,294, Cl. 200-166.00c.

Sugi, Tatsuo: *See—*
Nakahata, Masatake; and Sugi, Tatsuo, 3,698,353.

Sugita, Sadao: *See—*
Sato, Shui; Sugita, Sadao; Nakajima, Tomio; and Kasai, Keiji, 3,698,907.

Suguri, Susumu: *See—*
Shigematsu, Hiroji; Yamaguchi, Tomio; Fukue, Hisanobu; Ogawa, Hiroshi; Hashimoto, Takashi; Murakoshi, Kenichi; Suguri, Susumu; and Fujimura, Tsutomu, 3,699,436.

Sulich, Janusz S., to Bendix Corporation, The. Fluidic fluidmetering system. 3,698,413, Cl. 137-81.500.

Sulzer Brothers Limited: *See—*
Feiss, Rene T., 3,698,067.

Sumitomo Bakelite Company Limited: *See—*
Oshima, Keiji; Yamada, Shozo; Sakurai, Fujio; Iwasa, Yoshisuke; Horiuchi, Koichi; Uchida, Unosuke; Nomura, Teruhiko; and Tominaga, Yasushi, 3,699,203.

Sumitomo Chemical Company, Limited: *See—*
Takatoshi, Shimomura, 3,699,190.

Sumitomo Chemical Company, Ltd.: *See—*
Iwashita, Akira; Tsunokawa, Tamio; and Yuyama, Masahiro, 3,699,081.

Sumitomo Electric Industries, Ltd.: *See—*
Motoyoshi, Kenya, 3,698,877.

Summer, Dale E.: *See—*
Brawner, William H.; Gunsalus, Claude A.; and Rockwell, Lowell K., 3,698,337.

Summit Engineering Corporation: *See—*
De Sa E Silva, Claudio; and Cheever, Daniel R., 3,699,413.

Sun Oil Company: *See—*
Mills, Ivor W.; Dimeler, Glenn R.; Kirk, Merritt C., Jr.; and Boyer, Jackson S., 3,699,071.
Rhodes, Charles F., Jr., 3,698,237.

Sunbeam Corporation: *See—*
Jepson, Ivar; Morgan, John W.; and Richmond, James W., 3,699,282.

Superior Electric Company, The: *See—*
Henderson, Paul D., 3,698,826.

Supla Etablissement: *See—*
Uhrig, wilhelm, 3,698,064.

Susewitz, Michael Bernard. Fragrance emitting article for artificial Christmas trees. 3,698,991, Cl. 161-14.

Susquehanna Corporation, The: *See—*
Wallace, Jacob L., Jr., 3,699,255.

Susuki, Rinnosuke; and Hoshi, Hiroshi, to Raion Yushi Kabushiki Kaisha. Method and apparatus for manufacture of corrugated synthetic resin board. 3,698,977, Cl. 156-210.000.

Sutton, John Anthony, to Courtaulds Limited. Garment dyeing process. 3,698,855, Cl. 8-150.000.

Sutton, Thomas J., to Oakland Community College. Portable study carrel. 3,698,104, Cl. 35-60.000.

Suzui, Masaaki: *See—*
Konishi, Kozo; Suzui, Masaaki; Otake, Michio; and Maeda, Tatuo, 3,699,112.

Suzuki, Akio: *See—*
Miyata, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Nagakumi, Masahiko, 3,699,012.
Miyato, Akira; Ohkubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,699,013.

Suzuki, Masaru; and Kawai, Yoshihiro, to Kabushiki-Kaisha Tokai Rika Denki Seisakusho. Directional signaling mechanism for automotive vehicle. 3,699,286, Cl. 200-61.340.

Suzuki, Syoichi, to Nippon Gakki Seizo Kabushiki Kaisha. Iremolo arrangement for an electronic musical instrument employing feedback of modulated signal to modulator input. 3,699,233, Cl. 84-1.220.

Suzuki, Yoshitaka; Takenoue, Atsushi; and Kojima, Hideo. Chlorination process. 3,699,178, Cl. 260-659.00a.

SW Industries, Inc.: *See—*
Hess, Ralph A.; and McNamee, James P., 3,698,053.

Sweeney, William A., to Chevron Research Company. Color reduction of olefin sulfonates. 3,699,157, Cl. 260-513.00r.

Sweet, Ervin J.; Doyle, Brian W.; and Rygelis, Joseph, to Avco Corporation. Combustion liner joint. 3,698,743, Cl. 285-41.000.

Swett, James B.: *See—*
Ashton, Harold P.; and Swett, James B., 3,698,460.

Swett, James B.; and Smith, Sidney Z., to Dart Industries, Inc. Storage container for celery or the like. 3,698,783, Cl. 312-351.000.

Swichard, Edward A.: *See—*
Borzoni, John J.; Swichard, Edward A.; and Burek, John A., Jr., 3,699,500.

Swift, Edward W.: *See—*
Sanderson, John L.; and Swift, Edward W., 3,699,171.

Swoveland, Jackie E.; Irvin, Lothair; and Charles, James A., to Dana Corporation. Speed responsive switch. 3,699,288, Cl. 200-80.00r.

Sylvania Electric Products Inc.: *See—*
Anton, Franke, 3,699,382.
Dyche, James W., 3,699,517.
Paget, Fredrick W., 3,699,385.
Shaffer, John W.; and McDonough, Thomas B., 3,699,021.

Symons Corporation: *See—*
Shoemaker, James C., 3,698,680.

Syrop, Leroy J., to Del Mar Engineering Laboratories. Process for recrystallizing hexanitrostilbene. 3,699,176, Cl. 260-645.000.

Szasz, Imre, to Graco Inc. Device for the electrostatic application of protective coatings with synthetic powders by the use of spray guns. 3,698,636, Cl. 239-15.000.

Szymanski, Leonard W.; and Slaski, Joseph A., to Lift Parts Mfg., Inc. Extendable self-aligning trailer hitch. 3,698,739, Cl. 280-478.00b.

Taczak, William J., Jr., to United States of America, Navy. Two-color radiometer. 3,699,339, Cl. 250-83.30h.

Tafel, Leonard I., to North American Rockwell Corporation. Means for oscillating and silencing a ductor roller in a printing press. 3,698,313, Cl. 101-350.000.

Taits, Samuil Zalmanovich: *See—*
Mikhailov, Nikolai Petrovich; Rapoport, Lev Moiseevich; and Taits, Samuil Zalmanovich, 3,698,235.

Tak, Charles S.: *See—*
Lee, Joo C.; and Tak, Charles S., 3,699,392.

Takacs, Lawrence M.: *See—*
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Takase, Shinji; and Shiori, Tomonori, to Nippon Oil Company Limited. Method of halogenating crystalline aluminosilicate. 3,699,056, Cl. 252-442.000.

Takatoshi, Shimomura, to Sumitomo Chemical Company, Limited. Method for preparing block copolymer. 3,699,190, Cl. 260-877.000.

Takeda Chemical Industries, Ltd.: *See—*
Wada, Takeo; Okada, Kazuo; and Ohyama, Masaru, 3,698,358.

Takegawa, Akio: *See—*
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Tanaka, Katsunobu; Ohshima, Kazuo; Tokoro, Yoh; and Okii, Mitsuyoshi, to Kyowa Hakko Kogyo Kaburhiki Kaisha. Preparation of L-tyrosine by fermentation. 3,698,997, Cl. 195-28.00r.

Tanaka, Masao; Kishi, Teruo; and Mineura, Kazuyuki, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing pyridoxine-cyclic-phosphate. 3,699,113, Cl. 260-297.00v.

Tapp, James S.; Beemsterboer, George L.; and Salyer, Ival O., to United States of America, Health, Education and Welfare, mesne. Hollow, fiber, artificial kidney with disposable dialyzing cartridge. 3,698,560, Cl. 210-321.000.

Tarasevich, Michael: *See—*
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Tauscher, Kenneth E.; Roome, Theodore F., Jr.; and Coon, David S., to Sanders Associates, Inc. Time domain modulator for spectrum shaping of pulsed waveforms. 3,699,449, Cl. 325-324.000.

Taylor, Arthur Sinclair; Sandhage, Ellsworth; Bott, George; and Konazewski, William, to American Cyanamid Company. Sterile container filling mechanism. 3,698,450, Cl. 141-85.000.

Taylor, Brian Leslie: *See—*
Causer, Roy; Farren, John; Jones, Terence Leslie; Taylor, Brian Leslie; and Webster, Ronald Kerry, 3,698,819.

Taylor, Glenn L.; Cotton, John W.; and Winkler, De Loss E., to Shell Oil Company. Blend of block copolymer, one of which is epoxidized. 3,699,184, Cl. 260-836.000.

Taylor, Lloyd D.: *See—*
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,698,898.

Taylor, Paul H. Fluid amplified liquid spring shocks and/or shock absorbers. 3,698,521, Cl. 188-306.000.

Tebble, Robert S.: *See—*
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Technicolor, Inc.: *See—*
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Tektronix, Inc.: *See—*
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Telesco Brophey Limited: *See—*
Weber, Heinz, 3,698,410.

Tellerman, Jacob: *See—*
Stempler, Samuel; and Tellerman, Jacob, 3,699,421.

Tellerman, Jacob, to Kollsman Instrument Corporation. Solid state display. 3,698,793, Cl. 350-160.00r.

Tempcraft Tool & Mold, Inc.: *See—*
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Temptat Corporation: *See—*
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Tenkumo, Shohei, to Minolta Camera Kabushiki Kaisha. Shutter release control mechanism. 3,698,304, Cl. 95-53.0eb.

Tenneco Oil Company: *See—*
Rowley, Kermit G., 3,698,474.

Termin, Erich; and Bleh, Otto, to Dynamit Nobel Aktiengesellschaft. Production of potassium titanyl oxalate. 3,699,137, Cl. 260-429.500.

Terner, E. M., to Midland Glass Company, Inc. Plastic encased glass container. 3,698,586, Cl. 215-12.00r.

Terrox Iron Ltd.: *See—*
Nye, John David, 3,698,647.

Tessler, Martin Melvyn; and Rutenberg, Morton Wolf, to National Starch and Chemical Corporation. Process for reacting ungelatinized starch with a mixed carbonic-carboxylic anhydride of a polycarboxylic acid. 3,699,095, Cl. 260-233.500.

Testa, Emilio: *See—*
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Texas Instruments, Incorporated: *See—*
Dyer, Lawrence Dean, 3,698,944.
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Theriault, George R. Flashing. 3,698,142, Cl. 52-58.000.

Thermal Syndicate Limited: *See—*
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Theta-Com of California, mesne: *See—*
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Mc Cullough, Edward E., 3,698,642.
Thompson, Grant; and Wall, Bobby M., 3,698,967.
Wall, Richard H., 3,698,321.

Thomas, Herbert, to Copystatics Manufacturing Corporation. Exposure lamp alignment equipment. 3,698,815, Cl. 356-121.000.

Thomas, Stephen E. Mechanism for obtaining energy from tire flexure. 3,699,367, Cl. 310-69.000.

Thompson, Donald O.: *See—*
Thompson, Robert B.; Thompson, Donald O.; Kraut, Edgar A.; and Lim, Teong C., 3,699,481.

Thompson, Earl Clayton. Water dispenser for animals. 3,698,431, Cl. 137-604.000.

Thompson, Grant; and Wall, Bobby M., to Thiokol Chemical Corporation. Method of curing propellents containing carboxyl terminated polyalkadienes using an organic iron salt. 3,698,967, Cl. 149-19.000.

Thompson, James E.; and D'Amato, Gerald J., to Motorola, Inc. Weighted ladder technique. 3,699,568, Cl. 340-347.0da.

Thompson, James W.: *See—*
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Thompson, John T.: *See—*
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Thompson, John T.; and Gillemot, George W. Grounding connector. 3,699,494, Cl. 339-14.00r.

Thompson, Joseph: *See—*
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Thompson, Raymond; and Guest, Ashley W., to Plessey Company Limited, The. Differential phase shift keying modulation system. 3,699,479, Cl. 332-16.00r.

Thompson, Robert B.; Thompson, Donald O.; Kraut, Edgar A.; and Lim, Teong C., to North American Rockwell Corporation. Low velocity highly anisotropic elastic materials. 3,699,481, Cl. 333-30.00r.

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Thomsen, William F.; and Von Bramer, Paul T., to Eastman Kodak Company. Colored cyanoacrylate adhesive compositions. 3,699,076, Cl. 260-41.00c.

Thomson-CSF: *See—*
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Thunberg, Jon C.; and Philbrook, James E., to Grace, W. R., & Co. Process for the manufacture of ferrocyanide compounds. 3,699,214, Cl. 423-367.000.

Tietjen, James Joseph; Williams, Brown F.; and Wang, Chin Chun, to RCA Corporation. Photoemissive electron tube comprising a thin film transmissive semiconductor photocathode structure. 3,699,401, Cl. 317-234.00r.

Tilby, Sydney E., to Canadian Cane Equipment Ltd. Method and apparatus for preparing sugarcane stalks for subsequent processing. 3,698,459, Cl. 146-119.000.

Tiller, Calvin O.: *See—*
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Timber Engineering Company: *See—*
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Timex Corporation: *See—*
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Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
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Toering, Robert J.; and Seamands, Robert E., to United States of America, Army. Buffer system for decelerating a reciprocating gun. 3,698,284, Cl. 89-43.00r.

Tokai Cold Forming Co., Ltd.: *See—*
Abe, Michio; and Maeda, Naoyuki, 3,699,372.

Tokarz, Richard D.; and Kaveckis, Joseph E., to United States of America, Atomic Energy Commission. High-resistance electrical conductor encapsulation. 3,699,200, Cl. 264-102.000.

Tokoro, Yoh: *See—*
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Tokyo Seimitsu Co., Ltd.: *See—*
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Sato, Hideo; and Ito, Kunihiko, 3,698,406.
Toshimasa, Jinzenji; Ichimura, Kenji; and Ito, Shoji, 3,699,419.
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Tolliver, Donald L.: *See—*
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Tomilinson, Harold W. Display package and label. 3,698,551, Cl. 206-80.00r.

Tominaga, Yasushi: *See—*
Oshima, Keiji; Yamada, Shozo; Sakurai, Fujio; Iwasa, Yoshisuke; Horiuchi, Koichi; Uchida, Unosuke; Nomura, Teruhiko; and Tominaga, Yasushi, 3,699,203.

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Miyato, Akira; Ohkubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,699,013.

Tomozawa, Atsushi, to Nippon Electric Company, Limited. Frame synchronizing circuit for high clock frequency digital communication. 3,699,261, Cl. 179-15.0bs.

Tomy Kogyo Co., Ltd.: *See—*
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Wiltse, Donald G., 3,698,117.
Torley, Robert Edward; and Bankert, Richard Dale, to American Cyanamid Company. Non-woven fabrics by electrodeposition. 3,699,028, Cl. 204-180.00r.
Torok, Gabor Peter, to Bell Telephone Laboratories, Incorporated. Video processing circuit for producing a composite television signal including blanking and synchronization signals. 3,699,258, Cl. 178-7.200.
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Toshiba Kikai Kabushiki Kaisha: *See—*
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Touchette, John W.: *See—*
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Townsend, Eric Jean; and Fortin, Marcel, to Commissariat a l'Energie Atomique. Glove mounting ring device to permit of performing operations in a sealed container. 3,698,778, Cl. 312-1.000.
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Trasler, Paul Vincent Marie Brigstock, to Solartron Electronic Group Limited, The. Oscilloscope time base circuits. 3,699,460, Cl. 328-181.000.
Trautman, Robert D.: *See—*
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Trembley, William H., to Vsi Corporation. Nut member. 3,698,278, Cl. 85-70.000.
Trepka, William J., to Phillips Petroleum Company. Triarylphosphine, Alkyllithium, and 1, 3-dihalobenzene polymerization initiator for conjugated diene polymerization. 3,699,055, Cl. 252-431.00p.
Tretter, Larry Lee Roy: *See—*
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Trotta, Frank A. Safety container. 3,698,543, Cl. 206-42.000.
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Tsubouchi, Norio; Takahashi, Masao; Ohno, Tomeji; and Akashi, Tsuneo, to Nippon Electric Company, Limited. Piezoelectric ceramic-material. 3,699,045, Cl. 252-62.900.
Tsunokawa, Tamio: *See—*
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Tucker, Hal E. Smoker's pipe with built-in gaseous fuel lighter. 3,698,400, Cl. 131-186.000.
Tucker, Robert V. Tobacco ash receiver. 3,698,401, Cl. 131-235.00r.
Tura, Natale G. Devices for piercing tubes in closed pressure systems. 3,698,419, Cl. 137-318.000.
Turbanti, Luigi. Tropyl ester of 2-phenyl-cyclohexen-3-carboxylate. 3,699,109, Cl. 260-292.000.
Turnbull, Alistair Gordon: *See—*
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Turner, Edward W., to Phillips Petroleum Company. Cutting and sealing plastic tubes. 3,699,201, Cl. 264-98.000.
Turner, John A., to Automatic Radio Manufacturing Inc. Electrical probe-position responsive apparatus and method. 3,699,439, Cl. 324-71.004.
Twine, Kenneth Frederick C., to International Computers Limited. Web feeding apparatus. 3,698,611, Cl. 226-50.000.
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Uchiyama, Yasuui Japan, to Nippon Gakki Seizo Kabushik Kaisha. Single ended push-pull amplifier. 3,699,466, Cl. 330-15.000.
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Ukai, Takeshi, to Kabushiki Kaisha Ricoh. Apparatus for electrostatic charging of paper in electrophotographic reproduction. 3,699,388, Cl. 317-4.000.
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Umezu, Shiro; Hashimura, Tetsuo; and Sekido, Akira, to Tokyo Shibaura Electric Co., Ltd. High frequency heating apparatus. 3,699,299, Cl. 219-10.550.
Umio, Suminori; and Maeno, Shizuo, to Fujisawa Pharmaceutical Co., Ltd. 1,2,3-Trisubstituted pyrrolidine derivatives. 3,699,125, Cl. 260-326.810.
Underkoffler, Victor S.; and White, Richard B., to Leed & Northrup Company. Incremental slope method for optimum continuous digital linearization. 3,699,318, Cl. 235-151.100.
Union Carbide Corporation: *See—*
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National Aeronautics and Space Administration; Acting Administrator; with respect to an invention of:
Brown, Harry H. Reaction tester. 3,698,385, Cl. 128-2.00n.
Hunt, James G.; and Rice, Roy W. Extrusion can. 3,698,848, Cl. 425-176.000.
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
October 24, 1972 Volume 903 Number 4

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Oct. 24, 1972

Re. 27,381	3,617,613	3,647,950	3,665,293
D. 222,852	3,617,615	3,648,002	3,666,694
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3,596,745	3,624,862	3,652,658	3,669,742
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3,616,316	3,647,137	3,663,776	3,680,044
3,617,254	3,647,507	3,664,227	
3,617,471	3,647,927	3,664,876	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 3, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-11-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-09-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-06-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing: Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-11-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-17-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	7-21-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-27-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

REISSUES

OCTOBER 24, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

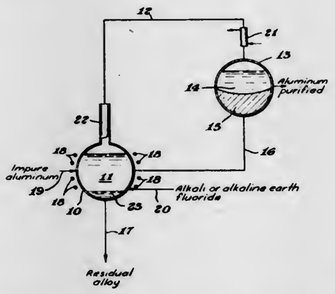
27,509
SEPARATION OF ALUMINUM FROM IMPURE ALUMINUM SOURCES

Gilbert S. Layne and James O. Huml, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 3,397,056, dated Aug. 13, 1968, Ser. No. 507,974, Nov. 15, 1965. Application for reissue Mar. 6, 1970, Ser. No. 17,360

Int. Cl. C22b *21/06*; C01f *5/28, 7/50*

U.S. Cl. 75—68 — 11 Claims



A process for the purification of impure aluminum wherein a mixture of impure aluminum such as aluminum scrap and/or alloys and a molten metal fluoride are heated in a reaction zone under a pressure above about 100 mm. of mercury absolute to a temperature above the melting point of the mixture. The vaporized products are condensed into a quiescent zone and the purified aluminum is separated from the two phase system which develops.

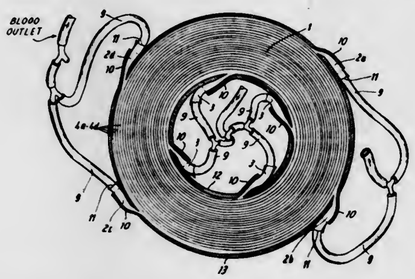
27,510
ARTIFICIAL KIDNEY

Josef Hoeltzenbein, Muenster, Germany, assignor to Baxter Lab. Inc., Morton Grove, Ill.

Original No. 3,510,004, dated May 5, 1970, Ser. No. 720,812, Apr. 12, 1968, which is a continuation of Ser. No. 582,896, Sept. 29, 1966. Application for reissue Nov. 1, 1971, Ser. No. 194,278

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 — 24 Claims



A dialysis tube for blood is coiled to form membraneous layers supported by a member having first and second strands arranged at angles from and projecting their length away from each other for forming flow channels for blood and dialyzing fluid.

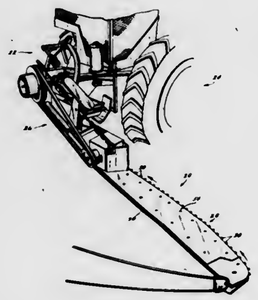
27,511
IMPACT MOWING APPARATUS AND SYSTEM

Norman Carl Locati, Lake Oswego, Oreg., assignor to Omark Industries Inc., Portland, Oreg.

Original No. 3,545,188, dated Dec. 8, 1970, Ser. No. 759,831, Sept. 16, 1968. Application for reissue Feb. 17, 1971, Ser. No. 116,179

Int. Cl. A01d *55/24*

U.S. Cl. 56—245 — 7 Claims



An apparatus and system for mowing vegetation and the like including a cutter bar adapted to mount a driven flexible belt having attached thereto a plurality of cutter elements. Said apparatus and system including means to automatically sharpen the cutter elements with said cutter bar supporting the cutter belt in a horizontally disposed and forwardly projected convex curve. The cutter bar has retaining rails for retaining the cutter belt on the cutter bar during the mowing operation and further includes sheaves that support the cutter belt in a manner whereby clogging is avoided. An accumulator tightening mechanism maintains the belt under a constantly desired tension. Said apparatus and system further includes means whereby the cutter elements are protected from hard objects lying in the path of the mower.

27,512
ATHLETIC SHOES

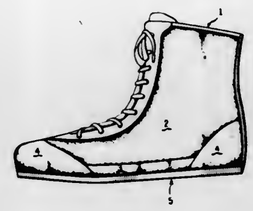
Kihachiro Onitsuka, 91–5, 1-chome, Kitano-cho, Ikuta-ku, Kobe, Japan

Original No. 3,535,799, dated Oct. 27, 1970, Ser. No. 820,528, Apr. 30, 1969. Application for reissue Dec. 10, 1971, Ser. No. 206,955

Int. Cl. A43b *00/00*

U.S. Cl. 36—2.5 P — 4 Claims

A reinforced athletic shoe includes an upper member of woven fabric material, a first reinforcing member joined with the lower peripheral portion of the upper member, and toe and heel reinforcing members joined with the first reinforcing member and upper member. The upper member and the reinforcing members are stitched to a sole which includes upper and lower cloth members made of woven fabric material joined by cement and a bottom member formed of wear-resistent synthetic rubber.



27,513
APPARATUS TO PRINT AN EMBOSSED PATTERN ALONG THE PERIPHERAL BAND OF A TOROIDAL ARTICLE

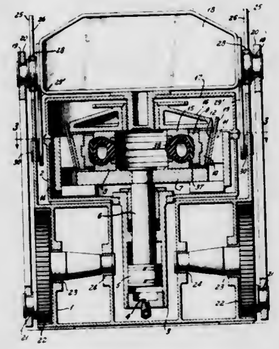
Antonio Pacciarini and Dario Giletta, Milan, Italy, assignors to Industrie Pirelli S.p.A.

Original No. 3,337,918, dated Aug. 29, 1967, Ser. No. 438,825, Mar. 3, 1965. Application for reissue Mar. 23, 1971, Ser. No. 127,417

Claims priority, application Italy, July 7, 1961, 12,473/61, Patent 658,679; Feb. 10, 1962, 2,639/62, Patent 665,377; Aug. 4, 1964, 17,022/64

Int. Cl. B29h *5/02*

U.S. Cl. 425—39 — 20 Claims



Apparatus for imprinting a predetermined embossed pattern upon the peripheral band of a toroidal article while the band is in a plastic state, including a mold having two coaxial continuous annular sections and a third section disposed between the annular sections. The third section includes a plurality of sectors, each of which has on its inner surface a plurality of radial projections adapted to engage the peripheral band. Means are also provided to axially displace the annular sections relative to each other along with means to displace the sectors in a radially inward direction towards the article after it has been enclosed between the annular sections.

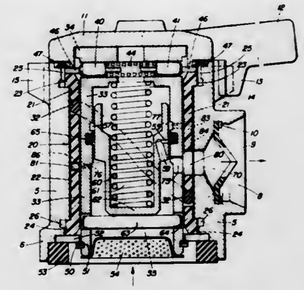
27,514
RETAINER VALVE

Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Chicago, Ill.

Original No. 3,526,248, dated Sept. 1, 1970, Ser. No. 693,801, Dec. 27, 1967. Application for reissue Mar. 22, 1971, Ser. No. 126,624

Int. Cl. F16k *11/00*; B60t *15/54*

U.S. Cl. 137—599.2 — 18 Claims



This retainer valve has a sleeve valve rotated by a handle to three different positions. A tubular bushing around the sleeve valve has three air ports, each of different capacity, which are adapted to communicate with air ports in the sleeve valve and these with an exhaust opening in the valve body. A piston in the sleeve valve controls one of the air ports. An oblique O-ring seal in the tubular bushing seals the different ports from the exhaust passage in the different handle positions. In one position full air exhaust is provided from the air brake pipe. In the second position 20 p.s.i. is retained by the piston control; while in the third position a slow restricted exhaust is provided.

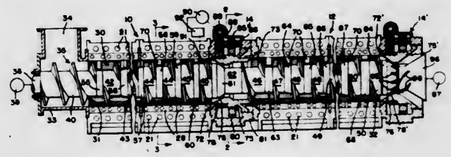
27,515
MECHANICAL SCREW PRESS

Dean K. Bredeson, % The French Oil Mill Machinery Company, P.O. Box 920, Piqua, Ohio 45356

Original No. 3,518,936, dated July 7, 1970, Ser. No. 758,300, Sept. 9, 1968. Application for reissue May 19 1971, Ser. No. 144,839

Int. Cl. B30b *9/12, 15/00*

U.S. Cl. 100—117 — 10 Claims



A screw press has a cage with spaced screen bars defining drainage slots therebetween. A rotatable screw extends through the cage and includes a shaft supporting a plurality of worms with axially spaced helical flights, and breaker bars are mounted on the cage projecting between the flights to resist rotation of the material with the screw. An annular choke member is connected to the cage intermediate the inlet and discharge ends and has a tapered inner surface which cooperates with a collar mounted on the shaft between a set of adjacent flights to define an intermediate restrictive orifice. The choke member is adjustable exially or interchangeable with other choke members for varying the size of the orifice to obtain the optimum progressive expression of liquid from the material.

PATENTS

GRANTED OCTOBER 24, 1972

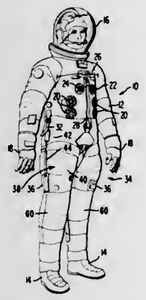
GENERAL AND MECHANICAL

3,699,589

SPACESUIT THIGH RESTRAINT ASSEMBLY

George P. Durney, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.

Filed Aug. 5, 1968, Ser. No. 750,159
Int. Cl. A62b *17/00*; B63c *11/04*
U.S. Cl. 2—2.1 13 Claims



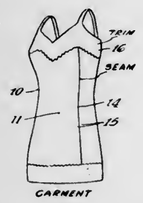
A thigh restraint assembly for a pressurized spacesuit which provides improved mobility for the wearer in the area of the thigh an crotch. It comprises thigh convolutes restrained by fabric covers and vertical thigh cables and reinforcement in combination with a plurality of crotch cables and cords passing through the crotch between the front and rear of the suit. The assembly cooperates with the torso and upper legs of the suit to maintain suit stability and to provide stress relief in the area of the joints. It cooperates with a torso block and tackle assembly to provide 90° of forward bending movement.

3,699,590

ANTISTATIC GARMENT

Harold H. Webber, Groton, and Pauline F. Riordan, Lowell, both of Mass., assignors to Brunswick Corporation

Continuation of Ser. No. 4,306, Jan. 20, 1970, abandoned.
This application Jan. 24, 1972, Ser. No. 220,326
Int. Cl. A41b *9/00*; H05f *3/00*
U.S. Cl. 2—73 18 Claims



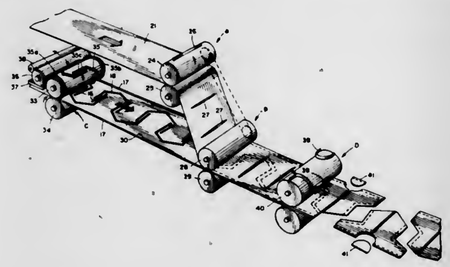
An anti-static garment such as an undergarment intended to be worn by a person having means for precluding the accumulation of static electricity. The garment fabric has a hand substantially similar to the hand of conventional garment fabrics while providing the desirable static elimination by incorporation therein of distributed textile-like conductive fiber. The fiber may be substantially uniformly distributed in the fabric or may be localized, such as in the stitching and/or trim portions of the garment.

3,699,591

METHOD OF MAKING DISPOSABLE GARMENTS

Stephen H. Breitkopf, North Brunswick, and Michael Scaduto, North Airlington, both of N.J., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed March 10, 1971, Ser. No. 122,826
Int. Cl. A41d *13/00*
U.S. Cl. 2—243 R 23 Claims



A disposable garment which is formed from foldable sheet material supplied from two converging webs, one web providing the material primarily for the back panel of the garment and the other web providing the material primarily for the garment's front panel. As the webs converge, they are sealed together along lines defining the outline of the desired garment. Immediately prior to the sealing step, one of the webs is transversely slit, the length of each slit being less than the width of the web and terminating short of the web's longitudinal edges. After the sealing step has taken place, both webs are cut just beyond the sealing lines to free the finished garment, the cutting lines of such final step intersecting the previously formed slit with the result that the finish garment has a divided rear (or front) panel.

ERRATA

For Classes 3—1 and 4—288 see:
Patents Nos. 3,700,380 and 3,700,381

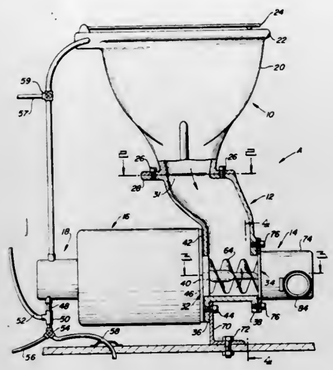
3,699,592

MARINE TOILET ASSEMBLY

Edward F. Minchak, Rocky River, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Dec. 21, 1970, Ser. No. 100,032
Int. Cl. E03d *11/11*, *11/10*
U.S. Cl. 4—90 12 Claims

The drawings show a marine toilet assembly comprising a first tubular member having an open upper end connected to and supporting a conventional toilet bowl and seat assembly. The lower end of the tubular member has an outlet opening facing generally horizontally and a motor is releasably connected to the tubular member on the side opposite the outlet with its drive shaft extending generally horizontally and aligned with the outlet opening. Positioned in the lower end of the tubular member and releasably connected to the drive shaft is a rotary macerator and waste pump assembly with the waste pump located outwardly of the outlet. A housing member encloses the waste pump and is sealingly and releasably connected to the outlet opening on the tubular member. The housing member has a discharge opening adapted to receive the output from the waste pump. A flush water pump is connected to the motor at the side opposite the outlet and means are provided for supplying treatment chemicals to the water supplied to the flush water pump.

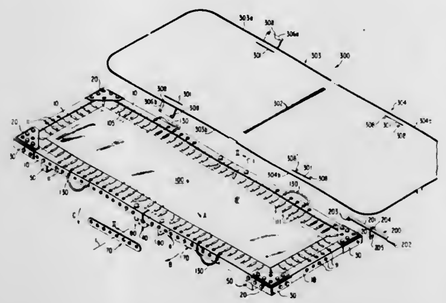


3,699,593

FOLDABLE BED STRUCTURE

Hans Oetiker, 21 Oberdorfstrasse, Horgen, Switzerland

Filed Oct. 30, 1969, Ser. No. 872,703
Int. Cl. A61g *7/00*; A47c *17/40*
U.S. Cl. 5—66 18 Claims



A bed made from standard structural parts, detachably connected together, which is adapted to be pivoted about a central pivot axis to permit insertion into a case formed by the mattress cover.

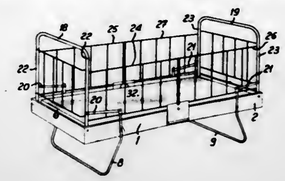
3,699,594

FOLDING BED

William Matthey-Doret, La Verrerie, F-21, Velars sur Ouche, France

Filed Nov. 3, 1969, Ser. No. 873,479
Claims priority, application France, Nov., 1968, 68173639; Dec., 1968, 68182125
Int. Cl. A47d *9/00*, *7/00*; A47c *27/08*
U.S. Cl. 5—99 R 9 Claims

Portable cot comprising two half-shells foldable together to form a valise. Frame members for the cot are retractable into said valise and folding feet on the half-shells are automatically positioned upon opening the frame members. The feet can also serve as carrying handles.

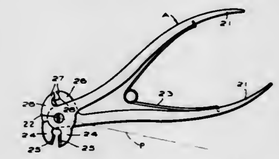


3,699,595

COMBINATION CLOSING AND OPENING PLIERS FOR REVERSIBLE MATRIX BAND CLAMP

Benjamin F. Tofflemire, 41301 Crest Drive, Hemet, Calif.

Filed June 1, 1970, Ser. No. 41,961
Int. Cl. B25b *7/22*
U.S. Cl. 7—3 1 Claim



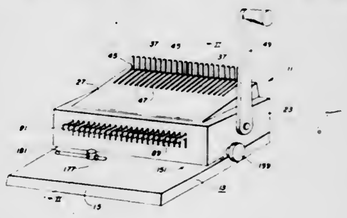
A combination closing and opening pliers for reversible matrix band clamp, wherein a pair of operating handles are swingably secured together for closing and opening movements, these pliers having a pair of clamp-closing beaks arranged to straddle legs of a substantially U-shaped clamp so as to crimp the clamp upon a dental matrix band, and the pliers further having a pair of clamp-opening beaks arranged to be applied over an arch interconnecting the legs of the clamp so as to compress the arch and thereby spread the legs apart to release the clamp from the band.

3,699,596

PUNCHING AND BINDING MACHINE

John W. Lyon, 110 Taylor Drive, Hot Springs, Ark.

Continuation-in-part of Ser. No. 859,047, Sept. 18, 1969, abandoned. This application March 22, 1971, Ser. No. 126,568
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 AC 20 Claims

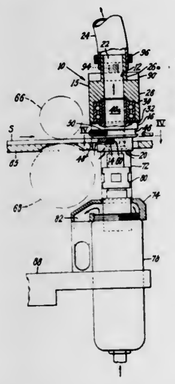


A combination punching and binding machine for gang punching a stack of sheets and binding the sheets with a ring-like plastic binding element. The machine has a manually actuated lever which, when operated in one direction, actuates the punches, and when operated in the opposite direction, first

moves laterally a comb upon which the binding element is placed and continued movement actuates a plurality of finger elements to uncurl the curled fingers of the binding element for receiving the punched sheets.

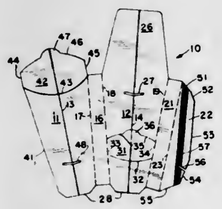
An alternate embodiment is also included which comprises substituting a first configuration for achieving lateral movement of the comb with a second configuration.

3,699,597
DUST REMOVAL MEANS
Edward S. Babson, Ipswich, Mass., assignor to USM Corporation, Boston, Mass.
Filed June 10, 1971, Ser. No. 151,810
Int. Cl. A43d 7/00
U.S. Cl. 12—89 **9 Claims**



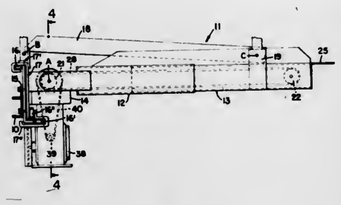
A head assembly for continuously removing dust accumulating on margins of shoe soles as a result of operations carried out on the margins by a rotary tool. The head is adapted to fit over the tool and includes a feed or guide slot for introducing marginal portions of soles to the interior of the head. The feed slot is located intermediate of air intake means and air exhaust means, and adjustment means is provided for orienting a sole as fed through the feeding slot.

3,699,598
BOOT SUPPORT AND SEPARATOR
Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,679
Int. Cl. A43d 5/00
U.S. Cl. 12—114.6 **21 Claims**



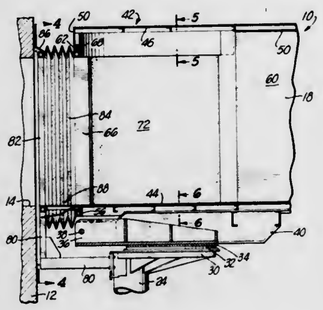
A support fitted into a boot following the boot contour for use during packing and shipping. A tongue portion extending above the boot top receives the toe portion of the mated boot to maintain the boots separated from each other.

3,699,599
DROP PLATFORM STRUCTURE FOR A LOADING DOCK
Sidney D. Lapham, 2324 Tice Creek Dr., Walnut Creek, Calif.
Filed March 15, 1971, Ser. No. 124,050
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **10 Claims**



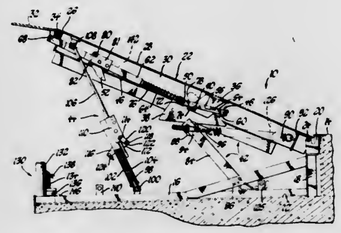
A drop platform structure for use with a loading dock is provided including a pair of elongated telescoping frame members, one of the members being pivotally secured to the dock and the other member being pivotally secured to a brace which is also pivotally secured to the dock. An elongated platform is slidably disposed with respect to the frame members and, upon retraction thereof, automatically telescopes the frame members so as to raise them from a generally horizontal to a generally vertical position.

3,699,600
LOADING BRIDGE STRUCTURE
Peter T. Gacs, Palos Verdes Peninsula, and Paul P. Shirzad, Palos Verdes, both of Calif., assignors to General Steel Industries, Inc., St. Louis, Mo.
Filed Dec. 30, 1970, Ser. No. 102,599
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **13 Claims**



A swing bridge type of aircraft loading bridge structure for use in providing access between an aircraft and a terminal can be constructed so as to minimize the amount of bridge slope by using a rotunda structure attached to a loading bridge so as to move in conjunction with the bridge. A first or rotunda support is used to rotatably carry a secondary support so that this secondary support may be rotated in a horizontal plane and the rotunda structure is rotatably mounted on the secondary support so as to be capable of being rotated in a vertical plane. The axis of the vertical rotation is preferably located adjacent to the terminal. Drive means are connected to the bridge for rotating the bridge horizontally and vertically with respect to the terminal.

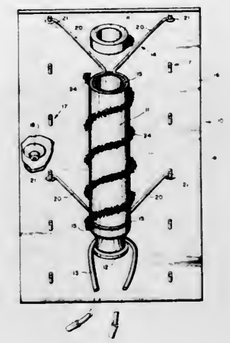
3,699,601
DOCKBOARD ASSEMBLY
Robert W. Hecker, Jr., Clare, Mich., and Robert C. Beckwith, Scotts Bluff, Nebr., assignors to Loomis Machine Company, Clare, Mich.
Filed Feb. 10, 1971, Ser. No. 114,264
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **13 Claims**



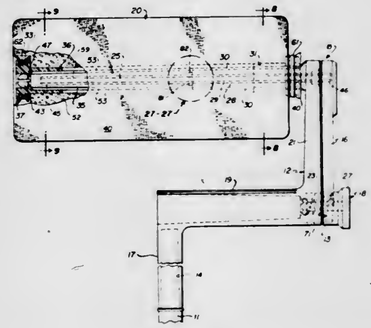
A dockboard assembly including a support means, a ramp means pivotally connected at a first end to the support means and extending to a second end, and lip means pivotally connected to the second end of the ramp means for pivotal movement between an extended cantilevered position and a pendant position. A cam is rotatably connected to the ramp means and a lift arm is pivotally connected to the support means and has a roller at the other end engaging the cam for pivoting the ramp means upwardly from any position in which the ramp means is disposed. A releasable hold-down means interconnects the support means and the ramp means for normally preventing the ramp means from moving upwardly. The hold-down means is also operable to allow the ramp means to be pivoted upwardly by the lift means and automatically allows the ramp means to pivot downwardly. A latch link is pivotally connected to the linkage with moves the lip means to an extended cantilevered position in response to rotation of the cam. The latch link is moved upwardly into positive latching engagement with an abutment pin on the ramp in response to rotation of the cam. Control pawls are pivotally connected to the lip linkage for automatically engaging the hold-down means to release the hold-down means as the lip means pivots from an extended position toward the pendent position when the ramp is below the dock and allows the hold-down means to keep the ramp locked when the lip is in the pendant position and the ramp is in any position below dock level.

3,699,602
THERAPEUTIC BATH BACK BRUSH AND PROCESS OF USING SAME
Malcolm R. Cameron, 1340 Cerise Avenue, Hawthorne, Calif.
Filed March 4, 1971, Ser. No. 120,905
Int. Cl. A61h 7/00
U.S. Cl. 15—21 D **5 Claims**

A cylindrical brush having bristles located in a helical column upon the surface of the cylinder and a pulley fastened at the base of the cylinder with a cord passing through the grooved rim of the pulley. The brush is adjustably mounted on a plate having suction cups on the side of the plate opposite the brush. The suction cups secure the plate to a shower wall and the brush is adjusted to the desired height of a body portion of a person. The body portion is washed and massaged when it is maintained in contact with the brush and the cord is reciprocated by the person to produce a reciprocating rotation of the brush.

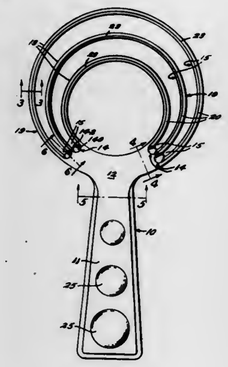


3,699,603
WRINGER MOP
Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.
Filed Feb. 26, 1971, Ser. No. 119,160
Int. Cl. A47l 13/142
U.S. Cl. 15—120 R **15 Claims**



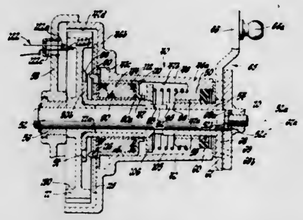
A wringer mop is disclosed in which the mop head, a sponge encased in a cloth sleeve, is cantileverally mounted on a rotatable wringer shaft. A U-shaped mop head mount supports a rotatable wringer shaft which is actuated by a crank which, in the inoperative position, permits the entire mop to be inserted into a water container without interference from the crank. Spools at both ends of the mop head are slotted so that the mop head can flip-flop backwardly and forwardly thereby permitting both sides to be worked. Additional slots are provided to secure the mop head against rotation on the cantilever wringer arm in a position approximately perpendicular with the mop handle facilitating the use of the mop, and more particularly its offset mop head, to clean the tops of doors, window sills, valances, and the like.

3,699,604
BUTCHERS' BONE DUST SCRAPER
Charles J. Hunt, Morning View, Ky., assignor to Vulcan Corporation, Cincinnati, Ohio
Filed March 22, 1971, Ser. No. 126,585
Int. Cl. A22c *17/04, 17/00*
U.S. Cl. 15—236 R 3 Claims



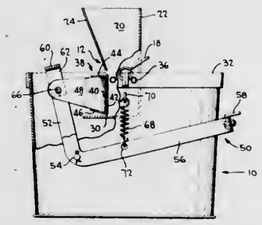
A one-piece plastic butchers' hand tool for the removal of bone dust from newly cut and sawn meat surfaces is provided and comprises spaced apart, flexible scraper blades mounted, one within the other, on the cross-head part of a T-shaped handle; the terminal ends of each of said blades having integral connections with the opposed sides of the cross-head part of the handle. The blades are spaced from each other at said cross-head connections a distance that provides relatively wide clearance areas between the blades for sanitary cleaning of the tool.

3,699,605
DEPRESSED PARK WINDSHIELD WIPER
James D. Bellware, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 18, 1971, Ser. No. 154,344
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.17 3 Claims



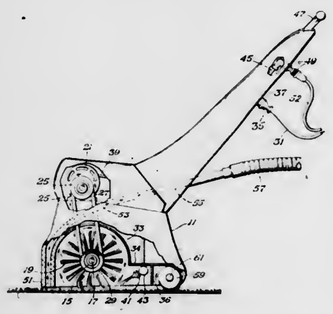
In a preferred form, this disclosure relates to an actuating mechanism for use in oscillating a pair of windshield wipers between inboard and outboard positions during running operation and for moving the wipers to a depressed park position spaced from the inboard position when wiper operation is being terminated. The actuating mechanism includes the housing means, a drive shaft rotatably supported by the housing means, a drive member, a drive gear drivingly connected to the drive shaft, an eccentric supported for rotation relative to the drive shaft, a crank arm rotatably journaled on the eccentric, means for drivingly connecting the crank arm to the drive shaft and for permitting the crank arm to move radially with respect to the drive shaft, and an shiftable sleeve drivingly connected with the eccentric and being shiftable between a first position in which it is drivingly engaged with the drive gear to cause the eccentric to be rotated in unison with the drive shaft and the crank arm to be rotated about an orbit of a given radius during running operation of the wipers and a second position in which it is disengaged from the drive gear to cause the crank arm to be rotated relative to the eccentric and moved radially of the drive shaft to increase the radius or throw of the crank arm to effect movement of the wipers to their park position.

3,699,606
MOP WRINGER
Carlos Rodriguez Ribas, 1663 Arkansas Street, San Gerardo Development, Rio Peidras, P.R.
Continuation-in-part of Ser. No. 40,243, May 25, 1970, abandoned. This application Sept. 27, 1971, Ser. No. 184,119
Int. Cl. A47l *13/58*
U.S. Cl. 15—261 5 Claims



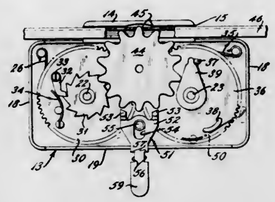
A mop wringer including a substantially funnel-shaped member with perforations at the lower end portion of the walls thereof, a piston member cooperating with the perforated walls of the funnel for wringing a mop, and foot operated lever means for moving the piston.

3,699,607
CARPET CLEANING APPARATUS
Frank E. Putt, Hurst, Tex., assignor to Town & Country Cleaners Franchises, Inc., Hurst, Tex.
Filed July 7, 1970, Ser. No. 52,941
Int. Cl. A47l *7/00*
U.S. Cl. 15—320 15 Claims



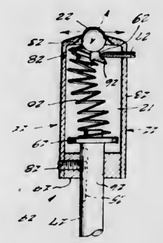
Apparatus for cleaning floor surfaces, especially carpets, with a cylindrical brush, a plurality of fluid nozzles directed tangentially adjacent the brush near floor level, and a vacuum nozzle for retracting the fluid from the floor surface, all of which are arranged cooperatively to retract a surprisingly large percentage of the moisture from the floor surface.

3,699,608
AUTOMATIC DOOR CLOSER
Charles A. Schwarz, Enid, Okla., assignor to Sooner Door Hardware Manufacturing Company, Hennessey, Okla.
Filed Oct. 23, 1970, Ser. No. 83,576
Int. Cl. E05f *1/08*
U.S. Cl. 16—79 8 Claims



A door closing apparatus having a plurality of springs with a single spring being operable during the first stage of operation of the door, and multiple springs being operable during the second stage of operation of the door, the apparatus being provided with locking mechanism for maintaining the door in fully opened, fully closed, or any intermediate position.

3,699,609
SPRING LOADED CASTER FOR SHOP TOOLS, BAR STOOLS AND THE LIKE
William L. Spatz, Route 2, P.O. Box 194-A, Montevallo, Ala.
Substitute for Ser. No. 801,982, Feb. 25, 1969, abandoned. This application April 12, 1971, Ser. No. 133,245
Int. Cl. A47b *91/00*
U.S. Cl. 16—44 1 Claim



An improved caster for the bottom of a stool or other furniture item, the caster comprising a casing containing a compression spring which bears adjustably against a spherical steel ball engaging a floor or supporting surface.

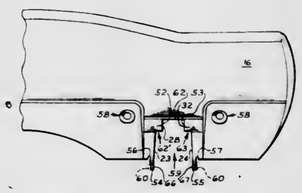
3,699,610
DRAPERY TRACK ASSEMBLY
Bernard M. Harby, West Vancouver, British Columbia, Canada, assignor to Bernard Harby Limited, Vancouver, British Columbia, Canada
Filed Sept. 8, 1969, Ser. No. 856,024
Claims priority, application Canada, June 23, 1969, 055,071
Int. Cl. A47h *15/00*; E05d *13/02*
U.S. Cl. 16—94 D 1 Claim

A drapery track assembly includes a wall plate securable to a wall, and a track-carrying member having at least one track for carrying curtain runners extending longitudinally of the member, said wall plate having interlocking means and said track-carrying member having interlocking means co-operable with the interlocking means of said wall plate by an interlocking action to secure the track-carrying member to the wall plate. The interlocking means of the track-carrying member may include a substantially vertical flange, and the interlocking means of the wall plate may include a lower forwardly projecting ledge and an upper downwardly projecting lip to enable the upper edge of the flange to be positioned behind the lip and the lower edge of the flange to rest on the ledge.



The track-carrying member may include a plate-like body from which the track is suspended. Preferably, the plate-like body extends forwardly from the wall plate in an upwardly inclined direction when the track-carrying member is secured to the wall plate attached to a wall.

3,699,611
CASKET HANDLE RETAINED BY SPREADABLE WEBS
Bennie R. Johnson, R. R. 3, Connersville, Ind.
Filed Feb. 12, 1971, Ser. No. 114,777
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 12 Claims



A casket handle hinge having spreadable webs for retaining the casket handle. A base plate securable to a casket side wall removably and hingedly receives a handle. A finger connected to the handle projects into a cavity formed in the plate. A pair of spreadable webs attached to the base plate are positioned on either side of the casket handle. A pair of raised stops project from the side of the handle and abut the webs when the handle is in the most downward position. The webs must be spread to allow the stops and handle to pass therebetween for removal of the handle from the plate. A stop edge located at the junction of the finger and handle must be moved past a curved surface on the plate prior to removing the handle from the plate. Three separate and independent pairs of surfaces limit the upward movement of the handle and distribute the lifting force.

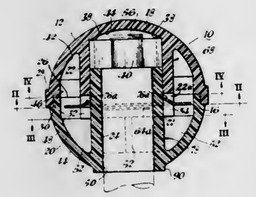
3,699,612
HANDLE FASTENING ASSEMBLY
Harold G. Hanley, Bensenville, and Edward E. Williamson, St. Charles, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed March 4, 1971, Ser. No. 120,988
Int. Cl. A47b *95/02*
U.S. Cl. 16—115 15 Claims



The assembly includes a handle, base plate, and fastening links. Horizontal slots extend laterally through the end por-

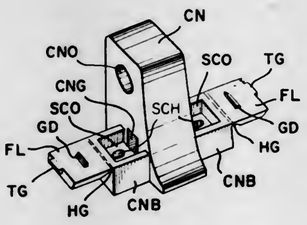
tions of the handle. Rectangular links having gaps provided in the short sides thereof are mounted through each slot in the handle. The base plate includes integrally formed surfaces or brackets having first portions with a lateral dimension less than the gap and second portions with a lateral dimension greater than the gap but less than the distance between the long sides of the link so that the links can fasten the handle thereto. Thin strips of resilient material extend beneath the inner surface of each bracket and form holding chambers therewith to restrain the gapped ends of the links.

3,699,613
HOLLOW KNOB CONSTRUCTIONS
Harvey G. Skinner, Latrobe, Pa., assignor to Vulcan, Inc., Latrobe, Pa.
Filed March 20, 1970, Ser. No. 21,414
Int. Cl. A47b 95/02
U.S. Cl. 16—121 14 Claims



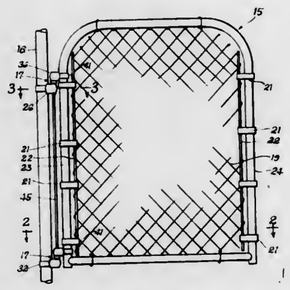
I disclose a bipartite hollow knob construction comprising a pair of hollow knob components, a pair of shank members joined respectively to the inward surfaces of said components, said shank members being positioned to permit complementary engagement of said components to form said knob structure, and fastening means engageable with the outer surfaces of each of said shank members to retain said components in their assembled position.

3,699,614
TOILET SEAT COVER MOUNTING
Henry Marshall Stairs, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed April 20, 1970, Ser. No. 29,933
Int. Cl. E05d 7/02
U.S. Cl. 16—128 3 Claims



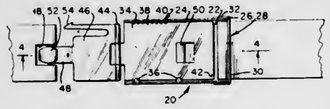
Covers a mechanism for connecting a toilet seat cover to a toilet seat assembly. The mechanism includes a lug, sometimes called a "connector" or "cover leaf," preferably made of a plastic material, such as linear or high density polyethylene, having two holes through which screws may be inserted to affix the lug to the seat cover. The lug also embodies flaps which are integral with the body of the lug and yet are moveable over an angle, such as 180°, for covering and concealing the heads of the screws. Two identical lugs would ordinarily be used with each toilet seat cover. By concealing the metal screws, the lug mechanism presents a finished appearance to the toilet seat and its cover and, more importantly, the flaps of the lugs prevent the accumulation of dirt in and around the screws. The employment of hinged flaps permits the easy installation of the lugs and will permit removal of the screws.

3,699,615
COMBINATION GATE HINGE AND CLOSER
Alan W. Duncan, River Forest, Ill., assignor to Sears, Roebuck and Company, Chicago, Ill.
Filed July 14, 1971, Ser. No. 162,495
Int. Cl. E05f 1/12
U.S. Cl. 16—184 7 Claims



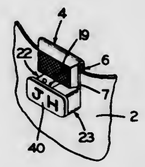
A gate hinge and closer means including upper and lower hinge assemblies, each including a bearing component and a hanger component, the bearing component being attached by a strap to a fence post and the hanger component being similarly attached to a gate frame member. A torsion bar has one end received in the bearing component and the other end received in the hanger component. The torsion bar is twisted when the gate is opened and thereby provides the necessary force for effecting automatic closing of the gate.

3,699,616
WRIST BAND AND BUCKLE THEREFOR
Harry Kalinsky, 3530 Henry Hudson Parkway, New York, N.Y.
Filed Aug. 2, 1971, Ser. No. 168,130
Int. Cl. A44c 5/24
U.S. Cl. 24—71 J 8 Claims



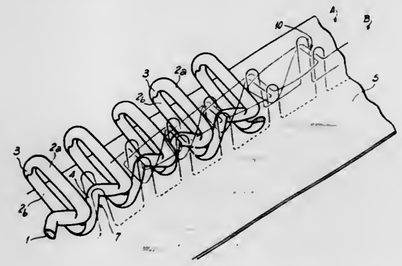
A wrist band buckle having a trough-shaped casing which is securable by one open end to an end of a wrist band and has a cover hinged thereto at said end. A ratchet is formed in a side of the casing and a pair of plates hingedly interengaged at one end are slidably supported within the casing for limited movement into and out of its other end, with the hinged ends of the plates facing said other end. The upper of the plates has a hook at its free end for engaging an opening in the other end of the wrist band and is releasably engaged by said free end on the lower plate. The upper of the plates also has a resiliently connected pawl engagable on the ratchet and disengagable therefrom upon the lifting and disengagement of the hook-end of the upper plate from the lower plate.

3,699,617
CONNECTING DEVICE FOR ARTICLES OF CLOTHING
John M. Hofmeister, 931 Marion N. W., Massillon, Ohio
Filed Jan. 29, 1971, Ser. No. 110,968
Int. Cl. A44b 21/00
U.S. Cl. 24—81 GS 7 Claims



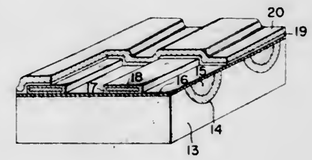
A connecting device for detachably joining together two articles of clothing for laundering, such as socks. The connecting device has two similar connecting members each of which is permanently attached to one garment of a pair. The connecting members each have a single stud or a pair of studs at one end which pierces one of the garments. Flanges at the opposite end of each member lock the studs in place after the member is folded upon itself securing the garment therebetween. Attachment plugs are formed on each connecting member and are snapped together detachably retaining the two garments in their proper pair.

3,699,618
ROW OF FASTENER ELEMENTS FOR A SLIDE
Horst Jakob, Choisy-le-Roi, France, assignor to Societe Financiere Franciase de Licences et Breveta, Choisy-le-Roi, (Val de Marne), France
Filed April 12, 1971, Ser. No. 133,174
Claims priority, application France, Aug. 13, 1970, 7013191
Int. Cl. A44b 19/12, 19/34
U.S. Cl. 24—205.1 C 2 Claims



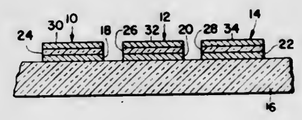
A row of fastener elements for a slide fastener comprises a continuous spiral-shaped thread having a varying pitch, each whorl of the spiral thread having two legs which are substantially superimposed, and each whorl being separated from each other whorl, each whorl having at a first end portion thereof a deformation to serve as a tooth of a fastener element. In such a construction, the connecting sections between the successive whorls, opposite the teeth, each have a respective bend facing towards the teeth and the totality of said bends forms a series of notches along the corresponding longitudinal edge of the row of fastener elements. When the row of fastener elements is secured by stitching onto a backing tape, the stitching consists of two parallel longitudinal rows, one of said rows being at an intermediate point in the space between the teeth and the connecting sections, preferably close to the connecting sections, and the other being along the edge of the row of fastener elements opposite to the teeth and disposed inside the notches. Advantageously, the stitching is double chain-stitch made with two needles, the chains being positioned over the end of the whorls opposite to the teeth.

3,699,619
METHOD FOR MANUFACTURING A MAGNETIC THIN FILM MEMORY ELEMENT
Nobuaki Yasuda, Zushi-shi; Takenobu Ogawa, Kawasaki-shi; Yoshio Murakami, Yokohama; Iwao Higashinakagawa, Kawasaki-shi; Syozo Takeno, Yokohama, and Norio Tanaka, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed July 29, 1970, Ser. No. 59,293
Claims priority, application Japan, July 30, 1969, 44/59790
Int. Cl. H01f 7/06
U.S. Cl. 29—604 6 Claims



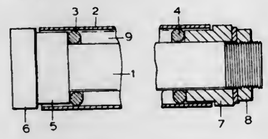
A magnetic thin film memory element ad a method for manufacturing the same, which comprises the steps of forming a magnetic keeper for concentrating a magnetic flux generated by a current flowing through word lines beside said word lines, forming a plurality of digit lines closely intersecting said word lines through a first insulator, which is encircled by a magnetic thin film forming a closed flux path, and forming a conductive layer contacting the digit lines through a second insulator.

3,699,620
METHOD FOR OBTAINING THE DIELECTRIC CONSTANT OF FRIT CAPACITORS
John W. Asher, Elmira, and Andrew Herczog, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 16, 1968, Ser. No. 729,800
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 3 Claims



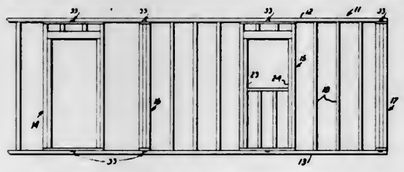
A frit capacitor of either the discrete or integrated microcircuit variety having a ferroelectric glass-ceramic dielectric whose dielectric constant is of intermediate value between about 20 and 400. The desired value of dielectric constant is accurately obtained in a readily reproducible manner by mixing a batch containing appropriate quantities of stable non-crystallizable glass particles and glass particles capable of forming a ferroelectric crystal phase. The desired dielectric constant is obtained by subjecting the batch to heat treatment. By controlling the weight ratio of the two glass components during the batch preparation, individual capacitor dielectrics having different dielectric constants can be provided utilizing the same firing schedule for each.

3,699,621
ROLLERS
Kenneth Clarke, Knebworth, and Ronald Bevan, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Dec. 16, 1970, Ser. No. 98,652
Int. Cl. B21b *27/00*
U.S. Cl. 29—113 R **9 Claims**



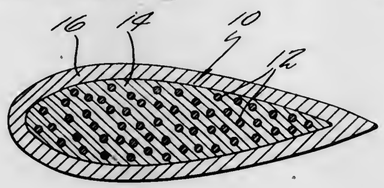
A resilient roller consisting of a cylindrical core member and a thin sleeve surrounding the core and spaced therefrom by resilient seals, the space between the core and the sleeve being filled with a liquid.

3,699,622
METHOD AND APPARATUS FOR MAKING WALL PANELS
Donald V. Frydenberg, Arlington, Tex., assignor to Clary Corporation, San Gabriel, Calif.
Filed May 3, 1971, Ser. No. 139,731
Int. Cl. B23p *17/00*, *19/00*, *21/00*
U.S. Cl. 29—155 R **14 Claims**



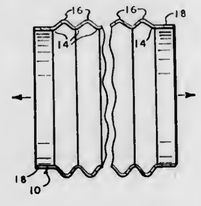
Disclosed method and apparatus continuously forms building wall panels using pre-formed sub-assemblies having centrally positioned locators thereon. Locating notches are formed in the top and bottom frame plate members at the centers for various window, door and post components. The plate members are fed continuously and as the locators drop into the notches, thereby properly locating the sub-assemblies, they are carried to a nailing station where they are fastened to the plate members.

3,699,623
METHOD FOR FABRICATING CORROSION RESISTANT COMPOSITES
Kenneth G. Kreider, Glastonbury, Conn., assignor to United Aircraft Company, East Hartford, Conn.
Filed Oct. 20, 1970, Ser. No. 82,252
Int. Cl. B23p *15/02*, *15/04*
U.S. Cl. 29—156.8 B **4 Claims**



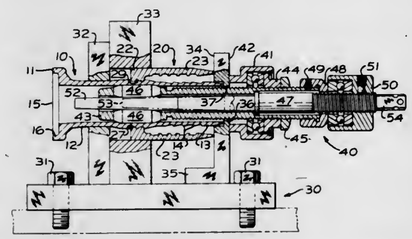
A method for fabricating erosion and corrosion resistant filament reinforced composite articles having a matrix of aluminum or magnesium or alloys thereof for use in gas turbine engines wherein a protective sheath of titanium foil is diffusion bonded to the outer surface of the matrix.

3,699,624
STRETCH METHOD FOR MAKING A TUBULAR PRODUCT
William J. De Gain, Warren, Mich., assignor to Koppy Corporation, Ferndale, Mich.
Division of Ser. No. 824,440, May 14, 1969, Pat. No. 3,577,621, which is a continuation-in-part of Ser. No. 627,718, April 3, 1967, abandoned. This application Feb. 10, 1971, Ser. No. 114,107
Int. Cl. B23p *17/00*
U.S. Cl. 29—155 C **9 Claims**



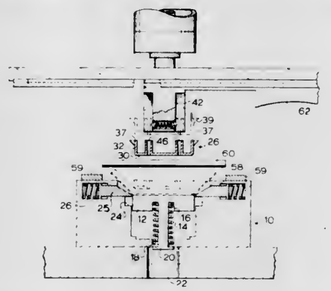
A tubular metal blank to be formed into a vehicle steering column or other stress-subjectable corrugated tubular product is first deformed by radially inwardly moving dies or other forming devices to produce a plurality of substantially equally spaced shallow annular depressions separated by slightly raised crowns. The blank is then axially compressed to form and close a plurality of convolutions under a selected load within predetermined limits and to a selected closed length within predetermined limits, the variations being dependent on the strength of the material. Finally, the blank is stretched using a selected stretch pressure within predetermined limits and to a selected expanded length within predetermined limits, expanding the convolutions to a plurality of generally similar spaced corrugations. When the end product is used as an energy absorbing tube, the above method minimizes the variations from a selected compressive axial load which would be required to collapse the finished column.

3,699,625
METHOD OF MAKING MECHANICAL JOINED HOSE COUPLING OF EXTRUDED COMPONENTS
Blaine G. Spencer, Peoria, and Lyle B. Clinebell, Wyoming, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 845,425, July 28, 1969, Pat. No. 3,589,752. This application Feb. 3, 1971, Ser. No. 112,483
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157 **5 Claims**



In a hose coupling having an extruded stem and an extruded collet which are joined so hydraulic hose can be clamped against the stem by the collet's gripping fingers when the hose is inserted therebetween, a mechanical connection between the stem and collet is effected by expanding a midportion of the stem into the peripheral dentured and grooved wall of an aperture in a radial flange forming part of the collet. The method of expanding the mid-portion of the stem and the configuration of dentured and grooved wall of the aperture insures a suitable mechanical joint between the stem and collet for a coupling operating at 4,500 psi or above.

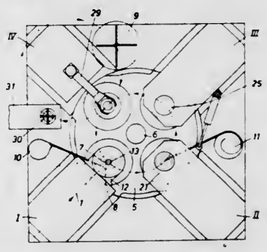
3,699,626
FABRIC APPLYING APPARATUS
Eric Michael Roth, R. R. #1, Unionville, Ontario, Canada
Filed Dec. 16, 1970, Ser. No. 98,591
Int. Cl. B23p *19/00*, *11/00*
U.S. Cl. 29—200 B **14 Claims**



A machine for attaching fabric to a member having a main wall, side walls extending therefrom and fabric retaining and engaging means on the side wall, has a platform movable from an extended to a retracted position relative to a base, with fabric and then the main wall thereon, and the machine has transversely movable lips biased inwardly and located to fold the fabric along the side walls and into engagement with said engagement and retaining means during travel of said members toward retracted position.

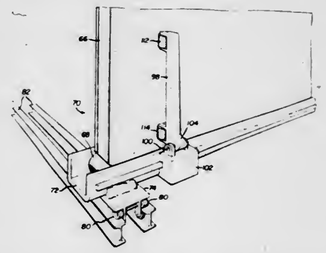
The fabric holding member as above defined may be combined with a cover member designed to overlie and contact the tines.

3,699,627
PROCESSING MACHINE FOR THE PRODUCTION OF SMALL COILS OF METAL OR OTHER WIRE
Alfred Jouin, Villiers/Marne, France, assignor to Societe A Responsabilite Limitee: Forges & Trefileries de Conflandey, Paris, France
Filed Dec. 28, 1970, Ser. No. 101,628
Claims priority, application France, Jan. 8, 1970, 7000607
Int. Cl. B23p *19/00*, *19/04*
U.S. Cl. 29—200 B **8 Claims**



A processing machine for producing small coils comprising a ring of wire maintained in a cage formed from a cross arm member whose arms are folded so as to retain the ring of wire and to serve as a reel. The machine includes four work stations arranged at 90° relatively to one another about a processing table including four dies arranged at 90° relative to one another and in each of which a spindle carrying a winding mandril is slidably mounted. The winding is effected at the first station, the bending and a first folding of the arms or the cross arm member and the cutting of the wire are effected at a second station, a second folding of the arms and the clamping of the ring of wire being effected at a third station and the removal of the completed coil being effected at the fourth station. Dispensing device for labels and for supporting rings may be provided at the first and second stations respectively.

3,699,628
VERTICAL ASSEMBLY APPARATUS
Gregory N. Gollobitz, Boca Raton, Fla., assignor to Behring Corporation, Fort Lauderdale, Fla.
Filed April 5, 1971, Ser. No. 130,970
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 A **12 Claims**

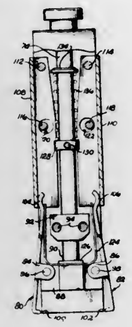


Apparatus for assembling wall units for prefabricated buildings including a welding station where metal beams are assembled and welded together to form a wall unit, and a sheathing station where sheathing such as wallboard is applied to the wall units and fastened with screws. The wall units ride on a track from the welding station to the sheathing station, and the beams are assembled on the track at the welding station. The beams are assembled in a squared configuration with cap beams at top and bottom, and during assembly, the top beam is held above the assembly area by movable magnets. After the lower cap beam and the vertical beams are put in place, the upper cap beam is lowered by moving the magnets as with a solenoid to place the top beam on the ends of the vertical beams. The beams are then welded together. The wall unit is shifted to the sheathing station, and sheathing material is fastened to the wall unit, preferably with power screwdrivers. The screwdrivers may be mounted for both vertical and horizontal movement on a frame which rides on rails and shifts along a section of the assembly track. Completed wall units are transferred to holding units which may be moved along rails transversely of the assembly track.

3,699,629
ELECTRICAL COMPONENT INSERTION-REMOVAL TOOL
Jesse C. Hood, Jr., 817 Dumaine Avenue, San Dimas, Calif., and Harold D. Palmer, 25942 Corriente Lane, Mission Viejo, Calif.
Filed Nov. 2, 1970, Ser. No. 86,206
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 H **6 Claims**

A tool is disclosed for use in placing and removing electrical components, as integrated circuit packages. A body, defining opposed substantially-parallel flat surfaces terminates in a slot for frictionally holding an integrated circuit package. A spring biased plunger engages the integrated circuit package either

to force it into a circuit-board receptacle or for withdrawal therefrom. The tool is disclosed in an insertion form and in an integrated form for both insertion and withdrawal. In the



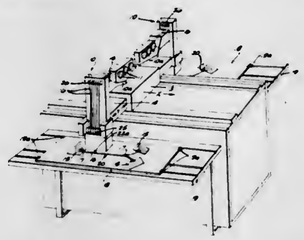
withdrawal embodiment, the contact includes opposed jaws which are spring biased into the slot along with actuators for spreading the jaws.

3,699,630

SYSTEM FOR ORDERED DISPENSING OF WIRE AND THE LIKE

John W. Tarbox, Malibu; Walter E. Hinds, Los Angeles, and Rodolfo Castro, La Palma, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 31, 1970, Ser. No. 103,233
Int. Cl. H05k *3/32*
U.S. Cl. 29—203 MW **35 Claims**



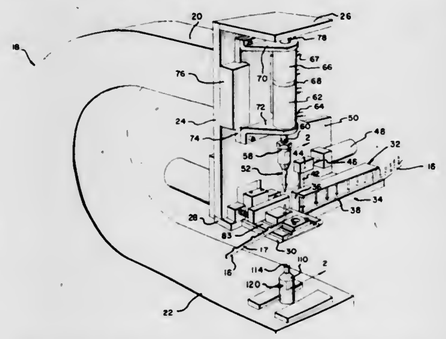
A wire dispensing system provides for ordered dispensing and forming of wires along predetermined paths to produce cables and including automating the production of cable harnesses. A wire dispensing head is controlled to selectively dispense wires from a group of supply spools, laying the wire along predetermined paths according to the desired harness pattern configuration, cutting the wires to conform to the individual path lengths, and securing the wires at respective termination sites. The wire dispensing head includes feed tubes selectively actuated to secure the wires at the termination sites wherein movements of the dispensing head are controlled to accurately move the selected feed tubes along the paths determined by the harness pattern configuration. The desired length of an individual precoded wire is determined by optically sensing the configuration of a wire mark which controls wire pay-out by a rotatable capstan while feed rate the tension of the wires is regulated by the same capstan at a low level capable of accurately locating the wires along the wire layout paths of the cable harness wherein the tension is regulated so as to not exceed the level of wire retention at the termination sites. The termination sites include openings having resilient retaining means comprising a slit pattern in neopreme at each opening for receiving and the end portion of a feed tube and retaining wires on withdrawal of the feed tube.

3,699,631

APPARATUS FOR ASSEMBLING ARTICLES IN STRIP FORM TO WORKPIECES

Mervin Leonard Shughart, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 869,744, Oct. 27, 1969, abandoned. This application April 26, 1971, Ser. No. 137,384
Claims priority, application Great Britain, Sept. 7, 1970, 42721/70
Int. Cl. H05k *3/30*
U.S. Cl. 29—203 B **16 Claims**



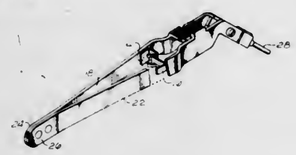
Assembling apparatus comprises strip feeding means for feeding a strip of articles along a predetermined path which extends above a supported workpiece. Assembly is carried out by means of a punch which is movable, in two stages, towards the workpiece. The inserting punch moves downwardly, in a first stage, and grasps the leading article of the strip. The carrier strip to which the article is attached, is then moved laterally while the article is supported against movement thereby to shear the leading article from the strip. The punch then moves downwardly through the remainder of its stroke to carry the article towards the workpiece and assemble it thereto. The article may comprise e.g. a terminal pin and the workpiece a printed circuit board.

3,699,632

OVERRIDING LATCH MECHANISM

John William Anhalt, La Crescenta, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 30, 1971, Ser. No. 167,565
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 H **5 Claims**



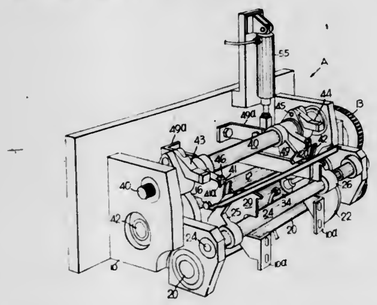
An overriding latch mechanism for positioning a pair of members in a first and second predetermined positions. A bracket portion contains an end wall, an enlarged width slot and a reduced width slot adjacent thereto. The bracket portion is secured to one of the members. A lipped spring portion contains a lip surface, an enlarged width portion and a reduced width portion. The lipped spring portion is secured to the other member. The lip surface interlocks with the bracket portion end wall when the members are in a first predetermined position. When the members are moved from the first position to a second position, the reduced width portion and the enlarged width portion pass through the reduced width slot and the enlarged width slot, respectively, during the movement. The bracket and lipped spring portion may be formed integrally with the members.

3,699,633

MACHINE FOR MAKING HANGING FILE FOLDERS

Arthur H. Kidd, menomonee Falls, Wis., assignor to Condes Corporation, Milwaukee, Wis.

Filed Feb. 25, 1971, Ser. No. 118,691
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 D **13 Claims**



Apparatus for making hanging file folders of the type having a strip of metal along opposite sides and by means of which the folder can be hung on two parallel hangers. The apparatus includes means for transferring a V-shaped rod from a stack and to a swingable transfer arm, the swingable transfer arm then transferring the rod to the edge of the file blank for being clamped therealong. The apparatus also includes pressure pads for holding the stack of rods and releasing the lowermost rod at the appropriate time so that it can be picked up by the pick-up arms.

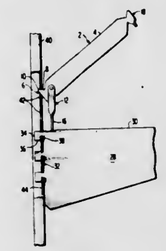
A machine for forming file folder blanks from a web, and automatically applying a rod on each of opposite sides of said blanks, said machine employing an apparatus of the above type at each side of the path of movement of said blanks.

3,699,634

SHELF BRACKET TOOL

Paul R. D'Amato, 1210 East Main Street, Waukesha, Wis.

Filed Feb. 22, 1971, Ser. No. 117,621
Int. Cl. B23p *19/04*
U.S. Cl. 29—267 **2 Claims**



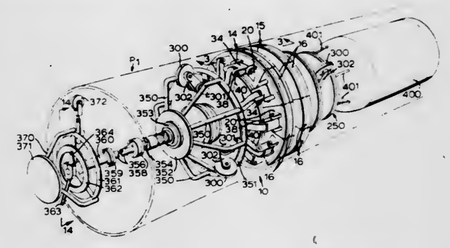
Shelf brackets typically have a series of downwardly hooked teeth which engage in slots in a supporting channel. The tool is a lever having at one end a dovetail for engaging into a channel slot above the bracket, near which dovetail is pivoted a dependant link engagable against a shelf bracket top for forcing the shelf teeth into the channel slots. At the other end of the lever is a projection engagable in a channel slot beneath the bracket, and a lever arm for engaging the bracket for prying the bracket teeth out of the channel slots.

3,699,635

INTERNAL LINE-UP CLAMP FOR PIPE LINES

Edmund G. Bradley, 7 Personna Boulevard, R.R. #2, Gormley, Ontario, and Reginald P. Whittingham, R.R. #2, Markham, Ontario, both of Canada

Filed May 26, 1970, Ser. No. 40,683
Int. Cl. B23p *19/04*; B23q *3/18*; B25b *1/18*
U.S. Cl. 29—252 **12 Claims**



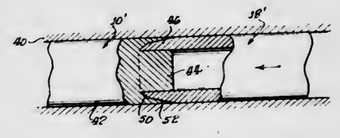
An internal line-up clamp which incorporates a pair of interconnected but independently operable clamping assemblies, each of which includes a set of radially movable pipe engaging shoes adapted to clampingly engage the inner circumferences of a pair of pipe sections in the zones adjacent their ends. At least two axially movable pneumatic actuators are operatively associated with each set of clamping shoes in a manner such that axial movement of the actuators effects radial movement of the shoe set with which they are associated. The clamping assemblies are interconnected by a plurality of axially extending rods which are adapted to maintain the assemblies in axial alignment while permitting them to be moved axially with respect to each other a limited distance. A fifth pneumatic actuator means is provided for effecting such reciprocal axial movement of the clamp assemblies.

3,699,636

METAL BONDING PROCESS

Gerard F. Walker, Hudson, Mass., assignor to Whittaker Corporation

Filed Feb. 17, 1971, Ser. No. 115,964
Int. Cl. B23p *11/00*; B23k *21/00*
U.S. Cl. 29—432 **7 Claims**

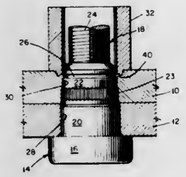


A method for pressure bonding metals of differing hardness to each other comprising mechanically forcing a shaped end of a harder metal member in tubular form into a flat-faced, chamfered end of a solid member of softer metal. The shaped end of the tubular member is formed by externally tapering one end of the tubular member to provide the latter with, preferably, two consecutive, intersecting tapered surfaces extending and tapering from the outer to the inner surface of the tubular member and defining an internally included angle of less than 180°. Each tapered surface is tapered between about 5° and about 45° with respect to the longitudinal axis of the tubular member. The chamfered end of the solid member is formed by tapering the side wall adjacent one end of the latter between about 5° and about 30° with respect to the longitudinal axis of the solid member. The internal diameter of the tubular member is less than the width of the chamfered end of the solid member.

3,699,637
METHOD OF LOCKING A BOLT IN AN ASSEMBLY BY EXTERNAL STAKING

Frank C. Rosiek, Royal Oak, Mich., assignor to The Budd Company, Philadelphia, Pa.

Filed Aug. 19, 1970, Ser. No. 65,068
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.1 2 Claims

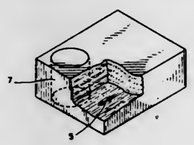


A method of securing a bolt or shaft in an aperture of an assembly by providing a depressed area on the surface of the bolt and flowing metal surrounding the aperture into the cavity of the depressed area by application of force to a staking tool to cause such metal flow.

3,699,638
METHOD OF FABRICATING A FUEL ROD HAVING A POROUS PLUG

Jean-Paul Laurent Van Dievoet, Bruxelles, Belgium, assignor to Societe Belge pour l'Industrie Nucleaire, S.A."-Belgonucleaire", Bruxelles, Belgium

Filed Nov. 24, 1969, Ser. No. 879,128
Claims priority, application Belgium, Nov. 29, 1968, 724.655
Int. Cl. B23p *3/00, 25/00*
U.S. Cl. 29—458 3 Claims



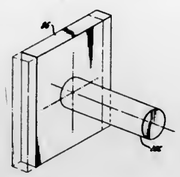
Method of manufacturing a fuel rod having a jacket and a porous plug by forming a laminate, the layers of which have porous passages between them, cutting a plug for the fuel rod from the laminate so that some of the passages between the laminated layers are included in the plug, whereby a porous plug is obtained, and welding the resultant plug to the fuel rod jacket.

3,699,639
FRICTION WELDING METHODS

Edwin D. Ditto, Sandusky, Ohio, and William S. Stone, Trenton, Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 778,720, Nov. 25, 1968, Pat. No. 3,627,189. This application Oct. 27, 1970, Ser. No. 84,424
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 11 Claims

Friction welder and friction welding methods in which plural flywheels can be selectively connected to a single workpiece drive spindle at different times so that kinetic energy can be stored in one flywheel as the kinetic energy of another flywheel is being used to relatively rotate and frictionally weld two workpieces engaged under thrust load. After the workpieces are welded, new workpieces are inserted into the welder so that the energy of the second flywheel can be utilized to relatively rotate and frictionally weld the other workpieces engaged under thrust load as kinetic energy is being

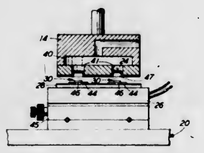


stored in the first flywheel for subsequent friction welding. As the workpieces are being relatively rotated, they can be slid laterally relative to each other so that all parts of the interface are cleaned and directly heated by friction. Both workpieces are rotated during welding so that a single tool can be employed to facilitate removal of hot-weld flash.

3,699,640
COMPLIANT BONDING

Benjamin H. Cranston, Trenton, N.J., and Michael P. Eleftherion, Yardley, Pa., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,135
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 12 Claims



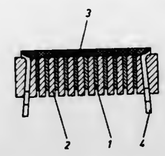
Compliant bonding of beam-leaded semiconductor devices is improved by deforming a compliant member into apertures of a rigid bonding grid during a bonding process. The deformation of the compliant member provides a desired clearance around brittle body portions of the semiconductor devices so that the body portions remain undamaged during bonding. In one example, the deformation takes place during exertion of bonding force and, in another example, just prior to the exertion of the bonding force. In still another example, the deformation is sufficient to cause complete shearing of the compliant member so that direct viewing of the device through the compliant member for alignment purposes can be effected.

3,699,641
METHOD FOR MANUFACTURING LINER BODY FOR COMBUSTION CHAMBERS AND LINER PRODUCED BY THE METHOD

Gottfried Kuhnen, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation of Ser. No. 820,270, April 29, 1969, abandoned. This application July 23, 1971, Ser. No. 165,401
Claims priority, application Switzerland, April 30, 1968, 6451/68
Int. Cl. B23k *5/22*
U.S. Cl. 29—493 5 Claims

A liner body for combination chambers comprises a cover plate made entirely of welding material deposited across the ends of and united with a plurality of parallel spaced cooling elements such as cooling fins. The cooling fins are held in

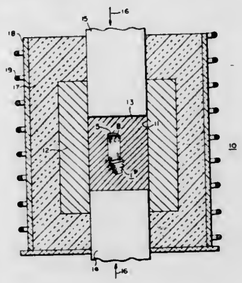


proper parallel relation by a jig and the welding material is deposited across the end faces of the fins in one or more layers.

3,699,642
METHOD FOR BONDING SHEET METAL CLADDING TO A BODY

Frederick F. Lange, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 8, 1971, Ser. No. 132,378
Int. Cl. B23s *31/02*
U.S. Cl. 29—497.5 5 Claims



A method for applying a cladding to the surface of a body by enclosing the body with a cladding of sheet metal or foil loosely adherent to the body surface in a mass of a non-reactive, non-densifying powder, and compressing the powder at a pressure of greater than about 500 psi and at elevated temperatures up to the melting point of the body or the cladding.

3,699,643
METHOD FOR MANUFACTURING A GILL FALLER OF A CONSTANT THICKNESS FALLER BODY TYPE

Ichizo Isumi, A6-206, 212-2, Oaza Yamada Shimo, Suita-shi, Osaka, Japan

Division of Ser. No. 4,218, Jan. 20, 1970. This application March 8, 1971, Ser. No. 122,013
Claims priority, application Japan, Jan. 27, 1969, 44/7345
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.1 4 Claims

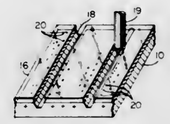


A method for manufacturing a gill faller of a constant thickness faller body type wherein a faller body is formed by an application of blanking to a plain steel plate of constant thickness, ends of the plain faller body are shaped as desired by pressing and combing pins are attached to thusly shaped faller body by plastic molding technique.

3,699,644
METHOD OF DIVIDING WAFERS

Frank J. Cocca, East Boston, Mass., assignor to Sylvania Electric Products Inc.

Filed Jan. 4, 1971, Ser. No. 103,583
Int. Cl. B23k *17/00*
U.S. Cl. 29—527.2 2 Claims

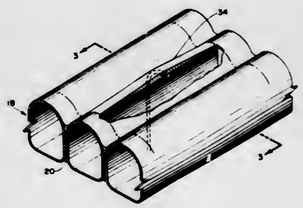


A method of dividing silicon wafers includes the steps of marking a predetermined pattern on the wafer to be divided and applying a clear dielectric film over the marked surface thereof. The surface of the wafer is cut through the dielectric film along the pattern with the resulting debris being scattered over the protective film. The protective film along with the debris is then removed, for example, by washing in an appropriate solvent. The wafer is then broken along the cut surface for further processing.

3,699,645
METHOD OF MAKING APPARATUS FOR SENSING TEMPERATURE

Ronald G. Huff, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Division of Ser. No. 877,717, Nov. 18, 1969, Pat. No. 3,671,329. This application May 26, 1971, Ser. No. 147,099
Int. Cl. B01j *17/00*; H01l *15/00*; H01n *49/00*
U.S. Cl. 29—573 10 Claims



Measuring the surface temperature of a wall heated by a flowing fluid without disturbing the boundary layer. A thin electrical conductor forming a thermocouple junction is covered by a layer of protective material to guide the flow of fluid over the junction.

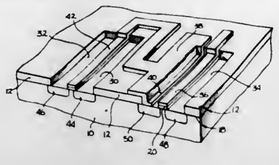
3,699,646
INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING INTEGRATED CIRCUIT STRUCTURE

Leslie L. Vadasz, Sunnyvale, Calif., assignor to Intel Corporation, Mountain View, Calif.

Filed Dec. 28, 1970, Ser. No. 101,805
Int. Cl. B01j *17/00*; H01j *1/14, 5/02*
U.S. Cl. 29—571 7 Claims

In connection with the fabrication of an integrated circuit, a method for simultaneously completing the formation of a contact, an interconnect, a gate and a source or drain is disclosed. An integrated circuit field effect structure wherein a diffused

silicon area is connected directly to a polysilicon member by conductive silicon and more specifically the source or drain of



one device is directly and continuously connected to the gate of an adjacent device by a conductive silicon member.

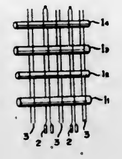
3,699,647
METHOD OF MANUFACTURING LONG LENGTH COMPOSITE SUPERCONDUCTORS
Michel Bidault, Bougival; Jean Dosdat, Verrieres le Buisson; Roland Lelay, Morsang sur Orge, and Jean Claude Parouty, Houilles, all of France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France
Filed July 15, 1970, Ser. No. 55,095
Claims priority, application France, July 18, 1969, 6924592
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **18 Claims**



Elongated elements of superconductive material are applied to an elongated, heated base support at a temperature permitting retention of the superconductive qualities in the material, and in a controlled atmosphere, the application step being carried out while twisting the superconductive element with respect to the base support so that the major axes of the superconductive elements will be inclined with respect to the major axis of the base support; composite elements can be made by applying composites of the resulting superconductive material and elongated base supports on additional supports, or forming them in tubular or other form, joined together, at temperatures below the temperatures at which the superconductive properties of the superconductive elements are affected.

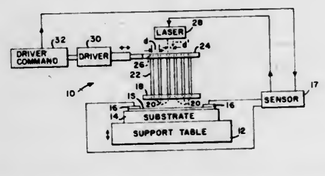
3,699,648
MEMORY DEVICE AND METHOD OF MAKING THE SAME
Kiichi Sato, and Isamu Ogura, both of Tokyo, Japan, assignors to Oki Electric Industry Company Limited, Tokyo, Japan, by said Ogura
Division of Ser. No. 712,731, March 13, 1968, Pat. No. 3,611,326. This application July 31, 1970, Ser. No. 64,939
Claims priority, application Japan, March 15, 1967, 42/15788
Int. Cl. H01f *7/06*; G11c *5/06*
U.S. Cl. 29—604 **32 Claims**

A memory device includes at least one memory plane comprising a plurality of substantially parallel memory lines serving as digit lines and arranged in a common plane, and plural pairs of lead wires, serving as word lines, with one lead wire of each pair extending along only one surface of the plane and the other lead wire extending along only the opposite surface of the plane, whereby one lead wire of each pair overlies all the memory lines and the other lead wire of each pair underlies all the memory lines, with the lead wires intersecting the memory lines at right angles. Plural pairs of insulated strings extend in parallel relation between respective pairs of adjacent memory lines, with the strings of each pair extending al-



ternately above and below adjacent pairs of lead wires and crossing each other between such adjacent pairs of lead wires to clamp the same in position therebetween. Plural memory planes may be interconnected by the memory lines and the insulated strings, in the form of a ribbon cable. At least some of the memory lines have a surface plating of a magnetic alloy, and the lead wires are insulated wires or tapes.

3,699,649
METHOD OF AND APPARATUS FOR REGULATING THE RESISTANCE OF FILM RESISTORS
Donald A. McWilliams, 1916 North Gilbert, Fullerton, Calif.
Filed Nov. 5, 1969, Ser. No. 874,227
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **18 Claims**

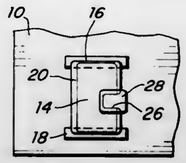


Method and apparatus for automatically trimming film resistors in production quantities. The method includes the steps of placing a substrate with a film resistance to be trimmed on a support beneath a grid mask of desired pattern; extending fiber optics from the grid mask to a fiber optic receiving support; directing a laser beam towards the receiving support; and moving the receiving support relative to the beam in a controlled manner. Apparatus may include a support table for supporting a substrate carrying a film to be trimmed in position to be in contact with a set of electrical probes connected with a sensor circuit for monitoring the actual resistance value of the film. Positioned above the film and substrate is a fixed aperture mask carrying the geometric requirements of the circuit with openings at required precision adjustment points. A fiber optic pipe joins each opening so as to focus light conducted by the fiber optic in the thin film plane of the resistor matrix. The fiber optic light pipes terminate in a common plane to receive a laser beam. The receiving end of the fiber optic light pipes and the laser beam are movable relative to one another so that the beam may be directed to select pipes. The relative movement is controlled dependent upon the desired pattern and actual monitored resistance value.

3,699,650
CO-FIRING PROCESS FOR MAKING A RESISTOR
Theodore F. Cocca, Everett, Mass., assignor to Spectac Incorporated, Bedford, Mass.
Filed Jan. 25, 1971, Ser. No. 109,337
Int. Cl. H01c *7/00*
U.S. Cl. 29—620 **1 Claim**

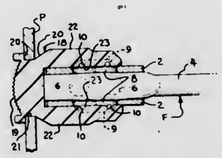
A resistor element and a process for manufacturing it including the steps of applying resistor material to a substrate;

baking and drying the resistor material at approximately 125° centigrade; applying a glass coating on the resistor material;



baking and drying the glass coating at approximately 125° centigrade; and co-firing the material at approximately 840° centigrade to form a resistor element.

3,699,651
TERMINATION METHOD FOR OPTIC MEANS
Herman Rueger, Lancaster, and Joseph Richard Keller, Harrisburg, both of Pa., assignors to AMP Domestic Inc.
Division of Ser. No. 557,797, June 15, 1966, Pat. No. 3,517,981. This application April 9, 1970, Ser. No. 27,015
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 A **2 Claims**

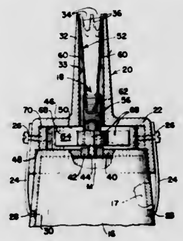


A terminal member is adapted to be secured onto the end of a fiber optic means at a minimum loss of transmission characteristics of the fiber optic means.

ERRATUM

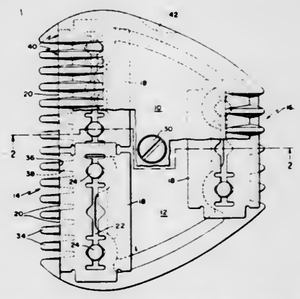
For Class 29—159 R see:
Patent No. 3,700,382

3,699,652
ROTARY HAIR CLIPPER
Kenneth D. Deverman, 333 Old Mill Road, and Charles R. Struck, 125 Arboleda Road, both of Santa Barbara, Calif.
Filed Nov. 9, 1971, Ser. No. 197,093
Int. Cl. B26b *19/18, 19/44*
U.S. Cl. 30—29.5 **5 Claims**



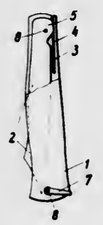
A rotary motor driven hair clipper for removing unwanted hair from the nostrils or ears and embodying a tubular shearing head within which a plurality of cooperating orbiting shearing blades function in close-fitting relationship under the influence of centrifugal force. A radial type fan which rotates with the shearing blades creates a suction which draws the sheared hair residue through the tubular shearing head and deposits the same on the inner surface of a removable filter ring.

3,699,653
HAIR TRIMMER
Oscar Miller, 4 Overlook Park, Newton Center, Mass.
Filed May 18, 1970, Ser. No. 38,412
Int. Cl. B26b *21/12*
U.S. Cl. 30—30 **1 Claim**



This disclosure includes a combination comb and hair trimmer which receives replaceable razor blades. The cutting edge of the trimmer includes a number of teeth defining a comb with the teeth projecting forwardly beyond the transverse cutting edge of the razor blade. The teeth are effective to comb the hair just prior to cutting and also to provide a safety guard for the sharp razor edge. The trimmer is formed from two generally flat and separable parts, each part having a portion of the teeth formed integrally therewith so that when the parts are mated they will define the full teeth of the comb. Each of the parts also include means for supporting the razor blade firmly in position in relation to the comb. The tooth portions in each of the parts are made so that no crevices are presented to the user's hair as the trimmer is advanced through his hair in a cutting stroke, thus avoiding the likelihood of catching the user's hair.

3,699,654
POCKETKNIFE
Ernst Joachim Gerling, Broeshausen Strasse 27, 3650 Solingen-Ohligs, Germany
Filed Jan. 12, 1971, Ser. No. 105,863
Claims priority, application Germany, Oct. 9, 1970, P 20 51 431.2
Int. Cl. B26b *1/02*
U.S. Cl. 30—155 **5 Claims**



A pocketknife having a handle or a haft and a knife blade which can be folded and unfolded from the handle. The handle is formed out of sheet material which is bent to receive the knife blade between two sides when the blade is folded. A por-

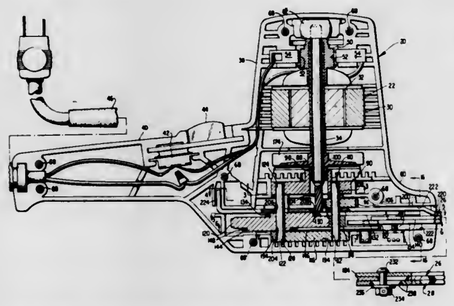
tion of the sheet material forms a spring which engages the knife blade to hold the blade in a fully unfolded or folded position as desired.

3,699,655

POWER DRIVEN HAND TOOL

Robert W. Taylor, Jackson, and Jerry W. Sellers, Lexington, both of Tenn., assignors to Rockwell Manufacturing Co., Pittsburgh, Pa.

Filed Jan. 18, 1971, Ser. No. 107,355
Int. Cl. B26b *19/02*
U.S. Cl. 30—216 12 Claims



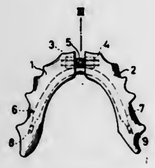
A power driven hedge trimmer having a substantially mirror image pair of cooperating, relatively reciprocable cutter blades and being operatively interchangeable one with the other for use as either the top blade or the bottom blade in a dual cutter blade assembly. The dual cutter blade assembly is supported from a support bar having one end received in a split clam shell housing. The support bar overlies the cutter blade assembly and is supported by the housing by being separably trapped at its one end between the halves of the clam shell housing. Another feature disclosed herein pertains to a pair of axially spaced bearing plates for journalling a motor armature shaft and gear-mounting shafts. The bearing plates are trapped in position between the halves of the split clam shell housing and are constructed in such a manner that forces tending to turn or twist the bearing plates will be about an axis aligning with the rotational axis of the armature shaft.

3,699,656

TEETH REGULATING DEVICE HAVING A U-SHAPED RIGID BRACKET ANCHORED IN THE POSTERIOR PORTIONS OF A PLATE

Rudolf Scheu, 20, Am Burgberg, Letmathe, Germany

Filed July 22, 1969, Ser. No. 846,652
Claims priority, application Germany, Dec. 2, 1965, Sch 38 110
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 E 18 Claims



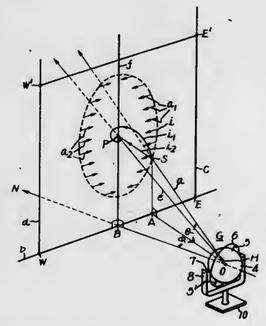
A teeth adjusting device comprising a split expanding plate comprised of two plate parts conforming in shape to a set of teeth, the plate parts being joined together at their anterior ends by adjustable means permitting expansion and contraction. The plate parts are slidably supported against torsion or tilting on a rigid U-shaped bracket having its ends pivotally anchored in the posterior ends of the respective plate parts. The anchored ends may be preformed pins inserted in ends of the U-shaped part of the bracket, and the pins may have enlarged ends.

3,699,657

GYROSCOPIC INSTRUMENT

Shin-ichi Kawada, Yokohama, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Division of Ser. No. 695,127, Jan. 2, 1968, Pat. No. 3,596,366.
This application Aug. 3, 1970, Ser. No. 60,282
Claims priority, application Japan, Jan. 13, 1967, 42/2649
Int. Cl. G01c *19/40*
U.S. Cl. 33—324 4 Claims



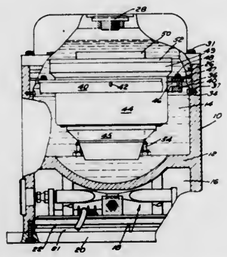
A gyroscopic instrument having a gyro case including a gyro therein and supported with three degrees of freedom and means for applying a control torque to the gyro about a substantially horizontal axis across the gyro-spin axis at right angles thereto in response to a differentiated value of the inclination of the gyro-spin axis.

3,699,658

BINNACLE

Harold S. Burns, Falmouth, Mass., assignor to Electro Marine Corp.

Filed Oct. 30, 1970, Ser. No. 85,357
Int. Cl. G01c *17/08*
U.S. Cl. 33—346 1 Claim



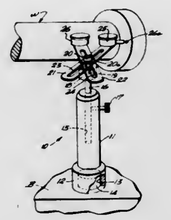
A binnacle is provided for mounting a compass which compass consists of a compass card mounted on a jeweled bearing and within a compass liquid in a first container, which in turn is gimballed in two directions (orthogonally) into the binnacle housing. The binnacle housing for the gimbal rings and the entire gimbal pivot as well as the compass housing is immersed in a compartment filled with a second fluid to provide damping for the compass bowl and the gimbal assembly.

3,699,659

MULTI-INDICATOR SETUP GAUGE

Erhart P. Roeller, 154 Scoles Avenue, Clifton, N.J.

Filed Dec. 18, 1970, Ser. No. 99,592
Int. Cl. A47g *29/00*; G01b *3/22, 5/20*
U.S. Cl. 33—172 R 1 Claim



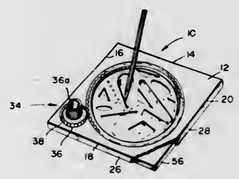
A multi-indicator setup gauge device is described for simultaneously taking two or more indications or measurements during setup or machining operations of a rotary workpiece is described, comprising a vertical support column having magnetic means at its lower end for selective attachment to a metal-working machine frame, and a post member telescopingly vertically adjustably received within the upper end of the support column and including means at its outer end for adjustably securing two or more dial gauge support arms adapted to have attached at their outer ends rotatably adjustable dial gauges or the like sensing devices. The inner ends of the dial gauge support arms are axially and rotatively adjustable with respect to their post member to provide for universal adjustable positioning of the dial gauges in a lateral plane.

3,699,660

DRAWING DEVICE

Herman M. Siegel, Stamford, Conn., assignor to E. S. Lowe Company, Inc., Long Island City, N.Y.

Filed April 2, 1971, Ser. No. 130,676
Int. Cl. B44d *3/30*
U.S. Cl. 33—174 B 6 Claims



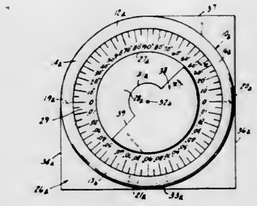
A child's drawing device including a base plate having a central opening. A template having a notched periphery is located and rotatable in said central opening and a gear is received in a gear seat in said base plate. The teeth of the gear are in engagement with the notched periphery of the template. Means is provided for selectively securing said gear in any one of a plurality of orientations and since the gear and template rotate with each other for securing said template in any one of a plurality of orientations. The base plate includes a number of edges and flanges depend from each of said edges in the same direction perpendicularly away from said base plate. During use a pad may be held fixed relative to said base plate and template by being nested within said flanges.

3,699,661

LIQUID LEVEL DEVICE

George W. Baltz, Route 4, Pocahontas, Ark.

Continuation-in-part of Ser. No. 877,404, Nov. 17, 1969. This application July 13, 1970, Ser. No. 54,314
Int. Cl. G01c *9/20*
U.S. Cl. 33—377 3 Claims



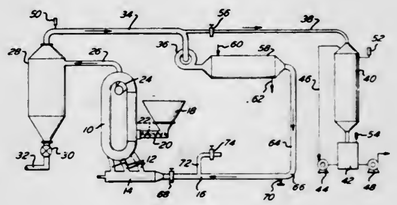
The disclosure includes a liquid level device comprising a circular tube made of clear plastic and partially filled with colored water. The tube is mounted on a protractor for measuring angles relative to the horizontal.

3,699,662

DRYING PROCESS FOR PULVERULENT MATERIAL

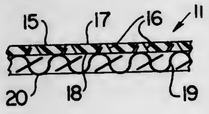
Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Company, Hatfield, Pa.

Continuation of Ser. No. 748,515, July 29, 1968, abandoned.
This application June 18, 1970, Ser. No. 47,232
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 4 Claims



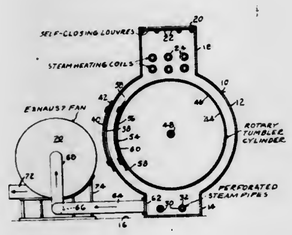
A process for drying wet pulverulent material by utilizing, as the heat-producing medium, the vapor form of the wetting liquid itself at a temperature higher than the deterioration temperature of the material being dried. The system comprises a continuous process whereby the pulverulent material is fluidized and dispersed while being centrifugally propelled through an arcuate mill. The fluidization and dispersion of the particles provides maximum surface exposure thereof to the heat of the liquid vapor. This results in an almost instantaneous flash-drying effect which is endothermic in nature. This endothermic reaction almost instantly lowers the temperature below the deterioration point of the material being dried. In this manner, very high temperatures can be used for rapid drying even though such temperatures may be above the deterioration temperature of the material being dried, while the vapor form of the liquid contaminate, itself, is used both as the source of drying heat and as the motive force.

3,699,663
METHOD AND APPARATUS FOR TREATING SHEET-LIKE MATERIAL WITH FLUID
Robert R. Candor, 5940 Munger Road, Dayton, Ohio, and James T. Candor, 5440 Cynthia Lane, Dayton, Ohio
Filed Jan. 12, 1971, Ser. No. 105,894
Int. Cl. F26b 3/00
U.S. Cl. 34—9 20 Claims



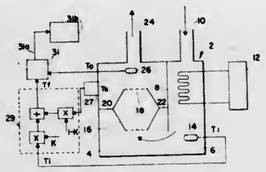
In air-through dryers for wet sheet-like material, such as paper, textiles, etc., the moist sheet-like material is subjected to an air pressure differential across the same so that heated or unheated air is caused to be engaged against one side of the sheet-like material and pass therethrough to the other side thereof to remove moisture from such sheet-like material as the air passes therethrough, such moisture being removed by a pushing out of the moisture by the air and/or by air entrainment. A belt means of this invention comprising a perforated flexible wall carrying felt fabric or other similar material on one side thereof is utilized in a manner to engage against the moist sheet-like material to compress the same during the passage of air through the perforated flexible wall and through the moist sheet-like material to assist in the water removal thereof by tending to cause the retained moisture of the sheet-like material to continuously fill the voids thereof and be more readily swept away by the air flow than when no compressing of the moist sheet-like material takes place.

3,699,664
PROCESS FOR IMPROVING THE BULK AND RESILIENCY OF YARNS
Leslie E. Lunsford, Chattanooga, Tenn.; Clyde A. Simmons, Calhoun, and William L. Evans, Dalton, both of Ga., assignors to Texture-Tex, Incorporated, Dalton, Ga.
Filed July 8, 1970, Ser. No. 53,108
Int. Cl. F26b 5/04
U.S. Cl. 34—16 4 Claims



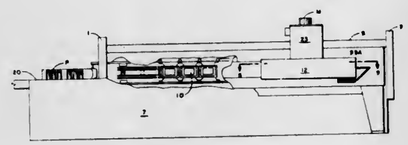
Yarn in skein form is introduced into a tumbler and subjected to the action of steam to increase the bulk of the yarn and render the bulk more uniform from end to end, and at the end of the steaming cycle valves are closed and exhaust fans are activated to remove steam from the chamber. The yarn is then subjected to air currents and dry heat to dry and further develop bulk in the yarn, after which the yarn is preferably subjected to further steam and heat setting steps.

3,699,665
BATCH DRYER CONTROL APPARATUS
Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Dec. 29, 1970, Ser. No. 102,469
Int. Cl. F26b 19/00
U.S. Cl. 34—48 6 Claims



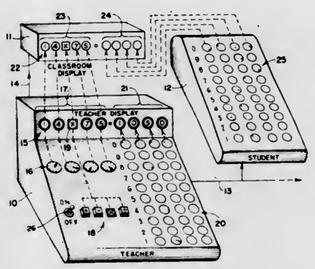
Method and apparatus for controlling the moisture content of a product dried in a batch dryer system wherein the length of the batch drying cycle necessary to result in a predetermined moisture content of the material to be dried is determined by reference to three characteristic temperatures of the process, the temperature of the inlet air, the temperature of the exhaust air and the equilibrium temperature during constant rate evaporation of the solid. The first and third temperature are determined and used to calculate the final value required of the second temperature in order to achieve the proper moisture content of the material. The second temperature is then monitored and the drying cycle is terminated when the final value is reached.

3,699,666
FILM HEATING SYSTEM
Rodney K. Calvert, Dunwoody, and Charles Rabun Landrum, Smyrna, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed April 8, 1971, Ser. No. 132,328
Int. Cl. F26b 21/00
U.S. Cl. 34—54 6 Claims



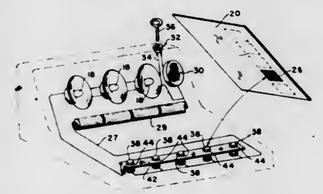
A mechanism includes a series of half-shells pivotally interconnected to form an endless chain of elements and forms a series of half-sections from a film drawn by vacuum into the pivotally interconnected half-shells and such half-sections are secured to another series of similarly formed half-sections to envelop a plurality of primary packages. The pairs of half-sections are then sealed together and tightened about the primary packages and are subsequently severed from each other. In order to condition the film for lining the half-sections, it is necessary to apply heat thereto and such heating is effected by supplying fluid such as heated air at a constant temperature and a at a rate which varies in accordance with variations in the velocity of movement of the film through the heating station, such movement being a function of the speed of operation of the mechanism itself.

3,699,667
ARITHMETIC TEACHING APPARATUS
Peter Devera Gomez, 2036 South "K" Street, Oxnard, Calif.
Filed April 12, 1971, Ser. No. 133,270
Int. Cl. G09b
U.S. Cl. 35—9 B 7 Claims



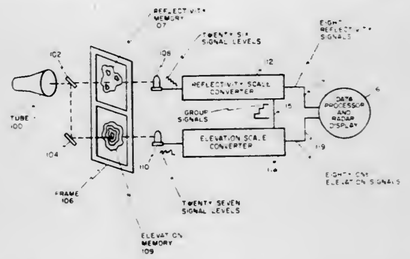
A teacher's unit includes means for displaying numerals defining a selected problem by the teacher. Simultaneously, the numerals defining the problem are displayed on a classroom display unit. The teacher can then display the correct answer on his own display unit but such answer will not appear on the classroom display unit. Each of the students is provided with a student's unit connected to the classroom display means such that the student can attempt to display numerals defining the answer to the problem on the classroom display means. The student is only successful if he selects the correct answer corresponding to the answer set up by the teacher on the teacher's display unit.

3,699,668
INSTRUCTIONAL DEVICE WITH INTERCHANGEABLE INDICIA CARDS
Ian A. Tesar, 53 River Road, Cos Cob, Conn.
Filed Feb. 19, 1971, Ser. No. 116,771
Int. Cl. G09b 7/06
U.S. Cl. 35—9 D 10 Claims



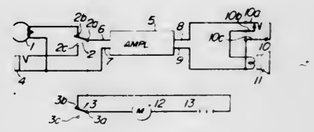
An instructional device or educational toy having a series of question and answer cards that are interchangeable on a portable console having spaced push buttons that selectively actuate an electrical signal system. The cards have a metallic tape or a metallic imprint on the rear, hidden side of the card directly under a corresponding correct push button whereby, when the correct push button is pushed, the signal system is made operative.

3,699,669
RADAR LANDMASS SIMULATOR
Hans H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 14, 1971, Ser. No. 152,846
Int. Cl. G01s 9/00
U.S. Cl. 35—10.4 4 Claims



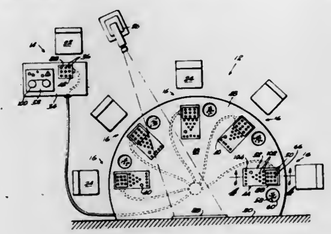
In a radar landmass simulator having one photographic memory for storing elevation information and another photographic memory for storing reflectivity information, surplus reflectivity storage is used to store multiplying factors for expanding the elevation information. The multiplying factors are combined with the elevation information to extend the range of usable elevations. Since a surplus of reflectivity storage is available, the net effect is to increase the available elevation storage by a factor of three or more with no increase in the size of the memories.

3,699,670
REPRODUCING DEVICE
Yukio Takeda, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 28, 1970, Ser. No. 76,161
Claims priority, application Japan, Oct. 2, 1969, 44/79395; Oct. 8, 1969, 44/80945; Oct. 11, 1969, 44/81347; Oct. 15, 1969, 44/82834; Oct. 11, 1969, 44/81348
Int. Cl. G09b 5/04; G11b 15/18, 19/20
U.S. Cl. 35—35 C 11 Claims



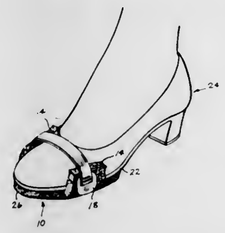
In a record player, magnetic reproducing apparatus, magnetic recording and reproducing apparatus, etc. used for reproducing a sound recorded on a disc record or tape record; the reproducing device comprising a stop motion for temporarily stopping automatically or manually the movement of said recording medium in relation to a converter element, a means interlocked with said stop motion for switching the input of an amplifier between a converter element such as a pick-up cartridge or a magnetic head and a microphone, and a releasing means for de-energizing said stop motion, a teacher's model speech or pronunciation being reproduced by the relative movement of said recording medium and converter element in a reproducing operation, said reproducing operation then being temporarily stopped, which connects a microphone with the amplifier and enables a learner to hear his own speech or pronunciation through headphone, earphone or a speaker, the temporary stoppage of reproduction being released on completion of said hearing of the learner's own voice, thereby to reproduce a teacher's model again.

3,699,671
EDUCATIONAL GAME APPARATUS
Donald James Desmond, 620 Highland Avenue, Woodstock, Ill.
Filed Sept. 9, 1970, Ser. No. 70,234
Int. Cl. G09b 7/06
U.S. Cl. 35—48 R **8 Claims**



Educational apparatus of the question and answer type including a teacher station and a plurality of student stations with the switch means of the student and teacher stations being correspondingly identified by numbers, letters or other symbols. A teacher-student circuit connects like-identified switch means of the teacher station with the switch means of each student station. Each circuit provides means for indicating the correct answer of a multiple choice question, the answer to a mathematical problem or the like: The teacher closes a switch of a circuit representing the right answer to a question and a student, knowing the answer to the question, closes a switch of the same circuit, completing the circuit and emitting a signal indicating a correct answer is given. The apparatus also includes tally means for monitoring the performance of the individual students.

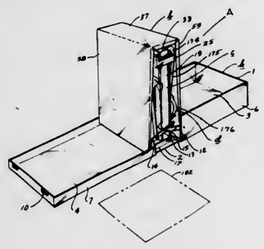
3,699,672
FLOOR CLEANING DEVICE ADAPTED FOR SECUREMENT TO A SHOE
Clarence R. Sims, Route 6, P.O. Box 121, Elkhart, Ind.
Filed Sept. 4, 1970, Ser. No. 69,740
Int. Cl. A43b 3/18
U.S. Cl. 36—7.7 **12 Claims**



A device which may be used for cleaning floors, household appliances, and similar items and which includes an elongated flexible pad of abrasive material adapted to be positioned across the sole of a shoe or the inside surface of the fingers of the hand with the end portions of the pad lapping the opposite side edges of the shoe sole or fingers. A strap having the ends thereof secured to the end portions of the pad is included and is adapted to extend across the upper part of the shoe or the back surface of the fingers so as to hold the pad against the shoe sole or inside surface of the fingers. A pad gripping part is carried at one end of the strap and is releasably interlocked with its engaged pad end portion at a selected location thereon.

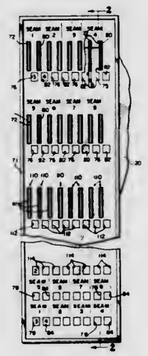
ERRATUM
For Class 37—8 see:
Patent No. 3,700,383

3,699,673
IRONING APPARATUS
Edwin E. Foster; Wilbur A. Foster, and Thomas E. Foster, all of Austin, Tex., assignors to Majik-Ironers, Inc., Austin, Tex.
Filed Dec. 7, 1970, Ser. No. 95,736
Int. Cl. D06f 71/00
U.S. Cl. 38—30 **22 Claims**



An ironing apparatus which compactly and unitarily comprises an iron, an ironing board, support structures for said iron and said ironing board, a casing of relatively small volume for containing the same with frame means fixing said casing to said support structures whereby said apparatus is adapted for operative disposition when said casing is opened to provide a base with said ironing board being in extended condition and said iron disposed thereabove, and inoperative position wherein said apparatus components are fully received within the closed casing for ready transportability.

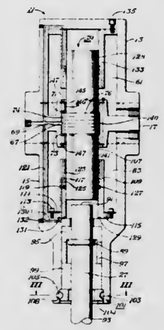
3,699,674
SEAM LOCATOR FOR SIZING DRAPERIES
Howard D. Reed, 4310 Sunrise Road, Indianapolis, Ind.
Filed May 26, 1971, Ser. No. 146,912
Int. Cl. D06c 3/08
U.S. Cl. 38—102.5 **13 Claims**



A drapery sizer and a seam and return or overlap registering system. The drapery sizer includes upper and lower frames carrying upper and lower fingers proportioned and designed to receive therebetween portions, respectively, of the upper and the lower edges of a drapery. The upper fingers define pleat receiving spacers therebetween and the lower fingers are proportioned and designed to engage therebetween lengths of the lower edge portion corresponding respectively to the pleats. Indicia means are placed on the lower fingers to identify positions thereon corresponding respectively to predetermined positions on the pleats. The registering system includes first means for registering the identity of each pleat in which each vertical seam of the drapery appears, second means for registering the position at which such a seam appears in such a pleat, and third means for registering the depth of the return or overlap at the upper edge portion of the drapery together with cooperating control means for determining and registering the amount of return or overlap at the lower edge portion of the drapery.

ERRATA
For Classes 46—136 thru 57—77 see:
Patents Nos. 3,700,384 thru 3,700,391

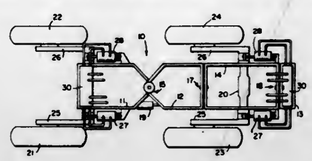
3,699,675
HYDRAULIC IMPACTOR METHODS AND APPARATUS
Edward M. Galle, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed April 5, 1971, Ser. No. 131,123
Int. Cl. F15b 15/18
U.S. Cl. 60—52 HF **25 Claims**



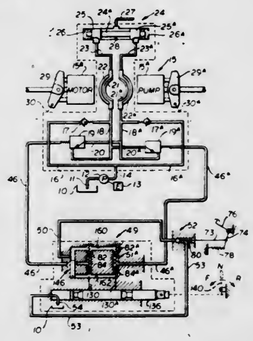
Methods and apparatus for generating two separated fluid flows that each include direct flow components as well as alternating, out-of-phase flow components, such separated flows being transmitted into two separate cavities that have interposed between them a mass capable of periodic movement responsive to the out-of-phase alternating flows. The direct flow component is discharged from each cavity through a passageway having entrances adjacent the ends of an enlarged central portion of the mass to center the mass. In addition, a flow restriction means in a discharge port connected with the passageway maintains a selected pressure level in the system. The sizes of the cavities, the size of the mass and the differential areas of the mass produce a selected ratio of the operating frequency to the natural frequency of the system.

3,699,676
HYDRAULIC SYSTEM
Eugene F. Beck, 29800 Seaview Road, Cazadero, Calif.
Continuation-in-part of Ser. No. 37,702, May 15, 1970. This application Sept. 8, 1971, Ser. No. 178,738
Int. Cl. F15b 11/22
U.S. Cl. 60—52 S **13 Claims**

A hydraulic system comprising a pair of hydraulic motors or rams mechanically and hydraulically connected in opposition to each other and control means for simultaneously operating the rams either in tandem or in opposite sense to each other is disclosed. Various embodiments of the control means are described and a wheeled vehicle embodying the hydraulic system is disclosed.



3,699,677
ANTI-COAST VALVE ADDITION TO THE MANUAL FEATHERING CONTROL FOR A HYDROSTATIC TRANSMISSION
Rodger W. Asmus, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 14,750, Feb. 24, 1970, abandoned, which is a continuation of Ser. No. 731,589, May 23, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,365
Int. Cl. F16d 31/02
U.S. Cl. 60—53 R **23 Claims**

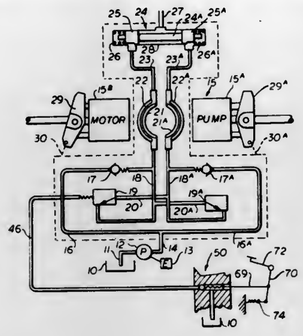


A hydraulic control system for a hydrostatic transmission in which are provided valving means which can be selectively positioned corresponding to forward, neutral or reverse drive of the transmission and including means for dumping excess fluid pressure from the fluid pressure circuit in order to prevent damage to the transmission and under certain conditions to prevent overspeeding of the transmission to further prevent damage. Means are provided whereby fluid flow in the hydrostatic loop can be bypassed from its normal drive path in the transmission, through the valve means provided.

3,699,678
MANUAL DISCONNECT AND FEATHERING CONTROL FOR A HYDROSTATIC TRANSMISSION
William C. Swanson, Clarendon Hills; Donald W. Moyer, and Rodger W. Asmus, both of Downers Grove, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 11,930, Feb. 19, 1970, abandoned, which is a continuation of Ser. No. 731,473, May 23, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,327
Int. Cl. F16h 39/10
U.S. Cl. 60—53 R **10 Claims**

A hydraulic control system for a hydrostatic transmission in which a manual disconnect and feathering valve means are provided in conjunction with high pressure relief valve means to disrupt power flow through the transmission to be used

under emergency conditions, for clutching and feathering the transmission during other conditions. The means provided



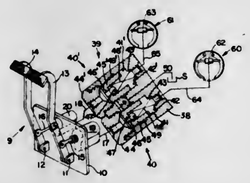
make it possible to shunt fluid pressure from its normal path of flow in the hydrostatic loop so that drive is disengaged in whole or in part.

3,699,679

HYDRAULIC BRAKE ADJUSTOR AND EQUALIZER

John J. Bardos, Westmont, and Joel J. Poplawski, Hickory Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1971, Ser. No. 108,818
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 E **9 Claims**



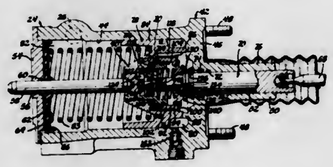
A valve assembly adapted to be interconnected between a pair of master cylinders and a pair of brake units for selectively permitting independent actuation of either of said brake units or simultaneous actuation thereof and having means for automatically adjusting the brake units.

3,699,680

HYDRAULIC POWER BRAKE BOOSTER AND OPEN CENTER CONTROL VALVE THEREFOR

Ronald L. Shellhause, 519 Bennert Drive, Vandalia, Ohio

Filed Sept. 29, 1970, Ser. No. 76,473
Int. Cl. F15b 7/00, 11/08
U.S. Cl. 60—54.6 P **1 Claim**



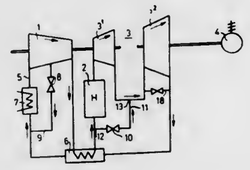
A hydraulic power brake booster powered by power steering gear pump pressure and utilizing an open-center valve so that fluid flows through the booster without pressure reduction when the booster is not activated. The valve assembly includes a radially floating valve seat which provides for self-centering, permits a valve separation operation to pass viscous cold hydraulic fluid or any elements which may tend to overly restrict the valve. It also includes a valve face design providing entrance and exit angles defining a venturi-type passage conducive to laminar flow with consequent reduction in valve noise, and has a hydraulic reaction mechanism which includes an arrangement for supported line pressure.

3,699,681

LOAD CONTROL FOR GAS TURBINE PLANT

Hans Ulrich Frutschi, Zurich, Switzerland, assignor to Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft, Zurich, Switzerland

Filed July 6, 1971, Ser. No. 159,650
Claims priority, application Switzerland, July 9, 1970, 10389/70; Germany, July 17, 1970, P 20 36 381.9
Int. Cl. F01k 3/18
U.S. Cl. 60—59 T **7 Claims**



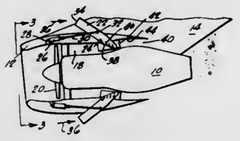
In a load regulating device for a gas turbine plant, which comprises in a flow-path for the working medium a compressor, heater and turbine in succession, the improvement, that at least one by-pass conduit having a flow-regulating element is provided, which by-pass conduit branches off the flow path at a point situated in the direction of flow of the working medium after a stage group of the compressor and in front of the heater, and opens into the flow path at a point situated between two stage groups of the turbine; this load-regulating device allowing good part-load efficiency.

3,699,682

TURBOFAN ENGINE THRUST REVERSER

Harold F. Kleckner, Los Angeles, Calif., assignor to McDonnell Douglas Coporation

Filed Jan. 4, 1971, Ser. No. 103,577
Int. Cl. F02k 3/02
U.S. Cl. 60—226 A **7 Claims**



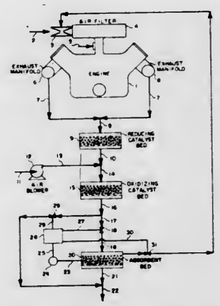
A turbofan engine thrust reverser comprising a plurality of pivotally mounted duct members forming an integral part of the engine cowl. These members redirect the exhaust air of the fan forward and outward at such velocity and angle that the suction of the engine inlet is insufficient to cause reingestion.

3,699,683

ENGINE EXHAUST EMISSION CONTROL SYSTEM

John F. Tourtellotte, Westfield; John S. Negra, Plainfield; Abe Warshaw, Matawan, and John F. Villiers-Fisher, Kendall Park, all of N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed April 5, 1971, Ser. No. 131,279
Int. Cl. F01n 3/14, 3/16; F02b 75/10
U.S. Cl. 60—274 **11 Claims**



A system for the prevention of hydrocarbon emissions from engines during start up is provided, in which a cold engine generates an exhaust gas rich in unburned or thermally degraded hydrocarbons. The exhaust gas is passed through a hydrocarbon absorbent bed prior to atmospheric discharge, so that hydrocarbon vapor is absorbed in the bed. When the engine and exhaust gas are hot, and hydrocarbon emission low, most of the exhaust gas is discharged directly to atmosphere and the absorbent bed is regenerated by passing a small stream of hot exhaust gas through the bed. The resulting gaseous mixture of exhaust gas plug desorbed hydrocarbon vapor is recycled to the engine.

ERRATUM

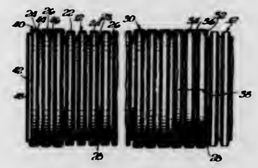
For Class 60-—214 see:
Patent No. 3,700,393

3,699,684

CORRUGATED DRAINAGE TUBES AND FITTINGS

Marty E. Sixt, Iowa City, Iowa, assignor to Advanced Drainage Systems, Inc., Waterville, Ohio

Continuation of Ser. No. 819,339, April 25, 1969, Continuation of Ser. No. 663,051, Aug. 24, 1967. This application June 30, 1970, Ser. No. 56,098
Int. Cl. E02b 13/00; F16l 11/04
U.S. Cl. 61—11 **13 Claims**



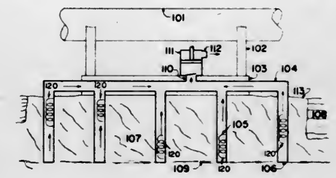
Flexible corrugated drainage tubes having alternating annular peaks and valleys and a plurality of slotted openings arranged transversely to the the longitudinal axis of the tubes. The fittings include flexible couplings for connecting the ends of corrugated tubes together and end plugs for capping the ends of tubes.

3,699,685

PERMAFROST STABILIZATION FOR BEARING HEAVY STRUCTURES

J. O. Scott, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 30, 1970, Ser. No. 76,802
Int. Cl. E02d 3/10
U.S. Cl. 61—36 A **10 Claims**



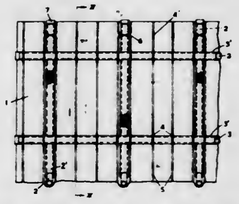
A process and apparatus are disclosed for improving load bearing capability of permafrost for mounting structures in arctic regions. The structures are loaded upon or within the permafrosted soil with means for melting the permafrost and means for removing water beneath the structures so that water accumulated from the melted permafrost may be drawn from below the structure and removed to the surface.

3,699,686

BOTTOM AND BANK FACING MATTRESS

Jan Gerrit De Winter, Enschede, Netherlands, assignor to Nicolon N.V., Enschede, Netherlands

Filed Nov. 5, 1969, Ser. No. 874,318
Claims priority, application Netherlands, Nov. 12, 1968, 6816093
Int. Cl. E02b 3/12
U.S. Cl. 61—38 **9 Claims**



A mattress for use in building bottom and bank revetments consists of a woven mat of plastics material to which tubular structures of plastics material are secured as substitutes for conventional fascines, said tubular structures being adapted to be filled with ballast material.

3,699,687

ARRANGEMENTS FOR ANCHORING SUPPORTING PINS OR BOLTS

Andre Bourland, Dijon, France, assignor to Societe Anonyme D'Exploits Industriels-Celtite

Filed Feb. 5, 1970, Ser. No. 8,914
Claims priority, application France, Feb. 2, 1969, 6903015; Nov. 27. 1969. 6940901
Int. Cl. E21d 20/02
U.S. Cl. 61—45 B **9 Claims**



A device is provided for use in anchoring a support pin in a hole adapted to accommodate the same. The device com-

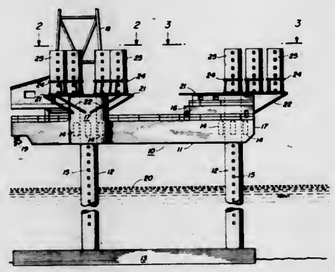
prises a hollow elongated element of open work construction and made of a friable material. This element contains a charge which is adapted to protrude through the open work construction when subjected to the pressure of a pin inserted in the aforesaid hole whereafter the friable material of the open work construction fragments during further insertion of the pin and becomes homogeneously distributed into the charge. A device is provided to brace the element in the hole adapted to receive the pin.

3,699,688

APPARATUS AND METHOD FOR REMOVING AND/OR ADDING COLUMN SECTIONS TO A COLUMN OF A MARINE STRUCTURE

John C. Estes, Beaumont, Tex., assignor to Bethlehem Steel Corporation

Filed Nov. 25, 1970, Ser. No. 93,301
Int. Cl. E02b *17/00*; B23p *19/00*
U.S. Cl. 61—46.5 **15 Claims**



A method and apparatus for removing and/or adding column sections to a column of a marine structure, such as a mobile drilling platform, employs a carriage for supporting a column section slidably mounted on the marine structure platform and jacking means for moving the platform and column relative to each other. When a column section is to be added to the column, the carriage with a column section supported thereon is positioned above the column. The jacking means is then operated to bring the top of the column into contact with the bottom of the carriage supported column section. The column section is then welded to the column and detached from the carriage. When a column section is to be removed from the column, a carriage is positioned above the column. The jacking means is then operated to bring the column within the carriage, and the column is secured to the carriage. A portion of the column is then severed from the column.

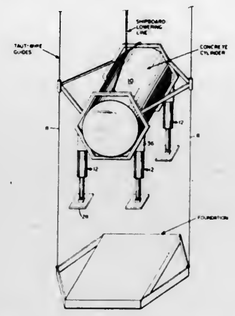
3,699,689

UNDERWATER SHOCK-ABSORBING AND DECELERATION DEVICE

Harvey H. Haynes, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 26, 1971, Ser. No. 119,272
Int. Cl. B63c *11/36*; B63q *8/00*; E05f *3/04*
U.S. Cl. 61—69 **5 Claims**

A device for cushioning the landing impact shock of a heavy underwater object during installation on the ocean bottom. It employs a set of telescoping leg assemblies each having an air entrapping cylinder and a dash-pot like piston moveable



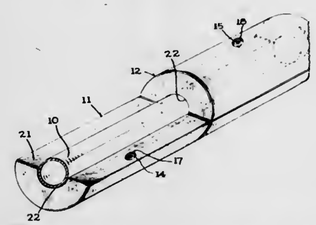
therein. Shock absorption is achieved through air pockets formed at the top of each piston.

3,699,690

METHOD OF LAYING PIPELINE AND MEANS THEREOF

Michael Watter, deceased, late of 1924 Rittenhouse Square, Philadelphia, Pa. (by Doris Watter, sole executrix)

Filed May 28, 1971, Ser. No. 147,959
Int. Cl. F16l *1/00*, *3/00*
U.S. Cl. 61—72.1 **8 Claims**



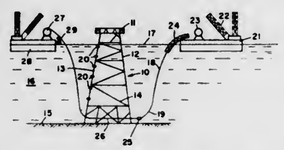
A method of supporting oil pipe beneath the ground by pneumatic inflated sections. The pneumatic inflated sections may be half sections shaped to receive the pipe.

3,699,691

METHOD FOR CONNECTING FLOWLINES TO A PLATFORM

Carl G. Langner, Gainesville, Fla., and Robert C. Visser, Calgary, Alberta, Canada, assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,422
Int. Cl. F16l *1/00*; B02b *17/00*
U.S. Cl. 61—72.3 **9 Claims**



A method for connecting an underwater flowline having a substantial portion thereof lying along the floor of a body of water to an offshore platform structure positioned on the floor. One of the natural sag lines of the flowline is determined and a plurality of flowline clamps (with locks) are installed on

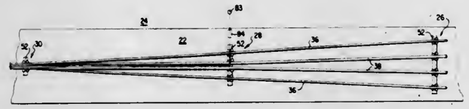
the platform structure substantially conforming to the predetermined natural sag line in such a manner that a line drawn through the locks assumes a shape related to substantially the predetermined natural sag line. The flowline is pulled into engagement with the locks and secured thereto.

3,699,692

METHOD AND APPARATUS FOR LAYING PIPELINES GROUPED IN A BUNDLE

Leif H. Smith, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed July 2, 1971, Ser. No. 159,343
Int. Cl. B63b *35/04*; F16l *1/00*; B65b *13/00*
U.S. Cl. 61—72.3 **32 Claims**



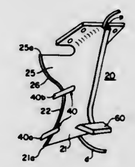
A pipeline laying operation wherein a continuous pipeline bundle comprised of a plurality of conduits is payed out from a floating vessel onto a submerged surface under the control of a tensioned flexible cable. The conduits are strapped to an alignment and spacer member at a plurality of longitudinally spaced bundling zones. The cable, the spacer and the pipeline bundle are placed in a force transmitting relationship, i.e., the weight of the pipeline bundle is transmitted to the cable at the spacer locations. Tension is applied to the cable at the floating vessel, to react the applied pipeline bundle weights at the spacers, maintaining the pipeline bundle conforming to a chosen configuration, which will keep the pipe stresses within a given level. Feed paths, defined by roller assemblies, for each of the conduits on the vessel maintain the end portions of the conduits laterally spaced and induce convergence of the conduits toward a bundling station.

3,699,693

APPARATUS FOR LAYING UNDERGROUND CABLE

Arthur Nelkin, Pittsburgh, and Robert H. Whittaker, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1970, Ser. No. 59,881
Int. Cl. F16l *1/00*; E02f *5/02*; A01h *3/64*
U.S. Cl. 61—72.6 **8 Claims**



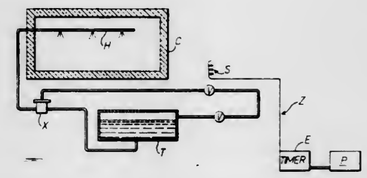
The invention relates to a vibrating plow blade assembly employing laterally protruding auxiliary blades for cultivating soil beneath the ground surface to form an underground cable channel having non-parallel side walls which exert compacting forces on the cultivated soil about a buried cable in response to compaction activity. A thin coulter blade is used to neatly sever the ground surface to maintain surface disturbance at a minimum.

3,699,694

LIQUID NITROGEN REFRIGERATION SYSTEM

Kenneth Calvert Hales, and Gerald Robin Scrine, both of Cambridge, England, assignors to Shipowners Refrigerated Cargo Research Association, Cambridge, England

Filed Oct. 26, 1970, Ser. No. 83,723
Claims priority, application Great Britain, Oct. 27, 1969, 52,548/69
Int. Cl. F25b *19/00*
U.S. Cl. 62—158 **3 Claims**



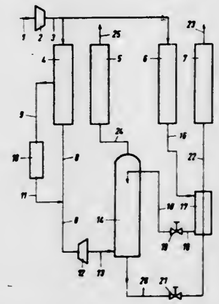
The invention relates to a refrigeration system for a cargo container and a method of refrigerating the container in which the interior of the container is connected with a reservoir of liquid nitrogen, a control valve is provided between the container and reservoir to control admittance of nitrogen to the container and the control valve is caused to be opened and closed for predetermined time intervals. The control valve is opened and closed automatically by a timing device, which is preferably powered by pressure from within the reservoir of nitrogen. However, the timing device may be of any, known type.

3,699,695

PROCESS OF SEPARATING AIR INTO AN OXYGEN-RICH FRACTION SUITABLE FOR BLAST FURNACE OPERATION

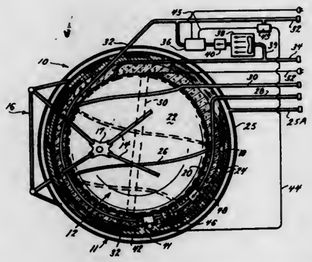
Rudolf Becker, Munich-Solln, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Continuation of Ser. No. 590,391, Oct. 28, 1966, abandoned. This application July 22, 1969, Ser. No. 849,556
Claims priority, application Germany, Oct. 29, 1965, L 52016
Int. Cl. F25j *3/00*
U.S. Cl. 62—13 **6 Claims**



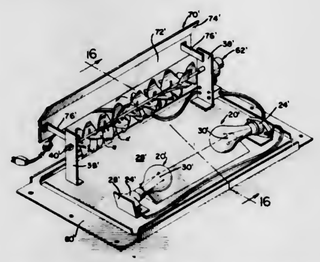
In a process for separating air into an oxygen rich fraction. The gas to be separated is compressed to a high pressure and cooled to almost the liquefaction temperature. A portion of the cooled gas is liquefied and passed through a rectification column. Another portion of the resultant cooled gas is heated and engine expanded and then passed to the rectification column to be placed in heat transfer relationship with the liquid portion.

3,699,696
CRYOGENIC STORAGE AND EXPULSION MEANS
Ronald L. Rhoton, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed April 20, 1970, Ser. No. 29,856
Int. Cl. F17c 7/02
U.S. Cl. 62—45 17 Claims



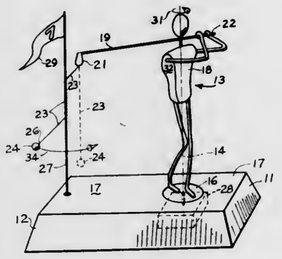
A system for storing cryogen in either a super-critical or a two phase state and for delivering the cryogen therefrom as desired. The system employs a storage vessel with external cooling coils which keep the storage vessel cold either by having isenthalpically expanded cryogen from the vessel vent therethrough when the cryogen is being stored in its super-critical state and/or by having a secondary cooling fluid pumped therethrough especially when the cryogen is being stored in its two phase state. The system also has means to prevent stratification of the super-critical cryogen and to pump heat into the vessel to maintain the super-critical state of the cryogen even when cryogen delivery is at relatively high rates of flow.

3,699,697
ILLUMINATING DISPLAY FOR SIMULATING A FIRE
Claude Arthur Painton, Solihull, England, assignor to United Gas Industries Limited, London, England
Filed Jan. 19, 1970, Ser. No. 3,819
Claims priority, application Great Britain, Sept. 21, 1965, 40,198/65; Jan. 31, 1966, 4,136/66
Int. Cl. G09f 13/36
U.S. Cl. 40—106.53 3 Claims



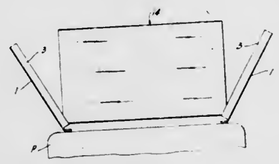
The effect of a wood or similar fire in a fireplace is simulated by the combination of an incandescent light bulb situated to illuminate discrete and separate areas of a rotatable blade or paddle assembly. The blade or paddle assembly is rotated and located behind the incandescent light source and both are enclosed within a shell having the shape, configuration and appearance of a bed of coals, a log fire or the like. The incandescent source or sources are mounted behind opaque portions of the shell and the blade or paddle assembly is rotated and is so constructed as to effect reflection of the incandescent source in such fashion that the reflected light on the interior of the shell moves upwardly and gives the appearance of flickering, thereby to simulate flames.

3,699,698
ANIMATED DISPLAY DEVICE AND METHOD
Peter D. Shiu, 1935 Hopkins Street, Berkeley, Calif.
Filed March 24, 1971, Ser. No. 127,678
Int. Cl. G09f 19/10
U.S. Cl. 40—106.35 10 Claims



A method and apparatus for animating a display device including a figure mounted for rotation on a support for the device and having a laterally extending element from the body of the figure with a flexible tendon secured thereto and an action element secured to the free end of the tendon is disclosed. Additionally, a stationary reaction rod is positioned adjacent the figure, and figure driving means is connected to rotate the figure. On rotation, the weighted action element swings outward under centrifugal force, and the figure dwells or remains in a stationary position facing a predetermined side of the display when the tendon engages the reaction rod winds, unwinds and swings free thereof in the manner of an escapement mechanism. The reaction rod, weighted element and preferably the projecting element are all formed as objects relating to an activity being simulated by the figure. Various constructions of the driving means are shown.

3,699,699
DISPLAY DEVICE
Ronald L. Bramble, Milwaukee, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.
Filed July 12, 1971, Ser. No. 161,639
Int. Cl. G09f 1/00
U.S. Cl. 40—125 H 4 Claims



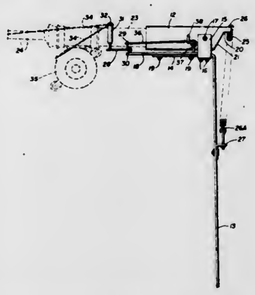
A display device which can be stored in a substantially flat manner and which can be easily assembled into a three dimensional display. Certain parts of the device are formed from molded plastic and have integral hinges which can be repeatedly flexed without weakening them.

3,699,700
MINNOW SEINE POLES
Earl G. Kinsell, P.O. Box 164, Millsboro, Pa.
Filed Dec. 31, 1970, Ser. No. 103,139
Int. Cl. A01k 73/12
U.S. Cl. 43—14 2 Claims



A seine net is spread between two spaced parallel poles whose rearward ends provide appropriate handles. The marginal side portions of the net are provided with an attached line which is releasably connected to the poles by resilient adapter clips.

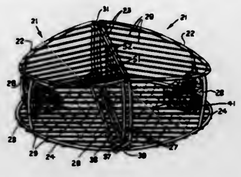
3,699,701
FISH HOOK SETTERS
Louis L. Jacobs, 1720 Pearl Street, Denver, Colo.
Filed Aug. 2, 1971, Ser. No. 167,960
Int. Cl. A01k 97/00
U.S. Cl. 43—15 9 Claims



A fish hook setter comprising a support and a pole holder pivotally mounted thereon with a tension spring secured to the rear end of the pole holder and to a bracket on the support. A trigger having a line holder thereon is pivotally secured to the support forwardly of the pole holder and is held in operative position by a lever which slidably engages the pole holder. When the trigger is pivoted by a pull on the line, it is disengaged from the lever and the spring jerks the pole holder with the fishing rod therein sharply upwardly to set the hook in the fish's mouth.

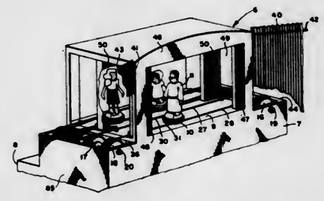
3,699,702
BOTTOM OPENING SHELLFISH TRAP
Richard F. Lankenau, 1207 Bonita Avenue, Mountain View, Calif.
Filed Feb. 8, 1971, Ser. No. 113,511
Int. Cl. A01k 69/08
U.S. Cl. 43—100 4 Claims

Shellfish trap is made of two substantially semi-cylindrical halves with the tops sloping downwardly-outwardly from the center and the sides outwardly curved so that the trap settles in the water in upright position. The halves are hinged together at the top by removable hinges and latched together



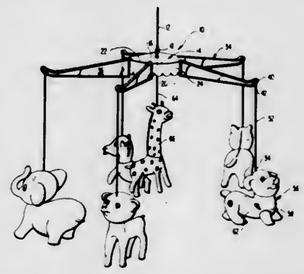
at the bottom. The trap may be dumped by merely unlatching the bottom, allowing the two halves to pivot apart. For storage, the traps nest together in a stack.

3,699,703
PUPPET THEATER
Thomas C. Biecker, John Carroll University, Cleveland, Ohio
Filed May 20, 1970, Ser. No. 38,919
Int. Cl. A63h 33/00
U.S. Cl. 46—13 19 Claims



A puppet theater having a stage on which dolls and other figures are movable. The dolls are each frictionaly mounted in upstanding relation on a circular base which is slidable on the stage. A continuous cable is reeved around each doll base and pulleys rotatably mounted adjacent the lateral sides of the stage. The pulleys are rotated and used to move the cable and manipulate each attached base and doll on the stage.

3,699,704
AMUSEMENT AND EXERCISE DEVICE
Albert S. Hakim, P.O. Box 4826, Monroe, La.
Filed June 3, 1971, Ser. No. 149,623
Int. Cl. A63h 3/50
U.S. Cl. 46—32 4 Claims



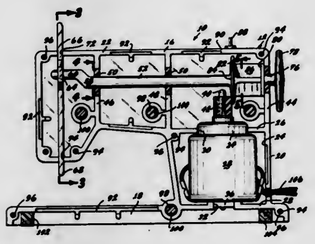
Suspended toys for infants are formed of flexible material and incorporate sound emission means operated in response to manipulation, as by squeezing, of the toys. One form of the invention comprehends the suspension of the squeeze toys on elastic cords, and the employment of a demountable assembly which supports the toys in the fashion of a mobile. The suspen-

sion assembly includes a hub with a series of T-form slots about its periphery, and a spoke with an internal vertical wall and a vertical connector, said wall and connector being spanned by a web and having a top extension which seats on the hub with the connector and web within the slot. A wedge feature maintains the spoke frictionally in place.

3,699,705
SIMULATED SEWING MACHINE TOY

Charles D. Clarke, Redondo Beach, and Donald C. Hartling, Garden Grove, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 15, 1971, Ser. No. 198,903
Int. Cl. A63h *33/30*
U.S. Cl. 46—39 **2 Claims**

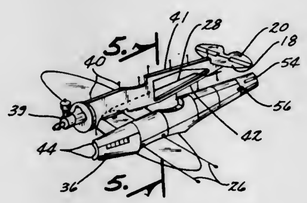


Horizontal shaft with crank on one end and driving disc on other end is rotated by vertical motor output shaft engaging face of disc while crank rides in needle slot to reciprocate simulated, flat plastic needle having blunt tip.

3,699,706
MODEL AIRPLANE AND METHOD OF ASSEMBLING SAME

Glen Sigafoose, 401 South Front, Montezuma, Iowa

Filed Dec. 4, 1970, Ser. No. 95,059
Int. Cl. A63h *27/00*
U.S. Cl. 46—78 **7 Claims**

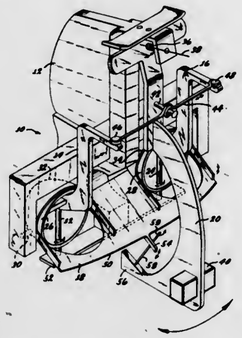


A model airplane including a profile fuselage of flat balsa wood and including a balsa wood tail assembly and wing. Convex outwardly fuselage half sections of sheet-like plastic material are secured to the profile fuselage by cement being placed along the top and bottom longitudinal edges of the profile fuselage for securing the longitudinal edges of the fuselage half sections. The profile fuselage includes a cutout adjacent the wing in which a bellcrank is positioned connected to a pushrod extending rearwardly along the profile fuselage and through an opening formed in the profile fuselage. The rear end of the pushrod extends through an opening in the fuselage half section and is connected to the elevator. Leadout control lines extend from the bellcrank along the wing through the fuselage half section. In assembling the fuselage half sections to the profile fuselage a series of pins are placed along the top and bottom longitudinal edges of the profile fuselage and a first fuselage half section is secured to the profile fuselage in engagement with the pins. Upon a bond being formed the pins are removed and the other fuselage half section is cemented in place.

3,699,707
DOLL WITH BLINKING EYELIDS MOVED BY A PENDULUM

Jurgis Sapkus, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 23, 1971, Ser. No. 173,886
Int. Cl. A63h *3/38, 3/40*
U.S. Cl. 46—166 **7 Claims**



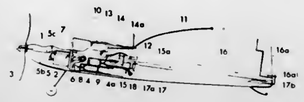
A doll with eyes that not only move from side to side, but which also blink rapidly but occasionally and close when the doll is laid horizontally. The doll includes an eyelid lever which can pivot up and down to cover and uncover the eyes, and a pendulum which swings laterally. The pendulum carries a resilient wire that can brush against a projection on the eyelid lever to quickly pivot it to cover the eyes, and then quickly release from it to allow the eyes to be uncovered. The eyelid lever is weighted so that the eyelids thereon cover the eyes when the doll is laid horizontally and face up.

3,699,708
ELECTRIC-POWERED MODEL AIRPLANE

Kenichi Mabuchi, Tokyo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1971, Ser. No. 203,516
Claims priority, application Japan, Dec. 2, 1970, 45/106019; Oct. 26, 1971, 46/84305
Int. Cl. A63h *27/00, 33/26*
U.S. Cl. 46—243 AV **6 Claims**

A novel electric-powered model airplane is for the first time disclosed which has an electric motor for driving a propeller and a specific dry cell mounted thereon, said dry cell being of a high capacity, small size and light weight and, if desired, encased in a case with a plurality of openings or fins for heat radiation. The model airplane may be provided with a remote
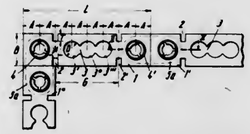


control device, if desired. Thus, the present model airplane can be simply operated and affords enjoyment to adults as well as children.

3,699,709
RODS HAVING MEANS FOR DIRECT CROSS-CONNECTING, COMBINED WITH SEPARATE ELEMENTS FOR CONNECTING SAME

Otto Schmidt, Schwindstrasse 16, Hamburg, Germany

Filed Nov. 15, 1971, Ser. No. 198,560
Claims priority, application Germany, Nov. 17, 1970, P 20 56 384.2; Oct. 21, 1971, P 21 52 341.1
Int. Cl. A63h *33/08, 33/10*
U.S. Cl. 46—29 **5 Claims**

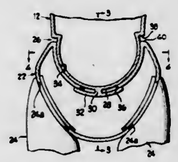


A structural toy which comprises a plurality of flat rods equipped with grooves along the longitudinal edges having widths corresponding with the thickness of the flat rods and depths corresponding with a quarter of their width. The flat rods have first perforations disposed along their longitudinal axis, adapted for receiving the ends of crosswise connectable further flat rods. The first perforations comprise three at least partly circular sections passing into each other and having diameters and center spacings corresponding with one half of the width of the flat rods. The flat rods have circular second perforations at a distance from their ends corresponding with one half of the width of the flat rods which have a diameter corresponding with one half of the width of the flat rods for the reception of coupling members, and the coupling members have at least one projection adjusted to the diameter of the first and second perforations in the flat rods.

3,699,710
DOLL JOINT

Marvin I. Glass, and Rouben T. Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates

Filed March 31, 1971, Ser. No. 129,761
Int. Cl. A63h *3/36*
U.S. Cl. 46—162 **3 Claims**



A toy doll having upper and lower torso components movably related to each other and characterized by the connection of the two-torso components together by means which permits rotational movement of one torso component relative to the other as well as a bowing or dipping movement simultaneous with the rotational movement.

3,699,711
TRACKED VEHICLE TOY

Francis T. Coffey, Sr., 430 South Fremont Avenue, Alhambra, Calif.

Filed Feb. 3, 1972, Ser. No. 223,175
Int. Cl. A63h *19/36*
U.S. Cl. 46—216 **8 Claims**



A vehicular toy comprising one or more concentric carrier rings, each ring having a pair of radially spaced, concentric, upwardly disposed tracks and an annular upwardly opening channel between the tracks, an annular tow ring in the channel of each ring, each tow ring having circumferentially spaced upwardly projecting tow hooks and an annular series of gear-engaging parts, a drive gear engaging the gear-engaging parts on the tow rings, a prime mover driving the gear and four-wheeled toy vehicles engageable on each carrier ring with the wheels engaged on the tracks thereof and having a downwardly projecting tow pin projecting into the channel between the tracks and engaged by a tow hook.

3,699,712
DOLL POSING STAND

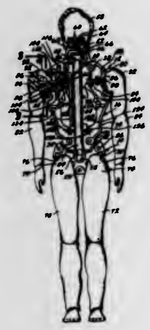
Elliot Handler, Los Angeles; Noel F. Bensley, Santa Monica; Armando J. Garcia, Sylmar, and Richard L. May, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 1, 1971, Ser. No. 111,342
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **8 Claims**



A simple doll stand for the rapid mounting and removal of a doll, which holds a doll in a natural manner and which enables a child to easily rock the doll to make it shake in dance-like movements. The stand includes a disc-like base with ribs extending from a lower face to rockingly support the base on a flat surface. A pair of tubular foot-holders extend from the upper face of the base, each tubular holder having a slot along the front so that a doll's leg can be held within the slotted tube with the foot of the doll protruding through the slot. The tubular foot-holders are detachable and can be mounted to extend from the same side of the base as the ribs, so that the stand does not rock.

3,699,713
APPENDAGE ANIMATING MEANS FOR FIGURE TOYS
Jurgis Sapkus, Manhattan Beach; J. Stephen Lewis, Pacific Palisades, and Robert N. Sporrong, Hermosa Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 17, 1971, Ser. No. 199,602
Int. Cl. A63h 11/00
U.S. Cl. 46—119 5 Claims



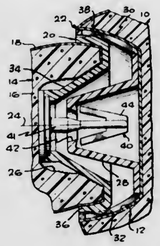
A figure toy appendage, such as an arm, is rotatably connected to a pinion gear having a hollow hub frictionally engaged by an appendage portion so that a rack, which is swingably mounted in the figure toy body in driving engagement with the pinion, may be used to swing the appendage by rotating the pinion while leaving the appendage free to be manually swung to different posed positions by overcoming the frictional drag between the hollow hub and the hub-engaging appendage portion.

3,699,714
DOLL HAVING A SUBSTANTIALLY SEAMLESS FOAMED INTEGRAL TORSO AND NECK PORTION
Richard Bruce Johnson, Centerear, N.Y., and George Winn, Livingston, N.J., assignors to Jacob J. Rosen, New York, N.Y.
Division of Ser. No. 806,180, March 11, 1969. This application March 1, 1972, Ser. No. 230,967
Int. Cl. A63h 9/00
U.S. Cl. 46—156 11 Claims



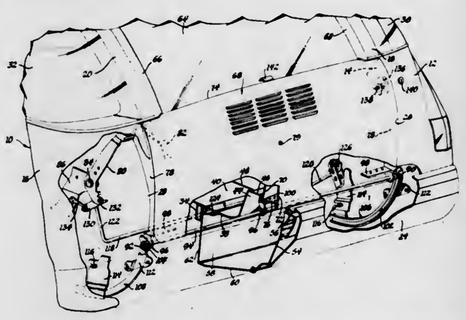
Methods and means for producing foamed articles such as doll bodies which are substantially seamless. A limited internal discontinuity is defined during the foaming operation, and stripping of the article through a limited opening in a seamless mold part is accomplished by urging portions of the foamed article into the internal discontinuity. Pressurized gas is introduced between the article-forming surfaces of the mold cavity and the foamed article to facilitate the stripping operation.

3,699,715
FLOPPY FOAM DOLL
J. Stephen Lewis, Pacific Palisades; Jurgis Sapkus, Manhattan Beach; Earl O. Antell, Gardena; George E. Robson, Torrance, and William R. Yarbrough, Cerritos, all of Calif.
Filed Jan. 11, 1971, Ser. No. 105,295
Int. Cl. A63h 3/46
U.S. Cl. 46—163 9 Claims



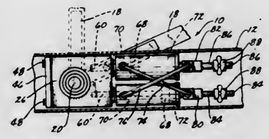
A doll constructed with a foam torso and appendages, and with joints that permit free appendage movements within a limited range. Each appendage is formed of foam which is completely covered by a water-proof skin except at the inner end which lies near the torso, and each joint includes a coupling member that covers the inner appendage end and is sealed to the skin surrounding it to prevent entrance of water into the appendage. Several coupling members are mounted on the torso for joining to other coupling members on the appendage. In one design, each torso-mounted coupling member has several slots which receive detents on an appendage-mounted coupling member to permit limited moved of the appendage, although the appendage may be forced to turn so that the detents move out of one slot and into an adjacent slot.

3,699,716
CLOSURE MOUNTING MEANS
Bert R. Wanlass, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 16, 1970, Ser. No. 72,685
Int. Cl. E06b 3/44
U.S. Cl. 49—40 4 Claims



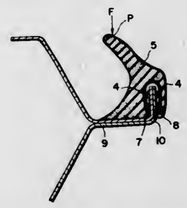
A control arm pivotally supported on a vehicle body has one end affixed to a closure asymmetrically with respect to the center of gravity of the closure and supports the latter on the vehicle body for generally vertical bodily shiftable movement between open and closed positions relative to an opening in the vehicle body. The control arm is indirectly rigidified by movement synchronizing means which equalize vertical movement of opposite edges of the closure to prevent tilting of the closure and twisting of the control arm.

3,699,717
AIR DOOR OPERATOR
Lloyd C. Hedrick, 912 Washington, Pleasantville, Iowa
Filed Sept. 9, 1970, Ser. No. 70,848
Int. Cl. E05f 13/00, 15/04
U.S. Cl. 49—264 9 Claims



A pivotal door is powered towards both open and closed positions by a shaft connected to a gear engaging a pair of rack members connected to double acting air cylinders inturn connected to a solenoid valve which is responsive to switches in the door carpet such that each of the air cylinders assist in both opening and closing the door. The operation of the door operator is buffered by the metering of oil between cylinders for the rack members having pistons thereon.

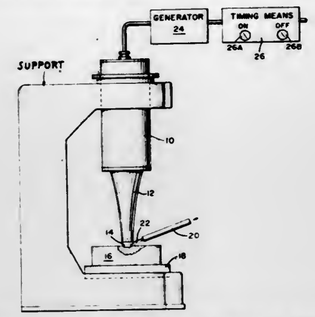
3,699,718
PACKING STRIP STRUCTURE
Yoh Kimura, Hiroshima-ken, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima-ken, Japan
Filed Jan. 18, 1971, Ser. No. 107,370
Claims priority, application Japan, Jan. 22, 1970, 45/5530
Int. Cl. E06b 7/16
U.S. Cl. 49—491 10 Claims



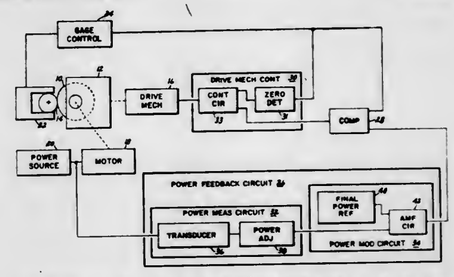
A packing strip structure is provided in which an opening of a packing member receives at least one mounting member comprising a plurality of tongue-bearing rectangular-sections connected together and bent generally into a U-shape. The mounting member is positioned and arranged so that the packing strip structure can bend freely laterally and longitudinally and otherwise, in various arcs and in various ways, to achieve maximum conformity and to adaptability for use with various edge flanges or other parts on which the structure is to be mounted.

3,699,719
ULTRASONIC MACHINING
Nicholas Rozdilsky, 92 Middle River Road, Danbury, and Hans J. Wilkens, Cold Spring Drive, Fairfield, both of Conn.
Filed Jan. 25, 1971, Ser. No. 109,452
Int. Cl. B24b 1/00, 31/00
U.S. Cl. 51—59 SS 8 Claims

The speed of ultrasonic abrasive slurry machining is improved by providing alternate periods during which the vibrating tool while urged against the workpiece is active and inactive.



3,699,720
ADAPTIVE CONTROL FOR A GRINDING MACHINE
Ronald L. Lenning, Wilmington, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed April 26, 1971, Ser. No. 137,286
Int. Cl. B24b 49/04
U.S. Cl. 51—165.77 7 Claims

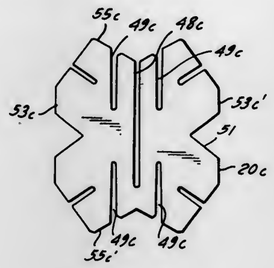


An apparatus for use on a grinding machine for adaptively controlling the grinding process. The grinding process is initiated by a coarse-feed motion of a grinding tool into a workpiece. A gaging device is adapted to the workpiece and produces a gaging signal representing the excess material remaining thereon. A feed back circuit produces a control signal as a function of the power required by the grinding process, and the control signal represents an amount of material capable of being removed from the workpiece by the measured power. A comparator circuit is responsive to the gaging signal and the control signal and produces an output signal when the excess material remaining on the workpiece equals the amount of material capable of being removed by the measured power. The output signal is operative to terminate the coarse feed, and the remaining material is removed primarily as the result of the force which has built up between the tool and the workpiece as indicated by the measured power. When the gaging signal indicates the part is ground to size, the tool is retracted from the workpiece.

3,699,721
GRINDING PAD
George A. Beasley, Ft. Lauderdale, Fla., assignor to Itek Corporation, Lexington, Mass.
Filed Aug. 22, 1967, Ser. No. 662,379
Int. Cl. B24d 7/00, 9/00, 17/00
U.S. Cl. 51—209 DL 8 Claims

The method of providing a replaceable grinding pad for a lens grinding tool, having a surface thereon for grinding optical and ophthalmic lenses. The pad is formed about the curve

determining surface of the grinding tool, thus providing the grinding surface of the pad with substantially the same curvature as that of the tool. The pad is formed by interposing a sheet metal blank between the tool and a die member of an

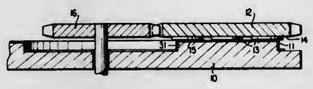


elastic material and thereafter deforming the blank with the tool by depressing it into the elastic material, whereby to form a grinding pad having the same configuration as that of the tool.

3,699,722
PRECISION POLISHING OF SEMICONDUCTOR CRYSTAL WAFERS

Jimmy L. Davidson, Melbourne Beach, and George V. Rouse, Melbourne, both of Fla., assignors to Radiation Incorporated, Melbourne, Fla.

Filed Nov. 23, 1970, Ser. No. 92,072
Int. Cl. B24b *37/04*
U.S. Cl. 51—283 **3 Claims**



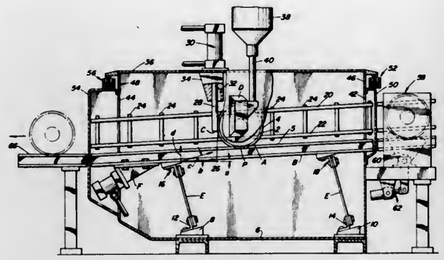
A method of polishing semiconductor crystal wafers in which a planar array of wafers is rotated about an axis normal to its plane while rotating a polishing surface in contact with a face of each wafer of the array in the same sense as the sense of rotation of the array, about an axis displaced from and parallel to the axis of rotation of the array. The wafer is displaced from the polishing surface at locations closest and furthest from the axis of rotation to eliminate the extremes of rotational velocity.

3,699,723
APPARATUS FOR SUPPORTING AND ROTATING A CIRCULAR WORKPIECE

Joseph T. Wloszek, Cuyahoga, Ohio, assignor to Custom Machine, Inc., Cleveland, Ohio

Filed Jan. 22, 1971, Ser. No. 108,871
Int. Cl. B24b *41/06*
U.S. Cl. 51—236 **15 Claims**

Apparatus for supporting and rotating cylindrical members while being treated. The member is mounted upright on a rail which slopes downwardly toward the work station. On the downhill side of the work station, there is a stop to hold the wheel at the station until it is fully treated. The rail is vibrated on a line of movement between a vertical line and the uphill slope of the rail so that the member is raised slightly off the rail and away from the stop and then falls back onto the rail and rolls downhill against the stop. Another embodiment uses a mechanism of the slow-work-stroke-and-quick-return type, so that on the uphill stroke of the rail, the member rotates on the rail, whereas on the return stroke, the rail moves fast enough to slide under the member. In another embodiment, the rail is

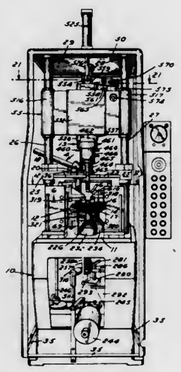


moved longitudinally a distance sufficient to rotate the wheel in its position against the stop through the required arc.

3,699,724
A METHOD FOR SIMULTANEOUSLY MACHINING THE CENTER BORE OF A GEAR WORKPIECE AND THE END FACES PERPENDICULAR TO THE AXIS OF THE CENTER BORE

Myron P. Ellis, Royal Oak; Albin S. Czubak, Detroit, and Keith A. McDonald, Union Lake, all of Mich., assignors to Micromatic Hone Corporation, Detroit, Mich.

Division of Ser. No. 701,447, Jan. 29, 1968, Pat. No. 3,525,178. This application Aug. 19, 1970, Ser. No. 65,160
Int. Cl. B24b *1/00*
U.S. Cl. 51—287 **2 Claims**

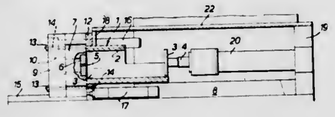


A multi-surface machining method for simultaneously machining the center bore of a gear workpiece concentric to the pitch circle of the gear teeth, and machining one or both of the end faces of the gear workpiece perpendicular to the axis of the center bore. The gear workpiece is rotated in a centerless manner by a pair of master gears comprising a driving gear and a braked retainer gear. The master gears improve the surface finish characteristics of the tooth flanks of the gear teeth while rotating the gear workpiece. Simultaneously, a first machining means is reciprocated axially in the gear workpiece center bore, and a second machining means is reciprocated over one or both of the end faces of the gear workpiece in a direction perpendicular to the axis of the center bore.

3,699,725
METHOD OF FINISHING AN APERTURE

Edward George Feldcamp, 60 Robert Burns Avenue, Benhall, England

Filed Sept. 17, 1970, Ser. No. 73,110
Claims priority, application Great Britain, Sept. 17, 1969, 45,940/69
Int. Cl. B24b *1/00*
U.S. Cl. 51—317 **7 Claims**

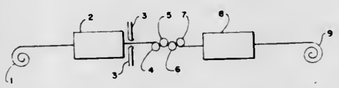


A method of finishing a pre-formed aperture in a metal component, for example an extrusion tool opening, to achieve a desired surface finish for the side wall of the aperture, comprises the step of forcing a wax-like abrasive compound through the aperture. Apparatus performing the method comprises a cylinder at one end of which a tool holder can be mounted. A ram-operated piston is reciprocable in the cylinder to force the abrasive compound through the extrusion tool when mounted in the holder.

3,699,726
METHOD OF DESCALING

Charles A. Turner, and Ernst A. Siemssen, both of Selas Corporation of America, Dresher, Pa.

Filed March 26, 1971, Ser. No. 128,275
Int. Cl. B24c *1/00*
U.S. Cl. 51—319 **8 Claims**

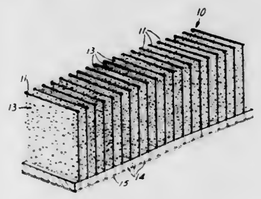


Dry descaling of steel strip by a combination of thermal and mechanical treatments. A strip of steel is heated in normal furnace atmosphere to a temperature at which the magnetite scale converts to softer, more porous wustite and then rapidly cooled by air jets. Subsequently, the cooled strip is flexed to crack the scale and abrasive blasted to remove the cracked scale.

3,699,727
ABRASIVE ARTICLE AND METHOD OF FABRICATION

William J. McDonald, Stillwater Township, County of Washington, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed April 30, 1971, Ser. No. 139,088
Int. Cl. B24b *11/00*, *9/02*
U.S. Cl. 51—334 **13 Claims**

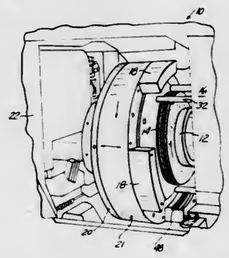


A continuous elongate flexible sheet bearing erect abrasive flaps, each held by an individual island of binder that is adherently bonded to the flexible support, can be formed into an abrasive flap wheel, endless belts, etc. The article is prepared by applying liquid binder to the sheet, inserting the flaps, isolating the islands, and hardening the binder.

3,699,728
METHOD AND APPARATUS FOR INTERNAL PLUNGE GRINDING

Dante S. Giardini, and Indarmohan S. Chhabra, both of Dayton, Ohio, assignors to The Bendix Corporation

Filed June 22, 1970, Ser. No. 48,355
Int. Cl. B24b *55/02*
U.S. Cl. 51—356 **5 Claims**

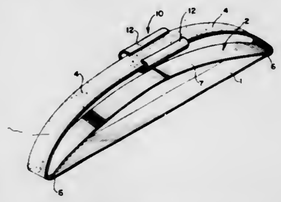


An internally lubricated grinding wheel arrangement for plunge or form grinding in which the voids of a porous grinding wheel are occluded by lubricant applied internally while in the grinding zone to prevent wheel loading. The wheel is cooled by directing a coolant supply externally of the wheel.

3,699,729
SANDING HAND TOOL

Francis J. Garvey, Newfield, and Bruce Winterbottom, Green Bank, both of N.J., assignors to Carrier Craft Corporation, Newfield, N.J.

Filed May 14, 1971, Ser. No. 143,316
Int. Cl. B24d *15/00*
U.S. Cl. 51—391 **7 Claims**



A sanding hand tool comprises an abrasive-surfaced strip of cloth in narrow endless belt form looped around a bow-shaped holding member of resilient metal having a convex rear surface on which a rear, reserve portion of the belt snugly fits and a concave front across which the remainder of the belt is exposed to provide an operative portion stretched under yieldable tension.

3,699,730
SUMP PUMP COVER

Burnice Lee Humphrey, 404 West Race Street, Portland, Ind.

Filed March 25, 1971, Ser. No. 128,043
Int. Cl. F16j *13/02*
U.S. Cl. 52—19 **9 Claims**

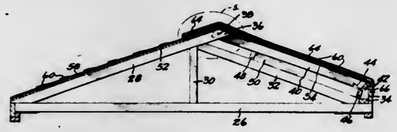
Sump pump covers of wood and steel are most frequently used to provide covers over the open sump where water is collected and must be exhausted from time to time. The present

invention is a sump pump cover of dome-like flexible construction, and having a radial slot which permits the outlet of the sump to pass therethrough. The cover has locking members at its undersurface which are adjustable and which are spaced from each other to engage the interior surface of the



sump opening to locate the cover whereby the outer edge of the cover extends beyond and completely encloses the sump opening. The cover is flexible and because of its curvature tends to shed surface contaminants and foreign objects. The outer edge of the cover allows water to seep past and enter the sump.

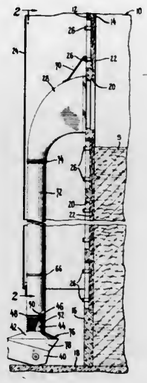
3,699,731
MODULAR BUILDING STRUCTURE
Thomas R. Arnold, Indiana Building, Elkhart, Ind.
Filed Sept. 3, 1970, Ser. No. 69,221
Int. Cl. E04h 1/00
U.S. Cl. 52—64 **2 Claims**



A modular building structure adapted to be prefabricated and transported to an erection site, and having an inclined roof consisting of a lower fixed section and an upper section pivoted to the fixed section to swing between an operative erected position and a lowered inclined transport position. The roof is completely covered with composition roofing overlying a flexible waterproof sheet spanning the joint between sections. A waterproof sheet anchored to the upper part of the first roof section overlies the second roof section when in lowered transport position.

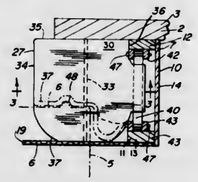
3,699,732
COLLAPSIBLE LINER FOR SILO CHUTE
Gail E. Janssen, and Henry N. Wildenberg, both of Kaukauna, Wis., assignors to Badger Northland, Inc., Kaukauna, Wis.
Filed March 8, 1971, Ser. No. 121,913
Int. Cl. E04h 7/00; B65g 11/10; B65d 5/06
U.S. Cl. 52—195 **6 Claims**

A collapsible discharge chute liner, for an upright silo having a plurality of doors and a vertical discharge chute, including a funnel assembly, a flexible tube, and a flexible tube storage assembly. The funnel includes hooks which hold it in communication with any of the silo doors and tight against the side of the silo. A flexible tube is attached to and supported by the assembly. A flexible tube storage assembly is provided to store excess flexible tube material for reuse as the funnel assembly is lowered from one of the silo doors to the next silo door. The flexible tube storage assembly may include a chamber assembly connected to a conveyor at the bottom of the silo with an inlet pipe having a flange on its upper end. The inlet pipe extends up into the flexible tube and excess flexible tube material is stored on the inlet pipe in an accordion folded condition. For installations where a chamber assembly is undesirable, a reel upon which the flexible tube can be wound may be provided. With a reel for the storage of the flexible



tube, a zipper is provided, to open an opening for silage, in the side of the flexible tube.

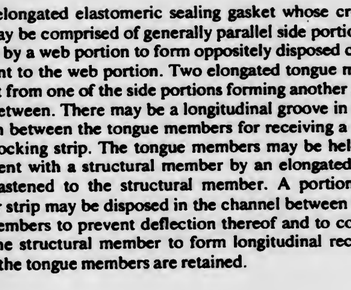
3,699,733
LOADING DOCK SHELTERS
Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa
Filed Oct. 30, 1970, Ser. No. 85,610
Int. Cl. E04f 10/04; E06b 1/56
U.S. Cl. 52—204 **5 Claims**



A loading dock shelter embodying a cover member carried by a rigid supporting frame with a resilient pad forming the bottom wall therefor and holding the lower portion of the cover in operative position.

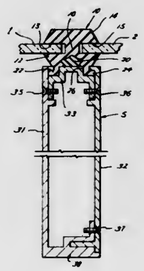
3,699,734
PARTITIONING SYSTEM HAVING REMOVABLE PANELS
Robert D. Craig, Lisle; Richard O. Evans, Glenview, and Gerald F. Grant, Wood Dale, all of Ill., assignors to Anning-Johnson Company, Melrose Park, Ill.
Filed May 19, 1969, Ser. No. 825,715
Int. Cl. E04b 2/74
U.S. Cl. 52—127 **20 Claims**

A system for partitioning an existing room having a floor, a ceiling and walls into smaller room units comprising at least one vertically extending framing member formed to provide an elongated recess; means for providing a partitioning panel formed with an elongated recess in confronting relationship with the support recess; means for connecting the panel to the framing member; and means for releasably biasing the connecting means into engagement with one of the recesses. The connecting means includes an elongated member interposed between the panel means and the framing member having a first portion slidably received within the recess of the framing member and a second portion slidably received within the recess of the panel means. Desirably, a vertically extending support member is disposed adjacent to each of the opposed end portions of the panel means with the biasing means of each end portion arranged both to urge the connecting means of each end portion into engagement with the adjacent framing member recess and to urge the panel toward the framing



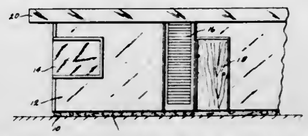
member adjacent to the opposite end portion. Additionally, the connecting means includes means for receiving a tool for moving the connecting means against the biasing means to a position wherein the connecting means will be out of engagement with one of the recesses formed in either the framing member or the panel means, thereby to permit removal of the panel means.

3,699,735
SEALING GASKET
Marvin Glenn Smith, Houston, Tex., assignor to Helmerich & Payne, Inc., Houston, Tex.
Filed June 10, 1970, Ser. No. 45,022
Int. Cl. E04b 1/62
U.S. Cl. 52—400 **6 Claims**



An elongated elastomeric sealing gasket whose cross section may be comprised of generally parallel side portions connected by a web portion to form oppositely disposed channels adjacent to the web portion. Two elongated tongue members project from one of the side portions forming another channel therebetween. There may be a longitudinal groove in the side portion between the tongue members for receiving a longitudinal locking strip. The tongue members may be held in engagement with a structural member by an elongated anchor strip fastened to the structural member. A portion of the anchor strip may be disposed in the channel between the tongue members to prevent deflection thereof and to cooperate with the structural member to form longitudinal recesses in which the tongue members are retained.

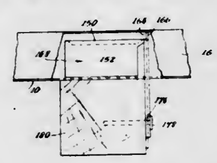
3,699,736
BUILDING COMPONENT AND SYSTEM
Howard O. Wallace, 580. A.N. Kaished, Kailua, Oahu, Hawaii
Continuation of Ser. No. 617,669, Feb. 21, 1967, abandoned. This application May 12, 1969, Ser. No. 840,081
Int. Cl. E04b 1/10, 1/54
U.S. Cl. 52—436 **4 Claims**



A building structure, e.g. a house that consists of generally-similar basic components and that can be economically manufactured at a location remote from the building site to permit rapid and simple assembly. The elemental building components comprise a generally rectangular frame (wood) which is variously closed at its sides to provide a partial wall, roof or floor. Walls are shown to include windows, etc.

The exterior edges of the basic component frame define matingly-keyed sections whereby a plurality of the components may be permanently interlocked by adhesive. The matingly-keyed edges include an elongate section that is less than a semi-cylinder and has a width that is less than the frame width. The female sections (concave) carry an adhesive, either as encapsulated beads of glue or an adhesive tape bearing a release sheet. In a structure of the elemental components, the adhesive is contained between the mating sections (concave and convex) to bond the building components together.

3,699,737
ROOFING AND SIDING SHEETS AND FASTENING MEANS THEREFOR
William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England
Division of Ser. No. 800,835, Feb. 17, 1969, Pat. No. 3,606,720. This application Nov. 13, 1970, Ser. No. 89,164
Int. Cl. E04d 3/30
U.S. Cl. 52—489 **14 Claims**

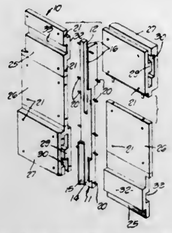


An assembly of a fastening clip and a roofing or siding sheet having wide-based ribs especially wherein a lateral male rib has means for interlocking with an overlying lateral female rib of a neighboring sheet, the male rib having a fixing channel for securing the rib to a structural member. The clip acts as a concealed fixing for the intermediate wide-based rib of the sheet, the clip having free arms to engage internal pockets in the rib and camming means secured to its base wall and rotatable relative to the base wall so that a free end of the camming means bears against the base wall of the rib, thereby urging the free arms of the clip into the internal pockets of the rib.

3,699,738
MODULAR STRUCTURAL PLAQUE ASSEMBLY
John G. Merideth, 5000 W. Imperial Highway, Los Angeles, Calif.
Filed May 13, 1971, Ser. No. 143,117
Int. Cl. E04c 1/30
U.S. Cl. 52—578 **11 Claims**

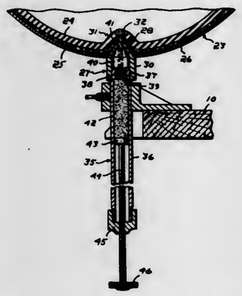
A modular structural plaque adapted for demountable telescopic assembly in a variety of arrangements with other

similar modular plaques. Each plaque is fabricated by bonding separately molded components together including a bifurcated main frame member and a plurality of panel like members some of which have tongues and channels complemental



to and interlockable with similar components of one or more other plaques. The plaques are adapted to be interlocked with one another in a wide variety of different patterns and arrangements as respects both their central frame members and their tongue and channel portions.

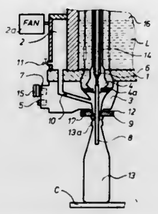
3,699,739
METHOD AND APPARATUS FOR USE IN INFLATING TENNIS AND OTHER BALLS
Howard A. Burdwood, 1380 Westbrook Street, Portland, Maine
Filed Feb. 3, 1971, Ser. No. 112,239
Int. Cl. B65b *31/04*
U.S. Cl. 53—7 **12 Claims**



Apparatus is disclosed for re-inflating tennis balls in which a conduit from an air source has a fixed inflating needle exposed on a hub. A ring is attached to each ball and has a receiver provided with an inwardly disposed tip forming a small dimple in the held ball and an outwardly disposed sleeve fitting the hub with the needle then piercing the ball through the dimple to enable the ball to be inflated. A sealant gun has a needle whose hub is dimensioned to fit the receiver with the needle then in the puncture so that when the gun is actuated the sealant is discharged into it. The sealant sets to form a plug in the form of a truncated cone which is compressibly locked in place once the ring is removed.

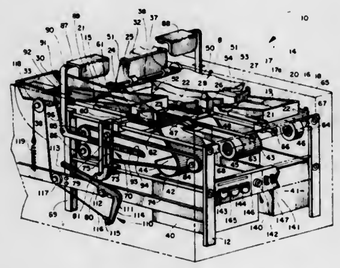
3,699,740
METHOD AND APPARATUS FOR FILLING BOTTLES OR CANS WITH BEER OR THE LIKE
Uwe Knabe, Dortmund-Hombruch, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany
Filed Jan. 27, 1971, Ser. No. 110,209
Claims priority, application Germany, Jan. 29, 1970, P 20 03 909.2
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 R **10 Claims**

Bottles, cans or like containers which tend to undergo deformation in response to excessive reduction of internal pressure below atmospheric pressure are filled with beer or another liquid which is adversely affected by contact with air by evacuating some air from their interior so that the pressure in the interior of a container does not decrease below a pressure at which the container is subject to deformation, circulating through the interior of the container an inert gas to expel



the remainder of air, raising the pressure of inert gas in the interior of the container, and thereupon admitting into the container a stream of liquid at a pressure corresponding to the pressure of inert gas in the interior of the container whereby the liquid expels the gas and fills the container to a desired level. The pressure in the interior of the thus filled container is reduced prior to sealing.

3,699,741
AUTOMATIC BAG PACKING APPARATUS FOR CHECK-OUT
Richard R. Norman, Palos Verdes Peninsula, Calif., assignor to Tony J. Bressickello, Gardena, Calif., a part interest
Filed July 9, 1971, Ser. No. 161,239
Int. Cl. B65b *43/14, 43/36*
U.S. Cl. 53—29 **27 Claims**

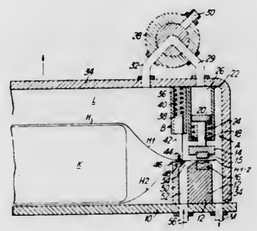


After articles such as groceries are loaded into a reciprocable shuttle tray they are automatically bagged, handled continuously and ultimately delivered to a point where the loaded bag can be picked up.

Situated on a holding platform in the path of horizontal movement of the shuttle tray is an open ended kraft paper bag inflated from a previously collapsed condition and oriented to admit both the shuttle tray and groceries being carried by it. When set in motion the shuttle tray travels into the bag and pushes it onto a receiving tray that tilts the bag of articles from a generally horizontal alignment to an erect position and deposits the bag of groceries on a conveyor that leads to a pick-up point.

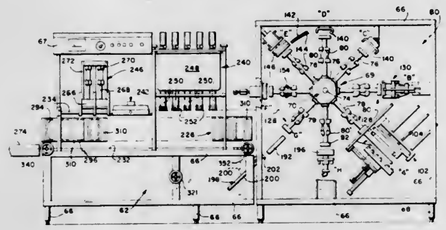
The individual bags are linked to one another by detachable joints and are stored in a supply hopper. As the shuttle tray drives a bag from the holding station to the receiving tray the motion of the bag serves to automatically pull the next or replacement bag into position onto the holding platform. After the shuttle tray has completed its cycle and has been returned to its initial station the replacement bag is expanded, by air from a blower for example, to accept the next load of groceries carried by the shuttle tray.

3,699,742
APPARATUS FOR VACUUM WELDING OF PLASTICS ENVELOPES
Giorgio Giraudi, Rho, Milan, Italy, assignor to W. R. Grace & Co., New York, N.Y.
Filed Feb. 18, 1971, Ser. No. 116,332
Int. Cl. B65b *31/02*
U.S. Cl. 53—86 **6 Claims**



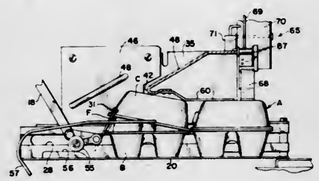
The specification discloses vacuum packaging apparatus including welding bars, and clamping bars for holding the edges of the packaging envelope before, during, and after the welding operation. Preferably the clamping bars may have grooves therein to facilitate escape of air from within the envelope during the evacuation phase. A jet of air is blown across the welded edge to cool the weld and facilitate separation of the welded edges from the welding bars.

3,699,743
CONTAINER FABRICATING MACHINE
Percy King, Bloomington, and Howard R. Garrett, St. Paul, both of Minn., assignors to Haskon Incorporated, Warsaw, Ind.
Filed Jan. 7, 1970, Ser. No. 1,273
Int. Cl. B65b *43/32*
U.S. Cl. 53—186 **27 Claims**



A container fabricating machine having a forming mechanism for erecting and bottom sealing paperboard container blanks and a filling mechanism for filling and top-sealing the bottom formed containers. The bottom forming mechanism includes a plurality of mandrels mounted on a spindle that are intermittently driven past a plurality of the mechanism's operating stations, the bottom formed containers being discharged from the mechanism in a downwardly inclined direction and a transfer mechanism for gripping the bottom of the discharged containers and pivoting them to an upright position. The filling mechanism includes a feeding mechanism that receives the containers from the transfer mechanism and grips all four corners of the bottom formed containers while advancing them through the filling mechanism's filling and sealing operations and that is readily adjustable to accommodate containers of various base sizes without disturbing the machine's overall synchronization.

3,699,744
CARTON CLOSING APPARATUS
Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.
Filed April 26, 1971, Ser. No. 137,414
Int. Cl. B65b *61/26, 7/26*
U.S. Cl. 53—131 **14 Claims**



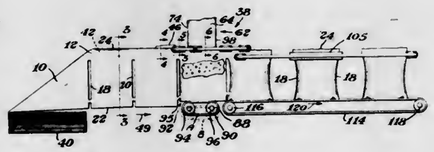
An apparatus for use in filling and closing egg cartons which comprises a frame mounted above a horizontal table onto which a cellular carton with a hinged cover member is adapted to be deposited in open position, so that eggs may be placed therein by an operator, the frame having a cross bar assembly carrying a series of radial fingers mounted at the front thereof which is adapted to be rotated to engage the fingers with a hinged locking panel at the front edge of the carton and to swing the panel into position for locking engagement inside the front wall of the cover member when the latter is closed, the cross bar assembly being movable to advance the filled carton beneath a cover closing assembly which is spaced rearwardly of the front cross bar assembly and above the table and which includes a plate member with the forward edge disposed in the path of the cover member so as to swing it down into closed position and having spring fingers arranged to bear on the cover member and insure engagement of cooperating locking elements on the cover front wall and the locking panel as the carton is advanced by pressure of a succeeding carton which is subsequently advanced beneath the cover closing assembly.

3,699,745
PACKAGE LOCATOR
Philip L. Reid, Lyman, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Dec. 14, 1970, Ser. No. 97,746
Int. Cl. B65b *65/00*
U.S. Cl. 53—393 **5 Claims**



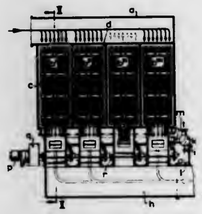
An apparatus for supporting and positioning bagged products and the like including a portion for supporting and positioning the neck of the bag and another portion supporting the bagged product. In preferred embodiments, the portion supporting and positioning the neck of the bag includes a slotted member and the portion supporting the product includes a cradling means at the forward or neck end of the product and other means impinging against the far end of the product to prevent it from sliding out of position.

3,699,746
APPARATUS FOR FILLING A CHAIN OF CONNECTED BAG ELEMENTS
Oliver R. Titchenal, and William A. Armstrong, both of Berea, Ohio, assignors to Basic Packaging Systems, Inc., Avon Lake, Ohio
Continuation of Ser. No. 727,545, May 8, 1968, abandoned. This application April 9, 1971, Ser. No. 132,808
Int. Cl. B65b *43/12*
U.S. Cl. 53—187 **28 Claims**



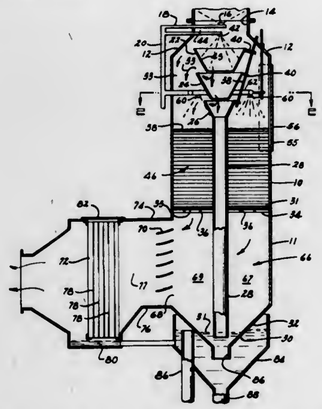
Apparatus for filling a chain of connected bag elements wherein improved design enables the apparatus to receive the bag elements from a folded pile. This allows the use of bag elements almost totally separated from each other whereby after filling the bag elements can be easily parted, as, for example, by a gentle pulling action. Accordingly, a cutting station to part the bags after filling can be eliminated from the apparatus. Other beneficial features of the invention include the employment of a mandrel to initially mount and align the connected bag elements in the apparatus such that the possibility of fouling the same by misfeeding the bags thereto is minimized, and an intermittently operated filling station which works in combination with a continuously run sealer or closing station to facilitate the pulling apart of the connected bag elements after fill operations.

3,699,747
PROCESS FOR CLEANING FILTER ELEMENTS OF FABRIC FILTER EQUIPMENT
Gert Kroll, Bayernstrasse 18, Hosel/Dusseldorf, Germany
Filed Sept. 8, 1969, Ser. No. 855,946
Int. Cl. B01d *46/04*
U.S. Cl. 55—96 **6 Claims**



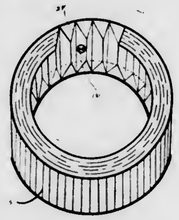
A process and apparatus for cleaning the filter elements of a fabric filter equipment in which certain of the filter elements are recurrently shut off from the current dust-laden air, and at such time is exposed to the action of a clean air current under relatively higher pressure, thus causing the filter elements to move alternately in opposite directions. The apparatus includes intermittently rotatable valve means causing the filter elements to be subjected to suction for short times and alternately then to air under pressure for longer periods.

3,699,748
WET SCRUBBER DUST COLLECTOR
William E. Barkovitz, Lincoln Park, Mich., assignor to American Radiator & Standard Sanitary Corporation, New York, N.Y.
Filed Oct. 24, 1969, Ser. No. 869,066
Int. Cl. B01d *45/06, 45/10*
U.S. Cl. 55—223 **8 Claims**



A wet dust collector or scrubber having an inertial separator section for removing a substantial percentage of the dust particles from the treated gas stream, a porous packing subjected to flushing liquid for producing a concentrated fog and assimilating the remaining dust particles into said fog, and a second separator section for removing the wet dust particles from the gas stream. The first inertial section preferably comprises spaced baffles which are subjected to liquid spray for collection of dust particles and for prevention of clog-up of the baffle spaces.

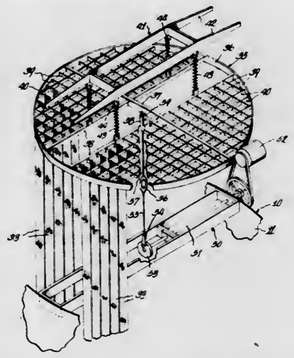
3,699,749
AUTOMOBILE CARBURATOR AIR INTAKE FILTERS
Raymond M. Nowicki, 30 Linn Road, Nutley, N.J.
Filed May 18, 1971, Ser. No. 144,467
Int. Cl. B01d *35/14*
U.S. Cl. 55—274 **1 Claim**



An annular pleated filter element with a anti-pollution warning reed compression collar device secured to the filtering paper through an aperture within a pleat.

3,699,750
AIR POLLUTION CONTROL APPARATUS
Harold A. Nepereny, Wexford, and John P. Reich, Baden, both of Pa., assignors to Koenig, A. G.
Filed July 17, 1970, Ser. No. 55,653
Int. Cl. B01d *41/00*
U.S. Cl. 55—288 **9 Claims**

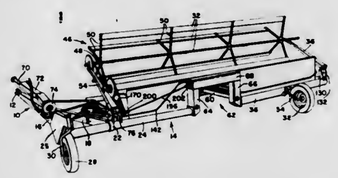
Air pollution control apparatus herein disclosed comprises a large upright casing, with a plurality of elongated air-pervious bags extending vertically within the casing, each air bag having its lower end fixed to a partition plate in line with an opening in the latter and its upper end closed and fixed to a grid frame. Dust-laden air is caused to flow upwardly through the air bags, the dust being filtered from the air and remaining within the bags and the dust-free air passing into the casing for exhaust through a casing outlet.



The grid frame is spring-supported and means are provided to vibrate the grid frame and consequently the air bags suspended from the grid frame. This vibration is performed at a time when dust-laden air is not being admitted to the casing inlet, and is for the purpose of shaking the dust particles from the interior of the air bags.

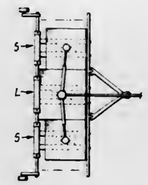
The air bags are disposed in two groups with a space therebetween large enough to accommodate a person for the purpose of inspecting the condition of the air bags.

3,699,751
WINDROWER DRIVE MEANS
Brian Francis Ross, St. Catharines, Ontario, and Dalton Harold Spicer, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.
Filed July 13, 1970, Ser. No. 54,320
Int. Cl. A01d *43/00*
U.S. Cl. 56—10.3 **12 Claims**



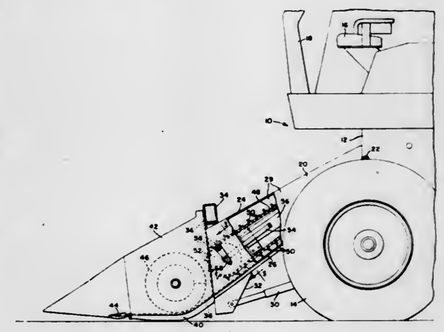
A drive system for the power-operated components of a pull-type windrower, including a fore- and-aft shaft on the windrower draft frame adapted to be driven by the draft vehicle, a first transverse countershaft on the windrower main frame adjacent to and drivingly connected with the fore- and-aft shaft, and a second transverse countershaft on the main frame above and spanning the swath opening in the central portion of the frame and drivingly connected with the first transverse countershaft. A reciprocating cutter bar on the leading edge of the windrower grain platform and a transverse reel mounted above and forwardly of the cutter bar are driven from the first countershaft, the reel drive including a spring overload release mechanism, and a pair of platform canvases on opposite sides of the swath opening are driven from the second countershaft.

3,699,752
MODULAR CONSTRUCTED ROTARY MOWER
John E. Dandl, 211 West 16th Street, Chico, Calif.
Filed May 17, 1971, Ser. No. 143,918
Int. Cl. A01d *75/30*
U.S. Cl. 56—13.6 **7 Claims**



A modular constructed rotary mower is provided with structural module means, a gear box assembly, a depending shaft and a rotary mower blade. Front and rear bars are attached to the structural module means. Hitch means are attached to the front bar and running gear are attached to the rear bar.

3,699,753
QUICK-ADJUSTABLE LOWER STOP FOR FEEDER HOUSE DRUM
Charles Benjamin Peak, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.
Filed Jan. 31, 1972, Ser. No. 221,998
Int. Cl. A01d *41/02, 45/02*
U.S. Cl. 56—14.5 **12 Claims**

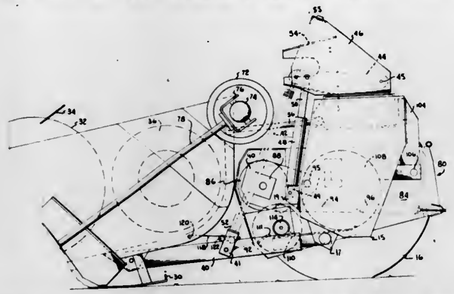


The lower stop for a combine feeder house drum can be rotated to present either one of a pair of stop surfaces which are positioned unequal distances from the axis of rotation of the stop so that by rotation of the stop member, the minimum clearance of the drum with respect to the bottom wall of the feeder house can be easily varied for small grain and corn. The lower drum stop is also carried by a rotatable cam which can be used to provide fine adjustments for the feeder house lower drum stop.

3,699,754
CONDITIONER MOUNTING FOR A WINDROWER
Earl E. Koch, Mohnton, Pa., and Joe E. Shriver, Lebanon, Ohio, assignors to Sperry Rand Corporation, New Holland, Pa.
Filed May 28, 1971, Ser. No. 148,044
Int. Cl. A01d *47/00*
U.S. Cl. 56—15.8 **9 Claims**

A conditioning unit adapted for mounting beneath the main frame of a windrower having a front mounted header pivotally connected thereto by a lift mechanism including a pair of

laterally spaced lower lift arms. The conditioning unit is pivotally mounted about the rear thereof to the main frame of the windrower and includes a pair of rollers rotatively



mounted about front outside portions, the rollers being laterally spaced and adapted to rest upon the lower left arms such that the conditioning unit moves proportionally to the movement of the header.

3,699,755

CONDITIONING MACHINES FOR AGRICULTURAL STRAW OR BLADE MATERIAL OR THE LIKE

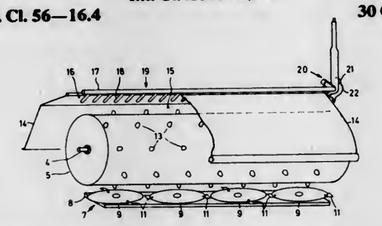
Hans Ulrich Hauser, Lienhard, Watt, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed June 23, 1971, Ser. No. 155,799

Claims priority, application Switzerland, July 24, 1970, 11290/70

Int. Cl. A01d *43/00*

U.S. Cl. 56—16.4 **30 Claims**



A conditioning machine for agricultural straw or blade material embodying a conveying drum equipped with conveying tools or implements. The conveying drum in conjunction with a guide wall forms a conveying channel which is provided with means for exerting a conditioning action upon the conveyed straw or blade material. According to important aspects of the invention the spacing between the ends of the conditioning means situated closest to the jacket or outer surface of the conveying drum and the circular path of travel of the ends of the conveying tools is smaller than the smallest inner height of the conveying channel between the jacket of the conveying drum and the guide wall measured from the axis of rotation of the conveying drum.

3,699,756

MACHINE FOR MANUFACTURING STEEL STRUCTURAL PARTS

Klaus Ritter; Hans Gott; Josef Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft mbH, Graz, Austria

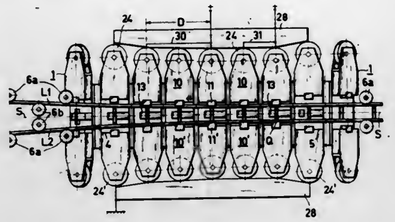
Filed Nov. 29, 1971, Ser. No. 202,935

Claims priority, application Austria, Nov. 27, 1970, A 10732/70

Int. Cl. B23k *11/02*

U.S. Cl. 219—56 **5 Claims**

Disclosed is an electric welding machine including an endless chain of welding heads, each head supporting opposite electrode holders for longitudinal rods and grippers for transverse rods, and cam means operable for controlling the operative and inoperative positions of the holders and grippers.



3,699,757

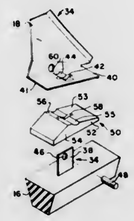
BELT CARRIED CUTTERS AND MOUNTING MEANS THEREFORE

Joseph C. Hulburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed March 23, 1971, Ser. No. 127,099

Int. Cl. A01d *55/24*

U.S. Cl. 56—291 **3 Claims**



An endless belt type cutter assembly for a mower having cutter blades of the impact type connected for swinging movement to outwardly projecting posts carried by the belt at spaced apart intervals. The connection means includes a pin adapted to pass through a hole in the post and to be received by a recessed seat in a portion of the cutter blade.

3,699,758
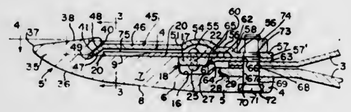
PRE-STRESSED TIE GUARD WITH KNIFE SECTION RETAINER

Thomas J. Scarnato, Barrington; Peter J. Peacock, Western Springs, and John J. Kowalik, Glenview, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 25, 1972, Ser. No. 229,449

Int. Cl. A01d *55/10*

U.S. Cl. 56—307 **11 Claims**



A sickle guard having separable upper and lower sections, the both sections, which are pre-stressed, oppose excessive lateral as well as longitudinal loads due to the guards striking obstructions or the sickle being deflected out of plane and striking the upper section. A novel wedging action is obtained between the sections which is conducive to a favorable destribution of the forces opposing destructive loads.

3,699,759

APPARATUS FOR CONVERTING TEXTILE THREADS

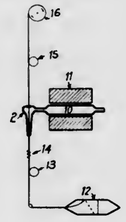
Michel S. M. Lefebvre, 41 Rue de Picardie, Saint-Quentin, France

Division of Ser. No. 697,812, Jan. 15, 1968, Pat. No. 3,534,453. This application June 18, 1970, Ser. No. 47,383

Claims priority, application France, March 24, 1967, 6718862

Int. Cl. D02g *1/16*

U.S. Cl. 57—34 B **5 Claims**



A conversion apparatus for textile thread in which the thread moves in hot gas subject to the action of shock waves which deform and fix the thread.

3,699,760

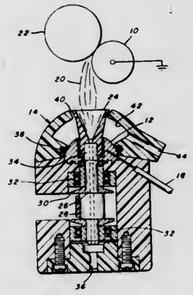
OPEN END ELECTROSTATIC SPINNING HEAD

Leo L. Chabot, Cumberland, R.I., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed April 19, 1971, Ser. No. 135,321

Int. Cl. D01h *1/12, 1/00*

U.S. Cl. 57—58.89 **8 Claims**



An improved spinning head apparatus used in the performance of open end electrostatic spinning of fibers into yarn wherein internal rotating parts are maintained free of stray fiber buildup comprising a stationary housing having a throughbore therein and a hollow spindle for rotation within the throughbore. The spindle includes a fiber collecting funnel at one end. An electrode is mounted within the housing in a suitable position to electrostatically attract charged fibers to the collecting funnel. Means defining an opening in the housing connects the throughbore of the housing with the outside environment whereby the throughbore can be maintained free of stray fiber buildup.

3,699,761

SEXTANT CLOCK

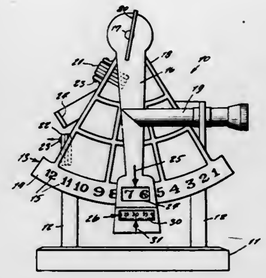
Edward D. Onstott, 413 Maplewood Drive, Colorado Springs, Colo.

Filed March 30, 1970, Ser. No. 23,760

Int. Cl. G04b *45/00, 19/20*

U.S. Cl. 58—2 **1 Claim**

A time indicating clock incorporating a novel conventional clock design by elimination of a clock face upon a case, the device comprising a configuration of a nautical sextant and which includes numerals indicating hours along an arc and across which a pivoted arm sweeps, the arm selectively pointing out one of the hour numerals, and the arm carrying a minute indicating mechanism.



3,699,762

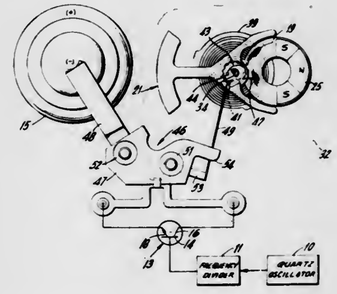
SYNCHRONIZED CONTACT WATCH

Norman Charles Zatsky, Briarcliff Manor, N.Y., assignor to Timex Corporation, Waterbury, Conn.

Filed April 5, 1971, Ser. No. 131,237

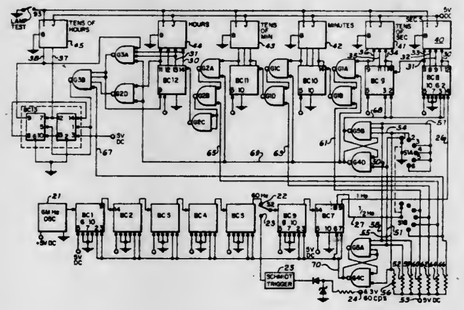
Int. Cl. G04c *3/00*

U.S. Cl. 58—23 AC **10 Claims**



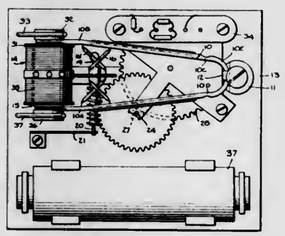
A battery-powered electric wrist watch in which a known fixed-frequency time base unit, such as that having a quartz oscillator and a frequency divider, is made operative to give better timekeeping by association in a simplified way with the motive unit of the watch through the use of a combination of selected particular functional units, viz., (1) the means for directly actuating the wheels of the watch is an oscillatory balance wheel assembly whose frequency of oscillation is made dependent on its oscillation amplitude over a working range of frequency values; (2) the impulsion of the balance wheel is by impulses from an electromagnetic motive unit of coil and permanent magnet whenever battery current flows in the drive coil; and (3), the flow of current in the drive coil, which is made to occur in intermittent pulses by a contactor associated in known fashion with the balance wheel, is controlled as to its duration (pulse width) and particular timing by the AND-function effect of the connection of the contactor and the battery in series with two terminals of a transistor whose control terminal receives a train of output pulses of fixed frequency directly from the frequency divider of the fixed-frequency time base unit, to make the transistor intermittently conductive for periods of fixed duration.

3,699,763
24-HOUR DIGITAL CLOCK
David L. Zeph, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 6, 1971, Ser. No. 159,856
Int. Cl. G04c *3/00*; G04b *19/30*
U.S. Cl. 58—23 R 9 Claims



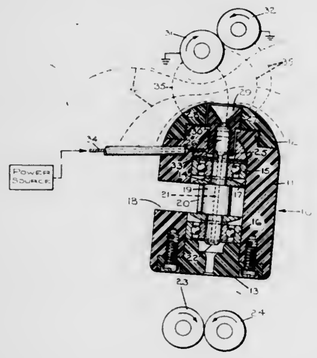
A 24-hour digital clock having a plurality of division counters driven from a stable frequency which are coupled to seven line segment decoder-drivers. A selector switch coupled to the counters allows setting of the minutes, tens of minutes, hours, and tens of hours to a precise time signal while resetting all other counters.

3,699,764
TUNING-FORK TYPE ELECTRONIC CLOCK HAVING PUSH-PULL INDEXING MECHANISM
Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 160,835, July 8, 1971. This application Jan. 28, 1972, Ser. No. 221,690
Int. Cl. G04c *3/00*; H02k *33/00*
U.S. Cl. 58—23 TF 5 Claims



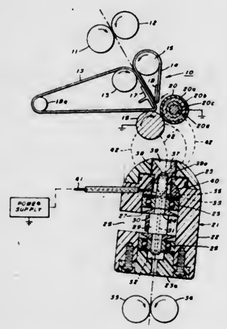
An electronic clock making use of an electromagnetically-actuated tuning fork whose vibrations are converted into rotary motion for driving the gear train of the clock. The conversion is effected by an indexing mechanism including two oppositely directed V-shaped indexing elements whose ends are attached to the tines of the fork. The vertex of each element is flattened to define a rectangular tongue whose edge engages the ratchet teeth of an index wheel whereby as the tines vibrate, the tongues reciprocate in phase opposition in a rectilinear path at right angles to the direction of vibration. In the course of each cycle, as the tines move together, one tongue acts to push the wheel as the other tongue retracts, and when the tines move away from each other, the other tongue acts to pull the wheel as the one tongue retracts.

3,699,765
ELECTROSTATIC SPINNING HEAD
Richard A. Amato, Bolton, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1970, Ser. No. 88,405
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 4 Claims



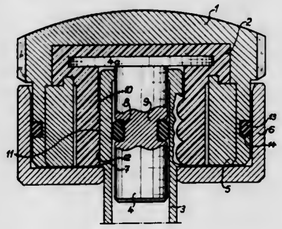
An improved spinning head for an electrostatic spinning apparatus including means for reinforcing and stabilizing the electrostatic field through which textile fibers are caused to travel so as to produce and maintain a desired flow path of said fibers therethrough to the twisting device carried within said spinning head.

3,699,766
DRAFTING COT ASSEMBLY
Roger J. Archambault, Blackstone, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Dec. 15, 1970, Ser. No. 98,371
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.91 2 Claims



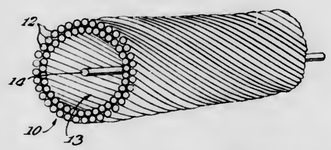
An improved drafting cot assembly for use in conjunction with an open end electrostatic spinning apparatus. The assembly is comprised of a rotatably mounted cot roll having rotary, fiber advancing surface and smooth, rounded shields adjacent the ends of the roll to prevent stray fiber accumulation adjacent the fiber advancing surface.

3,699,767
TIGHT CONTROL MEMBER FOR WATCH MOVEMENT
Ervin Piquerez, deceased, late of Bassecourt, Switzerland; Ami Scholler, 3 rue Hugi, Bienne, Switzerland, and Edouard Bandelier, executors, 10, Neubadrain, 4102 Binningen, Switzerland
Filed June 15, 1971, Ser. No. 153,178
Claims priority, application Switzerland, July 3, 1970, 10087/70
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 B 5 Claims



This fluid-tight mounting for a control member for a watch movement or like mechanism comprises a winding button having a member of synthetic material fitted therein, in which the flange-shaped head of a shank for driving the associated part is embedded. Rigid with the case of the mechanism is a socket having a bottom through which said shank extends towards the mechanism to be controlled. The socket receives in smooth frictional contact the skirt of said button with the interposition of an O-ring, thus permitting both rotational and axial sliding movements of said button therein and protecting said member of synthetic material against any attack from external agents.

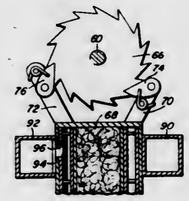
3,699,768
ELASTIC METAL FILAMENT YARN
John A. Roberts, North Chelmsford; Peter R. Roberts, Groton, and James E. Kelly, Burlington, all of Mass., assignors to Brunswick Corporation
Filed Feb. 24, 1971, Ser. No. 118,320
Int. Cl. D02g *3/12*
U.S. Cl. 57—144 12 Claims



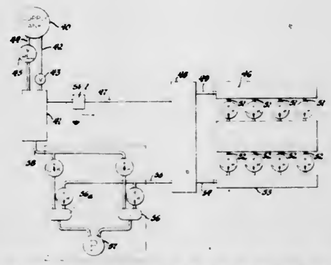
An elastic metal filament yarn, compatible with any natural and/or synthetic filamentary yarn or composite material, consisting of a plurality of outer peripheral metal filaments and at least one central metal filament located along the axis of the filament yarn, where said outer filaments are helically twisted around the yarn axis defining a void therein, wherein the outer metal filaments will collapse toward the central filament when axial tension is applied to the yarn.

3,699,769
TEMPERATURE CHANGE ACTUATED MOTOR
John C. Bondurant, 219 East Clinton Street, Hickman, Ky.
Filed April 22, 1971, Ser. No. 136,395
Int. Cl. F03g *7/06*
U.S. Cl. 60—23 12 Claims

A battery of side-by-side tubes constructed of a material having a high coefficient of expansion is provided and one set of ends of the tubes are stationarily supported from a suitable base. A power shaft is rotatably journalled on an axis stationary relative to the base and the shaft includes a ratchet wheel for each tube. Each tube has a pair of ratchet paws operatively associated therewith engaged with the corresponding ratchet wheel through suitable motion transmitting structure and the expansion and contraction of each tube above a predetermined magnitude is operative to rotate the shaft. A hot air manifold and a cold air manifold extend along one set of ends of the tubes and valve structure is provided for alternately communicating the interior of the manifolds with the interiors of the tubes, the valve structures being alternately driven through open and closed positions from the shaft and the remote ends of the tubes being provided with damper controlled air discharge structure.



3,699,770
STIRLING ENGINE CONTROL SYSTEM
James E. Bennethum, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 27, 1971, Ser. No. 147,355
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 3 Claims

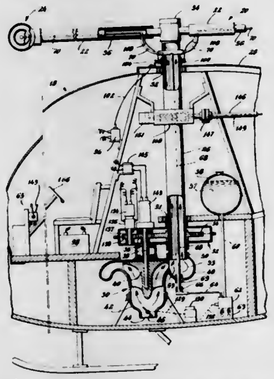


A working gas control system for a double acting hot gas engine particularly adapted for vehicle installation and including a manually adjustable system for variably controlling the pressure of the engine working gas to provide for load control of the engine. The system includes a gas reservoir for working gas to supply the engine system with gas at a suitable mean working pressure through an operator actuator control system. A gas supply tank is provided to maintain a predetermined minimum gas pressure in the reservoir.

3,699,771
ROTARY WING AIRCRAFT LIFT AND PROPULSION METHOD AND SYSTEMS
Stephen V. Chelminski, West Redding, Conn., assignor to Kendall G. Parmelee, Riverside, Conn., a part interest
Filed Jan. 29, 1970, Ser. No. 6,693
Int. Cl. F02c *3/16*
U.S. Cl. 60—39.35 4 Claims

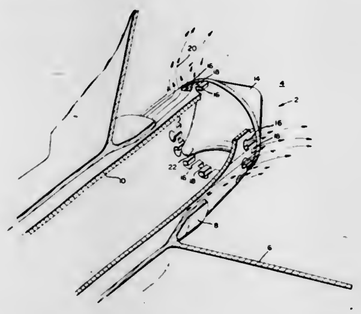
A rotary wing aircraft lift and propulsion method and system in which burner thruster units mounted on the lift-producing rotor at a position spaced radially from the axis of

the rotor generate moments to turn the rotor about its axis. An air compressor is driven by the rotor through a speed increasing drive and pumps air at a pressure exceeding atmospheric through ducts in the rotor extending out to the respective burner thruster units while fuel is shock in them to produce jets reflecting combustion gases generating thrust to turn the rotor about its axis. In addition to the lift-producing rotor, a propeller serves to drive the aircraft forward or backward, and



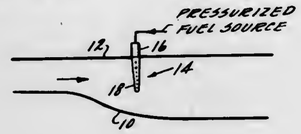
the power for driving this propeller is derived from the rotation of the rotor itself. To control forward or backward motion of the craft, the propeller pitch is varied, and also it may be disengaged by use of a clutch. There is a forward-motion steering rudder and a downwash deflector rudder which are both operable by the same control for counteracting the moderate rotor torque exerted on the aircraft body and for steering the craft.

3,699,772
LIQUID PROPELLANT ROCKET ENGINE COAXIAL INJECTOR
Gerard W. Elverum, Jr., Rolling Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Jan. 8, 1968, Ser. No. 696,470
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 A **1 Claim**



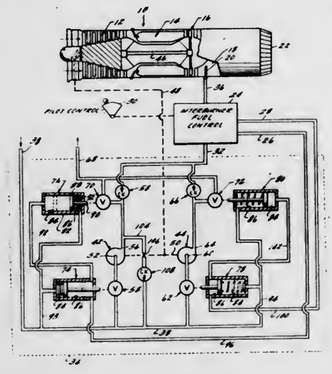
To provide combustion stability in rocket engines over a wide range of thrust, a coaxial injector is provided which includes an outer annular sleeve for introduction of one propellant and a hollow pintle with spaced slots for introduction of another propellant to impinge on the first propellant. The slots are staggered in location and size to permit initial interlocking of the propellants and, therefore, increased mixing and combustion performance.

3,699,773
FUEL COOLED FUEL INJECTORS
Kenneth W. Schuning, and Eugene E. Carlson, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Dec. 23, 1968, Ser. No. 786,146
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 R **1 Claim**



The disclosure shows two forms of injectors for supplying fuel to an ultra high temperature gas stream. One form of fuel injector provides a cooling film of fuel by reason of its porous construction. The other form of injector provides the same type of cooling film through the use of small holes disposed at a low angle to the outer, exposed surface of the injector.

3,699,774
FLUID SUPPLY SYSTEM
Donald Y. Davis, and George A. Coffinberry, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Sept. 17, 1970, Ser. No. 73,058
Int. Cl. F02c *9/06*
U.S. Cl. 60—39.28 **10 Claims**

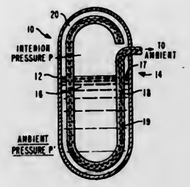


A wide flow range fluid supply system includes low and high flow range centrifugal pumps connected in parallel between a system outlet and a source of fluid. An outlet check valve and an inlet valve are provided for each pump. Means are provided to recirculate a predetermined portion of the discharge flow from the outlet of the low range pump to enable both pumps to operate during high flow system operation without overheating the low range pump.

3,699,775
GAS AND LIQUID PROCESSING SYSTEM
Kenneth W. Cowans, Los Angeles, Calif., assignor to Sub-Marine Systems Incorporated
Filed Dec. 11, 1969, Ser. No. 884,151
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **14 Claims**

In a liquid processing system, a container includes a liquid and a pressurizing gas which is substantially non-reactive with respect to the liquid and establishes a controlled pressure differential between the interior of the container and its surroundings. A porous conduit, extending between the interior

and exterior of the container, is maintained in contact with the liquid. The conduit transports liquid along its length, forming a meniscus of extended surface upon portions of the conduit not submerged in the liquid. The meniscus defines a gas barrier; the conduit nevertheless transports fluid at a selected rate

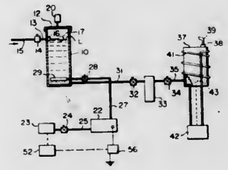


between the container and its surroundings. When employed in a cryogenic system, fluid may be transported in response to heat interchange by the container, the rate depending on the temperature change required. The fluid further may be ejected into an extremely high pressure environment without the use of a power source.

ERRATA

For Classes 60—52 HF thru 62—45 see:
Patents Nos. 3,699,675 thru 3,699,696

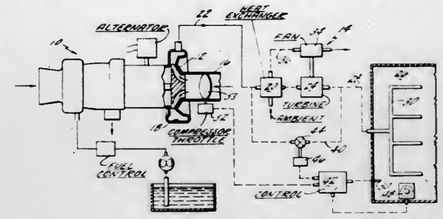
3,699,776
OZONE PURIFIER FOR PRESSURIZED WATER COOLER
Julius La Raus, Rochester, N.Y., assignor to Moody Aquamatic Systems, Inc., Meadville, Pa.
Filed June 30, 1971, Ser. No. 158,377
Int. Cl. F25d *23/00*
U.S. Cl. 62—157 **9 Claims**



Drinking water under pressure is fed automatically, when necessary, through a float valve into a sealed contact tank, which has an air space in its upper end. An electrically controlled ozone generator has its output connected to a diffuser that is mounted in the lower end of the tank; and a pressure regulator is mounted in the top of the tank to vent its air space when the pressure therein rises above, for example, five pounds per square inch. The tank itself may be surrounded by a cooling coil, so as to function both as a contact and cooling tank, or its output may be connected to a second tank surrounded by a cooling coil. The ozone generator may be periodically energized by a timer, or by a thermostat which is responsive to the temperature of the water in the cooling tank.

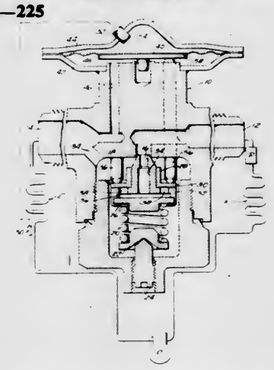
3,699,777
CAPACITY CONTROL FOR GAS TURBINE POWERED AIR CYCLE REFRIGERATION SYSTEM
George C. Rannenberg, Canton, Conn., assignor to United Aircraft Corporation, Hartford, Conn.
Filed April 9, 1971, Ser. No. 132,837
Int. Cl. F25b *9/00*
U.S. Cl. 62—172 **8 Claims**

For a gas turbine powered air cycle refrigeration package which gas turbine is normally operated at a constant speed and is operatively connected to a compressor or fan for feeding air to the package. The quantity of air through the compressor or fan is regulated for conserving the energy of the power plant. The air flow through the compressor is regulated as a function



of an error signal between the desired and actual temperature produced by the air cycle refrigeration system.

3,699,778
THERMAL EXPANSION VALVE WITH RAPID PRESSURE EQUALIZER
Charles D. Orth, Cedarburg, Wis., assignor to Controls Company of America, Melrose Park, Ill.
Filed March 29, 1971, Ser. No. 128,977
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 **6 Claims**

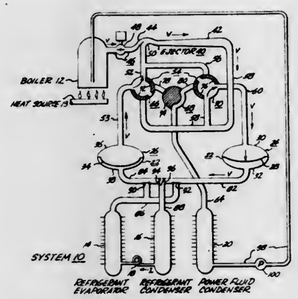


The thermostatic expansion valve is provided with an internal by-pass capable of providing rapid equalization of the pressure between the condenser and evaporator when the compressor shuts down. The valve controlling the refrigerant flow has an internal cavity in communication with the condenser pressure and a by-pass port in communication with the evaporator. The valve, urged towards the closed position by a spring, is actuated by the diaphragm through push pins. The push pins normally close the by-pass port, either by the lower end of one or more of the push pins cooperating with a seat located at the by-pass port outlet or a valve means (e.g. a flanged collar which guides the valve) interposed the push pins and the by-pass port. With the valve in the closed position, the push pin(s) or valve means can be lifted off the by-pass port by condenser pressure in the cavity, as forces across the diaphragm equalize after shutdown of the compressor. The system pressure is then rapidly equalized through the by-pass port.

3,699,779
THERMALLY POWERED DIAPHRAGM PUMP SYSTEM FOR HEAT TRANSFER
Ralph C. Schlichtig, 11212 S. 3rd, Seattle, Wash.
Filed June 1, 1971, Ser. No. 148,723
Int. Cl. F25b *13/00*
U.S. Cl. 62—324 **18 Claims**

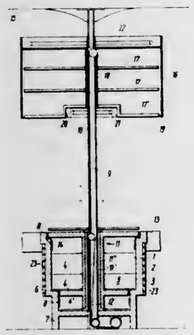
A pneumatic diaphragm pump system shown embodied in a thermally powered refrigeration system with means for heat

pumping with a high coefficient of performance while using any of several safe and non-toxic refrigerants. The pump system is driven by pressurized gaseous power fluid through a cycle in which in two embodiments an ejector salvages energy



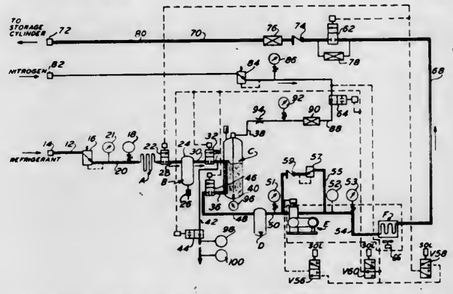
from the adiabatically expanding gaseous fluid in a compartment bounded by a pneumatic diaphragm. Means is provided for cyclic storing of energy and preheating any liquid returned to the gaseous fluid power source.

3,699,780
TOP OPENING REFRIGERATOR DEVICE
Hasso Gehrmann, Bregenz, Austria, assignor to Elektra-Bregenz GmbH, Bregenz/Vorarlberg, Austria
Filed Jan. 26, 1971, Ser. No. 109,775
Claims priority, application Austria, Jan. 26, 1970, 13 A 668/70
Int. Cl. F25d *25/00*
U.S. Cl. 62—378 **6 Claims**



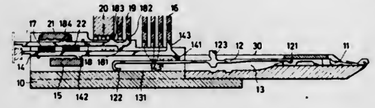
A refrigerator is formed of a open-topped tank enclosed by heat insulating material and an exterior casing. The tank contains storage shelves and a cover closes its top opening. A vertically arranged support column is associated with the tank and, preferably, is positioned centrally of and extends upwardly out of the tank. Lifting means are incorporated into the support column for vertically displacing the cover and shelves of the tank. In a preferred arrangement the top of the tank is located at about table top level and additional storage shelves are positioned in a casing spaced above the tank. These storage shelves are movably mounted on the support column.

3,699,781
REFRIGERANT RECOVERY SYSTEM
Larry Christopher Taylor, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Aug. 27, 1971, Ser. No. 175,601
Int. Cl. F25b *43/04*
U.S. Cl. 62—474 **9 Claims**



Apparatus for recovery of halogenated hydrocarbon refrigerant from defective refrigeration and air conditioning systems removes entrained moisture, chlorides, oils and sludge so that the reclaimed refrigerant is restored to original specification purity standards.

3,699,782
KNITTING MACHINES, ESPECIALLY FLAT MACHINES
Wilhelm Hadam, Reuthlingen, Germany, assignor to H. Stoll and Company, Stollweg, Germany
Filed Dec. 15, 1970, Ser. No. 98,236
Claims priority, application Germany, Dec. 15, 1969, P 19 62 787.3
Int. Cl. D04b *7/00*
U.S. Cl. 66—75 **6 Claims**

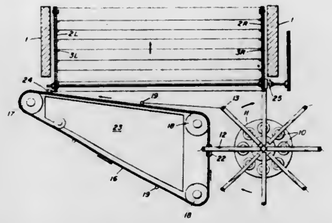


In a flat knitting machine with needle-actuating jacks mounted in the needle bed tricks, each with a working or operating butt acted on by the needle cams or lock parts for control of the needle movements, each jack is made as an elastically flexible rod or bar supported at both ends, on which a presser element can act, and the working butt of each jack is disposed in the area of maximum bending, such that it is moved out of range of the cam parts when the jack is bent. The jack is coupled with its associated needle so that the needle does not have to have a working butt of its own and necessarily must follow the movement of the jack in the needle trick, in either direction. For bending the jacks, presser jacks can be provided, or there can be provided an articulated slide or pusher on a selector jack, the slide or pusher having a wedge-shaped end which cooperates with a stationary oblique surface.

3,699,783
APPARATUS FOR FEEDING FILLING THREADS TO A WARP KNITTING MACHINE
Alexander J. Carman, Athens, Ga., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,524
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 **1 Claim**

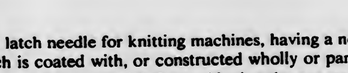
A feed mechanism for feeding lengths of weft thread on chains to a weft inserted warp knitting machine in which

threads from packages rotating on a turntable pass through arms for each package and are transferred to an auxiliary chain provided with clamping thread transfer pins which carry one end of each of the threads across the knitting machine to



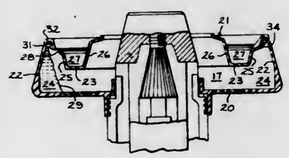
the far weft carrier chain while the rotating arms carry the other ends to the near feeding chain. The weft thread thus strung across from chain to chain is clamped on the chain, and at the near feeding chain the thread is cut.

3,699,784
LATCH NEEDLE FOR KNITTING MACHINES
Hardo Berentzen, Ebingen/Wurttemberg, Germany, assignor to Theodore Groz & Sohne and Ernst Beckert Nadelfabrik Commandit-Gesselschaft, Ebingen/Wurttembert, Germany
Filed June 4, 1971, Ser. No. 149,969
Claims priority, application Germany, June 15, 1970, P 20 29 440.0
Int. Cl. D04b *35/02*
U.S. Cl. 66—123 **10 Claims**



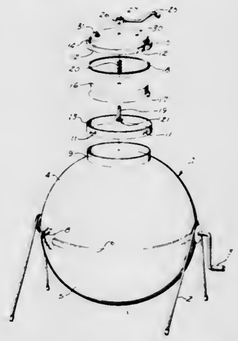
A steel latch needle for knitting machines, having a needle foot which is coated with, or constructed wholly or partially of, shock-absorbent material, for cushioning the engagement of the needle foot with the reciprocating elements of the knitting machine during operation.

3,699,785
ADDITIVE DISPENSING ARRANGEMENT
Richard A. Waugh, Louisville, Ky., assignor to General Electric Company
Filed March 10, 1971, Ser. No. 122,926
Int. Cl. D06f *39/02*
U.S. Cl. 68—17 A **5 Claims**



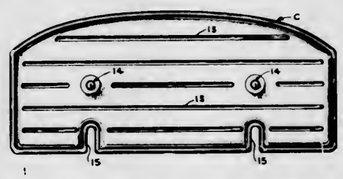
An additive dispensing arrangement for a washing machine, including removably mounting the dispenser above the filter pan, whereby the peripheral wall of the filter pan is utilized as a holding means in transferring the additive from the dispenser to the clothes washing receptacle.

3,699,786
HAND OPERATED WASHING MACHINE
Joseph Lynn Rencher, 900 Harrison Avenue, Canon City, Colo.
Filed Oct. 27, 1970, Ser. No. 84,360
Int. Cl. D06f *37/10*
U.S. Cl. 68—144 **3 Claims**



A hand operated washing machine includes a closure mechanism which automatically releases internal pressure, developed by agitation of soap or detergents, before the closure is removed.

3,699,787
COVER MEANS FOR NAVIGATIONAL INSTRUMENTS AND RADIO EQUIPMENT MOUNTED ON PANEL OF AIRCRAFT
Ronald F. Corrado, 727 Noriegn Way, Pacifica, Calif.
Filed Dec. 14, 1970, Ser. No. 97,708
Int. Cl. E05d *73/00*
U.S. Cl. 70—58 **16 Claims**

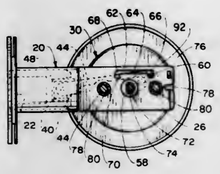


A cover means for the navigational instruments and radio equipment of an aircraft that are mounted on and arranged for removal from the aft face of the instrument panel of such aircraft which cover means includes a cover provided with lock means that are arranged to coact with cooperating lock devices mounted on such aircraft instrument panel or other permanent structure of the aircraft so as to prevent removal of such cover from said panel and consequently access to the instruments and equipment mounted thereon and thereby preclude their unauthorized removal or theft.

3,699,788
LATCH CONSTRUCTION INCLUDING ASSEMBLY, ANTI-VIOLATION AND DEAD BOLT FEATURES
John R. Gerlach, Monterey Park, and Clarence B. Morrensen, Orange, both of Calif., assignors to Emhart Corporation, Bloomfield, Conn.
Filed Feb. 12, 1971, Ser. No. 114,991
Int. Cl. E05b *9/04*; E05c *1/06*
U.S. Cl. 70—134 **20 Claims**

A bolt is moved by a driving lever pivoted on the bolt and through a transverse pin to a slotted rotatable driving member,

the driving lever pin being guided in movement in the driving member slot by extension thereof transversely through an inverted U-shaped guide slot in the latch frame. The forward downward end portion of the guide slot is rearwardly undercut in its downward extension. The operating lever is rotatable through a transverse driving shaft transversely slidably engaged therewith, the driving shaft being, in turn, rotated through a key operated lock cylinder connected to the shaft through a usual lost motion arrangement. The driving shaft is D-shaped cross section engageable in a D-shaped cross section opening of the driving member. Anti-violation plates of unique form are positioned beneath usual rosette and cover plates resisting shearing of the lock cylinder frame.

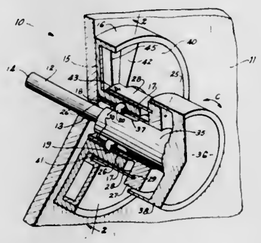


3,699,789

DIAL STRUCTURE FOR MECHANISM REQUIRING BOTH LINEAL AND ROTARY INPUT OPERATING MOVEMENTS

Anthony J. Potzick, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed June 28, 1971, Ser. No. 157,405
Int. Cl. E05b *15/00*
U.S. Cl. 70—329 **15 Claims**



Dial structure for use with a lock or other mechanism which requires both rotary and axial input movements of an operating spindle. The structure includes an operating knob for imparting both such movements to the spindle, and a dial having position indicia and which is responsive to and follows rotary movement but not lineal movement of the knob. Other features include a bearing connection which provides a universal joint of the spindle in the dial frame, to accommodate minor misalignment of the dial structure with respect to the mechanism. A mask screens all position indicia except that in a narrow aperture, which is visible only to the operator.

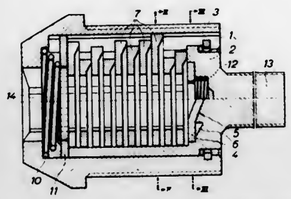
3,699,790

CYLINDER LOCK

Vaino Toivo Ansala, Jatasalmentie, Helsinki 83, Finland

Filed April 5, 1971, Ser. No. 131,256
Claims priority, application Finland, Sept. 8, 1970, 2472
Int. Cl. E05b *21/06*
U.S. Cl. 70—364 R **4 Claims**

A pick-proof cylinder lock whose cylinder may rotate in either direction, for example, to unscrew the lock from a threaded recess in a vending machine. The lock includes a locking disc mounted at one end of the detent stack. The disc is provided with a plurality of teeth which engage a corresponding plurality of gaps in the lock cylinder.

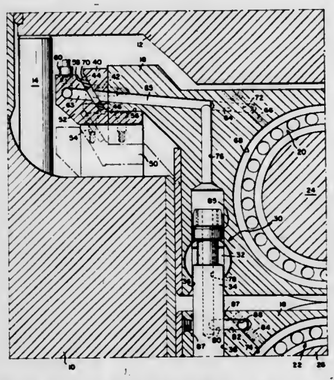


3,699,791

WORK ROLL BEARING LUBRICATION ARRANGEMENT

Werner W. Elbe, Pittsburgh, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Filed June 28, 1971, Ser. No. 157,453
Int. Cl. B21b *45/02, 27/06*
U.S. Cl. 72—45 **10 Claims**



A hoseless lubrication arrangement for the work rolls of a rolling mill including a pair of cooperating wall portions on an adapter on the balancing piston and on an adapter on the work roll chock, the wall portions being in opposed relation when the work roll chock is supported on the balancing piston within the mill housing. A lubrication passage extends from a supply fitting on the adapter on the balancing piston through the same and across the wall portions which are sealed and through the work roll chock into communication with the work roll bearing therein. The lubrication passage is automatically disconnected from the position interconnecting the fitting and the bearing when the work roll chock is removed from the mill housing and is automatically reconnected when a work roll chock is installed in the mill housing on the balancing piston.

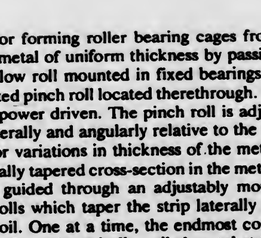
3,699,792

PROCESS AND APPARATUS FOR CORRECTING IRREGULARITIES IN THE CIRCULARITY OF RINGS

Paolo Pettazzi, Turin, Italy, assignor to RIV-SKF Officine de Villar Perosa S.p.A., Turin, Italy

Filed July 3, 1969, Ser. No. 838,813
Claims priority, application Italy, July 11, 1968, 52399 A/68
Int. Cl. B21h *1/06*
U.S. Cl. 72—110 **3 Claims**

A body such as a bearing race ring having a cylindrical outer surface is prevented from deforming during chilling to harden the body by rotating the body about its axis and engaging the outer surface of the body with at least two pressure rollers at two positions spaced circumferentially by 90° with respect to the center of the body. The load applied by the rollers may be increased progressively during chilling, or applied sharply after an initial period of free chilling of the body.



3,699,793

APPARATUS FOR FORMING ROLLER BEARING CAGES

William S. Wagner, 4945 Navarre Road, S. W., Canton, Ohio

Filed Oct. 19, 1970, Ser. No. 81,840
Int. Cl. B21c *47/00*; B21d *53/12*
U.S. Cl. 72—134 **3 Claims**

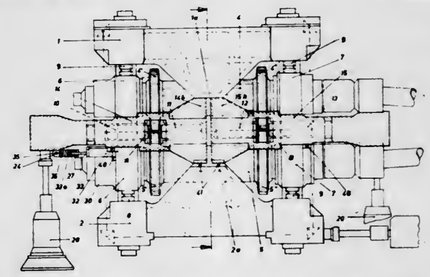
Apparatus for forming roller bearing cages from an elongated strip of metal of uniform thickness by passing the strip between a hollow roll mounted in fixed bearings and an adjustably mounted pinch roll located therethrough. At least one of the rolls is power driven. The pinch roll is adjustable longitudinally, laterally and angularly relative to the fixed roll to compensate for variations in thickness of the metal strip and to form a laterally tapered cross-section in the metal strip. The metal strip is guided through an adjustably mounted stock guide to the rolls which taper the strip laterally and bend it into a spiral coil. One at a time, the endmost complete convolution is cut from the spirally coiled metal strip, the ends thereof are brought into alignment with each other and welded. Slots for the bearing rollers may be cut out of the cage at this time, or may be cut out of the metal strip before it is passed through the apparatus. In a modified form of the apparatus, the metal strip is furnished in lengths suitable for forming a single cage instead of being formed into a spiral coil and then cut apart to form a plurality of cages.

3,699,794

UNIVERSAL ROLLING MILL STAND HAVING MORE THAN ONE CALIBER FOR ROLLING PROFILES BEAMS SUCH AS I-BEAMS

Otto Karl Buchheit, St. Ingbert, Saar, Germany, assignor to Moeller & Newmann GmbH, Ensheimer Str., Germany

Filed Sept. 8, 1970, Ser. No. 70,364
Claims priority, application Germany, Sept. 13, 1969, P 19 46 547.9
Int. Cl. B21b *13/10*
U.S. Cl. 72—225 **12 Claims**



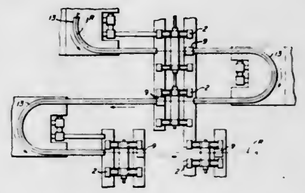
A universal rolling mill stand for reversing rolling of profiled material such as I-beams has at least two calibers which are formed by an adjustable pair of horizontal rolls and at least two pairs of vertical rolls. At least one of the pairs of vertical rolls is adjustable by power-operated means between passes, and for this purpose the rolls are mounted in an intermediate frame in which at least one roll is displaceable and which is displaceable in the stand. Edging rolls may be incorporated in the stand.

3,699,795

WORK TWISTER FOR ROLLING MILL

Arthur F. Pilling, Torrance, Calif., assignor to United States Steel Corporation

Filed Dec. 7, 1970, Ser. No. 95,471
Int. Cl. B21b *41/02*
U.S. Cl. 72—231 **4 Claims**



Described is apparatus adapted to be mounted on the delivery side of a rolling mill stand to receive an elongated piece of work, such as metal rod, being delivered from the mill stand and apply twisting force whereby the work enters the next stand rotated 90° as respects its passage into the preceding or delivering stand.

3,699,796

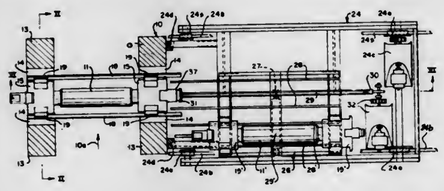
WORK ROLL CHANGERS

Werner W. Elbe, McCandless Twp., Allegheny County, and Wilfred T. Farrell, Robinson Twp., Allegheny County, Pa., assignors to Blaw-Knox Company

Filed Nov. 30, 1970, Ser. No. 93,727
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **18 Claims**

In a rolling mill the improvement of a roll changer for rapidly changing from one set of work rolls to another auto-

matically. The work rolls (and chocks) are raised and lowered on spaced apart first inside rails contacting the chocks supporting the upper work roll from operating position to transfer position in the mill housing spaced from each other so that they independently seek a predetermined drive position, preferably by the balancing means of the rolling mill. The work rolls are removed from and inserted into the rolling mill



through windows in the mill housing on spaced apart first inside rails and second outside rails by a guide means and latch means positioned on a transfer bed and shift car positioned adjacent the rolling mill without the uses of additional power means to connect and disconnect the latch means to and from the work rolls. The transfer bed may be movable to raise and lower the work rolls from floor level to transfer level.

3,699,797

HOT WORKED STEEL METHOD AND PRODUCT

Willy Tournoy, St. Lodewijk-Deerlijk, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Dec. 7, 1970, Ser. No. 95,928

Int. Cl. B21c *9/00*

U.S. Cl. 72—286 **7 Claims**

Hot worked medium carbon steel wire, strip or bar is given a high elastic limit, good workability, freedom from surface tensile stresses, good stress corrosion resistance and low creep, by heating the steel prior to hot working, to a temperature such that the temperature immediately after hot working is 350°–500°C., while simultaneously imposing tension on the heated steel in the range between 15 percent of the tensile strength and the elastic limit, for a period of time not more than 10 seconds. Preferably, the steel is tensioned between the hot working mechanism such as a hot drawing die and an immediately preceding cold deformation mechanism such as a cold drawing die, the heat being applied by electric resistance between contact points constituted by the dies.

3,699,798

METHOD OF INCREASING BERYLLIUM DUCTILITY

Raymond H. Anderson, Jr., Santa Ana, and Bennett V. Whiteson, Granada Hills, both of Calif., assignors to McDonnell Douglas Corporation

Filed Dec. 24, 1970, Ser. No. 101,257

Int. Cl. C21d *7/00*; B21d *26/08*

U.S. Cl. 72—377 **6 Claims**

Reorienting by planar compression loading the atomic planes of deformation in a hexagonal close-packed unit cell of a metal crystal, and in particular beryllium, to improve ductility in a bending mode. In particular ductility in the third dimension (short transverse direction) is accomplished by reorientation of existing slip systems by activating twin systems through planar compression loads. Highly textured sheet material, usually cross-rolled from hot pressed block, is of particular interest.

3,699,799

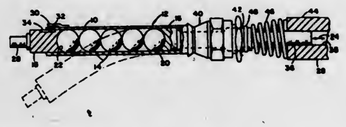
VARIABLE DIRECTION FORCE COUPLER

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and William H. Hespenhide

Filed Aug. 28, 1970, Ser. No. 67,730

Int. Cl. B21j *15/40*

U.S. Cl. 72—447 **4 Claims**



A variable direction force coupler for transmitting a reciprocating force along a selectable curved path consisting of a flexible tube filled with rigid balls and including force transmission members at each end adapted to connect the coupler between an applied force and a body to receive the force.

3,699,800

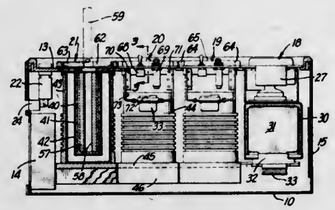
TEMPERATURE CALIBRATION SYSTEM

Bradley C. Waldron, Los Angeles, Calif., assignor to King Nutronics Corporation, Van Nuys, Calif.

Filed March 4, 1971, Ser. No. 120,818

Int. Cl. G01k *15/00*

U.S. Cl. 73—1 F **10 Claims**



An apparatus for calibrating temperature probes such as thermometers and thermocouples. A small portable unit which is dry and tiltable and which provides a plurality of set points for calibration of several instruments at one time or calibration at several different temperatures in sequence. A plug-in well with a removable metal heat sink within a vacuum bottle has an electric resistance heater for the heat sink controlled by a temperature sensitive thermistor in the sleeve between the heater and the heat sink. The operating temperature of each well may be preset ad may be adjusted as desired. A readout circuit operating from another temperature sensitive thermistor in the sleeve provides a direct indication of well temperature throughout the temperature operating range. The readout circuit provides an expanded scale indication of temperature and compensates for the highly nonlinear temperature characteristic of the thermistor.

3,699,801

ANEMOMETER ROTORS

John Ivor Parry Jones, Salisbury, England, assignor to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

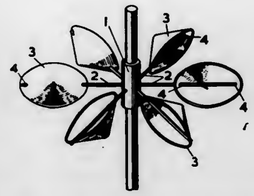
Filed Sept. 21, 1971, Ser. No. 182,396

Claims priority, application Great Britain, Sept. 24, 1970, 45,514/70

Int. Cl. G01w *1/10*

U.S. Cl. 73—189 **5 Claims**

An anemometer rotor capable of maintaining to a high order of accuracy a linear relationship of rotational speed to horizontal wind velocity by having an even number of lightweight cups, preferably six, disposed around the rotor



spindle, the planes of the rims of the cups being inclined at an angle of between 25° and 40° to the rotor spindle, alternate cups being oppositely inclined.

3,699,802

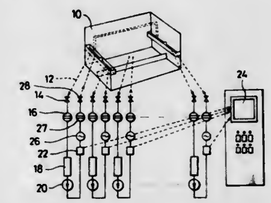
CONDENSER LEAKAGE MONITORING SYSTEM

Takeshi Hotta, and Hisashige Ishikawa, both of c/o Nikkiso Co., Ltd. No. 43-2, Ebisu 3-chome, Shibuya-ku, Tokyo, Japan

Filed Feb. 17, 1971, Ser. No. 116,024

Int. Cl. G01m *3/18, 3/22*

U.S. Cl. 73—40.5 R **2 Claims**



A condenser leakage monitoring system for power plants including individual sampling path derived from each divided section of the condenser and a sealed cycle provided within a vacuum zone for recirculation of the sample after inspection. The sampling path is connected to an inlet valve which is in turn connected to a sealed or canned motor pump and the canned motor pump is further connected to the conductivity measuring cell which is electrically connected to a conductivity meter and also communicated to an outlet valve through a detecting electrode.

3,699,803

SEMICONDUCTOR ELEMENT FOR DETECTING GASES AND METER FOR MEASURING COMPONENT CONCENTRATION OF A GAS MIXTURE

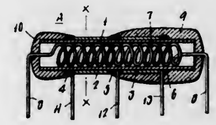
Kiyoshi Sumi, Kyoto, and Naomasa Sunano, Ayabe, both of Japan, assignors to Shiney Co., Kobe, Japan

Filed July 20, 1971, Ser. No. 164,331

Claims priority, application Japan, July 21, 1970, 45/64064

Int. Cl. G01n *27/12*

U.S. Cl. 73—27 R **10 Claims**



A gas vapor detecting element comprises an alumina ceramic cylinder with a coil-like heater extending through the interior thereof, and a gas detecting semiconductor and a temperature compensating semiconductor made of the same oxide semiconductor material and fixedly provided by sintering around the outer peripheral surface of the cylinder in adjacent relationship to each other. The opposite open ends of the ceramic cylinder are sealed with a glass material and the temperature compensating semiconductor is also covered and enclosed with the glass material. Contact of the detecting element with an atmosphere of insanitary gas vapor produces a variation in the ratio of resistance value between the gas detecting semiconductor and the enclosed temperature compensating semiconductor, whereby the presence and concentration of the insanitary gas vapor is detected. The gas vapor can be detected accurately by keeping the ratio of resistance value between the gas detecting semiconductor and the temperature compensating semiconductor constant in the atmosphere which may have a varying temperature. A meter for measuring the concentration of insanitary gas vapor in accordance with this invention principally comprises the above-mentioned detecting element, with the gas detecting semiconductor and the temperature compensating semiconductor thereof connected to auxiliary resistors respectively to provide a bridge circuit. Thus, the variation in the ratio of resistance value between both of the semiconductors is taken out as a potential difference across the bridge circuit which is directly indicated in terms of the concentration of a gas vapor to be measured on a potentiometer provided with a concentration scale.

3,699,804

CAPILLARY VISCOMETER

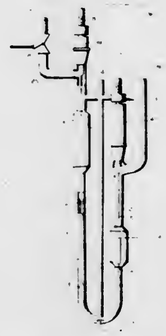
Hans Ulrich Gassmann, Fribourg, and Michel Mugnier, Monthey, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Jan. 20, 1971, Ser. No. 107,942

Claims priority, application Switzerland, Jan. 22, 1970, 894/70

Int. Cl. G01n *11/06*

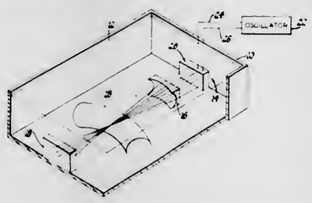
U.S. Cl. 73—55 **15 Claims**



A capillary viscometer has a capillary in one arm of a U-tube. The other arm contains a pair of coaxial but axially spaced measuring electrodes the upper one of which is axially adjustable. A reference electrode is mounted in the base of the U-tube and an axially adjustable control electrode is disposed beyond the upper end of the capillary. A measured quantity of a test liquid is introduced into the measuring electrode arm and drawn up into the capillary arm by vacuum applied at the upper end of the capillary until the liquid contacts the control electrode. Upon the liquid now being allowed to flow back up the measuring electrode arm, the flow path including the capillary, contact of the leading liquid meniscus with the lower and upper measuring electrode respectively starts and stops a clock. The time measured is a function of viscosity. The adjustable measuring electrode allows the viscometer to be calibrated to a known standard. There is described a pneu-

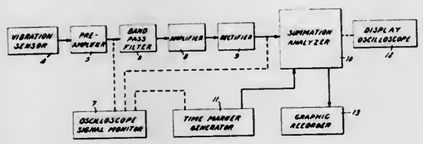
matic system whereby the operations in measurement are performed and an electric control circuit which enables measurements to be made substantially automatically.

3,699,805
ULTRASONIC TESTING APPARATUS
Willard W. Bayre, Amherst, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 26, 1968, Ser. No. 747,942
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.6 **6 Claims**



An ultrasonic testing apparatus including an ultrasonic lens having a double curved focusing face defined by two different constant curvatures each extending along a different one of two perpendicular reference axes so that each of the ultrasonic energy rays or wave trains in an ultrasonic beam passing through the focusing face is deflected at a different angle along each of the reference axes.

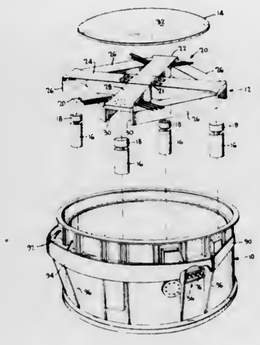
3,699,806
EARLY DETECTION OF DAMAGE TO MACHINE ELEMENTS IN ROLLING ENGAGEMENT
Bjorn Weichbrodt, 1038 Mahegan Road, Schenectady, N.Y.
Continuation-in-part of Ser. No. 653,509, July 14, 1967, abandoned. This application March 27, 1970, Ser. No. 23,252
Int. Cl. G01m *13/02*, *13/04*
U.S. Cl. 73—71.4 **8 Claims**



A system for detection of damage to a machine element in rolling engagement to another machine element utilizing the component of vibration produced by such damage. Successive cycles each including the component of vibration produced by the damage are summed to enhance and render detectable such component of vibration.

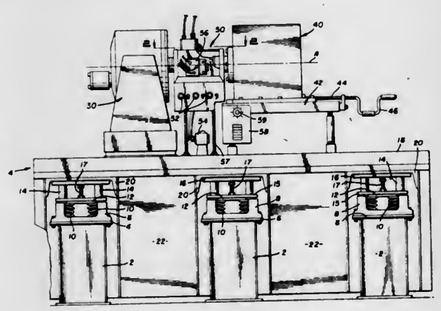
3,699,807
APPARATUS FOR VIBRATIONAL TESTING OF ARTICLES
James J. Kerley, Jr., Cheverly, and Norman C. Schaller, Seabrook, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 3, 1971, Ser. No. 168,650
Int. Cl. B06b *1/00*
U.S. Cl. 73—71.6 **20 Claims**

An apparatus for vibrational testing of manufactured assemblies, components, etc., comprising a vibration table having a generally planar supporting surface for the article being tested, at least a pair of actuating pistons for effecting vibrational movement of the table along a primary axis generally perpendicular to the plane of the supporting surface, at least one further actuating piston for effecting transverse vibration of the table generally in the plane of the supporting surface, and a plurality of pairs of prestressed supporting cables supportingly securing the table to a peripheral stationary frame, the supporting cables being disposed substantially in the plane



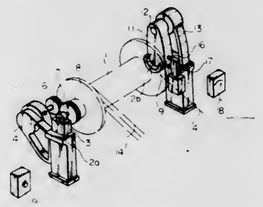
of the supporting surface and being pre-tensioned to at least ten percent of their ultimate breaking strength. The testing apparatus as described may advantageously be mounted on a testing centrifuge for adding an essentially constant gravitational accelerating force to the vibrational forces acting on the article being tested.

3,699,808
DYNAMIC TESTING DEVICE FOR VISCO-ELASTIC MATERIALS
Bryce W. Ford, Kent; Daniel A. Meyer, Akron, and Walter C. Warner, Hudson, all of Ohio, assignors to The General Tire & Rubber Company
Filed Oct. 13, 1971, Ser. No. 188,920
Int. Cl. G01n *3/38*
U.S. Cl. 73—91 **10 Claims**



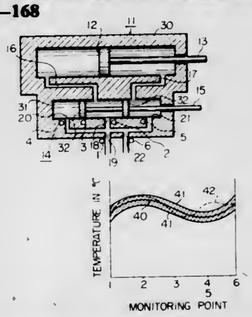
A testing device for obtaining dynamic properties of visco-elastic materials is adapted for testing in shear or compression. The device which imposes sinusoidal deformation upon the specimen permits testing over wide ranges of temperatures and frequencies. The displacement and force developed in the specimen are sensed by suitable transducers and with the aid of appropriate controls and instrumentation, the total or complex modulus of the material is found along with its "loss" or phase angle.

3,699,809
APPARATUS FOR DETECTING THE TENSION OF YARNS DELIVERED FROM A ROTARY YARN BEAM
Tokuji Komatsu, Kanazawa, Japan, assignor to Tsudakoma Industrial Co., Ltd., Ishikawa-ken, Japan
Filed March 22, 1971, Ser. No. 126,489
Claims priority, application Japan, April 16, 1970, 45/37030
Int. Cl. G01l *5/10*
U.S. Cl. 73—143 **6 Claims**



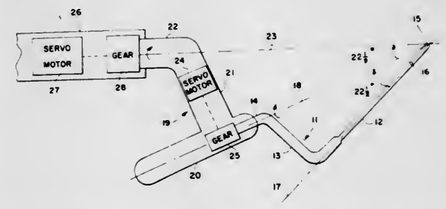
An apparatus for detecting the tension of yarns delivered from a rotary yarn beam that is movably supported at one end and supported for rotative movement on a pivotal arm at the other end. The tension of the yarn causes the pivotal movement of the arm which contacts and actuates an adjacently positioned detector that produces a signal corresponding to the amount of tension. A visual indicator and a braking mechanism can be actuated by this signal.

3,699,810
DEVICE FOR MONITORING A FLUID PRESSURE SYSTEM
Senji Takahashi, Yokohama-shi, Japan, assignor to Japan Aircraft Manufacturing Company Limited, Kanagawa-ken, Japan
Filed July 16, 1970, Ser. No. 55,367
Claims priority, application Japan, April 21, 1970, 45/33485
Int. Cl. G01k *7/00*; G01m *19/00*
U.S. Cl. 73—168 **5 Claims**



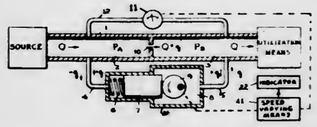
A device for monitoring a fluid pressure system comprises a plurality of tranducers for individually detecting local temperatures at a plurality of locations in the system and providing corresponding electric signals, a scanner for addressing the electric signals in accordance with a prescribed program and providing corresponding output signals, a linearizer for calibrating the output signals, an AD converter for converting the calibrated output signals into corresponding digital signals, and means for visually displaying both a temperature characteristic pattern developed from the digital signals and a temperature reference pattern indicative of the acceptable temperature levels in the system whereby a comparison of the two patterns may be made to determine defective components in the fluid pressure system.

3,699,811
FLOW VELOCITY AND DIRECTION INSTRUMENT
Donald L. Maiden, Williamsburg; James H. Monteith, Newport News, and Thomas D. Carpini, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 27, 1971, Ser. No. 166,541
Int. Cl. G01m *9/00*
U.S. Cl. 73—189 **7 Claims**



An instrument for providing measurements of both the magnitude and direction of flow velocities in a flow field. A probe is oriented in the flow field by two servo systems which impart two angular motions to the probe to aline it with the direction of the flow. The two angular motions are indicative of the direction of flow and the magnitude of the flow velocity is then measured by conventional means.

3,699,812
MASS FLOWMETER
Walter Masnik, 11 Cecil Court, Cedar Grove, N.J.
Filed Jan. 29, 1971, Ser. No. 110,839
Int. Cl. G01f *1/00*
U.S. Cl. 73—205 D **9 Claims**

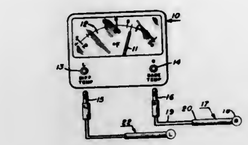


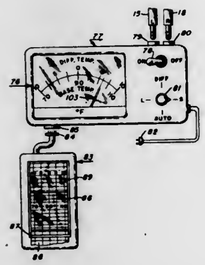
Mass flow is measured by providing a restrictor in a conduit and a differential pressure transducer to measure the pressure drop across the restrictor. In one modification a variable speed piston pump connected across the restrictor alternately adds and subtracts flow to the conduit. The speed of the pump is responsive to changes from a reference pressure drop across the restrictor to maintain the pressure differential constant across the flow restrictor for changes in the mass flow rate. An indicator responsive to the speed of the pump serves to measure the mass flow rate which is inversely proportional to the speed of the pump. In a second modification like results are obtained by oscillating the restrictor in an axial direction instead of using a pump.

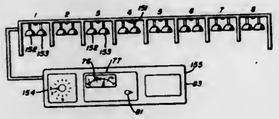
3,699,813
MEDICAL THERMOGRAPHIC DIAGNOSTIC MEANS
Anthony H. Lamb, 66 King Street, Hillside, N.J.
Filed May 25, 1970, Ser. No. 40,094
Int. Cl. G01k *7/24*
U.S. Cl. 73—342 **11 Claims**

Temperature-sensitive elements, adapted for contact with selected areas of the human body, are connectable into a bridge circuit and effect the actuation of an indicator having a scale calibrated in predetermined temperature values. Circuit arrangements are provided for measuring and recording the temperature of individual temperature sensitive elements and

the temperature difference between such elements, thereby to facilitate obtaining diagnostic temperature information of an

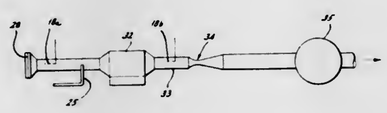






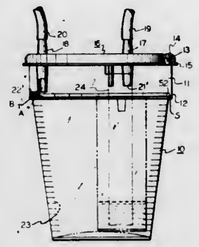
individual and, also, to provide for a rapid temperature checking of individuals on a mass basis.

3,699,814
GAS SAMPLER
Warren F. Kaufman, Santa Ana, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed March 9, 1972, Ser. No. 233,082
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 **10 Claims**



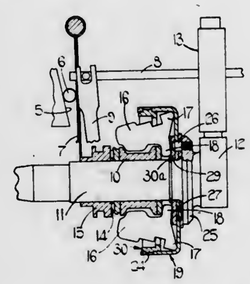
Apparatus for sampling gaseous exhaust emissions, on a constant flow basis. A centrifugal type extractor pump is used to draw gas through a critical flow venturi of predetermined flow rate. Exhaust emissions are diluted with air and the critical flow venturi acts as a constant volume flow device serving a metering function. Samples are taken and collected continuously during the test run, and are available to be analyzed for contaminants such for example as hydrocarbon, carbon monoxide and oxides of nitrogen.

3,699,815
IMPROVEMENTS IN BODY FLUID COLLECTION BOTTLE
Legrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah
Filed Oct. 29, 1970, Ser. No. 85,075
Int. Cl. G01f *19/00*; A61b *5/00*
U.S. Cl. 73—427 **9 Claims**



A vacuum operated body fluid collection bottle having an insert container of receptacle which is calibrated to receive accurately measurable, small quantities of body fluid collected within the bottle. Such insert includes overflow means whereby quantities in excess of a predetermined amount can overflow into the interior of the outside container. The insert container, in a preferred form of the invention, is positioned by means of a flange disposed against a shoulder provided within the interior of the bottle. Both outside and interior containers are uniquely calibrated to satisfy a variety of conditions. An anti-splash tube is incorporated and uniquely positioned within the bottle construction and is appropriately spaced from the lid thereof to provide for a free exhaust of air and hence a creation of reduced pressure conditions proximate the liquid inlet of the bottle.

3,699,816
GOVERNOR MECHANISMS
Pierre Henri Peltret, London, England, assignor to C.A.V. Limited, Birmingham, England
Filed Dec. 14, 1970, Ser. No. 97,963
Claims priority, application Great Britain, Jan. 1, 1970, 108/70
Int. Cl. G05d *13/06, 13/14*
U.S. Cl. 73—526 **5 Claims**

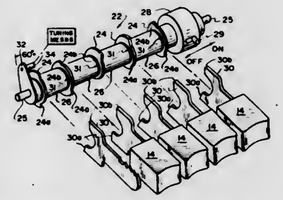


A governor mechanism including a plurality of weights which are movable under the action of centrifugal force to urge a sleeve in one axial direction, the weights being located within a housing. The housing includes a cup shaped member in which is located an insert. The insert defines surfaces which guide the movement of the weights under the action of centrifugal force.

ERRATUM

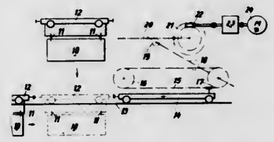
For Class 73—432 R see:
Patent No. 3,699,821

3,699,817
ISOLATOR WASHER MEANS FOR PUSHBUTTON TUNER MEMORY MECHANISM
Ole K. Nilssen, Barrington Hills, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 9, 1970, Ser. No. 96,553
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.37 **3 Claims**



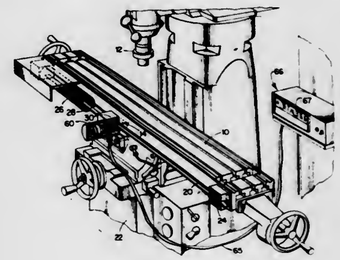
An isolator washer for a mechanical memory mechanism for a radio tuner or the like having a plurality of memory cams positioned at axially spaced locations in a common shaft. The shaft is rotated by actuation of a pushbutton which has a portion thereof engaging one of the memory cams to tune the radio to a desired preselected radio station. A common lock mechanism is used to simultaneously unlock all the memory cams on the shaft to a minimum per load holding force, and isolator washer means is positioned next to each memory cam to prevent rotational movement of a memory cam then being set from inadvertently rotating an adjacent memory cam which is not to be moved. The memory cam so being set is moved only under the influence of a setting action by its associated pushbutton.

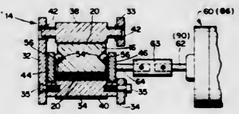
3,699,818
APPARATUS FOR CONVEYING GLASS PANES THROUGH A PROCESSING PLANT
Kurt Klotzbach, Dusseldorf-Rath, Germany, assignor to SACK Glastechnik GmbH, Dusseldorg-Rath, Germany
Filed June 4, 1970, Ser. No. 43,353
Claims priority, application Germany, June 13, 1969, P 19 30 081.3
Int. Cl. F16h *19/06*
U.S. Cl. 74—37 **5 Claims**



Apparatus for producing a jerk-free intermittent conveying motion which proceeds in accordance with a desired law of motion includes an electric motor driving the input of a steplessly variable transmission the output of which drives a crank transmission through a wormgear. A toothed push rod connected to the crank of the crank transmission drives a pinion coupled to drive one of two sprocket wheels carrying an endless chain to which is attached a carriage to be reciprocated. A cam disposed on the shaft of the crank has a control surface which defines the desired law of motion and is followed by a roller carried by one arm of a lever pivoted intermediate its ends. The other arm of the lever is coupled to an adjusting element of the steplessly variable transmission so as to adjust the output speed of such transmission in dependence upon the crank position and in accordance with the desired law of motion.

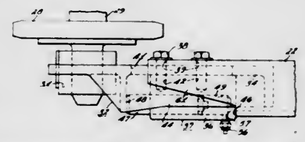
3,699,819
PRECISION LINEAR MOTION CONVERTING AND POSITION MEASURING APPARATUS
Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Filed Aug. 6, 1970, Ser. No. 61,725
Int. Cl. F16h *27/02*
U.S. Cl. 74—25 **14 Claims**





A roller-band device including an idler roller, drive roller and band, is mounted on a carriage movable linearly relative to the band so that the angle of rotation of the drive roller is related to the distance traveled by the carriage. The drive roller can be driven to convert rotary motion to linear motion or the carriage can be driven to convert linear motion to rotary motion. Means including a pulse generator coupled to the drive roller produces a very accurate readout of the position of the carriage.

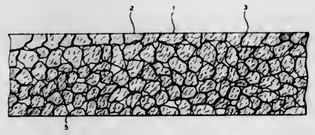
3,699,820
CHAIN ADJUSTER FOR ELEVATING SCRAPER
James W. Voth, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed March 19, 1970, Ser. No. 126,012
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.14 R **9 Claims**



An adjuster for an endless chain or belt mechanism includes a removable ram interposed between frame and tensioning members. Releasable fastening means not only adjustably secure the tensioning member relative to the support member but also releasably fasten the cylinder element of the ram to one of the members. Upon loosening of the fastening means,

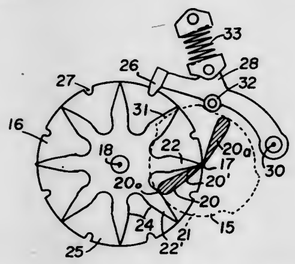
the ram can be expanded by introduction of pressure fluid to selectively adjust the position of the tension member relative to the support member.

3,699,821
DETERMINATION OF VOIDS TO SOLIDS RATIO IN POROUS MATERIALS
William C. Hahn, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 4, 1971, Ser. No. 103,378
Int. Cl. G01n 15/08
U.S. Cl. 73—432 R **8 Claims**



An etchable surface on which a pattern representing solids and voids is etched to remove a portion of the surface which, in respect to the weight of the total etchable surface, represents the percentage of the area occupied by the voids.

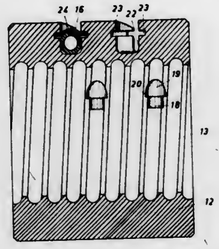
3,699,822
INDEXING DRIVE
Ernest Wildhaber, 124 Summit Drive, Brighton, N.Y.
Filed June 17, 1971, Ser. No. 154,126
Int. Cl. F16h 55/04; B23q 17/02
U.S. Cl. 74—437 **13 Claims**
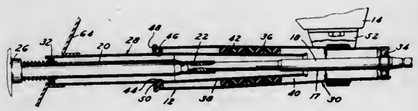


A continuously rotating driver and an element to be intermittently indexed are mounted on parallel axes. The driver has an oblong actuating portion that engages generally radial projections of said element. Adjacent projections are separated by spaces whose opposite sides converge towards the axis of said element. The contour of the actuating portion is free of concave curvature while said projections have sides with convex and concave curvature. Preferably the oblong actuating portion is shaped to hold said element in both rotational directions during indexing.

3,699,823
DEVICE FOR RE-CIRCULATING THE BALLS OF A BALL SCREW MECHANISM
Sven Walter Nilsson, Partille, Sweden, assignor to SKF Industrial Rading and Development Company N.V., Amsterdam, Netherlands
Filed Jan. 19, 1971, Ser. No. 107,655
Claims priority, application Sweden, Jan. 20, 1970, 620170/1970
Int. Cl. F16h 55/04
U.S. Cl. 74—459 **3 Claims**

In a ball nut mechanism the ball return means for recirculating the balls from one end of the mechanism to the other is designed as a tube which is substantially U-shaped, the end portions of the tube being fitted in bores in the nut body of the mechanism. The tube furthermore is countersunk in a channel running transversally over the nut body between said bores. On a level above the tube resting in the channel, this is provided with a longitudinal groove in each of its side walls, in which grooves a locking member is insertable. Said locking member, being of a deformable material, is so much longer than the channel that it extends out over enlarged portions of the bores, where it is bent down over the tube, thereby being secured against longitudinal displacement.



3,699,824
ENERGY ABSORBING STEERING COLUMN FOR A MOTOR VEHICLE
Karl Staudenmayer, Cologne-Weidenpesch, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 850,360, Aug. 15, 1969, abandoned.
This application April 5, 1971, Ser. No. 131,441
Int. Cl. B62d 1/18
U.S. Cl. 74—492 **8 Claims**

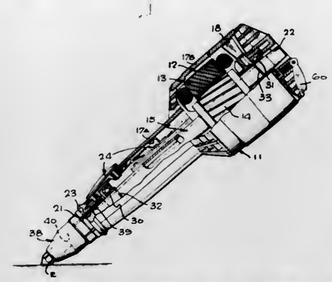


An energy absorbing steering column for a motor vehicle having a pair of telescopic steering shaft sections and a pair of telescopic tubular sections that form an outer housing. The tubular sections are separated by a plurality of prestressed elastomeric members that are compressed when the column is collapsed whereby energy is absorbed.

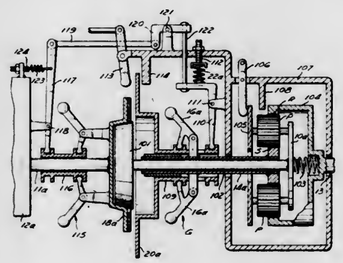
3,699,825
INTEGRATED AND FUNCTIONALLY IMPROVED ELECTRIC ERASING MACHINE AND ACCESSORY TOOL
Louis J. Misuraca, 1359 Romulus Drive, Glendale, Calif.
Filed Sept. 9, 1970, Ser. No. 70,710
Int. Cl. G05g 5/06
U.S. Cl. 74—527 **11 Claims**

The application discloses a hand-held and directed tool, typified herein as an electric erasing machine, embodying an electric motor equipped with a tubular shaft supported in a housing which provides resiliently mounted, preloaded ball bearings therefor, the shaft having precisely concentric, self-holding, tapered end portions forming external, frusto-conical seats upon which to rapidly mount chucks or other tools, either singly or plurally, and having slotted ends or other suitable means engageable by concommitant, restrictive means integral with the housing for holding, or locking the shaft against rotation whenever necessitated for the manual application or

removal of tools or accessory devices. The shaft is especially processed to provide precisely concentric (rotational) mounting and operation of any compatible tool or accessory applied thereon; said application (or removal) being accomplished instantly.



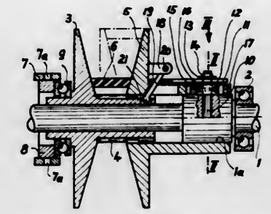
3,699,826
VARIABLE RATIO TRANSMISSION
Edwin T. Lumb, 530 N. W. 144th Street, Miami, Fla.
Filed Feb. 25, 1971, Ser. No. 118,701
Int. Cl. F16h 5/46, 57/10
U.S. Cl. 74—752 E **10 Claims**



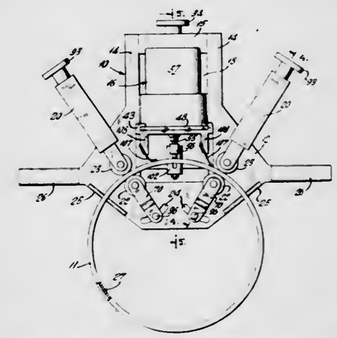
Variable ratio, planetary gear-type transmission having the input drive coupled to a rotatable carrier for the planet gears, the output driven by the ring gear, and a governor for regulating the speed of the sun gear. A torque coupling which accommodates slippage acts between the sun gear and the input drive, under the control of the governor, to control the gear ratio.

3,699,827
AXIAL ACTUATOR AND FORCE CONTROL FOR ROTARY MEMBERS, ESPECIALLY VARIABLE SPEED DRIVES
Hilmar Vogel, Gartenstrasse 1E, 8033 Krailling b. Munich, Germany
Filed July 9, 1971, Ser. No. 161,072
Int. Cl. F16h 9/00
U.S. Cl. 74—230.17 C **11 Claims**

An axial actuator or torque-responsive contact-pressure control, especially for variable-speed drives having a sheave with at least one axially movable disk for varying the pitch diameter of a transmission system having a flexible member interconnecting the adjustable sheave with a further sheave, e.g., a belt or chain transmission. The actuator or torque-responsive control, which has a relatively small mass and substantially no play, comprises a radial pressure pin shiftable along the axis of the adjustable sheave and/or angularly displaceable relative thereto and within a body defining a surface of revolution with an axis lying along a radius. A pair of pressure shoes have surfaces of a radius of curvature corresponding to that of the surface of revolution and planar flanks tangential to the pressure pin, while being received between the latter and the soffit of the surface of revolution so that the angle of attack of the pressure pin on the pressure shoes is varied in accordance with the position of the movable sheave disk. A force-transmitting system between the latter disk and the pressure shoes defines the ratio of pressure-pin movement to disk movement.



3,699,828
PIPE GROOVER
Edward Walter Platek, Linden, and William A. Horr, Hamburg, both of N.J., assignors to Victaulic Company of America, South Plainfield, N.J.
Filed Dec. 2, 1970, Ser. No. 94,294
Int. Cl. B23b 5/16
U.S. Cl. 82—4 C **12 Claims**

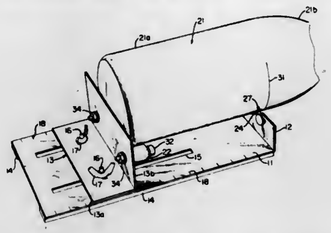


A portable tool for machining pipe, particularly suited for forming an external circumferential groove adjacent the end of a plastic pipe section. A motor driven cutter is held pointed toward the axis of the pipe by guide and support rollers which are mounted on adjustable arms adapted to engage pipes of different diameters. One rotation of 360° suffices to produce a completed groove.

3,699,829
METHOD AND APPARATUS FOR CUTTING GLASS BOTTLES AND THE LIKE
Ephrem J. Gelfman, 855 Orman Drive, Boulder, Colo.
Filed July 10, 1970, Ser. No. 53,741
Int. Cl. B23b 3/04, 5/14
U.S. Cl. 82—92 **13 Claims**

A method and apparatus for cutting hollow cylindrical members such as glass bottles includes rotary support structure on which a hollow cylindrical member may be rotated about its axis. The rotary support structure includes axially and laterally spaced support rollers with a pair of the laterally spaced rollers adjustable toward and away from the other laterally spaced rollers to make a cut of a selected length. One

support roller has a cutting edge engageable with the periphery of the supported member during rotation for forming a circular score line with a full revolution thereof. Heat is applied to the member along the score line such as by a flame,



and the member is then rapidly cooled such as by quenching with ice to effect a break along the score line. The edges at the break are smoothed by sanding with an abrasive material or the like.

3,699,830

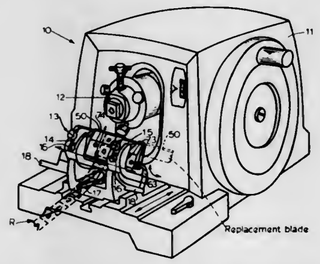
METHOD UTILIZING A DISPOSABLE BLADE IN MICROTOME CUTTING

John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C.

Continuation-in-part of Ser. No. 885,143, Dec. 15, 1969, Pat. No. 3,599,523. This application March 22, 1971, Ser. No. 126,674

Int. Cl. B26d *3/00*

U.S. Cl. 83—13 **9 Claims**



The method of microtome cutting based on using the conventional, non-disposable, thick, inflexible microtome knife that requires resharpening after each period of wear and substantial blade holder adjustments to obtain and maintain the proper cutting angle is replaced by a method based on using a thin, flexible and disposable blade having a microtome quality cutting edge and which method allows the technician to install and replace blades without disturbing or repositioning the holder.

3,699,831

CUTTER AND CREASER

Harry E. Mowry, Sewickley Heights, Pa., assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

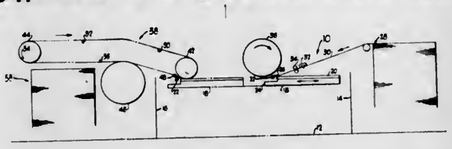
Filed May 3, 1971, Ser. No. 139,593

Claims priority, application Germany, May 8, 1970, P 20 22 508.5

Int. Cl. B65h *5/10, 5/12, 29/04*

U.S. Cl. 83—94 **5 Claims**

A cutter and creaser is fabricated from the components of a flat bed letter press. A carriage is mounted on the press frame member for horizontal longitudinal reciprocal movement between the feed end of the press and the delivery end of the press. A die plate suitable for cutting or creasing paperboard or the like is positioned on the upper surface of the carriage, or in some cases, wrapped around the cylinder. A cylinder is positioned above the carriage and is arranged to press a sheet into the die plate as the carriage moves reciprocally thereunder. A sheet delivery device includes an inclined feedboard that feeds the front edge of the sheet to the front edge of the carriage where the front edge of the sheet is engaged by gripper means. The carriage is advanced forwardly beneath



the cylinder while the sheet is engaged by the gripper device on the carriage to press the sheet against the die plate. A sheet delivery device includes gripper means to engage the front edge of the sheet on the carriage and transfer the sheet from the carriage to a stacking device. Another embodiment includes gripper means on the cylinder to engage the front edge of the sheet and transfer the sheet to the gripper device on the front of the carriage.

3,699,832

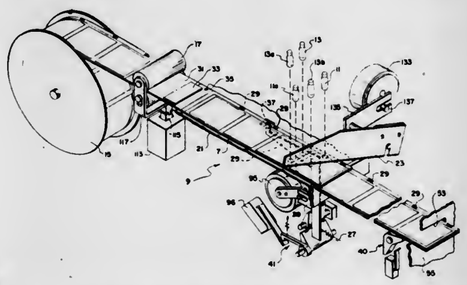
CONTROL CIRCUIT FOR AUTOMATING THE OPERATION OF A FILM CUTTER OR LIKE APPARATUS

Gerald C. Smith, Honeoye, and Raymond J. Williams, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed April 16, 1971, Ser. No. 134,789

Int. Cl. B26d *5/32, 5/34*

U.S. Cl. 83—210 **18 Claims**



A control circuit for automating the operation of a film cutter of the type suitable for cutting large, continuous rolls of film having regularly spaced edge perforations fixedly oriented with respect to the exposed frames thereof which continuous rolls are made up of spliced, intermingled customer rolls of 12 or 20 frames each. Cutting of the film into strips of four exposure frames each, plus a strip of four exposure frames and the splice frame, is controlled by the response of photosensitive detectors which monitor passage of the film perforations and the splice frame. The photosensitive detectors are connected to a counting circuit which generates, in its first frame first mode of operation, an output signal for each four film perforations counted. In its Last Frame First mode of operation, the counting circuit is logically controlled so that it counts five perforations prior to the first cut in the customer roll and four perforations thereafter. In response the output signal of the counting circuit, a pivotally mounted pawl located in the cutter is caused to swing upwards to engage the next following film perforation. Engagement of the pawl, in turn, causes the film drive to stop. The cutter blade is actuated in response to engagement of the pawl with the film perforation, thereby severing an initial strip of film containing four images in the First Frame First mode or an initial strip of film containing five images in the Last Frame First mode. The same signal which caused the film drive to stop and the cutter to sever a strip of film, after a time delay greater than that required for complete cutter blade movement is employed to drop the pawl out of engagement and restart film drive. This operation is repeated until a splice is sensed, whereupon the pawl remains engaged, halting further film drive until the previously cut strips are removed from the exit therefor provided in the cutter housing. A mode switch appropriately located on the cutter allows the operator to automatically cut the larger rolls of film regardless of whether the splice frame leads or trails the individual customer rolls.

3,699,833

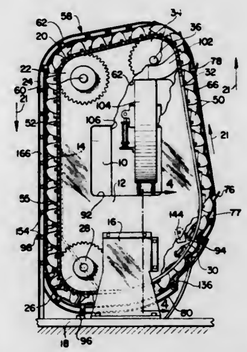
BOBBIN HANDLING APPARATUS

William E. Stoppard, Warwick, R.I., assignor to Lessona Corporation, Warwick, R.I.

Division of Ser. No. 847,240, Aug. 14, 1969, Pat. No. 3,613,862. This application April 29, 1971, Ser. No. 138,559

Int. Cl. B26d *7/06*

U.S. Cl. 83—410 **10 Claims**



Apparatus for segregating a jumbled mass of bobbins and delivery of the bobbins one at a time in axial orientation. A chain conveyor includes a plurality of buckets for receiving bobbins. These buckets open inwardly and together form the bottom of a hopper which receives the jumbled bobbins. As the conveyor is driven each bucket is adapted to receive a bobbin from the hopper and carry the bobbin upwardly along a substantially straight path to a discharge chute at an upper portion of the apparatus. Concurrently with such movement of each bucket and its bobbin a finger is moved across the inclined edge of the bucket to transfer any strands of yarn extending from the bobbin across the edge and into a cutter. Alternatively, each bucket may be provided with a cutter which is moved across the inclined edge to sever the loose strands.

3,699,834

BIMODAL FILM CUTTER ADAPTED TO HANDLE DIFFERENT FILM WIDTHS

Thomas W. Bracken, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

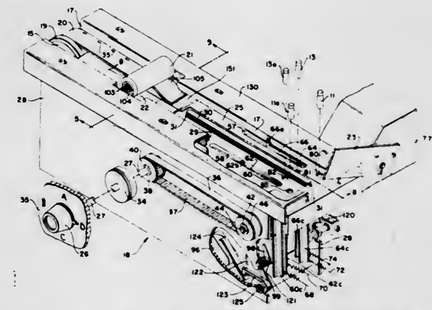
Filed April 16, 1971, Ser. No. 134,788

Int. Cl. B65h *9/20*

U.S. Cl. 83—446 **9 Claims**

A film cutter adapted to sever individual customer orders of 110 or 126 type film into a number of segments. The individual customer orders are spliced together to form a large, continuous roll which is placed in the film cutter. If the splice frame leads the individual customer orders, the film cutter is operated in a First Frame First mode. If the splice frame trails the individual customer orders, the film cutter is operated in a First Frame First mode.

Rotation of a selection knob conditions the film cutter for handling either width of film in either mode of operation. Such conditioning automatically causes selection of one of four pivotally mounted pawls, the selected pawl being properly located for the type of film to be cut and the mode of operation to be used. At the same time, rotation of the selection knob automatically raises a T-bar, longitudinally disposed in the film bed of the cutter, to provide a guide surface for one edge of the narrower 110 type film. If the wider 126 type film is to be severed, the T-bar remains lowered and only the proper pawl is selected.



When a pawl solenoid, which controls movement of the selected pawl, is energized, the selected pawl is forced downward out of engagement with a film edge perforation. This action permits film drive to commence. When the pawl solenoid is de-energized, the selected pawl swings upward under the biasing influence of a spring where it rides under the still driven film. Engagement of the next following edge perforation by the selected pawl, allows it to swing fully upward, which final movement is transmitted to and sets a microswitch located in its path of travel. The resultant signal from the microswitch causes film drive to stop.

3,699,835

MUSICAL INSTRUMENTS, ESPECIALLY OF THE PERCUSSION TYPE

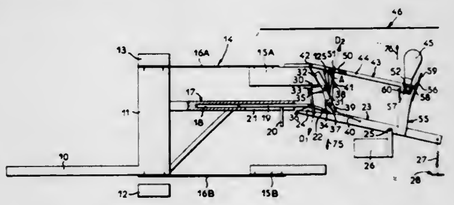
Andre Raffali, 188, Avenue de Verdun, 36 Chateauroux, France

Division of Ser. No. 761,099, Sept. 20, 1968, Pat. No. 3,559,526. This application Oct. 9, 1970, Ser. No. 79,499

Claims priority, application France, Sept. 25, 1967, 67122069

Int. Cl. G10c *3/18*

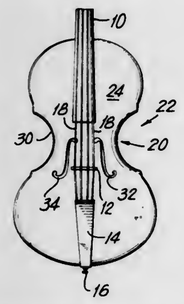
U.S. Cl. 84—236 **10 Claims**



In application of the invention to a keyboard musical instrument such as a piano, the key is guided by a deformable parallelogram linkage, so that during its actuated displacement, the key remains parallel to its original orientation; between each key and the associated hammer is interposed a transmission which, when the key is depressed, gives the hammer an accelerated movement with respect to the movement of depression of the said key; the release of the transmission for the free return of the hammer after striking is effected after the full

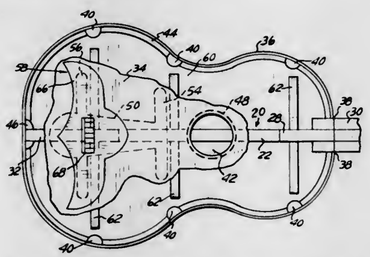
depression of the key during the sole inertia movement of the hammer towards the wire; the effect of the soft pedal is obtained by continuous modification of the active length of an intermediate lever of the transmission.

3,699,836
STRINGED MUSICAL INSTRUMENT
Leon Glasser, 390 Bedford Park Blvd., Bronx, N.Y.
Filed Sept. 9, 1970, Ser. No. 70,237
Int. Cl. G10d 3/00
U.S. Cl. 84—291 14 Claims



A stringed musical instrument such as a violin resembling a more expensive one in appearance and sound. The sound box portion of the violin includes top, bottom, and side walls which are formed by a plurality of woven, resin impregnated fiberglass sheets being in number between five and nine and in thickness between 0.006 to 0.009 inches. An outer layer of impregnated wood grained paper is heat-sealed to the fiberglass plies, forming the outer surface of the sound box. This outer surface takes on the appearance of a grainy wood finish, thereby resembling natural wood violins.

3,699,837
FRAME FOR A MUSICAL INSTRUMENT AND METHOD OF MAKING SAME
Domenico M. Annessa, 3536 Burns Avenue, Detroit, Mich.
Filed Dec. 27, 1971, Ser. No. 212,239
Int. Cl. G10d 3/00
U.S. Cl. 84—291 5 Claims



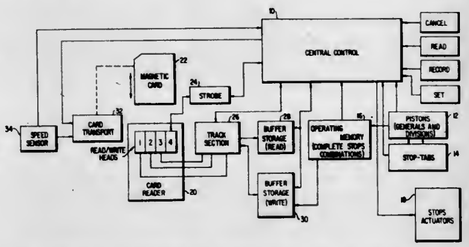
A frame work for a stringed instrument such as a guitar or violin is comprised of a hard wood single stabilizing central one piece dorsal spine which includes a lower hook portion for support of the back and a portion of the top of the instrument and an offset longitudinally extending upper hooked portion forming a support for another portion of the top. A plurality of cross struts are attached to the dorsal spine to support the back. Upright side blocks are supportably interposed between the top and back and are secured to the sides along interior portions thereof respectively spaced outwardly of the ends of said cross struts. Additional blocks are secured on opposite sides of end portion of the dorsal spine extending between and engaging the top and back.

3,699,838
GUITAR PICK
Edgar L. Montgomery, 729 N. Cole Avenue, Hollywood, Calif.
Filed July 2, 1971, Ser. No. 159,357
Int. Cl. G10d 3/16
U.S. Cl. 84—322 3 Claims



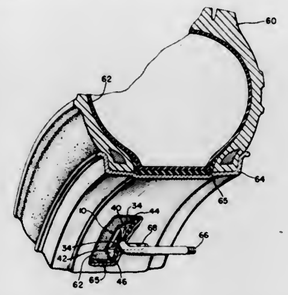
A guitar pick comprising as an integral part of its construction a band extending outward from each side of the main body and forming a loop around the upper portion of said pick. Said loop acts to provide a holding tension when a thumb or finger is inserted between the main body of the pick and said loop. The area enclosed by said loop being of such size and shape as to provide for fingers of various sizes and various gripping postures.

3,699,839
CAPTURE COMBINATION SYSTEM
Thomas R. Denigan, Newport Beach, and James L. Thomas, Placentia, both of Calif., assignors to North American Rockwell Corporation, Anaheim, Calif.
Filed Oct. 9, 1970, Ser. No. 79,611
Int. Cl. G10b 3/10
U.S. Cl. 84—345 15 Claims



A capture combination system for use in an electronic organ provides rapid reprogramming of the entire combination memory while permitting manual selection of desired stop combinations at any time. Desired stop combinations are selected for each piston and set into the working memory of the system. These combinations, upon command, are transferred from the working memory to a storage or external memory. A full combination of stop settings may be stored on the external memory by transfer from the internal memory, and a number of such external memories corresponding to a number of different full combinations of stop settings thus may be prepared and, subsequently, selectively presented to the system as desired. The combination settings from the external memory are transferred upon command into the internal working memory for establishing the desired combination of stop settings therein. Transfer into or out of the external memory requires but a few seconds. Whenever desired, the working memory may be altered to modify one or more stop combinations, whether set manually, or entered therein from the external memory and, in the latter case, while retaining the combinations recorded in the external memory.

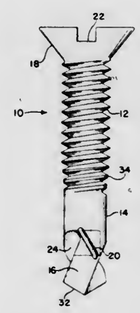
3,699,840
PUSH-ON BRIDGE WASHER FOR PNEUMATIC TIRE TUBES
Michael W. Cook, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 17, 1971, Ser. No. 144,136
Int. Cl. F16b 17/00, 43/00; B60c 23/10
U.S. Cl. 85—36 6 Claims



A lightweight one-piece bridge washer for use in conjunction with a pneumatic tire tube and wheel rim to grip the valve stem and hold the tube away from the valve stem opening in the rim. The bridge washer includes a flat rectangular base for engaging the tube, spring tongs to grip the valve, and end members supportable by the rim. Necessary strength is provided by ridges formed in the base and end members.

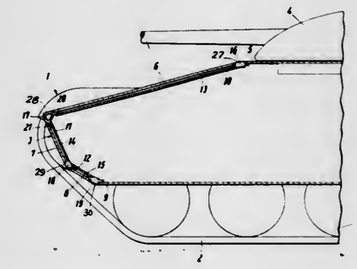
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,699,841
DRILLING AND REAMING SCREW
James Curtis Lanius, Jr., Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed March 31, 1971, Ser. No. 129,829
Int. Cl. F16b 25/00
U.S. Cl. 85—41 1 Claim



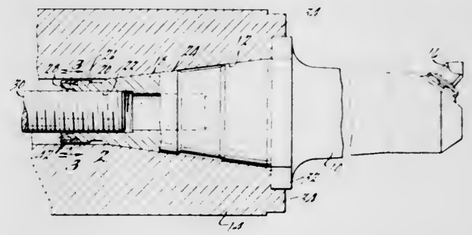
A self drilling screw for drilling and fastening a first work member to a relatively harder second work member. A drill tip having material removing members formed thereon and situated between drilling flutes on the tip. The material removing members becoming inoperative as a result of breaking on contact with the second relatively hard work member so as to permit threads to be formed in the second work member.

3,699,842
PROFILE ELEMENTS FOR JOINING ARMOR PLATES
Klaus Marbach Grewing, and Fritz Hacker, both of Ludwigsburg-Oswell, Germany, assignors to Firma Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany
Filed Dec. 16, 1969, Ser. No. 885,410
Claims priority, application Germany, Jan. 14, 1969, P 19 01 502.2
Int. Cl. F41h 7/04
U.S. Cl. 89—36 H 7 Claims



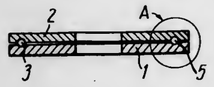
A connection for the shell of armored vehicles, wherein the plates of the shell are disposed in an angular, planar or stepwise relationship, thereby forming a hollow space. The plates are connected at the junction points by means of separate profile bars formed as hollow or solid components. The profile bars have shoulders constructed as mounting sections for the plate edges. For multiple wall shells, the profile bars can be provided with shoulders arranged in a stepwise manner.

3,699,843
TOOL HAVING RESILIENT BUMPER
Allen N. Sweeny, Grosse Pointe Farms, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.
Filed Jan. 20, 1971, Ser. No. 108,063
Int. Cl. B23b 27/00
U.S. Cl. 90—11 A 5 Claims



A tool or tool holder having a shank which is received in the socket of a machine tool spindle or other tool carrier. A resilient bumper ring is fitted on the rear end of the shank to protect both the shank and the socket from damage. In one embodiment of the invention the bumper also serves as a wiper to clean the socket.

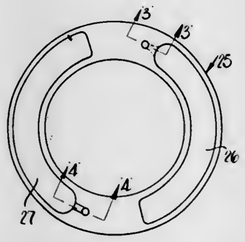
3,699,844
DIVIDING ATTACHMENT
Evgeny Mikhailovich Permitnov, Minsk, U.S.S.R., assignor to Minsky opytny zavod Spetsialnogo Konstruktoskogo Bjuro No. 3, Minsk, U.S.S.R.
Filed Aug. 14, 1970, Ser. No. 63,783
Claims priority, application U.S.S.R., Aug. 14, 1969, 1361761; Aug. 14, 1969, 1361763; Aug. 14, 1969, 1361764
Int. Cl. B23q *17/04*
U.S. Cl. 90—57 **2 Claims**



Dividing attachments for angular indexing in which the attachment is provided with two coaxial plates, in one of which spherical indentations extend along a circumference, while in the other balls are fixed for entering the indentations of the first plate. The indentations are made by compacting the material of the plate to a depth which is less, than their radius, and the balls are pressed into the plate to a depth which exceeds their radius, and are embedded in the plate.

The attachment is intended to be employed mainly in metal-working machines and in jigs used therewith.

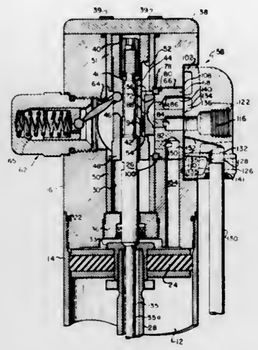
3,699,845
ROTARY HYDRAULIC PUMPS AND MOTORS
Richard Joseph Ifield, Beecroft, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 24, 1970, Ser. No. 58,059
Int. Cl. F01b *13/04*
U.S. Cl. 91—6.5 **11 Claims**



The port plate of a rotary hydraulic pump or motor has passages between one end of each port and the face of the plate against which the rotary cylinder block of the pump bears. One of the passages has a high resistance to flow from its associated port and the other passage has a high resistance to flow to its associated port. The passages permit a controlled flow between the ports and the pump cylinders prior to full communication therebetween.

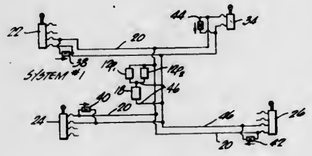
3,699,846
AIR MOTOR
Joseph M. Stomper, Norridge, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Dec. 30, 1970, Ser. No. 102,720
Int. Cl. F01l *31/02*; F15b *13/04*
U.S. Cl. 91—346 **1 Claim**

The following specification describes an air motor formed of three coaxial cylinders or housings assembled by a simple threading operation with one end housing having a spring biased valve assembly detachably inserted therein for directing air to opposite piston sides. A shuttle in one housing controlling the valve assembly is guided by a sleeve bearing to



minimize wear, and a conduit transmitting air from the valve assembly to the opposite end housing is simply connected by a single pair of fittings.

3,699,847
COOLED HYDRAULIC SYSTEM
Jane Little, Long Beach, Calif., assignor to McDonnell Douglas Corporation
Filed Feb. 4, 1971, Ser. No. 112,712
Int. Cl. F15b *11/16*
U.S. Cl. 91—411 R **13 Claims**



A hydraulic system which includes bypass restrictors at the extremities thereof to produce a predetermined flow of hydraulic fluid in selected hydraulic lines. The predetermined flow of hydraulic fluid transfers heat generated in the system throughout the system so that the heat loss along the hydraulic lines is sufficient to maintain the temperature of the hydraulic fluid below a predetermined temperature.

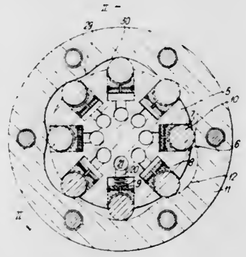
3,699,848
RADIAL PISTON FLUID PRESSURE MOTOR
Charles Scott Prendergast, Worthing, England, assignor to Cam Rotors Limited
Continuation-in-part of Ser. No. 825,507, May 19, 1969, abandoned. This application Feb. 10, 1971, Ser. No. 114,144
Claims priority, application Great Britain, May 23, 1968, 24,727/68
Int. Cl. F01b *13/06*
U.S. Cl. 91—487 **7 Claims**

A hydraulic pump or motor has a central cylinder block formed with eight cylinders of rectangular cross-section. Each containing a piston which projects radially outwards from the cylinder block, and maintains contact with a cam surface formed on the inner surface of a surrounding cam ring. Each piston comprises a rectangular shoe which is a sliding fit in its cylinder and which carries a roller on a partly circular seating

which extends over the axial length of the shoe, the roller following the cam surface. The seating is relieved to provide a space in which oil pressure can develop and substantially balance the reactive force between the roller and the cam. As the cylinder block rotates the pistons reciprocate within their cylinders as the rollers follow the cam surface. Hydraulic pressure at the bottom of a shoe is normally used to maintain contact between a piston and the cam ring, but springs may also be used. The space at the bottom of each piston shoe communicates alternately with inlet and outlet ports in a member which is rigid with the cam ring and which may be a plate with face ports or a cylindrical pintle with radial ports.

In one example the cam surface is formed so that each piston performs six cycles of reciprocation per revolution, the nature of each cycle being such that the total displacement of the unit remains uniform at a uniform rate of rotation and the radial pressure reaction between the cam ring and the cylinder block is always balanced.

In another example the form of the cam ring is in two generally semi-cylindrical parts which are movable and which



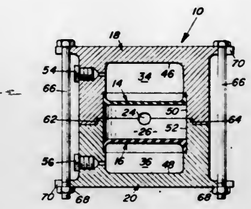
can be jointly adjusted radially in relation to the central axis to vary the length of stroke of the pistons.

One kind of fluid pressure unit has a rotor and a coaxial stator one of which surrounds the other and is formed with an internal cam surface while the inner member is formed with two or more cylinders arranged substantially radially each containing a piston which has an end projecting from the cylinder against the cam surface and which slides to and fro in the cylinder as the rotor rotates in use. Such units have external outlet and inlet connections with which each cylinder communicates in the angular positions of the rotor in which the corresponding piston slides respectively inwards and outwards within that cylinder. Either the inner or the outer member may be the rotor.

Although it is possible to use these units as motors or pumps, one of their main application is as relatively low speed, high torque motors. In this application their weight and size for a given output torque compare very favorably with those of a high-speed motor, electric or hydraulic, combined with reduction gearing, which is the conventional alternative.

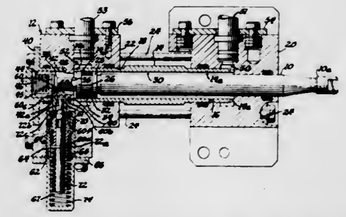
3,699,849
HYDRAULIC CELL FOR CALIBRATING A PRESSURE TRANSDUCER
Raymond J. Zawadski, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior
Filed Nov. 12, 1970, Ser. No. 88,958
Int. Cl. F01b *1/02*
U.S. Cl. 92—61 **2 Claims**

A hydraulic cell is used for calibrating an electro-mechanical pressure transducer. The transducer is positioned in the cell between an opposed pair of free-floating pistons. Calibration pressures are uniformly exerted upon the transducer by



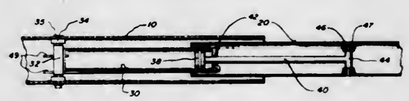
forcing the pistons toward one another with pressurized fluid injected into pressure chambers behind the pistons.

3,699,850
FLUID ACTUATOR WITH LOCK AND CUSHION
Douglas A. Wagner, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1971, Ser. No. 193,055
Int. Cl. F15b *15/26*
U.S. Cl. 92—24 **7 Claims**



A fluid actuator in the form of a differential fluid pressure operated piston rod in a cylinder has the piston rod retained in a retracted position by a spring biased pin and lock arrangement which in its normal biased position has the lock in locking engagement with the piston rod, the lock and pin being acted upon by the fluid pressure to effect its unlocking from the piston rod, a cushion cup being positioned behind the enclosed end of the piston rod to move axially upon movement of the piston rod into position to restrict movement of the lock into its normal locking position.

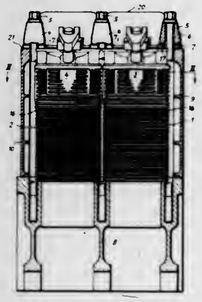
3,699,851
DIELECTRICALLY EXTENSIBLE BOOM STRUCTURE
Ray L. Kennedy, Excelsior, assignor to Tel-E-Lect, Inc., Minneapolis, Minn.
Continuation of Ser. No. 882,661, Dec. 5, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 169,137
Int. Cl. F01b *15/04*
U.S. Cl. 92—119 **13 Claims**



An extensible boom structure of a dielectric type in which a plurality of telescopic members some of which are made of a dielectric material are slidably mounted together to provide a telescopic boom structure with motive means for extending and retracting sections of the same being mounted internal of

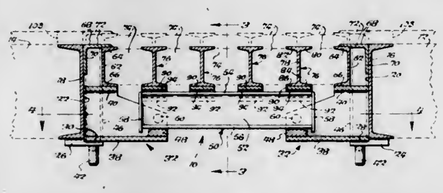
the boom structure and made in part of a metal and part of a dielectric material. The parts are connected respectively to portions of the boom structure of the same material to maintain dielectric isolation in the boom length. Provision is also made in the improved extensible boom structure of mounting additional extensions.

3,699,852
CYLINDER HEAD CONNECTION FOR RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINES
Hans-Ulrich Howe, Bensberg-Frankenforst, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany
Filed Dec. 8, 1970, Ser. No. 96,087
Claims priority, application Germany, Dec. 10, 1969, P 19 61 804.3
Int. Cl. F16j *13/02*
U.S. Cl. 92—169 **9 Claims**



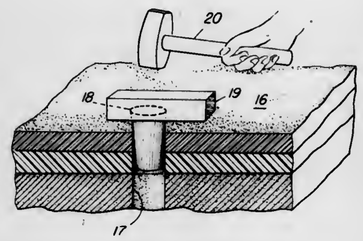
A reciprocable piston internal combustion engine having one or more rows of cylinders with individual cylinder heads, in which two adjacent cylinder heads are by expandable screw bolts clamped to the pertaining cylinders and the crank case so that one or more expandable screw bolts common to two adjacent cylinder heads connects or connect two adjacent cylinder heads through a bridge with the crank case.

3,699,853
COMPOSITE EXPANSION JOINT
Harry O. Wicks, III, Hamburg, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Feb. 16, 1971, Ser. No. 115,519
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **12 Claims**



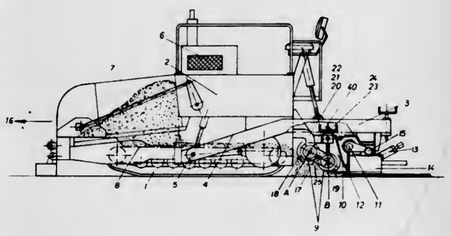
A composite expansion joint assembly of alternating elastic sealing elements and rigid structural members slidably mounted on transversely extending support beams by tie-down brackets which limit vertical displacement of the structural members. The assembly is prefabricated as a unit and can be readily inserted into and removed from an expansion groove without the customary blocking out.

3,699,854
PAVEMENT REPAIR
Walter G. Doherty, Carmel, N.Y.
Continuation-in-part of Ser. No. 804,802, March 6, 1969, abandoned. This application March 3, 1971, Ser. No. 120,675
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 **5 Claims**



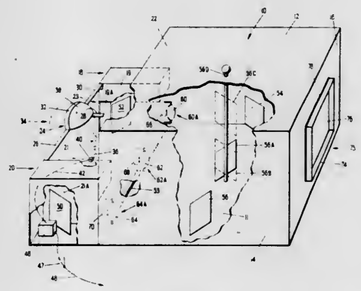
An improvement in pavement repair consists of a ready-to-use molded special asphalt composition plug which is intended for filling small holes in pavements. The invention also embraces an improved package in which numerous asphalt plugs are contained in a gang type disposable plastic matrix which serves the triple function of manufacturing mold and multiple container for shipping and storing the plugs until they are desired for use in repairing pavement holes. The special composition plug is at least 50 percent by weight of A.S.T.M. asphalt D–312, Types I, II, III and IV containing about 2 to 4 percent by weight of rubber. An optional third ingredient is up to 30 percent by weight of finely divided limestone or portland cement.

3,699,855
ROAD SURFACING MACHINES
Gerhard Leister, Birkenfeld, Germany, assignor to ABG-Werke G.m.b.H., Weser, Germany
Filed Dec. 21, 1970, Ser. No. 99,834
Claims priority, application Germany, Dec. 27, 1969, P 19 65 141.3
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **6 Claims**



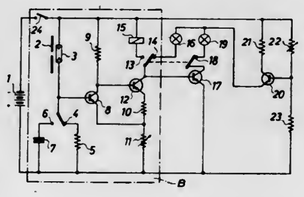
A road surfacing machine having two parallel material distributing screws provided one behind the other driven from their ends with the trailing screw coupled to the forwardly disposed screw and the two screws consisting of a single work unit for distributing material in the same direction. One of the two screws is vertically displaceable relative to the other.

3,699,856
MOVEMENT MONITORING APPARATUS
Ronald W. Chabot, Wilmington; George S. Leonard, Billerica, and David Sheena, Cambridge, all of Mass., assignors to Whittaker Corporation
Filed April 1, 1970, Ser. No. 24,537
Int. Cl. G01d *9/42*
U.S. Cl. 95—1.1 **8 Claims**



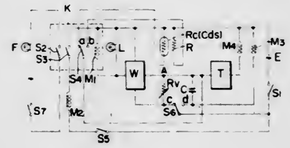
Human jaw motion is photographed from the front as well as the side of the face by using a point light source attached to the subject's chin. As the subject moves his jaw a photograph of the light spot tracing is superimposed on a previously taken still picture of the chin. By the use of appropriate mirrors and lenses any one or more of three jaw views may be recorded, namely front, right side, and left side views.

3,699,857
COMBINED BATTERY TEST AND LIGHT METER FOR A PHOTOGRAPHIC CAMERA
Karl Wagner, Ottobrunn, and Bernhard von Fischern, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed July 8, 1970, Ser. No. 53,249
Claims priority, application Germany, July 12, 1969, P 19 35 466.6
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE **17 Claims**



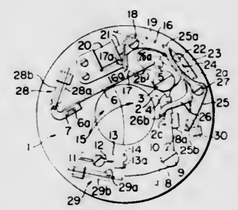
Indicator lamps for indicating sufficient and insufficient light for exposure are used for battery testing by connecting them in the emitter circuit of a switching transistor whose base voltage is controlled by a voltage divider in parallel with the battery. The voltage divider is adjusted to allow the lamp to light if the battery voltage exceeds the proper operating voltage or if the battery voltage is between a minimum acceptable voltage and the operating voltage. Otherwise the indicator lamps do not light regardless of the light available for exposure.

3,699,858
CAMERA EQUIPPED WITH AUTO-FLASH DEVICE
Mitsutoshi Ogiso, Kawasaki-shi, and Shohei Ohtaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 4, 1969, Ser. No. 873,998
Int. Cl. G03b *7/08, 15/03*
U.S. Cl. 95—10 CD **5 Claims**



An electronic shutter system for cameras having a shutter speed which is set to a constant value by automatically switching a photoconductor element of the time setting element of the electronic shutter to a predetermined and constant resistor for flash photographing. An electromagnet is provided which is activated when the brightness of a subject to be photographed is below the lowest limit of the EE working range of the electronic shutter in order to operate said switching. A main switch in a flash illuminating circuit is automatically closed by the electromagnet.

3,699,859
AUTOMATIC FLASH BULB TRIGGERING DEVICE FOR USE IN EVER-SET TYPE ELECTRONIC SHUTTER
Hideaki Akiyama, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1971, Ser. No. 110,129
Claims priority, application Japan, Feb. 2, 1970, 45/9077
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **2 Claims**



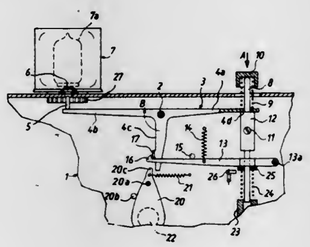
An automatic flash triggering device comprising first and second armature levers that are actuated by an electromagnet connected to the output trigger circuit of a Schmitt circuit which energizes the electromagnet when the brightness of light incident upon a CdS element is below a predetermined level. The first lever controls the camera shutter mechanism and the second turns on a warning lamp and switches the mechanism to a predetermined low shutter speed if a flash bulb is mounted in place. The second lever will not function when the brightness of incident light is higher than a predetermined level while the first lever is actuated. When the brightness is less than a predetermined level, both the first and second levers are actuated the latter operating a suitable mechanism such that the shutter opens at a predetermined slow shutter speed and the flash is fired for proper exposure.

3,699,860

PHOTOGRAPHIC APPARATUS WITH IMPELLER-OPERATED SOURCE OF ARTIFICIAL LIGHT

Alfred Winkler, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 24, 1971, Ser. No. 146,290
Claims priority, application Germany, May 23, 1970, P 20 25 181.4
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 R 12 Claims



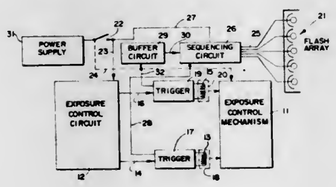
A still camera wherein the release element stresses a spring during a first stage of its movement from the starting position and disengages a blocking lever from a pivotable impeller during the second stage of its movement whereby the spring propels a pin of the impeller against a cartridge which fires a flash lamp or against a piezoelectric block which produces a high-voltage pulse for the firing of an electronic flash unit. At the same time, the impeller opens the shutter so that the subject or scene is illuminated by artificial light while the shutter is open. A second spring urges the release element back to its starting position. During such return movement, the release element returns the blocking lever into engagement with the impeller. The extent to which the release element moves during stressing of the spring which bears against the impeller is adjustable.

3,699,861

FLASH SYNCHRONIZATION CIRCUIT FOR SEQUENTIAL FIRING OF AN ARRAY OF FLASHBULBS

John P. Burgarella, Sudbury, and Seymour Ellin, Chestnut Hill, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 24, 1969, Ser. No. 844,470
Int. Cl. G03b *9/70*; H05b *41/00*
U.S. Cl. 95—11.5 17 Claims



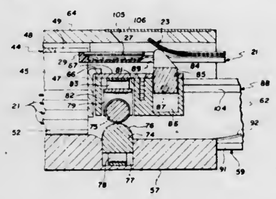
In a flash synchronization circuit, an array of flashbulbs are fired sequentially in synchronism with sequential actuations of the shutter mechanism. The shutter mechanism is opened and closed by electromagnets driven by Schmitt triggers. The sequential firing of the flashbulbs is controlled in response to signals derived from the Schmitt triggers and generated by the electromagnets.

3,699,862

POSITIVELY OPERATED STRIPPING DEVICE FOR CAMERAS

Guilford Edwin Kindig, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1971, Ser. No. 159,321
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 16 Claims



A stripping mechanism for separating photographic prints from transporting carriers and processing materials in film units of the self-processing type. After processing, movement of the film units through the mechanism effects translation of a stripping member from an inoperative position to an operative position, thereby forcing the print away from engagement with the carrier.

3,699,863

COMBINED MECHANISM OF SHUTTER AND FILM IN A CAMERA

Hideaki Yamamoto, Tokyo, Japan, assignor to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 3, 1970, Ser. No. 43,135
Claims priority, application Japan, June 6, 1969, 44/44057
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 AC 4 Claims



The invention relates to apparatus for uniformly controlling a combined mechanism in a camera body which is used with a separable film pack so that a film take-up is available independently of variations in operation of the combined mechanism. The combined mechanism may be independent of the shutter release.

3,699,864

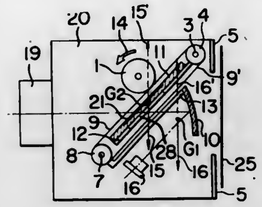
DEVICE FOR DRIVING REFLECTING MIRROR OF SINGLE-LENS REFLEX CAMERA

Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 25, 1970, Ser. No. 66,688
Claims priority, application Japan, Aug. 29, 1969, 44/67945
Int. Cl. G03b *3/00*
U.S. Cl. 95—42 5 Claims

A device for driving the reflecting mirror of a single lens reflex type camera having a reflecting mirror system and movable part system with a photometric or a light shielding member. The moments of rotation produced by the unbalanced masses of the reflecting mirror system and the movable part system are arranged in opposing relationship, and

drive means drive both systems simultaneously, so that both moments of rotation nearly cancel each other out, thereby reducing both the shock caused by movement of the reflecting



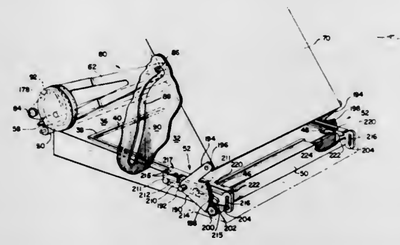
mirror and the adverse effects upon the movements of the reflecting mirror due to differences in the position of the camera.

3,699,865

SELF-DEVELOPING REFLEX CAMERA

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 26, 1970, Ser. No. 67,051
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 11 Claims



The energy absorbed in decelerating a reflecting member as it reaches the end of its travel is used to perform some useful function associated with the processing of a film unit. The camera includes a support for locating a film unit in position for exposure and film advancing apparatus for engaging and moving a film unit, subsequent to exposure, from its exposure position into the bite of a pair of rolls for subsequent movement to the exterior of the camera. The camera further includes a reflecting member which is mounted for movement between a first position in which it directs an image toward the film unit located in position for exposure and a second position in which it functions as a component of the camera's viewing system. A plurality of links and gear's are coupled between the reflecting member and the film advancing apparatus for transferring a portion of the kinetic energy of the moving reflecting member to the film advancing apparatus to move the film unit toward the rolls as the reflecting member moves between the first and second positions.

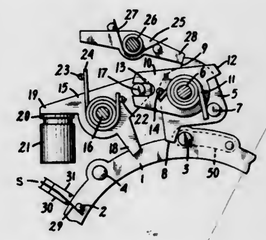
3,699,866

CAMERA SHUTTER OPERATING MECHANISM

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed July 23, 1971, Ser. No. 165,085
Claims priority, application Japan, July 23, 1970, 45/63964
Int. Cl. G03b *9/14*
U.S. Cl. 95—63 3 Claims

A camera shutter operating mechanism in which a shutter blade-operating ring is rotationally driven in opposite directions for opening and closing the shutter by three coupled driving members in which the direction of rotation of the driving members is such that their rotational forces are all additive in one direction in operating the shutter blade-operating ring in two opposite directions. The first and second driving members are time-delayed coupled to execute rotation in one direction and the third driving member is positively coupled to the second driving member and is held from rotating by an exposure delay or exposure time control circuit controlling the



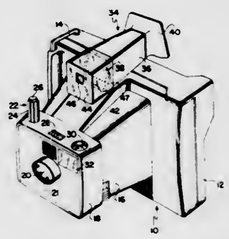
exposure time of a photographic exposure. Upon release of the third driving members by the exposure time control circuit the rotation of the three driving members is as though they were rotating in a common direction. Division of the driving force between two springs reduces impact forces upon coupling of the driving members. The movement of these driving members in effectively the same direction of rotation likewise reduces impact forces and vibration.

3,699,867

DISTANCE ESTABLISHING ARRANGEMENT FOR PHOTOGRAPHIC CAMERA

John Wolbarst, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1969, Ser. No. 799,699
Int. Cl. G03b *13/20*
U.S. Cl. 95—44 9 Claims



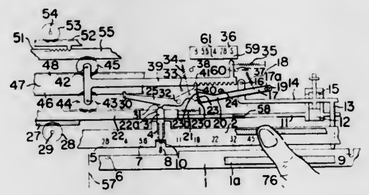
A distance determining device for popularly priced photographic cameras. The device cooperates with a conventional viewfinder to permit the establishing of a predetermined camera-to-subject distance by moving the position of either the photographic subject or the camera. The apparatus provides a transparent member or the like by which a segment of the field of view observed through a viewfinder is visibly differentiated from the remainder of the field. The member is configured such that it encompasses within the field of view, the vertical dimension of a human head when a predetermined camera-to-subject distance has been established. In a preferred embodiment, the segment is visibly contrasted from the remainder of the field of view by a color differential.

3,699,868

COUPLING DEVICE FOR EXPOSURE METER TO APERTURE OF INTERCHANGEABLE LENS IN SINGLE-LENS REFLEX CAMERA

Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,757
Claims priority, application Japan, April 18, 1969, 44/29640
Int. Cl. G03b 9/02
U.S. Cl. 95—64 R **5 Claims**



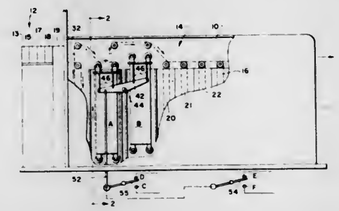
An improved coupling assembly is provided for coupling the exposure meter to an aperture ring of an interchangeable objective lens in a single-lens reflex camera to correct the exposure calculating mechanism in response to the maximum aperture of a lens utilizing the TTL full-aperture exposure measuring method. The correction about the maximum aperture of the lens mounted is automatically made to the exposure calculating mechanism of the built-in exposure meter of the camera when the lens is mounted with its aperture being maintained at maximum opening.

3,699,869

FILM PROCESSING APPARATUS FOR PROCESSING FILMS OF DIFFERENT TYPE

Einar W. Jensen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,594
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R **10 Claims**



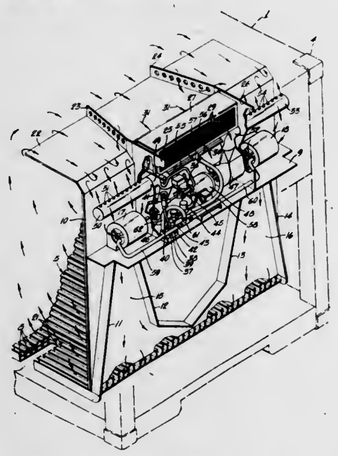
A processing apparatus having two chambers, one for properly processing a film of one type or ASA number, and the other for properly processing a film of a different ASA number or type. Each of the processing chambers is provided with a film supporting rack movable between an enabled position, in which the rack transports film, and a disabled position in which the film is not transported. Each chamber further has processing solution circulation, replenishment and temperature control systems. The film racks in the two processing chambers are coupled together such that movement of a rack in any one processing chamber to its enabled position results in movement of the rack in the other processing chamber to its disabled position. Once the threaded rack is moved to its enabled position and the processing apparatus threaded through all of its stations for properly processing a film of a predetermined type, an interlock system is actuated for (1) accepting for introduction into the processing apparatus only film of the predetermined type and rejecting all other types of film, and (2) activating recirculation, temperature control and replenishment systems for only the processing solution being used.

3,699,870

APPARATUS FOR TRANSPORTATION OF COMMODITIES

Raymond E. Cantagallo, Drexel Hill, and Robert J. Lutz, Swarthmore, both of Pa., assignors to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Continuation of Ser. No. 834,281, June 18, 1969, abandoned. This application June 23, 1971, Ser. No. 156,124
Int. Cl. B60h 1/24
U.S. Cl. 98—10 **6 Claims**



Large insulated containers are used for the transport of chilled or frozen commodities. Each of the containers has its own electric-motor-driven refrigeration equipment, which is supplied with electric power from the ship or trailer chassis on which the containers are being transported. In the containers, a continuous flow of refrigerated (or, in some cases, heated) air is maintained up through and/or around the packaged commodity. Means is provided to change the atmosphere inside the container by the addition of fresh air. A temperature set point adjustment is provided to maintain the temperature of the air being circulated in the container. A relatively simple and convenient arrangement is provided for mounting the refrigeration equipment on the container.

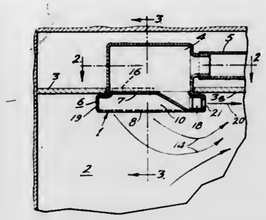
3,699,871

SUPPLY AIR DEVICE FOR INJECTION OF PREFERABLY COLD VENTILATION AIR

Birger Larkfeldt, Barnarp/Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Feb. 26, 1971, Ser. No. 119,091
Claims priority, application Sweden, Feb. 26, 1970, 2478/70
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D **6 Claims**

An air supply device adapted to be mounted adjacent one edge of a hung ceiling for injecting cold air from a duct extending parallel to the ceiling surface above the hung ceiling. The device consists of a pressure box having an air distribution chamber in its bottom formed between a pair of perforated plates which operate to distribute the air vertically downward and eliminate any horizontal component generated in the duct. To avoid the fouling of the ceiling surface surrounding the distribution chamber and the room wall adjacent the edge of the ceiling by the dirty secondary room air, air flow gaps are provided on three sides of the distribution chamber to inject air streams substantially parallel to the ceiling surface radiating outwardly from the distribution chamber, the outward flow deflecting the downwardly directed air by ejection and away from the room wall. Air flow regulating means are provided in each gap and in the distribution chamber to insure mixture of the air with secondary room air so as to avoid the draughts normally experienced from cold air inlet grilles.



3,699,872

AIR DISTRIBUTION APPARATUS

Michael H. Kruger, Chestnut Hill, Mass., assignor to Keene Corporation

Filed March 1, 1971, Ser. No. 122,611
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D **18 Claims**

Air distribution apparatus including an air distributor designed for connection to ductwork in a building and adapted to be mounted flush with a ceiling. The distributor contains an adjustable plenum chamber rotatable about its axis for selectively determining the quantity and directing air through its outlet angularly outward in any direction into a room without using dampers or other air deflecting or directing vanes. The absence of dampers or other members in the air stream minimizes air turbulence and sound noises while increasing the overall efficiency of the distributor.

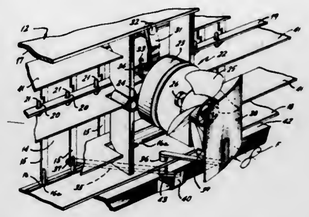
3,699,873

AIR FLOW CONTROL APPARATUS

Albert H. Irvin, Richmond, Ind., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 14, 1971, Ser. No. 152,886
Int. Cl. F04d 25/08; F01d 7/00, 17/12
U.S. Cl. 98—116 **5 Claims**

Air flow control apparatus for a room air conditioner includes oscillatable louvers for directing air discharged from the air conditioner in a sweeping motion throughout the space being conditioned. Power for oscillating the louvers is derived from a turbine device positioned in the stream of air caused to flow through the air conditioner. The sweep rate of the oscillatable louvers is controlled by a movable shield located in the air stream in advance of the turbine device, and selectively positionable to vary the quantity of air flowing over the turbine vanes. The shield includes a tab, which upon movement of the shield to the lowest turbine speed position, engages a turbine vane to halt rotation of the turbine device, thereby stopping oscillating movements of the louvers.

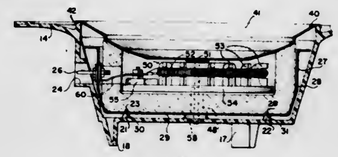


3,699,874

POPCORN POPPER

Ervin F. Dusek, Villa Park, Ill., assignor to Reliable Manufacturing Corporation, Franklin Park, Ill.

Filed Nov. 20, 1970, Ser. No. 91,460
Int. Cl. A23l 1/18
U.S. Cl. 99—238.1 **10 Claims**



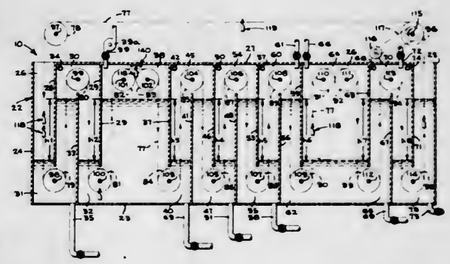
An improved popcorn popper having an improved insulating means which facilitates more uniform heating while reducing heat losses. Assembly of the heating element as an integral unit into the base is also facilitated.

3,699,875

APPARATUS FOR PRESERVING DELICATE FOOD PRODUCTS

Donald C. Wilson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

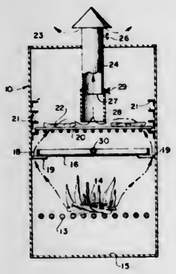
Filed May 3, 1971, Ser. No. 139,648
Int. Cl. B65b 55/06
U.S. Cl. 99—249 **7 Claims**



Delicate food products having substances that become volatile when subjected to sterilization heat can be preserved in flexible containers without loss of aroma or flavor by expelling air at room temperature from the food product and container, then sealing the container and sterilizing the

product therein. Each container is filled with a food product and has an opening through which gases can be expelled while preventing liquid from entering. These containers are advanced by a conveyor through a liquid filled leg in an enclosed housing towards a vacuum chamber and, as pressure decreases outside the container, higher pressure gases within the container are expelled through the container opening. Hydrostatic pressure of the liquid within the leg prevents the container from swelling up in balloon fashion and, as the container moves towards the vacuum, pressure outside the container gradually decreases. By the time the container reaches the vacuum, substantially all air is expelled from the container. Processing apparatus includes a vacuum chamber with a liquid filled leg through which a conveyor is adapted to travel, a sealer within the vacuum chamber for sealing containers passing through, and a hydrostatic cooker through which the conveyor passes for sterilizing food products in the sealed containers.

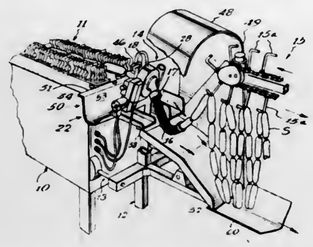
3,699,876
COMBINED CHARCOAL GRILL AND PIT BARBECUE COOKER
Clarence E. Ellis, 724 Monument Road, Ponca City, Okla.
Filed Aug. 9, 1971, Ser. No. 170,041
Int. Cl. A47j *37/00*; A24b *3/00*
U.S. Cl. 99—259 **7 Claims**



A common casing encloses an ash pit and grate for a pit-type barbecue cooker and an overhead pan for drippings or for the support of charcoal when the device is utilized as an outdoor charcoal grill. An adjustable grill rack is mounted in the casing above the pan and an adjustable stack with damper in the top of the casing allows smoke from a wood fire to be circulated across food on the grill rack.

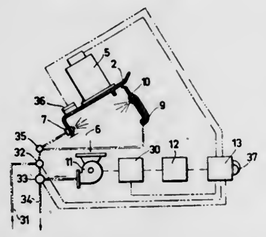
3,699,877
APPARATUS FOR APPLYING LIQUID SURFACE TREATING MATERIALS TO SAUSAGES
William H. Criss, Hinsdale, and John R. Shackleford, Roselle, both of Ill., assignors to Stange Co.
Division of Ser. No. 228,104, Feb. 22, 1972. This application Nov. 30, 1970, Ser. No. 93,609
Int. Cl. A23b *1/04*
U.S. Cl. 99—260 **12 Claims**

Apparatus for applying liquid surface treating materials to a linked string of sausages in a continuous cellulose casing immediately after stuffing and linking and before any other processing occurs. As the linked string of sausages moves in a predetermined path it is subjected to a spray consisting of a liquid surface treating material, the liquid being delivered under pressure to a spray head from a supply tank by a pump



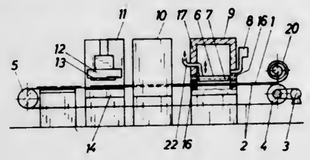
in substantial excess of the quantity required for surface treatment, and the excess liquid being returned to the tank.

3,699,878
WASHING MEANS FOR A SANDWICH SPREADING MACHINE
Bengt Karl-Axel Westberg, Nynashamn; Tor Axel Odman, and Rune Fahlstrom, both of Stockholm, all of Sweden, assignors to Fahlstrom AB, Stockholm, Sweden
Filed Sept. 28, 1970, Ser. No. 76,103
Int. Cl. B08b *3/00*
U.S. Cl. 99—450.4 **9 Claims**



In a sandwich spreading machine, a downwardly open vessel for spreading substance is placed with its mouth above a closed casing having a waste receiving opening. In the slot between said mouth and said opening a track for advanced bread are placed. Waste from spreading substance and bread are collected in the casing, which is provided with inlet for liquid and outlet therefor and for the waste. The substance vessel is detachable from the casing for separate washing.

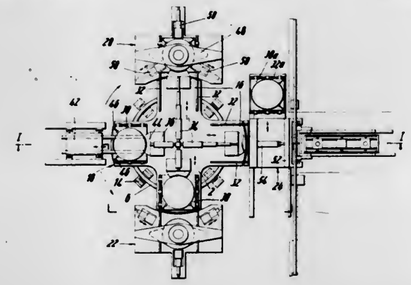
3,699,879
DEVICE FOR FURNISHING VITAL AND COSTLY FOOD WITH ORNAMENTS AND WRITING
Ulrich Ritzer, Claudiaplatz 1, 6020 Innsbruck, Austria
Filed Feb. 6, 1969, Ser. No. 796,973
Int. Cl. A23g *3/20*
U.S. Cl. 99—450.1 **10 Claims**



A device for furnishing vital and costly food with ornaments and writing, preferably pastries, by way of screen printing, by

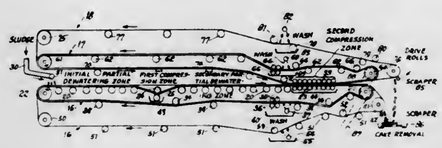
means of a viscous printing paste prepared of vital or costly food, the ornaments or writing being first applied onto an edible, flat support by utilizing a temperature controllable screen, said support being subsequently applied onto the food or as a negative onto a thin foil and being then transferred onto the support to be printed in the transfer process.

3,699,880
WIRE AND ROD HANDLING APPARATUS
Norbert Nuckel, Solingen, Germany, assignor to Friedrich Kocks
Filed Aug. 19, 1971, Ser. No. 172,977
Claims priority, application Germany, Aug. 19, 1970, P 20 41 181.8
Int. Cl. B65b *13/02*
U.S. Cl. 100—7 **10 Claims**
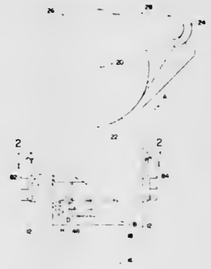


An apparatus is provided for pressing and binding bundles of wire which are delivered in succession from a loop collector which apparatus includes a loading station receiving bundles from the loop collector, a pressing and binding station and a discharge station, a rotary table for transporting bundles from one station to another, the pressing and binding station being disposed outside the periphery of the rotary table and carriage means receiving bundles and movable from the rotary table into the individual stations and back to the rotary table when the latter is aligned therewith.

3,699,881
SLUDGE DEWATERING APPARATUS
Paul Levin, Morton Grove, and Maximilian Adamski, Wheeling, both of Ill., assignors to General American Transportation Corporation
Filed July 26, 1971, Ser. No. 166,086
Int. Cl. B30b *9/24*
U.S. Cl. 100—118 **16 Claims**



An apparatus for removing aqueous liquid having a lower content of solids, if any, from a flowable material, containing aqueous liquid as a continuous phase and suspended solids as a discontinuous phase, to obtain a product having a higher solids content, has two endless, driven belts of elongated porous sheets. The belts are supported so that one belt has its path of travel inside that of the other belt. The outer belt is supported so that it has an upper horizontal run through three zones. The inner belt is moved in the same direction and has upper horizontal runs through the first and third of those zones. At the intermediate zone the belt moves downwardly and then upwardly. The outer belt overlies and abuts the inner belt at the first and third zones and is spaced from it at the intermediate zone. The sheet of the inner belt is resilient, compressible and made of cellular material capable of absorbing an aqueous liquid by a wicking action, whereas the sheet of the outer belt is a fine-mesh sheet with pores providing passage of the liquid through the sheet by the wicking action of the abutting cellular sheet of the inner belt while most of the solids are retained on the outer belt. A feeder for delivering flowable material on to the outer belt is mounted adjacent the beginning of the first zone. At the intermediate zone a pair of opposed rolls compress the inner belt to remove aqueous liquid. The inner belt is a composite assembly of the sheet of cellular material, a backing sheet and overlying strands secured to the backing sheet at widely spaced locations to avoid affecting substantially the planarity of the outer surface of the sheet of cellular material.

3,699,882
KNOCKOUT BAR ASSEMBLY FOR PRESSES
Harry E. Keithley, Battle Creek, and Robert A. Helrigel, Hastings, both of Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed July 2, 1971, Ser. No. 159,219
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **11 Claims**

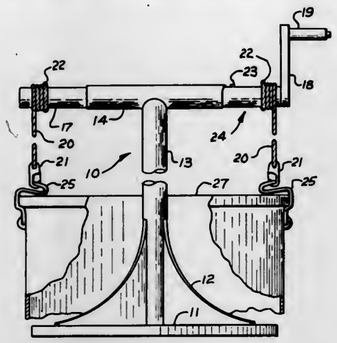


A press having a front and a back defining a first pair of opposite sides, and a right and a left defining a second pair of opposite sides, includes a reciprocating slide. An elongated knockout bar is movably mounted in the slide for upward and downward movement relative thereto. The knockout bar has a longitudinal axis extending in the direction between one of said pair of opposite sides. A knockout bar operating device is located on the other pair of opposite sides for moving the knockout bar downward relative to the slide during upward movement of the slide.

3,699,883
TRASH CONTAINER COMPACTOR
Donald B. Wiebe, 1529 East Candlewood Avenue, Orange, Calif.
Filed April 19, 1971, Ser. No. 135,175
Int. Cl. B30b *1/00*
U.S. Cl. 100—227 **4 Claims**

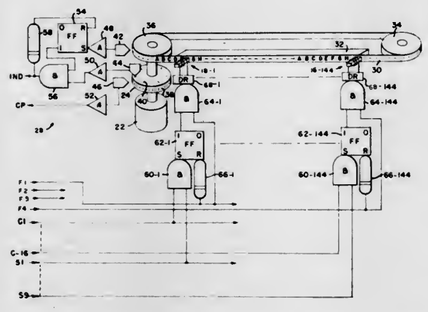
A trash container compactor, which is adaptable to most common trash containers, provides a feature which produces

a crushing force capable of increasing the storage capacity of a container by a factor several times its normal capacity, depending upon the type of refuse within the container. The



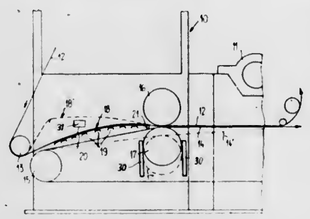
compactor also provides the option of using a simple tamping method to increase the container volume intermittently, as refuse is inserted, when high compression is not a requirement.

3,699,884
CONTROL FOR CHAIN PRINTER
Lynn W. Marsh, Jr., Melrose, and Edward M. Schneiderhan, Billerica, both of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.
Division of Ser. No. 877,354, Nov. 17, 1969, Pat. No. 3,629,861. This application May 26, 1971, Ser. No. 146,943
Int. Cl. G06k *15/08*
U.S. Cl. 101—93 C **3 Claims**



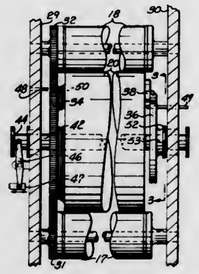
A control system for a horizontal type carrier, or "chain", printer wherein a recirculating shift register memory is employed to store the code representations of characters to be printed on the print line. A tracking or address counter is advanced in synchronism with the movement of data through the shift register and serves to identify each character stored therein with the particular print position in which it is to be printed. Generation of print command signals is accomplished by comparing, in sequence, each character stored in the memory with the output of a character generation counter which is advanced in synchronism with the movement of the type carrier to identify the order in which the types on the carrier move past the print positions. Actuation of the comparator and advancement of the character generation counter are controlled directly by the output of the tracking counter. Beginning-of-font sync pulses are generated by gating a primary index signal derived directly from the type carrier with a secondary index signal derived from a rotating code disc. A plurality of index marks are provided on the code disc in a manner to enable generation of properly timed beginning-of-font signals for any of a variety of different font length type carriers interchangeably employable in the printer.

3,699,885
SCREEN PRINTING MACHINE WITH TRANSPORT BAND FOR TEMPORARILY ADHESIVELY SECURING WEB DURING PRINTING
Hans Thierstein, Holzacker, Switzerland, assignor to Fritz Buser AG Maschinenfabrik, Wiler by Utzenstorf, Switzerland
Filed April 27, 1970, Ser. No. 32,123
Claims priority, application Switzerland, May 2, 1969, 6749/69
Int. Cl. B41f *13/02*
U.S. Cl. 101—118 **4 Claims**



A screen printing machine, especially a rotary screen printing machine, which is of the type wherein the material to be printed upon is delivered to a transport band and by the addition of heat and pressure is temporarily secured by means of a thermoplastic adhesive carried by the transport band to such transport band, until the material, after passing the color applying mechanism, is removed from the transport band so as to undergo further treatment. According to an important aspect of the invention, a heat source is arranged over a partial length of the transport band coated with the thermoplastic adhesive, this heat source being situated forwardly of the contact location of the material to be printed upon and the transport band.

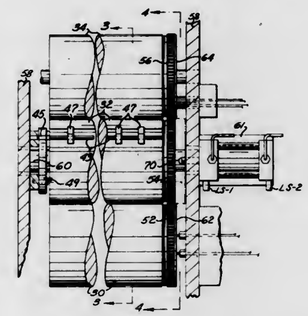
3,699,886
DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS
Norman K. Henkel, Dayton, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed April 2, 1971, Ser. No. 130,713
Int. Cl. B41f *7/06*
U.S. Cl. 101—183 **4 Claims**



A disconnect arrangement for a multi-unit sheet fed press in which the transfer cylinder, together with its grippers, gripper cam and followers, are shifted axially out of mesh with the gears on adjacent impression cylinders thereby interrupting

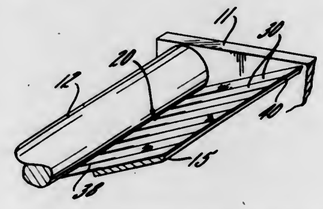
the press drive train and permitting individual operation of the units. The disconnected transfer cylinder is locked in a predetermined angular relationship relative to the adjacent cylinders with the transfer cylinder gaps facing the impression cylinders so that the grippers on the impression cylinders can open into the gaps as the units are individually rotated.

3,699,887
DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS
Donald L. Southam, Brecksville, and Thomas J. Kacmarcik, Parma Heights, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed April 2, 1971, Ser. No. 130,708
Int. Cl. B41f *7/06*
U.S. Cl. 101—183 **23 Claims**



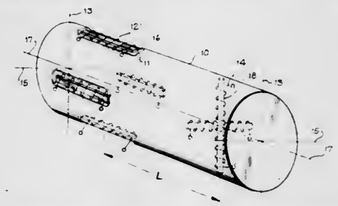
A disconnect arrangement for a multi-unit sheet feed press in which the transfer cylinder gear is shifted axially out of mesh with the gears on the adjacent cylinders thereby interrupting the press drive train and permitting individual operation of the units. Means are provided to prevent disengagement of the cylinder in one rotational position and to maintain the cylinder in a predetermined position after it has been disconnected. Interrupted portions on the transfer cylinder are angularly spaced such that, upon disconnect, these portions are facing the adjacent cylinders and provide a space into which the grippers on the adjacent cylinders can open as the units are individually rotated. Means are also provided to assure that, upon re-engagement, the gears are brought into mesh in exactly the same position they occupied when disconnected.

3,699,888
COMPOSITE FOUNTAIN BLADE CONSTRUCTION FOR REMOTE INK CONTROL SYSTEM
Robert D. Easoz, Woodridge, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Sept. 13, 1971, Ser. No. 179,685
Int. Cl. B41f *31/04*
U.S. Cl. 101—365 **7 Claims**



An ink fountain blade assembly which includes a rigid backing member and a plurality of identical blade sections secured to the surface of the backing closely edge to edge and extending cantilever fashion to present a common substantially continuous film-forming edge for presentation to the surface of an associated fountain roller, one lateral edge of each of the blade sections being relieved along its cantilevered portion by an amount which is sufficient to permit freedom of adjusting movement toward and away from the roller but which is less than that which will leak a body of ink supported on the blade sections. Each blade section is chamfered in a rear corner position to provide distinctive visual indication, for assembly purposes of the edge which has been relieved.

3,699,889
COIL CONFIGURATION FOR AN ELECTROMAGNETIC WARHEAD INFLUENCE FIRING SYSTEM
Armand Cioccio, and Gee-in Goo, both of Silver Springs, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 27, 1971, Ser. No. 137,907
Int. Cl. F42b *23/26, 21/38*
U.S. Cl. 102—18 **12 Claims**



A coil configuration for a torpedo warhead exploder influence firing system for use against surface and submarine targets consists of an orthogonal coil configuration where the transmit coils are surface mounted on the warhead section of the torpedo, and two receiver coils are mounted perpendicular to each other, one vertical and the other horizontal to the torpedo axis. The transmit coils generate an electromagnetic field around the region of the torpedo which induces eddy currents in a nearby hull. The eddy currents in the hull then induce a voltage in the receiver coils, indicating the presence of a ship.

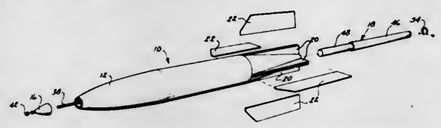
3,699,890
FIRE RESISTANT PHOTOFLASH CARTRIDGE
James E. Short, Jr., Switz City, Ind., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 4, 1971, Ser. No. 140,083
Int. Cl. C06d *1/10, 1/04*
U.S. Cl. 102—37.8 **2 Claims**



A fire resistant photoflash cartridge containing a charge of photoflash composition and an electric primer for initiating ig-

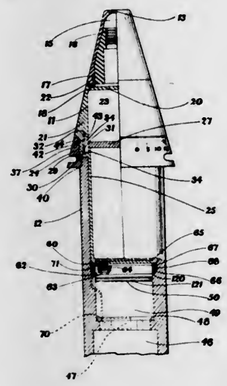
nition of said photoflash composition, the improvement comprising a disk of heating insulating material attached to said cartridge adjacent said electric primer and a heavy layer of intumescent material surrounding the remainder of the cartridge.

3,699,891
ROCKET VEHICLE AND METHOD OF MANUFACTURING SAME
John A. Kreuzer, Mission Viejo, and David E. Thompson, Irvine, both of Calif., assignors to The Susquehanna Corporation, Fairfax County, Va.
Filed April 23, 1969, Ser. No. 818,679
Int. Cl. F42b 13/28
U.S. Cl. 102—49.3 **13 Claims**



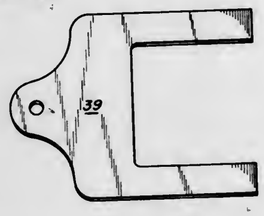
A rocket vehicle comprising a body formed of a lightweight material, such as foamed plastic, and a center support tube mounted within the vehicle body and formed of a lightweight, rigid material having relatively high structural strength, such as aluminum. The tube is utilized to support a rocket motor mounted within the vehicle body and to support ballast and the forward end of the vehicle body. The tube serves to transfer the thrust loads of the rocket motor into the relatively weak lightweight body material by presenting a large shear surface between the body and the tube. In a preferred method of manufacture, the support tube is positioned within a mold cavity having a configuration complementary with the external configuration of the rocket vehicle body. Foamed material is then introduced into the mold to form the vehicle body about the support tube.

3,699,892
CONTROLLED VARIABLE TIME RADIO PROXIMITY FUZE
John C. Kopec; Henry O. Schmitt, Jr., and Frederick H. Tenney, all of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 20, 1951, Ser. No. 247,462
Int. Cl. F42c 13/04, 13/00, 9/02
U.S. Cl. 102—70.2 P **19 Claims**



1. In a radio-controlled proximity fuze having a portion adapted to be rotated to set effective target time, a clock within said fuze adapted to be started when a projectile containing said fuze is fired, said rotatable portion being provided with at least two pairs of electrical contacts the first of which is adapted when short-circuited to close an electrical circuit to activate said fuze and the second of which is adapted when short-circuited to maintain said fuze unarmed, and means short-circuiting said second pair during a portion of the flight of the projectile and rotatably driven by said clock for sequentially short-circuiting said first pair and maintaining said electrical circuit closed and removing the short circuit across said second pair after predetermined intervals in flight which are functions of said affective target time.

3,699,893
IGNITION BAND AND COVER ASSEMBLY
Daniel Meraz, Jr., and Anthony J. Simshauser, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed March 30, 1971, Ser. No. 129,436
Int. Cl. F42c 19/06
U.S. Cl. 102—70.2 **10 Claims**



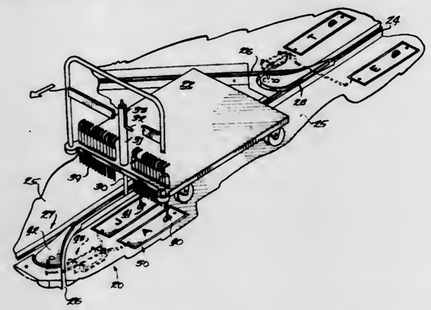
An ignition band and nozzle cover assembly for use on rocket motors. A cover molded from high impact strength plastic is provided with a groove around its outside diameter and recessed areas in its top. An ignition band is positioned within the groove and is provided with a contact band and shorting tab which fit into the recess on the cover top. Removal of the shorting tab unshorts the ignition band and, thus, the rocket motor. To reshorten the rocket motor, a shorting clip is provided which fits beneath the contact band and into the recess in the cover top. The cover assembly protects against dust and/or moisture entering the inside of the rocket motor and acts as a high impact protection for the aft end of the motor by absorbing impact. The ignition and contact bands are also shielded from damage by being positioned within recesses in the cover assembly.

3,699,894
MOVABLE APPARATUS FOR REPLACING AN OLD TRACK BY A NEW TRACK
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, 1, Austria
Filed Sept. 23, 1970, Ser. No. 74,710
Claims priority, application Austria, Oct. 7, 1969, 9452/69
Int. Cl. E01b 29/02
U.S. Cl. 104—2 **18 Claims**



A train assembly is moved continuously along a right of way during a track renewal or replacement operation, with a first train section of cars moving on the old track rails and a second train section of cars moving on the new track rails. In an intermediate trackless section, the old track is replaced by the new track, and an intermediate train section bridges the trackless section of the right of way. The intermediate train section is pivotally coupled to the first and second train sections, the latter being held at a predetermined distance. Track renewal means operable in a timed sequence during the continuous movement of the train assembly are mounted on the cars.

3,699,895
TRUCK TOW CONVEYOR SWITCHING APPARATUS
Alfred O. Peter, Hatboro, Pa., assignor to FMC Corporation, San Jose, Calif.
Filed May 5, 1971, Ser. No. 140,396
Int. Cl. B61j 3/04
U.S. Cl. 104—88 **23 Claims**



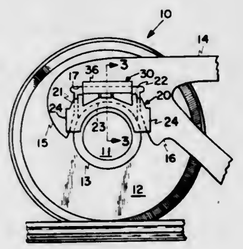
A mechanical switching apparatus for use in an automatic truck tow conveyor system has a switch plate for diverting coded trucks from a main slot in a reference surface to a spur slot intersecting the main slot. Two latched reader heads, located upstream from the switch plate, tension individual flexible cables when contacted by properly located code probes on the truck. Each cable is operatively connected to a motion translator device which, when both reader heads are activated simultaneously, causes the motion translator to move linearly and tension a third flexible cable. The tensioning of this third cable, which is connected to the switch plate, causes the switch plate to rotate from its closed to its open position so the truck is diverted into the spur slot. The motion translator prevents accidental movement of the switch except when two properly coded probes release the two latched reader heads simultaneously.

3,699,896
TRANSPORTATION INSTALLATION WITH A PLURALITY OF STATIONS
Francois L. Giraud, Plaisir, France, assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed June 23, 1971, Ser. No. 155,967
Claims priority, application France, July 6, 1970, 7024984
Int. Cl. E01b 25/26
U.S. Cl. 104—88 **20 Claims**



A transportation installation having a lower substantially horizontal conveyor and a guide rail extending parallel to and spaced above the conveyor and a car transportable by the conveyor having a shoe frictionally engageable with the conveyor at its bottom, a guide wheel vertically movably mounted on its upper top end and means for moving the guide wheel upwardly into engagement with the guiderail during movement of the car by the conveyor. The installation includes at least one station to which the car may be switched from the conveyor, each of the stations including a carrier rail having an upstream portion parallel to and spaced below the guide rail, an intermediate portion which is spaced laterally and upwardly from the guide rail, a downstream portion which is parallel to and spaced below the guide rail, and connector portions extending convergently laterally outwardly and upwardly from the upstream and downstream portions to the upstream and downstream ends of the intermediate portions.

3,699,897
RESILIENT BEARING ADAPTERS FOR RAILWAY TRUCKS
James W. Sherrick, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Nov. 25, 1970, Ser. No. 92,717
Int. Cl. B61f 5/30, 5/38, 15/02
U.S. Cl. 105—218 R **8 Claims**

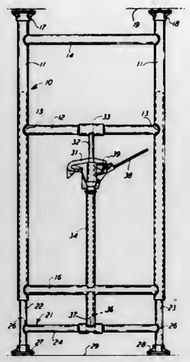


A railway truck having a resilient pad positioned between the bearing adapter and side frame. The resilient pad includes a body of elastomer in compression load carrying relation between the load carrying surface of the side frame and load receiving surface of the bearing adapter with an upper surface conforming to the load carrying surface and a lower surface conforming to the load receiving surface. The body has integral spaced flanges extending upwardly beyond the upper surface in straddling engagement with the side frame. In addition, the body and bearing adapter includes portions integral therewith providing means interlocking the lower surface of the body relative to the bearing adapter.

3,699,898
CARGO BULKHEAD
Matthew P. Nolan, Route 1, P.O. Box 673, Antioch, Ill.
Filed Dec. 28, 1970, Ser. No. 101,516
Int. Cl. B60p 7/14
U.S. Cl. 105—376 **1 Claim**

A H-shaped member having tubular parallel legs and a centrally located cross bar extending between the legs. An assembly of two tubular pieces slidably telescoped in the legs and extends therefrom and includes a cross bar interconnecting the extending ends of the tubular pieces. A jack is connected between the two cross bars for exerting a compressive

force therebetween and thereby forcing outwardly on the opposite ends of the entire unit for bracing the unit between spaced-apart walls or the like to have the unit serve as a bulk-

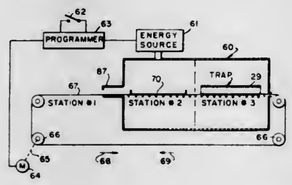


head for cargo. A third cross bar extends between the legs of the H-shaped member, and the jack extends through the third cross bar and is guided thereby in the extension and contraction of the jack for operating the bulkhead.

ERRATUM

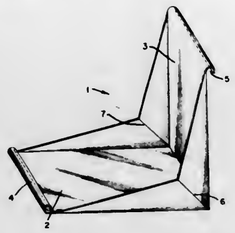
For Class 106—2 see:
Patent No. 3,700,013

3,699,899
DOUGH PROOFING APPARATUS
Robert F. Schiffmann, Brooklyn; Ernest W. Stein, and Harold B. Kaufman, Jr., both of New York, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 649,610, June 28, 1967, abandoned. This application July 1, 1970, Ser. No. 51,545
Int. Cl. H05b 9/06
U.S. Cl. 107—57 C **46 Claims**



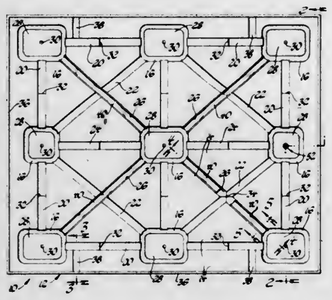
An apparatus including a conveyor for moving cut pieces of yeast-containing dough. The conveyor subjects the dough pieces to at least two microwave heating periods separated by a "rest" period. Alternatively, a similar heating sequence is achieved by appropriately programming a microwave energy source. Typically, the dough pieces are first heated for a period of 5 to 180 seconds to raise the dough temperature to between 90° F. and 120° F. Heating of the dough pieces is then stopped for 20–180 seconds to permit temperature equilibration. Thereafter, the dough pieces are heated again for a period not exceeding 3 minutes to a temperature between 100° F. and 130° F. During both heating intervals, the power density within the microwave cavity, as measured in terms of the heating of "conductivity water," is in the range 0.128–12.4 watts/gm. Such a sequence allows the dough pieces to uniformly rise to an optimum volume in a relatively short time.

3,699,900
MATERIAL HANDLING DEVICE
Eric A. Carlson, 12427 Highlife Drive, Creve Coeur, Mo.
Filed May 26, 1970, Ser. No. 40,675
Int. Cl. B65j 19/38
U.S. Cl. 108—53 **9 Claims**



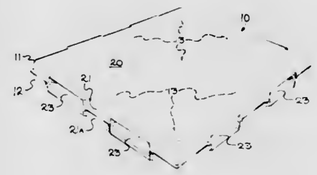
A material handling device for use in the transporting, handling and storage of materials is disclosed. The material handling device is provided with a base portion and a first wall portion either of which may be utilized in the lifting and transporting of the device. A pair of opposed spaced side panels are provided between the base portion and the first wall portion for confining and protecting the material on said material handling device. Also disclosed is the method of making such a material handling device.

3,699,901
PALLET
James M. Cook, III, Bloomfield Hills, Mich., assignor to Oakland Plastics Corporation, Troy, Mich.
Filed July 23, 1970, Ser. No. 57,693
Int. Cl. B65d 19/38
U.S. Cl. 108—58 **23 Claims**



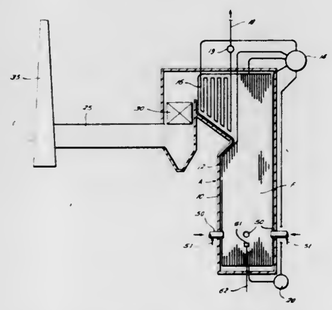
A pallet made of a plastic or organic polymeric material and of a unitary surface having a deck providing a load supporting surface. A plurality of spaced hollow legs project from the opposite surface of the deck. A plurality of hollow ribs project from the same opposite surface to define channels in the load supporting surface. The legs have drain holes in the bottom thereof. Each channel extends between a pair of legs and has a bottom which slopes downwardly to each of the pair of legs from a high point intermediate each pair of legs. Pairs of banding ramps are disposed on opposite extremities of the periphery of the pallet and project from the opposite surface of the deck. Each ramp presents a sloping surface extending upwardly from an adjacent rib toward the adjacent extremity of the deck. Metal channel-shaped reinforcing members are disposed in at least some of the channels in the load supporting surface. A reinforcing platform extends across and is attached to the extremities of the legs in a plurality of rows of legs. The platform includes a runner extending along and attached to the extremities of the legs in each row and a plate interconnecting adjacent runners.

3,699,902
PALLET
Guy H. Allgeyer, Toledo, and James B. Foote, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc.
Continuation-in-part of Ser. No. 867,589, Oct. 20, 1969, abandoned. This application May 5, 1971, Ser. No. 140,575
Int. Cl. B65d 19/38
U.S. Cl. 108—58 **3 Claims**



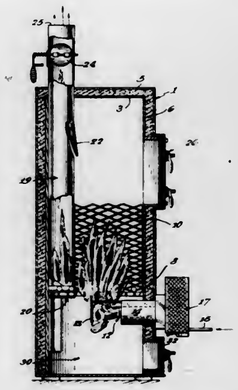
A pallet is provided for supporting loads thereon. The pallet includes an upper member formed of thermoplastic material for receiving loads thereon, a plurality of rows of supporting elements for supporting said upper member in an elevated position to permit the entry of lifting forks thereunder, and a reinforcing member positioned between the supporting elements and the upper sheet to bridge a load positioned on the upper sheet between the respective supporting elements. The reinforcing member has spaced apart upper and lower portions which are interconnected together to permit the reinforcing member to function as a flexural member.

3,699,903
METHOD FOR IMPROVING FUEL COMBUSTION IN A FURNACE AND FOR REDUCING POLLUTANT EMISSIONS THEREFROM
Oliver F. King, 5422 Brae Burn Drive, Bellaire, Tex.
Filed Feb. 25, 1971, Ser. No. 118,836
Int. Cl. F23b 7/00
U.S. Cl. 110—1 J **10 Claims**



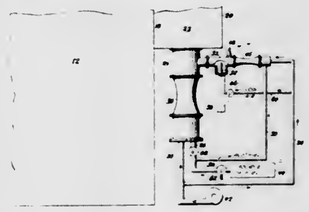
A method for improving fuel combustion in furnaces and the like and for reducing pollutant emissions therefrom, wherein primary air is used solely for fuel feed while commercially pure oxygen without any additives or other constituents is introduced for the combustion of the fuel in regulated amounts so as to provide sufficient oxygen for substantially complete combustion. The oxygen is preferably obtained by separating same from air so that the remaining nitrogen may be used as in inert gas applications.

3,699,904
CREMATOR
Charles W. Brown, 1104 North Snodgrass; Marion D. Biller, North Webster Street, and Jerry F. Breuel, Langleville Road, all of Taylorville, Ill.
Filed Sept. 1, 1970, Ser. No. 68,614
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C **4 Claims**



This invention is an apparatus of simple and inexpensive design for cremation of animal carcasses using a single burner to cremate efficiently in the absence of objectionable smoke and odor levels.

3,699,905
BURNER FOR INCINERATOR
Francis X. Gach; Ralph E. Fanton, and Noel D. Hazzard, all of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed March 3, 1971, Ser. No. 120,413
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A **7 Claims**

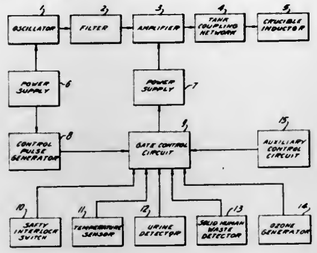


An incinerator having a pilot burner indicating safety control means that responds rapidly to a change of temperature therein to shut off all fuel flow when the flame is extinguished. This safety control means precludes the collection of unburned fuel in a manner that presents extreme fire and explosion hazards.

3,699,906
POLLUTION CONTROL SYSTEM
Carl Gallo, Scarsdale, N.Y., assignor to American Pollution Control Corporation, Scarsdale, N.Y.
Filed March 23, 1971, Ser. No. 127,171
Int. Cl. F23g 5/10
U.S. Cl. 110—8 E **2 Claims**

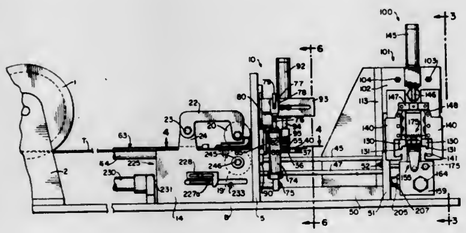
A pollution control system in which continuous-wave radio-frequency generator is coupled to a radio-frequency power

amplifier. The power amplifier is electrically coupled to an inductor surrounding a crucible made of sintered metal com-



pounds or alloyed metals. The crucible is resistive to radio frequency currents and converts the electrical energy of the inductor into heat for converting matter within the crucible.

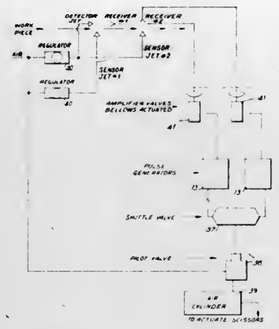
3,699,907
BELT LOOPER APPARATUS
Sven Anderson, Clearwater, Fla., and Anthony Lombardo, Bayshore, N.Y., assignors to The Duplan Corporation, Winston-Salem, N.C.
Filed Oct. 30, 1970, Ser. No. 85,581
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 30 Claims



Apparatus for taking an elongated piece of material and for cutting the same in predetermined lengths. The cut pieces are folded to have one or two bent ends to serve as a belt loop. The folded loops are sequentially delivered to a sewing machine where they are sewn by an operator.

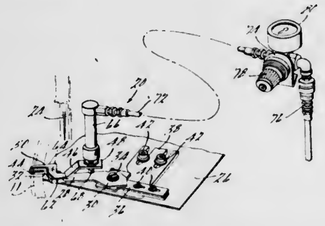
3,699,908
FLUID SENSING CUTTER CONTROL
Joseph M. Hoffee, 725 Sixth Avenue, New York, N.Y.
Filed April 1, 1971, Ser. No. 130,137
Int. Cl. D05b *37/04*; F15c *1/12*
U.S. Cl. 112—130 10 Claims

A pneumatic control device suitable for activating a shear and for attachment to a sewing machine employs two sensing air jets in a shoe and block combination, the shoe and block being spaced apart for the reception of work material. The distances between the sensing jets and the shear are separately adjustable, either continuously or step-wise. A shuttle valve and pulse generators are so arranged that interruption of the first jet by work material causes a first cutting stroke of the shear and essentially immediate retraction of the shear to a



rest position, and so that restoration of the second sensing jet resulting from removal of the work material causes a similar second cutting stroke.

3,699,909
WELT TENSION APPARATUS
Walter J. Gawel, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 24, 1971, Ser. No. 146,340
Int. Cl. D05b *35/06*
U.S. Cl. 112—152 10 Claims

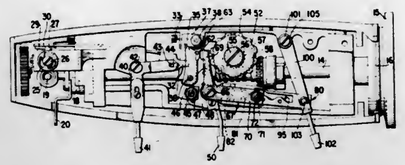


The apparatus controls the tension applied to a welt being fed to a needle of a sewing machine. A welt guide arm, having an opening at a free end thereof through which the welt is passed, is secured to a base supporting the sewing machine at a position in proximity to the needle of the machine. A welt tension lever is pivotably secured to the guide arm. This lever has a free end in juxtaposition to the opening in the free end of the guide arm. A force applying device is coupled to the lever to move the free end of the lever into contact with a welt. The force applied by the force applying device is controllable so that the pressure applied to the welt by the free end of the lever is controlled to a prescribed amount. In such a manner, the tension on the welt delivered to the needle of the machine is substantially uniform over extended time intervals.

3,699,910
CAM SELECTOR MECHANISMS FOR SEWING MACHINES
John A. Urciola, South Bound Brook, and Walter H. W. Marsh, Fanwood, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed Aug. 16, 1971, Ser. No. 171,935
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 A 3 Claims

A cam selecting machine for a zigzag sewing machine needle jogging mechanism in which a single control block is

formed with not only camming means for shifting a cam follower relatively to a cam stack, but also with camming means



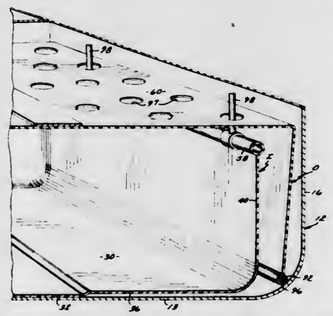
correlated therewith for removing the cam follower out of tracking relation with the cam stack during each cam selecting manipulation.

3,699,911
SELF-THREADING NEEDLE
Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.
Filed Oct. 29, 1971, Ser. No. 193,820
Int. Cl. D05b *85/02*
U.S. Cl. 112—224 4 Claims



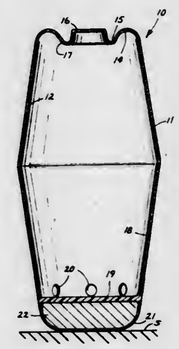
A sewing machine is disclosed in which a threading slot is provided along the needle blade and opening into the needle eye. This needle, which may be fabricated using conventional milling and grinding machinery, provides a self-threading needle eye construction which will deter re-entry of the thread into the threading slot once the thread has been drawn into the needle eye.

3,699,912
BULK CARGO SAFETY BARRIER APPARATUS
Thomas B. Wilson, Jr., 712 Via Del Monte, Palos Verdes Estates, Calif.
Filed June 7, 1971, Ser. No. 150,422
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R 8 Claims



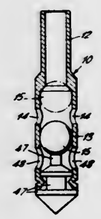
Apparatus for confining a bulk cargo, such as oil, within the hull of a ship should such hull be ruptured as by a collision or grounding. The apparatus includes inner and outer barriers of a form-sustaining but flexible liquid-tight material. Upon deformation of the ship's hull, the panels can be deflected without rupturing, and the adjoining panels of such barriers will sealingly interengage so as to prevent leakage of the bulk cargo contained within the hull.

3,699,913
SELF-RIGHTING MARKER
Willis T. Sautbine, Waterville, Mich.
Filed June 3, 1971, Ser. No. 149,462
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P 4 Claims



An upright marker for use in designating a selected spot on a floor or ground surface and having a weighted base with a rounded bottom to automatically return the marker to its uprights condition when knocked or blown over. The marker has colored walls which diverge in their upward extension from the base for greater visibility and the upper half of the marker may have the reverse shape of the lower half to allow the upper to be collapsed into the lower half for stacking of the markers.

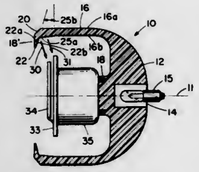
3,699,914
LIQUID LEVEL INDICATORS
Terry Reginald Smith, Cremorne, New South Wales, Australia, assignor to Smith Industries Limited, London, England
Filed June 11, 1971, Ser. No. 152,212
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 7 Claims



An indicator for detecting the sufficiency or insufficiency of oil level in the sump of a vehicle engine, wherein detection is dependent upon the creation of a vacuum between a ball valve device within the engine and an external vacuum source. If the oil level is sufficient, operation of the vacuum source causes the ball to close the valve device whereby the required

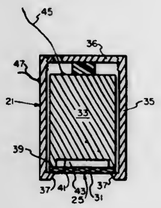
vacuum is created and detected. If the oil level is insufficient, the valve device remains open, even if the vacuum source is operated (that is, the ball stays off its valve seat) so that the required vacuum is not created and this fact can be detected upon operation of the vacuum source.

3,699,915
UNIFORMLY ILLUMINATED METER INDICATOR
William H. Greene, Pompano Beach, Fla., assignor to The Bendix Corporation, Ft. Lauderdale, Fla.
Filed May 19, 1971, Ser. No. 144,946
Int. Cl. G01d *11/28*
U.S. Cl. 116—129 L **4 Claims**



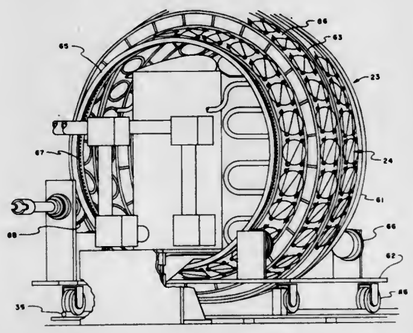
A cup-shaped meter case made of a light conductive material has a light source mounted interior of the bottom surface thereof. The edge of the case is terminated in an inwardly directed, in cross-section generally triangular, rim. The edge of the case is additionally beveled on both the inner and outer surfaces to direct light conducted from the light source through the case side into the triangular rim from where it is dispersed both inwardly and outwardly of the case to illuminate a dial suitably located outwardly of the rim and to illuminate a meter plate and needle located inwardly of the rim. In one alternate embodiment the case side is shown separated from the case bottom so that the rim may be rotated with respect to the light source. In a further embodiment a separate dial plate is shown fitted over the rim and rotatable thereon.

3,699,916
APPARATUS FOR MONITORING OF THE DEPOSITION OF METALLIC FILMS
Desmond F. Sheahan, San Carlos, and George C. Callander, Palo Alto, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated
Filed Aug. 5, 1970, Ser. No. 61,154
Int. Cl. B05c *11/00*
U.S. Cl. 118—9 **2 Claims**



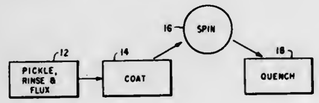
A blank crystal is sandwiched between two electrodes in a holder in a manner such that the only contact of the electrodes with the crystal is along the outer circumference of the crystal. A preliminary evaporation of metal onto the exposed surface of the crystal establishes the desired initial resonant frequency of the crystal. A substrate is then placed in the evaporation chamber proximate the crystal and a metal film is vapor deposited on the substrate and crystal until the resonant frequency of the crystal changes by a predetermined amount. The crystal holder is designed to provide easy removal of the crystal therefrom, thereby facilitating reclamation of the crystal after metal film buildup thereon by removing the crystal from the holder and dipping the crystal in a suitable metal etchant solution.

3,699,917
VAPOR DEPOSITION APPARATUS
Frank T. Deverse, Wappingers Falls; John A. Kurtz, Hopewell Junction; Daniel Rendon, Fishkill; Kenneth A. Trahn, Poughkeepsie, and James W. Tuttle, Wappingers Falls, all of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.
Filed Oct. 2, 1970, Ser. No. 77,453
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **8 Claims**



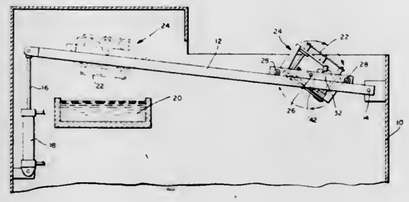
Apparatus for vapor depositing solder onto the terminal areas of semiconductive wafers includes an evacuable rectangular cabinet. A source for holding the solder and for providing heat thereto to cause evaporation thereof is cantilevered from the rear wall of the cabinet. The wafers to be coated are held within mask assemblies on a rotatable dome assembly. The dome is made up of a plurality of wire rings arranged in a plurality of wafer carrying tiers. A cooling shield surrounds the source. During operation the wafers are rotated about the source. Each wafer is exposed to evaporant approximately one-sixth of each cycle and the remaining time is cooled by radiation. Evaporant trim tabs between source and dome assure uniform distribution of solder on all wafers, regardless of tier location.

3,699,918
GALVANIZING APPARATUS
William H. Garrison, Richmond, Va., assignor to American Spin-A-Batch Company, Richmond, Va.
Division of Ser. No. 771, Jan. 5, 1970, abandoned. This application Sept. 24, 1971, Ser. No. 183,539
Int. Cl. B65g *49/04*
U.S. Cl. 118—54 **21 Claims**



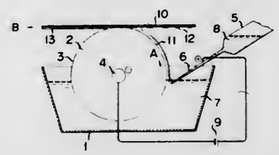
An apparatus is described. Means raise, lower, spin and translate a perforated basket to, into and through a sequence of treating stations to galvanize articles supported in the basket. A separate motor effects spinning of the basket. This motor is independent of any means to raise, lower, translate or support the weight of such basket.

3,699,919
APPARATUS FOR LEVELING SOLDER IN HOLES OF PRINTED CIRCUIT BOARDS
Frederick E. Coffman, State College, Pa., assignor to Chemcut Corporation, State College, Pa.
Filed March 16, 1971, Ser. No. 124,804
Int. Cl. B05c *11/12*
U.S. Cl. 118—56 **11 Claims**



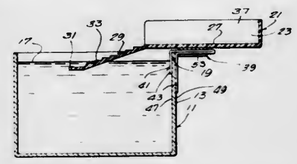
Apparatus for heating printed circuit boards to melt solder overlay and, while solder overlay is in melted condition, orbiting the board rapidly in its plane to level solder on the interior sidewalls of the terminal holes. The circuit board is held on a planar member which is mounted by eccentric bearings on a shaft or shafts symmetrically disposed and driven in unison by timing pulleys and a timing belt. Preferably, a melted liquid bath is used to heat the circuit board, which is immersed in the bath then removed to cool. To facilitate loading and unloading, the circuit board is preferably mounted on a planar mounting member which is rotatable so that the circuit board is below the mounting member during the heating and solder leveling operation but which can be rotated so that the circuit board is above the planar mounting member for loading and unloading. Preferably also, the flexible shafts further include counterweights to balance the inertia of the circuit board and planar mounting member during its circular movement.

3,699,920
ELECTRONOGRAPHIC COPYING MACHINE
Walther Bernt Fried Von Grabe, Koenigstein, Germany, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 26, 1969, Ser. No. 827,715
Claims priority, application Japan, March 12, 1968, 43/16138
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **3 Claims**



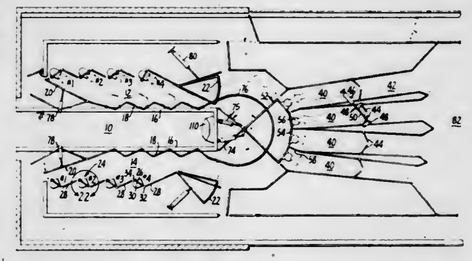
A device in which a pigment solution is discharged into a carrier through a small diameter nozzle while the pigment is applied with a voltage with the polarity opposite to that of an electrostatic latent image to be developed. The pigment is attracted toward an electrically conductive roller partially immersed in a carrier and applied with a voltage with the polarity opposite to that of the pigment so that the pigment is transported by the roller above the level of the carrier into contact with the surface of a copy sheet having an electrostatic latent image formed thereupon at the uppermost portion thereof, whereby the electrostatic latent image is developed.

3,699,921
AQUARIUM PLATFORM
Mark A. Janicek, 2301 East Bellview Place, Milwaukee, Wis.
Filed March 24, 1970, Ser. No. 22,226
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **9 Claims**



Disclosed herein is the combination of an aquarium having a generally vertically extending wall, and a platform having an upper portion straddling the top edge of the wall and a ramp portion extending downwardly below the top edge of the wall and into the tank in an inclined relation to the upper platform portion, together with means connected to the upper platform portion and to the vertical wall to locate the platform in overlying relation to the wall.

3,699,922
AUTOMATIC MILKING BARN
William Z. Holm, Petaluma, Calif., assignor to Holm Tractor & Equipment Company, Petaluma, Calif.
Continuation of Ser. No. 730,818, May 21, 1968, abandoned. This application Aug. 10, 1970, Ser. No. 62,714
Int. Cl. A01j *05/00*
U.S. Cl. 119—14.03 **3 Claims**

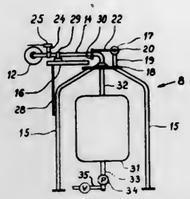


A herringbone milking parlor having automatic controls for preparation and movement of milking cows, stall adjusting means for accommodating cows of different size in a single herringbone stall, and a swinging sector gate for transferring a group of cows in sequence from a group of preparation stalls to a herringbone milking stall.

3,699,923
MILKING SYSTEM
Sven O. E. Strom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed May 7, 1971, Ser. No. 141,267
Claims priority, application Sweden, May 8, 1970, 6348/70
Int. Cl. A01j *09/00*
U.S. Cl. 119—14.04 **3 Claims**

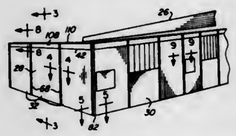
Milking platforms for respective cows are each provided with a teat cup cluster of milk receiving vessel hermetically connected to the cluster, the platforms being movable in unison along a closed path or circuit while the cows are being milked to supply the respective receiving vessels. The platforms move successively past an emptying station comprising a pipeline swingable about the center of an arcuate portion of the closed path. As each platform arrives at the emptying station, the outlet of the corresponding receiving vessel is her-

metically connected to the inlet of the swingable pipeline, and thereafter the vessel is emptied through this pipeline while it swings during movement of the platform along the arcuate



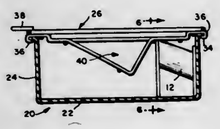
portion of the path, the pipeline then being swung back to its initial position in preparation for emptying the vessel on the next platform.

3,699,924
HORSE STALL CONSTRUCTION
Richard A. Hero, Scottsdale, Ariz., assignor to Port-A-Stall
Filed Aug. 21, 1970, Ser. No. 65,936
Int. Cl. A01k *01/00*
U.S. Cl. 119—16 **8 Claims**



A kick-proof and chew-proof horse stall construction having wall panels, each comprising a plywood sheet having sheet metal contiguous with the inner and outer sides thereof; and a frame comprising removably bolted together members for holding said wall panels in an upright assembly to form a stall structure which may readily be disassembled and moved and reassembled.

3,699,925
COMBINATION CAGE AND FEEDER FOR RODENTS
Cornelis G. Van Dongen, Watertown, Mass., assignor to Bio-Research Consultants, Inc., Cambridge, Mass.
Filed June 4, 1971, Ser. No. 149,936
Int. Cl. A01k *01/00*
U.S. Cl. 119—18 **7 Claims**



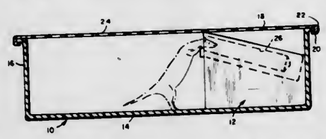
A cage comprising a receptacle having a floor, a circumscribing side wall and a removable cover, the latter, at least, containing openings and a feeder adapted to be disposed in the receptacle and held therein by engagement of the cover therewith comprising a plurality of spaced parallel chambers having open and closed ends, legs connecting the chambers and adapted to support the chambers from the floor of the cage in inclined positions with their open ends at the higher level, and members adapted to extend downwardly from the cover when the latter is applied to the top of the receptacle in confronting relation to the open ends of the chambers so as to prevent a rodent standing on the floor from raising itself into the open ends of the chambers.

3,699,926
FLOOR MAT FOR ANIMALS
Vilem Stockl, Amsterdam, Netherlands, assignor to Rubberindustrie Vasto N.V., Culemborg, Netherlands
Filed Oct. 19, 1970, Ser. No. 81,695
Int. Cl. A01j *1/00*
U.S. Cl. 119—28 **2 Claims**



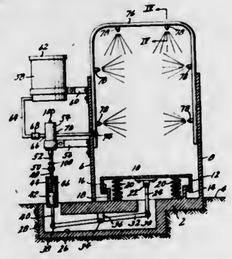
A rubber or plastic floor mat for a stable, factory or the like, the major surfaces of which are provided with regularly distributed projections with a substantially circular or polygonal cross-section, the projections of one surface lying intermediately between the projections of the other surface, at least a part of the peripheral zone of the mat being provided at the lower side with a thicker border portion extending substantially by the same distance as the lower projections. This border portion may be provided with transverse grooves extending over the full width of this portion.

3,699,927
FEEDER FOR RODENTS
Cornelis G. Van Dongen, Watertown, Mass., assignor to Bio-Research Consultants Inc., Cambridge, Mass.
Filed June 4, 1971, Ser. No. 149,927
Int. Cl. A01k *05/00*
U.S. Cl. 119—61 **8 Claims**



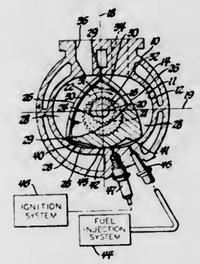
A cage comprising a container having a floor, a circumscribing side wall and optionally a removable top, the latter, at least, being of perforated construction, and a feeder disposed in the cage. The feeder comprises a member containing one or more chambers having open and closed ends for holding predetermined weights of food and is supported by legs from the floor of the cage with the chambers inclined and with the open ends at the higher level so that a rodent must stand on its hind legs to reach the open ends of the chambers.

3,699,928
CATTLE SPRAYING DEVICE
Frank O. Cowan, R.R. 1, Golden City, Mo.
Filed July 14, 1971, Ser. No. 162,336
Int. Cl. A01k *29/00*; A61d *7/00, 11/00*
U.S. Cl. 119—159 **5 Claims**



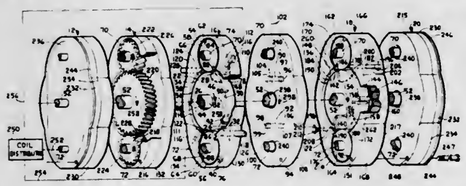
A cattle spraying device comprising a chute through which cattle or the like may be driven, the floor of said chute constituting a treadle depressible by the weight of said cattle, and a pump operable by the depression of said treadle to spray cattle passing through said chute with insecticide or other spray materials, said pump being specially adapted to deliver the spray liquid only when said treadle is depressed and for a limited time if the treadle remains depressed, and to deliver a uniform but adjustable quantity of spray for each depression of the treadle.

3,699,929
ROTARY COMBUSTION ENGINE
James E. Bennethum, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1971, Ser. No. 144,728
Int. Cl. F02b *53/10, 53/12*
U.S. Cl. 123—8.09 **6 Claims**



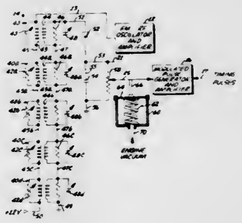
A rotary combustion engine having a piston whose contour provides each working chamber with a trailing region that is separated from a leading region by a flow restriction for initiating combustion wherein combustion is initiated by injecting and igniting fuel-air mixture in the trailing region whereafter the flow restriction is removed to permit flow from the trailing region to the leading region for continued combustion.

3,699,930
ROTARY INTERNAL COMBUSTION ENGINE
Earl G. Bunce, 414F Chateau Drive S.W., Huntsville, Ala.
Filed Nov. 8, 1971, Ser. No. 196,397
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.41 **5 Claims**



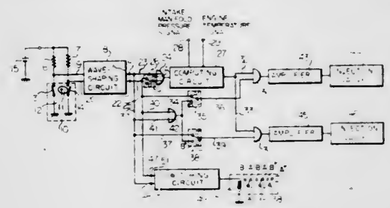
A rotary internal combustion engine having separately housed compression and power rotors and wherein there is a pair of sealing rotors positioned adjacent diametrically opposite peripheral edges of each rotor to form two sealed pressure chambers in each housing.

3,699,931
FUEL CONTROL SYSTEM USING RF CIRCUITS
Vincent J. Cinquegrani, 333 West Second Street, Scottsdale, Ariz.
Filed March 22, 1971, Ser. No. 126,694
Int. Cl. F02b *3/00*; F02m *39/00*
U.S. Cl. 123—32 EA **18 Claims**



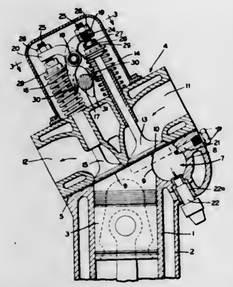
Apparatus for controlling the injection of fuel in an internal combustion engine utilizes RF circuits including a tuneable RF detector responsive to the speed of the engine.

3,699,932
ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM
Shigeo Aono, 3-68, Oppama-higashi-cho, and Nobuzi Manaka, 3-15-1, Morisaki, both of Yokosuka, Japan
Filed Oct. 22, 1970, Ser. No. 82,946
Claims priority, application Japan, Oct. 22, 1969, 44/84427
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **6 Claims**



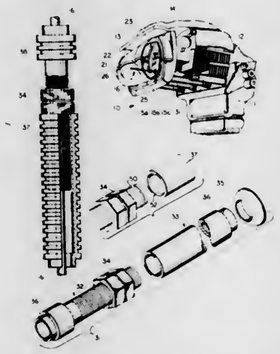
An electronically controlled fuel injection system which is so designed as to adapt itself to operation of high engine speed by effecting a switching from two-cylinder simultaneous injection to four-cylinder simultaneous injection. When the engine is operating at speeds below a predetermined value, a fuel injection pulse signal, which occurs at the rate of two pulses for each rotation of the engine shaft, is applied alternately to the injection valve associated with the first and third cylinders and the injection valve associated with the second and fourth cylinders, so that fuel injection takes place simultaneously in the first and third cylinders and it is followed by a simultaneous fuel injection in the second and fourth cylinders. On the other hand, when engine speed increases to the predetermined value, a switching is effected from the two-cylinder simultaneous injection to four-cylinder simultaneous injection. A switching from the four-cylinder simultaneous injection to two-cylinder simultaneous injection occurs when engine speed decreases to another predetermined value lower than said predetermined value.

3,699,933
VALVE OPERATING ARRANGEMENT FOR INTERNAL COMBUSTION RECIPROCATING ENGINES
Otis D. Treiber, 3080 Stanley Ave., Santa Cruz, Calif.
Division of Ser. No. 794,555, Jan. 28, 1969, Pat. No. 3,592,172. This application March 22, 1971, Ser. No. 126,841
Int. Cl. F01l *1/04, 1/18*; F02b *9/16*
U.S. Cl. 123—90.27 **1 Claim**



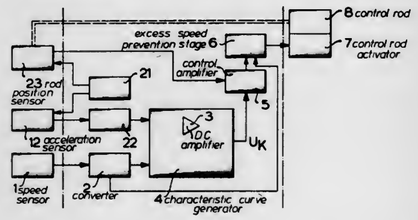
A valve operating arrangement for an internal combustion reciprocating engine having a combustion chamber shaped to permit the maximum feasible distance for travel of fuel spray from the spray nozzle tip, the spray nozzle being located so as to direct the fuel spray away from the combustion chamber walls clear of the piston and toward the cylinder head. The top of the piston and the top of the cylinder are at an angle to the axis of the cylinder, and the combustion chamber is on the long side of the cylinder. The exhaust and intake valves have their stems positioned normal to the combustion chamber, the engine camshaft being located between the exhaust and intake valve stems. Valve actuating rocker arms are partly rotatable on a rocker arm shaft located above and parallel to the camshaft. The rocker arms are equipped with shoes to contact the cams. The rocker arms have screw adjustable ball and socket slidable components with the valve stems, and there is a locking means for the adjustable screw.

3,699,934
EXTENSIBLE LUBRICANT-RETURN TUBE FOR INTERNAL COMBUSTION ENGINES
Eugene T. Galpo, 15035 Rayfield Drive, and James E. Mattingly, 14911 Fairhope Drive, both of La Miranda, Calif.
Continuation-in-part of Ser. No. 78,489, Oct. 6, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,451
Int. Cl. F01m *9/10*
U.S. Cl. 123—90.38 **15 Claims**



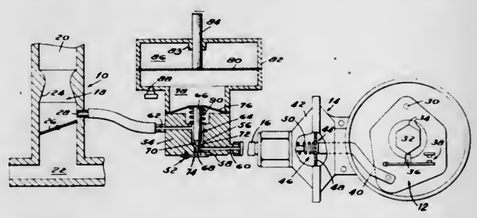
An extensible lubricant-return tube, for enclosing a pushrod in an internal combustion engine, having gaskets at the opposite ends of the tube and comprising an outer sleeve and an inner insert. The outer sleeve is internally smooth and the inner insert is externally threaded in the area where it telescopes into the sleeve. A pair of internally threaded locking torroids disposed on the inner insert serve to adjust and lock the sleeve and insert to the required length.

3,699,935
FAIL-SAFE FUEL INJECTION CONTROL ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES
Karl-Heinz Adler, Leonberg; Johannes Locher, Stuttgart; Rudolf Lemanczyk, Stuttgart, and Edgar Schonart, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 11, 1970, Ser. No. 97,271
Claims priority, application Germany, Dec. 13, 1969, P 19 62 570.8
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 **34 Claims**



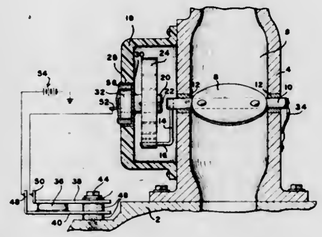
An electrically controlled control element determines fuel injection per operating cycle. The control circuit determining position of control element receives signals indicating gas pedal position, engine speed, and feedback signal indicating control element position. Each of these signals varies with corresponding parameter in such a manner that interruption of the signal causes minimum fuel injection. Additional limiting circuits within control system also designed to cause minimum fuel injection during circuit failure.

3,699,936
ACCELERATOR PUMP CONTROLLED ENGINE SPARK TIMING
Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 2, 1970, Ser. No. 94,361
Int. Cl. F02p *5/10*
U.S. Cl. 123—117 A **9 Claims**



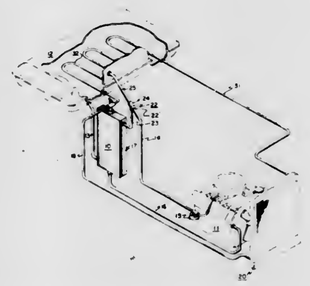
The vacuum line between the carburetor spark port and the engine distributor breaker plate servo actuator includes an air bleed valve that is normally closed to permit normal advance of the engine timing as a function of spark port vacuum changes, but is opened by a servo actuated directly by the carburetor accelerator pump linkage during vehicle accelerations to bleed air to the distributor servo to condition the timing for retarded operation.

3,699,937
SOLID STATE CONTROLLED AUTOMATIC CHOKE
Peter S. De Petris, 2004 La Salle Avenue, Niagara Falls, N.Y.
Filed Aug. 4, 1971, Ser. No. 169,002
Int. Cl. F02d *11/08*; F02m *1/10, 23/04*
U.S. Cl. 123—119 F **9 Claims**



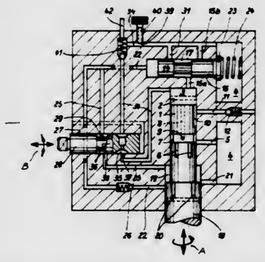
An electrical heating means for the bimetallic thermostatic spring controlling a carburetor automatic choke valve is in series with a negative temperature coefficient thermistor which senses engine and/or ambient air temperature to open the choke valve in a more efficient manner and thus reduce air pollution and improve engine performance during warm-up. The electrical heating means may be either a conventional resistance heater or a positive temperature coefficient thermistor.

3,699,938
GAS EXPANDER
Raymond R. Frazier, Route 4, Weiser, Idaho
Filed Jan. 25, 1971, Ser. No. 109,412
Int. Cl. F02m *31/00, 59/00*
U.S. Cl. 123—122 E **1 Claim**



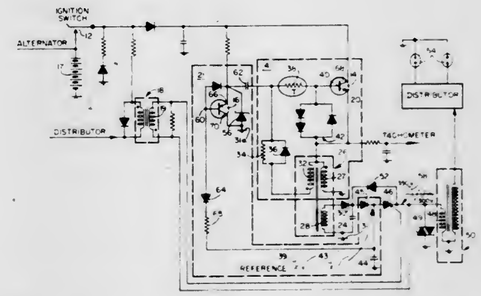
The gas expander assembly of this invention comprises a housing, a coil distally disposed in the housing in communication with a fuel supply tank and a combustion engine, and means interconnecting the housing to the engine cooling system being operable to receive heated liquid coolant materials from the engine to cause heating of fuel in the coil, and means operable to separate fuel vapors and the expanded fuel wherein fuel vapors are conducted back to the fuel supply system and expanded fuels are conducted to the engine.

3,699,939
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES AND METHOD OF FUEL CONTROL
Konrad Eckert, Stuttgart-Bad Cannstatt; Franz Eheim; Gerald Hofer, both of Stuttgart, and Claus Koster, Ditzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed June 8, 1970, Ser. No. 44,017
Claims priority, application Germany, June 19, 1969, P 19 31 039.5
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 J **10 Claims**



In a fuel injection pump, in order to prolong the duration of fuel injection during each pressure stroke of the pump piston in the idling or low load rpm range, there is provided a bypass channel extending from the pump work chamber for continuously discharging part of the fuel displaced by the pump piston. Said bypass channel contains a valve means which closes the bypass channel when the engine rpm exceeds the idling or low load rpm range.

3,699,940
INITIATION CIRCUIT FOR A CAPACITOR DISCHARGE IGNITION SYSTEM
Robert J. Vargas, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed July 14, 1971, Ser. No. 162,580
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **5 Claims**



An initiation circuit for a capacitor discharge ignition system for an internal combustion engine having an ignition capacitor, a semiconductor trigger means for discharging the ignition capacitor in synchronism with the engine, an oscillator providing charging pulses for the ignition capacitor and an enabling circuit responsive to the operation of the semiconductor trigger to couple a signal to the oscillator to initiate the same with the enabling circuit including a transistor and zener diode coupled across the output of the transistor to a

reference potential to prevent changes in supply potential from initiating the oscillator. A high voltage output transformer coupled to the semiconductor trigger provides a discharge path for the ignition capacitor.

3,699,941

FUEL CONTROL APPARATUS

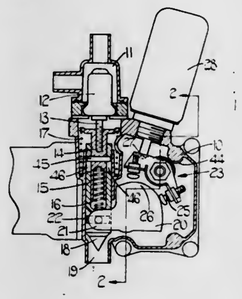
Ronald William Hughes, Birmingham, and Alan Boyse, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 23, 1970, Ser. No. 100,860

Claims priority, application Great Britain, Jan. 6, 1970, 560/70

Int. Cl. F02n *17/00*

U.S. Cl. 123—179 G **10 Claims**



An apparatus for controlling a fuel injection system for an engine includes a cam rotatable in response to engine temperature and a cam follower selectively engageable with different portions of the cam. The output of the cam follower provides one input of an arrangement for varying the position of a control stop on a metering pump for the system, and the said selective engagement is operated during engine starting to provide an increased fuel supply.

3,699,942

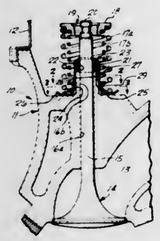
ADJUSTABLE VALVE STEM OIL SEALS FOR OLD AND NEW INTERNAL COMBUSTION ENGINES

Forest J. Moray, 1513 Books Avenue, Renton, Wash.

Continuation-in-part of Ser. No. 52,175, July 6, 1970, Pat. No. 3,577,972. This application Feb. 17, 1971, Ser. No. 116,032

Int. Cl. F01l *3/00*; **F16k** *41/02*

U.S. Cl. 123—188 P **6 Claims**



A new method and two seal mechanisms for carrying out the method are disclosed for preventing oil leaks around valve stems in internal combustion (I.C.) engines having a raised valve guide portion, for the elimination of the smog problem, carbon monoxide, engine sludge, and excess oil usage.

The basic method comprises placing a packing seal on the valve guide raised portion around the valve stem, forming a packing cover over the valve packing and raised portion, and positioning an annular plate under the valve spring and connected to the valve cover for adjusting the pressure on the valve packing without having to remove the valve spring for prevention of leaks from around the valve stem. Another method comprises varying the last step of the basic method as by forming various connections between the valve cover and valve guide raised portion. Two exemplary seal mechanisms are disclosed for carrying out the methods comprising a packing fitted on the seal guide raised portion of the I.C. engine head, a packing cover pressed over the packing, two different connections between the packing cover and the valve guide raised portion, and various annular plates connected to the packing cover and extending out from under the valve spring and having projections for being rotated without removing the valve spring for varying the pressure on the valve stem packing for elimination of oil and oil vapor leaks as the packing wears. The resulting great saving in time and expense provides greater inducement for maintaining the valve seals tight and leak proof for the reduction of the smog problem.

3,699,943

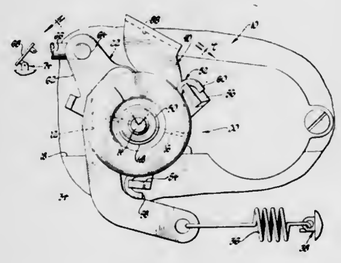
THROTTLE RETURN SPRING REDUNDANCY SYSTEM

Philip V. Eshelman, 19417 Greenwald Drive, Southfield, Mich.

Filed June 7, 1971, Ser. No. 150,670

Int. Cl. F02b *77/08*; **F02d** *11/04*; **B60k** *77/08*

U.S. Cl. 123—198 DB **7 Claims**



A throttle valve, situated within the induction passage of a fuel or air induction device, is carried by a throttle shaft for rotation therewith; a lever fixedly connected to the throttle shaft is operatively to a remotely situated operator's foot-operated throttle control; a first throttle return spring is operatively connected to the first lever for returning the throttle valve to an idle position whenever the foot-operated throttle control is released; a second safety spring is provided for assuring the movement of the throttle valve to the idle position in the event that, for example, either the first throttle return spring or the associated throttle control linkage should fail while the throttle valve is in either a partly or fully opened position; the manually operated throttle control being effective to force opening movement of the throttle valve against the resilient resistance of the second safety spring.

3,699,944

ANTI-SIPHON AND VENT MEANS FOR USE WITH AN OPEN-TO-ATMOSPHERE HOT WATER SUPPLY TANK

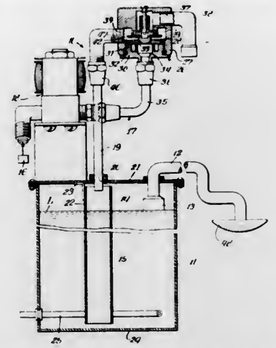
Harvey R. Karlen, Chicago, Ill., assignor to Cory Corporation

Filed Feb. 10, 1971, Ser. No. 114,147

Int. Cl. A47g *23/04*

U.S. Cl. 126—362 **9 Claims**

An anti-siphon and vent means for use with an open-to-atmosphere hot water supply tank. The anti-siphon and vent means is mounted downstream of a shutoff valve for controlling flow conditions relative to the hot water heating tank. The anti-siphon and vent means is arranged to permit free flow of cold water to the tank when the shutoff valve is open and to vent the tank to atmosphere and prevent backflow of water from the tank to the shutoff valve in the event of a failure of pressure in the cold water supply through the valve.



3,699,945

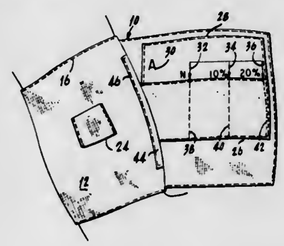
BLOOD PRESSURE CUFF WITH CALIBRATED HOLDING MEANS

Paul M. Hanafin, 240 Readington Road, Somerville, N.J.

Filed July 30, 1970, Ser. No. 59,620

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 C **10 Claims**



A blood pressure cuff including a visual indication of the limit of assured accuracy in the blood pressure recording. The point of the cuff closure is marked to show said limit, the indicia being located in reference to the ratio which the diameter of the limb encircled by the cuff bears to the width of the occluding bladder. The markings assure acceptance (despite differences of opinion in the scientific community) by the major recognized associations concerned with the establishment of cuff design standards.

The cuff minimizes disregard of the indicia and the consequent taking of an inaccurate recording, by incorporation of a "fail-safe" connection between the mating cuff ends. The connecting means loses holding power and fails to maintain closure of the cuff when gas pressure is applied to the bladder in the normal fashion, if the ratio of limb diameter to bladder width exceeds known standards.

3,699,946

WAVEFORM ABNORMALITY MONITOR

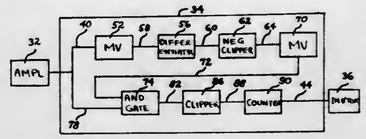
Walter A. Michel, 9035 North Mango Avenue, Morton Grove, Ill.

Filed Aug. 11, 1970, Ser. No. 62,831

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 A **8 Claims**

A portable, programmable electronic device for monitoring the heartbeat waveform of an ambulatory individual by sensing the difference between potentials from a pair of sensors attached to the individual, and electronically processing the waveform to detect and warn of the presence in that waveform of abnormalities, such as extrasystoles, which indicate the imminence of a possible heart attack. The potential difference, represented as a waveform formed by a series of R-wave complexes and any intermediate waveforms, is passed into a time controlled gate which is open during only the monitoring period following an R-wave complex so that an intermediate extrasystole will actuate an indicator.



3,699,947

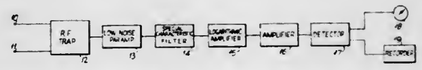
ELECTROENCEPHALOGRAPH MONITORING APPARATUS

Douglas Edward Maynard, Stoke Poges, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 771,192, Oct. 28, 1968, abandoned. This application July 13, 1971, Ser. No. 162,165

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 B **16 Claims**



Monitoring equipment is provided for monitoring electrical signals in the human brain. Signals from electrodes attached to the scalp are passed to a bandpass filter where certain interference signals, such as those arising from muscle action and rapid psycho-galvanic responses, are removed. The filter also applies a weighting to equalize the effect of random brain activity over the filter band, and to allow rhythmic activity to be more clearly observed. A logarithmic amplifier is connected to the filter output to provide amplitude compression signals received from the brain. The impedance between the electrodes is monitored to give an indication if the electrodes become wholly or partially disconnected.

3,699,948

RECORDING DEVICE WITH AUTOMATIC GAIN RANGE CHANGER AND D.C. CORRECTION MEANS

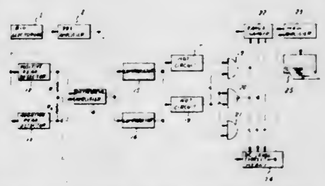
Tomiyoshi Ota; Katunobu Takigawa, and Masasada Honda, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1971, Ser. No. 143,552

Claims priority, application Japan, May 16, 1970, 45/41741

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 G **5 Claims**



An automatic recording device incorporating a range changer and an asymmetrical DC level correcting means. The

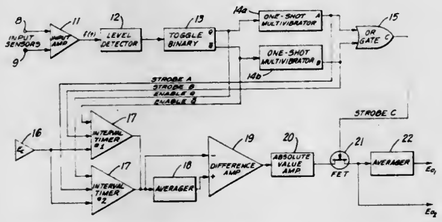
range changer automatically selects a gain capable of supplying the recorder, for example, with an electrocardiograph signal of suitable amplitude regardless of the amplitude of the detected electrocardiograph signal. The asymmetrical DC level correcting means corrects the DC level of the recorder so as to center the electrocardiogram on the recording chart.

3,699,949

PULSE JITTER MEASUREMENT ESPECIALLY FOR HEART BEAT MEASUREMENT

James F. O'Hanlon, Jr., and Glenn A. Sanderson, both of Santa Barbara, Calif., assignors to Human Factors Research Incorporated, Goleta, Calif.

Filed July 26, 1971, Ser. No. 165,947
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 A **8 Claims**



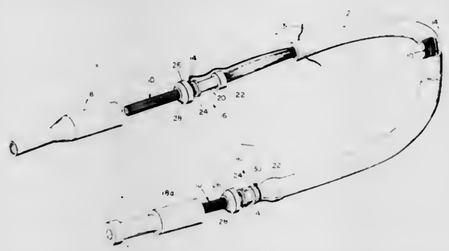
Apparatus for measuring the difference in intervals between pulses of a pulse train and providing a continuous output indicative of the interval variation or the pulse jitter. Circuitry having the pulse train as an input and including a pair of interval timers, for producing a series of constant width pulses related to the input pulses in amplitude and repetition rate. An averager and a difference amplifier for providing an output which is a function of the difference between each pulse interval and the average pulse interval.

3,699,950

FLEXIBLE OPTICAL LIGHT PIPES USED FOR SURGERY

William G. Humphrey, Jr., and Michael L. Rishton, both of Reading, Mass., assignors to Dyonics Inc., Woburn, Mass.

Filed July 2, 1970, Ser. No. 51,883
Int. Cl. A61b 1/06; F16l 13/00, 33/00
U.S. Cl. 128—23 **15 Claims**



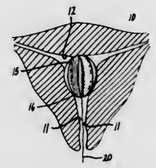
Flexible fiber optic light pipes. In the form of an autoclavable surgical light pipe, a protective sheath formed by a single tube of silicone rubber has a critical outer diameter at least 2¼ times the internal diameter, the outer diameter on the order of 8 mm. Such a tube has a self-limiting effect, resisting bending of itself so that the fibers are not bent to their critical angle for breakage. A sealing coating on the fibers prevents adverse effects attributable to moisture passing through the wall thickness of the tube while end sealing prevents wash-off of the coating. An end sealing arrangement is shown with end cap and ferrule gripping the thickness of the tube, forming a gasket seal. Correspondingly tapered, butted and bonded surfaces align the assembly and provide a uniform seal. An inextensible cord-like member in the bore, extending between the ferrules, resists extension of the elastomeric outer tube.

3,699,951

DEVICE FOR SUPPRESSING FERTILITY

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation

Filed Jan. 19, 1970, Ser. No. 3,852
Int. Cl. A41b 3/12
U.S. Cl. 128—130 **4 Claims**



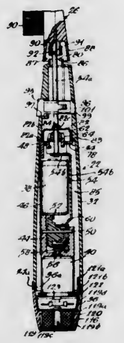
Fertility suppression in a female mammal is achieved with a device for insertion and retention in the uterus in the form of a flexible, resilient body of polymeric material having an elastic memory. The body has an ellipsoidal shape and a fluted surface. When inserted into the uterine cavity in a compacted state, the body assumes an ellipsoidal configuration. Preferably, the device contains an anti-fertility agent, most preferably progesterone, and is permeable to passage of the anti-fertility agent at a low rate. Upon insertion in the uterus, the device releases a fertility suppressing amount of the anti-fertility agent to the uterus.

3,699,952

SKIN TREATING APPLIANCE

Robert S. Waters, Oak Brook, and Albert S. Spohr, Park Ridge, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Continuation of Ser. No. 824,449, May 14, 1969, abandoned.
This application Feb. 3, 1971, Ser. No. 112,371
Int. Cl. A61h 21/00, 7/00
U.S. Cl. 128—24.2 **35 Claims**



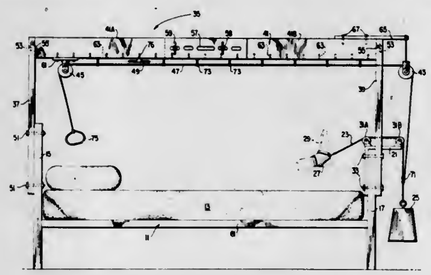
An electrically operated appliance for treating skin utilizing an orbitally driven brush, massaging or skin conditioning instrument. The appliance is operated by means of a switch which is energized upon engagement of the brush or implement against the skin of the user. Control means are provided to immobilize the implement supporting shaft and prevent actuation of the operating switch when the brush or massage instrument is attached or removed from the implement supporting shaft. The sealed housing of the appliance encloses a battery operated mechanism having a motor at one end of the enclosure connected to an elongated drive lever which straddles the rechargeable battery and is arranged to produce an elliptical, orbital motion at the end of the implement mounting shaft.

3,699,953

SELF-OPERATING TRACTION SYSTEM

Virginia S. Mason, 42 Westover Street, Hampton, Va.

Filed Sept. 16, 1970, Ser. No. 72,608
Int. Cl. A61h 1/02
U.S. Cl. 128—75 **7 Claims**



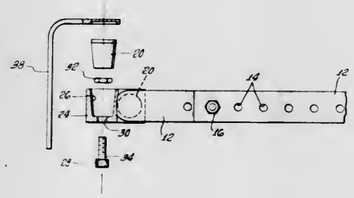
A self-operating traction system is disclosed. The system includes a supporting mechanism which is positioned above an orthopedic traction apparatus to support a lifting pulley above a traction weight. The supporting mechanism also supports a control pulley and a tie cleat within arms reach of a patient. A disabling cord rides on the lifting pulley and the control pulley, and is operatively attached to the traction weight. The patient pulls on the disabling cord to temporarily disable the traction weight and secures the disabling cord to the tie cleat to permanently disable the traction weight. The supporting mechanism has several structural features which permit it to be used for a variety of orthopedic traction applications.

3,699,954

ORTHOPEDIC APPLIANCE

William A. Craig, P.O. Box 81, Angwin, Calif.

Filed Aug. 25, 1971, Ser. No. 174,620
Int. Cl. A61f 3/00
U.S. Cl. 128—80 A **2 Claims**



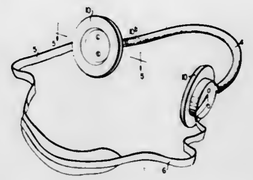
An improved orthopedic appliance having an adjustable length and provided with tapered sockets for cone locks for receiving cone members attached to anchor bars and rotatable in various positions to provide proper positioning of a patient's legs and hips so that orthopedic defects may be corrected.

3,699,955

HEADBAND DEVICE FOR SINUS RELIEF

Neill McK. Heath, 1808 Goodwin Street, Jacksonville, Fla.

Filed Dec. 31, 1970, Ser. No. 103,190
Int. Cl. A61f 5/24
U.S. Cl. 128—97 **14 Claims**



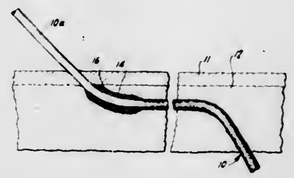
The headband device for use by persons having difficulty in breathing due to sinus trouble, head colds, or deflected septums, includes a pair of disk members adapted to contact the alae nasal region of the person's face at opposite sides of the person's nose. A flexible cross-piece of general arcuate shape has its ends respectively connected at a fixed angle to the disk members and is adapted to be disposed across the face of the person opposite his mouth. Elastic straps extend from the respective disk members to the back of the person's head, with provision for securing the outer ends of the straps together, whereby when the elastic straps are tightened the pressure on the alae nasal passages at each side of the nose is increased due to the angular connection of the cross-piece to the disk members, thereby pulling the alae on opposite sides of the nose away from the nose to maintain the nasal passages unobstructed.

3,699,956

PERCUTANEOUS LEAD DEVICE

Sotiris Kitrilakis, Berkeley, and Thomas C. Robinson, El Cerrito, both of Calif., assignors to Tecna Corporation, Berkeley, Calif.

Filed Oct. 1, 1970, Ser. No. 77,290
Int. Cl. A61m 25/00
U.S. Cl. 128—348 **9 Claims**



A percutaneous lead device including an element for preventing bacterial infection caused by implanting the lead through the skin. This element extends below and along the skin surface and includes an antibacterial fluid reservoir coated with a diffusion-controlling layer which maintains the desired fluid release rate. A surface configuration on the reservoir and lead which is highly adherent to and completely permeated by ingrowing tissue provides a particularly effective bacterial seal.

3,699,957

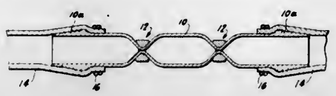
VAS PROSTHESIS FOR REVERSIBLE STERILIZATION

Thomas C. Robinson, El Cerrito, Calif., assignor to Tecna Corporation, Berkeley, Calif.

Filed Oct. 1, 1970, Ser. No. 77,201
Int. Cl. A61b 19/00
U.S. Cl. 128—1 R **6 Claims**

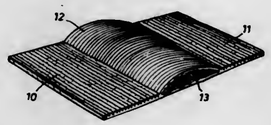
A prosthetic device for reversibly blocking semen flow through the vas deferens including a cannula for sealed

coupling with severed portions of the vas and a reversible valve associated with the cannula having a closed position for blocking fluid flow and an open position for permitting fluid



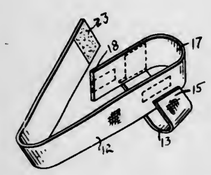
flow. Microcavities may be incorporated externally or internally on the surfaces of the cannula for compatibility with living tissue. The valve types include mechanical clamps or plugs and a hydraulically actuated expandible cuff.

3,699,958
ANTIMICROBIAL WOVEN OR KNITTED FABRIC
Laszlo G. Szucs, Ackermannstr. 6, Zurich, Switzerland
Filed Dec. 31, 1970, Ser. No. 103,145
Int. Cl. A62b *23/06*
U.S. Cl. 128—146.2 **19 Claims**



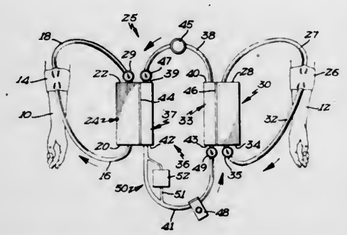
An antimicrobial woven or knitted fabric which is made from crimp yarn and treated with cation-active antimicrobial compounds and the use of said fabric as surgical dressing or surgical face mask.

3,699,959
BANDAGE CONSTRUCTION
William F. Garrahan; Edwin J. Madden, both of 166 Tollgate Road, and Clarence J. Picard, 981 Greenwich Avenue, all of Warwick, R.I.
Filed Dec. 16, 1970, Ser. No. 98,747
Int. Cl. A61f *13/06*
U.S. Cl. 128—166 **4 Claims**



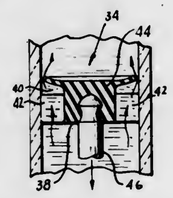
An elastic bandage construction for traumatic and post traumatic bandages for supporting after sprains, broken bones after the removal of the cast, for minor fractures and chronically unstable joints and ligaments. The bandage is made of an elastic material preferably with a soft nap to cut down on chafing and make the bandage more comfortable. The bandage has a performed section to fit around an ankle. It is then provided with an elongated integral section for wrapping around the joint. "Velcro" fasteners are provided not only at the end of the bandage but intermediately so that after a proper and comfortable tightening of the bandage, it will be retained in place while the hands are free to complete the bandaging operation. The bandage is constructed to provide for support without bulk. The user can tighten or adjust the bandage as desired. The bandage comprises an elongated portion having one end turned into a U-shape to fit around the back of the foot and around the Achilles tendon. A second looped portion is sewed to the bottom edge of the U-shaped portion and is adapted to extend around the bottom of the arch or instep. These portions are then tightened around the foot and locked in place by a suitably positioned "Velcro" fastener. The elongated section can then be wrapped around the instep and then completely around the ankle and finished off with another "Velcro" fastener.

3,699,960
PARABIOTIC DIALYSIS APPARATUS
Frank B. Freedman, 3430 Boone Avenue S., Minneapolis, Minn.
Filed Jan. 4, 1971, Ser. No. 103,774
Int. Cl. A61m *01/03, 05/00*
U.S. Cl. 128—214 B **11 Claims**



Parabiotic dialysis apparatus which may be safely used with humans is disclosed. Three chambers are fluidically interconnected yet separated by two membranes to enable safe and efficient transfer of substances between the blood of two organisms. One chamber is arranged to be connected into the blood circulation system of a normal human. A second chamber is arranged to be connected into the blood circulation system of a diseased human. A third chamber, which is split into two interconnected halves, is arranged to hold physiological fluid. The chambers are arranged with the third chamber between the first and second chambers. The membranes are arranged with one membrane forming the fluid boundary between the first chamber and one half of the third chamber and the second membrane forming the fluid boundary between the second chamber and the other half of the third chamber to thus provide a fluid path from the first chamber to the second chamber which fluid path can transfer substances to and from the first and second chambers across the membranes and third chamber due to convection and diffusion.

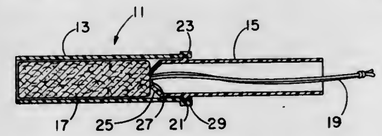
3,699,961
SYRINGE AND METHOD
Roman Szpur, Dayton, Ohio, assignor to The Sebon Corporation, Dayton, Ohio
Filed March 12, 1970, Ser. No. 18,925
Int. Cl. A61m *05/22*
U.S. Cl. 128—218 M **7 Claims**



A syringe assembly utilizes a one way valve which comprises a compliant plate portion adapted to partition a syringe barrel. The compliant plate portion moves in response to pressures developed within the syringe barrel and the valve includes a brace portion which limits compliance of the plate portion to

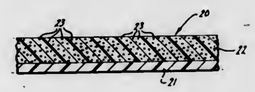
pressures exerted in a given direction. Due to compliance by the plate portion, fluid can flow within the syringe barrel and around the plate portion when the pressure acting on the fluid is in the opposite direction but, by reason of the compliant plate being braced, cannot flow through the valve when a pressure is developed in said given direction. Two embodiments of the valve are disclosed. Three methods of assembly are disclosed; one wherein a medicine is confined within the syringe assembly under a positive pressure, another wherein the medicine is confined under atmospheric pressure, and a third wherein two components of medicine are confined in separate syringe compartments. A preferred mode of syringe activation is disclosed wherein a traveling seal closing one end of the syringe is caused to cling to the syringe valve so as to maintain the syringe in readiness for aspiration.

3,699,962
TUBULAR PLASTIC INSERTER FOR TAMPONS
David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 28, 1970, Ser. No. 84,580
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **9 Claims**



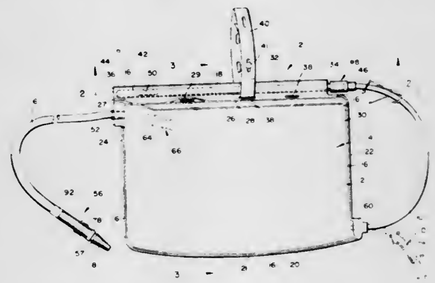
A plastic inserter for tampons consisting of inner and outer telescoping tubular members which are releasably interlocked against axial movement in both directions by mating configurations on the inner wall of the outer tube and the outer wall of the inner tube. One of the tubular members, preferably the outer member is made of a firm plastic, while the other member, is made of softer, less rigid plastic which more readily undergoes elastic deformation than the firm plastic whereby smooth disengagement of the interlocked tubes results when axial force is applied to the trailing end of the inner tube member by the user in order to release the interlock and eject the contents of the outer tube member.

3,699,963
THERAPEUTIC ADHESIVE PATCH
Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation
Filed Oct. 31, 1969, Ser. No. 872,862
Int. Cl. A61f *7/02*
U.S. Cl. 128—268 **12 Claims**



Therapeutic adhesive patch for stimulation of uterine contractions by application to the oral mucosa is comprised of a backing member, an amount of an oxytocic drug sufficient to release a therapeutically effective amount of the drug to the oral mucosa, and a pressure-sensitive adhesive coating. The oxytocic drug can be dispersed through or coated on the pressure-sensitive adhesive; can be microencapsulated with a material permeable to passage of the drug and the microcapsules distributed throughout the pressure-sensitive adhesive; or can be incorporated in a reservoir layer permeable to passage of the drug and mounted on or laminated to the backing member and bearing a coating of the pressure-sensitive adhesive. The pressure-sensitive adhesive coating can cover the full-face surface of the adhesive patch or a part thereof, such as the perimeter of the face surface of the patch.

3,699,964
CLOSED URINARY DRAINAGE AND IRRIGATION SYSTEM
Richard E. Ericson, Keene, N.H., assignor to C.R. Bard Inc., Murray Hill, N.J.
Continuation-in-part of Ser. No. 793,403, Jan. 23, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 101,976
Claims priority, application Canada, July 2, 1970, 087040; Great Britain, July 3, 1970, 32,372/70
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 **41 Claims**



A closed system, disposable, urinary drainage and irrigation system having the following improvements:

1. a flexible drainage tube of increased internal diameter, which is larger than the maximum internal diameter at which a continuous column of urine will form in the tube when urine flows therethrough by gravity from the bladder, to thereby prevent microorganisms from ascending the tube to the bladder;

2. a circumferential slit extending part way around the circumference of the drainage tube located over the shank of the catheter adapter to provide a unique type irrigation valve for alternately irrigating the bladder and draining the bladder through the drainage tube into a drainage bag in which the urine is collected without disconnecting and reconnecting the drainage tube from the catheter adapter shaft and without the necessity of clamping off the drainage tube between the valve and the bag;

3. a one way ball valve and housing therefor at the end of the drainage tube located within the drainage bag to prevent reflux while permitting free flow of urine through the drainage tube into the bag;

4. a protective cap over the end of the draw off tube for drawing urine from the drainage bag, such cap being effective to protect the end of the draw off tube from contact with contaminated objects; and

5. a disposable, plastic syringe in which the sterile irrigating fluid is prepackaged and which is particularly adapted to be used with the aforesaid irrigation valve to permit irrigation without leakage.

3,699,965
TAMPON FOR ABSORBING BODY FLUIDS
Zdenek Denny Dostal, Ramsey, N.J., assignor to International Playtex Corporation, New York, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,434
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **12 Claims**

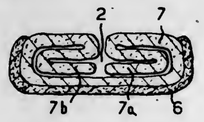
An article of manufacture for the absorption of body fluids, particularly tampons, comprising a body portion with at least a portion of the filaments which make up the body portion being

inflated filaments having voids therein. The inflated filaments have a lower specific gravity than like non-inflated filaments, and are preferably of cellulose base materials, and as used in a



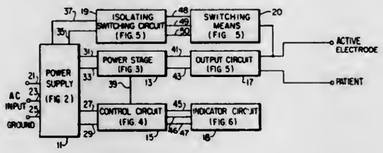
tampon provide a product having the ability, upon the application of moisture to increase in size in both length and diameter.

3,699,966
SANITARY NAPKIN
Robert Chapuis, Grenoble, France, assignor to Etablissements Ruby S.A., Voiron-en-Chartreuse, France
Filed June 5, 1970, Ser. No. 43,699
Claims priority, application France, June 10, 1969, 6919163
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **3 Claims**



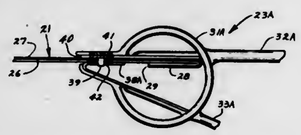
Sanitary napkin comprises alternate layers of hydrophilic and hydrophobic material, with the edges of the hydrophilic material folded inward to define a channel extending through the middle of one side of the napkin.

3,699,967
ELECTROSURGICAL GENERATOR
Robert K. Anderson, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.
Filed April 30, 1971, Ser. No. 139,085
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.14 **24 Claims**



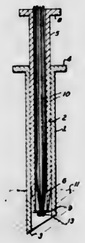
An isolated output electrosurgical generator suitable for generating cutting and coagulation electrosurgical currents is described. The electrosurgical generator using a single power stage generates three distinct and independent currents—a coagulation current for hemostasis or tissue destruction; a pure cutting current for cutting with a minimum amount of hemostasis; and a blended cutting current with a moderate amount of hemostasis. The electrosurgical generator includes a solid state power stage driven by two discrete frequencies that provide substantially differing cutting and coagulation characteristics. The electrosurgical generator also includes a solid state control circuit that controls the operation of the power stage. More specifically, the control circuit controls whether the power stage generates a current near the resonant frequency of the LC circuit so that a coagulation current or a blended cutting current is generated or whether the power stage generates a current at another frequency whereby a pure cutting current is generated. The output from the power stage is connected through an output circuit to suitable electrosurgical instrument terminals. An indicator circuit is used to provide audio and visual indication of activation of the electrosurgical generator. In addition, the electrosurgical generator provides electrical isolation on all output connections to prevent patient burns caused by alternate return current paths.

3,699,968
ELECTRICAL CONNECTOR AND PLATE ELECTRODE
Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.
Division of Ser. No. 762,582, Sept. 25, 1968, Pat. No. 3,624,590. This application May 20, 1971, Ser. No. 145,164
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.13 **17 Claims**



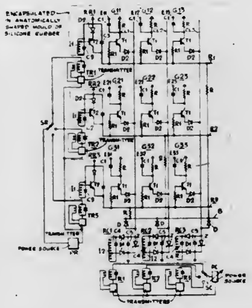
An electrosurgical unit using high frequency currents having an active electrode and a patient indifferent or ground plate electrode. The plate electrode is a disposable flexible ground item releasably attached to an electrical connector attached to a line leading to an electrosurgical unit. A test circuit tests the electrical connection between the clamp and the plate. The releasable connector has a flat contact plate in surface engagement with the ground electrode and at least one projection or edge coacting with the ground plate electrode to prevent accidental separation of the connector from the electrode. One form of the connector has a pair of plate contacts attached to and pivotally mounted on flat electrically conductive covers.

3,699,969
METHOD FOR IMPLANTING NATURAL OR SYNTHETIC FIBERS INTO LIVING TISSUE
William Glenn Allen, 2329 Tuscora Road, Bon Air, Va.
Filed June 1, 1971, Ser. No. 148,308
Int. Cl. A61b *17/00*, *17/34*; A61f *1/00*
U.S. Cl. 128—330 **4 Claims**



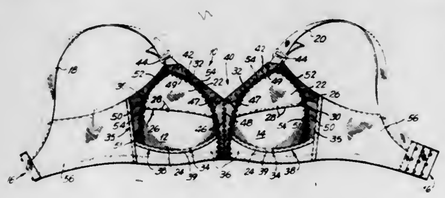
A method for implanting natural or synthetic fibers directly into the skin, particularly the scalp. The method is effected by the use of a concentric dual needle arrangement that comprises a first, outer needle and a second, inner needle slideably mounted within the outer needle. The fibrous material to be implanted is threaded within the inner needle, the latter then being "loaded" or mounted within the bore of the outer needle. The two needles are then inserted simultaneously into the scalp. The outer needle is withdrawn first to expose the fibrous strands to the tissue. The inner needle is next withdrawn leaving the fibrous strands implanted in the tissue. The method is highly effective, safe and requires a minimum of manipulative steps.

3,699,970
STRIATE CORTEX STIMULATOR
Giles Skey Brindley, London, and Peter Eden Kirwan Donaldson, Oxford, both of England, assignors to National Research Development Corporation, London, England
Filed June 23, 1970, Ser. No. 49,094
Claims priority, application Great Britain, June 26, 1969, 32,398/69
Int. Cl. A61n *1/18*
U.S. Cl. 128—419 R **8 Claims**



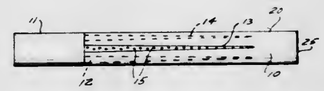
An implantable neurological prosthetic device comprises a plurality of electrodes for stimulating the striate cortex, a matrix of normally closed gates connected in one-to-one relationship with said electrodes, and a plurality of radio receivers tuned to predetermined frequencies and constituting at least two distinctive sets, each gate being connected for switching to an open state to energize the respective one of said electrodes by a unique group of at least two of said receivers from respectively different sets thereof. The receivers are themselves energizable by externally located respective transmitters conveniently positioned by a technique in which the transmitter tuned circuit is included as one arm in a bridge circuit balanced for maximum absorption by the respective receiver tuned circuit. This technique is more generally applicable to any implant provided with a tuned circuit.

3,699,971
FOUNDATION GARMENT
William C. Hittel, New Hyde Park, N.Y., and Charles M. Sachs, Teaneck, N.J., assignors to International Playtex Corporation, New York, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,824
Int. Cl. A41c *3/00*
U.S. Cl. 128—491 **31 Claims**



A brassiere providing both support and self-adjustment within standardized size designations having a torso encircling portion and non-stretchable bust cups having an underlying under-bust section and peripheral stretchable portions along the inner and outer edges of the cups. The stretchable portions along the inner edges of the cups form a medial Y section with the yoke of the Y between the cups. The stretch characteristics in the stretchable portions are preselected as to direction and degree to allow for self-adjustment in preselected areas and the transmittal of forces to dissipate their effect. The disclosure includes these features in front and rear closure embodiments in both bandeau and long-line versions.

3,699,972
CIGARETTE
Andrew Ferdinand Frisch, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Aug. 31, 1970, Ser. No. 68,163
Int. Cl. A24d *01/02*
U.S. Cl. 131—9 **11 Claims**



A cigarette is described which has the wrapper treated with a burn accelerating agent over a preselected area. An aperture is formed in this area. The burn accelerating agent causes the treated area of the wrapper to burn more rapidly than the untreated surrounding area so that an increased flow of air is caused to enter through the rapid burn area ahead of the burning coal during smoking. The air entering through the rapid burn area, in combination with the air entering through the aperture, dilutes the smoke stream and substantially reduces the delivery of smoke constituents. The provision of a slit through the treated area provides for a constant flow of air through the wrapper, during puffing of the cigarette, thus causing some dilution of the smoke stream at all times.

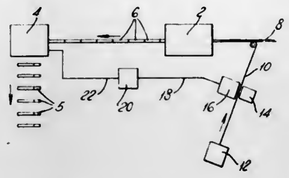
3,699,973
FILM COVERING FOR APERTURED SMOKING PRODUCT WRAPPER
Ronald A. Tamol, and Leo F. Meyer, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed July 6, 1971, Ser. No. 160,083
Int. Cl. A24d *1/02*; D21h *5/16*
U.S. Cl. 131—15 B **6 Claims**

The disclosure relates to a film covering for a smoking product wrapper, such as a cigarette wrapper. The wrapper is either porous, or is deliberately perforated with vents or apertures. These openings or vents are covered with a polymeric film that has been submitted to a degradation operation. The degradation is electrically produced, for example, by irradiation. The degradation expedites the removal of film over the apertures by smoke components so that air is permitted to dilute the smoke during the later stages of smoking.

3,699,974
CIGARETTE MANUFACTURE
Gordon Francis Wellington Powell, and Edward George Preston, both of London, England, assignors to Molins Machine Company Limited, Deptford, London, England
Filed June 25, 1970, Ser. No. 49,733
Claims priority, application Great Britain, June 27, 1969, 32,626/69
Int. Cl. A24c *5/34*
U.S. Cl. 131—21 R **15 Claims**

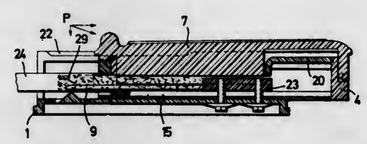
A cigarette making system for making mouthpiece cigarettes ejects cigarettes which have web joins by utilizing

the facility of the assembler unit to eject incomplete assemblies, the assembly of a mouthpiece in each cigarette including



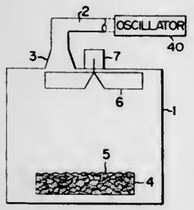
a web join being automatically stopped so that the incomplete assembly thus formed is ejected by the assembler unit.

3,699,975
CIGARETTE-MAKING APPLIANCE
Petrus Gerardus Saraber, Wolfhalden, Switzerland, assignor to Gizeh-Werk G.m.b.H, Berneustadt/Rhld, Germany
Filed Sept. 4, 1970, Ser. No. 69,616
Claims priority, application Germany, Sept. 9, 1969, P 19 45 498.9
Int. Cl. A24c *05/42*
U.S. Cl. 131—70 **5 Claims**



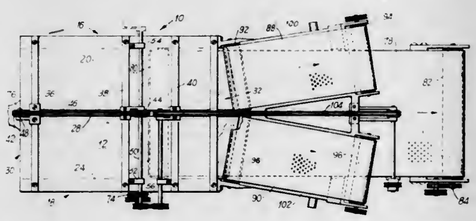
A manually operable device for making cigarettes in which a chamber is formed between a stationary part of the device and a sliding part. The sliding part has a nozzle in or on it. Over the nozzle a pre-formed tube of cigarette paper can be clamped. The tobacco in the chamber is compressed to form a plug and the sliding part slid so as to reduce the chamber size thereby forcing the plug through the nozzle and into the tube of paper to form a cigarette.

3,699,976
METHOD FOR KILLING TOBACCO LEAF BUG INHABITANTS AND THEIR EGGS
Isao Abe, Tokyo; Tatsuo Hirose, and Kotaro Ohshima, both of Yokohama-shi, all of Japan, assignors to The Japan Monopoly Corporation, Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Jan. 27, 1970, Ser. No. 6,144
Claims priority, application Japan, Jan. 27, 1969, 44/5430
Int. Cl. H05b *9/06*; **A24b** *3/00, 9/00*
U.S. Cl. 131—121 **2 Claims**



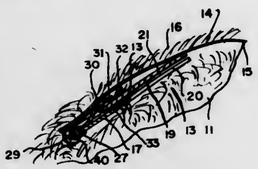
Method and apparatus for upgrading by heat treatment vegetable matter such as the foliage of tobacco or tea, using high frequency electromagnetic waves of 900 MHz min. and additionally irradiating infrared rays during said heat treatment to elevate operating efficiency.

3,699,977
TOBACCO LEAF CONDITIONER
Frank Hollenton, Richmond, Va., assignor to AMF Incorporated
Filed Oct. 1, 1970, Ser. No. 77,135
Int. Cl. A24b *5/14*
U.S. Cl. 131—147 R **7 Claims**



In this invention a tobacco leaf is unraveled by subjecting it to a flow of air that moves across the leaf transversely from its stem to its edges while the leaf is constrained along its stem. There is also provided a first air permeable belt and two divergent air permeable belts which cooperate with suction chambers to flatten and stretch the leaf. Selective control is obtained when manipulating the suction values and speed differential of the belts.

3,699,978
WIG
James A. Holly, Richton Park, Ill., assignor to Permalok International, Inc.
Continuation-in-part of Ser. No. 65,945, Aug. 21, 1970, abandoned. This application Sept. 9, 1971, Ser. No. 178,859
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **8 Claims**



A wig comprising a hairpiece and a fastener attached to the hairpiece for releasably securing it to the growing hair on the scalp in which the fastener includes a comb as a clamping part thereof for gently but firmly attaching the fastener and thus the hairpiece to the hair. By employing a comb the fastener can be placed as close to the scalp as desired thereby preventing any substantial amount of movement of the hairpiece relative to the scalp.

3,699,979
IMPREGNATED ARTICLE FOR CLEANING THE INTERPROXIMAL SURFACES OF THE TEETH
Joseph C. Muhler, and George K. Stookey, both of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.
Filed April 8, 1971, Ser. No. 132,442
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **10 Claims**

A mixture of a saliva soluble coating material and a specially defined dental polishing and cleaning agent is combined with a non-wax dental floss or dental tape to produce an impregnated dental floss or dental tape. Saliva dissolves the soluble coating material when the impregnated floss or tape is used to clean and polish the interproximal surfaces of the



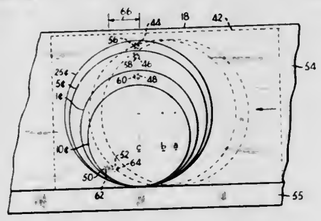
teeth by exposing the polishing agent to direct contact with the dental surfaces. Utilization of a saliva soluble coating material thereby substantially increases the cleaning and polishing properties of the dental floss or tape containing the cleaning and polishing agent.

3,699,980
LOTION APPLICATOR
Douglas D. Carpenter, 3013 1st Avenue, Great Falls, Mont.
Filed July 21, 1971, Ser. No. 164,630
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **3 Claims**



An elongated flat flexible belt has an elongated applicator pad secured permanently or detachably to one surface thereof. The belt and pad can be rolled up and provided with means for detachably holding belt and pad in rolled up position.

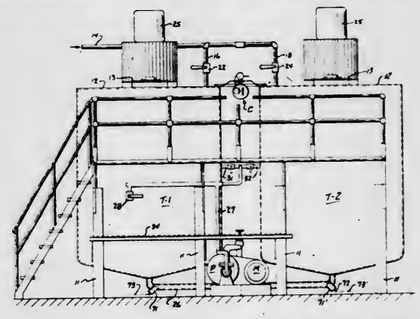
3,699,981
COIN VALUE DETERMINING APPARATUS AND SYSTEM
Barton C. Conant, Westport, and James A. Thomas, Stamford, both of Conn., assignors to Abbott Coin Counter Co., Inc., Greenwich, Conn., by said Conant
Filed March 23, 1970, Ser. No. 21,726
Int. Cl. G07d *9/04*
U.S. Cl. 133—8 **16 Claims**



Apparatus for high speed, high volume coin processing comprises sensor elements adapted for indicating both sizes and positions of coins in continuous non-selective transit. Systems incorporating such apparatus and providing denominational value indication are also disclosed.

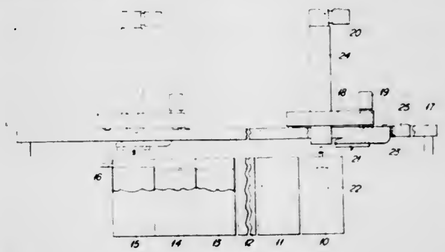
3,699,982
METHOD FOR KEEPING PAINT TANKS CLEAN
David D. Pipkins, Downers Grove, Ill., assignor to The Valspar Corporation, Rockford, Ill.
Filed Dec. 29, 1969, Ser. No. 888,558
Int. Cl. B08b *7/00*; **C23g** *5/02*
U.S. Cl. 134—22 R **6 Claims**

Enclosed paint tanks are maintained substantially free of pain residue by heating liquid thinner to vaporize the same, conducting the vapor to the head space of the tank, and causing the vapor to condense on the inside of the tank so that the liquid thinner rinses the side walls and keeps them clean. When the thinner is flammable, an inert gas is fed into the head space to maintain an inert protective atmosphere therein. The disclosed apparatus includes a pair of large, enclosed storage tanks each having an impeller and a common paint supply line. Conduits interconnect the tanks and a pump



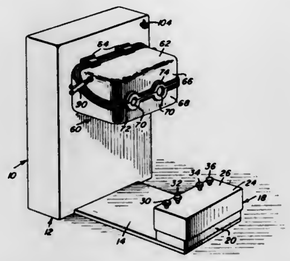
is provided for discharging the paint from either tank. The lowermost conduit has a storage chamber at either end and a ball is propelled between the chambers to loosen residue in the conduit. At the top of the tanks is a container for the liquid thinner. A float in the container maintains the level of the liquid thinner. A float in the container maintains the level of the liquid thinner. A heating element in the container is adapted to vaporize the thinner. Conduits lead from the container to the tanks to feed the vapor thereto.

3,699,983
WET PROCESSING INSTALLATION
Cyril William James Morley, 59 Yockley Close, Camberley, England
Filed June 15, 1971, Ser. No. 153,276
Claims priority, application Great Britain, June 19, 1970, 29,962/70
Int. Cl. B08b *3/02*
U.S. Cl. 134—76 **10 Claims**



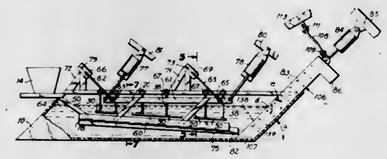
An installation for wet processing, such as electroplating, in which a plurality of wet processing tanks are arranged in a line and a single rinsing zone is arranged at one location in the line. A trolley is movable over the tanks and rinsing zone and includes lifting mechanism carried by the trolley to lift and lower a workpiece out of and into a tank beneath the trolley to and from a location above the level of the tops of the tanks. A drip tray is carried by the trolley for movement therewith and is movable between a first position permitting the lifting and lowering of a workpiece, and a second position beneath the lifted workpiece to catch any drips therefrom as the trolley moves over the various tanks.

3,699,984
CLEANING AND STERILIZING DEVICE
Charles T. Davis, 1150 N. Country Club Drive, Mesa, Ariz.
Filed Jan. 12, 1971, Ser. No. 105,830
Int. Cl. B08b *13/00*
U.S. Cl. 134—95 **10 Claims**



A housing into which the hands and forearms may be inserted and subject to sequential cleansing steps preparatory to performing aseptic surgery. The housing includes openings through which the forearms are sealing received and spray cleaning means for sequentially spraying soap, bacteroicide and alcohol solutions completely about the external surfaces of the hands and adjacent forearms portions disposed within the housing. In addition, means is provided whereby heated and filtered air may be subsequently blown over the cleansed forearms and hands prior to their being removed from within the housing.

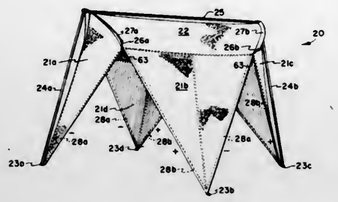
3,699,985
CONTINUOUS PLATING SYSTEM
Elbert R. Faust, Litchfield, Conn., assignor to M&T Chemicals Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 796,033, Feb. 3, 1969, Pat. No. 3,616,423. This application March 3, 1971, Ser. No. 120,635
Int. Cl. B65g *49/02*; B08b *3/04*
U.S. Cl. 134—141 **9 Claims**



A system for the continuous plating, cleaning or rinsing of articles wherein all surfaces of the articles are uniformly and entirely exposed to the fluid through which they are conveyed. A trough suspended within a fluid bath is operative to cyclically move forward and upward and abruptly return to its initial position thereby to cause articles in the trough to inertially fall to positions successively forward of the trough and in new positions with respect to the trough and other articles.

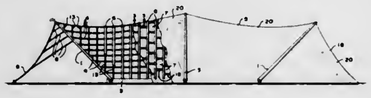
3,699,986
MODULAR SHELTER SYSTEM
Arthur J. Kirkham, 24 West Fifth South, Salt Lake City, Utah
Filed Jan. 6, 1971, Ser. No. 104,298
Int. Cl. A45f *1/00*; E04b *1/347*
U.S. Cl. 135—1 R **10 Claims**

A number of tent modules are arranged to be interconnected, as desired, to form various arrangements of combined shelter configurations. A single modular unit can be used and other modules can be acquired as necessary to accommodate



immediate and subsequently changing needs or to lay out a shelter structure conforming to the natural terrain and terrain obstacles.

3,699,987
HOUSING WITH CABLE SUSPENDED PANELS
Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co.
Filed Sept. 8, 1970, Ser. No. 70,331
Int. Cl. A45f *1/16*
U.S. Cl. 135—4 R **1 Claim**
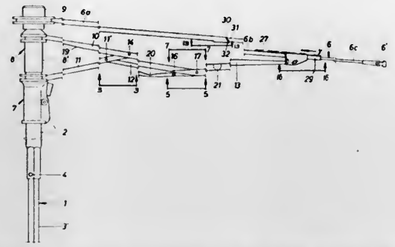


A housing which includes two arches inclined away from each other at acute angles to the vertical and mounted on the ground or other base so that they may be swung about their leg ends toward and away from this position, cables which extend between the arches and are attached to them, a covering for the housing which consists of rows of panels carried by the cables, and restraining cables which extend transversely of and around the supporting cables and are attached to the panels and the base. In addition to the inclined arches an intermediate arch or arches may be provided especially in relatively lengthy housings. To hold the end arches down and reduce the sag in the covering to an acceptable value, tie-downs attached to the end arches and anchored to the base are provided.

The housing may be left open at both ends or closed at one or both ends by end walls. In the latter event, the end walls may serve as tie-downs for the end arches or separate tie-downs may be provided. Means are also provided to close any gap which might otherwise exist between the covering and the end wall and the base and the arches.

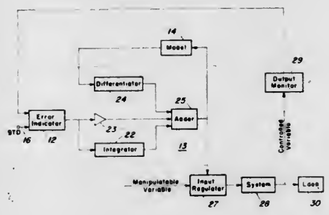
In one form of the invention, the panels are mounted on arch-shaped carriers which extend around and are carried by the supporting cables. In another form, the carriers are dispensed with and the panels are mounted directly on the supporting cables.

3,699,988
COLLAPSIBLE UMBRELLA
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed May 6, 1970, Ser. No. 35,184
Claims priority, application Germany, July 25, 1969, P 19 37 887.1; July 25, 1969, P 19 37 889.3
Int. Cl. A45b *19/04*
U.S. Cl. 135—20 R **14 Claims**

A collapsible umbrella having dome ribs in which each dome rib comprises three telescopic members. A supporting-stretcher and strut linkage of a parallelogram type wherein each component of the supporting linkage is of U-shaped cross section and of respective dimensions such that each component nests in a companion component thereby reducing the diameter of the umbrella when it is collapsed in a closed condition.



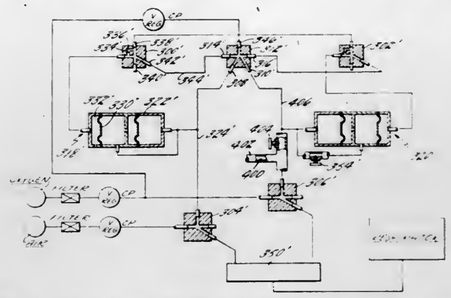
3,699,989
FEEDBACK CONTROL APPARATUS
Ward F. O'Connor, Deanville, N.J., and William George Van Vliet, Greenwich, Conn., assignors to The Lummus Company, Bloomfield, N.J.
Filed June 18, 1970, Ser. No. 47,238
Int. Cl. G05b *11/42*
U.S. Cl. 137—487.5 **23 Claims**



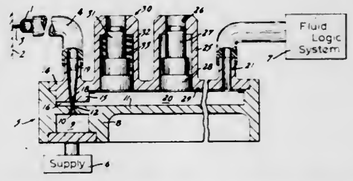
Apparatus for controlling the operation of a device is disclosed in accordance with the teachings of the present invention wherein the actual operation of the device is detected by detecting means and compared to a predetermined standard of performance. Indications of the variance between the actual operation of the device and the predetermined standard of performance are utilized by control function generating means to generate a device control function which adjusts the operation of the device such that the variance is reduced to zero. The device control function is additionally applied to device simulating means which simulates the response of the device to the device control function and generates a simulating function representative of that response. The control function generating means combines the simulating function with the indicated variance to produce the control function which includes a substantially noise-free component indicative of the rate of change of the operation of the device thereby anticipating the future operation of the device.

3,699,990
FLUID MIXER
Hermann Ziermann, Cheshire, Conn., assignor to General Medical Corporation
Continuation-in-part of Ser. No. 8,569, Feb. 4, 1970, Pat. No. 3,626,963. This application April 1, 1971, Ser. No. 130,150
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 **5 Claims**

Mixing of two or more gases is accomplished by controlling the switching frequency of fluid amplifiers metering the different gases by fluid timing devices. The percentage of gases may be changed by adjusting a single variable restrictor which changes the area and hence the flow into the fluid timing device.



3,699,991
SUPPLY CONNECTION MEANS FOR BLEED TYPE SENSING APPARATUS
Otto R. Munch, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Aug. 28, 1970, Ser. No. 67,911
Int. Cl. G05b *11/44*
U.S. Cl. 137—82 **3 Claims**

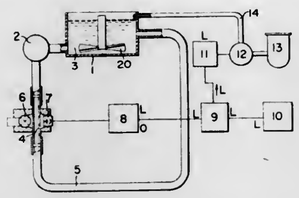


A pneumatic nozzle is connected by a line to a supply and load connection apparatus which includes a supply nozzle connected to an air source to establish a jet. A receiver nozzle is mounted in opposed aligned relation with the supply nozzle and includes a receiving orifice aligned with and spaced from the metering or supply orifice. The receiving orifice forms the apex of a conical diffuser which terminates in a connection to the line. The spacing of the receiving orifice defines a jet stream gap with an output chamber extending laterally outward therefrom. An output port connects the output chamber to a fluid logic system or other load. A pair of indicating plungers are mounted within cylinders projecting outwardly from the output chamber. One plunger is spring-loaded and moves outwardly at a selected minimum pressure level to indicate an "on" or positive signal condition. The other plunger is gravity-biased inwardly and indicates the "off" or minimum signal condition.

3,699,992
ELECTROPHOTOGRAPHIC APPARATUS
Wilhelm Josef Knechtel, Rodheim, and Detlef Schaffer, Wetzlar, both of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,336
Claims priority, application Germany, July 16, 1969, P 19 36 167.2
Int. Cl. G05d *11/08*
U.S. Cl. 137—93 **11 Claims**

A photocopying apparatus which comprises supply means for supplying a predetermined quantity of concentrated

developing agent to carrier liquid at a predetermined time interval, and measuring means for continuously measuring the concentration of the developing liquid. The measuring means controls said supply means so that the supply means supplies such measured quantity of concentrated developing agent to



the carrier liquid only during predetermined time intervals and then only where the developing liquid has lower than a predetermined value of concentration. The carrier liquid is independently supplied in a quantity equal to the consumption of the carrier liquid, whereby constant concentration of the developing solution is maintained.

3,699,993

CONTROL VALVE FOR THE FLOW TO AND FROM A VARIABLE PRESSURE CHAMBER

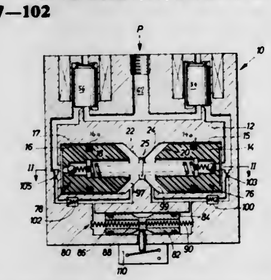
Erich Herion, Stuttgart, and Erich Ruchser, Stetten/Remstal, both of Germany, assignors to Technomatic AG, Aesch/Luzern, Switzerland

Filed Dec. 31, 1970, Ser. No. 103,222

Claims priority, application Switzerland, May 6, 1970, 6935/70; June 30, 1970, 9953/70

Int. Cl. G05d 7/00; F15b 11/08

U.S. Cl. 137—102 **22 Claims**



A control valve has two valve pistons disposed on opposite sides of a straight passage which is connected at one end with an expanding and contracting pressure chamber of a hydraulic press or brake system, and has a discharge opening at the other end. The valve pistons have a first position in which fluid from the contracting pressure chamber can flow with minimal resistance through the straight passage and out of the discharge opening. In a second position of the valve pistons, the discharge opening is closed by the same, and pressure fluid can be supplied from an inlet through control valves into the straight passage and from there to the expanding pressure chamber.

3,699,994

LINE PRESSURE REGULATOR VALVE

Yohichi Mohri, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan

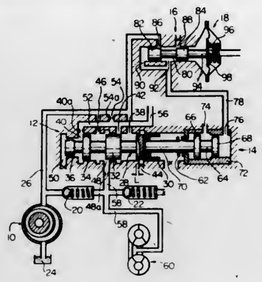
Filed Jan. 26, 1971, Ser. No. 109,832

Claims priority, application Japan, Jan. 30, 1970, 45/7750

Int. Cl. B60k 17/00; G05d 11/00

U.S. Cl. 137—115 **4 Claims**

A line pressure regulator valve for regulating a line pressure in a hydraulic control system for an automotive automatic power transmission, wherein a valve spool is adapted to move for initially allowing a relatively high rate of fluid flow to servo motors actuating friction elements and subsequently decreas-



ing the rate of fluid flow to the servo motors with the line pressure concurrently increased whereby a gradual engagement of the friction elements is established to provide smooth shifting between a plurality of gear ratios.

3,699,995

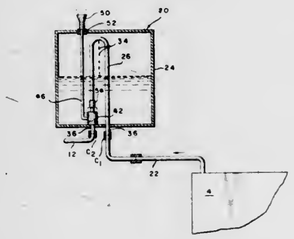
FUEL RESERVE DEVICE AND SYSTEM

Wilbur Brandt, 207 University Boulevard West, Silver Spring, Md.

Filed Jan. 7, 1971, Ser. No. 104,612

Int. Cl. B65d 25/00

U.S. Cl. 137—256 **6 Claims**



The device is an inexpensive, reliable and simply constructed fuel reserve system for internal combustion combustion engine powered devices, most generally motor vehicles; the device comprising a reservoir, a filling tube and a manually-operated valve for releasing the contents of the reservoir when the main fuel supply is exhausted.

3,699,996

VALVE APPARATUS INCLUDING SELF-INSTALLING MECHANISM

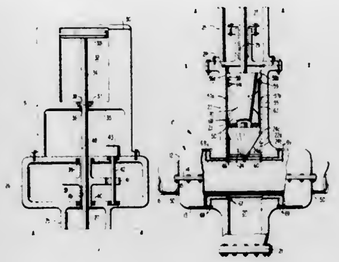
Charles M. Nichols, P.O. Box 3, Linden, Ala.

Filed July 27, 1971, Ser. No. 166,498

Int. Cl. F16e 41/04; B23b 41/08

U.S. Cl. 137—318 **10 Claims**

Valve having provision to cut its own installation hole so that the valve can be installed in an existing pipe line without removing the pipe line from service. A cutting tool is provided at an end of the valve apparatus, and motors are provided which move the cutting tool both rotationally and axially to cut a valve installation hole in the pipe. Provision is made for sealing the valve seat after the hole has been cut and the valve seat positioned, and for removing the cutting tool if desired.



Once the installation is completed, the axial edn rotational motive apparatus can be removed and replaced with conventional valve actuating apparatus.

3,699,997

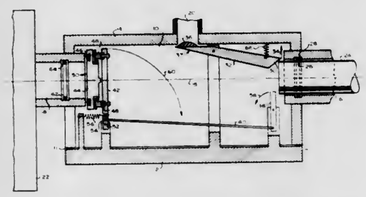
AUTOMATED VACUUM PORT

William P. Kruger, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 22, 1971, Ser. No. 155,446

Int. Cl. F16k 51/00

U.S. Cl. 137—320 **5 Claims**



An evacuable chamber having two coaxial ports and a roughing port permits a user to insert a probe into a vacuum system without bringing the vacuum system to atmospheric pressure. When the probe is inserted into the first coaxial port it actuates a valve on the roughing port to connect the chamber with a vacuum roughing pump. A vacuum tight seal is also formed between the probe and the first coaxial port when the probe is inserted. Further insertion of the probe is prevented by a stop until the chamber is evacuated. The stop is released, and a valve between the chamber and the second coaxial port is opened upon evacuation of the chamber. The probe can then be inserted into the vacuum system connected to the second coaxial port. When the probe is removed, the valve on the second coaxial port is closed by a spring, and then the valve on the roughing port is closed by a spring. When the probe is removed from the first coaxial port, the chamber returns to atmospheric pressure, which aids in closing both valves tightly.

3,699,998

CALIBRATED PRESSURE REGULATOR

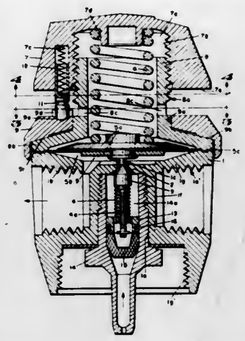
Frank Baranowski, Jr., 7 Pine Street, Lynnfield Center, Mass.

Filed Dec. 11, 1970, Ser. No. 97,107

Int. Cl. F16k 31/365

U.S. Cl. 137—327 **6 Claims**

A miniaturized pressure regulator capable of being calibrated and thus making it possible to dispense with an additional pressure gauge, if desired. The components of the pressure regulator are maintained in position by leaf spring



fasteners making it possible to quickly assemble and disassemble the pressure regulator.

3,699,999

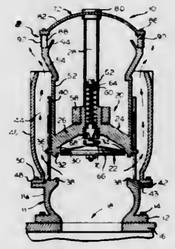
VERTICAL JET BREATHER VALVE

Evald Dunkelis, Glen Ellyn, Ill., assignor to GPE Controls, Inc., Morton Grove, Ill.

Filed March 8, 1971, Ser. No. 122,047

Int. Cl. F16k 17/194, 17/196

U.S. Cl. 137—493.4 **7 Claims**



A vertical jet breather valve capable of relieving sub-atmospheric and super-atmospheric pressures within a tank, and including a tank vapor-air mixing annular outlet opening for relieving super-atmospheric pressures and creating substantially constant velocity by self-adjusting the outlet opening proportioned to the tank vapor volume or filling rate.

3,700,000

VALVE ARRANGEMENT, ESPECIALLY FOR USE IN ANAESTHETIC GAS SUPPLY SYSTEMS

Holger Hesse, deceased, late of Skovtoftebakken 19, Virum, Copenhagen, Denmark (by Ruth Lea Hesse, heiress and executrix), and Henning M. Ruben, Skodsborg Strandveg 260, Copenhagen, Denmark

Filed March 3, 1969, Ser. No. 804,741

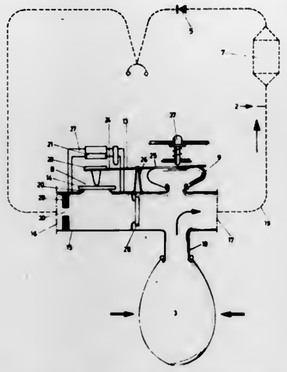
Claims priority, application Great Britain, March 4, 1968, 10,419/68

Int. Cl. A62b 7/00; A61m 17/00

U.S. Cl. 137—494 **30 Claims**

A blow-off valve which vents excess gas to the atmosphere when the pressure in a gas circulation system, such as an anaesthetic supply system, exceeds a certain value, as occurs when the patient breathes out, is improved by providing a system to close the valve when the pressure exceeds a still

higher value, as occurs when gas is forced into the patient's lungs. A movable member is exposed to the gas pressure in the

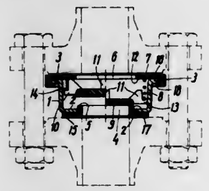


system. A force transfer means connects the movable member in the valve and closes the valve when this higher pressure is reached.

3,700,001
CHECK VALVE

Kurt Rudel, Bremen, Germany, assignor to Gustav F. Gerdts KG, Bremen, Germany

Filed Sept. 1, 1970, Ser. No. 68,685
Claims priority, application Germany, Sept. 4, 1969, P 19 44 774.6
Int. Cl. F16k *15/02, 17/04*
U.S. Cl. 137—543.21 **1 Claim**



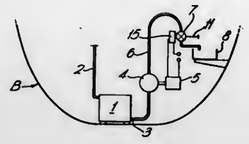
A check valve adapted to be fixed between flanges of two pipes is provided with an annular casing and a valve plate guided by ribs and cooperating with a valve seat provided in the casing. A closure spring has a free end engaging a member provided in the casing. The invention is particularly characterized in that the valve casing consists of a metallic tubular body having at one end an annular member consisting of elastic material and serving as a valve seat and at the other end an annular member consisting of elastic material and serving as a spring support. The two annular members engage a spring and cooperate with a valve plate which also consists of elastic material.

3,700,002
LIQUID SUPPLY SYSTEM WITH MOTOR OPERATED PUMP ACTUATED BY SWITCH CONTROLLED BY ON-OFF VALVE IN SYSTEM

Colin McMaster Christie, London, England, assignor to Aqua-Marine Mfg. Limited, Toronto, Ontario, Canada

Filed Jan. 4, 1971, Ser. No. 103,502
Int. Cl. E03b *11/16*
U.S. Cl. 137—565 **6 Claims**

A liquid supply system includes a reservoir, a pipe connected to the reservoir and having a discharge end above the reservoir, a pump in the pipe between the reservoir and discharge end, a motor for driving the pump, a valve in the

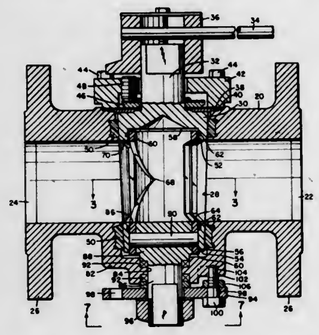


pipe between the pump and discharge end and a switch actuated by opening and closing of the valve for energizing and de-energizing the circuit that controls operation of the motor.

3,700,003
VALVE WITH FLOW REGULATING MEANS

Russell G. Smith, 2805 Digby Avenue, Cincinnati, Ohio

Continuation-in-part of Ser. No. 851,951, Aug. 21, 1969, abandoned. This application April 15, 1971, Ser. No. 134,364
Int. Cl. F16k *5/02, 31/44, 5/10*
U.S. Cl. 137—614.17 **25 Claims**

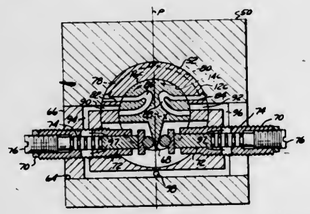


The valve is one which, by preference, has a Teflon liner forming a self-lubricating seal within which the hollow valving member rotates; and included in the structure is a flow regulator in the form of a replaceable or adjustable orifice sleeve which normally is embodied wholly within the axial bore of the hollow valving member.

3,700,004
VALVE STRUCTURE AND BOOST CONTROL SYSTEM

John D. Tobias, Royal Oak, Mich., assignor to John P. O'Hara, Jr. and Genevieve M. O'Hara, Bloomfield Township, Ohio, part interest to each

Filed Dec. 11, 1970, Ser. No. 97,140
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.23 **17 Claims**



A spool valve having a sleeve member and a core member, with ports formed from two longitudinally spaced perforations

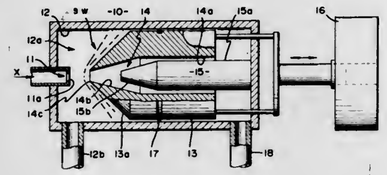
extending transversely of the members parallel to and offset on opposite sides of a longitudinal plane containing the axes of the members such that, when the core is rotated 180° for use, the ports in the core are offset on opposite sides of the plane from the ports in the sleeve. The ports are preferably formed to be tangent to the plane so that rotation from the use position to one direction or the other will register one or the other of the core ports with its corresponding sleeve port.

The valve is used in a boost control system in which fluid pressure is directed to the core ports through a central longitudinal bore, with a force motor selectively rotating the core in one or the other direction, depending on the functions of a fluid pressure user. This rotation alternatively opens the sets of core ports to passages in the sleeve, which are simultaneously respectively opened to boost passages in the core to assist rotation in the selected direction, and which rotation simultaneously opens a selected core port to its corresponding sleeve port, directing pressure fluid to the user as needed. Rotation also simultaneously opens the active boost passage to a sleeve passage directing fluid to a core return piston for rotating the core back to its initial position.

3,700,005
GAS FLOW CONTROL DEVICE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and John B. Wellman, 2121 Valderas Drive #90, Glendale, Calif.

Filed Aug. 10, 1971, Ser. No. 170,440
Int. Cl. F17d *1/10, 1/00*
U.S. Cl. 137—608 **8 Claims**



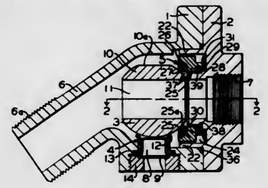
A gas flow control device is disclosed comprising a housing with an input port through which gas enters the housing. At the input port the subsonic gas flow is converted into supersonic flow. The housing includes a movable probe with a conical external surface which produces a shockwave when impinged by the supersonic gas flow. The probe has a cavity with a shape of a truncated cone with the top of the cone serving as the cavity input. Mounted in the housing and surrounded by the probe is a mandrel with a truncated cone-shaped top, whose surface corresponds to the cavity surface. By moving the probe toward and away from the input port, the rate of gas flowing to an output port is controlled. The shockwave prevents disturbances due to changes in the gas flow rate from advancing upstream.

3,700,006
ANGLE COCK

Roger Marcillaud, Saint Denis, France, assignor to Compagnie Des Freins Et Signaux Westinghouse, Freinville-Sevran, France

Filed May 21, 1970, Ser. No. 39,333
Claims priority, application France, June 17, 1969, 6920195
Int. Cl. F16k *11/08*
U.S. Cl. 137—625.21 **6 Claims**

An angle cock has a body provided with a chamber into which opens an inlet port, a delivery port and an exhaust port. A ball-type valve disposed in the chamber is formed intermediate the ends of a valve stem rotatably mounted in a bore provided therefor in the body. A passageway extends through the ball to provide communication either between the inlet and delivery ports or between the delivery and exhaust ports. A valve cover member carried on the end of a pipe has two concentric skirts the larger of which is disposed in the inlet port and also serves to support the valve stem. Disposed between the inner and outer skirts is a sealing member biased against the surface of the ball by a Belleville spring interposed

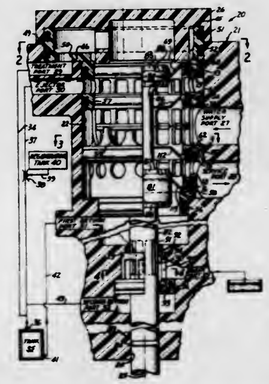


between this sealing member and the cover member. This sealing member includes a piston carrying two resilient annular seals which respectively form seals with the surface of the ball and either a shoulder formed on the cover member or a shoulder formed on the piston accordingly as the pressure in the inlet port exceeds or is less than the pressure in the delivery port. Thus, while in the closed position of the ball valve, flow through angle cock is prevented irrespective of whether the inlet port is subject to pressure or vacuum.

3,700,007
CYCLING VALVE AND VALVING ASSEMBLY FOR WATER SOFTENERS

Raymond T. Sparling, and William A. Dietz, both of Los Angeles, Calif., assignors to Hersey Products Inc., Los Angeles, Calif.

Filed June 19, 1970, Ser. No. 47,751
Int. Cl. F16k *11/07, 3/24*
U.S. Cl. 137—625.29 **14 Claims**



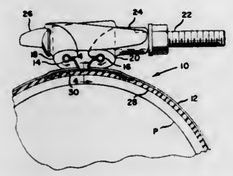
A cycling valve for a water treatment system wherein an axially reciprocable stem bearing a pair of sealing lands is adapted to make selective closures among four sets of lip-seals to cycle a water softener through a cycle beginning with service and extending through back-wash, brine, rinse, quick-rinse and return to service. A valving assembly for use in such a valve comprises a support ring that bears a frusto-conical web forming the lip-seal which has a circular opening which makes an interference fit with the respective land. Lip-seal elements bearing the lip-seals may be stacked inside a body to form a readily assembled device.

3,700,008

PIPE CLAMP WITH IMPROVED GAP BRIDGE

Frank C. Hackman, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed May 28, 1971, Ser. No. 148,102
Int. Cl. F16l 55/16
U.S. Cl. 138—99 5 Claims



A pipe clamp for use in encircling a pipe or main, the pipe clamp being used as a pipe repair clamp or as a clamp for connecting a service line to the main. The pipe clamp comprises a split flexible band means of sheet-metal having at least one pair of confronting ends separated by a gap, the band means being provided on its inner surface with an elastomeric gasket means which seals with the exterior of the pipe or main. Lug means are provided for drawing the pair of confronting ends together to tighten the band means and gasket means about the pipe. An arcuate gap bridge member is interposed between the band means and the gasket means in an area where it spans the gap between the confronting ends. The gap bridge member is provided with a plurality of circumferentially extending and longitudinally spaced stiffening ribs or corrugations on its outer surface. These stiffening ribs function to make the gap bridge member have a uniform high gasket load completely about the edges of the gap bridge and, further, these ribs terminate short of the edges of the gap bridge and thus the low gasket load immediately beneath the ribs is completely confined. By having the ribs provide a surface for the lug means, the operative contact area between the lug means and the gap bridge member is reduced thus reducing the friction and amount of bolt torque necessary to tighten the clamp about the pipe.

ERRATUM

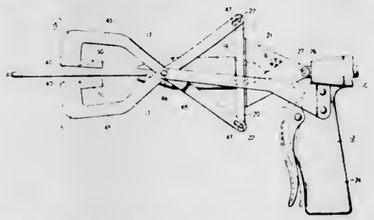
For Class 139—161 see:
Patent No. 3,700,033

3,700,009

WIRE JOINING TOOL

Robert Holbrook Cushman, Huntingdon Valley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,660
Int. Cl. B21f 15/04
U.S. Cl. 140—111 14 Claims



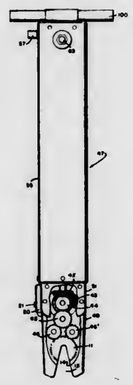
A hand held, motor driven, wire joining tool is disclosed which includes two wire gripping jaws adapted to twist wires gripped therein by counter-rotating with respect to each other and a heater for melting insulation from the wires as they are twisted.

3,700,010

WIRE TYING APPARATUS INCLUDING DEMOUNTABLE TYING MECHANISM

Benjamin M. Bartilson, and Gerald A. Francis, both of Columbus, Ohio, assignors to The United States of America as represnted by the Secretary of the Army

Filed June 17, 1971, Ser. No. 154,111
Int. Cl. B21f 7/00, 15/04
U.S. Cl. 140—93 A 4 Claims



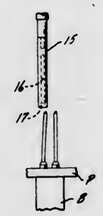
An improved apparatus for tightly joining a cluster of wires or cables which utilizes counter-rotating heads to wrap a relatively stiff tie wire around the cluster. A ramp on one of the heads cams the tie wire into a position where it is picked up by a pulley on the other head. As the heads rotate in opposite directions the tie wire is restrained by the above-mentioned pulley as well as a pulley on the head that has the ramp, thereby causing a tight wrap. The heads are housed in a removable cartridge to facilitate maintenance.

3,700,011

TERMINAL STRAIGHTENING METHOD AND MACHINE

George Walter, Chicago, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.

Continuation of Ser. No. 824,349, April 21, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,747
Int. Cl. B21f 7/00
U.S. Cl. 140—147 14 Claims



A method of straightening bent wire-wrap posts of electrical terminals in a group of terminals and a machine for practicing the method. The method contemplates bending posts misaligned with corresponding terminal axes back into alignment with respective axes and then twisting them on said axes through a sequence of twists which culminates in return of the posts to generally their original radial orientation on the respective axes and fixing of the posts in alignment with such axes. The machine performs this method by telescopically engaging all the terminals in a group of terminals with a corresponding group of spindle wrenches. The initial engagement

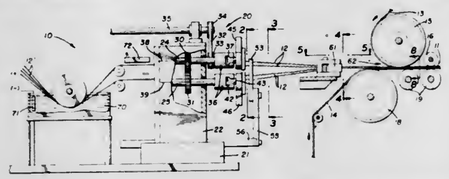
places all wire wrap posts in alignment with corresponding axes. Rotation of the spindle wrenches through a rack and pinion arrangement according to a prescribed sequence is effective to perform the aforedescribed twisting operation on the posts in the group.

3,700,012

APPARATUS FOR PRODUCING HELICALLY FORMED FILAMENTS

Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Jan. 7, 1971, Ser. No. 104,602
Int. Cl. B21f 7/00
U.S. Cl. 140—149 8 Claims



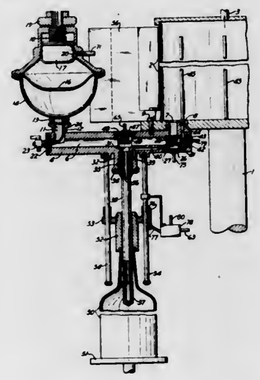
Helical, wire filaments are disclosed that may be encapsulated individually or nested in bundles that are themselves encapsulated within an elastomeric material to provide a reinforced fabric. The method and apparatus by which such filaments are formed pass straight wire, in individual or plural strands, through a bore in a movable working die. Each strand is cold worked around the flared orifice of the bore in the movable die and enters a corresponding bore in a fixed die means. The corresponding bores are eccentric, and the movable die plate is translated such that each bore therein describes an annular path concentrically outwardly of the corresponding bore in the fixed die means. The foregoing apparatus and method are particularly adapted to the manufacture of reinforced, elastomeric fabric, even to the point that, if desired, normally plated wire can be deplated prior to being encapsulated within the elastomer.

3,700,013

PROTECTIVE COATING COMPOSITIONS

Charles R. Coffey, and Thomas C. Tesdahl, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Filed Feb. 2, 1971, Ser. No. 112,047
Int. Cl. C08b 21/26
U.S. Cl. 106—2 15 Claims



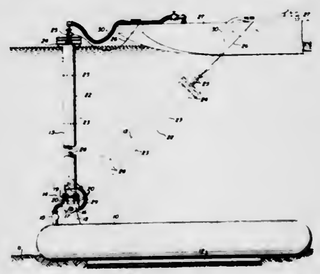
An aqueous dispersion is disclosed especially adapted for use as a protective coating composition in food contact areas of food processing plants. The dispersion contains white mineral oil, a hard wax such as carnauba wax, an ethyl cellulose or ethyl hydroxyethyl cellulose having an ethoxyl or combined hydroxyethoxyl-ethoxyl content of 46.0 to 49.5 weight percent and a viscosity of about 4 to 100 centipoises, a higher (C_{12}—C_8) fatty acid, and a volatile basic amine.

3,700,014

APPARATUS FOR TRANSFERRING FLUID FROM AN UNDERWATER STORAGE UNIT TO A FLOATING VESSEL

Ralph E. Scales, and James O. Whitley, Jr., both of Beaumont, Tex., assignors to Bethlehem Steel Corporation

Continuation-in-part of Ser. No. 853,717, Aug. 28, 1969, abandoned. This application April 30, 1971, Ser. No. 139,074
Int. Cl. B65b 1/04, 3/00
U.S. Cl. 141—388 8 Claims



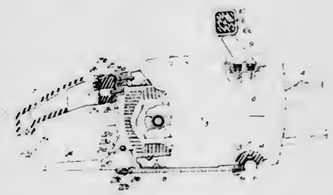
Apparatus for transferring fluid between an underwater storage unit and a floating vessel has a rigid elongated member with its lower end connected to the storage unit through a universal joint, a buoyant chamber on the rigid member, a pipe in communication with the storage unit and the floating vessel attached to and extending along the rigid member, and a cable attached to the floating vessel and the upper end of the rigid member.

3,700,015

VIBRATION ABSORBING DEVICE FOR PORTABLE MACHINES

Torao Kobayashi, and Masatoshi Sato, both of Tokyo, Japan, assignors to Kyoritsu Noki Co., Ltd., Tokyo, Japan

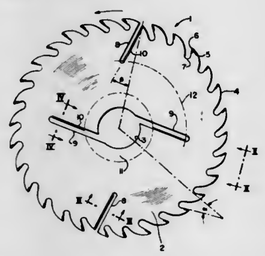
Filed July 12, 1971, Ser. No. 161,729
Claims priority, application Japan, March 9, 1971, 46/12620
Int. Cl. B27b 17/02
U.S. Cl. 143—32 R 1 Claim



A vibration absorbing device for portable machines of the type accommodating a vibration generating source therein and having a front handle and a rear handle, wherein said front and rear handles are secured to the main body of the machine independently of each other and through resilient buffer members respectively, while the main body of the machine is provided with seats for the respective resilient buffer members on the rear and bottom walls thereof over re-

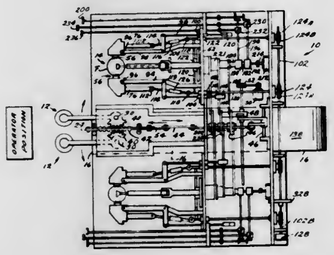
gions extending transversely of the main body. The front handle extends transversely of the main body to surround one side surface of said main body, while the rear handle extends perpendicularly of said front handle. Each of the resilient buffer member is so designed so to provide sufficiently rigid connection between the respective handle and the main body.

3,700,016
DOUBLE SLOTTED SAW
Keene S. Strobel, Everett, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed July 26, 1971, Ser. No. 166,164
Int. Cl. B27b 33/08
U.S. Cl. 143—140 R 5 Claims



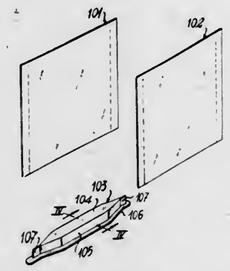
A circular saw blade has a plurality of spaced teeth around the periphery of a saw plate and a plurality of radial slots positioned both from the periphery inward and from the eye outward; the slots preferably being faced on the cutting side with a facing element extending substantially the length of the respective slot with the facing element having a width substantially the same or slightly less than the width of the kerf of the cutting teeth.

3,700,017
CITRUS FRUIT PEELING MACHINE
Daniel B. Vincent; Daniel A. Vincent, and George C. Roberts, all of Tampa, Fla., assignors to Consolidated Machines, Inc., Tampa, Fla.
Filed Aug. 5, 1970, Ser. No. 61,048
Int. Cl. A23m 7/00
U.S. Cl. 146—3 M 10 Claims



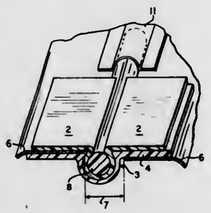
By preference the device includes two substantially alike sections which accept two unpeeled fruit and swing them into peeling position. Here, the fruits are each accepted by opposed spike chucks which are initially sharply thrust into the peel, followed by some relaxation. As the fruit is rotated on the chucks, two knives move across the rotating fruit to an adjustable depth cutting peel therefrom toward the spikes. The edges of two additional knives finally pass under the spikes to cut the ball of fruit from the peel buttons held by the spikes. Plungers push the buttons from the spikes and the fruit balls and peel buttons fall to a conveyor for mechanical separation.

3,700,018
SEMIRIGID CONTAINER
Luigi Goglio, Via Solari 10, Milan, Italy
Filed Jan. 6, 1971, Ser. No. 104,438
Claims priority, application Italy, Jan. 14, 1970, 20494 B/70; Feb. 18, 1970, 20779 A/70; March 23, 1970, 22316 A/70
Int. Cl. A45c
U.S. Cl. 150—.5 11 Claims



Completely heat-welded, semirigid tight container for foodstuff. The container comprises a pre-shaped bottom of thermoplastic material which can be heat-welded, as well as a top containing portion, at least partly formed of heat weldable material consistent with that the bottom, formed of a preferably tubular element which at one of its ends is heat-welded to the bottom and provided with a top opening suitable to be closed by transverse heat-welding upon completion of product stuffing.

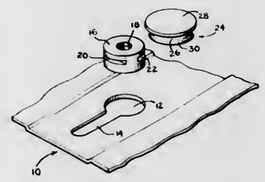
3,700,019
CLOSURE FOR FLEXIBLE CONTAINER
William Paul Robbins, 5047 Manchester Road, Middletown, Ohio, and Clifford Ralph Bullock, 522 Cheshire Avenue, Fort Walton Beach, Fla.
Continuation-in-part of Ser. No. 842,181, July 16, 1969, abandoned. This application Jan. 20, 1971, Ser. No. 107,919
Int. Cl. B65d 33/16
U.S. Cl. 150—3 8 Claims



A fastening device for securing the mating edges of a sheet of plastic material together to form a sealed container. The structure or device is constituted of three parts, two of which are secured to the respective edges of the material as strips, and take the form of "C" shaped elements of different sizes which can be fitted snugly one within the other. These members have flat extensions to which the edges of the plastic sheets are secured. The third member is constituted of a rod of rubber or similar stretchable material which when stretched longitudinally will temporarily reduce its diameter so that it

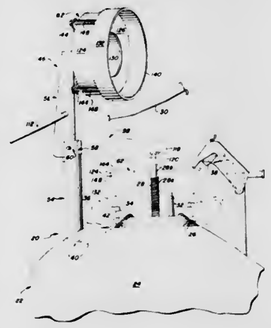
can be pressed into the circular opening formed within the inner "C" shaped member. When the stretching force is removed, the rod will increase its diameter to press the inner member against the outer member and provide a sealed joint between the two members and the mating edges of the material to which they are attached.

3,700,020
BOLT ANCHOR ASSEMBLY
Richard M. Wallace, 10 Lillian Drive, Binghamton, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,315
Int. Cl. F16b 39/00
U.S. Cl. 151—41.7 1 Claim



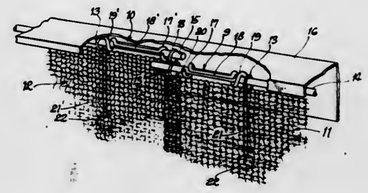
An assembly for firmly anchoring a bolt, especially in sheet metal or other relatively thin stock. A keyhole-shaped opening is provided in the base and a special nut is inserted in the large part of the opening and moved laterally into the elongated narrower part with grooves in each side of the nut engaging the base on each side of the elongated opening. A resilient plug of rubber or plastic is inserted into the large part of the opening to prevent movement of the nut.

3,700,021
TIRE SERVICING AND INFLATING APPARATUS
Gilbert M. Motis, Westlake Village, Calif., assignor to The Coats Company, Inc.
Filed March 8, 1971, Ser. No. 121,872
Int. Cl. B60c 25/12
U.S. Cl. 157—1.1 8 Claims



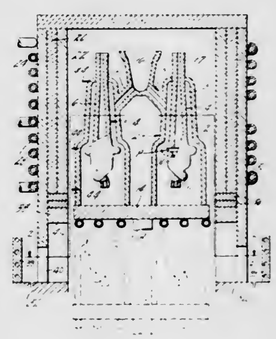
A tire changing stand characterized by the provision of an inflation accessory including a chamber member which is movable toward and away from the rim receiving surface of the tire changing stand into and out of engagement with a tire side wall to create a confined chamber thereabout and to urge one of the tire beads toward seating engagement with its related rim bead seat so that the influx of air under pressure through the rim valve stem may serve to seat and inflate the tire held thereon.

3,700,022
DRAW MEANS FOR SLIDING SCREEN AND THE LIKE
Randall H. Eaves, Des Plaines, Ill., assignor to DeSota, Inc., Des Plaines, Ill.
Filed March 8, 1971, Ser. No. 122,002
Int. Cl. A47h 5/00
U.S. Cl. 160—126 9 Claims



Draw means for a sliding screen supported on a traverse rod and comprising a wire member including two co-axially disposed leading and trailing loops connected by a rigid straight section. A manually engageable handle depends from the trailing loop. The loops embrace the traverse rod from which the screen is suspended as by ring elements. The draw means is disposed between two consecutive ring elements and movement of the draw means will effect corresponding sliding movement of the screen. In a modified embodiment the leading loop is provided with an extension which is connected to the screen.

3,700,023
CASTING OF DIRECTIONALLY SOLIDIFIED ARTICLES
Anthony F. Giamei, Middletown, and Bruce E. Terkelsen, Cheshire, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 12, 1970, Ser. No. 63,142
Int. Cl. B22d 25/06
U.S. Cl. 164—60 8 Claims

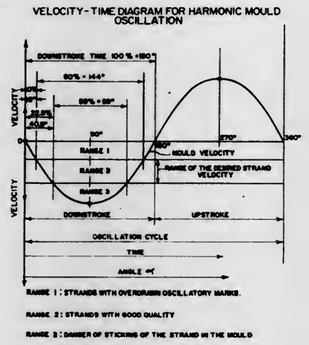


The cooling cycle for directionally solidified castings is improved by lowering the temperature of the mold adjacent to the chill plate at the beginning of the solidification while maintaining the high temperature in the greater portion of the mold and then further cooling the mold near the chill plate during continued solidification to increase the heat removal and thereby maintain the desired high thermal gradient.

3,700,024
METHOD OF CONTINUOUSLY CASTING STEEL BILLETS

Bernard Knell, Thalwil, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Oct. 16, 1969, Ser. No. 867,073
Int. Cl. B22d *11/02*
U.S. Cl. 164—83 3 Claims

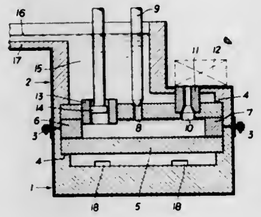


In continuously casting steel billets wherein the mold is oscillated up and down substantially according to a sine function the mean speed of descent of the mold is selected so that the maximum speed of withdrawal of the casting from the descending mold during not less than about 55 percent, and the minimum speed during not more than about 80 percent, of the time required for the complete descent of the mold is below the speed of the mold. Further, the level of liquid steel in the mold is preferably kept constant by adjusting the withdrawal speed of the casting in accordance with the rate of delivery of liquid steel into the mold; if the withdrawal speed of the casting exceeds the desired maximum or falls below the desired minimum, further delivery of liquid steel to the mold is stopped.

3,700,025
METHOD OF CASTING QUIET MELTS

Oscar Tenner, Rossatz, Austria, assignor to Gravicast Patentverwertungsgesellschaft m.b.H., Vienna, Austria

Filed Aug. 30, 1971, Ser. No. 176,025
Claims priority, application Austria, Sept. 4, 1970, A 8047/70
Int. Cl. B22d *27/12*
U.S. Cl. 164—120 4 Claims

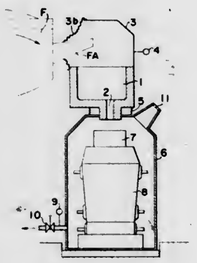


The melt to be cast is dammed up in a supply chamber so as to flow by its own weight through an equalization chamber and from the latter through a nozzle into a mold. The melt is brought to a quiet condition before it reaches the mold by interrupting the flow of the melt into the equalization chamber and after the mold has been filled, a return flow of the melt into the equalization chamber is prevented by subjecting the melt in equalization chamber and in the mold to an increased pressure and the melt in the gate cross section of mold has solidified.

3,700,026
INGOT CASTING APPARATUS

Toshio Adachi; Kiyohide Hayashi, and Yukio Okura, all of Nagoya, Japan, assignors to Daido Seiko Kabushiki, Aichiken, Japan

Filed Dec. 22, 1970, Ser. No. 100,713
Claims priority, application Japan, Dec. 25, 1969, 44/122378
Int. Cl. B22d *27/16*
U.S. Cl. 164—256 4 Claims

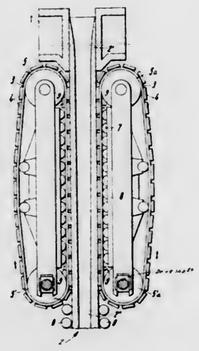


An ingot casting apparatus in which protecting gases used in melting metals are introduced into a sealed casting vessel through a specially design sealed ladle or tundish connected with the vessel and through a spout of the remelting furnace which is also connected with the ladle or tundish in a completely gas-sealed condition, and molten metal is cast under an evacuated or inert gas atmosphere.

3,700,027
CONTINUOUS CASTING MACHINE

Ulrich Petersen, Dusseldorf-Lohausen, Germany, assignor to Maanesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Sept. 13, 1971, Ser. No. 179,957
Claims priority, application Germany, Sept. 16, 1970, P 20 46 645.9
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 10 Claims

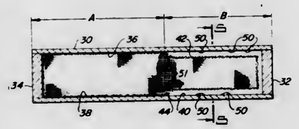


In a continuous casting machine, having a mold and means for withdrawing and guiding a casting emerging and lowered from the mold, a pair of endless belts or chains carrying plates and disposed on opposite sides of and along and urged against the casting for the plates to engage the casting, the belts running in synchronism with the lowered casting; the plates having relief profile to engage the casting with less than the entire surface area of a plate, preferably with about 10 to 30 percent thereof, there being protrusions and indentations for a coolant to flow around the protrusions in contact with the casting.

3,700,028
HEAT PIPES

Don W. Noren, Redwood City, Calif., assignor to Noren Products, Inc., Redwood City, Calif.

Filed Dec. 10, 1970, Ser. No. 96,836
Int. Cl. F28d *15/00*
U.S. Cl. 165—32 4 Claims

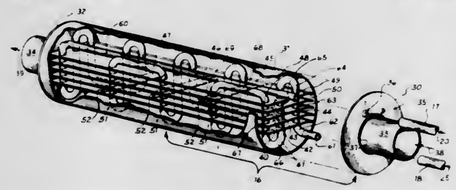


The specification and drawings disclose two embodiments of heat pipe structures arranged to readily conduct heat in one direction and conduct only a limited amount of heat in the opposite direction. In both embodiments, the heat pipe is shown as comprising a hollow, sealed tube having wick material positioned in engagement with selected portions of the inner surface. A vaporizable fluid is placed in the tube in an amount sufficient to wet the wick. In one embodiment, the wick extends over and is in engagement with only those portions of the wall surface from which it is desired to transfer heat. The other portions of the wall surface are bare. Consequently, fluid in the wick can be vaporized and flow to the bare wall portion for condensation. However, if the bare wall portions are at a higher temperature, heat cannot be transferred to the wicked portion except by conduction through the tube wall. In the second embodiment, the entire inner surface is covered by a wick but in certain areas, the wick is spaced from the surface. The spaced areas function in the manner of the bare areas of the first embodiment but allow the unit to be used in any orientation since droplet formation in the spaced wick areas permit the droplets to engage the spaced wick for capillary flow to the heated wick portion.

3,700,029
VEHICLE POLLUTION CONTROL UNIT

Paul H. Thrun, 5946 Kessler Ridge Drive, Indianapolis, Ind.

Filed July 7, 1970, Ser. No. 52,895
Int. Cl. F28f *19/00*
U.S. Cl. 165—51 6 Claims

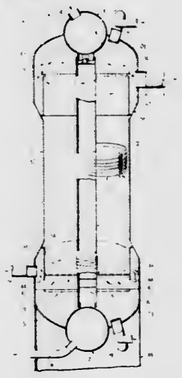


An apparatus for controlling the pollutants in engine exhaust gases. A housing contains a hollow tube having heat transfer plates attached which extend the length of the housing. Baffles are positioned along the length of the housing between the heat transfer plates. The housing is capped on both ends and is provided with an inlet and outlet pipe for the exhaust gases to pass through. A fluid coolant is circulated through the tube to cool the exhaust gases within the housing.

3,700,030
HEAT EXCHANGER SUPPORT STRUCTURE

Maurice Bosquain, Paris; Marcel Bourjot, La-Varenne-Saint-Maur, and Maurice Kirsch, Champigny-sur-Marne, all of France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed July 28, 1970, Ser. No. 58,777
Claims priority, application France, Nov. 13, 1969, 69 38 976; July 9, 1970, 7023900
Int. Cl. F28f *9/22*
U.S. Cl. 165—145 8 Claims



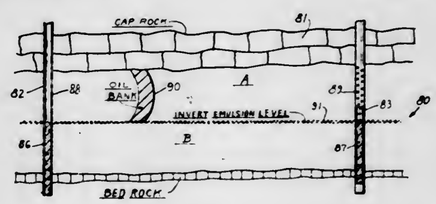
The present invention relates to a heat exchanger of the type involving a nest of tubes formed from concentric layers of wound pipes, in which the pipes in each layer are attached, generally near their ends, by being fitted between two successive crowns in a series of crowns, with the inside edge of one crown extending round the outside edge of the crown it fits on to, so as to form a plate reaching out transversally from the core. The pipes in each of the wound layers preferably rest in the concave sections of ridged uprights laid lengthwise along the core, and fitted between each pair of layers, or between the first layer of pipes and the core, the said ridged uprights being attached at their ends to the crowns holding the ends of the pipes.

These measures provide a rigid structure, in which the tubes are firmly held in position with respect to the core of the exchanger.

3,700,031
SECONDARY RECOVERY AND WELL STIMULATION, SOLUTIONS, AND METHODS OF USE

Walter F. Germer, Jr., Edna; Carl W. Stringer, and William H. Harrison, both of Houston, all of Tex., assignors to Germer-Stringer Corporation, Houston, Tex.

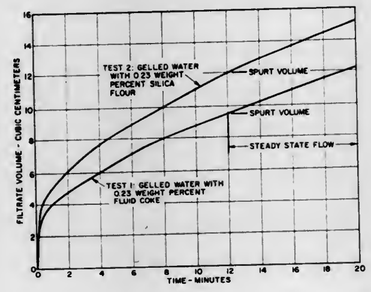
Filed June 18, 1970, Ser. No. 47,311
Int. Cl. E21b *43/22*
U.S. Cl. 166—270 62 Claims



The disclosure is to secondary recovery and well stimulation, solutions, and methods of use. Primarily combinations of

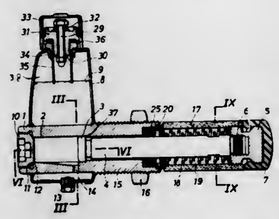
sacrificial material capable of plating on formation surfaces and extending detergent action, are used together with at least one of a detergent, an emulsifier, and caustic as an emulsification activator, such use being conjointly with, or after the sacrificial material.

3,700,032
METHOD FOR FRACTURING SUBTERRANEAN FORMATIONS
William M. Terry, Houston; John W Graham, Alvin; Albert R. Sinclair, and Othar M. Kiel, both of Houston, all of Tex., assignors to Esso Production Research Company
Filed Dec. 16, 1970, Ser. No. 98,525
Int. Cl. E21b *43/26*
U.S. Cl. 166—283 **6 Claims**



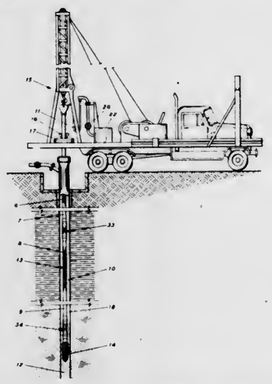
A fracturing method wherein a fluid containing particles of petroleum coke are injected into a subterranean formation at a pressure sufficient to open a fracture therein.

3,700,033
HYDRAULIC SHOCK ABSORBER FOR LOOMS
Jose Bosch, Aragon 376, Barcelona, Spain
Filed March 16, 1970, Ser. No. 19,726
Claims priority, application Spain, March 25, 1969, 765,708
Int. Cl. D03d *49/38, 49/54*
U.S. Cl. 139—161 **4 Claims**



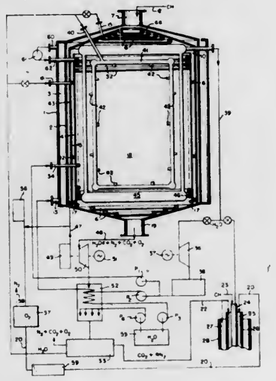
A hydraulic shock absorber for looms, comprising a cylinder bearing body, an oil compression rod slidably disposed within the cylinder bearing body, an elastic cap mounted on one end of the rod and adapted to receive the impact of a shuttle, and an oil tank connected the cylinder bearing body. Communicating channel means are provided between the cylinder bearing body to the tank, and the cylinder bearing body comprising a hollow tubular element having an outer surface including a smooth portion, the oil tank being formed with an opening in which the smooth portion of the tubular element is inserted for connection to the oil tank, the outer surface of the tubular element including a threaded portion for adjustable mounting on the loom, and a connical end cap closing the hollow tubular element, the latter being formed with a substantially inner right-angle step in which the connical end cap engages.

3,700,034
METHOD FOR WELL CLEANOUT
Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 807,766, March 13, 1969, abandoned. This application March 11, 1971, Ser. No. 123,412
Int. Cl. E21b *21/00*
U.S. Cl. 166—312 **5 Claims**



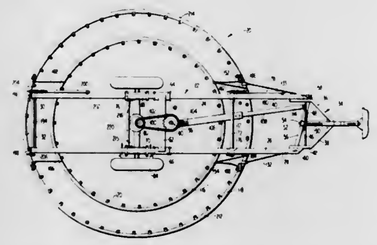
A method of well cleanout by circulating preformed foam in a well through a segmented tubing string and the annulus between the tubing string and the well wall to remove sand and fluids from the well. Check valve means are placed in the segmented tubing string at preselected positions to maintain control over the foam in the well while foam injection is temporarily halted to permit addition of another tubular section to the tubing string. The check valve means insures that the foam in the well remains in a dynamic condition during such temporary halts so as to prevent sticking of the tubing string in the well.

3,700,035
METHOD FOR CONTROLLABLE IN-SITU COMBUSTION
Hans Lange, Wietze, Germany, assignor to Deutsche Texaco Aktiengesellschaft
Filed June 4, 1970, Ser. No. 43,547
Int. Cl. E21b *43/24*
U.S. Cl. 166—261 **6 Claims**



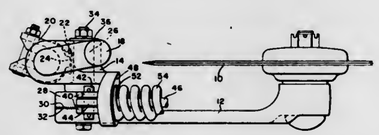
A method and device for controllable in-situ combustion in subterranean hydrocarbon bearing formations containing bitumens with simultaneous production and recovery of energy sources supplying the mechanical and thermal energy required for the in-situ combustion and operation of the facilities involved.

3,700,036
GROUND WHEEL DRIVEN OSCILLATING HARROW
August Reuber, 2790 Charlotte Street, Albany, Oreg.
Filed Aug. 7, 1970, Ser. No. 61,997
Int. Cl. A01b *39/10*
U.S. Cl. 172—105 **1 Claim**



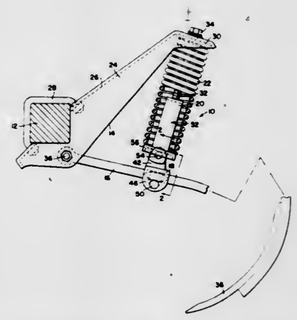
An agricultural implement in which spaced apart, concentric rings carry depending harrow points, the rings being subjected to oscillatory movement during operation by a pitman crank and sway bar actuated responsive to movement of the implement. The rings are adapted to folding to transport positions, and are also elevated for transport.

3,700,037
PLOW COLTER WITH YIELDABLE FORCE-APPLYING MEANS AND ADJUSTABLE OVERLOAD MOUNT FOR COLTER CARRYING ARM
Robert Dale Hentrich, Bettendorf, Iowa; Howard Christian Esbeck, Moline, and Loren Glenn Arnold, Rock Island, both of Ill., assignors to Deere & Company, Moline, Ill.
Filed Jan. 25, 1971, Ser. No. 109,304
Int. Cl. A01b *61/04*
U.S. Cl. 172—265 **8 Claims**



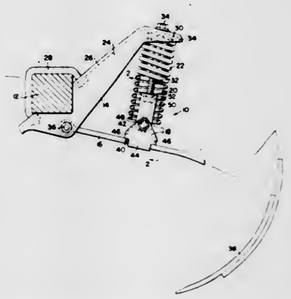
A colter arm having a colter on its rear end is connected to a rockshaft on a mounting bracket and is normally held in a working position by either a spring or a hydraulic cylinder acting between the mounting bracket and a lever arm on the rockshaft so that if the colter encounters an obstruction the spring or hydraulic cylinder will yield to permit the colter to move over the obstruction. The colter arm and one end of the rockshaft have complementary serrated faces which are clamped together to normally hold the colter arm and rockshaft in fixed relative positions. By loosening the bolt clamping the faces together the relative position of the colter arm with respect to the rockshaft can be varied, and, if the colter encounters an extra large obstruction, the bolt will stretch and permit the teeth of the serrated faces to slip and thereby prevent damage to the colter.

3,700,038
ADJUSTABLE SPRING TRIP SHANK ASSEMBLY
Duane Arnold Essex, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.
Filed March 3, 1971, Ser. No. 120,495
Int. Cl. A01b *61/04*
U.S. Cl. 172—265 **4 Claims**



A self-restoring spring trip shank assembly of the type having a mounting element secured to a toolbar, a shank pivoted to the mounting element, and a spring acting between the mounting element and the shank to yieldably hold the shank in a working position. The spring acts on a multi-position reversible bracket secured to the shank so that by reversing the bracket the moment arm through which the spring force acts is varied and the force needed to pivot the shank upwardly is varied.

3,700,039
SPRING TRIP SHANK ASSEMBLY
Duane Arnold Essex, Des Moines; Virgil Dean Haverdink, Ankeny, and Donald Allan Hill, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed March 3, 1971, Ser. No. 120,496
Int. Cl. A01b *61/04*
U.S. Cl. 172—265 **6 Claims**



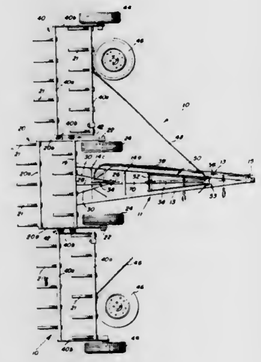
A self-restoring spring trip shank assembly in which the lever arm through which the spring acts to retain the shank in a working position decreases as the spring force increases upon upward deflection of the shank so that the force needed to trip the shank remains close to constant or has only a slight increase with increased tripping height.

3,700,040

FOLDABLE IMPLEMENT CART WITH FORWARDLY OFFSET WING SECTIONS AND TACKING MEANS FOR THE CABLE ARM RETAINING MEANS

Harry Sosalla; Lyle M. Meusburger, and Max L. Jarnagin, all of Sac City, Iowa, assignors to Noble Manufacturing Company

Filed June 30, 1970, Ser. No. 51,203
Int. Cl. A01b *65/02*
U.S. Cl. 172—311 4 Claims



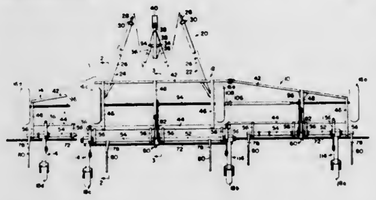
A foldable sectional tow-type implement, including a wheel cart having a centrally located section which is revolvably mounted on a horizontal axis extending transversely of the direction of travel for movement between a lower, generally horizontal, operative position and a generally vertical transport position, and a pair of outboard sections interconnected to the centrally located section and each being revolvable with the center section and also swingable in a fore and aft direction relative to the center section when revolved to the vertical transport position to permit folding of the outboard sections rearwardly relative to the center section. Each of the sections support or mount agricultural type tools. At least portions of each of the outboard sections are offset forwardly of the centrally located section to provide bypass clearance for the tools when the outboard sections are folded rearwardly and also to shift the center of gravity of the entire implement forwardly to facilitate revolving the sections to the vertical transport position. Wheels for all of the sections are mounted on a common horizontal axis forward of the sections. Flexible cables are connected between the outboard sections and the end of a swingable arm pivoted to the cart forward of the sections. The arm is locked in a lowered position to support the outboard sections when the implement is in its operative position. The arm is released for swinging to a rearward position to permit the outboard sections to be folded rearwardly, but the cables remain connected to the arm and outboard sections whereby the outboard sections pull the arm rearwardly during folding. An independent positive lock, hydraulically actuated when the outboard sections are lowered to their operative positions, is provided to lock the cable arm in its lowered position. The outboard sections are hingedly connected to the center section with a lost motion structure to provide for limited vertical movement of the outboard sections relative to the center section about the hinge connections to accommodate irregular terrain when the implement is moved thereover while in its folded transport position.

3,700,041

POSITION CONTROL FOR PARALLEL HYDRAULIC SYSTEMS ON AN AGRICULTURAL IMPLEMENT

Edward Clyde Ryan, 341 Eastlawn Drive, Ankeny, Iowa

Division of Ser. No. 812,577, March 28, 1969, Pat. No. 3,583,284. This application Oct. 23, 1970, Ser. No. 83,677
Int. Cl. A01b *63/14, 63/22*
U.S. Cl. 172—316 6 Claims



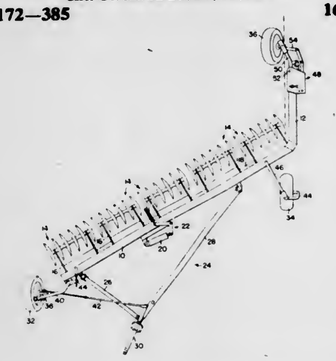
A flexible rod weeder in which the weeder rods are raised and lowered by rocking the frame about the forward wheels. A plurality of gauge wheels are connected to the rear of the frame through extensible and retractable hydraulic motors so that by extending and retracting the motors, the frame is rocked about the forward wheels. The hydraulic motors are connected in parallel and are provided with an adjustable stop which will prevent the lowering of the weeder rods beyond a predetermined position, but permit the flow of fluid from one motor to another so that the gauge wheels equally share the weight of the rear of the frame.

3,700,042

REAR FURROW WHEEL CONTROL STRUCTURE FOR DISC TILLERS AND THE LIKE

Roger Lee Patterson, Fonthill, and Mario Ventresca, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Nov. 5, 1970, Ser. No. 87,186
Int. Cl. A01b *23/04, 15/14*
U.S. Cl. 172—385 16 Claims



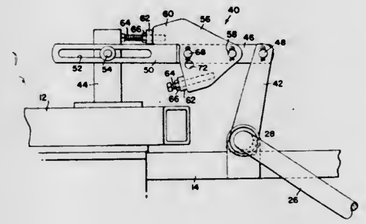
Control structure for the rear furrow wheel of a disc tiller or the like including a first arm pivotally mounted on the rear portion of the frame and a second arm pivotally mounted medially on the rearward end of the first arm and rotatably supporting the furrow wheel on one of its ends. A pair of concentric link members are connected to the arms and are slidable through a trunnion structure on the frame as the furrow wheel moves from its operating to its turning and transport positions. Adjustable stops on each of the members are biased against the forward end of the trunnion by a spring and cable mechanism to normally maintain the furrow wheel in its operating position, the mechanism being yieldable to permit the wheel to swing to its turning and transport positions in response to an abnormal side load on the wheel. A latch mechanism is provided to selectively lock the wheel in the latter position.

3,700,043

DEPTH CONTROL MEANS FOR A MOLDBOARD PLOW

James Franklin Sullivan, East Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed July 26, 1971, Ser. No. 166,018
Int. Cl. A01b *63/16*
U.S. Cl. 172—400 15 Claims



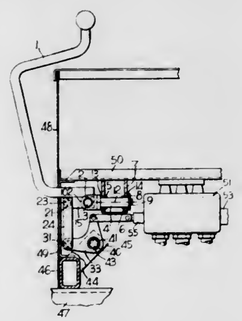
A pivoted stop member on a drawn plow prevents lowering movement of the plow frame on the front furrow wheel to a normal plowing position when in a first position and to a land-opening position below the normal plowing position when in a second position. Provision is also made to independently adjust the normal plowing position of the frame with respect to the front furrow wheel and the land-opening position of the frame with respect to the front furrow wheel.

3,700,044

HYDRAULIC SYSTEM FOR CONTROLLING BULLDOZER BLADE

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Sept. 21, 1970, Ser. No. 73,836
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 10 Claims



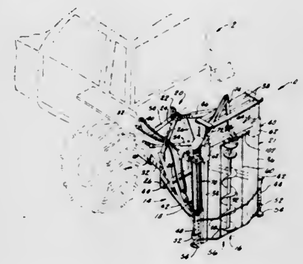
A single lever control valve means for controlling hydraulic actuators to pitch and tilt a bulldozer blade.

3,700,045

TRACTOR-MOUNTED POST HOLE DIGGER

John G. Coontz, P.O. Box 104, Kiowa, Kans.

Filed April 26, 1971, Ser. No. 137,237
Int. Cl. E21c *11/02*
U.S. Cl. 173—26 6 Claims



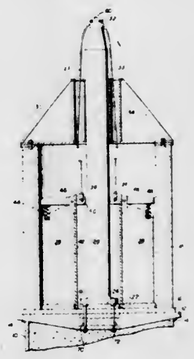
A tractor-mountable post hole digger has a special frame mountable on the hitch of a tractor, an auger specially mounted with the frame to be moved vertically relative the frame and rotated by the powering means of the tractor.

3,700,046

TWO-STAGE DROP HAMMER FOR DRIVING LARGE DIAMETER PILING

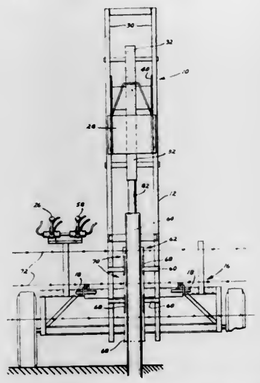
Robert G. Evans, P.O. Drawer 68, Harvey, La.

Filed March 8, 1971, Ser. No. 121,663
Int. Cl. E02d *7/00*
U.S. Cl. 173—103 6 Claims



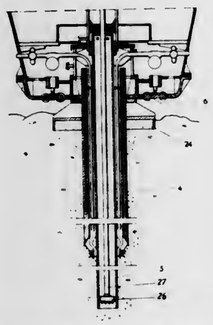
A two-stage or multi-stage drop hammer for driving large diameter piling having a backing plate welded onto the upper terminal end of a cylinder to be driven to form a pile, a hammer guide secured onto the backing plate, said hammer guide containing an annular, contoured first hammer for impacting upon a large peripheral portion of the bottom member of the hammer guide, and a second hammer for impacting upon a large central area of the bottom member of the hammer guide, and a flanged extension on the second hammer for lifting the first hammer to a distance above the bottom member of the hammer guide, whereupon dropping of the hammers provides and allows the first hammer to impact upon the bottom member of the hammer guide in timed sequence ahead of the second hammer impacting upon the bottom member of the hammer guide.

3,700,047
FENCE POST DRIVER
Michael A. Gartner, Route 1, P.O. Box 10, St. Anthony, N. Dak.
Filed May 11, 1971, Ser. No. 142,242
Int. Cl. E02d 7/00
U.S. Cl. 173—124 6 Claims



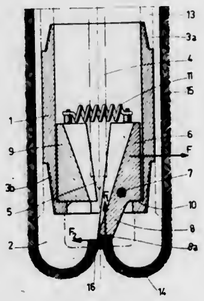
A fence post driver for driving fence posts, including replacement posts for an existing fence having a plurality of parallel strands, has a lifting mechanism which repeatedly elevates a hammer which when released, falls by gravity to hammer the fence post into the ground to the desired depth. The driver includes a post guiding member which is stationary with respect to the ground during the driving operation and formed with a vertically upstanding back portion and a pair of side portions secured to the back portion. Notches formed in the side portions align with the individual strands of the fence which are positioned between the post and the back portion of the post guiding member, so that the driver may operate on the opposite side of the fence with respect to the post being driven. Of course, the driver may be used on the same side of the fence as the post being driven.

3,700,048
DRILLING INSTALLATION FOR EXTRACTING PRODUCTS FROM UNDERWATER SEA BEDS
Robert Desmoulins, 3, Avenue de St. Amand, 59 Valenciennes, France
Filed Dec. 30, 1969, Ser. No. 889,357
Claims priority, application France, Dec. 31, 1968, 6819266
Int. Cl. E21c 19/00
U.S. Cl. 175—6 10 Claims



An installation for extracting products from underwater sea beds comprises a base section which is permanently sunk in the sea bed, a reusable well section, and water-tight flexible connecting means releasably connecting together the base section and well section. The well section has sufficient internal dimensions to allow workmen and equipment to pass therethrough and is open to the atmosphere so that the working space for the workmen is maintained at atmospheric pressure. The reusable well section may be disconnected from the base section and reused again at another extracting site.

3,700,049
DEVICE FOR CONNECTING A DRILL BIT TO A DRILL STRING PROVIDED WITH A PENETROMETER
Wladimir Tiraspolsky, Les Moulineaux; Roger Rouviere, Aix En Provence, and Yves Willm, Suresnes, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Hauts de Seine, France
Filed Oct. 2, 1970, Ser. No. 77,523
Int. Cl. E21b 47/00
U.S. Cl. 175—50 7 Claims



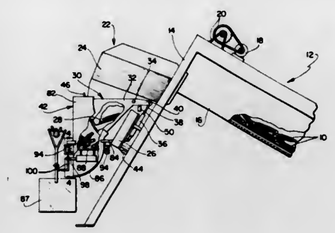
Device for connecting a drill bit having a central bore to a drill string having at its lower part a retractable penetrometer, comprising an obturation member for the central bore, the lower part of which is provided with cutting elements, and adapted to block said central bore in response to the centrifugal force generated by the rotation of the bit, said obturation member leaving open said bore in the absence of rotation of the bit.

3,700,050
METHOD FOR DRILLING AND COMPLETING A WELL AND A PACKER FLUID THEREFOR
Leon H. Miles, Plano, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 98,163
Int. Cl. E21b 43/00
U.S. Cl. 175—65 20 Claims

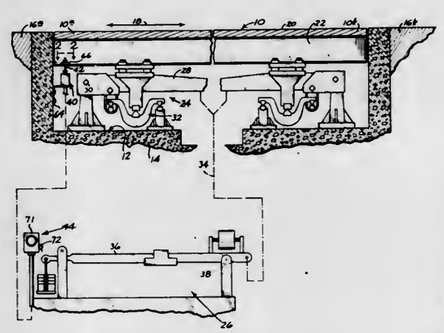
A method for drilling and/or producing a well through a permafrost zone which employs a thermally insulated packer fluid which contains at least one of hollow shapes such as glass spheres, halogenated ethane, or halogenated ethylene.

3,700,051
BOBBIN HANDLING APPARATUS
Charles W. Brouwer, East Greenwich; Henry C. Bucheister, Providence, and Raymond V. Tata, Warwick, all of R.I., assignors to Leesona Corporation, Warwick, R.I.
Division of Ser. No. 837,050, June 27, 1969, Pat. No. 3,593,896. This application March 19, 1971, Ser. No. 126,227
Int. Cl. G01g 13/18
U.S. Cl. 177—59 10 Claims

A bobbin handling apparatus in which filled bobbins are stored in a storage-conveyor bin and discharged through a chute and into a hopper. The bin continues to feed bobbins until a predetermined weight of bobbins is in the hopper whereupon a control system stops operation of the bin and concurrently closes a closure associated with the chute to prevent any bobbins subsequently passing from the bin from entering the weighing hopper. Strands of yarn extending from the bobbins are severed by a cutter mounted on the closure. As a container of an overhead conveyor passes the hopper a sliding trap door of the hopper opens thereby discharging the bobbins in the hopper into the container.



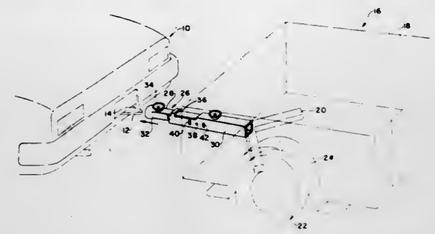
3,700,052
END SHIFT INDICATOR FOR PLATFORM SCALES
William C. Smith, P.O. Box 111, Kent, Oreg.
Filed Jan. 26, 1972, Ser. No. 220,919
Int. Cl. G01g 19/02
U.S. Cl. 177—134 5 Claims



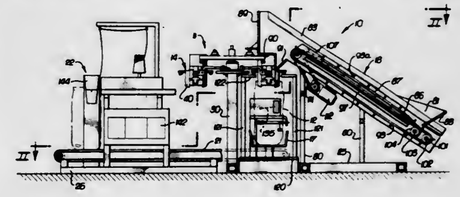
Vehicle weighing apparatus including a platform positioned to afford driving of a vehicle onto the platform. The platform is supported on lever mechanism which interconnects the platform with the usual weighing scale where vehicle weight is measured. Shifting of the platform in directions extending along the path of movement of a vehicle onto the platform displaces a control rod beneath the platform, and any such displacement is detected by an electrical detecting means including a signaling device.

3,700,053
WEIGHT-INDICATING TRAILER COUPLER
Wilmer E. Glissendorf, Phoenix, Ariz., assignor to Advanced Management Engineering & Research Company, Phoenix, Ariz.
Filed Dec. 6, 1971, Ser. No. 204,967
Int. Cl. G01g 3/08, 19/08, 23/14
U.S. Cl. 177—136 9 Claims

A weight-indicating trailer coupler for visually indicating actual tongue weight or tongue load of a trailer which is applied to a tow car hitch, during loading, after loading, or after rearranging a load, for the purpose of insuring safe towing through application of adequate weight on the tongue and tow car hitch ball. Actual tongue weight may be read off of a calibrated scale. The coupler consists of two pivotally engaged portions, one of which is attached to a trailer tongue, and the other portion being pivotable with respect to the first portion, against the action of a predetermined strength spring means interposed therebetween, to indicate tongue load visually on a scale.



3,700,054
TWO STATION RECEPTACLE AND WEIGHING APPARATUS
Stanley A. McClusky, 3001 Baylor Avenue, Bakersfield, Calif.
Filed Sept. 13, 1971, Ser. No. 179,761
Int. Cl. G01g 21/10
U.S. Cl. 177—184 9 Claims

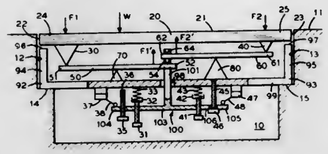


A bag filling and weighing apparatus having a bag applying station and diametrically opposite thereto a single combined filling and weighting station at which simultaneous feeding of articles by both bulk and dribble feed methods is provided, both dribble and bulk feed having a common discharge zone and both dribble and bulk feed being operable until a preselected underweight condition is reached at which time the bulk feed is stopped and the dribble feed continues feeding until a precise final weight is reached at the single station. The apparatus includes means to rapidly transmit weight of each article to a scale before the article is received in a bag or box, and includes means to impart vibrations in a horizontal plane to the bag or box during filling independently of the weight sensing by the scale.

3,700,055
THRESHOLD RESPONSIVE SCALE
Jean-Claude Gaulier, Bois D'Arcy, France, assignor to Compteurs-Schlumberger, Montrouge, France
Filed Feb. 10, 1972, Ser. No. 225,212
Claims priority, application France, Feb. 12, 1971, 7104781
Int. Cl. G01g 3/04, 19/46, 21/16
U.S. Cl. 177—204 9 Claims

According to an illustrative embodiment of the invention, a scale for passageway is described comprising a horizontal plate for mounting level to the floor of the passageway to receive loads moving therein. Means are provided to convert the vertical load on the plate into a force on a force transmitting member having a first and a second portion subjected

by virtue of respective first and second prestressed springs to forces which resist displacement of these portions when a force is applied to the force transmitting member by the load converting means. The second spring is prestressed with a force greater than that of the first spring and the force trans-



mitting member is mounted for tipping to allow the first portion to be displacing the second portion against the second spring. Means responsive to the displacements of the first and second portion are provided for detecting respective first and second load thresholds on the plate and adapted for coupling to control means of the passageway.

3,700,056

TOP LOADING PRECISION BALANCE HAVING ANNULAR WEIGHTS

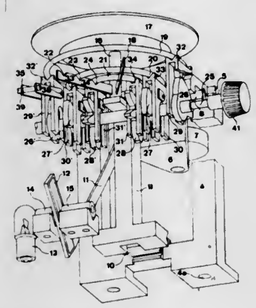
Hans Buchmann, Oetwil, Switzerland, assignor to Mettler Instrumente A.G., Greifensee-Zurich, Switzerland

Filed Aug. 12, 1971, Ser. No. 171,093

Claims priority, application Switzerland, Aug. 26, 1970, 12766/70

Int. Cl. G01g 1/28, 1/26

U.S. Cl. 177—237 **11 Claims**



A top loading precision balance having a weighing pan held horizontal by a parallelogram linkage is provided with a set of coaxial, annular weights mounted on the stem of the pan above the secondary or suspension pivot which connects the balance beam with a vertical pan carrier member of the linkage. The weights may be lifted from the stem of the pan in any desired combination by means of lifters operated by cams on a single control shaft, but remain coaxial in all positions, their common axis passing through the center of the pan and being laterally offset from the upright pan carrier, which is parallel to a stationary support member in the parallelogram linkage.

3,700,057

FOLDABLE TRANSPORTATION DEVICE

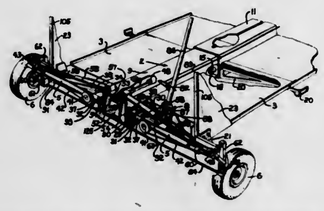
Loyce M. Boyd, 11400 Longview Road, Jackson County, Mo., and Clarence L. Boyd, 1100 County Line Road, Bldg. 7, Apt. 4, Wyandotte County, Kans.

Filed May 3, 1971, Ser. No. 139,619

Int. Cl. B62d 63/02

U.S. Cl. 180—1 R **10 Claims**

A foldable transportation device having the component parts thereof movable between a folded storage position and an extended in-use position for travel is disclosed and includes a center frame having a plurality of telescopeable sections and a body including floor and end and side wall members mounted thereon and movable therewith between respective folded positions and extended in-use positions and a pair of opposed arms for each end of the center frame each having one end thereof pivotally mounted on the respective side of



the center frame and each having a wheel rotatably mounted on the other end thereof with each arm being movable between a folded storage position and an in-use position for movably supporting the transportation device. Drive means and steering means are operatively connected to selected wheels for controlling movement and travel of the transportation device.

3,700,058

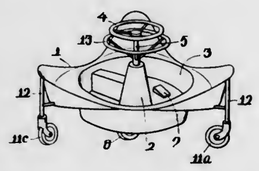
MOTORIZED AMUSEMENT CAR

Ayako Kuwahara, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Dec. 8, 1969, Ser. No. 882,994

Int. Cl. B62d 61/00

U.S. Cl. 180—21 **2 Claims**



A motorized amusement car comprising a car body, a steerable driving wheel provided on the car body to be steered, a group of three or more caster wheels positioned near the outer edge of the car body and surrounding the driving wheel and a substantially annular seat surrounding the steering mechanism of the driving wheel, the driving wheel extending below the imaginary plane including all of the caster wheels, i.e., the plane upon which the caster wheels would rest if there were no driving wheel, so that the motorcar is not only capable of being driven in any desired direction by manually operating the steering mechanism but is also capable of changing its direction of movement in response to changes in the manner in which the weight of the person riding thereon is distributed.

3,700,059

TANDEM WHEELED VEHICLE WITH STABILIZING APPARATUS

Denver Sutton, R.R. #2, Angola, Ind.

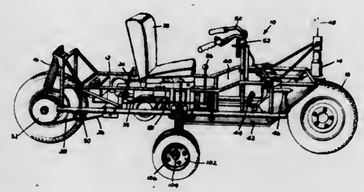
Filed June 11, 1971, Ser. No. 152,283

Int. Cl. B62d 61/12

U.S. Cl. 180—30 **14 Claims**

A motor vehicle having wheels arranged in tandem along the longitudinal axis of the vehicle, and which includes a steering mechanism and a supporting frame. The vehicle is provided with a pair of wheels disposed in bilaterally symmetrical

spaced-apart relationship to the longitudinal axis of the vehicle and strut means securing the wheels to the vehicle for verticle-swinging movement between retracted and extended positions. There are means coupled between the wheels and the steering mechanism of the vehicle for steering the wheels



in synchronism with the vehicle's steering mechanism in all positions of the wheels between their retracted and extended positions. There are also provided motor means for moving the wheels between their retracted and extended positions, and switch means for selectively operating the motor means to retract and extend the wheels.

3,700,060

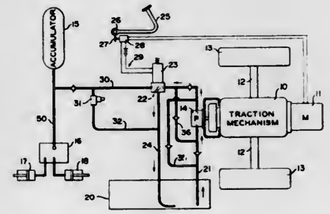
TRACTION MECHANISM ACTUATED PRESSURE SOURCE

Derek K. Keene, Philadelphia, and John J. McElhare, Levittown, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed April 30, 1971, Ser. No. 139,122

Int. Cl. B66f 9/14

U.S. Cl. 180—53 FE **9 Claims**



In a vehicle such as an industrial truck, the traction mechanism operates a pump to charge an accumulator. When the traction mechanism is power actuated to propel the truck, the fluid moving through the pump is directed through a pressure free circuit in bypass relation to the accumulator so that the pump requires very little power. When power to the traction mechanism is withdrawn, as when the vehicle is coasting, the bypass circuit for the fluid moving through the pump is closed, and the fluid is directed to the accumulator to be charged. This charging of the accumulator acts to brake the traction mechanism, so that beneficial braking of the vehicle is contributed at the same time that the accumulator is charged. If, at any time, the accumulator does not have sufficient charge when a particular pressure operated device is to be operated, the circuit of an electric motor driving an auxiliary pump is actuated automatically so as to bring about the operation of the pressure operated device.

3,700,061

ELASTIC MOUNTING OF A RADIATOR OF MOTOR VEHICLES

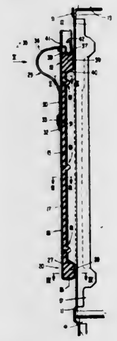
Franz Hortnagl, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed April 16, 1971, Ser. No. 134,642

Claims priority, application Germany, April 17, 1970, P 20 18 458.1

Int. Cl. B60k 11/02

U.S. Cl. 180—68 R **18 Claims**



An elastic mounting of a radiator in a motor vehicle in which the two lateral walls of the radiator block are reinforced by a rigid housing part and one rigid mounting means extending essentially over the entire height of the radiator and constructed as profile rail is provided for the connection of the adjacent housing part with the vehicle superstructure; a continuous elastic damping rail is inserted between each mounting means and the adjacent housing part, whereby each mounting means is provided at the lower end with a support mounting on which is seated a support abutment of the adjacent housing part under interposition of an elastic cushion and the support abutment is forced against the support mounting by the downwardly directed effect of an elastic securing means engaging in the upper area of the housing part, and whereby each housing part is provided additionally with an upper support mounting on which is supported the clamping arm portion of a spring clip anchored to the mounting means by another arm portion.

3,700,062

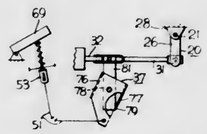
NEUTRAL DEVICE FOR INTERNAL COMBUSTION ENGINE POWERED TRUCKS

Donald Garnett, Homewood, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 10, 1970, Ser. No. 96,886

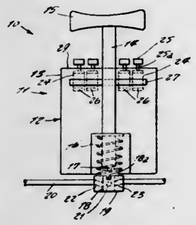
Int. Cl. B60k 23/00; B60r 21/00

U.S. Cl. 180—101 **4 Claims**



The vehicle transmission is automatically placed in a neutral condition at the time the operator's seat is vacated. This is achieved by a seat actuated mechanism including a cable operated control structure which moves a reciprocating element of the shift control linkage to neutral from either of its forward and neutral positions when the vacated seat is shifted upwardly by spring means.

3,700,063
FUEL LOCK
Edward Dunseath, 51 Jefferson Blvd., Port Jefferson Station, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,707
Int. Cl. B60r *25/00*
U.S. Cl. 180—114 **2 Claims**



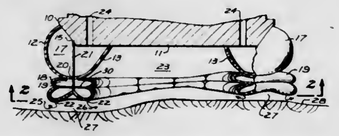
An anti-theft device for an automotive vehicle, the device comprising a gasoline shut off valve; the valve not preventing the engine from being started, but being able to cause the engine to come to a stop when the gasoline supply in the carburator is used up.

3,700,064
GAS-CUSHION VEHICLE
Harold Richardson, and Bruce D. Newman, both of Lachine, Quebec, Canada, assignors to Hovermarine (Canada) Limited, Lachine, Quebec, Canada
Filed June 15, 1970, Ser. No. 46,238
Int. Cl. B60v *1/00*
U.S. Cl. 180—119 **3 Claims**



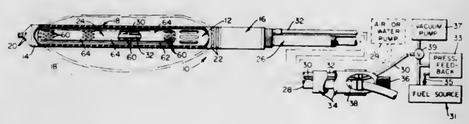
A gas-cushion vehicle is provided with steering means comprising steering members adapted to be brought into contact with the surface over which the vehicle travels and disposed on each side of the fore and aft axis of the vehicle so as to apply steering forces differentially to the vehicle and means for biasing the steering members away from said surface.

3,700,065
FLUID CUSHION CELLS FOR FLUID CUSHION VEHICLES
Wilfred J. Eggington, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Continuation of Ser. No. 802,620, Feb. 26, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,212
Int. Cl. B60v *1/16*
U.S. Cl. 180—128 **6 Claims**



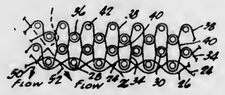
According to the present disclosure, a deformable chamber is provided beneath the rigid body of a fluid cushion vehicle. A plurality of expansible chambers are mounted to the deformable chamber and in fluid communication therewith. Orifice means provides fluid communication between each expansible chamber and a region below it to form a fluid cushion cell. According to one feature of the present disclosure, the deformable chamber is confined to a region below the periphery of the body so as to define another cushion cell within its bounds.

3,700,066
GAS OPERATED SEISMIC SOURCE EMPLOYING AN INFLATABLE MEMBER
Paul A. Knight; James R. Saunders, and Fred E. Stapleton, all of Houston, Tex., assignors to Mandrel Industries, Inc., Houston, Tex.
Filed Feb. 27, 1970, Ser. No. 14,923
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 NC **18 Claims**



A gas operated seismic source has a rigid elongated cylindrical form and includes at least a single, hollow, thick wall barrel along most of the central length thereof, wherein the internal volume defines therein a combustion chamber. The barrel has a plurality of perforations formed along its length of a selected number, size or sizes, and arrangement. An inflatable member is secured at either end thereof about the perforated barrel to enclose the perforations and define accordingly an expandable outer wall about the combustion chamber. The perforated barrel has a substantially constant diameter as does the inflatable member, and the barrel supports the inflatable member when in its collapsed state. Thus the outside dimensions of the entire length of the source are substantially constant to allow the source to be readily forced or "planted" into and also retrieved from a consolidated or an unconsolidated formation, or to readily allow inserting the source into a predrilled hole in a consolidated formation. Means are provided to introduce a preselected mixture of combustible fuel into the combustion chamber. Upon firing, the burned gases are forced out an exhaust means by the explosion and the subsequent charge of combustible fuel, or the combustion chamber is purged by employing vacuum or pressure.

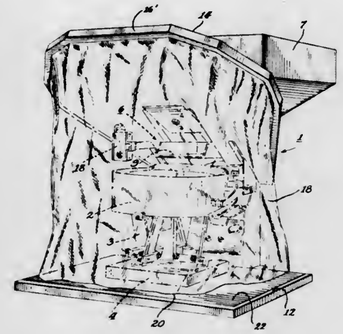
3,700,067
ACOUSTIC FACE SHEET
Richard A. Dobbs, Orange, and Richard N. Holmes, Glendale, both of Calif., assignors to McDonnell Douglas Corporation
Filed June 1, 1970, Ser. No. 41,897
Int. Cl. G10k *1/00*; F01n *7/00*
U.S. Cl. 181—33 G **2 Claims**



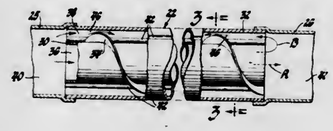
A three-dimensional acoustic porous face sheet formed from an integrally woven fabric and made rigid in a desired configuration by a resin system.

3,700,068
NOISE REDUCTION CANOPY DEVICE FOR MACHINERY
Theodore R. Francis, 855 Richard Street, Aurora, Ill.
Filed Jan. 5, 1972, Ser. No. 215,510
Int. Cl. F02f *7/00*; F01n *1/10*
U.S. Cl. 181—33 K **5 Claims**

Sound reduction apparatus for use with a machine, which apparatus includes a rigid sound-absorbing canopy overlying the noise-producing portions of the machine and a curtain formed of flexible light-transmissive, sound-restricting sheet plastic material extending downwardly from the canopy and enclosing the noise-producing portions of the machine with the bottom of the curtain in free-resting relationship upon a surface.



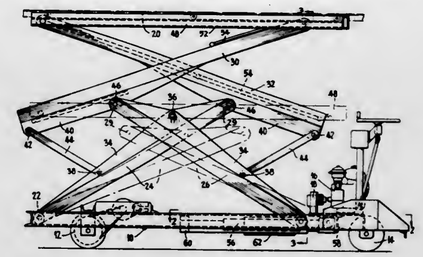
3,700,069
WAVE INTERFERENCE SILENCER
John T. Rausch, and William J. Parker, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 20, 1971, Ser. No. 145,405
Int. Cl. F01n *1/12, 7/08*
U.S. Cl. 181—36 B **5 Claims**



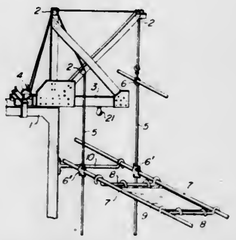
A wave interference silencer includes a pair of coaxially disposed pipes which are separated by helical baffle and define an axial flow path through the inner pipe and an outer helical flow path between the pipes and the baffle. A plurality of inwardly projecting longitudinal ribs are formed on the outer pipe to radially space the baffle from the outer pipe and define a plurality of frequency independent annular acoustical and fluid leakage paths between adjacent turns of helical flow paths. The leakage paths provide parallel acoustical couplings which are effective upon increasing frequency to attenuate acoustical energy in the helical flow path thereby producing a reduced acoustical pressure at the exit end of the silencer such as the portion of the acoustical energy from the inner pipe reversely flows through the leakage paths for additional attenuation.

3,700,070
SCISSORS-TYPE LINKAGE
John Calaby King, North Balwyn, Victoria, Australia, assignor to Concrete Formwork Engineers Pty. Ltd., Northcote, Victoria, Australia
Filed July 21, 1971, Ser. No. 164,756
Int. Cl. E04g *1/22*
U.S. Cl. 182—16 **7 Claims**

The invention relates to a scissors-type linkage mechanism for raising and lowering working platforms. The invention overcomes the prior art disadvantage of high initial raising force by providing a mechanism in which, in the fully collapsed position, the pivot point between the two lowest links is substantially above the line of action of a horizontally acting hydraulic cylinder.



3,700,071
METHOD OF ERECTING SUSPENDED SCAFFOLDING AT CONSTRUCTION FIELD AND SCAFFOLDING ERECTED THEREBY
Reizo Kikuchi, 73 Aza Takamatsu, Haranomachiodawara, Sendai, Japan
Filed Sept. 17, 1971, Ser. No. 181,340
Claims priority, application Japan, July 3, 1971, 46/50840; July 3, 1971, 46/58202; July 3, 1971, 46/58203
Int. Cl. E04g *3/10*
U.S. Cl. 182—150 **2 Claims**

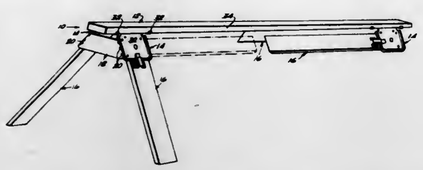


A suspended scaffolding used at the construction field of a multistoried building. The scaffolding can be easily erected and disassembled due to the simple combination of wire ropes and horizontal and lateral rods. The scaffolding does not occupy a large space for erection and the vertical distance between the horizontal rods can be easily varied.

3,700,072
SAWHORSE WITH RETRACTABLE LEGS
Maxwell J. Lovett, 3511 Hilltop Lane, Cocoa, Fla.
Filed Oct. 23, 1970, Ser. No. 83,322
Int. Cl. E04g *1/32*; F16m *11/00*
U.S. Cl. 182—155 **6 Claims**

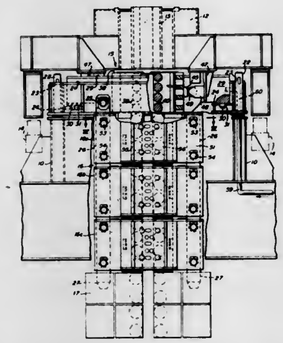
A sawhorse structure comprising a transverse work support member and a pair of legs normally diverging downwardly and outwardly from each end portion of the transverse member, the pairs of legs being adapted to be retracted from the diverging positions in a manner so as to reduce the necessary storage or transportation space of an average size saw horse from approximately 10 cubic feet to approximately 1¼ cubic feet. The mechanism for retracting the legs includes a pair of interconnected brackets fixed to each end portion of the transverse member, and pivots connecting one leg to each bracket, a unique application of a pair of yokes associated with each

bracket whereby each leg is maintained in either the extended or the retracted position by the pivots and three legs of the



pair of yokes, a latch mechanism being employed to lock each leg in either of the retracted or extended positions.

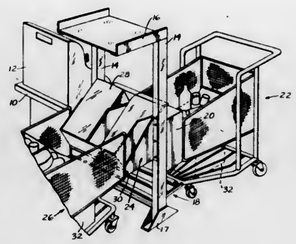
3,700,073
SELF-ALIGNING AND FLEXING GUIDE-ROLL RACK
Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed May 13, 1971, Ser. No. 143,077
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 8 Claims



A guide-roll rack for use in a continuous-casting machine. The rack is formed of a short-length upper section and a longer lower section which is made up of individual subsections. Both the upper and lower sections are supported on a frame which rests on the supporting structure of the machine. The rack is stationary vertically but can shift horizontally to a limited extent to facilitate aligning it with the mold and its sections and subsections with one another. The mold-support frame oscillates vertically, but carries rollers which ride against the upper section of the rack for aligning the rack with the mold. The sections and subsections are flexibly connected to assure proper alignment.

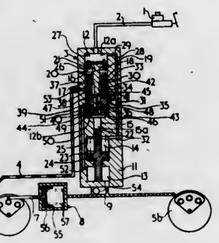
3,700,074
CHECK OUT SYSTEM
Willie M. Shoffner, 318 South Luthern Church Road, New Lebanon, Ohio
Filed Aug. 11, 1970, Ser. No. 62,889
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 AC 8 Claims

The specification discloses a merchandise check out system in which a cart in which the customer has collected the merchandise is presented to a check out station so that a check out clerk in the station can pick up the articles of merchandise from the cart directly, while a second cart in end to end relation with the first cart has bags therein into which the merchandise can be placed directly by the check out clerk, thereby eliminating the counters and conveyors. The basket of



the cart is open at the front and is tiltable upwardly at the front end to selected angles.

3,700,075
BRAKING SYSTEMS
Frank R. Mortimer; Alan R. Brewster, both of Coventry, and Michael J. Bartram, Nuneaton, all of England, assignors to The Dunlop Company Limited, Birmingham, England
Filed Sept. 25, 1970, Ser. No. 75,547
Claims priority, application Great Britain, Sept. 27, 1969, 47,630/69
Int. Cl. B60t *13/10*
U.S. Cl. 188—346 17 Claims

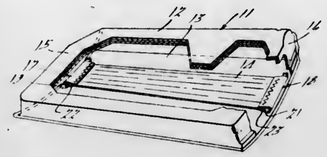


A self-servo device for a fluid pressure operated braking system and utilizing torque reaction developed by the brake and transmitted as fluid pressure by a torque sensing unit sensitive to the braking torque reaction to amplify the fluid pressure supplied from the device to the brake, the device preventing an unlimited rise in the fluid pressure supplied to the brake so as to maintain a substantially constant torque reaction, a fluid flow damping unit being fitted to a movable member of the self-servo device.

3,700,076
SIDE PROTECTION DEVICE FOR MOTOR VEHICLES
Bernard Forsting, Rheydt; Edmund Hellriegel, Cologne, and Dieter Pfadenhauer, Pulheim, all of Germany, assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 16, 1970, Ser. No. 81,351
Claims priority, application Germany, Nov. 29, 1969, P 19 59 989.4
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C 6 Claims

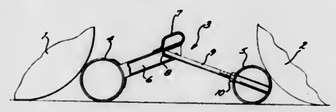
Side impact protection for motor vehicle bodies, particularly for the doors of the passenger compartment to restrict

the depth of penetration of an impacting vehicle. A band-shaped energy absorbing element is arranged contiguous to



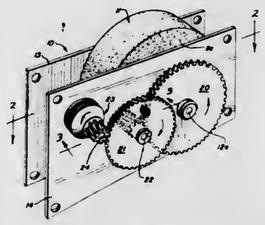
the inner surface of an outer door panel and is anchored on the door end walls.

3,700,077
CHOCK FOR A TANDEM WHEELED TRAILER
Abraham Harder, 6230 Lewis Avenue, Long Beach, Calif.
Filed July 13, 1971, Ser. No. 162,154
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 4 Claims



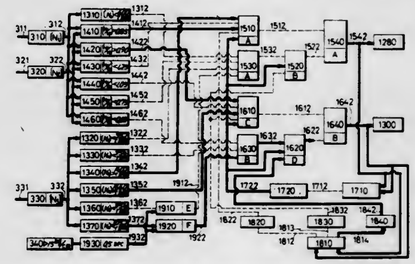
This invention relates to a means of holding the wheels of a trailer or the like against accidental rolling or movement. The spaced hollow tubes engage aligned wheels of the trailer and are pressed tightly against these wheels by means of an off-center coupling which is extended by pressing downwardly against the hinged portion of the coupling.

3,700,078
SPEED RETARDING DEVICE
Nicholas J. Froio, Harvey, Ill., assignor to Froio Corporation, Harvey, Ill.
Filed Nov. 23, 1970, Ser. No. 91,935
Int. Cl. B60t *8/00*; B65g *13/00*
U.S. Cl. 188—180 1 Claim



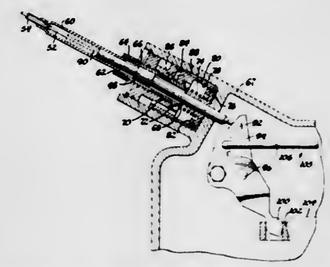
This device for retarding the movement of an object includes a rotatable member mounted for axial adjustment and biased to assume a predetermined axial position. The rotation of the member is responsive to the movement of the object being retarded. The rotatable member is provided with means for imparting an end thrust to the member upon rotation thereof, thereby causing the member to move from the predetermined axial position. The rotatable member carries one section of a sectional braking unit, and the one section is adapted to frictionally engage a stationary second section of the braking unit upon a predetermined thrust being applied to the member.

3,700,079
AUTOMATIC TRANSMISSION EFFECTIVE FOR CHANGING SPEED BY BRAKE PRESSURE
Takeaki Shirai, Nagoya; Shigeru Sakakibara, Okada; Masaki Noguchi, Nagoya, and Masaharu Sumiyoshi, Toyota, all of Japan, assignors to Nippon Denso Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha
Filed May 14, 1970, Ser. No. 37,150
Claims priority, application Japan, May 24, 1969, 44/40291
Int. Cl. F16h *57/10*; B60k *29/02*
U.S. Cl. 192—4 A 6 Claims



The automatic transmission system incorporates a hydraulic torque converter (which with its associated torque activated elements is hereinafter referred to as torcon). The aforesaid associated mechanisms or elements comprising a hydraulic torque converter pump, a hydraulic torque turbine, an associated multiple gear assembly, a friction engaging means for activating the appropriate elements of the speed change gearing of the multiple gear assembly and an oil pressure operation circuit, the same being effectuated by a signal generated by a brake pressure detector, the aforesaid mechanisms, assemblies and oil pressure operation circuit being activated electrically, or mechanically.

3,700,080
TRANSMISSION WITH FLUID PRESSURE RELEASED BRAKE
John Z. Delorean, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 25, 1971, Ser. No. 174,724
Int. Cl. F16d *67/00*; B60k *29/02*
U.S. Cl. 192—4 A 5 Claims

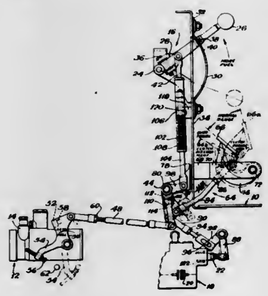


The parking brake mechanism illustrated includes a cable-actuating arrangement wherein the removal of the Park pawl from the teeth of a transmission output shaft, under load conditions, is hydraulically assisted by a piston and valve arrangement which is actuated by the reaction to cable movement or an arcuately positioned cable sheath having one end fixed on the pushbutton housing and the other movable end connected to the valve body.

3,700,081
TRACTOR INCHING CONTROL UTILIZING A DECELERATOR

Robert B. Porter, Melrose Park; Clarence A. Ardelt, Wheaton, and Robert C. Storck, Glen Ellyn, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 26, 1971, Ser. No. 109,870
Int. Cl. B60k *29/00*
U.S. Cl. 192—.07 7 Claims

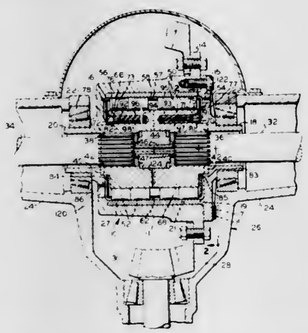


Inching mechanism for accurately controlling final movement of a loader toward the body of a truck being loaded thereby. A separately provided decelerator pedal coordinates neutralization of the customarily provided transmission and deceleration of the customary engine for vehicle inching purposes, all without disturbing settings of such customarily provided gear selector and clutch operator and fuel control.

3,700,082
DIFFERENTIAL DRIVE MECHANISM

Delmar G. Schwab, Portland, Oreg., assignor to Hy-Torq Corporation, Portland, Oreg.

Continuation of Ser. No. 758,988, Sept. 11, 1968, abandoned.
This application July 9, 1970, Ser. No. 56,171
Int. Cl. F16d *41/06*
U.S. Cl. 192—50 12 Claims

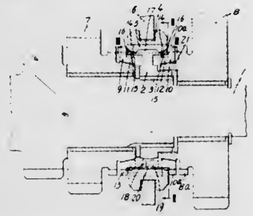


A differential drive mechanism includes a driven body assembly adapted to drive or permit overrunning of either of two hubs through crowned rollers movable by cup-shaped cages having bottoms frictionally engaging damping bosses of an end cap and an inner flange of an integral body and also engaging friction actuating plugs carried by the hubs. Limited lost motion is provided between the hubs to permit one to be driven while the other overruns.

3,700,083
SYNCHROMESH TRANSMISSION APPARATUS

Noboru Ashikawa, Kawagoe, and Fujiya Maruno, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1970, Ser. No. 101,223
Claims priority, application Japan, Dec. 29, 1969, 45/1218
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 F 10 Claims

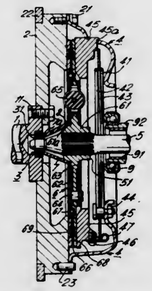


A synchromesh transmission comprises a resilient ring interposed between a sleeve mounted for axial slidable movement on a hub on a main shaft and a blocking ring provided on the outside of the sleeve. The resilient ring is arranged so that at the time of displacement of the sleeve, the resilient ring is initially pushed laterally by the sleeve so as to push the blocking ring and then the resilient ring is compressed and deflected radially by the sleeve so as to allow the sleeve to pass thereover and engage a drive gear loosely mounted on the main shaft.

3,700,084
FRICTION DISC CLUTCH FOR VEHICLES

Jiro Nasu, Nagoya; Tokuo Ogawa, Niwa-gun, and Yoshio Sekine, Ama-gun, all of Japan, assignors to Toyota Jidosha Hanbai Kabushiki Kaisha, Aichi-ken, Japan

Filed July 13, 1971, Ser. No. 162,059
Claims priority, application Japan, July 13, 1970, 45/69822; July 31, 1970, 45/77011; Aug. 29, 1970, 45/75717; Dec. 28, 1970, 45/137524
Int. Cl. F16d *13/50*
U.S. Cl. 192—70.28 25 Claims

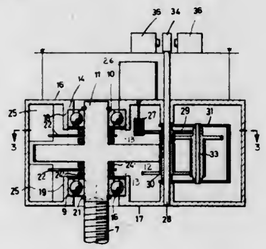


A friction disc clutch of the type which includes an output shaft, a flywheel secured to a drive shaft, a clutch cover connected to the flywheel, a pressure plate mounted movably in the clutch cover, a dish spring supported by the clutch cover and the pressure plate, and a clutch disc mounted slidably on the output shaft and positioned between the flywheel and the pressure plate. Means for causing additional thrusting force to disengage the clutch disc forcefully from the flywheel in disengaging operation of the clutch is provided between an inner race of a guide bearing receiving the top end of the output shaft and the clutch disc, thereby to expedite disengaging operation.

3,700,085
MOTOR DRIVEN POSITIONING APPARATUS WITH FORCE-CONTROLLED SHUTOFF SWITCHES

Jurgen Balz, Heilbronn Neckar, Germany, assignor to Firma Helmut Balz GmbH, Heilbronn/Neckar, Germany

Filed Jan. 13, 1971, Ser. No. 106,030
Claims priority, application Germany, Sept. 12, 1970, P 20 45 249.7
Int. Cl. F16d *71/00*; F16k *31/04*
U.S. Cl. 192—141 10 Claims



A drive gear is driven by a motor, the gear positioning the positioned member, such as a valve stem, with predetermined force against an obstruction, such as a valve seat. A torque sensing means is provided sensing excess torque applied by the motor to the gear to disconnect the motor. In the disclosed embodiment, the torque sensing element includes a cage swingable over a shaft and carrying, offset with respect to the shaft, a gear transmitting drive power from the motor to the positioned gear. The cage is restrained from swinging about the shaft by a spring; if the torque transmitted exceeds the restraining spring force, the cage will deflect, deflecting movement causing shut-off of the motor. To end-position the valve stem, spring-controlled frictional force is applied to the drive gear when a terminal position is reached causing axial excursion of the drive gear relative to its housing.

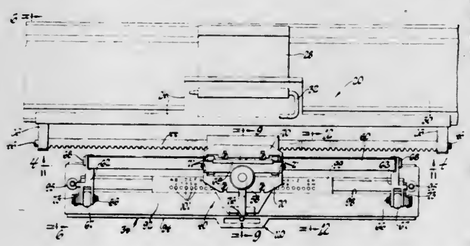
ERRATUM

For Class 193—35 see:
Patent No. 3,700,073

3,700,086
TYPEWRITER FOR USE WITH A DRAFTING STRAIGHT EDGE

David P. Jones, 3160 Second Avenue, Apt. 504, Detroit, Mich.

Filed Dec. 18, 1969, Ser. No. 886,308
Int. Cl. B41j *3/38*
U.S. Cl. 197—2 15 Claims

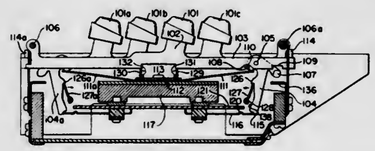


A printing assembly including a support means supporting a rack and adapted to be attached to a drafting straight edge. The rack extends through a head assembly and is engaged by a pinion gear for moving the head assembly along the rack. The head assembly is connected through links to a carriage which supports two longitudinally extending rows of type characters. The head means is moved between a raised position and a lowered position and includes a hammer pin for engaging one of the type characters to cause it to print when in the lowered position. Normally the head means prints the characters in one row but includes a handle on the links interconnecting the head means and the carriage to shift the position of the links so that upon movement of the head means to the lowered position, a character in the other row will be printed.

3,700,087
PAWL ACTUATOR AND LOCKING MECHANISM FOR IMPACT CONTACT KEYBOARD

Wilbur C. Ahrns, Rochester; David F. Sweeney, Pittsford, and Hugh St. L. Dannatt, Rochester, all of N.Y., assignors to The Singer Company

Filed July 27, 1970, Ser. No. 58,638
Int. Cl. B41j *5/08*
U.S. Cl. 197—98 3 Claims



A keyboard is disclosed which produces a signal in response to the depression of a selected key lever. In response to the depression of the selected key lever, a resilient spring contact is deflected away from a relatively fixed contact and released. The resilience of the resilient spring contact causes said spring contact to return towards the relatively fixed contact and make a momentary closure therewith. In response to the momentary closure, an electrical signal is produced during the charge time of a capacitor in series with the closing contacts. The capacitor is so chosen that it will be substantially fully charged in response to the closure of the contacts and no additional signal will result in the event that there should be any contact bounce or multiple closures thereof. An actuating pawl for actuating the resilient contact spring is attached to the key lever and a single spring is used to bias the actuating pawl and the key lever to their at rest positions. A bail which may be selectively positioned in cooperative relationship with a projection on the actuating pawl may be used to lock the key levers against actuation. A frame member is employed to pivot the pawl near the end of the down stroke of the key lever and thereby release the resilient contact spring. The cited frame member, the pawl and the key lever coact to provide a down stop limit for the key lever. Alternate selective means may be provided for locking selected key levers against actuation. In the structure shown, selected key levers are pivoted from a forward position while other key levers are pivoted from a rearward position. The circuit of the cited capacitor is designed to assure discharge of the cited capacitor well within the cycle time of operation of a given key lever.

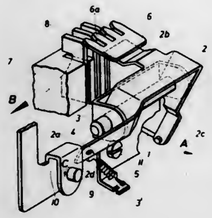
3,700,088
BLOCKING DEVICE FOR THE CARRIAGE OF TYPEWRITERS AND SIMILAR MACHINES

Detlef Kunst, Sanderbusch, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed May 8, 1970, Ser. No. 35,661
Claims priority, application Germany, May 14, 1969, P 19 24 601.6
Int. Cl. B41j *19/90*
U.S. Cl. 197—120 2 Claims

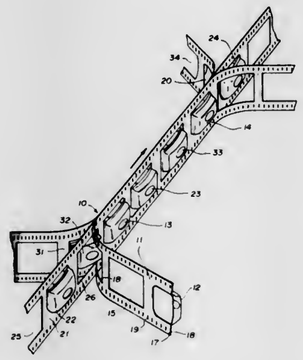
A device for blocking the carriage of typewriters and similar machines during the performance of line shifts has a switching bar which can be displaced in the direction of the movement of the carriage and is mounted to be pivoted in a direction perpendicular to the movement of the carriage. This switching

bar is operable to be actuated by the line-shift key, and is provided with a blocking member defining a plurality of open slots engageable with a plurality of stop members on the carriage to block the carriage. A push rod is also provided on the



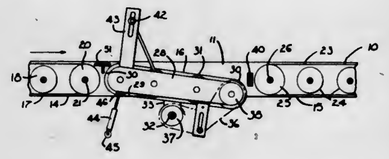
switching bar which is operable to interrupt the carriage return movement. Once the carriage return movement is interrupted, the switching bar is returned to its rest position by a suitable tension spring.

3,700,089
ANALYZER APPARATUS
Ingomar Halbartschlager, Basel, and Alfred Heim, Mohlin, both of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.
Filed May 20, 1971, Ser. No. 145,152
Claims priority, application Switzerland, June 1, 1970, 8161/70
Int. Cl. B65g ; B65d *83/00*
U.S. Cl. 198—1 **9 Claims**



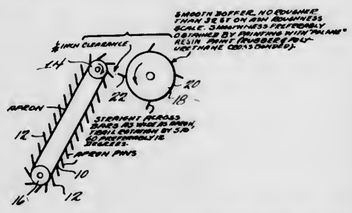
An analytical apparatus for use in transporting in an automatic analyzer, a plurality of individual analytical samples having several transport bands each band including one or more receptacles for containing samples alternating with one or more apertures, the bands being offset with respect to one another to display at a position on one band a receptacle where all other bands have apertures thereby enabling the bands to be married to each other to form a continuous series of receptacles for passage by a sample transfer station and further enabling the bands to be individually passed through separate analyzing stations.

3,700,090
CONVEYOR AND ARTICLE FOR HANDLING APPARATUS
Reinhold A. Pearson, deceased, late of Spokane, Wash. (by Alma Pearson, executrix), assignor to R. A. Pearson Company, Spokane, Wash.
Filed March 12, 1971, Ser. No. 123,701
Int. Cl. B65g *47/26, 37/00*
U.S. Cl. 198—34 **13 Claims**



An apparatus for longitudinally spacing articles on a conveyor as they are carried along a first conveyor. An adjacent longitudinally aligned conveyor surface receives each article. One of the adjacent ends of the conveyor surfaces is moved elevationally relative to the other. A transverse stop is spaced above the conveyor surfaces adjacent to the rear end of the receiving conveyor surface. Movement of the surface alternately positions the stop for clearance of articles moving beneath it for blocking movement of an oncoming article. A forward stop is provided for collecting articles on the receiving conveyor surface when desired.

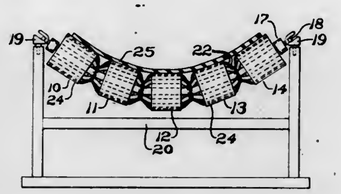
3,700,091
FIBER TRANSPORTING DEVICE
Kenneth G. Lytton; David F. Hullett, and George J. Miller, all of Gastonia, N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.
Filed Jan. 29, 1971, Ser. No. 111,013
Int. Cl. B65g *29/00, 37/00*
U.S. Cl. 198—103 **8 Claims**



The doffer of this invention includes a rotatable cylindrical structure with a plurality of solid doffing blades (equal in width to the apron width) extending outwardly and backwardly (with respect to the direction of doffer rotation) from the cylinder circumference at an incline (5 to 60°) with respect to a radially directed reference line. The entire cylinder and doffer blade assembly is painted with a synthetic resin paint or otherwise treated to insure a substantially smooth outer surface. (A finish of 32 or smoother on a standard finish scale is sufficient.)

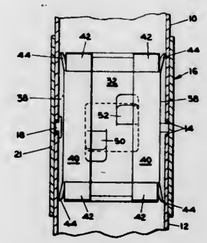
In operation, this cylindrical doffer is preferably mounted for rotation such that the blades pass by the apron in the same direction as the moving apron pins but without any intermeshing therebetween. (A clearance of approximately ¼ inch is provided.) As the doffer is rotated at fairly high speeds, a doffing sheet of moving air is generated over the entire width of the apron to remove fibers therefrom (i.e. fanning action). In addition, because of the extreme smoothness of the outer doffer surfaces, stray fibers are in no way caught up in the doffer itself to accumulate and interfere with the desired doffing operation.

3,700,092
CATENARY ROLL SUPPORT FOR A CONVEYOR BELT
Amos J. Stark, and Hebert E. McGinnis, both of Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed April 21, 1971, Ser. No. 135,924
Int. Cl. B65g *15/08*
U.S. Cl. 198—192 R **8 Claims**



A catenary type roll support for a troughed conveyor belt has cylindrical segments connected solely by tapes fastened to the surfaces of the cylindrical segments, and the first and last segments are suspended from fixed supports by anti-friction bearings.

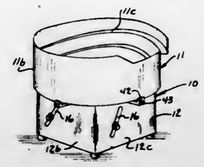
3,700,093
TROUGH COUPLER WITH CHAIN GUIDE FOR CHAIN CONVEYOR TYPE ANIMAL FEEDER
Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.
Filed Sept. 21, 1970, Ser. No. 74,081
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **21 Claims**



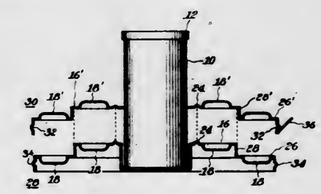
A feeder trough connected in a manner which wedges a chain guide between the trough sections. The chain guide has depending leg portions which extend down between adjacent ends of the trough sections, abutting the same. The leg portions rest upon a specially shaped portion of a connecting section which latter section removably holds the trough sections together by conventional straps.

3,700,094
VIBRATORY FEEDER BOWL DRIVE APPARATUS
Michael K. Parr, 5169 East State Street, Apt. 211, Building 3, Rockford, Ill.
Filed Aug. 2, 1971, Ser. No. 168,328
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 BC **10 Claims**

A feeder bowl drive apparatus for imparting angular and axial vibratory movement to a parts feeder bowl in which a feeder bowl support is resiliently mounted on the base by a leaf spring assemblies angularly spaced about the axis of the feeder bowl. The springs are adjustably mounted on the base to enable adjustment of the effective length of the spring for tuning of the natural frequency of vibration of the vibratory body and the leaf spring mountings on the base and on the bowl support are self-aligning with the leaf springs to avoid introduction of nonuniform spring tensions in the leaf springs.

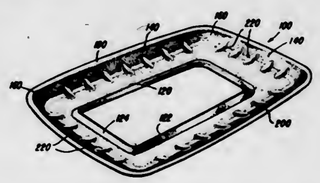


3,700,095
PILL OR CAPSULE DISPENSER: SURE DAILY REMINDER
Thomas C. Dangles, and Elsie R. M. Dangles, both of 10424 South Lavergne Avenue, Oak Lawn, Ill.
Filed July 20, 1971, Ser. No. 164,281
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 **6 Claims**



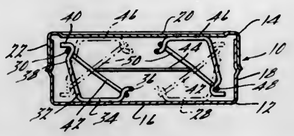
A dispenser for pills and/or capsules adapted to cooperate with a container having pills and/or capsules therein. First and second horizontal disc like members detachably engage each other and support the container in a vertical position as it extends through central openings in both members. The members each have two concentric annular sectors having respective lower and upper mating recesses which together define enclosed chambers for detachably receiving pills and/or capsules.

3,700,096
FOOD PACKAGING TRAY
Richard F. Reifers, New Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.
Filed March 30, 1970, Ser. No. 23,776
Int. Cl. B65d *65/16*
U.S. Cl. 206—45.33 **11 Claims**



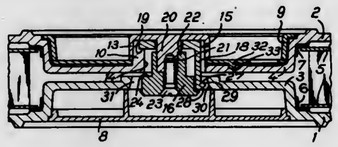
A tray of molded pulp or the like is provided for the packaging of meat, poultry and fish in conjunction with an overwrapped plastic film. The tray is constructed with a corrugated series of bowed portions projecting convexly toward the interior of the tray along the edge joining the bottom of the tray to the four side walls.

3,700,097
SHIPPING CONTAINER FOR FRAGILE ARTICLES
Neal C. Thomas, Brighton, Mich., assignor to The Bendix Corporation
Filed Jan. 11, 1971, Ser. No. 105,501
Int. Cl. B65d 85/00
U.S. Cl. 206—46 FR **11 Claims**



A shipping container for generally disk-shape fragile articles comprising a generally cup-shape base having a bottom wall and an upright side wall, a generally cup-shape cover having a top wall and a depending side wall disposed in a telescoping relation with the base side wall and a plurality of rubber bands trained about brackets supported on the top and bottom walls so as to form a plurality of flexible strips arranged in opposed frusto-conical patterns in which they can support a disk-shape article therebetween so as to maintain the article in a spaced relation with the container walls.

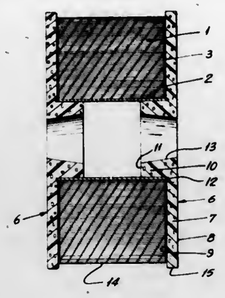
3,700,098
BOXES FOR PACKAGING A REEL
Pierre A. Posso, 20 rue Gandon, 75 Paris 13, France
Filed June 22, 1971, Ser. No. 155,504
Claims priority, application France, June 23, 1970, 7023225; March 30, 1971, 7111158
Int. Cl. B65d 85/67
U.S. Cl. 206—52 F **10 Claims**



This invention relates to a box for the packaging of a reel of cinematographic film, magnetic tape or the like, comprising a body and a cover unitary with means provided for centering the reel and in which there is incorporated a locking device comprising an expansible means and a rotary actuation cam, wherein the expansible means comprises at least three flexible blades extending freely in directions substantially parallel to the axis of rotation of the cam rotatably mounted in one of the bosses, the base of each blade is immobilized in this first boss, the free end of each blade bears against the cam and has an outwardly projecting tooth and the second boss defines a central opening bordered by a truncated seat converging towards the first boss and against which the teeth of said blades may be pressed by the cam in order to provoke, at the same time as the locking of the cover on the body, the mutual bringing together of these latter in order to tighten the reel.

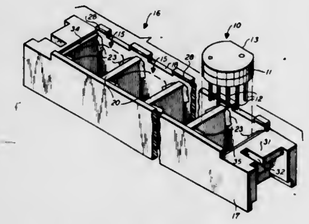
3,700,099
END ROLL PROTECTOR
J. Omer Heroux, 1698 Gouin Boulevard, Montreal, Quebec, Canada
Filed Nov. 3, 1970, Ser. No. 86,578
Int. Cl. B65d 85/67
U.S. Cl. 206—59 F **2 Claims**

This invention relates to protectors for the ends of rolls of flexible sheet or strip. These protectors consist of discs having a central coaxial extension adapted to be frictionally retained in the hollow core of the roll. They serve to protect the sheet



or strip against damage and reduce the wrapping required for the roll.

3,700,100
PACKAGE
William D. Bohannon, Jr., Graham, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed June 29, 1970, Ser. No. 50,547
Int. Cl. B63d 71/00
U.S. Cl. 206—65 F **6 Claims**

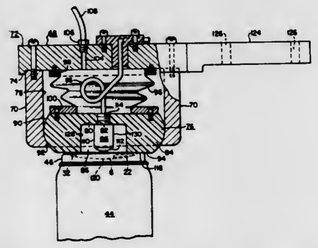


A package receives and maintains a plurality of articles having flat sides, tabs, or other nonsymmetrical dimensions in oriented positions. The package has a casing with a row of compartments open at the top and bottom. A plurality of resilient projections extend into each of the compartments to support the articles from falling through the open bottoms. The compartment walls mate with the nonsymmetrical dimensions of the articles to maintain the articles in oriented positions. A cover is secured over the top of the compartments to contain the articles. The cover has apertures aligned with each compartment such that a finger or pusher may be inserted into each compartment to force each article past the resilient projections out the bottom of the compartment without removing the cover.

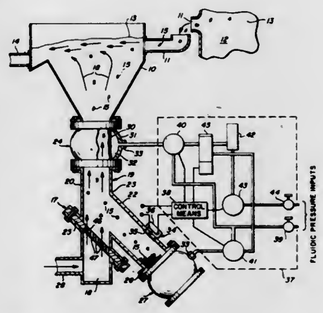
3,700,101
CONTAINER INSPECTION APPARATUS
Richard N. Ference, Trafford; Albert Grega, Monroeville; James A. Miller, Apollo; Ray T. Stewart, New Kensington, and David M. Stricker, Lower Burrel, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed May 18, 1971, Ser. No. 144,424
Int. Cl. B07c 5/344
U.S. Cl. 209—80 **13 Claims**

Apparatus for inspecting sealed containers, including vacuum sealed containers having deflectable panel indicators. A sensing head having an electrically insulating pad and a generally centrally disposed eddy current sensor secured within a bore of the pad. The insulating pad and eddy current

sensor are urged downwardly by a restraining means and are adapted to be moved upwardly uniformly or irregularly responsive to contact with a container wall. The eddy current sensor has a lower surface disposed radially inwardly and spaced upwardly with respect to the annular lower surface of the insulating pad. Conveyor means adapted to move a plurality of sealed containers to an inspection station with the containers disposed in underlying position with respect to the sensing head and the insulating pad in contact with a container wall. First detector means for emitting a signal indicating that a container is positioned at the inspection station. Logic circuit means responsive to an eddy current sensor reading sampled after the first detector means signal to compare the sensor reading with a predetermined standard incorporated within the sensor control circuit means and emit a signal indicating whether the container at the inspection station is properly sealed. Reject means for removing improperly sealed containers from said conveyor means responsive to the circuit means signal indicating that the container is improperly sealed. Second detector means for emitting an indication that a container has emerged from the inspection station for initiating operation of the reject means when the circuit means signal has indicated that the container is improperly sealed.

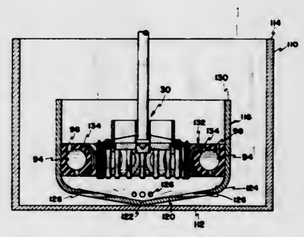


3,700,102
AUTOMATIC DUMP SYSTEM FOR CONTAMINANTS COLLECTED IN A SLURRY PROCESSING SUMP
Lawrence M. Higgins, 2952 West Port Royale Lane, Phoenix, Ariz.
Filed Dec. 24, 1969, Ser. No. 887,913
Int. Cl. B03b 3/34
U.S. Cl. 209—158 **9 Claims**



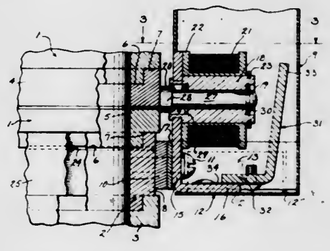
An automatic dump system for use with a slurry processing sump is disclosed. It has a flushing chamber and a collection chamber attached to the lower end of the sump. A flushing fluid is supplied to the flushing chamber to deflect relatively heavy contaminating materials into the collection chamber, and provide resistance to settlement of relatively light slurry materials. Both the flushing chamber and the collection chamber have valves which are controlled by an actuation means to periodically discharge collected contaminating materials without interrupting sump operation.

3,700,103
RECOVERY OF MINERALS
Walter C. Giebel, General Delivery, Sheridan, Mont.
Filed July 17, 1969, Ser. No. 842,528
Int. Cl. B03d 1/14
U.S. Cl. 209—169 **12 Claims**



Apparatus for treating ore pulp in a treatment cell attendant to recovery of minerals therefrom, the apparatus having a rotatable shaft with an attached impeller and a radially projecting annular disc, the disc including a plurality of projections attached thereto and a cylindrical collar disposed above the disc and joined thereto, thus forming a rotating standpipe so that the path of flow of ore pulp through the eye of the impeller is well defined. A stabilizer ring is joined to the cell adjacent the impeller so that a shear zone is developed in the ore pulp, the stabilizer ring being configurated to maximize turbulence in the shear zone and minimize surging and boiling of the ore pulp at the surface thereof. An insert is adapted to nest within a rectangular cell so that the rectangular cell operatively receives the stabilizer ring.

3,700,104
TRANSVERSE TAPPER ASSEMBLY FOR SIFTER SIEVE STACK
Robert L. Schurrer, Milwaukee, Wis., assignor to ATM Corporation, Greendale, Wis.
Filed Oct. 15, 1970, Ser. No. 81,094
Int. Cl. B07b 1/54
U.S. Cl. 209—237 **4 Claims**

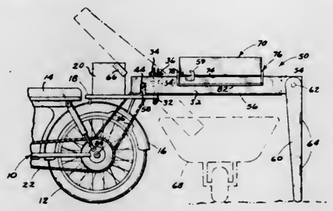


A tapper assembly for the sieve stack of a reciprocating air column sifter includes a mounting ring that is incorporated into the stack. The ring mounts two oppositely disposed transverse tappers which are alternately electromagnetically actuated to tap the sieve above the mounting ring.

3,700,105
VIBRATING SCREEN, EARTH-CLASSIFYING MOTORCYCLE ATTACHMENT

Delbert A. Piper, Lexington, Oreg.

Filed July 21, 1971, Ser. No. 164,514
Int. Cl. B07b 1/42
U.S. Cl. 209—421 8 Claims

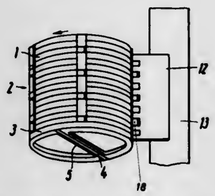


An earth-classifying motorcycle attachment for use by artifact hunters, etc., comprises a vibrating screen supported on one end by pivoted legs and on the other by an eccentric drive mounted on the rear fender of the motorcycle and connected to the drive wheel of the latter. When the attachment is not in use, the eccentric drive may be disconnected and the screen and legs folded back for transport from place to place.

3,700,106
COMMINUTOR

Paul Wittke, Niederrodenbach, Germany, assignor to Condux-Werk Herbert A. Merges KG, Wolfgang, Germany

Filed Nov. 6, 1970, Ser. No. 87,455
Claims priority, application Germany, Nov. 11, 1969, P 19 56 607.5
Int. Cl. B01d 35/28
U.S. Cl. 210—174 4 Claims

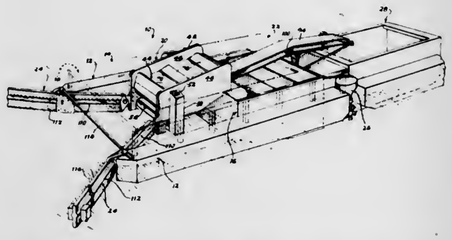


A comminutor for coarse materials and to be installed in sewage channels has a rotatably mounted sieve drum having a plurality of sieve rings arranged in spaced relationship thereon. A comminutor element is mounted on a respective one of each of the sieve rings. At least one support column is provided and has a comb unit thereon arranged to cooperate with the comminutor element on the sieve drum. A ring member is fastened to the lower end of the sieve drum for rotation therewith and has a blade carrier member to which is attached a blade member. A fixedly mounted counterring having a blade member is arranged so that its blade member cooperates with the blade member of the ring member to provide a scissor-like comminuting action.

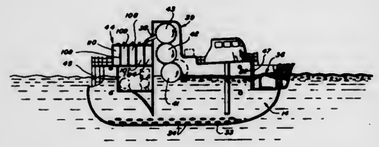
3,700,107
APPARATUS FOR RECOVERY OF FLOATING SUBSTANCES

Edmond Flaviani, 719 28th Avenue, San Francisco, Calif.

Filed Nov. 18, 1970, Ser. No. 90,544
Int. Cl. C02b 9/02; E02b 15/04
U.S. Cl. 210—242 11 Claims



The disclosure relates to a propelled hull having an open front as well as an open rear, a scoop removably mounted on the hull at its open front for picking up from the surface of water mixtures of water and pollution material floating thereon, together with an upright partition fixedly secured in said hull, a housing supported on said partition, a plurality of rotatable cylinders mounted in vertically arranged engagement to one another within said housing; said cylinders having spirally arranged grooves in the peripheries thereof for transfering picked up liquid material from one cylinder to another, a separator on said hull in communication with the uppermost cylinder for receiving mixtures of liquids from said uppermost cylinder and for separating one liquid from another for discharge into separate areas, means for rotating said cylinders, and means at the rear of said hull for discharging separated liquids from said separate areas of said hull to a remote location.



3,700,108
OIL SKIMMER

Frank A. Richards, 11 Martha Drive, Bowmansville, N.Y.

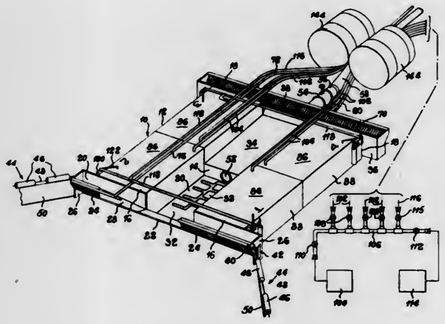
Filed Feb. 4, 1971, Ser. No. 112,598
Int. Cl. C02b 9/02
U.S. Cl. 210—242 6 Claims

A float supported unit for removing oil films, debris or other floating liquid and/or solid impurities from the surface of a body of water including an impurity-water conveyor, a perforated, separator-conveyor for separating solid impurity components from the conveyed impurities and water, and a holding tank for thereafter gravity separating water from the liquid impurity components. The impurity-water conveyor is pivotally supported at its upper-outlet end adjacent a fore-aft mid-point of the float support and has its lower-intake end independently float-supported to rise and fall in conformity with the surface of the water adjacent the fore end of the float support. The impurity-water conveyor includes a plurality of relatively flexible paddle elements, which cooperate to elevate separate charges of impurities-water upwardly along a channel guide; each charge being formed and subsequently conveyed and separated with a minimum of emulsion inducing agitation, whereby to promote relatively rapid separation of the liquid impurity components from the water in the holding tank.

3,700,109
APPARATUS FOR REMOVING FLOATING LIQUIDS FROM THE SURFACE OF A BODY OF WATER

Charles J. Lasko, 4344 Washington Road, Parlin, N.J.

Filed Dec. 23, 1970, Ser. No. 101,016
Int. Cl. C02b 9/02; E02b 15/04
U.S. Cl. 210—242 9 Claims

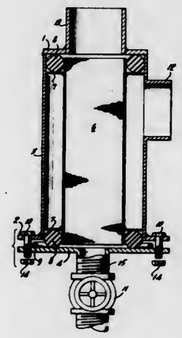


Apparatus for skimming liquids, such as oil, having a specific gravity less than that of water from the surface of a body of water including a pair of laterally spaced hulls supporting a basin between them and a skimming edge immediately ahead of the basin, the hulls including fore and aft chambers and means for admitting or expelling water independently into or out of each chamber to select the level and the fore and aft tilt of the hulls relative to the surface of the body of water so as to enable skimmed liquid to pass over the skimming edge and into the basin.

3,700,110
FLUID STRAINER

John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed July 14, 1971, Ser. No. 162,557
Int. Cl. B01d 35/16, 27/00
U.S. Cl. 210—308 8 Claims

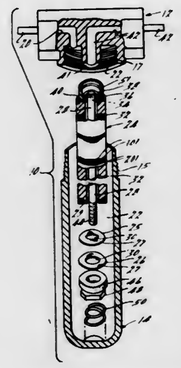


A fluid strainer including an elongated shell having an inlet at one end and connecting with an inner passageway of a filter cartridge mounted axially in the shell resting on resilient "O" rings which seal said filter cartridge in the shell.

3,700,111
LAMINAR FLOW FLUID FILTER

James Daniel Bode, Royal Oak, Mich., assignor to The Bendix Corporation

Filed Dec. 22, 1969, Ser. No. 887,102
Int. Cl. B01d 43/00
U.S. Cl. 210—322 18 Claims

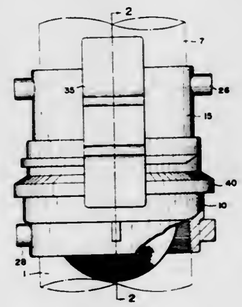


A stacked washer multi-stage impaction and diffusion filtering apparatus wherein a succession of laminar flow channels terminated by impact target surfaces are arranged to form intricate channel systems on individual filter washers, the washers then being stacked to form a plurality of filter passages. The intricate channel system permits establishment of a large number of filtration stages within a given volume.

3,700,112
HOSE COUPLING

Sozaburo Maeshiba, 33-32,-4 chome, Hakataekimae, Fukuoka, Japan

Filed June 8, 1970, Ser. No. 44,198
Int. Cl. C02c 1/14
U.S. Cl. 210—445 3 Claims

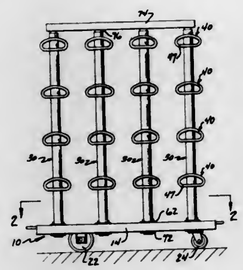


A connect-and-disconnect coupling for connecting a hose to a pipe, comprising a female coupling element having a tapered socket threaded to receive a tapered or conical male nozzle. The male nozzle has a plurality of pivotally mounted arms provided with hooked free ends that automatically hook over an outer collar on the female coupling element as the male nozzle is inserted into the socket and the tip thereof seats on a C-shaped annular seal in the female coupling element. The hooked arms hold the nozzle and female coupling element releasably in fixed relative axial positions.

3,700,113
TIRE STORAGE RACK

Clarence H. Hager, Rockford, Ill., assignor to Modern Caster Co., Inc., Rockford, Ill.

Filed Feb. 4, 1971, Ser. No. 112,577
Int. Cl. A47f 7/04
U.S. Cl. 211—23 12 Claims

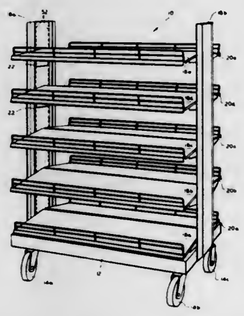


A plurality of upright supports are removably mounted on a mobile bed by means of wedges secured to the upright supports for engaging the sides of an elongate opening in a plate at the top of the bed. A second plate, spaced below the first plate, is shaped to closely receive the lower end of the upright support to complete the removable mounting arrangement. The upright support is tubular and has an internal strut extending in the lateral direction. A plurality of elongated arms are welded on each support member to support a tire. Each arm is formed into a tube from a continuous sheet of material and shaped with an arcuate upper portion and a generally flat bottom. The edges of the original sheet are located at the bottom of the tube and means is provided to hold the edges in a closed position.

3,700,114
ADJUSTABLE SHELF SUPPORT BRACKET

James E. Myers, Niles, Mich., assignor to Clark Equipment Company

Filed Jan. 18, 1971, Ser. No. 107,203
Int. Cl. A47g 29/02
U.S. Cl. 211—150 6 Claims

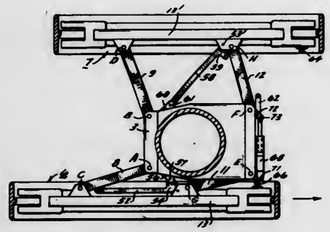


An adjustable shelf support bracket having a pair of oppositely extending cantilever type shelf support beams pivotally connected at their inner ends to a vertically adjustable inner plate with hooked tabs to connect the plate to a vertical column at a desired height. The angular orientation of each beam is determined by the engagement of an adjustment pin with an individual tooth chosen from a plurality of teeth formed in the inner end of the beam and such orientation may be varied by selectively changing the tooth engaged by the adjustment pin.

3,700,115
VEHICLE WITH VARIABLE WIDTH GROUND SUPPORTS

Kenneth V. Johnson, Oconomowoc, and David A. Miller, New Berlin, both of Wis., assignors to Koehring Company, Milwaukee, Wis.

Filed Sept. 17, 1970, Ser. No. 73,014
Int. Cl. B66c 23/36
U.S. Cl. 212—38 6 Claims

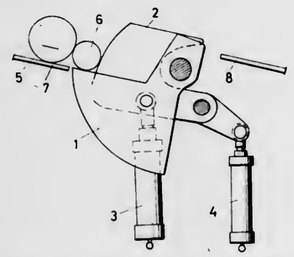


An endless track vehicle such as a mobile construction machine comprising laterally adjustable tracks movable relative to the vehicle frame, pivotally connected arms interposed between the frame and tracks, and locking means for independently and releasably securing each track in various lateral positions relative to the vehicle frame.

3,700,116
DOSING DEVICE FOR USE IN LOG HANDLING INSTALLATIONS

Ilkka Arimo Rysti, Frisanssintie 22, Frisans, Finland

Filed Nov. 5, 1969, Ser. No. 874,256
Int. Cl. B65g 11/00
U.S. Cl. 214—1 PB 2 Claims



A log handling installation has a device for dosing transversely extending logs which are moved one by one. The device includes pairs of lifters for raising the logs. One of the lifters of each pair is of larger size than the other lifter of the same pair and has a threshold against which the logs are fed. The lower surface of the other lifter is also shaped to form a threshold. When the other lifter is turned to its lifting position its threshold is closer to the arriving logs than the threshold of the first lifter.

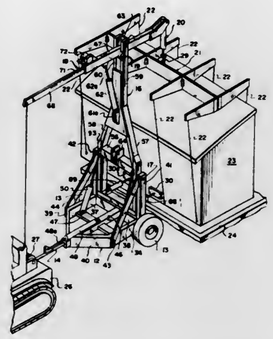
3,700,117
PORTABLE CRANE

Gale C. Corley, 1207 Beech Street, Valparaiso, Ind.

Filed March 4, 1971, Ser. No. 120,872
Int. Cl. B66c 23/40
U.S. Cl. 214—1 H 6 Claims

A portable crane for lifting and positioning modular house sections from a trailer truck onto a foundation is provided with a pivotal post member which folds down onto a base and

wherein the crane jib pivots and folds against the post member so that the crane is reduced in size for transport. The lower end of the post member, when in a vertical position for lifting,

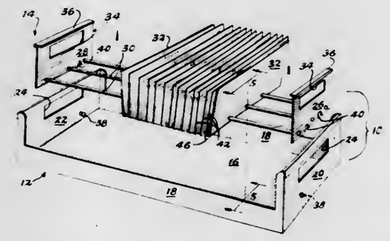


includes side support pads with elongated slots to allow transverse adjustment of the house section during positioning thereof onto a foundation.

3,700,118
CHECK SEPARATOR SYSTEM

Thomas H. Snethen, Dewittville, N.Y., assignor to United Business Equipment Corporation, Buffalo, N.Y.

Filed May 19, 1971, Ser. No. 144,798
Int. Cl. B65g 57/28
U.S. Cl. 214—1 R 15 Claims

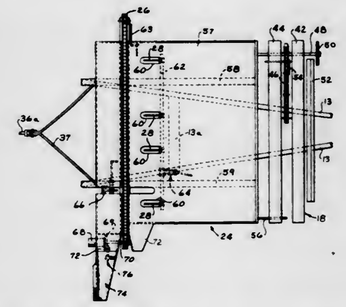


Checks are separated from a bank of checks and indexing guides carried by an insert-carrier removably supported within a storage-work tray. To perform the check separating operation, the insert-carrier is gravity supported on a vertically inclined vibratory platform having a plurality of separation assisting leaves arranged to be inserted into the bank of checks and indexing guides. Upon vibration of the platform, checks are gravity fed from between the indexing cards onto a platform supported, generally L-shaped holder, which is adapted to be manually withdrawn from adjacent the bank as the checks are separated therefrom. The holder is provided with side walls adjustable to accommodate for the length of the bank thereby to insure that the checks are constrained to remain on the holder in the same relationship they assumed in the bank.

3,700,119
TABLE EXTENSION FOR A BALE WAGON

Donald M. Grey, and Jerry W. Welker, both of Selma, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation of Ser. No. 828,881, May 29, 1969, abandoned.
This application April 26, 1971, Ser. No. 137,601
Int. Cl. B65g 60/00
U.S. Cl. 214—6 B 1 Claim

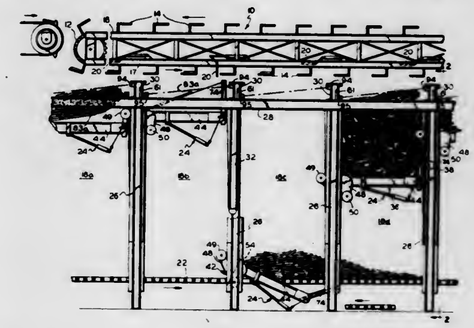


A table extension for the transfer table on a bale wagon which is adapted to be selectively positionable with respect to the table between a first bale engaging, guiding and turning position and a second stored position.

3,700,120
APPARATUS FOR COLLECTING AND DISCHARGING LUMBER

Roscoe B. Romick, and John G. Strauss, both of Portland, Oreg., assignors to U.S. Natural Resources, Inc., Portland, Oreg.

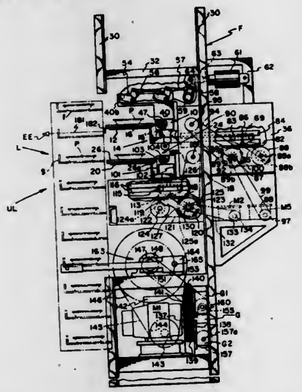
Filed Aug. 2, 1971, Ser. No. 168,103
Int. Cl. B65g 65/42; B07c 3/08
U.S. Cl. 214—16 B 22 Claims



Multiple lumber-collecting bins are positioned below a lumber drop sorter. Each bin has a lumber let down apparatus including a series of horizontally extending parallel lumber-supporting arms cantilevered across the bin from a common support tube which travels along a vertical track. A lumber-receiving cable extends diagonally from an inner end of each arm upwardly to an upper portion of a swinging tip pivoted to the free end of each arm and then downwardly to a counterweight below each arm. At the beginning of a collecting cycle lumber drops from the sorter hooks onto the diagonal cables which minimize the fall and build a straight first course of lumber. As additional lumber drops on the cable, it sags progressively until the load is supported directly by the support arms, and the arms gradually lower through the bin. Near

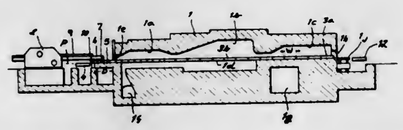
the lower end of the bin the swinging tips swing outwardly and the support arms tilt downwardly to gradually spill the load onto a transfer chain defining the bottom of the bin. Thereafter the counterweights return the tips to their upright positions and hoist cables lift the support arms to the upper end of the bin to begin the next loading cycle.

3,700,121
RACK LOADING AND UNLOADING APPARATUS
Lynn S. McManus, Saginaw, Mich., assignor to Baker Perkins, Inc., Saginaw, Mich.
Filed Feb. 22, 1971, Ser. No. 117,240
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 C **22 Claims**



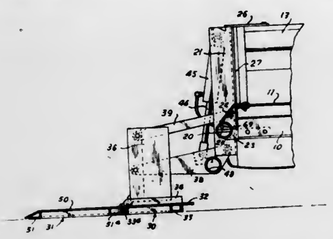
Rack loading and unloading apparatus for respectively transferring bakery products, such as pies in containers, from a supplying conveyor to a plurality of vertically spaced multi-shelved racks, which are moved in an endless path through a bakery processing unit, and removing products from the racks after they have been processed and transferring them to a discharge conveyor.

3,700,122
PUSHER-TYPE FURNACE
Theodor Josef Sevenich, Dortmund; Wolfgang Fabian, Dortmund-Hombruch, and Klaus Kuhn, Dortmund, all of Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Germany
Filed Oct. 1, 1970, Ser. No. 77,095
Claims priority, application Germany, Oct. 2, 1969, P 19 49 747.3
Int. Cl. F27b 9/22
U.S. Cl. 214—24 **4 Claims**



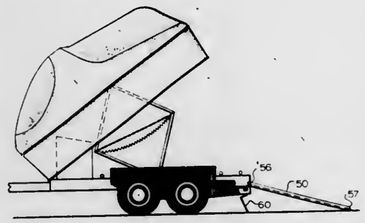
A pusher-type furnace for the heating of metal ingots, blooms, billets or bars to rolling temperature, is provided at its inlet side with a billet-receiving platform or table upon which a pusher assembles one or more billets for advance into the furnace by a main pusher, the latter serving simultaneously to displace the entire array of workpieces and advance one or more of the latter out of the furnace.

3,700,123
POWER LIFT AND GATE APPARATUS FOR TRUCK
Quentin D. Corley, Jr., 326 South Rock Island, Dallas, Tex.
Filed Aug. 16, 1971, Ser. No. 171,949
Int. Cl. B60p 1/48
U.S. Cl. 214—77 P **12 Claims**



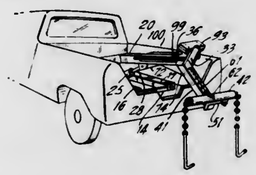
A lift frame for attachment to the truck frame and bed includes a tubular horizontal base having integral transverse brackets for attachment to the truck frame and having upright end posts securely welded to the tubular member. A mounting flange welded along the tubular member is secured along the edge of the truck bed. A hinged lift platform includes a horizontal portion and a folding portion, with the horizontal portion swingably supported by a parallelogram arms on the frame end posts. A torque bar connects lift arms, defining one of the parallel arms at each end; and a hydraulic power cylinder connects one lift arm and one corner post to swing the lift platform between the upper position in the plane of the truck bed and the lower ground position. In the upper limit position, the torque bar is stressed by the power cylinder so that the folding portion may be swung into upright position to define a gate, with co-acting latch mains of the gate and one end post positioned for latching engagement. When the power cylinder is released, the torque bar positively latches the gate in locked position.

3,700,124
TRAILER LOADING AND UNLOADING EQUIPMENT
Richard A. Lawrence, 2737 Silverhill Drive, Pontiac, Mich.
Filed June 29, 1971, Ser. No. 158,023
Int. Cl. B65f 67/02
U.S. Cl. 214—85 **3 Claims**



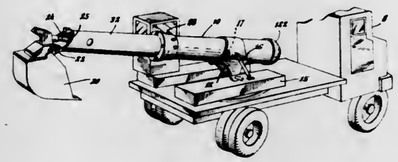
A trailer for hauling wheeled loads too heavy for manual lifting for the average person having a ramp-platform positionable at the rear end of the trailer floor and removable therefrom and insertable below the trailer floor on slide flanges for travel where it is secured for travel. The tail-gate is hinged at the bottom and upon opening swings down into contact with the ground surface and acts as a support leg at the rear end of the trailer to prevent tipping when loading and unloading. A pivotally mounted cross-rod at the rear of the floor below the slide flanges has radial lifting and lowering arms for receiving the front end of the ramp at the rear end of the floor when the operator slides the ramp out from below the floor. A lever on the rod enables the user to pivot the rod and lift-lower arms to raise and hold the front end of the ramp at the rear end of the floor. To again stow the ramp for travel, the user reversely pivots the rod with the hand lever to lower the front end of the ramp and then slides the ramp on the flanges below the floor.

3,700,125
TOWING APPARATUS
Joseph Aquila, 144-41 231st Street, Rosedale, N.Y.
Filed Jan. 8, 1971, Ser. No. 105,012
Int. Cl. B60p 3/12
U.S. Cl. 214—86 A **14 Claims**



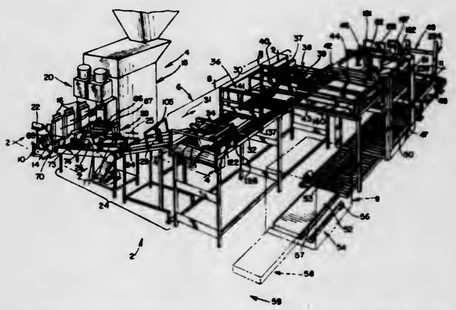
A truck mounted crane for pulling automobiles is constructed with a tubular boom pivoted at its front end to a base, with a fluid operated power cylinder being used to raise the rear end of the boom. A tow bar assembly mounted to the boom includes a boom extension that is mounted in telescoping relationship with the boom and a cross-bar supported from below at its center by a universal joint connected to the boom extension at the free end thereof. The tow bar assembly is movable between an extended or operating position and a retracted or storage position. In the operating or extended position, the boom extension projects downwardly and to the rear of the boom, and in the retracted position the boom extension is nested within the boom.

3,700,126
HYDRAULIC BOOM FOR EARTH EXCAVATING APPARATUS
Joseph R. Beaton, Hillside Terrace, Oneida, N.Y.
Filed Aug. 16, 1971, Ser. No. 171,901
Int. Cl. E02f 3/00
U.S. Cl. 214—141 **7 Claims**



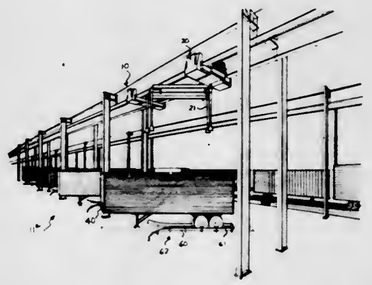
A boom for earth excavating apparatus comprises a first elongated tubular shaped member, a second elongated tubular shaped tool supporting member positioned within the first member and adapted for telescoping movement therein, a hydraulic cylinder positioned within the outer boom member, means for constraining motion of the cylinder in a longitudinal direction with respect to the outer boom member, a hydraulic piston positioned within the cylinder and coupled to the second member for causing longitudinal motion of the second tubular member when a hydraulic force is applied thereto, means intercoupling the cylinder and the second boom member for guiding motion of said second member in a longitudinal direction and for causing rotation about a longitudinal axis thereof when the cylinder is rotated, and means for providing rotation of the cylinder thereby causing rotation of the second member and the tool about a longitudinal axis.

3,700,127
METHOD FOR ASSEMBLING LAYERS OF PACKAGES ON A PALLET
Kenneth G. Kurk, and Robert S. Kilbride, both of Quincy, Ill., assignors to Moorman Manufacturing Company, Quincy, Ill.
Filed Nov. 16, 1970, Ser. No. 89,658
Int. Cl. B65g 57/26
U.S. Cl. 214—152 **5 Claims**



A method and apparatus for arranging bags in layers with the sewn end of each bag in each layer facing inwardly of the layer and for depositing each layer on a pallet. Some bags are turned 180° and some bags are turned 90° while the bags are being conveyed to a marshalling station where the bags are gathered sequentially in groups. The first two groups are sequentially moved onto a plate to form a layer of bags having a predetermined pattern. Then, the plate is moved over a pallet and the layer is wiped off the plate over the pallet while the plate is retracted. The next two groups are arranged in a layer having a different pattern and deposited over the pallet in like manner. These steps are repeated several times to quickly deposit eight layers on the pallet with adjacent layers having interlocking patterns. Preferably, 90° turning of a bag is accomplished by blocking movement of the bag on one side near one end while quickly moving a guide member along the other side of the bag toward the other end and then quickly retracting the guide member.

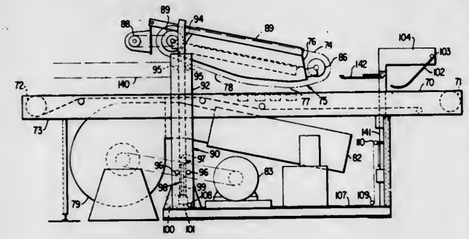
3,700,128
INTERMODAL TRANSFER SYSTEM
Philip S. Noble, North East, and James R. Chapin, Erie, both of Pa., assignors to General Electric Company
Filed Dec. 23, 1970, Ser. No. 101,009
Int. Cl. B65g 67/02
U.S. Cl. 214—40 **11 Claims**



This interface system comprehends the transfer of containerized or trailerized loads between transportation media by means of overhead traffic flow. An overhead guideway net-

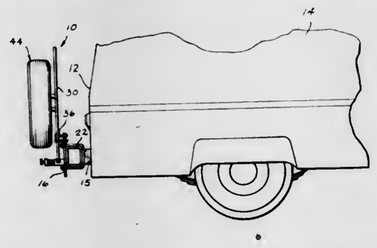
work connecting terminal areas for said transportation media serves as support and guide means for a plurality of self-propelled transfer cars. Each transfer car embodies a rotatable hoist and propulsion motors. By means of the propulsion motors, an individual transfer car is positioned along the overhead guideway above a designated load located at a given transportation terminal. The hoist is rotated into proper orientation for pickup, lowered, attached to the load, raise, re-rotated into alignment with the transfer car, and secured thereto. The load-bearing transfer car is then directed to a second terminal area where the hoist process is reversed and the cargo container is deposited. The transportation terminal areas may be designed to serve rail, truck, ship, air, or transit terminals and storage media. A given interface may comprise any combination of said terminal areas. Operation of the system may be directed by manual, remote or automatic control.

3,700,129
ARTICLE HANDLING EQUIPMENT
Stanley Morgan Maude, Ilkley, England, assignor to Alto Corporation, York, Pa.
Filed Sept. 4, 1970, Ser. No. 69,786
Int. Cl. A21b 3/18
U.S. Cl. 214—309 **14 Claims**



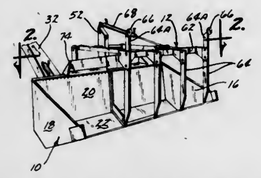
A suction depanner is provided having an automatic height adjustment means responsive to the height of the product to be depanned. Further, the depanner is provided with self-centering guides for aligning the product.

3,700,130
SPARE WHEEL CARRIER
Robert N. Holdread, 23 Fern Drive, Elkhart, Ind.
Continuation-in-part of Ser. No. 805,270, March 7, 1969, abandoned. This application June 29, 1970, Ser. No. 50,053
Int. Cl. B62d 43/00
U.S. Cl. 214—454 **9 Claims**



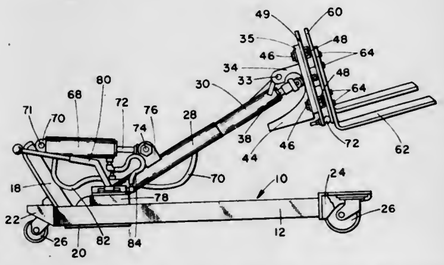
A spare wheel carrier, attachable to the exterior of a wheeled vehicle adjacent a wall thereof, which includes an arm pivotally connected to a bracket. The bracket is adapted for attachment to the vehicle so as to enable to the arm of the carrier to be swung in a substantially vertical plane parallel to the adjacent wall of the vehicle. Releasable lock means is provided in association with the bracket and arm to anchor the arm to the bracket and thus position a wheel mounting means carried by the arm in a wheel storing position.

3,700,131
GRAB FORK ATTACHMENT FOR A LOADER BUCKET
Walter J. Westendorf, Smithland, Iowa
Filed Jan. 25, 1971, Ser. No. 109,342
Int. Cl. B66f 9/18
U.S. Cl. 214—767 **7 Claims**

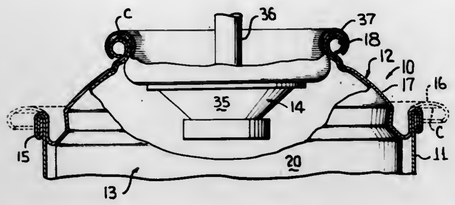


A grab fork attachment for a loader bucket which may be quickly attached thereto and removed therefrom. The attachment comprises a tower frame means which is adapted to be selectively secured to the rearward side of the loader bucket back wall and a pivotal arm means extending forwardly from the upper end of the tower frame means. A plurality of spaced apart forks or teeth elements are secured to the forward end of the arm means and extend downwardly therefrom towards the open forward end of the loader bucket. At least two of the teeth elements have extension means extending therefrom to add stability to the attachment when the attachment is removed from the loader bucket and positioned on the ground. A hydraulic cylinder means connects the forward end of the arm means and the tower frame means for movement of the teeth elements with respect to the loader bucket. A locking means is provided on the tower frame means and the rearward side of the loader bucket to permit the tower frame means to be quickly secured to the loader bucket. A clamp means is secured to the tower frame means and detachably receives the upper end of the loader bucket to further secure the attachment to the loader bucket. A modified form of the attachment is also disclosed wherein the hydraulic cylinder means is positioned rearwardly of the rearward side of the loader bucket. The method of mounting the attachment on the loader bucket is also disclosed.

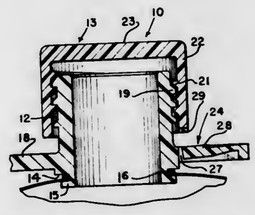
3,700,132
FLOOR HOIST
James R. Waters, 356 Princeton Street, Santa Paula, Calif.
Filed April 21, 1971, Ser. No. 136,022
Int. Cl. E02f 3/00
U.S. Cl. 214—768 **7 Claims**



A low profile portable hydraulic hoist for handling heavy structures in cramped quarters. It includes a castered frame, a pivoted arm mounted on the frame and an adjustable head means mounted on the end of the arm for holding the structure to be moved. Hydraulic cylinders are used to elevate the arm and tilt the head, which may also be manually rotated.

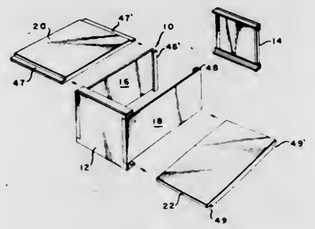


3,700,133
THREADED SAFETY CLOSURE
Richard B. Bagguley, Dolton, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 17, 1970, Ser. No. 99,206
Int. Cl. B65d 55/02
U.S. Cl. 215—9 **1 Claim**



A safety closure comprising a cap threaded on a neck. The neck includes an upwardly biased safety button which seats in a notch on the lower edge of a cap screw. The safety button is seated in the notch and prevents turning of the cap and thereby removal of the latter from the neck until the button is depressed and disengaged from the notch.

3,700,134
COLLAPSIBLE CONTAINER
Russell T. Blanchard, P.O. Box 176, Engelhard, N.C.
Filed June 4, 1970, Ser. No. 43,479
Int. Cl. B65d 9/12
U.S. Cl. 217—12 **4 Claims**

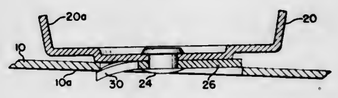


A collapsible container having high stacking strength and having means on the ends thereof cooperating with means on the sides, top and bottom to maintain the container in an operative condition without the use of fasteners.

ERRATUM

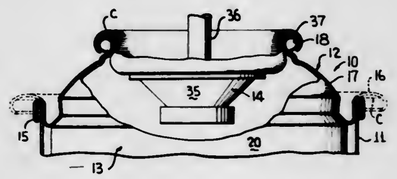
For Class 219—56 see:
Patent No. 3,699,756

3,700,135
HOLE PLUG
Frank J. Collier, East Dundee, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 22, 1970, Ser. No. 100,745
Int. Cl. B65d 45/00
U.S. Cl. 220—25 **8 Claims**



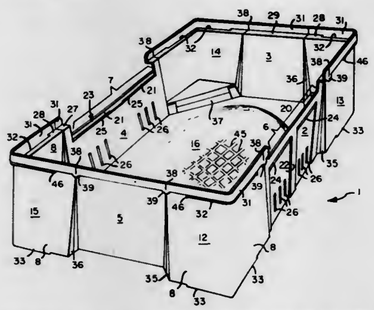
A plug assembly for closing preformed apertures in panels, or for closing holes resulting from removal of so-called knockouts, and the like; and which includes a hole-closing shallow cup-like or dished formation with outward peripheral flange means and a spring disk fixed to the bottom of the cup-like formation by riveting, welding or the like and extending slightly outwardly beyond the cup-like formation for disposition in spaced relation to the flange means; and the spring disk being slit radially inwardly or provided with a cut-out portion with the adjacent portion being deflected downwardly to provide a leading ramp or cam surface so that insertion of the leading edge of the ramp through the panel aperture and wedging placement thereof under the blind face of the panel with subsequent rotation of the plug assembly in the direction of the leading edge of the ramp will effect progressive downward flexing of the trailing peripheral portions of the spring disk to underlie the blind face of the panel with the flange means engaging the accessible face of the panel and with the cup-like formation plugging the aperture in the panel.

3,700,136
END UNIT AND LINER FOR AEROSOL CONTAINERS
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 537,570, March 25, 1966, Pat. No. 3,423,818. This application Dec. 3, 1968, Ser. No. 780,807
Int. Cl. B65d 25/14
U.S. Cl. 220—63 R **5 Claims**



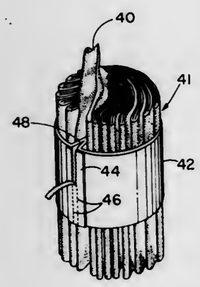
This disclosure relates to an end unit and a liner, and particularly means for defining a mechanical interlock therebetween, the liner being constructed from flexible material and having an annular radially outwardly opening groove, and the end unit having a central opening defined by a peripheral curl received in and interlocked with the annular groove of the liner.

3,700,137
PRODUCE SHIPPING CONTAINER
Augustine A. Souza, San Jose, Calif., assignor to Polygon Concepts, Los Altos, Calif.
Filed Jan. 20, 1971, Ser. No. 108,056
Int. Cl. B65d 21/06
U.S. Cl. 220—97 E 12 Claims



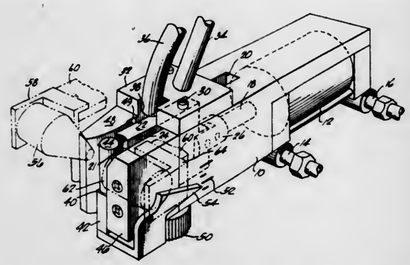
A container and its cover particularly suitable for use in the packing and shipping of produce is described. The container comprises a plurality of relatively thin sidewalls which are joined by moveable corner members adapted to assume an inwardly directed draft when in a nesting configuration and an outwardly directed draft when in a stacking configuration. The outwardly directed draft assumed by the corner members during stacking permits the loads encountered in stacking to be removed from the side walls and carried by the corner members. The cover corners and corner members of the container are further provided with mating grooves and beads which interlock in a male-female relationship during stacking. In addition, both the cover and bottom members of the container are domed to reduce slipping and twisting of one container relative to another stacked thereon during shipping.

3,700,138
METHOD OF DISPENSING INTERFOLDED SHEET MATERIAL AND PACKAGE THEREFOR
Howard N. Nelson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 19, 1970, Ser. No. 91,110
Int. Cl. B65h 29/66
U.S. Cl. 221—51 4 Claims



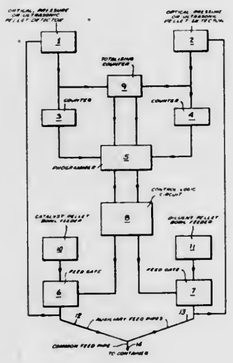
Interfolded sheet material such as facial tissues having a rectangular shape are folded upon themselves about an axis corresponding generally to the longitudinal centerline of an exterior tissue. The clip is then disposed in a cylindrical or other similar shaped package adapted to stand on end, and the individual tissues may be dispensed longitudinally.

3,700,139
RIVET SLUG INJECTOR
Earl K. Kelly, Lynwood, Calif., assignor to McDonnell Douglas Corporation
Filed June 29, 1970, Ser. No. 50,825
Int. Cl. B65h 31/20
U.S. Cl. 221—241 2 Claims



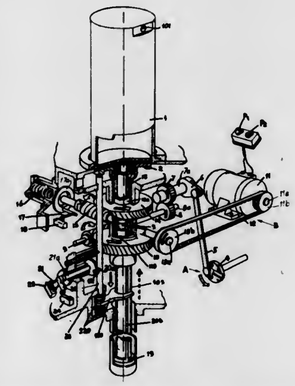
An intermittent acting mechanism receiving rivet slugs from the delivery tube of a rivet dispenser for injecting each slug into a spring loaded finger mechanism which, in turn, inserts the slug into a previously drilled hole for a rivet upsetting action by an automatic riveting machine. A photoelectric cell verifys insertion of the rivet slug into the finger mechanism and signals for the next step in the drilling operation. An adapter unit permits rapid and accurate conversion for slugs of different diameters and lengths without extensive alignment and readjustment.

3,700,140
METHOD AND APPARATUS FOR FEEDING PELLETED MATERIALS
Lawrence Harvey, Coldharbour, near Dorking, England, assignor to BP Chemicals Limited, London, England
Filed June 26, 1970, Ser. No. 50,287
Claims priority, application Great Britain, June 26, 1969, 32,361/69
Int. Cl. B67d 5/60
U.S. Cl. 222—1 9 Claims



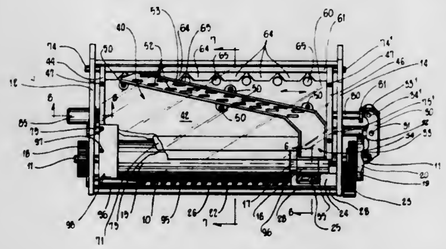
Granules or pellets of dissimilar materials are fed to a container in a predetermined ratio from a common feed pipe which is fed in turn from separate single line streams of counted pellets or granules metered to obtain parity with predetermined values.

3,700,141
GLUE DISPENSER FOR CIGARETTE MAKING MACHINE
Athos Cristiani, Bologna, Italy, assignor to AMF Incorporated
Filed June 30, 1971, Ser. No. 158,166
Claims priority, application Italy, July 23, 1970, 12835 A/70
Int. Cl. G01f 11/06
U.S. Cl. 222—1 9 Claims



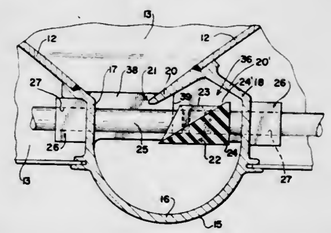
Apparatus for dispensing glue for use with a cigarette maker, which comprises a cylinder having an outlet orifice therein, a plunger mounted for slidable movement in the cylinder and operable to dispense glue out said orifice, means coupling the plunger and the cigarette maker for driving said plunger toward said orifice at a rate commensurate with the demand for glue of the cigarette maker, and means coupled to the plunger independent of the cigarette maker for driving said plunger toward and away from said orifice.

3,700,142
POWDER DISPENSING UNIT
Helmut K. Waibel, San Leandro, Calif., assignor to The Singer Company, New York, N.Y.
Filed Sept. 20, 1971, Ser. No. 181,988
Int. Cl. B67d 1/16
U.S. Cl. 222—109 11 Claims



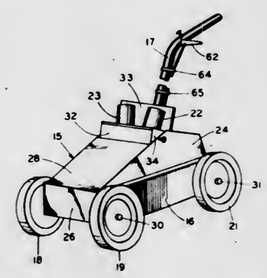
A powder dispensing unit suitable for use as a copier developer unit for developing a latent image with a dry toner powder. A magnetic roller and an auger are rotatably mounted in a housing: the roller having a power takeoff gear at one end and a power transfer gear and a camming disc at the other; the auger having an end-mounted driven gear mated with the power transfer gear. An end portion of the auger is mounted in a feed block having an upwardly extending chute aperture permitting toner feed upwardly toward an inlet portion of a toner distributor unit, which is reciprocably mounted in the housing. A rocker arm having a roller at each end—one contacting an undulating surface of the camming disc, the other contacting a camming post—reciprocates the toner distributor unit laterally in the housing. The toner distributor unit has a sloping, slotted distributor channel and a pair of sloping surfaces for gravity feeding toner powder therealong, and a trimming member to remove toner from the roller for admixture with toner fed along the distributor channel from the inlet.

3,700,143
PNEUMATIC DISCHARGE ARRANGEMENT FOR RAILWAY CAR HOPPERS
William R. Shaver, Munster, Ind., and James J. Schuller, Dolton, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed March 5, 1971, Ser. No. 121,381
Int. Cl. B67d 1/08
U.S. Cl. 222—148 3 Claims



A pneumatic discharge arrangement for railway hopper cars comprises a housing divided into separate discharge chambers each including an elongated opening. The openings are regulated by valves slidably positioned. A trough is disposed beneath the openings for receiving materials therefrom and is adapted to be connected to a pneumatic conveying means. Each valve is movable to one side of the trough to an open position. A tunnel is provided at the top of the trough and is coextensive therewith above the valve in its open position. The tunnel facilitates cleaning of the upper surface of the valve at the completion of the discharge operation.

3,700,144
SPRAYING APPARATUS
Thomas J. Smrt, 4N 671 Route 59, Bartlett, Ill.
Filed Feb. 24, 1971, Ser. No. 118,351
Int. Cl. B67d 5/64
U.S. Cl. 222—176 15 Claims



A spraying apparatus which is particularly suitable for painting stripes on pavement, grass or the like. The apparatus includes a wheeled frame and an upwardly extending handle for pushing the frame over the surface that is to be marked. The frame includes a base plate which is provided with an opening to receive the valve end of an inverted aerosol spray can, and side plates extend from the base plate to maintain the

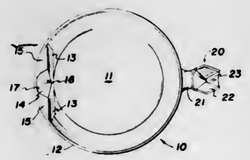
can in a substantially upright position. The valve of the can is actuated by a slide plate which is slidably secured to the base plate, and sliding movement of the slide plate is effected by a bell crank which is rotatably mounted on the frame. A cable extends along the handle between the bell crank and a trigger mounted on the upper end of the handle, and actuation of the trigger actuates the can valve to spray the marking contents of the can generally downwardly toward the surface.

3,700,145
CONTAINER FOR LOOSE MATERIAL
Franz Schluter, Bruhl, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany
Filed May 28, 1968, Ser. No. 732,673
Claims priority, application Germany, June 20, 1967, P 15 06 866.3
Int. Cl. B65g *1/08*
U.S. Cl. 222—202 **3 Claims**



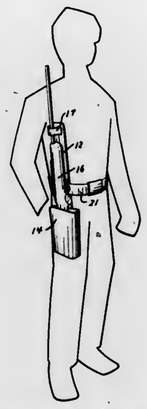
A container composed of a synthetic material such as polyethylene, epoxy or polyester resins and used for transporting powdery or granular materials, has a knocker base plate fastened to its wall. This plate protects the container when the plate is struck to loosen the powdery or granular materials.

3,700,146
CUP WITH POUR SPOUT AND CIRCULAR FINISH
Morison S. Cousins, Plainview, N.Y.; Rennold L. Klawson, Darien, Conn., and Roy Watson, Mt. Kisco, N.Y., assignors to General Foods Corporation, White Plaines, N.Y.
Filed March 25, 1970, Ser. No. 22,472
Int. Cl. A47g *19/22*
U.S. Cl. 222—465 **8 Claims**



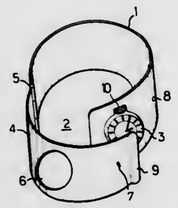
A cup having an inverted generally frusto-conical configuration is formed with a flattened surface area shaped to include a tapered channel extending between said surface area and the rim of said cup and constituting a pour spout disposed internally of the generally frusto-conical outline of said cup. An open handle attached to said cup near its rim, slanted at substantially the same angle as the cup side wall permits nesting of said cups in a compactly arranged stack. A bead formed on the circular rim or finish of the cup renders it adaptable for enclosure with a circular snap-on lid.

3,700,147
WEAPON CARRIER
Damon A. Vaughn, 1114 West Broadway Street, Madisonville, Ky.
Filed Sept. 14, 1970, Ser. No. 71,912
Int. Cl. F41c *33/00*
U.S. Cl. 224—2 A **4 Claims**



A weapon carrier mounted onto a belt or like member strapped to the user, and where the weapon, carried in a pivotal pocket, may be quickly and readily used without the necessity of removal from the carrier.

3,700,148
WRIST WATCH BRACELET
Lucie Lanvin, Paris, France, assignor to Jeanne Lanvin
Filed July 10, 1970, Ser. No. 53,899
Claims priority, application France, July 10, 1969, 6923429
Int. Cl. A44c *5/00*
U.S. Cl. 224—4 J **4 Claims**

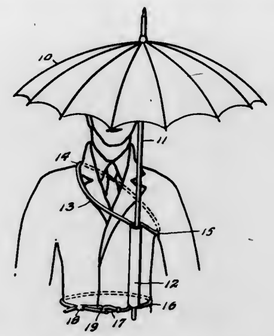


A wrist-watch strap made of a material which is at least semi-rigid, comprising a ring with a break of continuity, so-called open portion, said open portion which is limited by two edges having a width which corresponds to the average diameter of a wrist, and a closure-member having an end hinged about an edge of said open-portion and a free end, said free end being adapted to overlap a portion of said ring in the vicinity of the other edge of said open-portion.

3,700,149
UMBRELLA HOLDER
Michael Grogan, 2179 Canal Road, Lake Park, Fla.
Filed Jan. 21, 1971, Ser. No. 108,318
Int. Cl. A45b *11/02*
U.S. Cl. 224—5.1 **9 Claims**

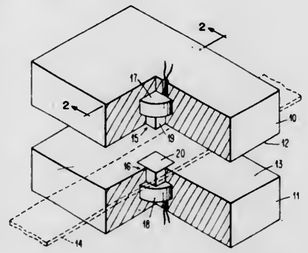
This invention is directed primarily to an elongated hollow substantially rigid member adapted to receive the shaft of an

umbrella, and having an elongated filament slidably connected with said elongated hollow member and extending the length of said hollow member, said filament having the central portion thereof formed as a loop adapted to surround the wearer by going over one shoulder and under the opposed arm



of the wearer, and the terminal ends thereof surrounding the waist of the wearer; and, means for securing said terminal ends. Also included within the invention is means adapting the elongated hollow member to receive umbrella shafts of different diameters, and insertable means releasably securing the umbrella shaft within the elongated hollow member.

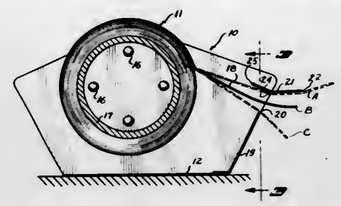
3,700,150
METHOD AND APPARATUS FOR FRACTURING METAL
Raymond E. Cheney, Niwot, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 8, 1971, Ser. No. 151,028
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **7 Claims**



Thin metallic material is selectively cut by apparatus which subjects the material to complementary alternate displacement of a few microinches in a direction normal to its generally flat planar surface, the material stresses thus generated causing the metal to change state and fracture along the line of alternate displacement, the change in state occurring without the loss or distortion of material at the fracture.

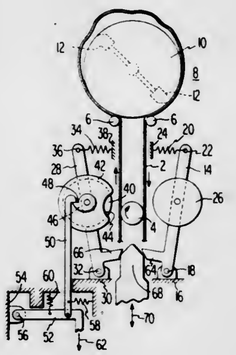
3,700,151
CELLOPHANE TAPE DISPENSER
Clifford L. Youngstrom, 304 Commonwealth Avenue, Duluth, Minn.
Continuation-in-part of Ser. No. 790,765, Jan. 13, 1969, abandoned. This application Oct. 7, 1970, Ser. No. 78,821
Int. Cl. B26f *3/02*
U.S. Cl. 225—26 **1 Claim**

A dispenser for supporting and dispensing pressure-sensitive transparent tape from a roll wherein the tape has adhesive on its inner wound surface, said dispenser having means for supporting the roll for unwinding rotation about a horizontal axis, a cutter bar mounted on the dispenser in substantial horizontal alignment with said axis and having a longitudinal V-shape and a serrated forward edge allowing an appendage



from the tape to be pulled forwardly under the bar with the dry side up, and a ledge spaced below the cutter bar and having a centrally recessed upper surface so as to contact only the edge portions of the appendage when it rests thereon.

3,700,152
WEB TRANSPORT APPARATUS
Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation
Filed Feb. 9, 1971, Ser. No. 113,974
Int. Cl. B65h *17/20*
U.S. Cl. 226—108 **9 Claims**

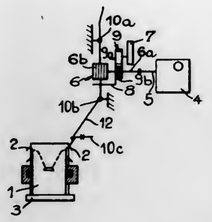


In a recorder-reproducer system in which a recording web is transported to and away from a transducing head scanner, an arrangement for advancing the web to the scanner is disabled for a given interval during which a further web moving arrangement disposed beyond the scanner, is active to draw the web away from the scanner.

3,700,153
YARN FEEDER FOR A KNITTING MACHINE
Jean-Paul Delair, 40 Boulevard Jules Guesde; Raisin: Jean-pierre, 15 rue Auguste Renoir, both of 10 Troyes, and Eugene Voisin, 10 Souligny, all of France
Continuation-in-part of Ser. No. 821,792, May 5, 1969, abandoned. This application March 5, 1971, Ser. No. 121,440
Claims priority, application France, May 8, 1968, 68150975
Int. Cl. B65h *17/42*
U.S. Cl. 226—114 **6 Claims**

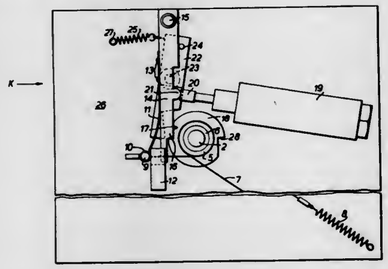
A yarn feeder for a knitting machine comprises a rotatable cylinder having an outer surface possessing a high coefficient of friction. A yarn guide is mounted for rotation on a common

axis with the cylinder and has fingers which engage yarn. A motor rotates the yarn guide between a position in which the



yarn is engaged by the cylinder and fed to the knitting machine and a position in which the yarn is disengaged from the cylinder.

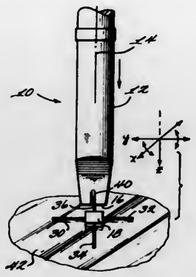
3,700,154
INCREMENTAL DRIVE MECHANISMS
David Thomas Gwillim, Bransgore, and Robin Joseph Whiting, Broadstone, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland
Filed Feb. 24, 1971, Ser. No. 118,335
Claims priority, application Great Britain, Feb. 25, 1970, 9,143/70
Int. Cl. B65h 17/22
U.S. Cl. 226—156 **5 Claims**



A tape incrementing mechanism comprises a wire wrapped around a drum and coupled to a shaft carrying a tape drive sprocket through a one-way clutch device in combination with a piston and a lever for pulling the wire in one direction to rotate the shaft in one direction and so increment the tape the distance moved by the tape being accurately controlled by a stop cam co-operating with the levers to stop the shaft and sprocket after a predetermined angular movement thereof and a spring for pulling the wire back in the opposite direction without movement of the sprocket due to the interposition of the one-way clutch device.

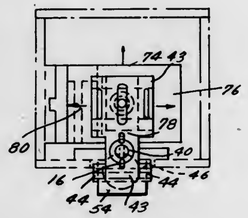
3,700,155
APPARATUS FOR IMPROVING ALIGNMENT OF BEAM LEADED BONDING TOOLS
Leonard S. Hermanns, Woburn, Mass., assignor to Mech-El Industries, Inc., Woburn, Mass.
Filed May 20, 1970, Ser. No. 39,022
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 **3 Claims**

An improved bonding tool and method permitting improved accurate relative alignment of a bonding tool, a beam leaded device and a substrate onto which electrical leads from the beam leaded device are to be welded or bonded. Particular use is made of a unique reference area or point provided on the tool itself to aid in the alignment processes and in the preferred embodiment, a mirror surface is utilized to support the beam leaded device during alignment of this device with a



reference point on the tool thus further facilitating detection of minor relative misalignments which can then be corrected by an operator.

3,700,156
BONDING HEAD FOR BONDING BEAM LEADED DEVICES TO A SUBSTRATE
Leonard S. Hermanns, Woburn, Mass., assignor to Mech-El Industries, Inc., Woburn, Mass.
Filed May 20, 1970, Ser. No. 39,023
Int. Cl. B23k 1/00, 37/04
U.S. Cl. 228—4 **6 Claims**

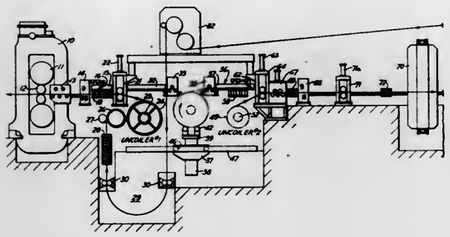


An improved beam leaded bonding method and head wherein a bonding surface is caused to individually and successively contact and bond each of a plurality of electrical leads projecting from around the periphery of a beam leaded device onto a substrate. A particular mechanical bonding head is illustrated for moving a bonding tool in a complex "wobbling" fashion to produce the desired individual and successive automatic lead bonding.

3,700,157
APPARATUS FOR FEEDING STRIP-LIKE MATERIAL TO A PROCESSING APPARATUS
Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed June 9, 1971, Ser. No. 151,339
Claims priority, application Great Britain, July 13, 1970, 33,842/70
Int. Cl. B23k 1/20
U.S. Cl. 228—5 **7 Claims**

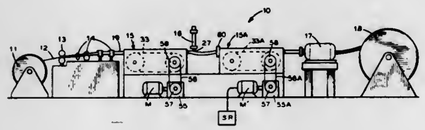
This disclosure relates in one form to a method of and apparatus for feeding coils of metallic strip to a rolling mill or similar strip processing device in a manner that the device can be either operated continuously, e.g., it need not be stopped to receive succeeding coils to be processed, or intermittently, e.g., it requires interruption of the device to receive separate coils to be processed.

This combined operation is accomplished by providing two uncoilers, one of which feeds strip in a direction away from the mill to a strip accumulator. The second uncoiler is ar-



ranged to uncoil coils towards the mill when separate coils are to be rolled by the mill, but when the mill is to be operated to roll the coils continuously, the second uncoiler functions as part of a tension unit.

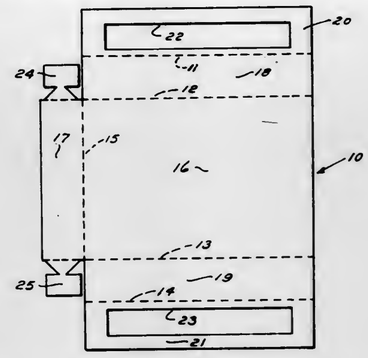
3,700,158
APPARATUS FOR MAKING THIN WALLED METAL TUBING
Friedrich Schatz, Karl-Kellner-Str. 62; Harry Stachewski, Gutenberg str. 20, both of 3012 Langenhagen, Germany, and Gunther Lehnert, deceased, late of Hannover, Germany (by Gerda Lehnert, administratrix)
Continuation-in-part of Ser. No. 659,792, Aug. 10, 1967, abandoned. This application April 23, 1970, Ser. No. 31,074
Int. Cl. B23k 1/20
U.S. Cl. 228—15 **7 Claims**



Process and apparatus for forming metal tubing from thin metal strip with a longitudinally extending welded seam, and including means for moving and positively gripping the tubing as it is transported towards and beyond a welding station to thereby avoid any stresses which would have adverse affects on the tubing including the seamed area thereof.

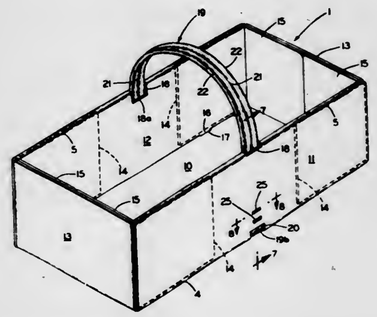
3,700,159
FOLDABLE CONTAINER AND BLANKS THEREFOR
Raymond J. Beigel, 505 Xenia Avenue, Dayton, Ohio
Filed Nov. 9, 1970, Ser. No. 87,741
Int. Cl. B65d 5/32
U.S. Cl. 229—19 **5 Claims**

A receptacle such as a container, box, tray, or the like includes two or more elements that are interconnected either in fixed, secured relationship, or for limited telescoping movement therebetween. The elements are each formed from a blank of foldable material such as paperboard, cardboard, or the like, and each has, in addition to a main panel, a first panel



having a tab at one end thereof that is received between double walls of a second panel and is interconnected with one of said walls.

3,700,160
BASKET CONSTRUCTION
John D. Farrell, Canton, Ohio, assignor to Massillon Container Co., Navarre, Ohio
Filed July 27, 1971, Ser. No. 166,393
Int. Cl. B65d 5/22, 25/22, 5/46
U.S. Cl. 229—34 R **9 Claims**

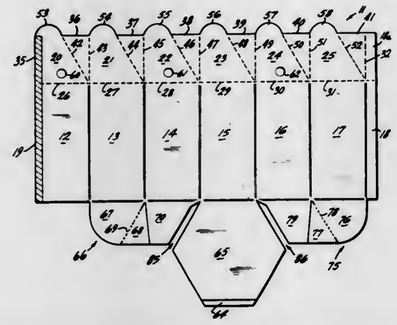


A basket for fruit and produce having corrugated board bottom and folded double thickness side and end walls in various sizes, such as peck and half-bushel, and having a plastic handle. The handle is formed of a flattened tubular plastic member such as extruded tubular polyethylene. The flattened handle preferably is generally oval in cross section and preferably has concave upper and lower walls and rounded edges in cross-section providing a double-thickness handle stiff enough to maintain its arched shape when stapled to the corrugated board basket side walls. The lower ends of the tubular plastic handle are each stapled by one or two staples to the outer layer only of the corrugated board side walls. The staples are engaged only with the outer layer of the flattened tubular handle member. An opening is formed at the outer corner between each basket side wall and the bottom wall midway between the ends for insertion of the anvil of a stapling tool exteriorly of the basket to telescope the anvil into an end of the tubular handle so that no clinched staple ends project to the interior of the basket.

3,700,161
FLAT FOLDABLE CARTON HAVING A PREFORMED, ANCHORED IN PLACE, AND FOLDED BOTTOM, WITH SELF-LOCKING TOP

Patrick L. Bundy, Battle Creek, Mich., assignor to Michigan Carton Co., Battle Creek, Mich.

Filed July 15, 1970, Ser. No. 54,997
Int. Cl. B65d 5/36
U.S. Cl. 229—41 C 8 Claims

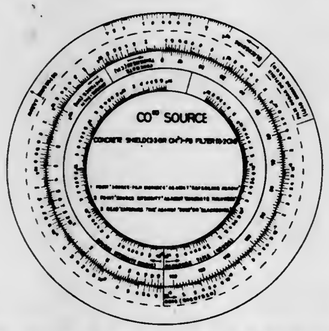


A carton is provided which may be prepared from an integral blank and which when properly glued together, may be stored in flat folded condition. The folded carton may be quickly erected to form a carton in the form of a polygonal prism having a closed bottom and another end which is readily closable by interlocking a plurality of flaps.

3,700,162
CIRCULAR CALCULATOR FOR THE SOLUTION OF PROBLEMS CONNECTED WITH ELECTRO-MAGNETIC RADIATION PENETRATION

Giancarlo Gaggero, Besozzo; Carla Mongini-Tamagnini, Angera, both of Italy, and Antoine Settipani, Bagneux, France, assignors to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg

Filed Oct. 27, 1969, Ser. No. 869,752
Claims priority, application Great Britain, Nov. 8, 1968, 53,097/68
Int. Cl. G06c 27/00
U.S. Cl. 235—78 3 Claims

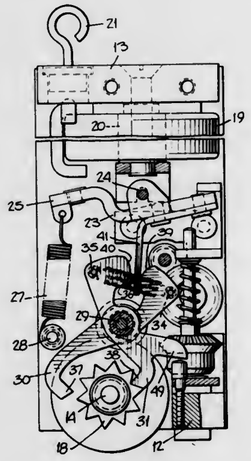


A circular calculator for the solution of radiation penetration problems, the parameters of which are: source indensity *I*, exposure time *T*, thickness *L* of a shield, source-target distance *K* and one of the radiation dose *R* at the target position and a quantity related to the radiation effect *X* on the target, comprising three concentric disks of different radii movable relatively to one another around an axis, two of which disks have each of two scales in opposition associated with the first four parameters *I*, *T*, *L*, *K*, the third disk having a scale associated with one of the two remaining parameters *R* and *X* and carrying an indicator of the *R* scale.

3,700,163
STAR WHEEL OPERATING MECHANISM

George B. Soden, 108 Hickory Lane, Wolcott, Conn.

Filed April 19, 1968, Ser. No. 722,747
Int. Cl. G04b 39/00, 15/00
U.S. Cl. 235—91 M 20 Claims



Bi-acting verge drive means for driving a star wheel with the verge means comprising a pair of pivotally supported pawls engageable with the wheel and mechanical or electrical actuator means operatively connected to at least one of the pawls and spring means connected to the pawls whereby the pawls co-operate to rotate the wheel.

The star wheel is shown adapted to actuate a counter and means is provided for resetting of the counter.

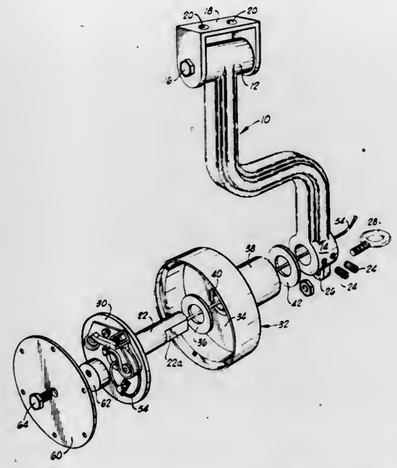
3,700,164
ODOMETER

Rufus L. Slagle, P.O. Box 1327, Panhandle, Tex.

Filed Jan. 19, 1972, Ser. No. 219,104
Int. Cl. G01c 22/00
U.S. Cl. 235—95 R 13 Claims

An odometer which includes a hollow drum having a tubular arm extending normal to one side thereof; a contact-supporting plate having a hollow shaft projecting normal therefrom through the tubular arm; a mounting arm having one end secured to one end of the shaft which is secured at its other end to the contact-supporting plate; a mounting bracket pivotally secured to the other end of the mounting arm; electrical contact points mounted on the contact-supporting plate and adapted for movement between alternate positions for opening and closing an electrical circuit; and eccentric means secured to the drum and rotatable therewith in relation to said contact-supporting plate for periodically actuating said contact points during the revolution of the drum. An electrical lead extends from the contact points through the shaft attached to the contact-supporting plate and forms a portion of

an electrical circuit which includes a switch and a distance indicating meter. Actuating means is connected to the mounting arm for pivoting this arm in the mounting bracket to move the

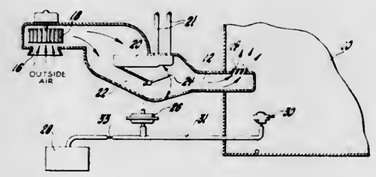


drum between an operative position in contact with a rotating member, and a non-operative position out of contact therewith.

3,700,165
THUMBWHEEL VACUUM THERMOSTAT

Larry A. Beehler, and Jackson R. Templin, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,185
Int. Cl. G05d 23/185
U.S. Cl. 236—13 2 Claims

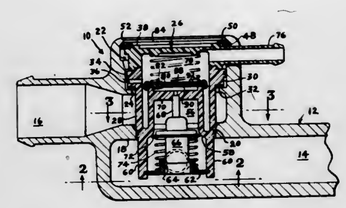


An automotive air temperature control system including a vacuum regulator which is responsive to the air temperature of the passenger compartment to vary the strength of vacuum applied to a multiposition vacuum motor which is connected to an air damper. The vacuum regulator includes a bleed port with a valve controlled by the combination of a main bimetal element and a compensator bimetal element whose relative response to changes in air temperature is in opposition to one another. The action of the compensator tends to reduce temperature overshoot caused by thermal delay of single bimetal regulators. Cam means connected to a thumbwheel dial are provided for manually setting the vacuum regulator for a range of predetermined temperatures.

3,700,166
FILLING AND VALVING ASSEMBLY FOR RADIATOR SYSTEM

Jonathan Asa Foults, Wolcott, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Aug. 20, 1971, Ser. No. 173,395
Int. Cl. F01p 7/16
U.S. Cl. 236—34.5 3 Claims

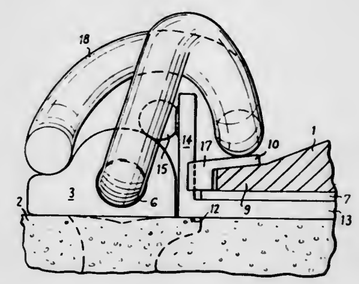


Removable filler cap for pressurized radiator system includes thermostat, pressure escape, vacuum break, and is held in place by a pair of safety locking rings.

3,700,167
RAIL FASTENING ASSEMBLIES FOR RAILROAD TRACKS

Brian Michael Jennings, Upminster, and John Walter Albert Ager, London, both of England, assignors to Costain Concrete Company Limited, London, England

Filed Oct. 16, 1970, Ser. No. 81,251
Claims priority, application Great Britain, Oct. 17, 1969, 51,227/69
Int. Cl. E01b 9/48
U.S. Cl. 238—349 5 Claims



A rail fastening assembly for fastening rails of a railroad to concrete ties comprises metal shoulders cast directly into a concrete tie during its manufacture on opposite sides of each rail seat and rail clips secured in housings in the shoulders and bearing on the foot of each rail to fasten the rail to the tie. In order to provide for shimming between the rail and the tie to raise the rail and reduce a vertical curve in the track caused by bumps, for example, due to frost-heave, a channel-shaped retainer is slid between the foot of the rail and the tie into a position between the clip retaining shoulders and the shims are located between the foot of the rail and a resilient pad disposed in the bottom of the channel-shaped retainer. Bracing rods are welded to the outside surfaces of the upright walls of the retainer adjacent the top edges and bear on the shoulders to resist outward deflection of the channel side walls. An insulator is interposed between the upright walls of the retainer and the rail foot and has an extension resting on the top of the rail foot underneath the clip.

3,700,168
SPRAY COATING APPARATUS

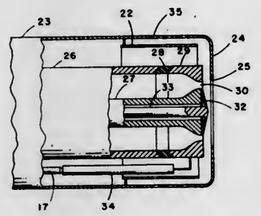
Wolfgang Ferrant, Bozen, Italy, assignor to Ransburg Electro-coating Corp., Indianapolis, Ind.

Division of Ser. No. 826,071, May 12, 1969, Pat. No. 3,606,972, which is a continuation of Ser. No. 632,583, April 21, 1967, abandoned. This application Nov. 9, 1970, Ser. No. 88,232

Claims priority, application Germany, April 28, 1966, P 15 77 737.4; April 28, 1966, P 15 77 738.5; April 28, 1966, P 15 77 739.6

Int. Cl. B05b 5/02; A01q 23/10

U.S. Cl. 239—3 6 Claims



An electrostatic, compressed-air spray gun wherein the liquid to be atomized is formed on a conductive support into a film having an extended edge coincident with one edge of a narrow opening through which a high-velocity stream of atomizing air is discharged. The opposite edge of such opening is defined by an electrode between which and the film-support there is maintained an electrical potential difference. The gun may be provided with an insulated spray-surrounding electrode which is maintained at an effective spray-repelling potential by the transmission of ion-borne charges to or from it.

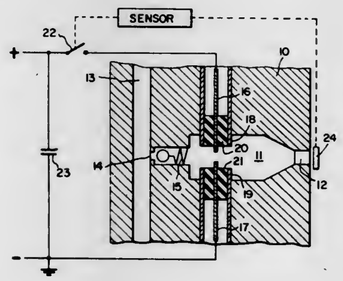
3,700,169
PROCESS AND APPRATUS FOR THE PRODUCTION OF HYDROELECTRIC PULSED LIQUIDS JETS

Theodore T. Naydan, and Walter W. Aker, both of Schenectady, N.Y., assignors to Environment/One Corporation, Schenectody, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,319

Int. Cl. B05b 17/04

U.S. Cl. 239—4 16 Claims



Process and apparatus for producing high energy pulsed liquid jets by the discharge of electrical energy through a relatively incompressible liquid in an essentially closed chamber having a shaped outlet nozzle.

3,700,170
GENERATOR OF MONODISPERSE AEROSOLS

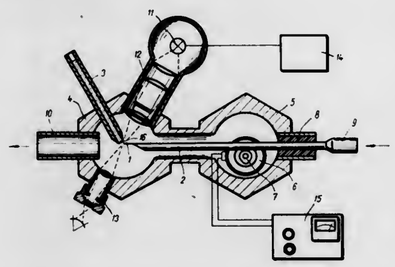
Dohnalova-Binkova Blanka, and Bedrich Binek, both of Pizen, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed June 2, 1971, Ser. No. 149,292

Claims priority, application Czechoslovakia, Nov. 18, 1970, 779970

Int. Cl. B05b 3/14

U.S. Cl. 239—102 7 Claims



Generator of monodisperse aerosols, which forms fine droplets of liquid of equal size by breaking a liquid bridge formed from a constant liquid volume between curved contact surfaces comprising a capillary filled with a liquid and having a blade-like projection at the outlet end strand means such as a wire or fiber of which one extremity is attached to an oscillatory or vibrating means or device having a cylindrical portion at the one extremity thereof and which is arranged so as to be located in the dead center of the extreme limits of oscillations, the strand means being a contact with the blade-like projection of the capillary and with the surface level of the liquid in the capillary, and means for directing a supply of a gaseous phase for breaking the liquid bridge located substantially perpendicular to that of the strand motion.

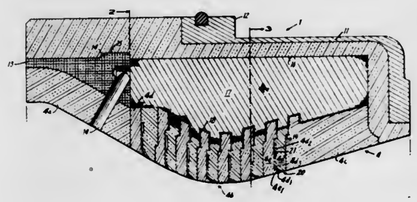
3,700,171
COOLING TECHNIQUES FOR HIGH TEMPERATURE ENGINES AND OTHER COMPONENTS

Arthur R. Parilla, 34 Crestview Road, Mountain Lakes, N.J.

Continuation of Ser. No. 588,779, Oct. 24, 1966, abandoned, which is a division of Ser. No. 273,265, April 12, 1963, Pat. No. 3,305,178. This application June 26, 1969, Ser. No. 842,774

Int. Cl. B64d 33/04

U.S. Cl. 239—127.3 5 Claims



Cooling means for a rocket engine nozzle comprising a fusible multi-turn, multi-layer coil of metal surrounding a porous liner in the nozzle and flowing therethrough when melted. Gas bled from the thrust chamber of the rocket engine forces the melted metal coolant through the nozzle liner, the pores of the liner directionally dispersing the coolant over the nozzle liner surface.

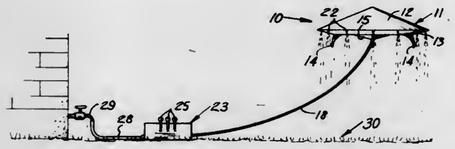
3,700,172
REACTION POWERED TOY FLYING CRAFT

James P. Gallegos, Sr., 10553 Greenway, El Paso, Tex.

Filed Sept. 9, 1971, Ser. No. 178,946

Int. Cl. B05b 3/00

U.S. Cl. 239—188 3 Claims



A toy craft which is lifted aloft by water jet means. This device includes internal tubes directed to spray nozzles on the underside of the craft and the rate of flow of the water is controlled by valve means and a control box which is placed on the ground and is connected to a water faucet.

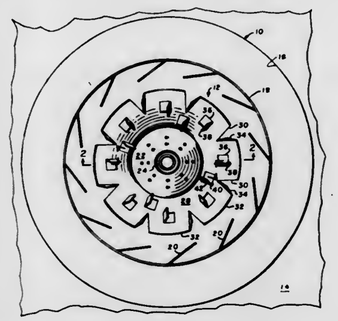
3,700,173
DIFFUSER

Elmer Ketchum, Jr., Pontiac, Mich., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 30, 1970, Ser. No. 102,810

Int. Cl. B05b 7/10

U.S. Cl. 239—405 7 Claims



An improved diffuser for liquid fuel fired burners wherein the diffuser has a frusto-conical surface located in the combustion-supporting air path with widely spaced slots formed in the frusto-conical surface to divide the surface into several distinct frustums to direct combustion-supporting air into the fuel spray as independent streams for the complete mixing thereof. The tabs from which the slots are formed are bent forward at substantially an 80° angle with respect to the frusto-conical surface to direct the air streams into the fuel spray in a tangential manner.

3,700,174
AIRLESS SPRAY GUN EXTENSION

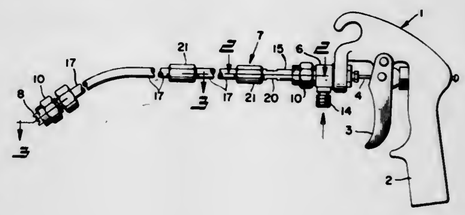
Louis Beck, 6399 Crossview Road, Seven Hills, Ohio

Filed April 5, 1971, Ser. No. 130,957

Int. Cl. B05b 11/00

U.S. Cl. 239—526 8 Claims

An extension for an airless paint spray gun of the type wherein a flanged spray nozzle or tip is clamped to the gun body by means of a cap having threaded engagement with the spray gun body, the extension being characterized in that a flanged fitting at one end is thus clamped to the spray gun body by means of the cap aforesaid, and in that a fitting at the other end has the spray nozzle clamped thereto by another cap which is the same as the cap which threads onto the spray gun body. Between the fittings aforesaid the extension includes one or more tubular sections which are coupled to each other and to the end fittings to define an extension assembly having a smooth wall bore without pockets or radial enlargements. The extension assembly is further characterized in that the fittings and tubular sections are of thick wall construction so as to substantially avoid radial and lineal expansion even under very high paint spray pressures.



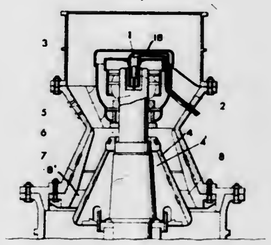
3,700,175
GAP CONTROLLING DEVICE FOR A CONE CRUSHER

Hisatuna Saito, Hibarigaoka Danchi 2-206, Kurume-machi, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,078

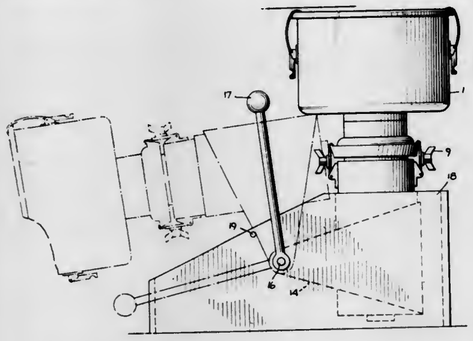
Int. Cl. B02c 25/00

U.S. Cl. 241—37 4 Claims



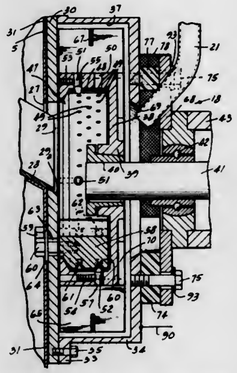
Apparatus is disclosed for controlling the outlet gap of a cone crusher, comprising a detecting core disposed within a main shaft of the cone crusher and a plurality of coils fixedly disposed with respect to the detecting core and forming therewith a differential transformer. A suitable electrical circuit is associated with the differential transformer to develop an electrical signal to be applied to a suitable measuring means such as a meter for providing an indication of the size of the outlet gap. In an illustrative embodiment of this invention, the measuring means is adapted to control the vertical movement of the main shaft of the cone crusher to adjust the outlet gap, thus enabling minerals to be crushed to a predetermined size.

3,700,176
TILTABLE GRINDER-BLENDER,
Norman Haber, Old Tappan, N.J., assignor to Haber Instruments, Inc., Palisades Park, N.J.
Filed Dec. 14, 1970, Ser. No. 97,879
U.S. Cl. 241—27 **2 Claims**



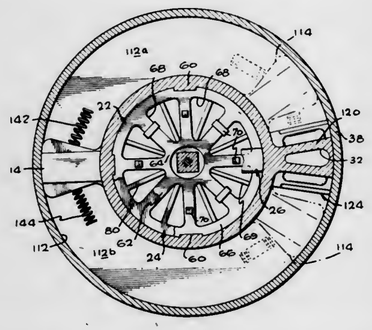
This disclosure is directed to a grinder blender having a bowl with a blade member therein which rotates at a high speed. A means is provided to tilt the bowl to increase the effectiveness of the grinding or blending operation.

3,700,177
COMMINUTING APPARATUS
William S. Pearson, Hampstead, Md., assignor to Cypro-Incorporated, Hampstead, Md.
Division of Ser. No. 808,250, March 18, 1969, Pat. No. 3,617,005. This application May 13, 1971, Ser. No. 142,928
Int. Cl. B02c *13/08*
U.S. Cl. 241—36 **17 Claims**



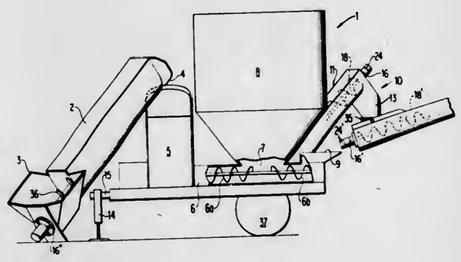
Comminuting apparatus includes a grinding drum, means for rotating the drum, grinding teeth mounted within the drum and a stationary grinding device extending into the drum and having complementary grinding surfaces coactive with the teeth. The drum is in the form of a rotor having a perforated peripheral wall through which comminuted material is centrifugally displaced into a chamber about the same, with impeller means on the rotor about the periphery thereof for creating a suction of air outwardly from within the rotor in the comminuting rotation of the rotor. Means are provided for automatically stopping the rotor when a foreign metal particle lodges across a gap between conductive surfaces connected to the rotor and the housing.

3,700,178
HYDRAULICALLY POWERED WASTE DISPOSAL DEVICE
Donald J. Verley, 4444 Sunnycrest Drive, Los Angeles, Calif.
Filed Feb. 6, 1970, Ser. No. 9,192
Int. Cl. B02c *18/42*
U.S. Cl. 241—46 B **7 Claims**



A waste disposal device having a comminuting chamber containing comminuting means powered by a hydraulic motor. Water efflux from the motor enters the chamber to aid passage of waste through the chamber. The disclosed comminuting means embodies a fixed comminuting member and a coacting oscillatory comminuting member driven in oscillation by a positive displacement oscillatory rotary vane hydraulic motor. Water flow to and from the hydraulic chamber spaces at opposite sides of the rotor vane is controlled by a reversing valve operated by the rotor at the ends of its oscillatory stroke in such a way that the rotor is driven in oscillation without stalling. The comminuting cutters of the disposal device have improved comminuting elements which provide a superior and powerful waste comminuting action.

3,700,179
RESILIENTLY MOUNTED AUGER MECHANISM
Marvin Van Peursem, Newton, Iowa, assignor to Koehring Company, Milwaukee, Wis.
Filed Jan. 28, 1971, Ser. No. 110,682
Int. Cl. B02c *11/04, 13/286*
U.S. Cl. 241—301 **4 Claims**

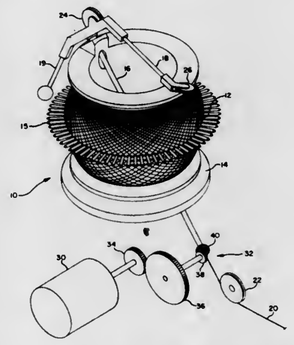


A farm mechanism including an auger-type feeder, at least a portion of which is yieldably supported by a diaphragm-mounted motor.

ERRATUM

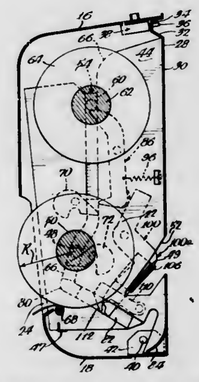
For Class 241—230 see:
Patent No. 3,700,182

3,700,180
CABLE WINDING APPARATUS
Tilbert C. Sitz, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed May 11, 1971, Ser. No. 142,194
Int. Cl. B65h *75/34*
U.S. Cl. 242—54 A **7 Claims**



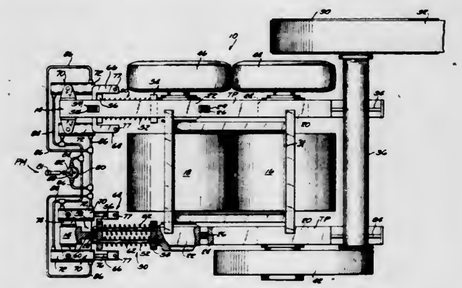
Apparatus for winding cable and the like including a spherically shaped reel, a hollow drive shaft extending through said reel, and a winding arm fastened to a free end of the drive shaft for receiving cable through the drive shaft and winding or unwinding the cable on the reel. Torque governing means is provided to control cable tension during winding and unwinding operation.

3,700,181
TISSUE DISPENSING MECHANISM
James A. Diring; John B. Engel, and John E. Broeren, all of Green Bay, Wis., assignors to Mosinee Paper Corporation, Green Bay, Wis.
Filed June 24, 1971, Ser. No. 156,300
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 **10 Claims**



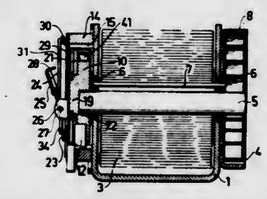
A dispenser for toilet tissue or the like includes a tamper proof enclosure that contains a roll carrying track leading downward and forward from a reserve position to a dispensing position. The track then leads rearward and downward to a storage area for depleted rolls. Automatic refill at the dispensing position is accomplished by pushing the depleted roll into the storage area, and means are provided to prevent excessive movement of the roll in dispensing position until the roll has been entirely depleted.

3,700,182
HYDRAULIC ADJUSTMENT MEANS FOR ROLL CRUSHING APPARATUS
Ronald B. Dedlemar, Brown Deer, and LeRoy J. Schuman, Milwaukee, both of Wis., assignors to Barber-Greene Company, Aurora, Ill.
Continuation of Ser. No. 836,389, June 25, 1969, abandoned. This application July 6, 1971, Ser. No. 159,876
Int. Cl. B02c *4/32*
U.S. Cl. 241—230 **5 Claims**



A roll crushing apparatus of the type in which the crushing action takes place between a pair of parallel, spaced apart, rotating rolls, one of which is fixed on the crusher frame while the other roll is movable on the frame to thereby adjust the gap between the rolls. A roll adjusting assembly is provided for positioning the movable roll relative to the other roll, and this assembly includes spring means having a U-shaped bracket embracing spring means, the bracket in turn being positionable by double acting hydraulic rams. The arrangement of the parts is such that the overall length of the crusher can be shortened.

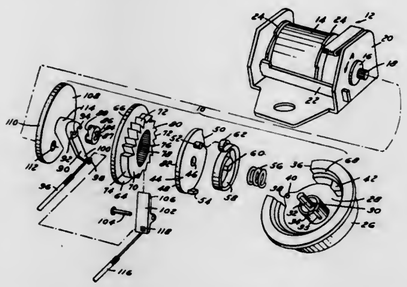
3,700,183
NOVEL AUTOMATIC LOCKING DEVICE FOR SAFETY BELTS
Gert Ingmar Rex, Hamstad, Sweden, assignor to AB Autoindustri, Halmstad, Sweden
Filed Oct. 21, 1971, Ser. No. 191,171
Claims priority, application Sweden, Oct. 27, 1970, 14490/70
Int. Cl. B65h *75/48*; A62b *35/60*
U.S. Cl. 242—107.4 **3 Claims**



An automatic locking device for a safety belt for retaining a person in a vehicle comprising a rotor shaft rotatable in a casing for reeling up the belt and a rotor rotatable together with the shaft and means to lock the rotor to the casing in response to centripetal forces produced by withdrawal of the belt. The

device includes a two-armed locking member mounted on a horizontal shaft carried by a cover plate substantially transversally to the shaft of the rotor and adapted on acceleration or deceleration forces exceeding a predetermined value actuate a swingable element which is suspended pivotably relatively to said cover plate to take a position releasing the means locking the rotor relative the casing. By mounting the swingable element at an upper point freely pivotable on the cover plate and forming it on both sides of one arm of the two-armed locking member with cam surfaces, the force necessary for actuating the swingable element is reduced and the weight of the locking device is a reduced weight and its reactivity and reliability is improved. In addition the two-armed locking member can be mounted on a shaft extending in other than the horizontal direction.

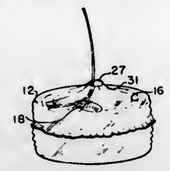
3,700,184
SEAT BELT RETRACTION DISABLING DEVICE
Reid Eugene Francis, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 8, 1971, Ser. No. 113,228
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **6 Claims**



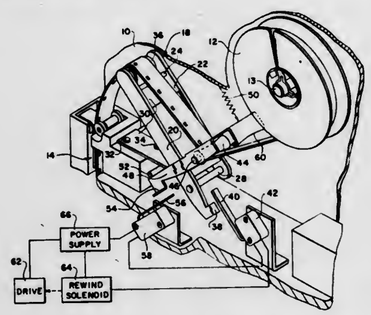
A device is described for disabling the retraction of an automatically retracted seat belt. The retraction device has a shaft, about which the seat belt is wound, which has gear teeth formed on an exposed free end thereof. The disabling device includes a position locating mechanism which is driven to various positions by the shaft's gear teeth as the seat belt is unwound from the shaft. A locking device is engageable with the position locating mechanism in order to lock the mechanism and the belt shaft in a fixed position associated with the extension of a predetermined belt length. A cam controlled device is also provided which controls whether the locking device operates to lock the position locating mechanism in the fixed position. Operating mechanism is also provided which operates in conjunction with the cam controlled device to selectively actuate the same thereby to control the movement of the locking device into and out of locking engagement with the position locating mechanism.

3,700,185
DISPENSABLE COIL PACKAGE
Ronald R. Hubbard, and Richard N. Nalevanko, both of Orange, Calif., assignors to Anaconda Wire and Cable Company
Filed Feb. 17, 1970, Ser. No. 11,997
Int. Cl. B65h *55/02, 49/00*
U.S. Cl. 242—159 **1 Claim**

A shipping and dispensing package comprising coils comprising a plurality of radial layers, each layer comprising a helical winding of insulated wire or other strand and a thin-walled, stretchable, polymeric membrane enclosing and compressing the coils and having an aperture for pulling the wire from within the package.



3,700,186
AUTOMATIC REWIND DEVICE FOR WEB HANDLING APPARATUS
William L. Burnham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 29, 1971, Ser. No. 158,001
Int. Cl. B65h *59/38, 63/02*; G03b *1/04*
U.S. Cl. 242—189 **7 Claims**

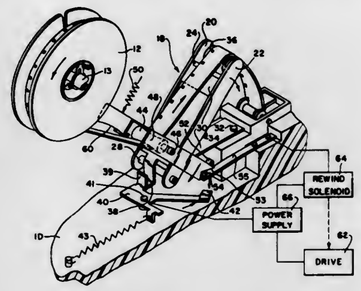


A device for effecting automatic rewind in a web handling apparatus of the type having means for rotatably supporting a hub having a web of strip material wound thereon with the innermost end of the web anchored to the hub so that at least a portion of the web extends substantially radially from the hub when the web has been completely unwound therefrom. The device includes drive means having a first condition for unwinding the web from the hub and a second condition for rotating the hub to rewind the web thereabout. A first sensing means is actuatable by an increase in tension of the web to close a first switch and a second sensing means is actuatable by a portion of the web extending radially from the core to close a second switch. The drive means is placed in its second condition to rewind the web onto the hub in response to the simultaneous closure of the first and second switches.

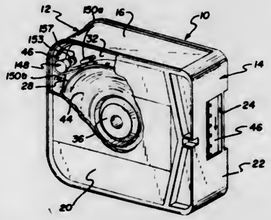
3,700,187
REWIND DEVICE FOR WEB HANDLING APPARATUS
Kenneth W. Thomson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 29, 1971, Ser. No. 158,035
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—190 **6 Claims**

A device for effecting automatic rewind in a web handling apparatus of the type having means for rotatably supporting a hub having a web of strip material wound thereon with the innermost end of the web anchored to the hub so that at least a portion of the web extends substantially radially from the hub when the web has been completely unwound therefrom includes drive means having a first condition for unwinding the web from the hub and a second condition for rotating the hub

to rewind the web thereabout. A first sensing means is actuatable by an increase in tension of the web to move a switch contact from an inactive position to an active position, and a second sensing means is actuatable by a portion of the web extending radially from the hub to move a second switch contact from an inactive position to an active position whereat it engages the first switch contact of the first contact in its active position. The drive means is placed in its second condition to rewind the web onto the hub when the first and second switch contacts are engaged.



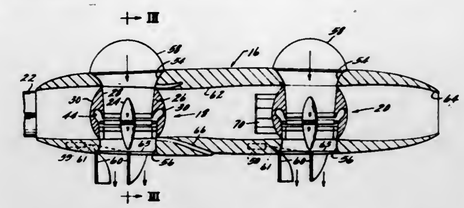
3,700,188
FLEX-SNUBBER
James C. Bradford; Stephen H. Miller, and Jeffrey C. Robertson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 24, 1971, Ser. No. 201,825
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—194 **11 Claims**



In a cartridge for use in a motion picture camera, a frustoconical snubber is mounted on a resilient, deflectable stem and is positioned along a film path in the cartridge. As the film is intermittently advanced through the cartridge in contact with the snubber, the snubber is resiliently deflected to increase the surface area of the snubber engaged by the film. The deflection of the snubber and the increased frictional forces between the film and snubber resulting therefrom dampen variations in tension forces along the film permitting more accurate registration of the film for recording of images thereon.

3,700,189
VTOL PROPULSION SYSTEM
Eugene L. Timperman, Cincinnati, Ohio, assignor to General Electric Company
Filed July 2, 1970, Ser. No. 51,923
Int. Cl. B64c *15/00, 29/00*
U.S. Cl. 244—12 **8 Claims**

A propulsion system is described which comprises two tip-turbine driven fan units pivotally mounted in a pod. For vertical propulsion the units are respectively registered with vertically aligned inlet and discharge ports in the pod. For forward propulsion the units are swung into registration with a horizontal passageway through the pod.



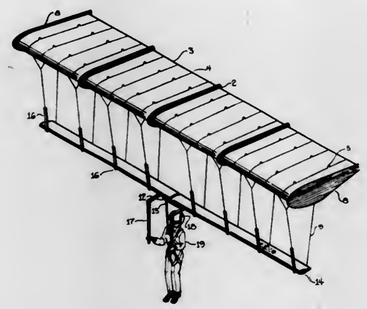
3,700,190
DAMPING DEVICE FOR SATELLITES
Manfred Kubler, Friedrichshafen, Germany, assignor to Dornier System GmbH, Friedrichshafen/Bodensee, Germany
Filed Sept. 22, 1970, Ser. No. 74,316
Claims priority, application Germany, Oct. 17, 1969, P 19 52 280.6
Int. Cl. B64c *39/00*
U.S. Cl. 244—1 SA **6 Claims**

This invention relates to an apparatus for damping the nutational movements on satellites comprising motor means mounted on the satellite housing, and flywheel means mounted on the motor shaft in a universally movable manner.

3,700,191
PARASAIL, GLIDER TYPE AERIAL DEVICE
Patrick E. Page, 393 Cronin Drive, Santa Clara, Calif.
Filed Sept. 8, 1970, Ser. No. 70,009
Int. Cl. B64c *31/02*
U.S. Cl. 244—16 **3 Claims**

The parasail, a glider type aerial device, uses aeronautical principles found on conventional parachutes and sailplanes, thus its name. This craft uses airfoil shaped flying surfaces connected, via a multiplicity of shroud lines, to an external load and control carrying spar and its payload. The wings fly above the spars in a similar manner as a parachute canopy does above its payload. These wings are split at their center to provide angle of attack changes independently from each other. The pilot actuates a set of independently moving spars, using two control levers, that in turn change the angle of at-

tack of the wings using a multiplicity of shroud lines as a transmittal medium. This allows the change to the speed, lift coefficients and direction of travel of the Parasail. By the use of a fully controlled flying wing with its load and control spar far below the wing itself, the result is a glider type of aerial device



with a very low center of gravity with great in flight stability. Due to its structural simplicity, flight stability, ease of operation, low cost of manufacturing and operation, a soaring craft is obtained, that has many desirable features for its intended purpose as a sporting aerial machine.

3,700,192

VORTEX BREECH HIGH PRESSURE GAS GENERATOR

James E. Pleasants, and Viggo G. Dereng, Newport News, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 22, 1971, Ser. No. 108,824
Int. Cl. B64d *17/72*
U.S. Cl. 244—139 **14 Claims**



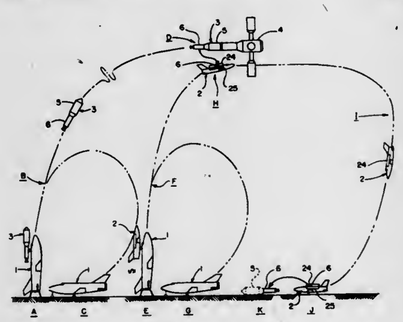
A high pressure gas generator for ejecting parachutes or the like where propellant free gases are essential to prevent damage to the ejected article and employing a vortex breech to separate unburned propellant particles from the hot high pressure gases.

3,700,193

A METHOD OF DELIVERING A VEHICLE TO EARTH ORBIT AND RETURNING THE REUSABLE PORTION THEREOF TO EARTH

Raymond H. Bradley, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 14, 1971, Ser. No. 106,465
Int. Cl. B64g *1/00*
U.S. Cl. 244—155 **1 Claim**



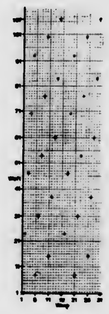
The present invention relates to a space shuttle system for delivering payload to earth orbit or other celestial orbit comprising a specially designed stage to be used with the orbiter and booster of the space shuttle. The booster can carry either the orbiter or the stage to a sub-orbital staging point. Both the orbiter and the stage are capable of proceeding from such a staging point to celestial orbit carrying a payload. The orbiter, having re-entry equipment, is capable of re-entering the earth's atmosphere and landing on earth. The orbiter has a re-entry environment protected bay in which its payload can be carried. The stage, being independent of re-entry equipment, has a large payload carrying compartment and a smaller, detachable subsystem carrying portion which can be received into and carried back to earth in the protected payload bay of the orbiter.

3,700,194

SEAM FOR WOVEN FABRIC

Donald George MacBean, Pierrefonds, Roxboro, Quebec, Canada, assignor to JWI Ltd., Montreal, Quebec, Canada

Continuation of Ser. No. 844,108, July 23, 1969, abandoned. This application Aug. 18, 1971, Ser. No. 172,864
Claims priority, application Canada, June 13, 1969, 054,348
Int. Cl. B21f *27/10*
U.S. Cl. 245—10 **1 Claim**



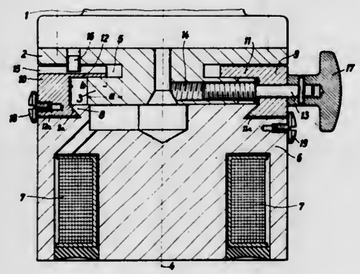
A seam for an endless woven fabric wherein end portions of weft strands project from the ends of the fabric and are woven together in the seam with a plurality of added warp strands so that the warp end portions projecting from one end of the fabric and those from the other end of the fabric to be joined meet at a termination point and these termination points are both laterally and longitudinally spaced from one another.

3,700,195

ADJUSTABLE SUPPORTING STRUCTURE FOR POWER TOOLS OR THE LIKE

Lothar Pahlow, Geesthacht, Germany, assignor to Firma Wilhelmsburger Maschinenfabrik, Hinrichs & Sohn, Geesthacht, Germany

Filed July 1, 1971, Ser. No. 158,871
Claims priority, application Germany, March 4, 1971, P 21 10 239.6
Int. Cl. E21c *5/00*
U.S. Cl. 248—16 **10 Claims**



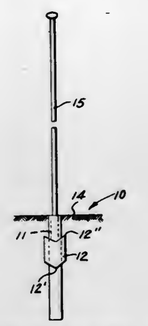
A supporting structure for a portable boring machine has a foot which is attracted to a metallic body by one or more electromagnets and has a dovetailed circumferential groove. A column which supports the machine has a base abutting against the foot and having a circumferential groove for complementary flanges provided on two semicircular sections of a clamping ring. The sections have dovetailed flanges which extend into the groove of the foot and they are coupled to the base for rotation with the column relative to the foot. The sections can be moved into and out of clamping engagement with the foot and with the base, and the width of thoee flanges which extend into the groove of the base exceeds the depth of such groove to permit sidewise adjustments of the column when the clamping action is relaxed or terminated. The column is then also free to rotate about its own axis but through less than a full revolution. Sidewise adjustments of the column are effected by a spindle which is rotatable in one of the sections and extends radially of the column into a tapped bore of the base, or by a pinion which is rotatable with a shaft mounted in one of the sections and meshes with a radially extending rack of the base. The spindle and the internal threads of the bore or the pinion and the rack furnish a self-locking action so that the column can be moved sideways only when the spindle or the pinion is caused to rotate.

3,700,196

FLAG STAFF ANCHOR

Arthur E. Hall, 157 West Lorenzo Avenue, Norfolk, Va.

Filed March 19, 1971, Ser. No. 126,000
Int. Cl. F16m *13/00*
U.S. Cl. 248—44 **1 Claim**



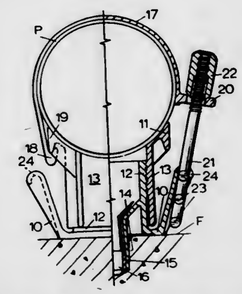
A device for supporting a flag staff. This device includes a sleeve with a stabilizing plate attached thereto which will enable it to remain permanently in the ground, the sleeve portion receiving the flag staff which is removable therefrom.

3,700,197

PIPE SUPPORTING MEANS

Eric Sidney Branton, Romford, England, assignor to Activated Sludge Limited, London, England

Filed Sept. 1, 1970, Ser. No. 68,608
Claims priority, application Great Britain, Sept. 30, 1969, 47,878/69
Int. Cl. F16l *3/14*
U.S. Cl. 248—71 **6 Claims**



A supporting means for a pipe or pipework comprises a base part, a seating-part or saddle, for supporting a pipe, adjustably mounted on said base part so that the height or length of the supporting means can be varied, a strap or the like adapted to embrace or bear on said pipe to hold it onto the seating part or saddle and a screw threaded bolt for tightening said strap or the like about or against said pipe, said bolt having an anchoring arrangement which provides for alteration in the effective length of the bolt according to the adjustment of the seating-part or saddle on the base part. In one preferred embodiment of the invention the bolt has two, three or more head-like parts spaced along its length any one of which can be anchored to an anchorage on the base part, and the strap has a hooked part which hooks onto a hook-like member provided on the saddle.

3,700,198

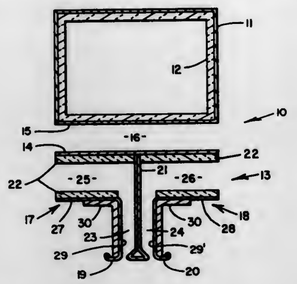
MOUNTING BRACKET ASSEMBLY FOR AIR CONDITIONING SYSTEMS

August W. Guthelm, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 3, 1971, Ser. No. 139,491
Int. Cl. F16b *1/00*
U.S. Cl. 248—214 **6 Claims**

A bracket assembly for mounting a component of an air

conditioning system to a frame member of the ceiling of an area being served by the system. The bracket assembly includes a U-shaped member having first and second portions for engaging the component, and a third portion connecting the first and second portions. The bracket assembly further includes a hanger portion for engaging a first section of the frame member. An edge of the hanger portion extends a predetermined distance beneath an edge of the third portion of said U-shaped member. The respective edges define the lowest vertical surface of the U-shaped member and the lowest vertical surface of the hanger portion.

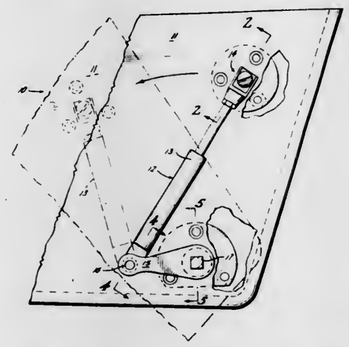


3,700,199

QUICKLY REMOVABLE, PIVOTAL, AND SNUBBED STORAGE BIN

James E. Matuska, 641 West Ewing, Seattle, Wash.

Division of Ser. No. 744,933, July 15, 1968. This application Oct. 6, 1970, Ser. No. 78,585
Int. Cl. A47b 46/00
U.S. Cl. 248—292 4 Claims



An easily and quickly removable, pivotal, and snubbed storage bin, such as but not limited to aircraft passenger carry-on luggage having axially retractable pivotal pins extendible from the bin into recesses in support structure, such as but not limited to an aircraft passenger transport, in a nonrotatable fitting and a snubber pivotally connected between the bin and the pin for snubbing relative movement between the bin and its pivot pin and accordingly between the bin and the support structure.

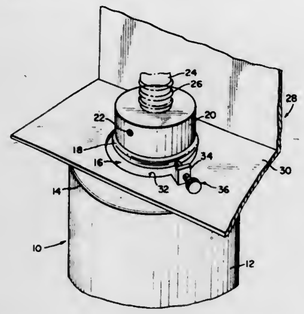
Also incorporated in the quickly removable pivotal rigid structure is a quickly retractable and snubbing pivot pin mechanism comprising an extendible means, snubbing means, and link means nonrotatably and slideably connected to the extendible bin means and pivotally connected to the snubbing means.

3,700,200

ADJUSTABLE AEROSOL CAN SUPPORT

Gordon S. Batchelor, Portsmouth, and Dalbro R. Nixon, Chesapeake, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Jan. 20, 1971, Ser. No. 108,122
Int. Cl. A61m 27/00
U.S. Cl. 248—312 1 Claim



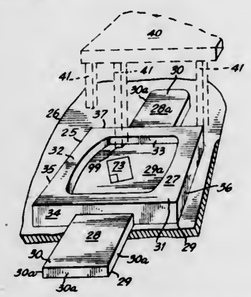
An aerosol can support for aerosol bombs of the type having a cylindrical body portion and a neck dispensing portion with a collar or lip and a dispensing valve, wherein adjustable means such as a threaded screw is adjustably engageable with the lip, the can being inserted through an opening in a baseplate, mounting for the screw being formed in a tab bent up from the base of the baseplate leading from the opening.

3,700,201

FLOOR MAT PORTIONALLY WITH A FENCED IN TOP/SURFACE AND AN OPENING THEREFROM

Thomas P. O'Donnell, 220 Highland Boulevard, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,150
Int. Cl. B65d 19/38
U.S. Cl. 248—346 6 Claims



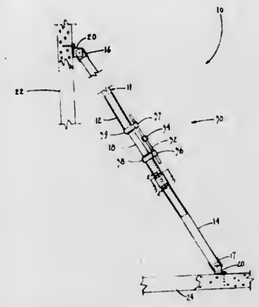
A floor mat, with or/and without a foot-rest-and-pressable leaf abutting therefrom, and firstly comprising a fence abutting upwardly therefrom for partly or fully fencing in a top surface portion thereof, for a first purpose, of simultaneously fencing in swivelling wheels of a swivel chair on said top surface portion, and secondly comprising a propable opening portion, for a second purpose, of surrounding a prop penetrated therein and being otherwise attached with a portion of a floor, for anchoring said floor mat on a said floor. And thirdly comprising a bottom surface, or a portion of a bottom surface of a floor mat, and/or its leaf when present, and/or a prop, can be made from a self adhering material for adhering and anchoring a said floor mat with a said floor. When a floor mat comprises a said leaf, said leaf can comprise a said propable opening portion, for a said second purpose.

3,700,202

ADJUSTABLE BRACE FOR TILT-UP CONSTRUCTION

Wayne T. Donnels, Reno, Nev., assignor to The Walker Boudwin Construction Co., Inc., Reno, Nev.

Filed June 29, 1970, Ser. No. 50,505
Int. Cl. E04g 25/06
U.S. Cl. 248—354 C 3 Claims



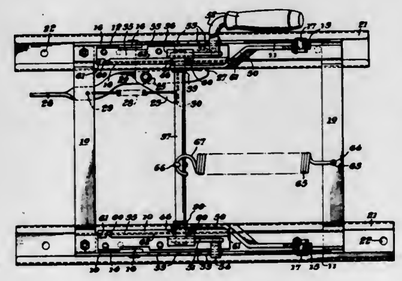
A tilt-up brace is provided which includes an adjustable strut having an upper pipe portion and a lower pipe portion. Partially engaged within and welded to the upper pipe portion is a pipe of smaller cross section which is received within the lower pipe portion. The ends of an adjusting bar having halves of reversed thread are received by threaded eyes. The eyes are secured to the upper and lower pipe portions adjacent their confronting ends, the bar in spanning relationship with these ends. Rotation of the adjusting bar will either draw together or spread apart the upper and lower portions of the strut. A friction locking assembly is provided on the lower pipe portion which when engaged will prevent further longitudinal movement of the pipes relative to one another once the strut is adjusted.

3,700,203

VEHICLE SEAT SUPPORT

Albert John Adams, 3, Richmond Way, Fetcham, England

Filed Feb. 5, 1971, Ser. No. 113,005
Int. Cl. B60n 1/02
U.S. Cl. 248—419 6 Claims



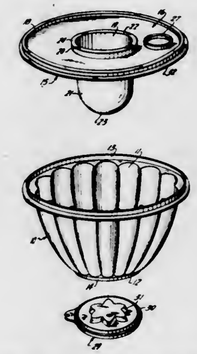
A vehicle seat support in which a single tension spring performs the functions previously performed, in one known construction of vehicle seat support, by a tension spring and two coiled springs, namely, control of the elevation of a seat frame assembly relative to a floor frame assembly and operation of a catch mechanism to maintain a chosen elevation setting of the seat frame assembly.

3,700,204

MOLD FOR INGESTIBLE SUBSTANCES

James B. Swett, Barrington, and Harold P. Ashton, Providence, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 849,779, Aug. 13, 1969, Pat. No. 3,576,113. This application Nov. 19, 1970, Ser. No. 91,147
Int. Cl. B41b 11/62
U.S. Cl. 249—104 6 Claims



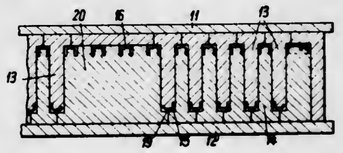
A reusable molding kit and method of molding ingestible substances. The kit comprises a central mold portion and a multiple seal closure having a depressed portion which is inwardly directed. The central mold portion has smaller and larger end openings either of which can be sealed by the multiple seal closure. The depressed portion in the multiple seal closure causes a hollow well to be formed in the molded substance. The hollow well can be filled with various different substances to give a pleasing appearance. The depressed portion also serves as an additional mold for ingestible substances. A multicolored molded substance may be formed by filling the central mold portion with a moldable substance, filling the depressed portion with a second moldable substance having a different color, hardening the substances, removing the substances and inserting the second substance into the hollow well formed in the first substance.

3,700,205

DIE FOR MOLDING PLASTIC PALLETS

Ernst Ditges, Herzebrock, Westfalen, Germany, assignor to Press-Und Stanzwerk Paul Craemer KG, Herzebrock, (Westfalen), Germany

Division of Ser. No. 785,812, Dec. 20, 1968, Pat. No. 3,603,272. This application Feb. 8, 1971, Ser. No. 113,235
Claims priority, application Germany, Dec. 20, 1967, P 15 56 151.0
Int. Cl. B28b 7/16
U.S. Cl. 249—142 6 Claims



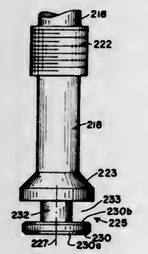
A two part die for injection molding an integral plastic pallet having a load carrying top portion and a supporting bottom portion each formed by transversely spaced ribs of U-shaped cross section, the die comprising two die sections having each a plurality of spaced webs tapering toward free ends thereof

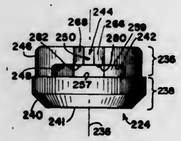
and arranged with respect to each other so that when the die is closed the webs of one section will intermesh and engage without play plane side faces of the other section and so that at the free ends of the webs hollow spaces of U-shaped cross sections are formed for molding the U-shaped ribs.

3,700,206
VALVE ASSEMBLY

Evan Jones, Evanston, Ill., assignor to Henry Valve Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 34,483, May 4, 1970, abandoned. This application April 15, 1971, Ser. No. 134,336
Int. Cl. F16k *25/00*
U.S. Cl. 251—84 6 Claims



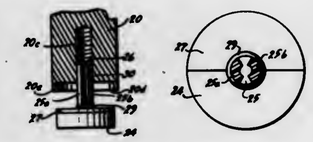


The valve assembly includes an integral member or molded part which serves as a one-piece valve seat disc and which is mounted on a metal valve stem received in a valve body and arranged for movement along an axis essentially coaxial with the axis of a valve seat at the entrance to a passage within the valve body. The valve stem has a button at its inner end for mounting the valve seat disc and is rotatably reciprocal in the valve body for moving the valve seat disc to and from the valve seat. The valve seat disc is made from a material which is stiff, but resilient, and which has a low coefficient of friction with respect to metal to permit relative rotation between the disc and the stem when the stem bears against the disc. The disc is defined by a seating section having a seating surface for seating on the valve seat and a valve stem coupling section having an opening in which the button is received. The opening has a lateral extent somewhat greater than the lateral extent of the button and is characterized by projections therein which snap-fittingly receive and retain the button within the opening for securely holding the valve seat disc to the inner end of the valve stem and yet allowing it to move a limited distance laterally of the axis of the valve stem so that the disc will properly seat itself on, and align itself with respect to, the valve seat. In one embodiment, the projections have axially extending protuberances thereon which bear against the underside of the button to firmly hold the disc against axial movement thereof relative to the stem.

3,700,207
WASHER REPLACEMENT ASSEMBLY FOR FAUCET VALVES

Joseph E. Bartlett, 215 South Parker Avenue, Highway 7, Olathe, Kans.

Filed July 23, 1970, Ser. No. 57,691
Int. Cl. F16k *25/00*
U.S. Cl. 251—88 7 Claims

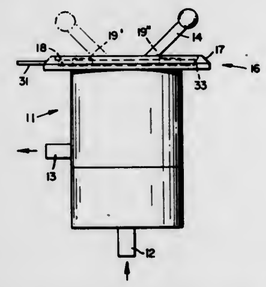


A nonmetallic washer having a resilient main body and a bifurcated variable thickness shank integral therewith. A frictionless bearing is located at the juncture between the main body and shank, the shank being insertable into the central bore of the faucet valve with the bearing thus between the washer and end of the stem. An auxiliary, resilient spacer held within the slot of the shank provides adaptation of the washer to various size stem bores.

3,700,208
AIR VALVE SAFETY LOCK

John Hanan, 912 Versailles Avenue, Alameda, Calif.

Filed June 30, 1971, Ser. No. 158,267
Int. Cl. F16k *35/00*
U.S. Cl. 251—90 8 Claims



A safety lock is described for preventing unintentional actuation of an air control valve. The safety lock includes a disc-shaped base which is securable to an air control valve with the actuating toggle for the control valve projecting therethrough. A locking pawl is pivotally secured to the base for movement between a position at which it blocks movement of the valve control lever between the valve unactuated and the valve actuated positions, and a second location at which it permits the valve lever to be manipulated. A leaf spring is also included as a part of the safety lock for resiliently urging the locking pawl to its position preventing movement of the valve lever to its valve actuating position.

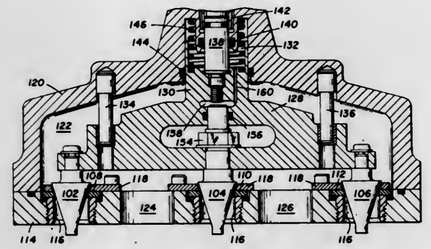
3,700,209
BALANCED PINTLE VALVE

Joe D. Usry, Arlington, Tex., assignor to E-System, Inc., Dallas, Tex.

Filed Dec. 30, 1970, Ser. No. 102,570
Int. Cl. F16k *1/12*
U.S. Cl. 251—282 11 Claims

To minimize actuation power requirements in a metering flow control valve, forces generated on the metering pintle are statically and dynamically balanced. To reduce actuation

power, the mechanization of the flow control valve must be an integrated concept that combines valve geometry and balancing techniques. The pintle in either a throttling valve or an injector valve is dynamically balanced by a plurality of passages formed in the pintle. These passages are arranged to be successively withdrawn into the upstream pressure to balance

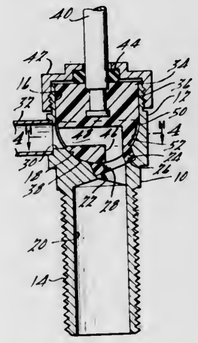


forces generated by a fluid flowing past the pintle. As each succeeding passage is exposed to the upstream pressure, the pressure in a compensating chamber increases to produce a force that tends to balance the force produced on the pintle by fluid flowing through the valve. With a generally conical shaped metering pintle, the passages are displaced both longitudinally along and radially around the pintle.

3,700,210
FAUCET VALVE

Alex Manoogian, Grosse Pointe Farms, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed July 27, 1971, Ser. No. 166,542
Int. Cl. F16k *5/22*
U.S. Cl. 251—304 4 Claims

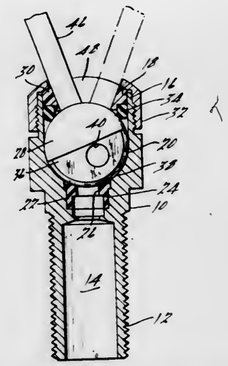


A faucet valve in which a rotatable valve member has a spherical valve surface and a passage including an inlet in the spherical surface which is offset from the axis of rotation and rotatable into and out of registry with a similarly offset inlet port in the valve body, and a laterally extending outlet terminating in an annular channel in the spherical surface and communicating with an outlet port in the valve body. The annular channel on the valve surface defines a restricted passage through which water flows when there is only slight registry of the inlet ports in the valve member and valve body to create a back pressure which muffles turbulence and reduces noise.

3,700,211
FAUCET VALVE

Alex Manoogian, Grosse Pointe Farms, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed July 27, 1971, Ser. No. 166,543
Int. Cl. F16k *5/22*
U.S. Cl. 251—304 3 Claims

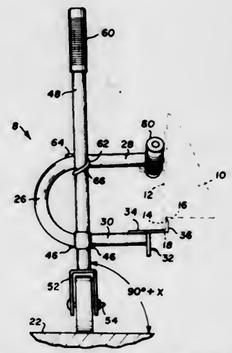


A faucet valve in which the valve member comprises a ball rotatable on a horizontal axis within a spherical socket formed in the valve body, the ball having a passage therein having its inlet movable into and out of registry with an inlet port in the valve body and its outlet in constant communication with an outlet port in the valve body.

3,700,212
WHEEL DOLLY FOR LIFTING SNOWMOBILES AND THE LIKE

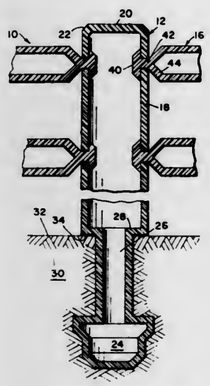
Peter C. Morgenberger, 2366 Spencerport Road, Spencerport, N.Y.

Filed April 8, 1971, Ser. No. 132,297
Int. Cl. B66f *3/00*
U.S. Cl. 254—131 12 Claims



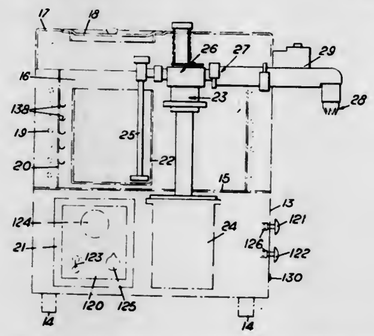
A wheel dolly for lifting an object such as a snowmobile or the like comprising a support bracket for rotatably supporting a lever to which a wheel is secured at one end. The lever is movable between a mounting position in which the bracket may be readily mountable on the object with facility, and a lifting position in which the bracket is releasably secured to the object and the object lifted above a reference or ground surface by the dolly. The lever is vertically adjustable to accommodate the height of the object above the ground surface, and to vary the vertical distance that the object is lifted.

3,700,213
PLASTIC FENCE
Wilfred J. Blease, Greenville, N.H., assignor to Pioneer Plastics, Inc., Greenville, N.H.
Filed Feb. 12, 1971, Ser. No. 114,784
Int. Cl. E04h 17/16
U.S. Cl. 256—19 10 Claims



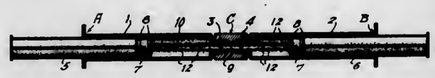
An all plastic fence composed of hollow posts and rails externally textured to simulate wood. The posts are formed with anchor formations at the bottom and vertically spaced holes for reception of snap lock formations at the ends of the rails.

3,700,214
MACHINE FOR PRODUCING AERATED TOPPINGS
John MacManus, 143-16 22nd Road, Whitestone, N.Y.
Division of Ser. No. 883,867, Dec. 10, 1969, Pat. No. 3,606,266. This application June 18, 1971, Ser. No. 154,431
Claims priority, application Great Britain, Dec. 31, 1968, 61,986/68; Feb. 13, 1969, 7,982/69; Sept. 5, 1969, 44,032/69
Int. Cl. B01f 15/02
U.S. Cl. 259—4 7 Claims



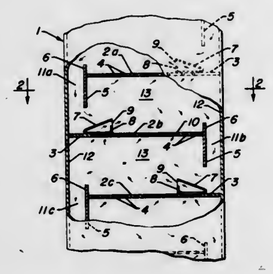
The machine includes a motor-driven pump having an inlet operatively connected both to an air intake and to an unpressurized liquid product container, whereby the liquid product and air are simultaneously drawn into the pump. An adjustable needle valve is provided at the air intake to control flow of air into a chamber which has a check valve at its outlet. The pump outlet is connected to a static, narrow-orifice homogenizer which emulsifies the liquid and air mixture. A solenoid-operated valve is located at the outlet of the homogenizer and an electrical control system simultaneously opens the valve and starts the motor.

3,700,215
MIXING AND DISPENSING DEVICE
Kenneth V. Hardman, Upper Montclair, and Alfred J. Anderson, Livingston, both of N.J., assignors to Hardman Incorporated, Belleville, N.J.
Filed Oct. 21, 1970, Ser. No. 82,753
Int. Cl. B01f 5/12
U.S. Cl. 259—98 2 Claims



Each of two syringes comprises a barrel having a plunger therein and an outlet nozzle separably connected to the outlet nozzle of the other barrel in axial alinement therewith, and there is a perforated mixing tube slidable through said nozzles with each of its ends in abutting relation to one of said plungers so that fluent substances may be placed in either or both of said barrels, for example, one component of a two part reactive resin system can be placed in each of said barrels, and pumped repeatedly from each barrel into the other barrel through said perforated tube to thoroughly and rapidly mix said substances.

3,700,216
VAPOR-LIQUID CONTACTING DEVICE
Kenneth D. Uittl, Bensenville, and Don B. Carson, Mt. Prospect, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 21, 1970, Ser. No. 99,860
Int. Cl. B01f 3/04
U.S. Cl. 261—114 R 8 Claims

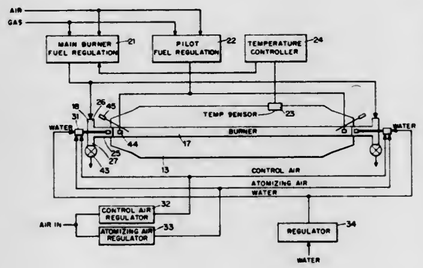


In a vapor-liquid contacting column having a plurality of vertically spaced contacting trays, vapor-liquid contacting on these trays is improved by the installation of:

1. an inwardly slanted imperforate wall adjacent to the imperforate liquid inlet portion of the tray so as to separate the liquid inlet section from the perforate contacting section, and
2. a vertical imperforate wall at a height below the upper edge of the slanted wall.

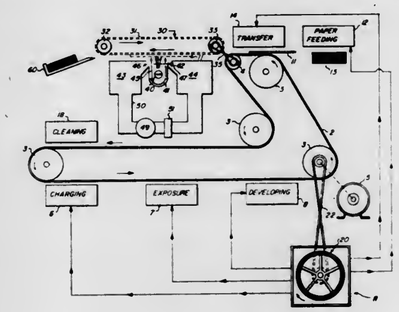
These walls are constructed to form a continuous vapor slot opening across the column which communicates with a lower tray whereby rising vapor is directed against the liquid overflowing the slanted wall to produce a vapor-liquid mixture of uniform composition with a uniform liquid velocity as well as a uniform concentration front.

3,700,217
COOLING SYSTEM FOR HEATED CALENDER ROLLS
Fred W. Rauskolb, Haworth, N.J., assignor to Standard International Corporation, Andover, Mass.
Filed June 14, 1971, Ser. No. 152,634
Int. Cl. F26b 13/18
U.S. Cl. 263—6 C 6 Claims



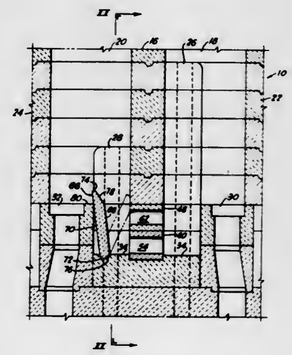
A system for rapidly reducing the temperature of a heated roll used in calender or embossing machines. Water is mixed with and atomized in a stream of air and injected into the burner of the calender roll for impinging on the interior wall of the roll. The water absorbs the heat of the roll and is vaporized and exhausted at either end of the roll in the same manner as are exhaust combustion gases.

3,700,218
ELECTROPHOTOGRAPHIC FUSING APPARATUS
Alexis D. Laisney, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,900
Int. Cl. G03g 13/20, 15/20
U.S. Cl. 263—6 E 8 Claims



Apparatus for preventing toner and other particulate material from contaminating the fusing station in an electrophotographic apparatus. Means are provided for forming a protective air curtain between the fusing station and the path along which a toner-bearing support travels during the fusing operation, whereby toner and other particulate material separated from the support are intercepted before contacting and thereby contaminating the fusing station. The invention is particularly adapted for use in electrophotographic apparatus of the type in which fusing of the toner image to a receiving sheet is accomplished by passing the receiving sheet with its toner image facing downward overtop a source of thermal energy.

3,700,219
APPARATUS FOR CONTROLLING THE FLOW OF GAS BETWEEN FLUES IN THE HEATING CHAMBERS OF A REGENERATIVE COKE OVEN
Wilhelm Jakobi, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Aug. 28, 1970, Ser. No. 67,888
Claims priority, application Germany, Sept. 19, 1969, P 19 47 389.3
Int. Cl. F27b 17/00; C10b 5/02
U.S. Cl. 263—15 R 10 Claims

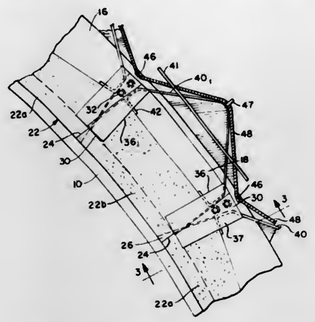


Regenerative coke oven batteries have heating chambers on opposite sides of the coking chamber and the heating chambers have parallel spaced heating walls with a plurality of spaced flue walls extending transversely between and connected to the heating walls. The flue walls form a series of vertical flues in the heating chambers. Combustion of the gaseous fuels takes place in alternate flues and the gaseous products of combustion are directed to flow downwardly in the adjacent flue for further transfer of heat from the gases to the heating walls. The flue walls are formed of individual bricks in parallel courses with the bricks bonded to adjacent bricks. Cylindrical passageways are formed in the bricks in spaced relation to the edges of the bricks, particularly the horizontal edges so that the bond between adjacent bricks is not interrupted by the horizontal passageways. The flow of gases through the passageways is controlled by slab-like dampener bricks. The bricks are positioned in a generally vertical position parallel to the flue wall and are arranged to pivot in one direction into abutting relation with the flue wall and in overlying relation with the passageways to thereby control the flow of gas therethrough.

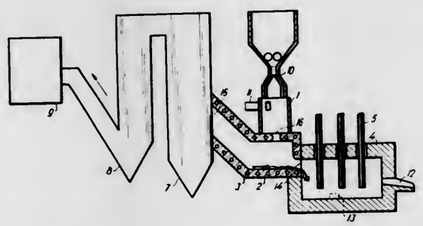
3,700,220
KILN SEAL
Paul Talago, Center Valley, Pa., assignor to Fuller Company
Filed June 18, 1971, Ser. No. 154,577
Int. Cl. F27b 7/24
U.S. Cl. 263—32 R 9 Claims

A sealing assembly for sealing the opening between a pair of communicating members such as a rotary kiln and the feed end housing or fire hood of the kiln. The seal comprises a plurality of abradable sealing blocks which are in slight engagement with the rotating member or kiln. These sealing blocks

are spring biased toward the kiln and guide means are provided for guiding the blocks radially inwardly toward the kiln as they wear. The ends of the blocks are arranged so that adjacent blocks overlap to insure a continuous seal around the kiln.



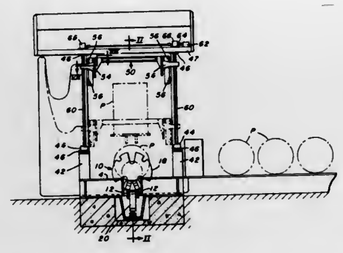
3,700,221
CYCLONE KILN SYSTEM
Vladislav Holy, Praha, Czechoslovakia, assignor to Vyzkumny ustav Kovu, Panenske Brezany, Czechoslovakia
Filed Dec. 23, 1969, Ser. No. 887,607
Claims priority, application Czechoslovakia, Dec. 27, 1968, 880868
Int. Cl. C22b 5/00
U.S. Cl. 266—9 **1 Claim**



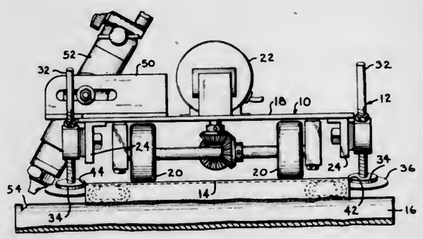
A cyclone kiln system for heat treatment of ores and concentrates of non-ferrous metals for separating said metals, provided between the cyclone reactor and the settling oven for slag and stone a distribution chamber with cooled walls, preventing an early decay of the lining of the settling oven.

3,700,222
PIPE SLITTING MACHINE
Calvin J. Baxter, Springville, and McKinley B. Thomas, both of Orem, Utah, assignors to United States Steel Corporation
Filed May 13, 1971, Ser. No. 142,871
Int. Cl. B23k 7/04
U.S. Cl. 266—23 K **9 Claims**

Apparatus for cutting a relatively short section of pipe into a plurality of arcuate segments includes a cradle having a support for receiving the pipe with its axis generally horizontal when the cradle is in its lower position and a plate normal to the support at one end of the support. The cradle is pivotally mounted about a horizontal axis and is rotated upwardly through an angle of 90° so that the pipe rests on the plate with its axis vertical. A vertically movable carriage surrounds the pipe when in its upper position and carries a plurality of cutting torches. Means are provided to move the carriage from the bottom of the pipe to the top with the torches in operation to divide the pipe into a plurality of segments. The cradle is then rotated in the same direction as the original rotation to discharge the segments from the cradle after which the cradle is returned to its original position. Special means are provided for moving the cradle.



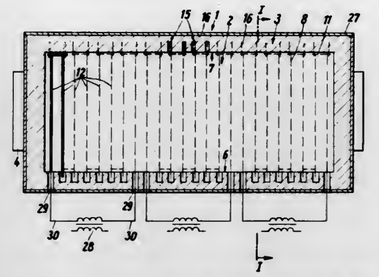
3,700,223
SELF-ALIGNING BAND FOR BEVELING MACHINE
Bernard V. Elliott, Bartlesville, Okla., assignor to H. C. Price Co., Bartlesville, Okla.
Continuation-in-part of Ser. No. 70,355, Sept. 8, 1970, abandoned. This application April 28, 1971, Ser. No. 138,065
Int. Cl. B23k 7/04
U.S. Cl. 266—23 NN **15 Claims**



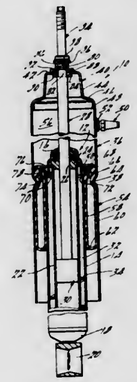
An adjustable band for supporting a dolly carried bevel cutter for movement around a joint of pipe. The band comprises an elongated strip having a pair of parallel side guide edges and a toggle interconnecting the band ends for moving the band in tight engagement with the pipe. Two rows of rollers having wheels mounted on axes extending perpendicular to the pipe axis are carried by the surface of the band and hold the latter in spaced parallelism with the pipe while permitting movement of the band longitudinally of the pipe.

3,700,224
MELTING FURNACE
Peter Nolting, Toging, Germany, assignor to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany
Filed Oct. 13, 1969, Ser. No. 865,856
Claims priority, application Germany, Nov. 8, 1968, P 18 07 843.8
Int. Cl. C21b 7/02
U.S. Cl. 266—33 **18 Claims**

A melting furnace comprising a melting chamber in which a plurality of parallel adjacent electric heating resistances are transversely mounted and secured to opposite wall portions of the chamber in the region of the top thereof. The electric heating resistances have major and minor surfaces and are positioned so that their major surfaces extend parallel with the vertical plane of the melting chamber.

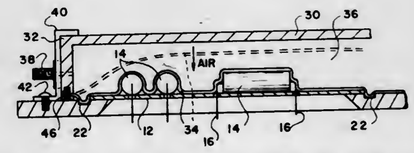


3,700,225
COMBINATION SHOCK ABSORBER AND SUPPLEMENTARY AIR SPRING UNIT AND METHOD OF ASSEMBLING SAME
John H. Fader; Johan H. Keijzer, both of Hasselt, and Marcel Josef Roger Graulus, St. Truiden, all of Belgium, assignors to Monroe Belgium N.V., St. Truiden, Belgium
Filed May 28, 1970, Ser. No. 41,362
Int. Cl. F16f 9/08; B60g 11/26; F16f 5/00
U.S. Cl. 267—35 **12 Claims**



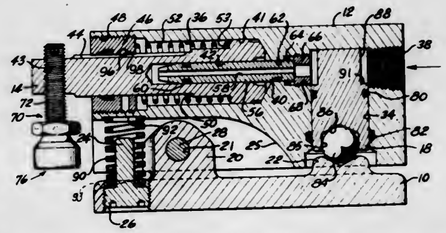
A combination shock absorber and supplementary air spring unit comprising, a tubular direct acting shock absorber including a generally cylindrical outer body member, means adjacent one end of the body member defining a generally annular recessed area, a piston reciprocably disposed within the shock absorber attached to one end of a piston rod extending axially outwardly from one end of the body member, means defining an externally thread end portion on the end of the piston rod extending from the body member, a generally cylindrically-shaped enclosure member arranged coaxially of the shock absorber and spaced radially outwardly from the body member, one end of the enclosure member including means, defining a generally radially inwardly disposed shoulder, a tubular resilient diaphragm member having one end thereof secured to the inner periphery of the enclosure member and the opposite end thereof secured to the body member and defining with the enclosure member a variable volume gas chamber, means adjacent one end of the enclosure member closing one end of the chamber and defining a generally axially disposed opening through which said end portion of the piston rod extends, means threadably received on the end portion of the piston rod for securing the enclosure member thereto whereby reciprocable movement of the piston rod results in concomitant reciprocation of the enclosure member, the relative dimensions of the recessed area, the shoulder and the one end of the diaphragm member being such that relative axial movement between the body member and the enclosure member will result in the shoulder biasing said one end of the diaphragm into peripheral engagement with the recessed area.

3,700,226
PRESSURIZED UNIVERSAL HOLDING DEVICE
Joseph V. Mrugala, Kenmore, N.Y., assignor to Sylvania Electric Products Inc.
Filed Sept. 24, 1970, Ser. No. 75,079
Int. Cl. B23q 3/08; H05k 3/30
U.S. Cl. 269—22 **3 Claims**



A device for holding components against one surface of a printed circuit board includes a base plate having an opening therein and adapted to support the printed circuit board with the components. A cover has a flexible diaphragm mounted to the periphery of the cover walls to form a closed chamber therewith. The cover with the diaphragm is clamped to the base plate with the diaphragm adjacent to the unsecured components on the printed circuit board. Air, introduced into the closed chamber through a valve in the wall of the cover, deforms the flexible diaphragm about the components forcing them against the printed circuit board.

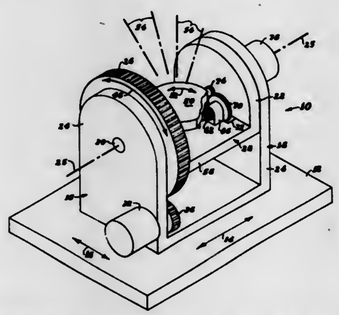
3,700,227
TRAVERSING WORKHOLDING CLAMP
Donald W. Seaody, Milwaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Dec. 9, 1970, Ser. No. 96,537
Int. Cl. B23q 3/08, 3/18; B25b 1/18
U.S. Cl. 269—24 **5 Claims**



A traversing workholding clamp, including a base adapted to be mounted on a work surface and a body mounted for pivotal movement on the base between operative and inoperative positions with respect to a workpiece. A traversing clamp arm is mounted for reciprocal motion in the body and includes a clamp assembly at its outer end. A hydraulically actuated piston is mounted in the body for movement toward the base to pivot the body with respect to the base to move the clamp assembly into engagement with the workpiece. Hydraulic fluid

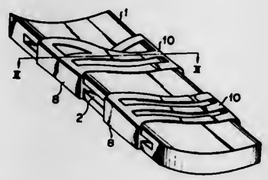
passages are provided in the body to move the traversing arm rapidly to an operative position with respect to the workpiece prior to movement of the piston toward the base to apply pressure to the workpiece.

3,700,228
ADJUSTABLE AXIS WORK SUPPORT
Robert E. Peale, 10343 Greentree Drive, Carmel, Ind.
Filed Sept. 25, 1970, Ser. No. 75,378
Int. Cl. B23q *1/18*; B25b *1/22*; B23q *5/54*
U.S. Cl. 269—61 7 Claims



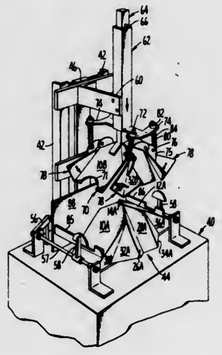
An adjustable-axis work support, by which a work object may be selectively positioned with respect to each of two angularly related axes of rotation, and usefully adapted also to an associated movable base to provide an overall assembly having even more than two axes of work-object positioning or adjustment.

3,700,229
EXAMINEE FASTENING DEVICE FOR USE IN AN X-RAY PHOTOGRAPHING APPARATUS
Toshio Kurokawa, Tokyo; Shoji Nishiyama, Machinohe; Katsumi Nagai, Tokyo, and Yuu Mochizuki, Kawasaki, all of Japan, assignors to Toshio Kurokawa, Tokyo; Shoji Nishiyama, Hachinohe-shi, Aomori-ken and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Sept. 25, 1970, Ser. No. 75,688
Claims priority, application Japan, Sept. 29, 1969, 44/92326; Sept. 29, 1969, 44/92327; Sept. 29, 1969, 44/92328
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 5 Claims



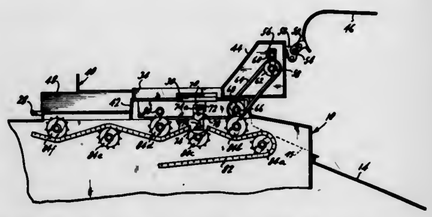
An X-ray table top has longitudinal grooves formed in the sides thereof, which grooves have an enlarged engaging recess. Sliding pieces which are respectively received in the grooves and made slidable lengthwise of the table top are movably fitted at one end to the enlarged recesses of the grooves and are connected at the other end to strip-shaped fastening elements of synthetic resin, one of the pair having on its bottom surface a number of generally J-shaped projections and the other having a number of inverted generally U-shaped projections on its upper surface. The fastening elements are overlapped with each other on a patient placed on the table top and pressed together, thereby to permit the projections on the opposing fastening elements to interengage with each other.

3,700,230
MAP FOLDING MACHINE
Thomas L. Cook, San Francisco, Calif., assignor to Albert S. Giesecke
Filed March 25, 1971, Ser. No. 128,068
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 R 4 Claims



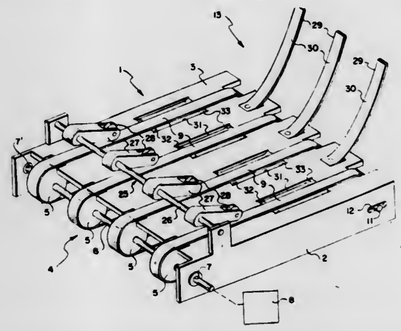
A semi-automatic machine for folding snap-open maps is provided having a first die for forming center sections and auxiliary dies for forming corner sections.

3,700,231
DOCUMENT TURN-AROUND DEVICE FOR COPYING MACHINE
Torulf F. Aasen, Hollywood; Bernard Mogil, Hallendale, and William Sepulveda, Jr., Miami, all of Fla., assignors to Copystatics Manufacturing Corporation, Miami Lakes, Fla.
Filed Sept. 21, 1970, Ser. No. 73,873
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 6 Claims



A bridge for placement on top of a copying machine to control the stacking of successive original documents fed through the machine in either of two orders. The attachment includes a baffle which when raised does not intercept the original documents fed through the machine and allows the documents to be stacked in a reverse order in a collecting tray as is the usual practice. However, when the baffle is lowered, it intercepts each original document and guides it so that each document is effectively flipped over. The original documents are collected in a different tray and their order is the reverse of that usually obtained. Transport rollers in the bridge are driven by a belt coupled to a pressure roller in the bridge which engages a drive roller in the machine.

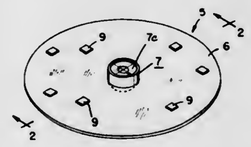
3,700,232
SHEET STACKING APPARATUS
Albert Carl Wiegert, Pittsford, and Edward Belmor Schoonmaker, East Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed March 25, 1971, Ser. No. 127,983
Int. Cl. B65h *29/18*, *31/02*
U.S. Cl. 271—75 7 Claims



Apparatus for stacking sheet-like articles, wherein a moving belt conveys the articles in generally shingled relation over a platform to a backstop. The backstop is disposed at the rear of the platform for successively guiding such conveyed articles into an orientation stacked substantially on edge across the moving belt. A slot in the platform is disposed forward of the backstop at a location beneath the moving belt for receiving successive portions of the belt should such portions be respectively urged into the slot by the weight of stacked articles. Accordingly, the friction force exerted on a stack of articles by the belt moving in contact therewith will be locally reduced where movement of the belt between the stack and the platform is facilitated by means of the slot.

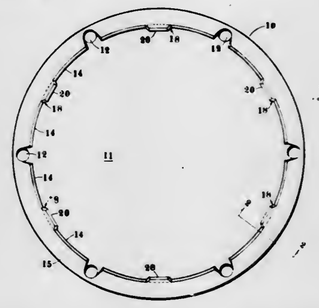
3,700,233
Patent Not Issued For This Number

3,700,234
BALANCING SKILL GAME
Charles W. Philippi, Bucks Road, Perkasie, Pa.
Filed March 24, 1971, Ser. No. 127,730
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 M 8 Claims



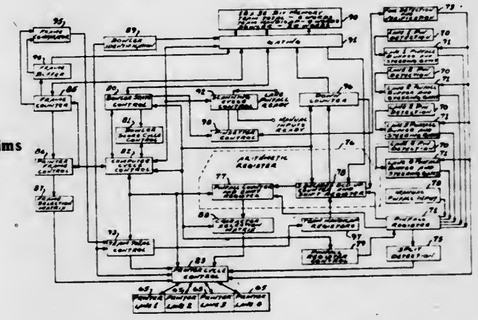
A ferrous disc has a bubble level located at the center of its upper surface and a partially spherical body fastened to the center of its lower surface. At rest on a base, the object is inclined somewhat from a perfect level condition. The players set small magnetic playing-pieces on the upper surface in an attempt to bring the object to an exactly level condition whereupon the bubble is in the exact center of the level. The one whose piece finally brings it to this state is declared the winner of the game.

3,700,235
CIRCULAR BILLIARD TABLE WITH CURVED AND STRAIGHT BUMPER SECTIONS
James D. Meyers, 12132 Sapphire, and John H. Mattson, 12621 Morgan Lane, both of Garden Grove, Calif.
Filed March 27, 1969, Ser. No. 811,075
Int. Cl. A63d *15/06*
U.S. Cl. 273—9 9 Claims



The invention is a circular billiard or pool table having a number of pockets or openings, for receiving billiard balls, which are equally spaced around a circular bumper. Spaced at a mid position between each pocket on the circular bumper is a flat bumper that projects inwards towards the center of the table to prevent billiard balls from traveling a path continuously along the curved bumper to a pocket and also to provide a limited flat bumper surface for rebounding balls.

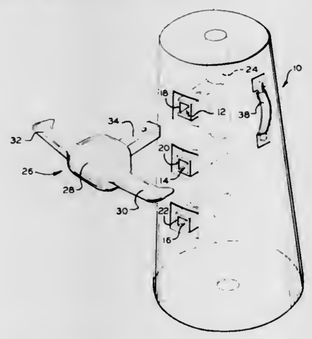
3,700,236
ELECTRONIC SCORER FOR BOWLING GAMES
Jerome F. Walker, Shaker Heights, Ohio, assignor to Brunswick Corporation
Division of Ser. No. 612,665, Jan. 30, 1967, Pat. No. 3,550,939. This application June 22, 1970, Ser. No. 48,427
Int. Cl. A63d *5/00*
U.S. Cl. 273—54 C 10 Claims



A bowling scoring system having a single computation means for computing scores bowled on any of a plurality of lanes and which (1) includes an error correction system; (2) computes anew at the end of each frame a team total score which will reflect any corrections made to bowlers' scores, includes all pinfall actually earned by bowlers on the team and will be for a discrete team frame whether or not all bowlers on the team are bowling in the same frame; (3) is adapted to be selectively conditioned to score league bowling on all lanes, open bowling on all lanes or league bowling on some lanes and open bowling on other lanes; (4) includes logic which an-

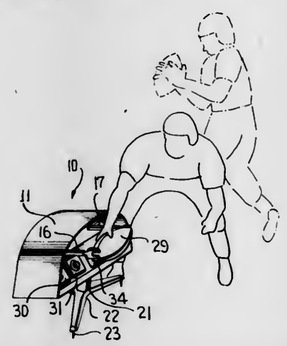
ticipates the nature of a subsequent read-out and conditions a read-out device for the read-out in advance of the operation; (5) incorporates a separate printer for read-out for each lane to be scored; and (6) is formed of a number of electronic registers fabricated primarily of semiconductor components.

3,700,237
TWO-PIECE FOOTBALL DUMMY
Harold W. Kopp, 21 Lancaster Drive, Saxonville, Mass.
Filed Nov. 18, 1970, Ser. No. 90,650
Int. Cl. A63b 67/00
U.S. Cl. 273—55 A **5 Claims**



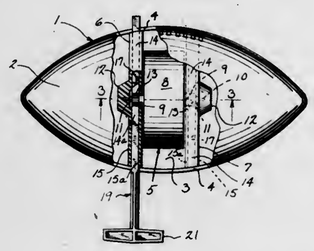
A two-piece football dummy for physical contact training comprising a padded cylindrical, stand-up portion with a second portion attached thereto by vertically adjustable means. The second portion is also generally cylindrical with smaller diameter end portions extending transversely of the stand-up portion to represent the head and shoulders of an opposing player at a predetermined height.

3,700,238
OFFENSIVE TRAINING COORDINATOR
Buddy H. Mathis, 4594 Hawthorne Place, Mobile, Ala.
Filed June 16, 1971, Ser. No. 153,511
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R **11 Claims**



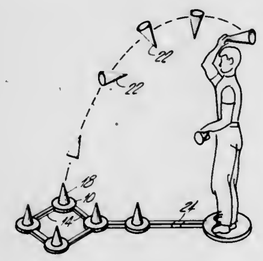
A machine for developing proficiency of a quarterback and pass receivers in football including a structure resembling the center of a football team and having a pair of arms adjacent the buttocks of the simulated center for supporting a football and having timing devices associated with the arm for sounding audible signals upon removal of the football from the arms by the quarterback preparatory to releasing the ball in response to timed signals.

3,700,239
TOY FOOTBALL
Robert J. Paterick, 6228 West Leroy, Milwaukee, Wis.; Eugenio R. Liana, 1580 North Farwell, Apt. 316, Milwaukee, Wis., and Jerry L. Kleman, 3918 West Orchard, Milwaukee, Wis.
Filed Dec. 30, 1971, Ser. No. 213,859
Int. Cl. A63b 43/00; A63h 1/04; A63b 1/32
U.S. Cl. 273—65 R **5 Claims**



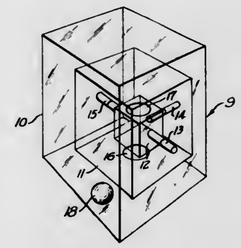
A plastic shell, shaped in the form of a football contains a pair of internal brackets. A gyroscope is rotatably attached to these brackets with its axis of rotation coincident with the axis of rotation of the football. A flexible plastic gear rack engages a pinion gear on the gyroscope, and when pulled through the football, sets the gyroscope in motion. When thrown, the football assumes a nearly perfect spiral rotation during flight.

3,700,240
MISSILE THROWING APPARATUS HAVING CONNECTORS HOLDING TARGETS IN A GIVEN SPACED RELATIONSHIP
Juan J. San Emeterio, Astoria, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,396
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R **4 Claims**



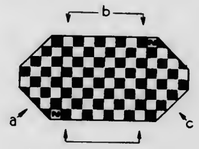
A game employing a plurality of pyramid shaped bases or targets and another plurality of hollow pyramid shaped members or missiles adapted to be thrown from a distance at the targets. A platform is provided for the game player to stand on while projecting the missiles toward the targets. The target areas and the platform are held rigidly in a spaced relationship from one another.

3,700,241
APPARATUS FOR PASSING A BALL THROUGH A SERIES OF CONCENTRIC CONTAINERS
Charles H. Tracy, 53 East Main Street, Earlville, N.Y.
Filed Jan. 3, 1971, Ser. No. 112,114
Int. Cl. A63b 72/04
U.S. Cl. 273—95 R **2 Claims**



The game includes a plurality of transparent containers located one within the other. The containers may be rectangular, spherical or of any other suitable shape. The containers are so mounted that adequate passages are provided between the inner surfaces of one container and the outer surfaces of an adjacent container. Openings of suitable size are provided in the inner containers at different locations. The game may consist in moving one or more play pieces located within the outer container. The play pieces may be spherical, round, oval or of any other suitable shape. Obviously they must be of a size which will enable them to pass along the passages and through the openings. The game may be varied by providing play pieces of different colors and shapes and by different arrangements of the openings.

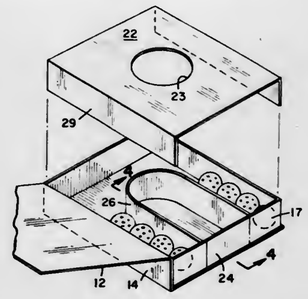
3,700,242
CHESS GAME APPARATUS
Bernard Sterler, 51 Kime Ave., North Babylon, L.I., N.Y.
Filed Aug. 5, 1970, Ser. No. 61,326
Int. Cl. A63f 3/02
U.S. Cl. 273—131 KP **2 Claims**



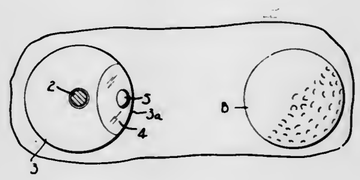
A zonal chess game comprising a center board containing 64 squares and two generally triangular boards, each containing 20 additional squares, at opposite ends of the center board; and two conventional sets of playing pieces with two extra pawns in each set.

3,700,243
PUTTING CUP ARRANGEMENT FOR GOLF PRACTICE
Jerald R. Kenney, 360 Mountain Avenue, Piedmont, Calif.
Filed April 21, 1971, Ser. No. 136,142
Int. Cl. A63b 57/00
U.S. Cl. 273—178 R **8 Claims**

A putting cup arrangement in the form of a box structure for putting practice away from a golf course is described. The arrangement simulates a hard-bound book volume and includes a cover portion which is pivotally hinged to the remainder of the structure in the same manner as a book cover is hinged to the remainder of a book. A wall of the structure immediately beneath the hinged cover portion is provided with an aperture which simulates the opening of a golf cup. The cover portion is pivotal on the hinged securance between a closed position lying flat against the wall having the aperture and an open position in which the aperture is revealed and the cover portion acts as a ramp for the passage of a ball to the aperture. The floor below the aperture slopes downward to a flap in a side wall which may be opened so that balls may be discharged from the box structure. A partition interiorly of the box structure provides a space for ball storage and defines a raceway extending from a position below the aperture to the sidewall flap opening.



3,700,244
GOLF PUTTER INCLUDING SPHERICAL HEAD WITH MIRROR REFLECTING SURFACE
Alfonso L. Liotta, Box 2066, College Station, Pullman, Wash.
Filed Jan. 21, 1971, Ser. No. 108,336
Int. Cl. A63b 69/36
U.S. Cl. 273—183 D **1 Claim**

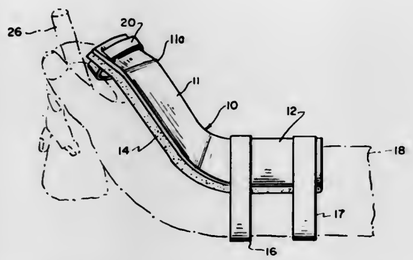


A putter for use to improve skill in putting a golf ball is provided with a ball engaging head which presents a spherical face to engage the ball. This face has a reflecting mirror surface in which the user of the putter can see the image of a ball while he grasps the putter handle. Within the reflecting area, and positioned in the area of the reflecting surface visible to the user grasping the putter, there is an indicator mark contrasting with the mirror surface so as to be readily visible.

3,700,245
GOLFER'S WRIST ATTACHMENT
Norando Nannini, 316 Euclid, Highwood, Ill.
Continuation of Ser. No. 14,442, Feb. 26, 1970, abandoned.
This application Jan. 3, 1972, Ser. No. 215,124
Int. Cl. A63b 69/36
U.S. Cl. 273—189 A **2 Claims**

A golfer's wrist attachment to restrain the wrist of the hand which is lower most on a golf club shaft in a cocked position during the entire golf swing. The attachment includes a one-piece semi-rigid member having a first portion which is

secured to the forearm and a second portion which overlies the back of the hand and is secured thereto. The angular rela-



tionship between said portions is such that the golfer's wrist is always maintained in the cocked position which is normally assumed only at the top of the backswing.

3,700,246

A SEALING DEVICE FOR INTRODUCTION OF A VERTICAL ROTARY SHAFT THROUGH AN UPPER WALL OF A CONTAINER OR PIPE

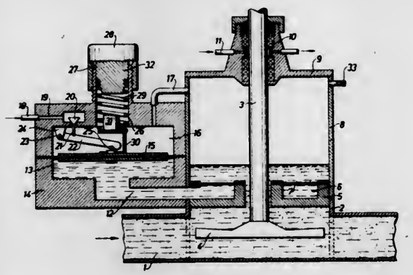
Knut Enarsson, Saffle, Sweden, assignor to Aktiebolaget Kalle-Regulatorer, Saffle, Sweden

Filed Feb. 16, 1971, Ser. No. 115,560

Claims priority, application Sweden, March 25, 1970, 4162/70

Int. Cl. F16j *15/00, 15/40*

U.S. Cl. 277—3 **3 Claims**



A sealing device for introduction of a vertical rotary shaft through an opening in an upper wall of a container or pipe filled with liquid under pressure, the purpose being to prevent the liquid from contact with a packing box supporting the shaft above said wall. A vessel surrounding a shaft portion below the packing box has a bottom opening coinciding with the opening in said upper wall and dimensioned to receive the shaft with clearance. The upper part of the vessel communicates with a source of pressurized gas through a throttle valve, and a diaphragm inserted in the bottom wall of the vessel is adapted to cause the valve to open for supply of gas when liquid from the underlying container rises above a predetermined level in the vessel.

3,700,247

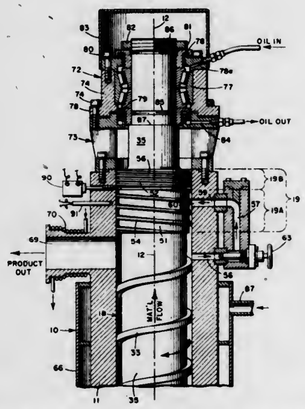
FLUSH COOLING OF SHAFT SEALING SCREW MEANS

Robert G. Butler, Dayton, Ohio; Don E. Carter, Creve Coeur, Mo., and George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,106

Int. Cl. F16j *15/40, 15/54*

U.S. Cl. 277—28 **6 Claims**



In certain shaft seals using a viscoseal-type sealing screw such as those adjacent the pressurized screw pump section of a viscous liquid devolatilizer, excessive heat buildup and/or prolonged elevated temperature exposure in the seal region can either deteriorate the liquid materials in the sealing screw or render such liquids less viscous to an extent such that the seal is no longer fully operative. To cool and flush the sealing screw and the liquid materials therein, a fluid conduit bringing fresh liquid material continuously to the sealing screw from the adjacent pressurized section is provided.

3,700,248

SLIDE RING FOR RADIAL AND AXIAL SEALING

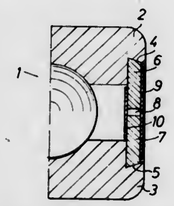
Fritz Teske, Industriestr. 28; Lothar Teske, Industriestr. 30, both of 505 Porz-Westhoven, and Robert Dreismann, Niehler-Kirchweg 139, 5 Cologne-Weidenpesch, all of Germany

Filed Nov. 10, 1969, Ser. No. 875,148

Claims priority, application Germany, Nov. 9, 1968, P 18 08 060.9; Nov. 9, 1968, P 18 08 063.2

Int. Cl. F16c *33/78*

U.S. Cl. 277—80 **20 Claims**



A slide ring seal for radial and axial sealing between a stationary and a rotating machine part, particularly in roller bearings, journal bearings and the like. Independent, strong and thick rings are tightly fastened to each machine part in a common radial plane with respect to one another, while an axial annular gap is maintained between them. The gap is covered by at least one annular plate which is held to the tight-fitting rings by magnetic force.

3,700,249

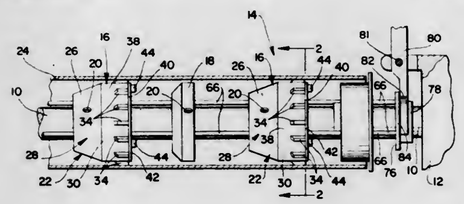
CHUCK

James N. Allam, Woonsocket, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Jan. 29, 1971, Ser. No. 111,036

Int. Cl. B23b *31/42*

U.S. Cl. 279—2 **7 Claims**



A take-up spindle carries axially spaced chucks each having a body carrying a plurality of chuck members for gripping the inner face of a hollow take-up core. Each chuck has a plurality of concentric springs which urge an actuator into a gripping position to cam the chuck members into gripping engagement with the core. Release mechanism concurrently urges the actuators of all the chucks to a released position whereupon the chuck members of each chuck are urged to a retracted position by an annular spring received in notches in generally radial faces of the respective chuck members. The chuck members are small and light weight to effectively eliminate resultant centrifugal force deforming the core, and are mounted to maintain a normal gripping force on the core although the core may tend to move axially of the spindle and chucks.

3,700,250

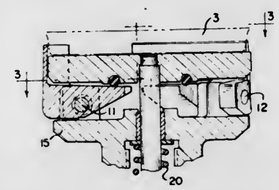
GRIPPING TYPE COMPOUND APPLYING CHUCK ASSEMBLY

Fred H. Bautz, Hazel Crest, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,048

Int. Cl. B23b *31/18;* **B25b** *1/04*

U.S. Cl. 279—35 **12 Claims**



A chuck assembly for positively gripping a cap, a bottle top or a can end. This chuck assembly is used on a compound applying machine to lift the rotating cap up to the compound applying nozzle and hold the cap by positive mechanical pressure while compound is applied from the nozzle to the inside of the rotating cap.

3,700,251

CONVERTIBLE SIDEWALK BIKE

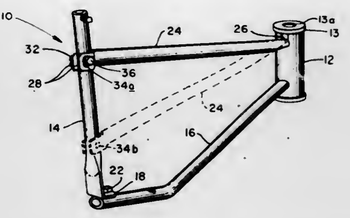
Raymond W. Boucher, Dothan, Ala., assignor to Hedstrom Company, Bedford, Pa.

Filed July 1, 1971, Ser. No. 158,680

Int. Cl. B62k *13/00*

U.S. Cl. 280—7.11 **6 Claims**

A cross-bar hinge for a convertible boy-girl bike employs a T-shaped tab projecting from the forward end of the cross-bar which seats in a notch formed in the upper rear edge of the head tube. A cap engages over the upper end of the head tube



which locks the tab in the notch, yet allows the bar to swing between the upper and lower positions.

3,700,252

METAL EDGE MEMBERS FOR SKIS HAVING VARIED LENGTHWISE STRESS-STRAIN RATIO AND SKIS INCLUDING SUCH MEMBERS

Hermann Schultes, Hohenems/Vlbg., Austria, assignor to Olin Coporation

Filed Jan. 29, 1971, Ser. No. 110,909

Int. Cl. A63c *5/04*

U.S. Cl. 280—11.13 N **12 Claims**



A metal edge member of the cracked variety which is formed so as to display a varied stress-strain ratio, or spring rate at different areas along its length to vary the flexibility of the edge member at different lengthwise areas on the ski.

3,700,253

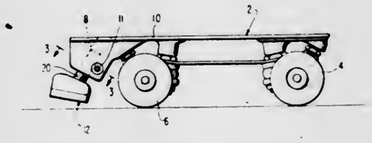
TOE STOP FOR ROLLER SKATES

Vernon D. Heitfield, Purcellville, Va., assignor to William Buffington, Jacksonville, Fla.

Filed Sept. 7, 1971, Ser. No. 178,312

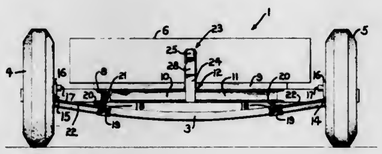
Int. Cl. A63c *17/14*

U.S. Cl. 280—11.2 **5 Claims**



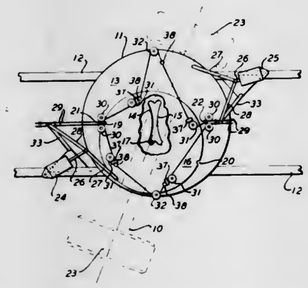
A toe stop has a flat floor-engaging surface disposed at such an angle to a mounting stud that it engages flat against the floor when the skate is tipped forwardly. The portion having the floor-engaging surface is molded of relatively soft plastic having a high coefficient of friction, and the portion in which the mounting stud is embedded is formed of relatively hard plastic with a lower coefficient of friction.

3,700,254
TRAILER
Leonard F. Eck, 418 North Hartup, McPherson, Kans.
Filed July 6, 1971, Ser. No. 160,003
Int. Cl. B62d 21/02
U.S. Cl. 280—63 10 Claims



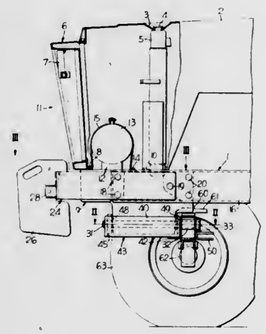
A trailer having an axle adapted to absorb shock includes a load supporting frame and a forwardly extending portion having an adjustable leveling hitch mounted thereon and having a movable portion selectively raised and lowered and connected to a towing vehicle to maintain the frame substantially level. The trailer includes a pair of wheels rotatably mounted on spindles at opposite ends of an axle formed of spring metal. Spaced connection members are mounted on the axle in upstanding relation with portions fixed to the frame and the connection members permit deflection of the axle relative to the frame as determined by the load on the trailer. The axle has a spindle at opposite ends and inclined downwardly to position the wheels closer together at the bottom than at the top when the frame is in an unloaded condition and substantially upright or slightly closer together at the top when the frame is in a loaded condition in response to deflection of the axle.

3,700,255
PIVOTABLE AXLE
Daniel H. Herbert, 138 Ainsworth Ave., East Brunswick, N.J.
Filed June 18, 1971, Ser. No. 154,353
Int. Cl. B62d 53/06
U.S. Cl. 280—81 A 3 Claims



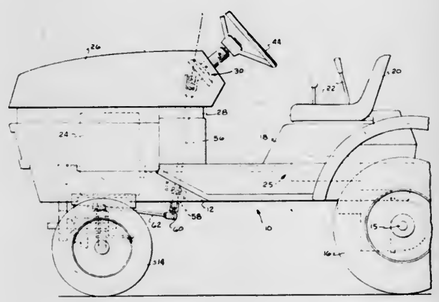
A trailer or truck axle which prevents scuff-wear of tires by yielding to a normal course with respect to the direction of travel by being anchorable at two different pivot points.

3,700,256
FRONT END SUSPENSION
Elborn W. Jones, Jr., State College, Miss., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Oct. 13, 1970, Ser. No. 80,286
Int. Cl. B62d 25/08, 37/04
U.S. Cl. 280—87 R 10 Claims



A front end suspension system having the radius rods extending forwardly from the front axle to support a pivot pin journaled in a massive support member supporting the front end of the vehicle and maintaining stability and steering control.

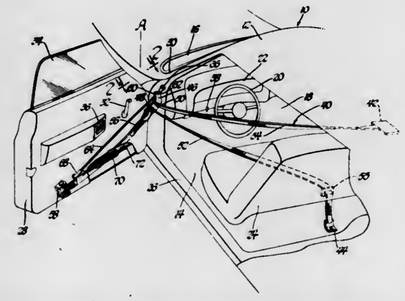
3,700,257
TILTABLE STEERING SYSTEM
Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed March 30, 1971, Ser. No. 129,433
Int. Cl. B62d 1/18
U.S. Cl. 280—87 A 7 Claims



A steering system for a vehicle including a tiltable steering shaft connected to a driven lever arm by a universal coupling, the driven lever arm being operatively connected to the vehicle's front wheels for transmitting motion thereto. The steering shaft is rotatively journalled within a steering yoke which is pivotally secured about an axis extending transversely of the vehicle and moveable back and forth thereabouts relative to an operator's station spaced rearwardly therefrom.

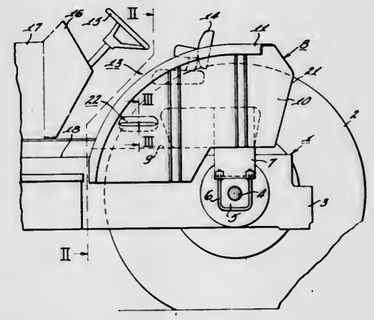
Housed generally within the steering yoke and operatively associated with the steering shaft is an orbital gear reduction arrangement which effectuates a reduction in the steering system before the output steering motion is transmitted through the universal coupling, thereby tending to minimize load pulsations and variations in steering response when the steering shaft and lever arm are disposed in substantial non-aligned orientations.

3,700,258
VEHICLE PASSIVE OCCUPANT RESTRAINING BELT ARRANGEMENT
Gary A. Wize, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 25, 1971, Ser. No. 156,892
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 3 Claims



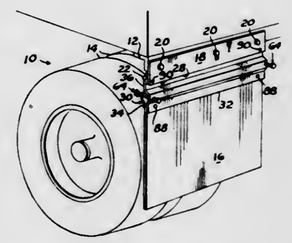
A vehicle passive occupant restraining belt arrangement includes a generally flexible cable with one end attached to the vehicle body generally adjacent the lower end of a windshield pillar laterally of the hinge axis of the adjacent door, a door mounted guide receiving the other end of the cable which extends to within the door for attachment to one end of a helical spring whose other end is fixed to the door, an apertured member slidably receiving an intermediate portion of the cable and connected to lap and shoulder belt portions of a first belt, and a second belt with one end fixedly attached to the apertured member and the other end received by a belt retractor mounted on the door adjacent the other end of the cable. During door opening movement, the cable is moved to a generally outwardly extending orientation and due to the lateral positioning of the one end with respect to the door hinge axis, the effective length of the cable is increased to tension the spring. As the spring and cable are thus tensioned, the retractor extends the second belt while the apertured member slides forwardly along the cable to move the lap and shoulder belt portions to easy-enter positions. During door closing movement, the retractor retracts the second belt and the apertured member slides rearwardly along the cable to move the lap and shoulder belt portions to occupant restraining positions while the cable slackens and moves to a generally longitudinally extending orientation adjacent the lower door edge and generally out of sight. In another embodiment, the one end of the cable slides through a guide mounted on the vehicle body adjacent the lower end of the windshield pillar and is attached to the forward edge of the door laterally of the hinge axis. In this embodiment, the effective change in length of the cable during door movement is increased by the corresponding change in distance between the guide and the end of the cable attached to the forward door edge. When the door is moved to closed position, a resilient member pulls the cable back through the guide and the cable assumes a slackened condition adjacent the vehicle body floor and generally out of sight.

3,700,259
FENDER LOUVER
Robert J. Scheinkoenig, Franklin, and Robert C. Haupt, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation
Filed Nov. 2, 1970, Ser. No. 85,864
Int. Cl. B62b 9/16
U.S. Cl. 280—152 R 10 Claims



A fender louver on the rear wheel fender of a tractor to provide visual means of determining the condition of wheel rotation.

3,700,260
MUD FLAP AND MOUNTING MEANS
Peter N. Moore, and Leo F. Pierce, both of 117 S.W. 23, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 858,078, Sept. 15, 1969, abandoned. This application Feb. 19, 1971, Ser. No. 116,775
Int. Cl. B62d 25/18
U.S. Cl. 280—154.5 R 6 Claims

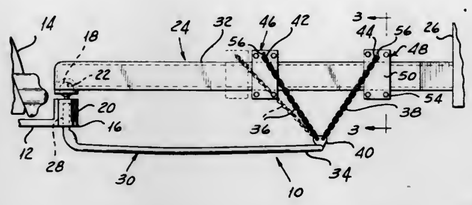


Spring urged clamp means, connected with a vehicle rearward support, grips an enlarged upper edge portion of a mud flap. Downwardly directed stress impressed on the depending portion of the mud flap opens the clamp means to release the mud flap.

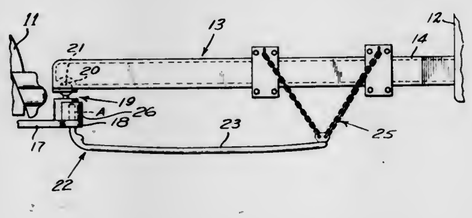
3,700,261
SPRING BAR ASSEMBLY FOR TRAILER HITCHES
Theodore K. Suckow, 160 Rock Road, Glen Rock, N.J.
Filed April 12, 1971, Ser. No. 133,239
Int. Cl. B60d 1/06
U.S. Cl. 280—406 A 16 Claims

The spring bar assembly for trailer hitches provides for each articulating spring bar, located adjacent opposite sides of a trailer A frame, dual suspension members interconnecting the free end portion of the spring bar with the A frame in such a

manner that the opposite ends of each of the suspension members are connected at points lying in spaced, imaginary, vertical planes to thereby provide a bending lift on the spring bar of relatively great amount in relation to the amount of relative horizontal movement between the spring bar and A frame.



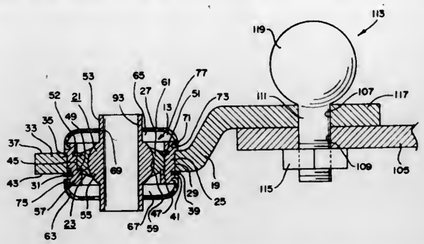
3,700,262
SPRING BAR TRAILER HITCH ASSEMBLY
Theodore K. Suckow, 160 Rock Rd., Glen Rock, N.J.
Filed July 12, 1971, Ser. No. 161,693
Int. Cl. B60d 1/06
U.S. Cl. 280—406 A **8 Claims**



In a spring bar trailer hitch assembly having spring bars each of which are connected at one end to the tractive vehicle to extend on one side of the trailer and the opposite distal end connected to the trailer so as to be free to move longitudinally relative to the trailer, the improvement comprising the connection of each of the spring bars in planes horizontally offset from the plane in which the hitch ball is located so that upon pivotal movement of the tractive vehicle and trailer relative to each other, as in fishtailing, will meet with significant initial resistance by both spring bars, but as the trailer moves further from the centerline of the tow car as in rounding a curve, the longitudinal movement of one of the spring bars relative to the trailer will be greater than such movement of the other spring bar thereby effecting a greater force on the side of the trailer on the outside of the curve than the force exerted on the side of the trailer located on the inside of the turn.

3,700,263
HITCH
Leon E. Day, Memphis, Tenn., assignor to Richard Routon and James B. Sellers, Memphis, Tenn., part interest to each
Filed April 27, 1971, Ser. No. 137,762
Int. Cl. B60d 1/06
U.S. Cl. 280—415 A **5 Claims**

A hitch for hitching a towed device, such as a trailer, to a towing vehicle such as a pick-up truck, automobile, tractor or the like. The hitch includes a swivel assembly, a ball and pin assembly removably held in the swivel assembly and adapted to be engaged by a socket mounted on a trailer tongue, and a holder retaining a movable portion of the swivel assembly in a fixed position. The ball and pin assembly and the holder are removable to convert the hitch so that it is usable with a tongue having a pin type of arrangement.



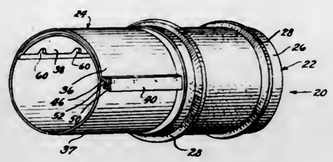
3,700,264
BOOK HAVING SUBDIVISIONS AND MEANS TO LOCATE THE FIRST LEAF OF EACH SUBDIVISION
Arthur S. Friedman, Merrick, N.Y., assignor to Carey Press Corporation, New York, N.Y.
Filed Nov. 2, 1970, Ser. No. 86,178
Int. Cl. B42f 21/12
U.S. Cl. 283—38 **1 Claim**

A book having a plurality of subdivisions which consist of a varying number of leaves. Reference leaves are located at the front and back of the book and flank the subdivisions. All the leaves are the same width except those which precede the first leaf of a subdivision, these are narrower. As a result of the above construction a person can thumb through the book and as he does so there will be a slight pause in the passage (flexing) of leaves past his thumb as each narrower leaf slips beneath his thumb and momentarily rests on the first leaf of the following subdivision for the period of the pause. This enables a user to more rapidly locate and stop at the first page of any desired subdivision.

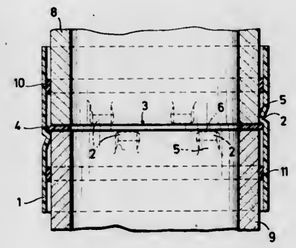
3,700,265
INTERNAL PIPE SEALING DEVICE
Raymond J. Dufour, Wheaton, Ill., and James J. Grimm, Columbus, Ohio, assignors to Northern Illinois Gas Company, Aurora, Ill.
Division of Ser. No. 35,140, May 6, 1970. This application Feb. 4, 1972, Ser. No. 223,596
Int. Cl. F16l 55/00
U.S. Cl. 285—15 **7 Claims**

The sealing device is composed of an inner expandable retainer member and an outer elastic sealing member. The inner retainer member in the unexpanded position has a cylindrical sleeve configuration with its end portions in an overlapping arrangement. One of these end portions has two locking-grooves to accommodate a range of pipe diameters,

which are adapted to receive and hold the other end. The outer elastic member has two annular spaced ridges formed of a deformable hard material which are urged against the pipe's interior by the inner retainer member to form an air-tight seal with the pipe.



3,700,266
DEVICES FOR CONNECTING PIPES TOGETHER
Karl Glehn, Wiethasetstrasse 58, Cologne, Germany
Filed Dec. 28, 1970, Ser. No. 101,920
Claims priority, application Germany, Dec. 30, 1969, P 19 65 600.9
Int. Cl. F16l 21/02
U.S. Cl. 285—24 **5 Claims**

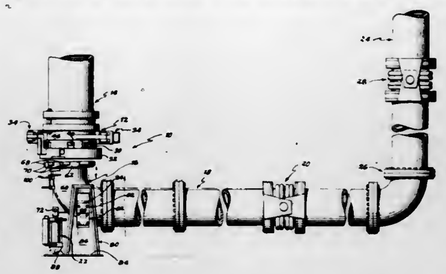


A device for interconnecting pipes and consisting of a yieldable plastics sleeve having two rows of axially offset lugs formed on its inner surface which serve to centralize and support the pipes. The rows of lugs have a gap therebetween accommodating a resilient or flexible plain annular disc. The disc separates the ends of the pipes and contacts stop faces of the lugs extending perpendicularly to the longitudinal axis of the sleeve.

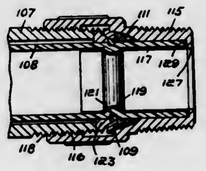
These lugs also have inclined bearing faces adjoining the stop faces and engaging the pipes and the disc can slide over these faces when being installed in the gap. Sealing rings are disposed between the exterior of the pipes and the interior of the sleeve.

3,700,267
PIVOTAL QUICK DISCONNECT FLUID FLOW COUPLING
Henry John Piegza, Clarence, N.Y., assignor to Welding and Steel Fabrication Co. Inc., Tonawanda, N.Y.
Filed Nov. 4, 1971, Ser. No. 195,653
Int. Cl. F16l 19/00
U.S. Cl. 285—24 **5 Claims**

An upwardly opening, generally L-shaped movable coupling part is mounted for vertical pivoting movement at one end of an elongated horizontally extending fluid conduit under the control of a fluid cylinder, and a rotary locking ring is supported on a downwardly opening, relatively stationary coupling part and operable to releasably lock open ends of the coupling parts together in vertical alignment. Guide devices serve to constrain the movable coupling part for vertical swinging movement; such devices being effective in preventing horizontal displacement of the movable coupling part due to thermal expansions/ contractions of the mounting conduit. The coupling parts carry a safety device for preventing undesired unlocking rotations of the locking ring.

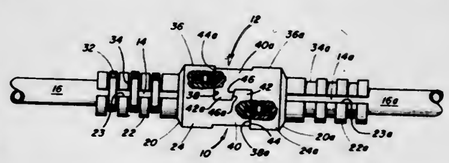


3,700,268
POSITIVE LOCKING TERMINAL BUSHINGS FOR FLEXIBLE PIPE
Anker J. Nielsen, Jr., 410 Bailey Rd., Holden, Mass.
Division of Ser. No. 522,877, Jan. 25, 1966, abandoned. This application July 2, 1969, Ser. No. 847,775
Int. Cl. F16l 9/14
U.S. Cl. 285—55 **3 Claims**



This device is an adapter for joining flexible tubing run through a rigid pipe to such pipe and to continuing rigid piping, in both fluid-tight and mechanically positive relation. When the adapter is screwed on to the rigid pipe, the end of the pipe presses a non-metalic gasket into sealing relation with the protruding end of the flexible tubing and the adapter and forces a deformable metallic ring to contract about the tubing and crimp the tubing into a preformed groove in a metallic sleeve within the tubing. Stop means keeps the parts from exerting destructive pressure on the gasket.

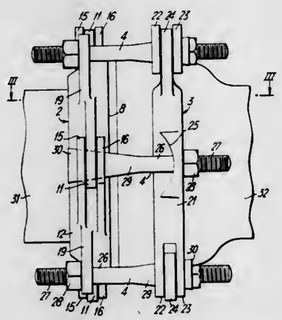
3,700,269
SEXLESS HOSE COUPLING
Eugene A. Salata, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 17, 1970, Ser. No. 90,243
Int. Cl. F16l 13/00
U.S. Cl. 285—78 **4 Claims**



A coupling for interconnecting lengths of flexible hose having identical half members including cooperating complimen-

tary surfaces which upon abutting the halves together and twisting them in opposite directions cam the halves together into a tight fitting connection. Spring biased detent pins serve to permanently secure the halves in the coupled position when the adjacent ends of the connected hoses are compressed together.

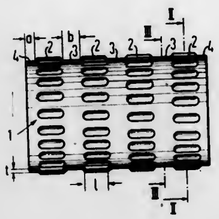
3,700,270
LEAK CLAMP ASSEMBLIES
David Campbell Howard, Newcastle upon Tyne, England, assignor to The Gas Council, London, England
Filed March 8, 1971, Ser. No. 121,944
Int. Cl. F16l *21/00*
U.S. Cl. 285—337 **4 Claims**



A leak clamp assembly for repairing a leak in a spigot and socket joint in a gas pipe includes a split sealing ring of resilient material which is placed around the spigot and against the outer face of the socket and a split rigid backing-up ring which is also placed around the spigot on the side of the sealing ring remote from the socket and a series of clamps which act between the backing-up ring and the back face of the socket. The backing-up ring comprises at least two arcuate sections containing a bolt hole at each end, the sections being connected end to end to form the ring and overlapping at their junctions so that the corresponding holes are at least partly in register with each other. The clamps comprise bolts for passing through the pairs of overlapping holes and designed to engage behind the socket preferably with an anchor ring which is assembled around the pipe behind the socket. The bolts comprise a conventional shank for cooperation with a nut and a head which tapers to the shank, the arrangement being such that the backing-up ring section can be arranged with the bolt holes overlapping to a minimum degree around the shanks of the bolts to provide the backing-up ring with a maximum size, but on tightening the nuts on the bolts, the tapered heads are drawn into the overlapping holes thus increasing the extent of the overlap and drawing the backing-up ring sections further together until the backing-up ring tightly engages the sealing ring and clamps it around the spigot and against the face of the socket of the spigot and socket joint.

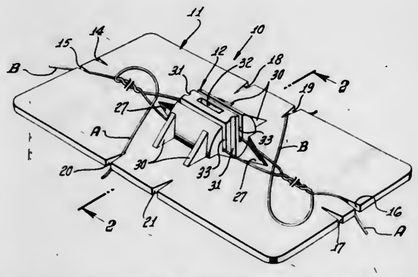
3,700,271
SPACER RING
Gunter Blaurock; Hans Stender, both of Schweinfurt, and Werner Will, Geldersheim, all of Germany, assignors to Deutsche Star Kugelhalter GmbH, Schweinfurt am Main, Germany
Filed April 8, 1971, Ser. No. 132,503
Claims priority, application Germany, April 16, 1970, P 20 18 367.9
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.04 **10 Claims**

A tubular spacer ring for frictionally fastening a shaft in the oversized bore of a machine element is bent from a strip of embossed sheet metal having several circumferential rows of axially elongated projections on one face and corresponding recesses in the other face. The projections have a preferred axial length of 5–8 times their radial height, and must have a



length of 3–10 times the height. The projections are identical and uniformly distributed in each row, but the rows are circumferentially offset by a fraction of the center-to-center spacing of the projections in each row.

3,700,272
FISHERMAN'S KNOT TYING DEVICE
George J. Bauer, 3498 Duffy Street, San Bernardino, Calif.
Filed April 8, 1971, Ser. No. 132,318
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **6 Claims**

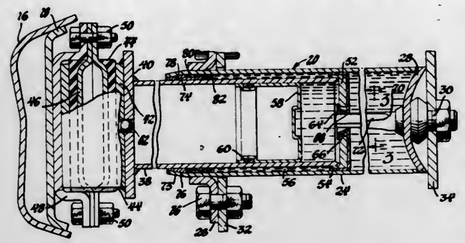


A hard plastic cylinder 5/8 inch in diameter and 3/4 inch long is freely rotatably mounted in a semi-cylindrical recess provided centrally in the upper surface of a 2 × 4 × 1/16 inch rigid sheet plastic carriage. Line anchoring notches are provided in the carriage ends and sides and a loop receiving slot is formed axially in the recess bottom with circumferential loop anchoring recesses at its ends.

The cylinder has two line twisting slots extending lengthwise thereof, and a central diametral loop receiving hole capable of alignment with said loop receiving slot in the carriage. Diametral line guide grooves are provided in the cylinder ends. The carriage recess has central conical free spaces at its ends whereby lines being tied into a knot may be rotated with the cylinder in order to twist two strands of a line together.

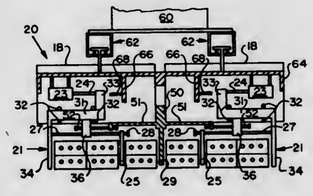
3,700,273
ENERGY ABSORBING BUMPER SYSTEM
George W. Jackson; Paul J. Long, Jr., and Wayne V. Fannin, all of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 19, 1970, Ser. No. 91,008
Int. Cl. B60r *19/02*; F16f *9/06*
U.S. Cl. 293—70 **5 Claims**

An energy absorbing bumper system for automotive vehicles includes a pair of fluid-filled telescopic cylinder units at respective ends of the bumper mounting the same to the vehicle chassis. Variable volume fluid chambers within each unit have the fluid flow therebetween controlled by a floating orifice and metering rod and one of the chambers is bounded by a gas piston urged by a body of compressed gas to force the



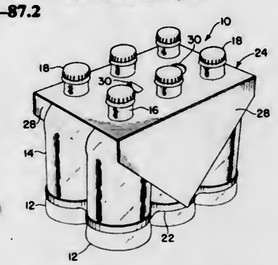
telescopic mounting unit to a definite extended or normal position wherein the cylinders of the unit are snugly interengaged to resist relative radial displacement in rough road conditions and the like.

3,700,274
APPARATUS FOR STACKING UNCURED BRICK
Forrest A. Paschal; Gerald L. Stuart, and Forrest A. Paschal, II, all of Silver City, N.C., assignors to Forrest Paschal Machinery Company, Silver City, N.C.
Filed March 4, 1971, Ser. No. 121,058
Int. Cl. B66c *1/30*
U.S. Cl. 294—63 R **6 Claims**



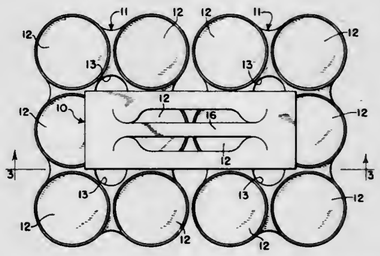
In a pickup head for gripping one or more columns of raw, uncured brick or tile arranged in end-to-end relationship, at least one support tongue disposed between a pair of outer gripper arms for reciprocal sliding movement longitudinally of the column. The slidable support tongue supports the brick intermediate the gripper arms and prevents deformation of the soft brick ends.

3,700,275
CONTAINER PACKAGE
Raymond E. Deasy, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,670
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **1 Claim**



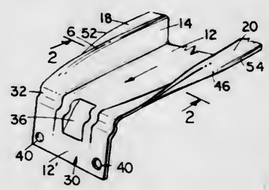
A container package for a plurality of bottles or the like including a carrier device which holds and retains the bottles in spaced positions adjacent the lower ends thereof, and a separator device which is positioned adjacent the tops of the bottles and is attached to the carrier device to provide a unitary package, the separator device further including handle means for carrying the package.

3,700,276
MULTIPLE CONTAINER CARRIER
Mindaugas Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Feb. 23, 1971, Ser. No. 118,000
Int. Cl. B65d *25/28*
U.S. Cl. 294—87.2 **5 Claims**



A carrier device for use with multiple container carriers for retaining and transporting a plurality of multiple container carriers.

3,700,277
ROOF BOW DEVICE
John Montean, Jr., North Olmsted, Ohio, assignor to The Ohio Moulding Corporation, Wickliffe, Ohio
Filed May 3, 1971, Ser. No. 139,774
Int. Cl. B62d *25/06*
U.S. Cl. 296—104 **10 Claims**

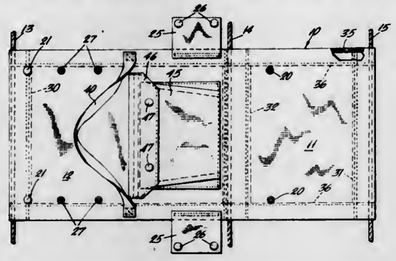


A roof bow device for use with a vehicle including a channel-like body member made from a single piece of sheet material adapted at its opposed ends for attachment to a vehicle. The body member includes a pair of oppositely disposed side walls interconnected together by a web portion with flanges extending laterally outwardly from the side walls adjacent the end remote from the web portion. The flanges each include flute-like deformations adjacent the opposed ends of the body member to provide optimum securement with the vehicle.

3,700,278
PORTABLE SEATING APPARATUS
Francis S. Gulba, 1405 Oakmont Street, Philadelphia, Pa.
Filed Jan. 12, 1971, Ser. No. 105,796
Int. Cl. A47g *7/62*
U.S. Cl. 297—191 **8 Claims**

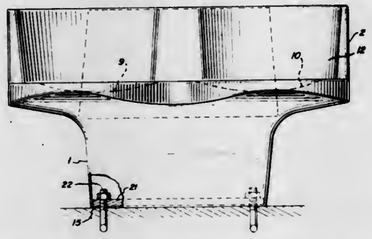
Portable seating apparatus is provided for suspension between spaced apart uprights such as trees. The seating apparatus is of flexible material and has a seat portion and a

backrest portion which are suspended from the uprights by means of tension elements extending outwardly from the upper margin of the backrest and from the bottom of the seat to engage around the uprights. The backrest tension element is secured around the uprights at a location above the place of attachment of the seat tension elements to dispose the backrest in an upright position in use. Means is provided to



releasably fasten the backrest in a position folded over the seat, and flap means is provided on the lower portion of the backrest to fold over the side edges of the apparatus for containing the tension elements when the apparatus is folded. A carrying strap is provided on the backrest to enable the seating apparatus to be transported readily in its folded configuration; and pouch means is provided on the reverse side of the backrest for storing articles.

3,700,279
TWO PLACE SEATING UNIT
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to Brunswick Corporation
Filed Oct. 2, 1970, Ser. No. 77,568
Int. Cl. A47c 5/12
U.S. Cl. 297—232 **7 Claims**

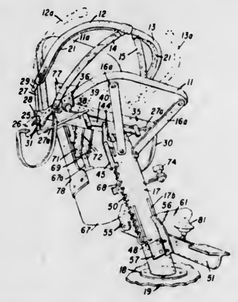


The invention is of a two place seating unit of molded fiberglass. The assembled unit is a unitary structure having a sculptured appearance, which permits the user to sit comfortably whether facing immediately forward of the seating unit or to either side. Cantalever mounting is employed to afford maximum free space beneath the seating consistent with its sculptured appearance.

3,700,280
METHOD OF PRODUCING OIL FROM AN OIL SHALE FORMATION CONTAINING NAHCOLITE AND DAWSONITE
Michael N. Papadopoulos, Lafayette, Calif., and Russell C. Ueber, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Continuation-in-part of Ser. No. 835,323, June 23, 1969, abandoned. This application April 28, 1971, Ser. No. 138,379
Int. Cl. E21b 43/24, 43/28
U.S. Cl. 299—5 **5 Claims**

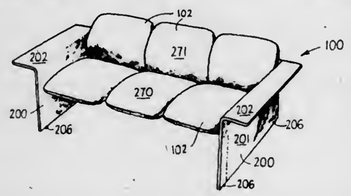
A new and improved method of recovering hydrocarbons and dawsonite decomposition products from a subterranean oil shale formation containing substantial amounts of nahcolite and dawsonite comprising penetrating said formation with at least one well borehole and forming a cavern therein. A hot fluid is circulated in the upper region of the cavern to effect formation of carbon dioxide by decomposition of the nahcolite and dawsonite thereby causing pressure build-up resulting in fracturization and/or rubbling and enlargement of the cavern, thereafter injecting simultaneously or sequentially into the upper region of the cavern a cooling liquid, and into the rubblized zone a kerogen-pyrolyzing fluid to recover hydrocarbons and final by recovering dawsonite decomposition products by suitable means such as solution mining.

3,700,281
AUTOMATIC SAFETY SEAT CLAMP
Robert Servadio, 3721 Parkview Avenue, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 804,423, March 5, 1969. This application March 8, 1971, Ser. No. 121,804
Int. Cl. A62b 35/60
U.S. Cl. 297—390 **8 Claims**

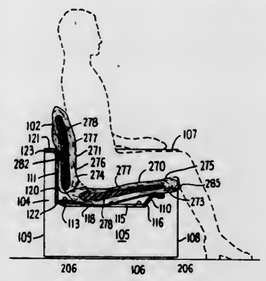


An automatic safety seat pair of clamps adapted to be moved in front of an occupant of a vehicle seat, one to restrain his mid section and the other, his shoulders, and thus prevent him from being thrown forwardly during an accident. The mid-section safety clamp is automatically raised from a low retracted position and the shoulder clamp is moved inwardly in front of the shoulders in response to the occupant's body pressure which actuates a switch on the seat back. The mid-section clamp completely encircles the occupant in response to foot pedal action. The clamps are retracted by motor power.

3,700,282
SEATING UNIT
David L. Rowland, 49 West 55th Street, New York, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,155
Int. Cl. A47c 4/02, 7/54
U.S. Cl. 297—440 **44 Claims**

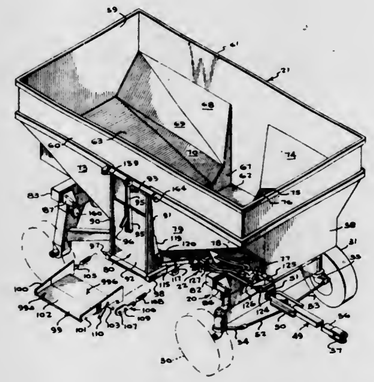


A seating unit, made up of: (1) a pair of side panel members, each comprising a planar vertical portion having a lower unit-supporting edge, often with a horizontal arm portion at its upper end, (2) a generally horizontal seat frame member, (3) a generally vertical back frame member having a generally vertical panel portion, often with a horizontal portion at its upper end, (4) releasable clamp or threaded means or other locking means securing each side panel member to the seat frame, (5) hinges securing the seat frame and back frame together, so that they can be folded together or erected at approximately a right angle, (6) releasable clamp or threaded means or other locking means securing the back frame to each



side panel, and (7) at least one cushion with seat and back portions resting on the seat frame and back frame, the seat and back frames each being a single cushion wide or a width equal to an integral number of cushions. The unit may also have removable upholstery; this may comprise a casing of stretchable upholstery fabric with padding at least five times as thick as the fabric adhered to the fabric; a suitable undersize casing is secured releasably around each side panel and held in tension thereon, and a similar casing is held in tension on the back frame. There are numerous important structural features in the various elements.

3,700,283
MATERIAL CARRIER
Bert A Birdsall, Mondamin, Iowa
Division of Ser. No. 752,843, Aug. 15, 1968, Pat. No. 3,572,643, which is a division of Ser. No. 527,947, Feb. 16, 1966, Pat. No. 3,412,883. This application Aug. 10, 1970, Ser. No. 62,355
Int. Cl. B60p 1/36
U.S. Cl. 298—7 **2 Claims**

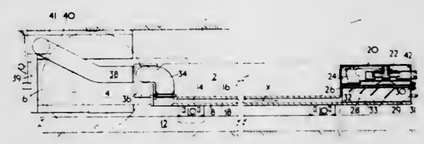


A material carrier movable over the ground and having wall structure of changing dimensions to provide an increasing dimension flow path to facilitate downward flow of material to a trough and discharge opening and with structure for tilting of the carrier relative to the supporting frame.

ERRATUM

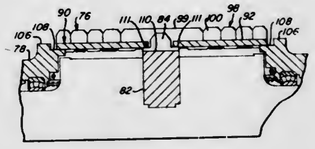
For Class 299—5 see:
Patent No. 3,700,280

3,700,284
UNDERFRAMES FOR LONGWALL MINERAL MINING MACHINES
James Malcolm Agnew, Burton-upon-Trent, England, assignor to Coal Industry (Patents) Limited, London, England
Filed June 28, 1971, Ser. No. 157,342
Claims priority, application Great Britain, July 17, 1970, 34,829/70
Int. Cl. E21c 35/22
U.S. Cl. 299—46 **9 Claims**



An underframe for a longwall mineral mining machine has a hollow deck which forms a guide duct for dust laden air which is drawn from the region around the cutter head and passed via the guide duct to a layer of filter material which removes the dust before the relatively dust free air is discharged into the mine atmosphere.

3,700,285
CUTTER CHAIN SUPPORT MEANS
Lester G. Rollins, 650 Forest Lane, Franklin, Pa.
Division of Ser. No. 786,649, Dec. 24, 1968, abandoned. This application May 5, 1971, Ser. No. 140,500
Int. Cl. E21c 27/24
U.S. Cl. 299—83 **11 Claims**



A cutter chain support means and more particularly a mining apparatus supporting a cutter chain for dislodging mineral from a solid mined vein.

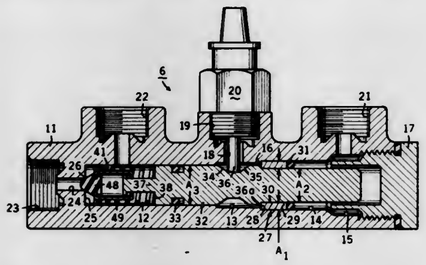
ERRATUM

For Class 299—18 see:
Patent No. 3,700,849

3,700,286
CONTROL VALVE
Richard C. Bueler, Glendale, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed March 26, 1970, Ser. No. 22,903
Int. Cl. B60t 17/22, 11/34
U.S. Cl. 303—6 C **8 Claims**

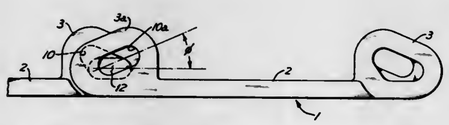
A control valve for use in a dual or split braking system which has a proportioning valve therein generally operable to proportion the fluid pressure in one of the systems. The control valve is provided with a shuttle or warning piston movable from a normally centered position to opposed translated posi-

tions in response to a predetermined differential between the separate supplied fluid pressures in said systems acting thereon. A by-pass passage is provided in the control valve connected in by-pass relation with the proportioning valve, and a valve member is normally urged toward a position closing said by-pass passage. A lost motion connection is defined between the shuttle piston and valve member wherein said



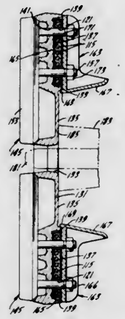
valve member is moved to a position opening the by-pass passage permitting the flow of one of the supplied fluid pressures therethrough in by-pass relation with the proportioning valve to obviate the proportioning function thereof upon the movement of the shuttle piston to one of its translated positions. It is also contemplated that the control valve can include the proportioning valve.

3,700,287
TREAD MEMBER AND ENDLESS TRACKS MADE THEREFROM
William J. Persin, Coraopolis, Pa., assignor to Baychem Corporation, New York, N.Y.
Filed June 25, 1971, Ser. No. 156,777
Int. Cl. B62d 55/22
U.S. Cl. 305—38 **8 Claims**



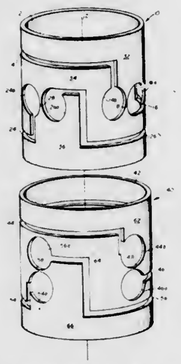
A one-piece molded plastic tread segment adapted for coupling with an identical tread segment without distortion of either member which comprises a one-piece body portion having a recessed opening defined by integral walls and adapted to receive the teeth of a driving means, said body portion having extending from either end thereof a plurality of tongue members, the area between any two tongue members defining a clevis area adapted to receive the tongue members of another identical member, each tongue member having an aperture molded therein and extending completely therethrough in a transverse direction, the configuration of the aperture of two of the tongue members, each of which is located at the extremities of and on opposite sides of the body portion, being such as to conform with the cross section of a pin, said cross section of said pin being substantially elliptical, said aperture in said tongue member being disposed such that it forms a predetermined angle ϕ along its major axis in relation to the horizontal plane of the body portion, the configuration of the apertures of the remaining or inner tongue members being substantially triangular such that a certain degree of rotational freedom is permitted said pin when inserted through said apertures. Endless tracks produced by the cooperative engagement of a plurality of tread members are especially suited for use on tracked vehicles, such as for example, snowmobiles.

3,700,288
PAVING MACHINE
Donald R. Davin, Shelbyville, and Gary H. Beckley, Mattoon, both of Ill., assignors to Blaw Knox Constuction Equipment, Inc., Mattoon, Ill.
Filed Dec. 31, 1969, Ser. No. 889,542
Int. Cl. B62d 55/24
U.S. Cl. 305—38 **10 Claims**



An asphalt paving machine mounted on rubber tread tracks. Each track is equally tensioned hydraulically. Each track is made of shoes which are individually connected to band sections. Replaceable rubber inserts are fastened to each shoe. Replaceable retains connected to each shoe engage bogie wheels which are attached to bogie carriages pivotally mounted on a torsionally flexible machine frame. A drive sprocket for each track is directly driven by a separate hydrostatic transmission with the sprocket supporting the track shoes and bands to maintain a constant pitch diameter for the track. The gear train between the hydrostatic motor and the sprocket is completely enclosed. A manual automatic engine speed control system is provided which automatically brings the paving machine engine to idle speed when the paving machine is stopped and brings the engine to its governed speed whenever the paving machine is moved. A closed center hydraulic system supplies fluid to operate power actuators.

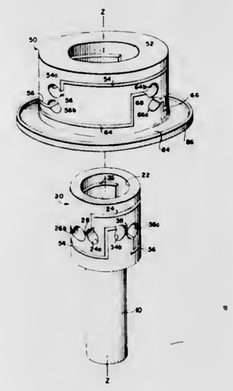
3,700,289
FLEXURE HINGE ASSEMBLY
Donald J. Bilinski, Randolph Township, Dover County, N.J., and Leon Weisbord, New York, N.Y., assignors to The Singer Company, New York, N.Y.
Filed April 15, 1970, Ser. No. 28,592
Int. Cl. F16c 11/12; G01c 19/18
U.S. Cl. 308—2 A **6 Claims**



A flexure hinge assembly wherein a pair of fixed telescoped tubular members are provided, each having one or more pairs

of axially spaced slots extending through their walls, the ends of one slot of each pair terminating a predetermined circumferential distance from the corresponding ends of the other slot of the same pair to form at least two flexure portions between the ends. The flexure portions of one of the tubular members extend parallel to the axes of the members, and the flexure portions of the other tubular member extend perpendicular to the axes of the members. A method of manufacturing a flexure hinge assembly.

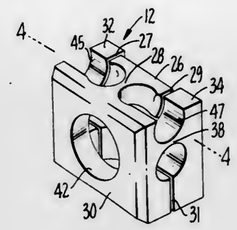
3,700,290
FLEXURE HINGE ASSEMBLY
Willis B. Ensinger, Silver Spring, Md., assignor to The Singer Company, New York, N.Y.
Filed April 5, 1971, Ser. No. 131,014
Int. Cl. G01c 19/22; F16c 29/00
U.S. Cl. 308—2 A **3 Claims**



A flexure hinge assembly consisting of a pair of fixed telescoped tubular members, each having two pairs of slots extending through the walls thereof, the slots of one pair being axially spaced from the slots of the other pair to form a first and second gimbal portion adapted for connection relative to a drive member and a driven member, respectively, and a third gimbal portion extending between the first and second gimbal portions. Holes are formed at the ends of each slot, with the holes of one slot of each pair terminating a predetermined circumferential distance from the corresponding holes of the other slot of the same pair to form flexure portions between the holes which provide effective connections between the gimbal portions while permitting movement of each of the first and second gimbal portions relative to the third gimbal portion about predetermined coordinate axes. A stop member is connected relative to two of the gimbal portions to limit the relative angular deflection between the gimbal portions.

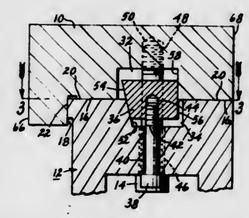
3,700,291
TWO DEGREE INVERTED FLEXURE
Wayne O. Hadland, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 29, 1971, Ser. No. 193,671
Int. Cl. F16c 11/00
U.S. Cl. 308—2 A **6 Claims**

An inverted flexure is provided having two degrees of freedom which can be made from a single block of material by simple drilling and sawing operations. The flexural axis of



either or both planes can be located either on or off the geometric center of the device.

3,700,292
APPARATUS FOR SECURING AND ALIGNING TWO ELEMENTS WITH RESPECT TO EACH OTHER IN ORTHOGONAL PLANES
William A. Owens, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 28, 1971, Ser. No. 147,960
Int. Cl. F16c 23/00
U.S. Cl. 308—3 A **4 Claims**

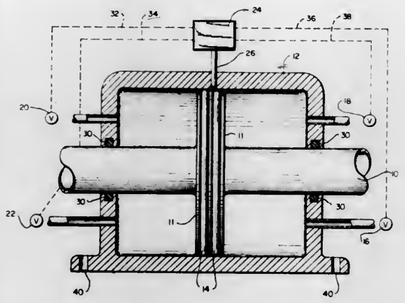


An apparatus secures and aligns distinct elements in two orthogonal planes. Each of said elements contains a key slot designed to accept a locating means when the desired surfaces of the elements are engaged with each other. The locating means is a key member that fits loosely in the slots wherein one wall of the key member forms a plane that obliquely passes through the plane of the desired surfaces and another wall of the key member engages the edge of the slot of one of the elements in a manner causing lateral movement of the elements with respect to each other when the key member is adjusted to move in a direction perpendicular to said lateral movement.

3,700,293
PISTON TYPE THRUST BEARING
James F. Dray, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed April 7, 1971, Ser. No. 132,015
Int. Cl. F16c 17/16
U.S. Cl. 308—9 **2 Claims**

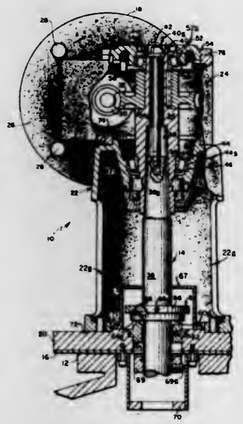
The invention is a piston type thrust bearing wherein the

rotating shaft has a radially extending plate attached thereto which defines a piston in a cylinder having fluid pressure act-



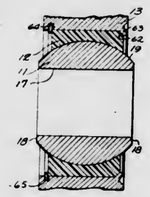
ing axially on opposite sides of said piston to absorb thrust loads.

3,700,294
SHAFT SUPPORT AND SEAL
John J. Lennon, Winchester, Mass., assignor to Nettco Corporation, Everett, Mass.
Filed April 21, 1971, Ser. No. 135,846
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **5 Claims**



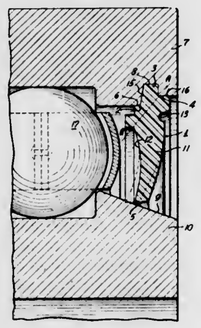
The inventions relates to a drive unit for rotating a shaft that extends into an enclosure and is sealed thereto by a conventional rotary seal. The shaft is supported by a bearing disposed a short distance from the seal so that oscillatory or pendulum-like movement of the shaft about the bearing as a center of rotation results in minimal radial displacement of the seal. The shaft is fabricated in two mating sections, an outer one connected to the supporting bearing and the inner one carrying the rotary seal. The inner shaft section can be axially displaced to separate the two sections for replacement of the seal without disturbing the bearing or other parts of the drive unit.

3,700,295
BALL AND SOCKET BEARING
Neil W. Butzow, Greendale, and Bernard Harris, Milwaukee, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Division of Ser. No. 826,565, May 21, 1969. This application Dec. 3, 1971, Ser. No. 208,026
Int. Cl. F16c *23/04, 33/20*
U.S. Cl. 308—72 **3 Claims**



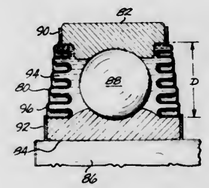
Identical or similar balls are assembled on an arbor and a low-friction material-lined glass filament reinforced hardened epoxy tube is formed thereover. The outer diameter of the tube is finished and the tube is cut into sections to comprise the sockets or outer races for the balls. The socket or outer race includes reinforcing glass filaments which extend helically from one end face to the other thereof and other filaments which extend helically from one end face to the outer surface thereof.

3,700,296
ANTIFRICTION BEARING
Ernst Bugmann, Honggerstrasse 118, CH-8037 Zurich, Switzerland
Continuation-in-part of Ser. Nos. 719,249, April 5, 1968, abandoned, and Ser. No. 738,023, June 18, 1968, abandoned. This application Jan. 15, 1971, Ser. No. 106,670
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **13 Claims**



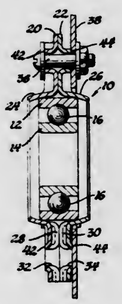
An antifriction bearing having radially spaced outer and inner races is provided with a polyurethane seal having glass fibers dispersed randomly therein between the races, the seal being an annulus which has an arcuate shaped body in longitudinal cross-section with its concave surface facing the interior of the bearing, an outer peripheral edge adapted to fit snugly in the outer race and an inner circumferential edge pressed against the surface of the inner race.

3,700,297
FLEXIBLE OSCILLATORY MOTION BEARING SEAL
Frederick I. Fickenwirth, Seattle, and Jan W. Van Wyk, Kirkland, both of Wash., assignors to The United States of America as represented by the Administrator of the Federal Aviation Administration
Filed Nov. 24, 1969, Ser. No. 879,474
Int. Cl. F16c *33/78*; F16j *15/50*
U.S. Cl. 308—187.2 **9 Claims**



An antifriction bearing assembly and seal installation for oscillatory motion about a longitudinal axis comprising a pair of longitudinally spaced, thin-walled elastomeric seals defining a hermetically sealed chamber which contains fluid lubricant. The seal comprises an intermediate portion having a plurality of bellows-like folds which have a pair of parallel straight portions concentric with the axis of rotation and interconnected at one end by a radially directed semicircular segment.

3,700,298
ADJUSTABLE SELF-ALIGNING BEARING MOUNT
Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 23, 1971, Ser. No. 174,053
Int. Cl. F16c *23/00, 23/08*
U.S. Cl. 308—194 **6 Claims**



An adjustable self-aligning bearing mount in which a bearing is clamped in a pillow block formed by a pair of flanged housing halves having abutting helically ramped faces so that these housing halves can be axially adjusted to the proper straddle for a particular bearing.

3,700,299
ROLLING BEARINGS
Robert S. Batt, Barby, near Rugby, England, assignor to The Torrington Company Limited, Conventry, England
Filed Aug. 30, 1968, Ser. No. 756,449
Claims priority, application Great Britain, Sept. 2, 1967, 40,202/67; Feb. 9, 1968, 6,554/68
Int. Cl. F16c *13/00, 33/00*
U.S. Cl. 308—212 **4 Claims**

This invention relates to bearing races and bearing cages which are made of material which is initially in sheet form and which is subjected to such operations as pressing, rolling and deep drawing in order to shape it into its final configuration and in such a bearing component the invention provides one

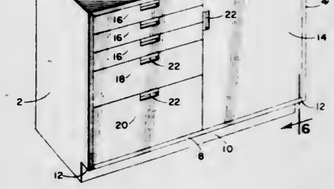


or more radial flanges which are thickened relative to the remainder of the component by folding over upon itself an end region of the component to create a multiple thickness of material constituting a flange.

ERRATUM

For Class 308—216 see:
Patent No. 3,700,845

3,700,300
MODULAR CABINET CONSTRUCTION
Donald A. Davis, Winchester, and Anthony Galluzzo, Woburn, both of Mass., assignors to The Schwamb Corporation, Arlington, Mass.
Filed Sept. 29, 1970, Ser. No. 76,505
Int. Cl. A47b *85/00, 43/00, 47/00*
U.S. Cl. 312—240 **10 Claims**

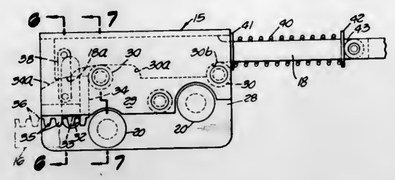


Modular cabinet construction wherein cabinet components, such as drawers, interior dividers, shelves, and exterior doors can be interchanged easily and quickly to convert the cabinet from all drawer type storage to all cupboard type storage, or to practically any desired combination of the two. The doors and interior dividers are mounted on the cabinet by resiliently biased pins or bolts, retraction of which permits removal of these members for converting the cabinet as desired. Drawer stop assemblies are provided on drawer guide members for preventing complete withdrawal of the drawers from the cabinet, with such assemblies being resiliently biased and adapted to be cammed out of the way to permit removal of the drawer for rearrangement thereof in the cabinet or for converting the cabinet into cupboard type storage.

3,700,301
SELF-LOCKING LATCH MECHANISM
Gunther A. Boeck, Northridge, Calif., assignor to Keystone Engineering Company, Los Angeles, Calif.
Filed Oct. 19, 1970, Ser. No. 81,927
Int. Cl. A47b *88/16*
U.S. Cl. 312—333 **15 Claims**

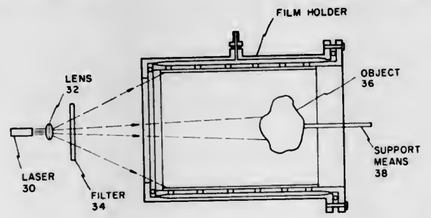
A self-locking positive latch mechanism for use between a pair of relatively slidable structures for holding the latter

selectively in any one of many different positions. Spring



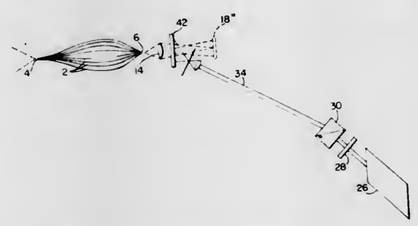
means function to hold the parts in their normal positive locking position except when manually held unlocked.

3,700,302
VACUUM FILM HOLDER FOR HOLOGRAMS
Windell N. Mohon, Winter Park, and Alfred H. Rodemann, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 27, 1971, Ser. No. 147,558
Int. Cl. G03b 27/60
U.S. Cl. 350—3.5 **1 Claim**



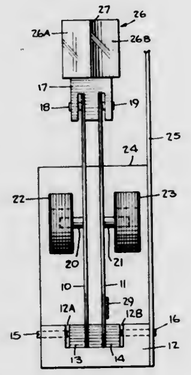
A movement proof film holder for making holograms is made by forming a vacuum chamber between the walls of two darkened open-ended concentric cylinders. The perforated walls of the inner cylinder are sealed by a layer of photographic film covering its inner surface. A vacuum is generated in the chamber to hold the film securely. A pair of similar cylinders made of transparent materials is used to hold the hologram for read-out.

3,700,303
EFFICIENT ILLUMINATION OF THE CORES ONLY OF A FIBER OPTIC BUNDLE USING HOLOGRAPHY
Luther W. Smith, Brimfield, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed May 19, 1971, Ser. No. 144,762
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 **2 Claims**



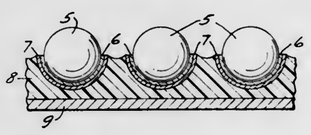
Holographic method of recording and reconstructing a wavefront, from an array of light spots on a dark field, to propagate the reconstructed wavefront so as to illuminate the light spots to the exclusion of the dark field.

3,700,304
OPTICAL SWITCH MECHANISM
Frank Dostal, and Charles Badowski, both of New York, N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,249
Int. Cl. G02b 17/00
U.S. Cl. 350—6 **9 Claims**



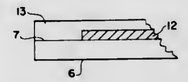
An optical switching mechanism including a vibrator having a pair of parallel reeds which are sustained in vibration at a rate determined by the resonance characteristic of the vibrator, the free ends of the reeds being ganged together by a headpiece. The arrangement is such that as the reeds sway simultaneously from side to side, the headpiece is caused to undergo a translating movement substantially free of an arcuate component. Mounted on the headpiece is a triangular reflecting element whose apex, in the static state of the vibrator, is aligned with a beam of incident radiant energy, whereby as the element, in the dynamic state, shifts to either side of the beam, the beam is deflected by the angled faces of the element in alternate directions.

3,700,305
RETROREFLECTIVE MICROSPHERES HAVING A DIELECTRIC MIRROR ON A PORTION OF THEIR SURFACE AND RETROREFLECTIVE CONSTRUCTIONS CONTAINING SUCH MICROSPHERES
Wallace Karl Bingham, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 14, 1970, Ser. No. 97,660
Int. Cl. G02b 5/12
U.S. Cl. 350—105 **11 Claims**



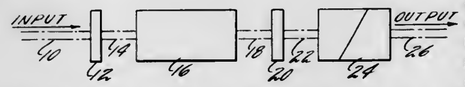
Retroreflective constructions containing microspheres with adjacent dielectric mirrors. Also microspheres having a plurality of coatings on a portion of their surface to form a dielectric mirror thereon.

3,700,306
ELECTRO-OPTIC SHUTTER HAVING A THIN GLASS OR SILICON OXIDE LAYER BETWEEN THE ELECTRODES AND THE LIQUID CRYSTAL
James V. Cartmell; Donald Churchill, both of Dayton, and Donald E. Koopman, West Carrollton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Sept. 22, 1971, Ser. No. 182,819
Int. Cl. G02f 1/16
U.S. Cl. 350—150 **12 Claims**



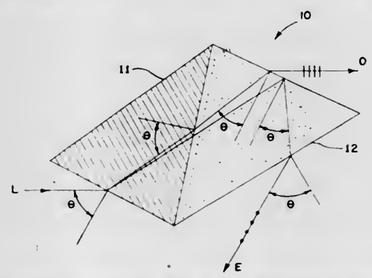
An electro-optic shutter employing nematic liquid crystal material is disclosed. The electrodes of the shutter of this invention are protected with a thin overcoat of an insulating material such as glass. This thin overcoat essentially prevents rapid electrode failure due to conduction of current through the liquid crystal material.

3,700,307
ADJUSTABLE NONLINEARLY TRANSMISSIVE OPTICAL DEVICE
William H. Glenn, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed April 5, 1971, Ser. No. 131,327
Int. Cl. G02f 1/24
U.S. Cl. 350—157 **4 Claims**



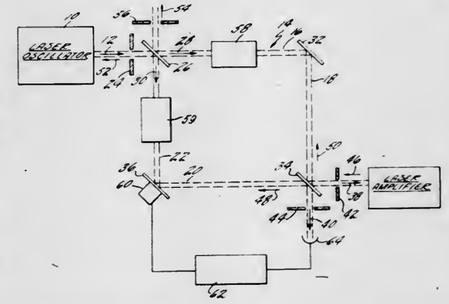
A nonlinear optical device which is useful because of its intensity-dependent transmissivity characteristic for Q switching or mode locking lasers and also as an optical limiter is disclosed. A combination of adjustable optical elements each of which causes a known effect on the polarization of radiation passing therethrough forms the device; one of these elements is a dielectric material which rotates the major axis of elliptically polarized radiation in an amount proportional to the intensity of the radiation, producing an intensity sensitive transmissive characteristic. The saturation parameters of the devices are variable and devices having either a saturable absorber or a saturable transmitter characteristic are described.

3,700,308
LIGHT POLARIZING PRISM OF ZIRCON
Van O. Nicolai, 11653 1B Northshore Drive, Reston, Va.
Filed March 22, 1971, Ser. No. 126,729
Int. Cl. G02b 5/30
U.S. Cl. 350—157 **1 Claim**



A laser beam splitting polarizer is constructed of zircon. Zircon can give about a 90° spread between the ordinary and extraordinary rays and is rugged enough to withstand high powered laser beams.

3,700,309
NONRESONANT INTERFEROMETRIC OPTICAL ISOLATOR
Michael L. Skolnick, West Hartford, and Carl J. Buczek, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed March 15, 1971, Ser. No. 124,137
Int. Cl. G02b 27/00
U.S. Cl. 350—163 **6 Claims**

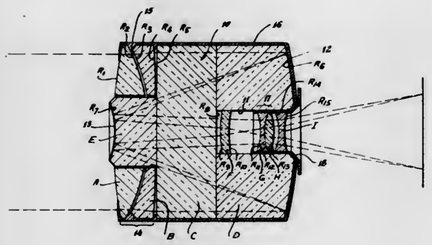


A nonresonant interferometric optical isolator is provided with an element having an index of refraction anisotropy. The isolator is a device having two beam paths and any input beam which passes through is split into two individual component beams, with each component being transmitted along a separate path before interfering with the other component and exiting from the isolator. The anisotropy causes the effective optical length through the isolator to be responsive to the direction of travel of an optical beam through the element so that an optical beam passing through the anisotropic element in a forward direction experiences an optical length which is different from the optical length the beam would experience traveling in a reverse direction. The two beam paths of the isolator have effective optical lengths in the reverse direction which differ from each other by half a wavelength and the components of an optical beam transmitted through the isolator in the reverse direction undergo destructive interference and leave the isolator along a path which is different from the input beam direction. Therefore, an input beam of optical energy is readily transmitted through the isolator in the intended direction, but any feedback beam passes through the isolator in a reverse direction and exits the isolator along a path which is different from the input beam direction.

3,700,310
COMPACT CATADIOPTRIC APOCHROMAT SYSTEM
Juan L. Rayces, Santa Ana, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Sept. 10, 1971, Ser. No. 179,367
Int. Cl. G02b 17/08
U.S. Cl. 350—201 **10 Claims**

A highly corrected compact optical system which has a large telephoto ratio, and which is particularly adapted for a photographic objective, is provided by a catadioptric system consisting of a solid refractive support which has a portion of smaller diameter projecting from its forward end and internal reflecting surfaces on its opposite end. An annular convergent reflecting surface on the rear end of the support reflects incoming light back through the support to a circular divergent reflecting surface which is on the forward end of the forwardly projecting portion and which reflects the light back through the opening at the center of the annular reflecting surface where a series of lenses are suitably provided for increasing the focal length of the system and correcting for some aberra-

tions. Light enters the system through an afocal doublet at the front of the system consisting of a positive lens in front of a negative lens with an air space between; this doublet has an axial aperture through it and is positioned at the front of the support, around the forwardly projecting portion. The positive



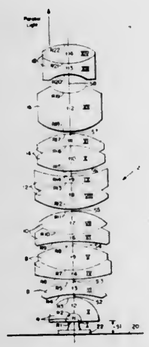
lens and the support are both of the same material which has substantially the same dispersive power as the material of the negative lens but a much lower (about 17 percent lower) refractive index, so that apochromatism is achieved with rather shallow spherical surfaces, which avoid zonal spherical aberration and the need for aspheric surfaces.

3,700,311

EIGHT COMPONENT 100X MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 22, 1971, Ser. No. 200,688
Int. Cl. G02b *21/02*
U.S. Cl. 350—214 **2 Claims**



An eight component apochromatic oil immersion microscope objective having a magnification of substantially 100X and a numerical aperture of substantially 1.30.

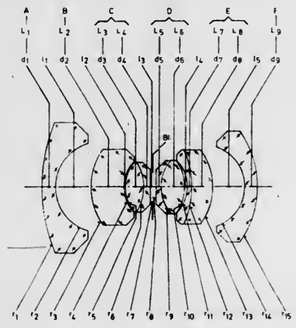
3,700,312

WIDE-ANGLE OBJECTIVE

Ludwig Bertele, Heerbrugg, Switzerland, assignor to Firma Wild Heerbrugg AG, Heerbrugg, Switzerland

Continuation-in-part of Ser. No. 816,218, April 15, 1969. This application Oct. 14, 1971, Ser. No. 189,263
Int. Cl. G02b *9/62*
U.S. Cl. 350—215 **5 Claims**

A wide-angle objective composed of six components separated from each other by air spaces and located three at the object side of the diaphragm and three at the image side of such diaphragm, said six lens components taken in consecutive order from the side of the object comprising: a first lens component composed of one or more dispersing meniscus lens members curved towards the object side; a second lens component which follows a larger air space composed of a meniscus lens component curved towards the object side; a third lens component which follows an air space and possessing a collecting refractive index and having a strongly convex curved outer surface facing the object side and further having a concave cemented surface facing the object side which at the side of the object possesses a greater refractive



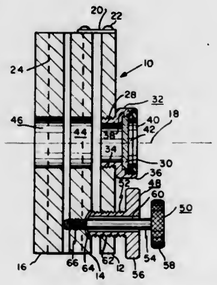
index than at the image side; a fourth lens component which follows the diaphragm space, said fourth lens component having a collecting refractive index and a strongly convex curved outer surface which faces the image and further possesses a concave cemented surface facing the image and which at the side of the image exhibits a greater refractive index than at the side of the object; a fifth lens component which follows an air space and comprising a meniscus lens component which is curved towards the image and assembled from at least one dispersing and collecting lens and; a sixth lens component which follows a larger air space and composed of one or more dispersing meniscus lens members curved towards the image.

3,700,313

COAXIALLY ADJUSTED OPTICAL MOUNT

Lawrence J. Karr, Venice, and Norman Fried, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 27, 1971, Ser. No. 212,525
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **6 Claims**



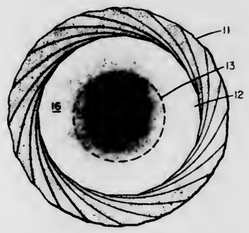
First and second plates facing one another are hinged at one edge by a strip of spring metal. An adjusting screw coupled between the plates urges the plates together or apart to position an optical element, lying in the first plate, along a first axis. A third plate is hinged to the second plate along a second edge 90° to the first edge. A second adjusting screw coaxial with the first one couples the second and third plates together for positioning the optical element along a second axis 90° to the first axis.

3,700,314

VARIABLE LIGHT TRANSMITTING FILTER FOR CAMERAS

Edwin S. Busby, Jr., Menlo Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed April 7, 1971, Ser. No. 131,996
Int. Cl. G02b *5/22*
U.S. Cl. 350—314 **3 Claims**



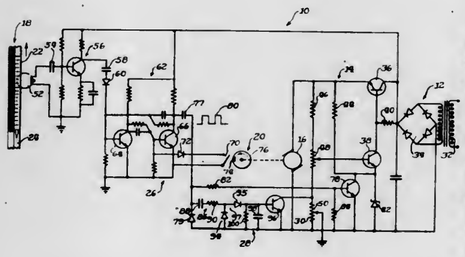
A filter for permanent installation to extend the effective range of iris openings of a camera; the filter has light transmittance characteristics varying smoothly from low transmittance at the center to high transmittance at the periphery.

3,700,315

AUTOMATIC SPEED CONTROL FOR MOVIE PROJECTOR

Edward B. Bernhold, Wheaton, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 16, 1970, Ser. No. 98,504
Int. Cl. G03b *31/04*
U.S. Cl. 352—17 **4 Claims**



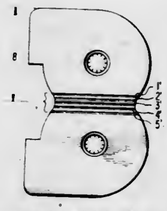
An automatic speed control for a sound-synchronized motion picture apparatus. Synchronizing pulses supplied by a tape recorder are compared with pulses generated by the projector. The comparative signal controls a flip-flop which supplies a square wave output signal to a voltage regulator. The square wave controls the voltage regulator which in turn controls the speed of the projector motor. Additionally, the flip-flop output triggers a switching means which shunts a control element of the voltage regulator in the presence of synchronizing pulses from the recorder so as to raise the regulator output voltage during sound-synchronized operation.

3,700,316

CINEMATOGRAPHIC FILM MAGAZINE

Taichi Kurechi, Ashigara-Kamigun, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 3, 1971, Ser. No. 177,722
Claims priority, application Japan, Sept. 3, 1970, 45/87802
Int. Cl. G03b *23/02, 1/60*
U.S. Cl. 352—78 C **2 Claims**



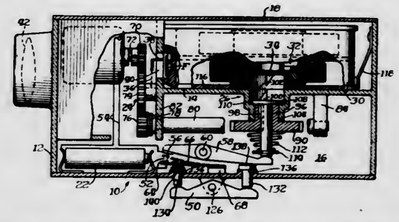
A plurality of grooves, in which the upright portion of a magazine stopper fits, are provided in the outer wall of a cinematographic film magazine between the take-up and supply shafts thereof, and the magazine, when placed on the magazine stopper, is balanced at one of the grooves, and detecting the amount of unexposed film in the magazine occurs by reading the graduation corresponding to the groove.

3,700,317

RETRACTED FILM TAKE-UP DRIVER

Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 67,112
Int. Cl. G03b *1/04*
U.S. Cl. 352—91 **7 Claims**



For use in a camera having film transported for take-up on a unidirectionally operable take-up member, a take-up drive selectively engageable with the member to rotate that member and connected to the camera drive so as to be rotated continuously during camera operation. For normal operation of the camera, a manually operable control actuates the camera motor energizing circuit and simultaneously moves the take-up driver into operative engagement with the film take-up member. When the control is released, the camera is de-actuated and the take-up is retracted. A second control is arranged to actuate the camera without engaging the take-up member with the take-up driver wherein exposed film accumulates in the film chamber but is not taken-up. This accumulated length of once exposed film is available for rewinding and re-exposure as is desirable in making lap dissolve sequences.

3,700,318

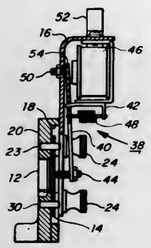
FILM GATE

Omar Leo Cunningham, Jr., La Jolla, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed April 26, 1971, Ser. No. 137,406
Int. Cl. G03b *1/48*
U.S. Cl. 352—225 **6 Claims**

An improved film gate for motion picture projectors, microfilm viewers and the like is disclosed. The film gate con-

sists essentially of rigid fixed platen and an arcuate spring platen. The platens have cooperating apertures corresponding to the film frame size. During film movement through the film gate the platens are spaced apart to serve as guides. While the



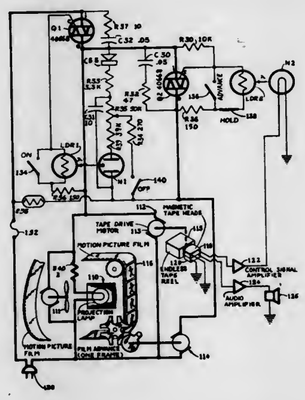
film is stopped for viewing, the spring platen presses the film against the fixed platen. The arcuate configuration of the spring platen provides rolling contact as it closes to prevent film damage.

3,700,319

CONTROL CIRCUIT FOR SINGLE FRAME FILM ADVANCE AUDIO PROJECTOR

Harold Gallina, Belleville, N.J., assignor to Optisonics Corporation, Montgomeryville, Pa.

Filed Jan. 12, 1971, Ser. No. 105,891
Int. Cl. G03b *31/00*; H01j *39/12*; H03k *3/42*
U.S. Cl. 353—15 **10 Claims**



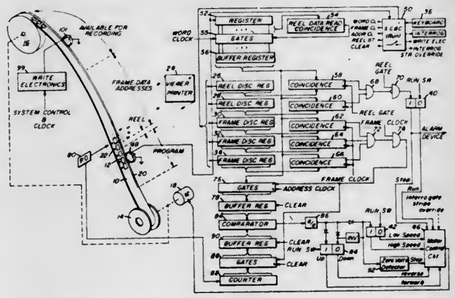
A control circuit for an audio-visual projector of the type wherein a dual track magnetic tape recording provides an audio presentation and control signal bursts for advancing a filmstrip in single frame sequence in predetermined synchronism with said audio presentation. The projector is turned on by manual operation of a momentary contact switch; this renders conductive a main semiconductive switch which energizes the projector lamp, the tape drive motor, and, via a diode, a first circuit control bulb and a storage capacitor in parallel with said bulb. Light from the bulb is sensed by a first photoconductor in parallel with the manual switch. The first photoconductor assumes a lowered impedance, thereby to maintain the main semiconductive switch (and hence the projector lamp, tape drive motor, and first bulb) energized so that the first frame of the filmstrip is projected and the audio presentation is heard. Each burst from the control track of the audio tape advances the filmstrip one frame as follows: the burst (after amplification) briefly energizes a second circuit control bulb; this illuminates (and lowers the impedance of) a second photoconductor, thereby to render conductive a second semiconductive switch which energizes the projector's geneva film drive mechanism. The second semiconductive switch shunts the first circuit control bulb and diode but does not extinguish the first bulb when turned on briefly because the capacitor, having been charged, supplies current to maintain the first bulb on during film advance intervals. However at the end of the audio visual presentation, a long control burst is provided which turns on the second semiconductive switch long enough to cause the capacitor's charge to dissipate, whereby the first control bulb turns off, interrupting the latching action of the circuit associated with the main semiconductive switch so as to turn off the entire projector.

3,700,320

AUTOMATIC SEARCHING SYSTEM

Waldo L. Brewer, and Joseph F. Laukaitis, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,201
Int. Cl. G03b *23/12*; G11b *5/00*; G06k *7/00*
U.S. Cl. 353—26 **7 Claims**



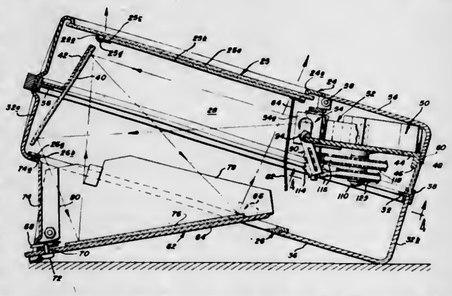
An automatic searching system, say for use with microfilm strips, hybridizes magnetic and optical searching techniques: Magnetically recorded descriptor data is not positioned relative to respective frames; and instead, magnetic frame address data is associated with descriptor data. A counter, under optical control, keeps track of frames which pass a reference (viewer) location; and a code-and-counter combination serves as an efficient frame-count keeper.

3,700,321

MICROFILM VIEWER

Arnis E. Peters, La Crosse, Wis., assignor to Micro 8 Company

Filed Nov. 18, 1970, Ser. No. 90,514
Int. Cl. 353 *78*; G03b *23/12*, *21/28*
U.S. Cl. 353—26 **14 Claims**



A portable, compact viewer is provided for illuminating, enlarging and viewing microphotograph frames that are carrier

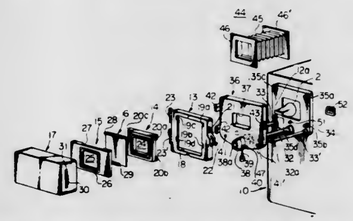
on a film strip pre-packaged in a cassette. An angled stand for the viewer carries one of the mirrors used in projecting the illuminated and enlarged image and provides shield means against random light entering the viewer. Simplified means are provided for selectively holding a film-containing cassette in proper optical position on the viewer and for releasing the cassette for focusing the lens means and for transporting the film in the cassette selectively in opposite directions, all without possibility of damage to the microphotograph-bearing portion of the film strip.

3,700,322

PHOTOGRAPHING ARRANGEMENT FOR USE WITH A CATHODE-RAY TUBE

Yasuyuki Morita, and Tsutomu Nishino, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadoma, Osaka, Japan

Filed Sept. 4, 1970, Ser. No. 69,648
Claims priority, application Japan, Sept. 5, 1969, 44/85646
Int. Cl. G03b *27/00*
U.S. Cl. 355—1 **5 Claims**



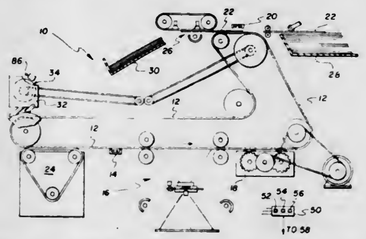
A method and arrangement for photographing optical images such as oscillographic waveforms displayed on a faceplate of a cathode-ray tube, wherein a glass fiber screen is attached to the faceplate to form a display surface at the leading end of the glass fiber screen and a sensitized photographic film is placed directly upon the display surface of the glass fiber screen so that the images on the display surface are photographed on the film without use of a lens or lenses interposed between the film and the faceplate. The contact pressure between the film and the display surface is in operation maintained at a desired constant value through detection and conversion into electrical signals of the contact pressure for direct reading of the contact pressure.

3,700,323

CONTROL CIRCUITRY FOR ASSISTING ELECTROSTATOGRAPHIC COMPENSATION

Franklin L. Guyette, and Donald R. Frank, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1971, Ser. No. 213,014
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **4 Claims**



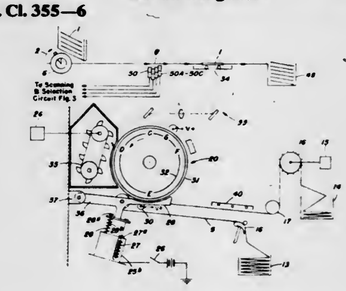
In an electrostatographic copying device of the type which utilizes a replaceable web having a particular sensitivity response which falls into one of a number of sensitivity response ranges, the particular sensitivity response range of each web being encoded thereon or on a cartridge in which the web is disposed, circuitry adapted to assist the control of any one of a number of operations to be performed with respect to a utilized web, in a manner which insures comparable copies when webs of differing sensitivity are employed from time to time.

3,700,324

ELECTROPHOTOGRAPHIC PRINTING SYSTEMS

Mark A. Hutner, Glenview; Neil A. Polit, Cary; Donald W. Watson, Arlington Heights, and Herbert C. Artelt, Jr., Wildwood, all of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1972, Ser. No. 221,229
Int. Cl. G03g *15/00*
U.S. Cl. 355—6 **23 Claims**



Improved electrophotographic printing systems are provided in accordance with the teachings of the present invention wherein a plurality of coded data records containing document information are scanned by code sensing devices and presented to electrophotographic imaging means at which the document information is imaged upon a photosensitive member and processed according to electrophotographic techniques for subsequent presentation to a transfer station. Code information from each of the plurality of data records scanned as provided by the code sensing devices is processed in accordance with selected conditions for printing and print and skip information is generated in sequence therefrom. The sequence of print and skip information is propagated through logic circuitry at a rate corresponding to the rate at which document information from each of the plurality of coded data records is electrophotographically processed in such manner that each bit of information in the print and skip information sequence is present at a predetermined output of the logic circuitry at a time when document information from the data record associated therewith is presented to the transfer station. At the transfer station, a transfer member which is normally maintained in a position displaced from the photosensitive member is continuously charged by an ion charging device and a transfer member assembly is provided to selectively bring the transfer member from its displaced position into a transfer relationship with the photosensitive member in response to the presence of a bit representing a print signal at the predetermined output of the logic circuitry.

3,700,325

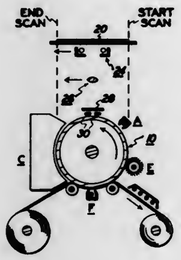
SCANNING OPTICAL SYSTEM FOR PHOTOCOPYING APPARATUS

David C. Harper, 233 Winona Boulevard, Rochester, N.Y.

Filed March 26, 1970, Ser. No. 22,936
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **15 Claims**

An optical system for forming and focusing a light image of an original onto a photosensitive surface by a scanning technique of exposing successive increments of the photosen-

sitive surface including a correcting lens that corrects any tracking error between a given point in the light image and its corresponding image point on the photosensitive surface which occurs perpendicular to the direction of scan when the



original and/or the photosensitive surface is not flat. The correcting lens, which can be a Fresnel lens, has a power which corrects the tracking error along the entire length of the exposure station by modifying the path of rays between the original and photosensitive surface.

3,700,326

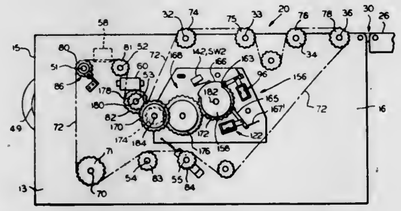
SWITCH CONTROL MEANS FOR A PHOTOCOPY MACHINE

Karl M. Murgas, Lincolnwood; Burton Greenberg, Skokie, and Otto A. Clark, Chicago, all of Ill., assignors to ICP, Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 745,841, July 18, 1968, Pat. No. 3,597,074. This application Aug. 21, 1970, Ser. No. 65,769

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **7 Claims**



An electrostatic photocopy machine comprising an original document transport means having a sheet copier position for reproducing an original document sheet of substantially any length and a book copier position for reproducing a book or other type original document of substantial thickness. In either the sheet or book copier position, increments of a moving original document are produced onto a simultaneously moving length of copy paper. A movable book carrier is removably attached to the machine when the original transport means is in the book copier position.

Switch control means, including a cam driven by a continuous chain, is used to turn the corona and the high intensity lamp on and off.

3,700,327

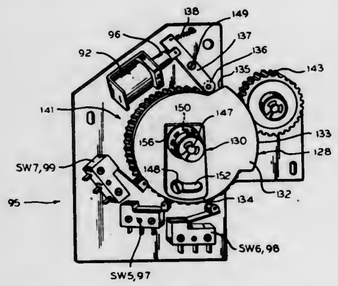
SWITCH CONTROL MEANS FOR AN ELECTROSTATIC BOOK COPIER MACHINE

Karl M. Murgas, Village of Lincolnwood, and Burton Greenberg, Village of Skokie, both of Ill., assignors to ICP, Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 65,769, Aug. 21, 1970. This application March 18, 1971, Ser. No. 125,559

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **5 Claims**



An electrostatic book copier machine includes a movable carriage on which an original document is positioned, for reproducing onto a simultaneously moving length of copy paper. Switches for turning "on" the high intensity lamp and the corona and causing the carriage to move the document past a scanning area, are controlled by a cam means, activated after manually depressing a print button, and automatically activated when reproducing multiple copies.

3,700,328

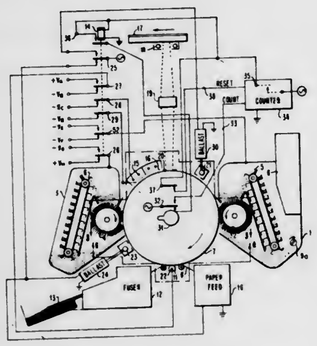
MAGNETIC BRUSH CLEANING SYSTEM

Ronald V. Davidge; Henry C. Locklar; James C. Ralston, and Robert T. Ritchie, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,756

Int. Cl. G03g *15/00*

U.S. Cl. 355—15 **15 Claims**



The present case concerns several systems for cleaning a photoconductor of residual toner at a cleaning station and recirculating the toner to a developer station in a copier machine. One embodiment contemplates a fairly continuous accumulation of residual toner in the cleaning unit and a periodic recirculation of the toner to the developer unit.

Another embodiment makes use of a cleaning station for performing cleaning of toner from an imaging portion of a photoconductor drum member and concurrent conveyance of residual toner from the cleaning station back to the developer station by another portion of the photoconductor. In still another version, recirculation is performed by augers. In some cases, recirculation is initiated by counter means operative after a predetermined number of cycles.

3,700,329

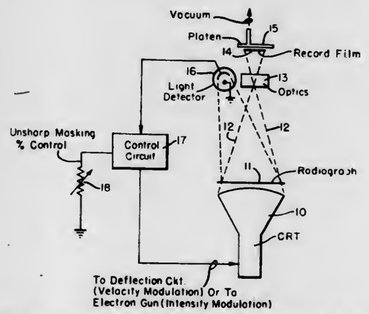
RADIOGRAPHIC REDUCTION SYSTEM

Robert P. Mason, Alexandria, Va., assignor to Log Etronics Inc., Springfield, Va.

Filed Aug. 2, 1971, Ser. No. 168,116

Int. Cl. G03b *27/78*

U.S. Cl. 355—81 **8 Claims**



The density range existing in a reduced-size copy of a radiographic film is linearly compressed by a system employing a combination of electronic unsharp masking cooperating with a dual-gradient record film. Image densities in the original radiograph between a range of 0 and approximately 2.0 are recorded on the higher contrast gradient portion of the record film characteristic, and are subjected to unsharp masking over the range of said higher gradient portion. Image densities in the radiograph in excess of about 2.0 are recorded, without masking, on the lower contrast gradient portion of said record film.

3,700,330

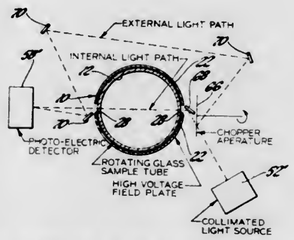
ELECTRO-OPTICAL VEHICLE EXHAUST PARTICULATE MONITOR

Roger C. Davis, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1971, Ser. No. 188,849

Int. Cl. G01n *1/00, 15/02, 21/12*

U.S. Cl. 356—38 **3 Claims**



A device for measuring the particulates entrained in a gaseous stream includes a rotating transparent cylinder through which the gases pass; a supply of dry ionized air for admixture with the gaseous stream to charge the particles entrained in the stream and a pair of electrodes adjacent the rotating cylinder for establishing an electrostatic field to precipitate the particles onto the cylinder wall. An optical scanning device then measures the collected particulate according to the attenuation of light beams passing through the cylinder wall.

3,700,331

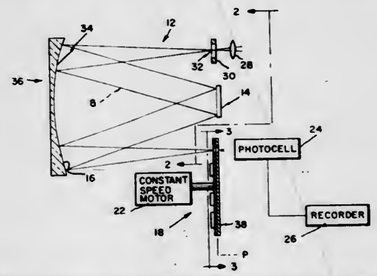
SPECTROMETER WITH ROTARY SCANNING DISC AND METHOD OF SPECTROSCOPIC ANALYSIS

Peter G. White, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 29, 1969, Ser. No. 888,385

Int. Cl. G01j *3/42, 3/12*

U.S. Cl. 356—83 **11 Claims**



A spectrometer and method of spectroscopic analysis for providing spectral data concerning a scene by collecting and collimating radiation from the scene to provide a radiation beam dispersing the radiation of the beam into a spectrum, forming a focused image of the spectrum, scanning the spectrum image in rapid succession by multiple narrow radiation receiving areas, and generating an electrical output representing the radiant flux incident on each area during its relative scanning movement along the image. The spectrometer may be equipped with means for mounting radiation filters over selected radiation receiving areas to provide information concerning selected characteristics, such as relative polarization, of the radiation from the spectrum image and for mounting narrow band-pass calibration filters over alternate radiation receiving area to permit calibration of the spectral data obtained from the scene.

3,700,332

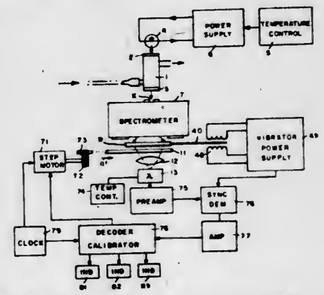
SPECTRAL ANALYSIS USING A MODULATING MASK TRANSMITTING SELECTED SPECTRAL LINES AND REFERENCE BANDS

John A. Decker, Jr., Concord, Mass., assignor to Comstock & Westcott, Inc.

Filed March 5, 1971, Ser. No. 121,283

Int. Cl. G01j *3/42, 3/36, 3/00*

U.S. Cl. 356—97 **25 Claims**



For detecting specific gases in an automobile exhaust selected lines of the exhaust gas absorption spectrum and

reference bands of the spectrum close to the lines are chopped by a mask at the spectral plane so that the light flux from the lines and bands are transmitted at different times. The flux of the lines and bands are also encoded by the chopping mask or a successive encoding mask and applied to a single photodetector which produces a series of electrical values representing the flux of the selected spectral lines.

3,700,333

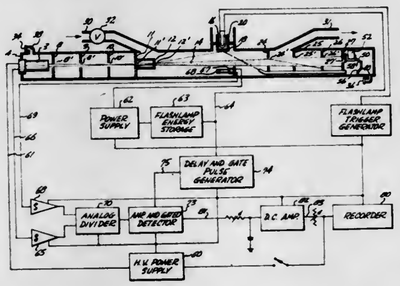
METHOD AND APPARATUS FOR MAKING AN IN-SITU DETERMINATION OF THE CHEMICAL PROPERTIES OF ATMOSPHERIC AEROSOLS

Robert J. Charlson, and Norman C. Ahlquist, both of Seattle, Wash., assignors to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 854,214, Aug. 29, 1969, which is a continuation-in-part of Ser. No. 729,812, May 16, 1968, abandoned. This application Feb. 4, 1971, Ser. No. 112,630

Int. Cl. G01n *21/00, 21/06, 21/26*

U.S. Cl. 356—103 **14 Claims**



An integrating nephelometer which provides an output signal proportional to the value of the extinction coefficient due to light scattering for a given sample of an atmospheric aerosol is described. A method for determining chemical and other properties of the aerosol sample using this nephelometer includes the steps of continuously varying some physical parameter of the aerosol sample while observing any change in the output signal provided by the nephelometer. In each case, a characteristic curve for the aerosol may be recorded over a range of values of the physical parameter, which curve identifies one or more properties of the aerosol, such as deliquescence, hygroscopicity, chemical composition, aerosol particle size distribution, and so forth. In one embodiment, the presence of deliquescent materials is ascertained by continuously varying the aerosol's relative humidity below a value of 100 percent while simultaneously recording the value of the nephelometer output signal and noting any discontinuities in the resultant recording. To obtain a clue as to the particular deliquescent material present in the aerosol, the relative humidity thereof is increased within a given range and the exact relative humidity at which a first discontinuity in the recording occurs is noted. To obtain an indication of the size distribution of the particles comprising the deliquescent aerosol, the relative humidity is further increased and the exact relative humidity at which a second discontinuity occurs is noted, and the slope of the characteristic curve between the first and second discontinuities thereof is calculated. By comparison of the aforementioned first discontinuity and slope with those of predetermined reference curves, information as to the particular deliquescent material and its size distribution may be obtained. The method is also applicable to hygroscopic materials and to other, broader, combinations of a reagent, physical parameter, and aerosol sample. Embodiments of apparatus for continuously varying the aerosol's relative humidity are also described.

3,700,334

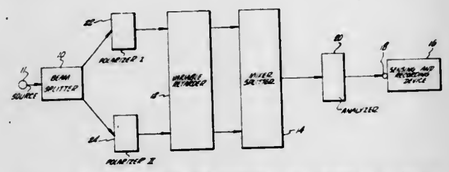
INTERFEROMETER-POLARIMETER

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Alain L. Fymat, San Marino, Calif., and Krishna D. Abhyankar, Hyderabad, India

Filed Nov. 13, 1970, Ser. No. 89,211

Int. Cl. G01b *9/02*; G01n *21/40*

U.S. Cl. 356—106 **7 Claims**



A system for measuring the intensity and state of polarization of a radiation field as well as obtaining the spectral variations of these quantities with a wide range of spectral resolution, i.e., from low to extremely high resolution values, is disclosed. The system generally includes any standard or conventional two-beam interferometer which is modified by the inclusion of a polarizer in each of the beams and an analyzer positioned in front of a sensor or recording device. More specifically, the system employs a beam splitter which serves to divide light from a selected light source into a pair of individual light beams. Each of the light beams is directed through a polarizer. The polarizers are positioned to have preselected planes of polarization with respect to each other and with respect to the plane of polarization of the analyzer. The polarized light beams are applied to a variable optical retarder which serves to selectively modify the relative optical path lengths of the light beams. An optical mixer may be employed to recombine the two light beams. The recombined light beams are projected through an analyzer, such as a linear polarizer, to a sensor or recording device.

3,700,335

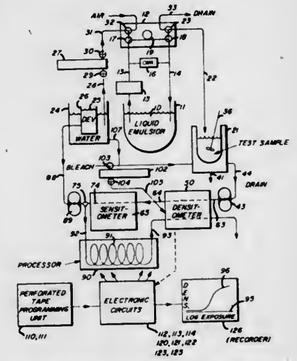
PROCESS AND APPARATUS FOR SENSITOMETRICALLY TESTING A LIQUID, PHOTOSENSITIVE EMULSION

David C. Seelbinder, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,485

Int. Cl. C01n *21/22*

U.S. Cl. 356—201 **27 Claims**



A continuous process and system for measuring and relating the densities of a liquid photographic emulsion to determine its sensitivity. A test sample of the emulsion is diluted with a fixed amount of water before being moved and circulated in a predetermined flow path. A densitometer and sensitometer are arranged in the flow path, and the unexposed emulsion is first introduced into the densitometer so as to measure the density thereof, before processing, and then into the sensitometer in which the emulsion is exposed to radiation of continually varying intensity and of selected spectral quality. After being exposed, the emulsion is mixed with a suitable processing solution; and the processed emulsion is then returned to the densitometer wherein the density is again measured. A recorder plots a graph representative of the density measurements so that the emulsion can be determined. The process and apparatus is continuous in its operation and sequence of operation through the medium of a program-control medium. Such a medium and its associated electronic circuitry provides the necessary control for actuating the various valves, pumps and other elements of the system in proper time and sequence to effect a complete and fully automatic emulsion testing device.

3,700,336

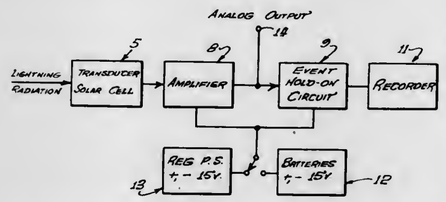
METHOD FOR OPTICALLY DETECTING LIGHTNING RADIATION

Robert J. Clegg, Auckland, New Zealand, assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1971, Ser. No. 134,933

Int. Cl. G01j *1/44*; H01j *39/12*

U.S. Cl. 356—226 **4 Claims**



The apparatus detects the optical radiation of lightning in both daylight and nighttime conditions. A silicon solar cell receives light radiations converting them to electrical signals which are amplified and electronically processed for recording purposes. Preferably, the electronics provide a thresholding means to selectively pass signals representative of lighting events to the recorder while blocking the relatively constant background radiation representative of the daylight.

3,700,337

STRUCTURE OF EXPOSURE MEASURING DEVICE USING TWO GALVANOMETERS

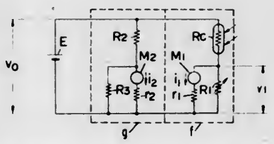
Tatsuo Fujii, and Toshio Tomomitsu, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,696

Claims priority, application Japan, June 18, 1969, 44/57010; June 18, 1969, 44/57011; June 18, 1969, 44/57012

Int. Cl. G01j *1/42*

U.S. Cl. 356—227 **4 Claims**



An electrical photo-exposure meter comprising at least one variable resistor operatively associated with an exposure factor whereby an accurate exposure free of any error resulting from a variation in the source voltage can always be obtained without checking the source voltage.

3,700,338

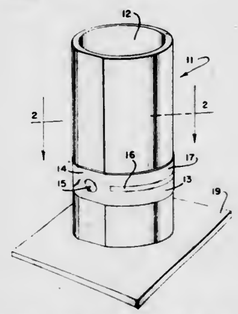
LIGHT SCATTERING CELL

Albert S. Trundle, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed June 9, 1970, Ser. No. 44,835

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **4 Claims**



A light scattering cell for containing liquid samples or particulate samples suspended in a liquid comprising a tube having light entrance and exit apertures with optical surfaces formed from thin transparent disposable film. The entrance aperture is flat and normal to the incident light and the exit aperture is a portion of a cylinder whose axis is normal to the scattering plane and is at the center of the scattering volume.

3,700,339

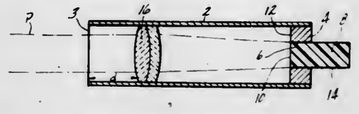
GUN SIGHT

William F. Steck, III, El Paso, Tex., assignor to W. R. Weaver Company

Continuation-in-part of Ser. No. 130,677, April 1, 1971. This application June 29, 1971, Ser. No. 157,868

Int. Cl. F41g *1/00, 11/00*

U.S. Cl. 356—247 **4 Claims**



A sight for use with a firearm which sight includes a flourescent reticle mounted in a holder which also carries a collimating lens operative to direct the image of the reticle along parallel lines to the eye of the shooter. The sight is sufficiently small, and is designed for use at a distance of three to four feet from the eye of the shooter so as to obscure very little of the image of the target from the field of vision of the shooter's eye, thereby permitting a shooter to use the sight with either one eye or two eyes open.

3,700,340

MULTICOLOR BALL-POINT PEN

Shingan Terasaki, Tokyo, Japan, assignor to Nikko Pen Kabushiki Kaisha, Tokyo, Japan

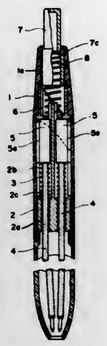
Filed Sept. 8, 1970, Ser. No. 70,080

Int. Cl. B43k *5/16, 27/12*

U.S. Cl. 401—33 **5 Claims**

The present invention relates to a ratchet-type multicolor ball-point pen, the rotatable cylinder of which is rotated by

vertical movement of an actuating stem and which cylinder is provided with an inclined surface, a vertical surface, and a notch between said surfaces, said notch and inclined surface



being adapted to cooperate with the tops of a plurality of ink-reservoirs, and shift said reservoirs successively into the writing position in response to vertical movement of the actuating stem.

3,700,341

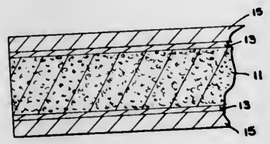
LAMINATED BOARD AND METHOD OF MAKING SAME

James P. Block, Long Beach, Calif., assignor to LCOA Laminating Company of America

Filed July 27, 1970, Ser. No. 58,230

Int. Cl. B23b *35/00*

U.S. Cl. 408—1 **2 Claims**



A laminated board formed of a core of pressed wood covered with preferably aluminum foil outer layers, adhesively bonded thereto, which is useful for a back-up board when drilling printed circuit boards which is formed by drying the pressed fiber core to a low moisture contest prior to adhesively bonding the aluminum foil thereto.

3,700,342

TOOL INFEEDING MECHANISM

John A. Cupler, II, 10 Cupler Drive, Cumberland, Md.

Division of Ser. No. 715,711, March 25, 1968, Pat. No. 3,478,419. This application Sept. 4, 1969, Ser. No. 871,133

Int. Cl. B23b *47/18*

U.S. Cl. 408—17 **5 Claims**

The disclosure introduces a new concept in machining; that of the non-captive tool. A non-captive tool is herein defined as one which may undergo bodily movement, transversely of its own axis, relative to both the tool bearing structure which supports the tool in working position and a tool support structure which supports the tool in a non-working position adjacent the bearing structure. The non-captive tool is unrestrained against the aforesaid bodily movement except during that time the tool is actually working and, while working, the restraint imposed is due to engagement with the tool driving means. Accordingly, removal of the tool driving means from engagement with the tool frees the same for bodily movement which movement may, advantageously, be integrated with the movement of the tool driving means out of engagement with the tool.

The disclosure is directed to methods and apparatus for automatically interchanging a plurality of non-captive rotary tools between working and non-working positions; for effecting tool interchange concomitantly with respective engagement and disengagement of working and non-working tools with a constantly driven input; for effecting infinitely variable infeed of the working tools; for automatically positioning a workpiece in accordance with pre-programmed operating cycles controlling a tool changer; for performing machining operations with a tool having a compound rotary input; and for transmitting a programmed cycle of operation from a master machining console to a plurality of slave machining centers.

The working and non-working tools in accordance with a first aspect of the invention relating to a tool changer are non-captively supported, in a horizontal position, on Vee bearings and a tool support rack, respectively. The tools are mounted on spindles which are adapted to be supported adjacent their outer ends on the support rack and at an intermediate portion thereof on the bearings. The bearings are of the Vee type and provide non-captive support for the tool spindles supported thereon to permit both rotary and reciprocating movement of the tools. Relative vertical movement between the rack and bearings results in an interchange of tools therebetween by virtue of the tools being lifted from either the bearings or the rack, depending on the direction of vertical movement.

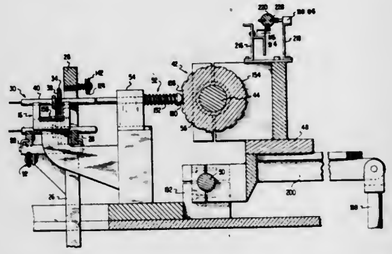
At least one flexible driving member is constantly recirculated adjacent the bearings and is mounted for vertical movement with the tool support rack for movement into and out of driving engagement with the working tools simultaneously with the aforementioned tool interchanging operation.

A linearly reciprocable cam follower is mounted adjacent each tool bearing in coaxial alignment with that end of the tool spindle remote from the working end; whereby reciprocating and/or advancing movement of the followers will be transmitted through one end thereof to the working tools. An elongated cone cam is positioned to engage the other ends of the followers and reciprocate the same upon rotation of the cone. The cone is, additionally, mounted for axial translation to provide for controlled advance of the followers and tools engaged thereby. Simultaneous rotation and translation of the cone results in a constantly advancing reciprocating path of tool movement.

A work station is positioned adjacent each of the Vee bearings and includes a work clamping and indexing mechanism whose sequence of operation is integrated with, and controlled by, the operating cycles undergone by the tool changing mechanism.

A tool having a pair of telescoped spindles, each of which is adapted to receive a separate rotary input, is provided for use in certain special machining operations.

A second cone cam is mounted outside the confines of the tool changing mechanism for reciprocating one or a plurality of followers comprising the input to a closed hydraulic slave system whose output is adapted to actuate additional tools.



3,700,343

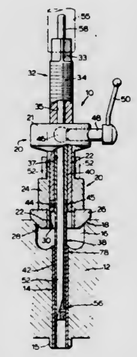
APPARATUS FOR PROVIDING OIL GROOVES IN VALVE GUIDES

John Parry, Orillia, Ontario, Canada, assignor to Ingenious Devices Limited, Orillia, Ontario, Canada

Filed Feb. 8, 1971, Ser. No. 113,389

Int. Cl. B23b *5/48, 5/08, 41/12*

U.S. Cl. 408—81 **8 Claims**



An apparatus for cutting an oil groove into a valve guide in a cylinder head. The apparatus includes bracing means for supporting the head with the combustion chambers either up or down, a feed body rigidly held against the cylinder head, and a rotary oil-grooving tool which is screw-fed down through a split-nut in the feed body and which has a tubular boring member with a tool bit which enters the guide and inscribes a helical oil groove on its interior wall.

3,700,344

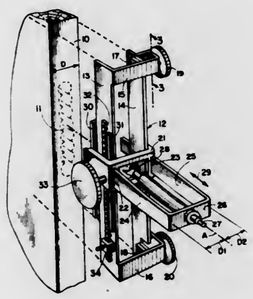
MORTISING DEVICE

Alfred T. Grumbach, 1427 Lincoln Boulevard, Santa Monica, Calif.

Filed Dec. 4, 1970, Ser. No. 95,313

Int. Cl. B27f *5/12*; **B23b** *45/14*

U.S. Cl. 408—108 **6 Claims**



A device for forming an end mortise in a door-stile includes a frame positionable on the door-stile with a carriage vertically slidable along the frame. The carriage supports a drill holding means which is guided by the carriage for in and out movement so that a series of vertical holes may be precisely drilled into the end of the door-stile to define a mortise of vertical slot shape for receiving conventional door latch and locking mechanism.

3,700,345

ECCENTRIC BORING SPINDLE

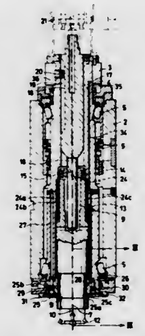
Paul Schubert, Imtobel, Germany, assignor to Cross Europa-Werk GmbH, Wendligen, Postfach, Germany

Filed May 10, 1971, Ser. No. 141,490

Claims priority, application Germany, Nov. 4, 1970, P 20 54 165.5

Int. Cl. B23b *47/00*

U.S. Cl. 408—150 **9 Claims**



A driven spindle carries a boring bar which is rotatable on an eccentric axis to adjust the cutting edges. The boring bar is mounted in the spindle by at least one bushing having an elastically deformable bearing surface which can be forced against the boring bar by an incompressible pressure medium. With the pressure released, the boring bar may be rotatably adjusted. Raising the pressure will reduce or eliminate the radial play of the boring bar in the spindle.

3,700,346

BORING BAR INSERT

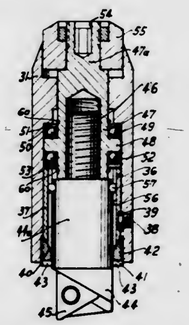
Otto Eckle, Lochgau, Germany, assignor to Firma Komet Stahlhalter-Und Werkzeugfabrik Robert Breuning GmbH, Besigheim/Neckar, Germany

Division of Ser. No. 806,572, March 12, 1969, Pat. No. 3,577,810. This application Feb. 1, 1971, Ser. No. 111,697

Claims priority, application Germany, March 20, 1968, P 17 52 014.8; March 20, 1968, P 17 52 012.6

Int. Cl. B23b *29/03*

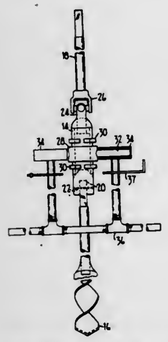
U.S. Cl. 408—153 **3 Claims**



A boring bar insert having two counterwise movable boring tool carriers, the tools of which are arranged at oppositely actuated ends of the boring tool carriers when rotated through 180° to one another. For counterwise movement and adjustment of the boring tool carriers there is between their mutually facing shank ends an adjusting ring co-operating with

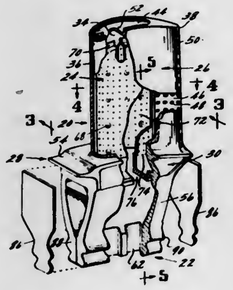
two counterwise screwthreads of the boring tool carriers and a centering device. The boring tool holders are securely held and also can be moved counterwise in the clamped condition. Centering of the boring tool carriers with respect to the boring bar axis is possible.

3,700,347
UNIVERSAL TAP JACK
Silvio Edward Nanne, and Renville O. Moody, both of Sault Sainte Marie, Ontario, Canada, assignors to The Algoma Steel Corporation Limited, Sault Sainte Marie, Canada
Filed Dec. 7, 1970, Ser. No. 95,862
Int. Cl. B23p *47/00*
U.S. Cl. 408—236 **1 Claim**



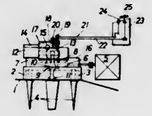
A drilling device comprises a tubular body portion having annular collar slidably mounted thereon so that the body can freely rotate within the collar and a drill rod is secured to one end of the body. A universal connection at the other end of the body is provided for attachment thereof to drill rotating means and a handle member is pivotally secured to the anular collar for manually directing the device.

3,700,348
TURBOMACHINERY BLADE STRUCTURE
Robert J. Cornuelier, Cincinnati; Thomas G. Howell, West Chester; Charles E. Corrigan, and Bernard L. Koff, both of Cincinnati, all of Ohio, assignors to General Electric Company
Filed Aug. 13, 1968, Ser. No. 752,736
Int. Cl. B64c *11/24*
U.S. Cl. 416—90 **5 Claims**



An economically fabricated turbomachinery blade structure with good and predictable high temperature characteristics having a hollow integrally cast member defining the blade portion, the platform portion, a transition shank portion defining an opening to the blade chamber and a pair of juxtaposed rails extending therefrom. A hollow insert, formed with a plurality of nozzles in the side walls thereof, is secured within the cast member chamber so as to direct coolant fluid against the inner surfaces of the blade portion. To provide means enabling attachment of the blade to a supporting rotor, in one form, the juxtaposed rails are formed into abutting contact at their free ends and bonded. In another form, a root insert is provided which is secured to the inner surfaces of shank rails. Suitable passages are provided to direct coolant fluid into the insert chamber and to discharge the coolant fluid through the trailing edge and the end closure of the blade. Means may be provided to automatically space the insert nozzles from the blade side walls. A plurality of posts may be provided in the trailing edge portion of the blade to increase the effective convection cooling area. All bonds subjected to structural loading are spaced from the blade portion and positioned to be bathed in coolant fluid so as to reduce their operating temperature environment.

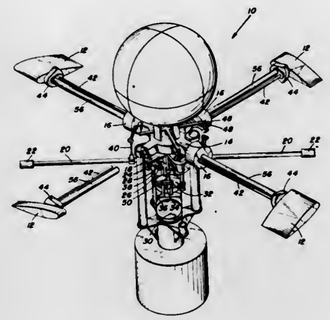
3,700,349
CONTROL SYSTEM FOR A BLADE-WHEEL PROPELLER
Werner Fork, Bremen-Artsen, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany
Filed June 14, 1971, Ser. No. 152,731
Claims priority, application Germany, June 18, 1970, P 20 29 996.1
Int. Cl. B63h *1/10*
U.S. Cl. 416—111 **9 Claims**



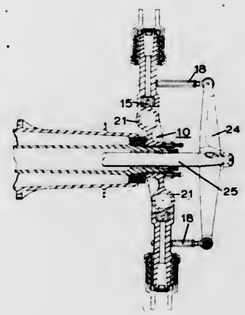
A blade-wheel propeller for a ship has pilot control means for operation of servo motors which displace a control column and are actuable from a remotely located control stand. A first pivotable servo shaft is operatively connected to the pilot control means and is connected to a rectilinear motion transmission means which includes a first pivot pin on a rectilinearly guided portion thereof. A second servo shaft is operatively connected to the pilot control means and is pivotally connected by a radius rod to the rectilinear motion transmission means. There are further provided means responsive to the position of the first pivot pin for operating the servo motors to position the control column to coincide with the pivot pin. A correction transmission in the form of a parallelogram joint is connected to the rectilinear motion transmission means and causes the central control disk to approach the neutral position along an approximately elliptical path.

3,700,350
HELICOPTER CYCLIC AND COLLECTIVE PITCH MECHANISM
Harold R. Scheibe, King George, and John E. Blankenship, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 3, 1971, Ser. No. 112,161
Int. Cl. B64c *27/74*
U.S. Cl. 416—114 **5 Claims**

An apparatus for changing both the cyclic and collective pitch of each blade of a rigid rotor helicopter with a single differential gear mechanism. To change the collective pitch, a spider element is moved up or down which simultaneously actuates the differential gear mechanism for each blade in order to change its pitch collectively To change the cyclic pitch, a seesaw type linkage is actuated and applies a torque to the swash plate and control gyro of the helicopter. The control gyro supports lateral arms and the applied torque changes their plane of rotation. Linkages connected between each of the control arms and differential gear mechanisms react to this change in the plane of rotation and actuate the appropriate differential gear mechanisms to cyclically change the pitch of the blades.

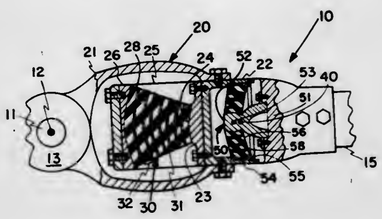


3,700,351
TAIL ROTOR HUB ASSEMBLY FOR ROTARY WING AIRCRAFT
Peter John Flux, Somerset, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England
Filed Feb. 10, 1971, Ser. No. 114,299
Claims priority, application Great Britain, Feb. 27, 1970, 9,613/70
Int. Cl. B64c *27/08*
U.S. Cl. 416—123 **5 Claims**



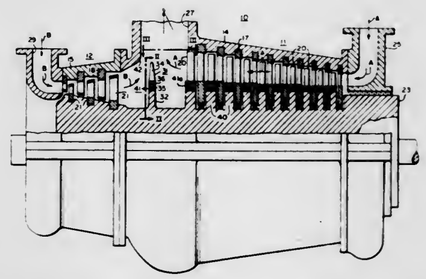
A tail rotor hub assembly for a rotary wing aircraft comprises a rotor hub having six radially extending arms arranged in three diametrically opposed pairs, each arm being adapted to support a tail rotor blade, the arms of each pair being staggered so that during operation the arms rotate in two separated planes, the staggered pairs being arranged so that alternate arms rotate one in each of the separated planes and groups of three arms rotate in each plane. The rotor hub and arms are of one piece construction, a common pitch change control mechanism is adapted for connection to all blades, and blade flapping control stops are integral with the rotor hub.

3,700,352
ROTOR SYSTEM
John H. Gorndt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed March 5, 1971, Ser. No. 121,425
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **11 Claims**



A rotor system for a rotary wing aircraft such as a helicopter or the like wherein a main resilient bearing restrains movement of the blade against centrifugal forces imposed thereon while permitting movement of the blade about certain designated axes such as a lead-lag, a flapping and a pitch axis. A secondary resilient bearing cooperates with the main resilient bearing for restraining bodily movement of the blade transverse to its longitudinal axis and preventing the introduction of undesirable stresses into either of the resilient bearings without interfering with movement or substantially increasing the resistance to movement of the blade about the designated axes while insuring that such latter movements are generally about a point and/or axis generally coincident with the center of both resilient bearings.

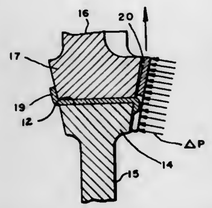
3,700,353
ROTOR STRUCTURE AND METHOD OF BROACHING THE SAME
Ralph J. Ortolano, Palos Verdes Peninsula, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 1, 1971, Ser. No. 111,530
Int. Cl. F01d *5/06*
U.S. Cl. 416—199 **5 Claims**



A method of broaching axial grooves for blade roots in a turbine rotor structure for a marine turbine having forward and astern elements exhausting to a common outlet and simultaneously broaching axial grooves for an integral exhaust baffle structure.

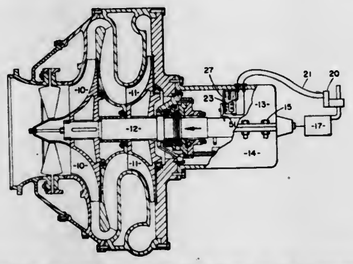
The resulting structure is a rotor having a plurality of axial rows of grooves comprising an equal number of grooves in the rotor portion and the baffle structure.

3,700,354
COMPRESSOR BLADE ROOT SEAL
James P. Memery, Manchester, Conn., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 3, 1971, Ser. No. 139,642
Int. Cl. F01d 5/32
U.S. Cl. 416—219 6 Claims



A sealing device for restricting leakage across the stages of an axial compressor through the clearances around the root fittings of replaceable blades. A compliant dished annulus is attached on the high pressure side of each compressor stage at its inside radius. The combination of centrifugal force and pressure differential across each compressor stage deforms the sealing device against the blade root fittings thereby restricting the leakage.

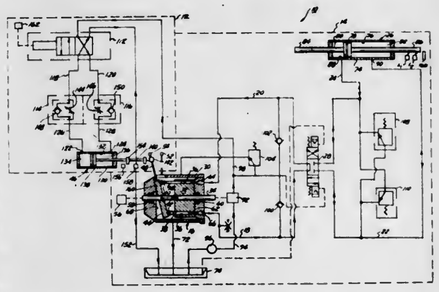
3,700,355
EMERGENCY SHUTDOWN MECHANISM FOR CENTRIFUGAL COMPRESSOR
Carl M. Anderson, and James W. Endress, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed July 8, 1971, Ser. No. 160,691
Int. Cl. F04b 49/02
U.S. Cl. 417—33 4 Claims



A switch is mounted on a bracket fixed in the compressor casing and has contacts connected in a control circuit means for the impeller driver. Upon actuation, the contacts of the switch are cooperable with the circuit means to deenergize the driver. A lever is pivotally mounted on the bracket and in normal position restrains actuation of the switch contacts. Upon the impeller driving shaft shifting from normal operating position, a projection on the shaft moves the lever from normal position permitting actuation of the switch contacts to effect stoppage of the impeller driver.

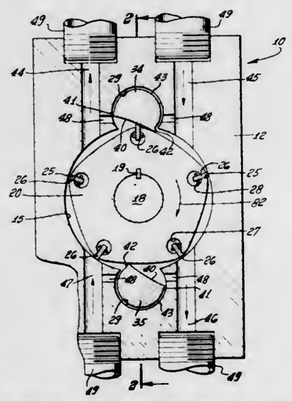
3,700,356
FLUID SYSTEM
Philip A. Kubik, 6809 Spruce Drive, Birmingham, Mich.
Continuation-in-part of Ser. No. 50,093, June 26, 1970, Pat. No. 3,653,208. This application Aug. 26, 1970, Ser. No. 67,177
Int. Cl. F04b 1/26
U.S. Cl. 417—222 17 Claims

A fluid system having a variable displacement fluid pump connected in a closed loop circuit to a fluid cylinder having a piston and a pair of connecting rods extending from opposite sides of the piston externally of the fluid cylinder. A directional control valve disposed in the closed circuit between the inlet and outlet of the fluid pump is adapted to selectively direct fluid to one side of the piston within the fluid cylinder, while exhausting fluid from the other side of the piston, to selectively move the piston within the fluid cylinder. The rate of movement of the piston in either direction of movement is controlled by the amount of fluid displaced by the fluid pump.



A second directional control valve is adapted to direct fluid from a second source of fluid to a pressure responsive displacement control mechanism to selectively vary the displacement of the fluid pump between a maximum and a minimum flow position. The rate of fluid flow to the pressure responsive displacement control mechanism is selectively varied to control the rate of displacement of the fluid pump and to thereby selectively control the rate of movement of the cylinder piston, while the maximum flow position may be varied between defined limits by an electrically operated remote control.

3,700,357
ROTARY ENGINE
Robert H. Williams, Route 2, Bandera, Tex.
Filed Nov. 27, 1970, Ser. No. 93,171
Int. Cl. F01c 21/00; F03c 3/00; F04c 15/00
U.S. Cl. 418—239 3 Claims

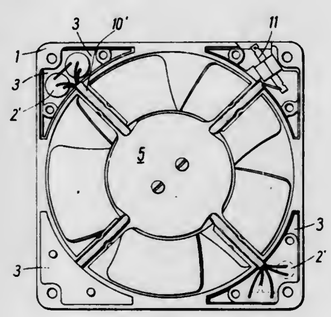


A stator having a main cylindrical chamber with concentric end bearings in which journal the shaft of a pentagonal parallel pistoned rotor, seal vanes on the piston crests sweeping the walls of said chamber and dividing the peripheral vacant space between said walls and said rotor into a series of five circumferentially contiguous sealed off expansion chambers. A pair

of diametrically opposed cylindrical abutment chambers are provided in the stator which are parallel with and intersect the rotor chamber and have end bearings concentric therewith in which trunnions journal, to rotatably mount abutments in said chambers. The trunnions extending from said abutments to the rear of the engine are spring biased to constantly rock said abutments in a common rotational direction whereby the periphery of said rotor is constantly wiped by corresponding transverse sealing edges of said abutments. Four fluid passages are provided in the stator communicating with the peripheral portion of the rotor chamber at points close and in opposite directions from said abutment chambers. Each of these passages is connected by a smaller duct with the abutment chamber adjacent thereto. The material forming the enclosed face of each abutment is removed excepting for transverse radial sealing lips provided adjacent the two sealing edges of an approximately flat (or slightly concave) diametral face of the abutment. Operating fluid under high pressure is admitted through one of said ducts to each abutment chamber and pressurably applies torque simultaneously in equal amounts in opposite directions to the abutment mounted therein whereby said pressure is balanced equally about the axis of the abutment thereby neutralizing the torque effect of said fluid pressure on said abutment.

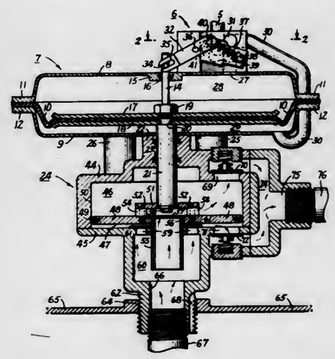
Manual control means, including a four-way fluid reversing valve, and a biasing spring reversing mechanism functions to set the engine to run in either direction when fluid under high pressure is supplied to said valve.

3,700,358
FAN ASSEMBLY FOR A VENTILATOR
Georg F. Papst; Emil Gierschek, and Hans-Dieter Papst, all of St. Georgen, Germany, assignors to Papst-Motoren KG, St. Georgen, Germany
Filed Dec. 23, 1970, Ser. No. 101,026
Claims priority, application Germany, Dec. 24, 1969, P 19 64 890.9
Int. Cl. F04b 17/00, 35/04; H02k 7/00, 68/73
U.S. Cl. 417—354 3 Claims



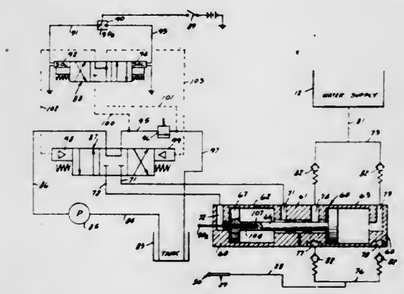
A fan assembly for a ventilator, and a square ventilator housing comprising a first portion formed with a first passage of circular cross-section and wherein the fan assembly is at least partially received, and at least one second portion rigid with the first portion and formed with a second passage axially aligned and directly communicating with said first passage, said second passage having an open end spaced from the first passage and having throughout its length and at the open end thereof a cross-sectional area greater than the cross-sectional area of the circular first passage and a transverse dimension greater than the diameter of the circular first passage. The electronic components as resistors, condensors, transistors, diodes and the like which are necessary for commutation and/or for electrical control of this fan assembly are placed inside one or more hollow portions in the corners of said square housing.

3,700,359
EXPLOSION-PROOF LIQUID FUEL PUMP
John A. Vanderjagt, Memphis, Tenn., assignor to Science, Inc., Memphis, Tenn.
Continuation-in-part of Ser. No. 23,866, March 30, 1970, abandoned. This application May 18, 1971, Ser. No. 144,548
Int. Cl. F04b 17/00, 23/04; F01l 31/12
U.S. Cl. 417—404 14 Claims



A double acting piston type liquid fuel pump is driven by an integrally constructed coaxial flexible-diaphragm gas piston within a dual compartment chamber. The compartments are alternately connected to a vacuum or pressure source through a reversible toggle valve operated by movements of the diaphragm.

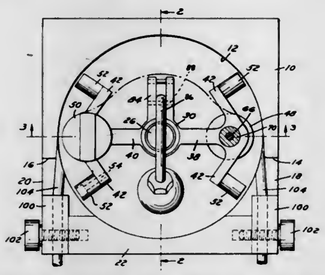
3,700,360
DOUBLE-ACTING TANDEM PISTON PUMP
Roland E. Shaddock, Streator, Ill., assignor to Myers-Sherman Company, Streator, Ill.
Division of Ser. No. 857,424, Sept. 12, 1969, Pat. No. 3,658,589. This application Aug. 23, 1971, Ser. No. 173,767
Int. Cl. F04b 9/08, 17/00, 35/00; F01l 25/08
U.S. Cl. 417—404 7 Claims



A high pressure tandem piston pump reciprocated by pressured oil from a vehicle engine driven hydraulic pump to surge water at high pressure from a vehicle tank or other source through a hose and nozzle to create a jumping action or jack hammer driving of the nozzle forcing it through and around obstructions in a sewer pipe. The engine driven pump pumps oil to opposite sides of one of the pistons of the tandem pump causing it to reciprocate the piston for high pressure surging delivery of water. Oil flow to opposite sides of the driving piston to is controlled from a valve tripped by a switch which is actuated by a control rod slidable in a recess of the connecting rod between the two pistons of the tandem pump and ar-

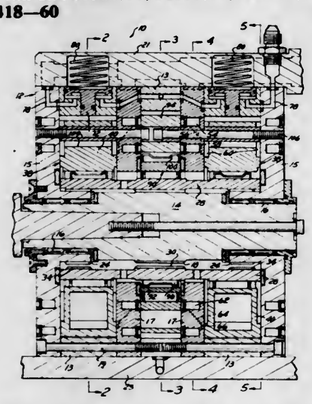
ranged to be pushed to a switch tripping position at one end of the stroke of the pump admitting high pressure oil which further ejects the control rod and holds it in an extended position until pulled to a retracted locked position at the opposite end of the stroke of the pump permitting the switch to again be tripped for reversing the flow from the engine driven pump.

3,700,361
PERISTALTIC PUMP CONSTRUCTION
James H. De Vries, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.
Filed July 8, 1971, Ser. No. 160,617
Int. Cl. F04b *43/12*
U.S. Cl. 417—477 **7 Claims**



A rotor for a peristaltic pump assembly which is formed of a unitary element having radial arms recessed at the distal ends to receive pressure rollers for the pump and wing formations at the distal ends for carrying guide rollers extending radially of the axis of the rotor and spaced axially on either side of the rollers to serve as a tube guide. The assembly includes a mount on the rotor for a drive crank which can be utilized in one position as a manual crank for the rotor and which can be stored within the rotor in a second position in which it also serves as a connection drive between a power shaft and the rotor. Movement of the crank to the manual position disconnects the rotor from the power drive.

3,700,362
RING GEAR DRIVE WITH INTERNAL ROTARY CLUTCH
Kenneth W. Verge, Farmington; Robert D. Kachman, Madison Heights, and Ronald G. Read, Birmingham, all of Mich., assignors to The Bendix Corporation
Filed July 26, 1971, Ser. No. 166,145
Int. Cl. F01c *21/00*; F03c *3/00*; F04c *15/00*
U.S. Cl. 418—60 **18 Claims**



An actuator of the type utilizing an orbiting ring gear to drive an output shaft in which a rotatable clutch is provided for coupling and decoupling the ring gear to the output shaft. A bearing supported crank ring cooperates with a supporting clutch ring to hold the ring gear in a confined path when coupling of the ring gear to the output shaft is desired, and the clutch ring is rotatable to a position in which the ring gear can be moved out of driving engagement with the output shaft when decoupling is desired. Fluid actuated motors, arranged symmetrically with respect to the clutch ring, are operable to move the ring gear so as to drive the output shaft and centering pistons cooperate with the motors to decouple the ring gear from the output shaft when the clutch ring is in a position releasing the ring gear for movement out of engagement with the output shaft.

3,700,363
LOW INERTIA MOTOR FOR FLUID OPERATED TOOL
Clarence A. Sorensen, Fruitport, and Edwin J. Deremo, Spring Lake, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.
Continuation of Ser. No. 818,957, April 24, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,773
Int. Cl. F01c *13/02*
U.S. Cl. 418—270 **2 Claims**



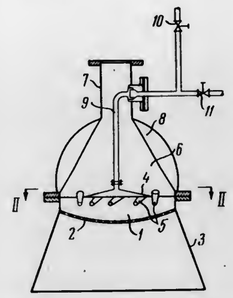
A rotary vane expansible chamber fluid motor having a rotor member constructed with relatively large axially extending grooves formed between the radially extending vanes. The moment of inertia of the rotor member is substantially less than a comparable cylindrical rotor and the expansible chamber volume is greater than a conventional rotary vane motor. The motor is advantageously used in fluid operated tools for tightening threaded fasteners.

ERRATUM

For Class 418—239 see:
Patent No. 3,700,357

3,700,364
APPARATUS FOR GRANULATING MELTS
Alexei Alexeevich Vagin, Dzerzhinsk; Stanislav Valerievich Yablonsky, Kazan; Pete Stepanovich Voloshin, Dzerzhinsk; Nikolai Gregorievich Sharov, Dzerzhinsk; Viktor Ivanovich Shiborin, Dzerzhinsk; Vladimir Efimovich Novakowsky, Dzerzhinsk; Grigory Vasilievich Kolpakov, Dzerzhinsk; Mark Efremovich Ivanov, Moscow; Viktor Mikhailovich Lindin, Moscow, and Daniil Yakovievich Lipsky, Moscow, all of U.S.S.R., assignors to Dzerzhinsky Filial Nauchno-Issledovatelskogo i Konstruktorskogo Instituta Khimicheskogo Mashinostroenia, Dzerzhinsk, U.S.S.R.
Filed Dec. 23, 1969, Ser. No. 887,640
Claims priority, application U.S.S.R., Dec. 23, 1968, 1291391
Int. Cl. B22d *23/08*; B29c *23/00*
U.S. Cl. 425—7 **5 Claims**

An apparatus for granulating melts comprising a chamber with a perforated bottom provided with branch pipes for supplying the melt into this chamber, in which the outlet tips of the branch pipes are directed relative to the perforated bottom so as to provide a continuous rotary motion of the melt above the inner surface of the bottom.

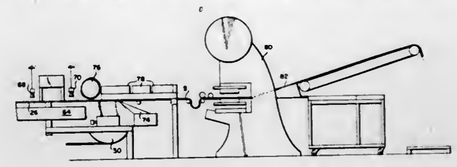


3,700,365
APPARATUS FOR CONTINUOUSLY VULCANIZING ENDLESS BELTS
Alvin W. Spicer, Cuyahoga Falls, and Anselm Talalay, Cleveland, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,731
Int. Cl. B29h *7/22*
U.S. Cl. 425—28 **21 Claims**

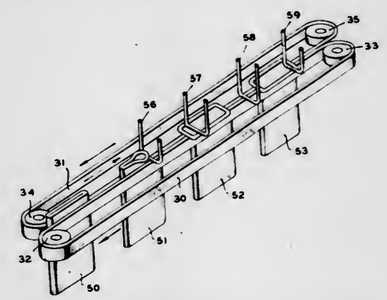
A machine for simultaneously curing a plurality of elastomeric belts while passing over a heated rotary drum. The belts are individually uniformly tensioned by individually movable tension idlers each actuated by a separate fluid pressure actuated cylinder connected to a common source of predetermined fluid pressure. A separate endless metal band is provided for individually pressing each of the belts against the drum with the bands each passing over an individual movable tension idler similar to that used for the belts for maintaining each of the bands at a predetermined uniform tension.

3,700,366
APPARATUS FOR PRODUCING RESINOUS SHEETLIKE PRODUCTS
Anthony N. Placente, Lawrenceville, N.J., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed May 25, 1970, Ser. No. 40,269
Int. Cl. B29j *5/00*
U.S. Cl. 425—71 **14 Claims**

An apparatus for continuously molding a resinous sheet-like product including an endless polished smooth surface belt, feed means for metering resinous chips onto the belt in substantially abutting contact and in a substantially mono-chip layer, means for heating the metered chips and the belt, means for compressing the heated chips against the belt to consolidate the chips in a sheet form which adheres to the belt, means for burnishing the sheet form, means for cooling the sheet form and the belt, and means for stripping the sheet from the belt.
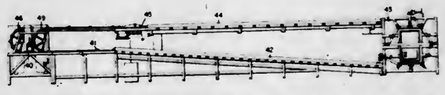


3,700,367
PLASTIC BAG FLARING APPARATUS
John J. Quackenbush, Monroe, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Division of Ser. No. 629,328, April 7, 1967, Pat. No. 3,629,389. This application March 17, 1971, Ser. No. 125,379
Int. Cl. B29c *17/02*
U.S. Cl. 425—112 **1 Claim**



In order to cause the opposing panel ends of a plastic bag to curl outwardly, the bags are captured between moving belts with a portion of their upper surfaces extending above the belts. The outer surfaces of the bag panels are heated, and the panel edges are forced to flare open by passing through a stiff wire. The interior surfaces of the open panel lips are then rapidly cooled to introduce a permanent tendency for the bag panels at the bag opening to curl away from one another.

3,700,368
CONTINUOUS MOLDING APPARATUS
Howard E. Wells, 218 Shadmore Drive, Rochester, N.Y.
Continuation-in-part of Ser. No. 460,404, June 1, 1965, abandoned. This application Jan. 22, 1969, Ser. No. 814,868
Int. Cl. B29c *3/02*; B29g *7/02*
U.S. Cl. 425—115 **20 Claims**

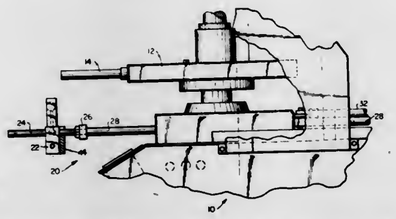


A continuous foamed strip molding method and apparatus uses two continuous lengths of mold halves that snap-fit together to hold the foamed strip and are flexible enough to be driven in a curved path with one mole half inside the other for high speed and adequate cure time in relatively small space.

3,700,369
STRIPPER FOR BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., Brigantine, N.J.

Filed Aug. 24, 1970, Ser. No. 66,307
Int. Cl. B29f 1/14
U.S. Cl. 425—139 8 Claims

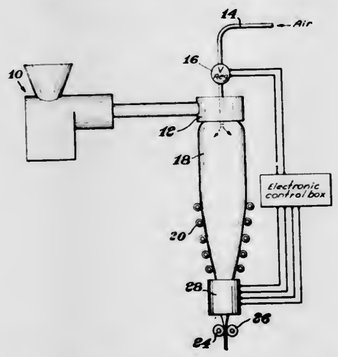


A stripper mechanism for an automatic blow molding apparatus having a rotatable turret carrying plural sets of parison pins for forming molded articles. A set of stripper fingers project between the formed article carrying pins at an ejection station and are reciprocated parallel to the pins to strip formed articles therefrom. The span of stroke of the stripper fingers is adjustable and the fingers can be lowered to provide operation of the apparatus without an automatic stripping step. The mechanism includes a device for checking the condition of the pins after the stripping step.

3,700,370
FILM SIZE CONTROL APPARATUS

Harold L. Hearns, and Harold J. Donald, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 2, 1970, Ser. No. 15,454
Int. Cl. B29d 7/02
U.S. Cl. 425—140 4 Claims

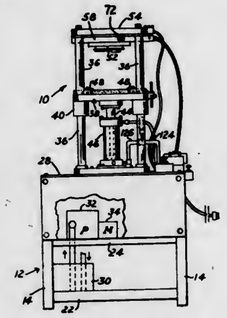


Apparatus and method for automatically injecting and/or withdrawing air from tubularly extruded film when needed, to obtain precise size control of the film. Such apparatus can include movable, opposed follower assemblies gravity operated inwardly toward the film to continuously engage opposite sides thereof, respectively, while still in the inflated condition. Any relative movement between the followers indicates a film size change, and is converted into electrical signals such as by potentiometer means or the like. Such signals energize electronic circuitry which, in turn, operates electrical valving means for inserting or withdrawing air from the film at the proper moment. The apparatus is not affected by film edge wrinkle or lateral sway of the film during measurement and, in addition, does not require drive motors or the like to operate.

3,700,371
MACHINE FOR MAKING PACKAGING COMPONENTS OF FOAM MATERIAL

Clarence K. Edwards, 865 Morrison Street, and Lawrence D. Edwards, 2816 Rosemont Avenue, both of Medford, Oreg.

Division of Ser. No. 873,953, Nov. 6, 1969, Pat. No. 3,670,064.
This application Nov. 1, 1971, Ser. No. 194,146
Int. Cl. B29c 17/00
U.S. Cl. 425—144 10 Claims

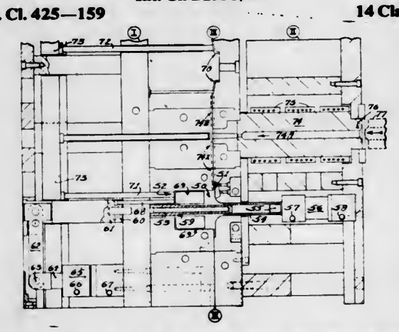


The invention relates to a novel molding press for making improved packaging components of firm sheets or blocks thermoplastic foam. Recesses of predetermined size, shape and depth are pressed into sheets of the foam material by the combined effect of a die or hob structure maintained at a temperature which will not melt, but will substantially soften the material, such structure being forced into the material by a pressure which would be inadequate to effect penetration if the material were not progressively softened as the die advances. Each work piece must be pre-coated on the face to be recessed with an appropriate release agent. The lateral walls of the recess are protected against heat shrinkage by limitation of temperature and by speed of penetration together with abrupt reduction of cross-sectional die area from the leading end of each die projection, preferably through the provision of thin peripheral flanges at leading ends of recess producing die projections. The material displaced by recess formation is all usefully employed through fusion and condensation to reinforce the walls of the components in the very areas where they are thinned and where the merchandise is to be nested in them.

3,700,372
PUMP IMPELLER MOLDING APPARATUS

Donald P. Lalley, Elgin, Ill., assignor to March Manufacturing Company, Glenview, Ill.

Filed Dec. 23, 1969, Ser. No. 887,494
Int. Cl. B29f 1/06
U.S. Cl. 425—159 14 Claims

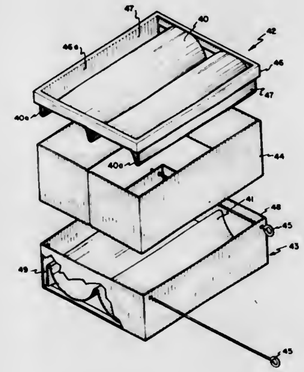


Apparatus for molding a plastic pump impeller having an annular coupling magnet totally enclosed and sealed within a hub formation traversed by a shaft bore. The plastic melt is injected into a special mold having movable core and magnet-supporting parts and means for actuating the same in a time sequence such that the melt forms the impeller configurations at one end of the magnet while the shaft bore is temporarily blocked off. The melt is caused to flow about the external aspects of the magnet toward the distal end thereof and then to resume the flow with timed opening up of the shaft bore to line the latter and complete the total envelopment of the magnet in unitary joinder with the impeller.

3,700,373
CHEESE MOLD APPARATUS

Dean A. Fowler, Smithfield, Utah, assignor to Cache Valley Dairy Association, Smithfield, Utah

Filed June 1, 1970, Ser. No. 42,343
Int. Cl. A01j 25/15
U.S. Cl. 425—195 4 Claims



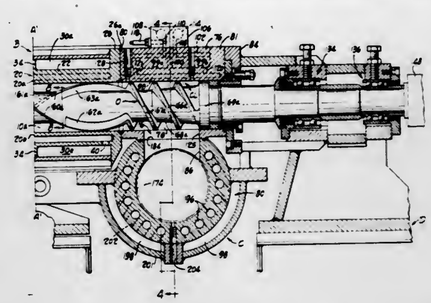
A rectangular cheese hoop is constructed to conform generally in outside dimensions, assembly and operation to a conventional block cheese hoop. If desired, a block cheese hoop may be modified by the insertion of novel adapters. The adapters (or equivalent horn hoop structures) are in the form of platen members, each of which carries at least one, preferably two, concave molds shaped as longitudinal sections of a cylinder. The horn cheese hoop is loaded with curd and pressed in the fashion conventional with block cheese hoops. Thus, pressing is in a direction normal the axis of the fully pressed horn.

3,700,374
CONTINUOUS MIXER WITH SCREW DISCHARGE CONTROL

James T. Matsuoka, Brecksville, and Armando Cantarutti, Akron, both of Ohio, assignors to Intercole Automation, Inc., Cleveland, Ohio

Filed July 14, 1969, Ser. No. 841,349
Int. Cl. B29f 3/02
U.S. Cl. 425—208 18 Claims

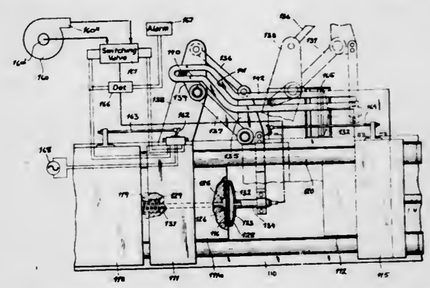
An internal mixer with parallel mixing rotors and a screw controlled discharge. The material discharge rate is controlled by operation of a screw in a conduit from the mixing chamber through which mixed material is discharged. Preferably, the screw is a part of a screw-type extruder and further conditions and extrudes the material.



3,700,375
INJECTION-MOLDING MACHINE WITH ALARM DEVICE

Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing and Tool Works Ltd., Bolton, Ontario, Canada

Continuation-in-part of Ser. No. 597,641, Nov. 29, 1966, Pat. No. 3,454,991. This application July 14, 1969, Ser. No. 841,634
Int. Cl. B29c 7/00, 17/07
U.S. Cl. 425—422 2 Claims



A take-off member, interposable between a movable mold portion and its mate to receive the molded articles for removing them from the mold, has a seat for a molded article adjacent a chamber connected to a source of vacuum (or fluid pressure) by way of a pressure sensor which detects the lack of buildup of a pressure differential, caused by the absence of a molded article from the seat, to give an alarm signal.

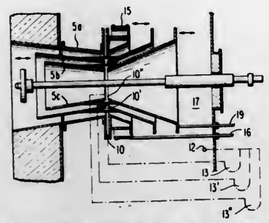
3,700,376
OIL BURNER

Horst Niepenberg, Oberhausen; Rolf Oppenberg, Wesel, and Rudolf Kuhn, Mulheim, all of Germany, assignors to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany

Filed Dec. 28, 1970, Ser. No. 101,731
Int. Cl. F23d 5/12
U.S. Cl. 431—13 7 Claims

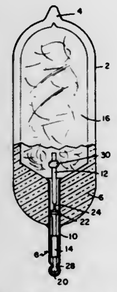
An oil burner for connection to the wall of a boiler or steam generator having an axially movable burner pipe which extends through an opening in the rear wall of the burner, and an air measurement device in the form of a venturi meter surrounding the burner pipe and including a first truncated cone

of a venturi meter which is coupled to the air chamber for regulating the air supply. A second truncated cone surrounds



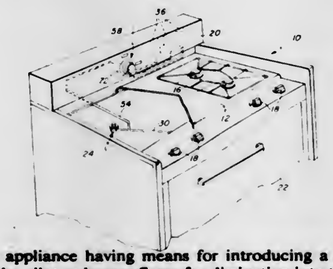
the oil burner nozzle and includes a means for measuring the amount of air pressure.

3,700,377
PHOTOFLASH LAMP
Stephen V. Brown, Williamsport, Pa., assignor to Sylvania Electric Products Inc.
Filed Nov. 27, 1970, Ser. No. 93,109
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **2 Claims**



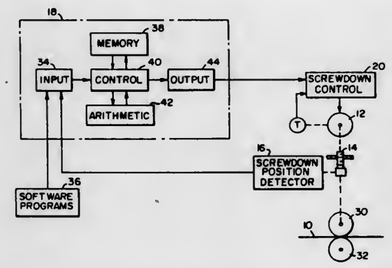
A percussive-type photoflash lamp in which the anvil of the primer is a wire on a segment of which the fulminating material is located, the wire having first and second sets of swaged protuberances in the form of lobes which aid in supporting the wire anvil coaxially within the the primer tube to provide a clearance between the coating of fulminating material and the inner wall of the tube. The second set of lobes are located immediately above and at right angles with respect to the first set of lobes.

3,700,378
ODOR CONTROL APPLIANCE
William J. Scheid, Allentown, Pa., assignor to Ratheon Company
Filed Oct. 28, 1970, Ser. No. 84,693
Int. Cl. F23j *7/00*
U.S. Cl. 431—253 **18 Claims**



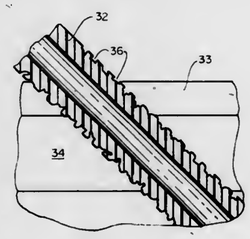
A gas appliance having means for introducing a selected fluid to the pilot or burner flame for dissipation into the air as an odorizer, air freshener or fumigant.

3,700,379
MOTOR DRIVE POSITION MOVEMENT PROFILE CALIBRATION
James D. Robertson, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 14, 1971, Ser. No. 152,787
Int. Cl. B21b *37/12*; G06f *9/00*; H02p *3/00*
U.S. Cl. 444—1 **25 Claims**



A slowdown profile calibration method and apparatus for a position regulated motor drive system is disclosed, including a programmed digital computer as the position controlling component of such a system that is calibrated to optimize the operation of said motor drive system in regard to distance error points and corresponding to a defined operational speed pattern relative to those distance error points.

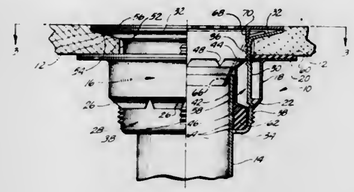
3,700,380
SURFACE OR LINING COMPATIBLE WITH BLOOD OR OTHER TISSUE
Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Berkeley, Calif.
Filed Oct. 1, 1970, Ser. No. 77,289
Int. Cl. A61f *01/00*
U.S. Cl. 3—1 **7 Claims**



A surface or lining containing microcavities for anchoring pseudointimal growth within blood handling prostheses such as vascular grafts, heart assist pumps, artificial hearts, extracorporeal devices, and the like to form a thin, stable autologous lining. The surface is also compatible with other living tissue and promotes tissue adhesion to percutaneous leads, catheters, cannulae, etc., which inhibits bacterial penetration and consequent infection. A method of forming a lining or surface containing microcavities.

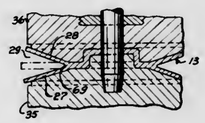
3,700,381
COUPLING ASSEMBLY
Heinrich E. Deeke, Los Angeles, Calif., assignor to National Tool & Die Corporation, Huntington Park, Calif.
Filed Dec. 21, 1970, Ser. No. 100,013
Int. Cl. E03c *1/20, 1/26*
U.S. Cl. 4—288 **12 Claims**

A coupling assembly includes a sleeve having an upper portion mounted in an opening in a floor or tank and a lower portion below the opening disposed around the outer surface of a conduit. An outer lock ring clamps the lower portion of the sleeve in a rigid position in the opening. The inner surface of the sleeve's lower portion is spaced laterally from the outer surface of the conduit to form an annular space between the sleeve and conduit for receiving a deformable gasket. Vertically spaced apart serrations are formed on the inner surface



of the sleeve's lower portion, and an inner lock ring having an outwardly projecting shoulder is driven down into the annular space so it presses against the upper surface of the gasket to squeeze the gasket so it clamps and seals the lower portion of the sleeve to the outer surface of the conduit. The shoulder on the inner lock ring is engaged between a pair of the serrations to maintain the gasket clamped and sealed between the sleeve and conduit.

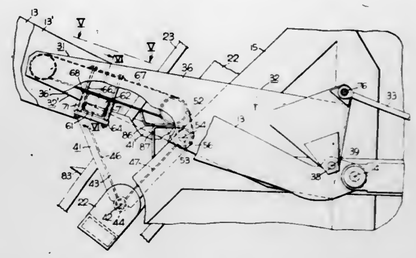
3,700,382
METHOD AND APPARATUS FOR MAKING GROOVED WHEELS
Matthew Pacak, Solon, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Continuation-in-part of Ser. No. 854,957, Nov. 23, 1959, Pat. No. 3,087,531, and a continuation of Ser. No. 266,451, March 19, 1963, abandoned. This application March 30, 1966, Ser. No. 538,853
Int. Cl. B21d *53/26*; B21k *1/42*; B21d *22/14*
U.S. Cl. 29—159 R **26 Claims**



This invention relates to the manufacture of peripherally grooved members, such as peripherally grooved wheels, pulleys, sheaves and other wheel-like members, and provides a novel method and novel apparatus for producing such grooved members by a blank-splitting procedure. The grooved members are hereinafter referred to merely as grooved wheels.

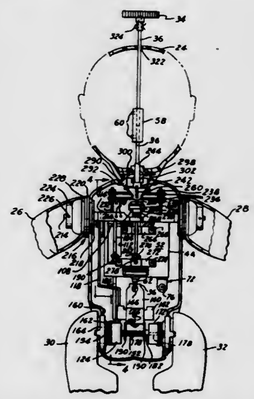
3,700,383
SCRAPER ELEVATOR LIFTING AND CUSHIONING MECHANISM
Richard F. Boersma, Springfield, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sept. 15, 1971, Ser. No. 180,692
Int. Cl. B60p *1/36*
U.S. Cl. 37—8 **10 Claims**

The elevator of an elevating type scraper is supported at the open front end of the bowl by linkage permitting upward and rearward swinging movement to a raised position in which it is sufficiently high to permit the ejector to move forward in the bowl during the unloading operation. The linkage for raising and lowering the elevator includes cushioning means operative to cushion the elevator against shock when rocks or other



large objects are encountered during the excavating operation.

3,700,384
BALLERINA DOLL
Robert Gardel, New York, N.Y., and Egon Gorsky, Westfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Filed March 25, 1971, Ser. No. 127,910
Int. Cl. A63h *13/02*
U.S. Cl. 46—136 **11 Claims**

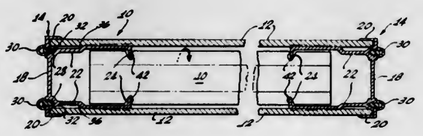


A hand-operated doll having animated leg, arm and head movement. The movements of the doll simulate those of a ballet dancer. The leg and arm movement is synchronized to have a leg raised while the arms are moving downward toward the leg and to have the arms raised as the leg moves downward to a vertical position. The doll is rotated on the toe of the other leg. A head spotting mechanism is provided for controlling the rotation of the head as a function of the rotation of the torso.

3,700,385
PANEL AND STILE CONSTRUCTION
John C. Sherwood, La Crescenta, Calif., assignor to Sher Walls Inc., Santa Fe Springs, Calif.
Filed Nov. 2, 1970, Ser. No. 86,219
Int. Cl. A47b *5/00*; A04g *3/03*
U.S. Cl. 52—36 **5 Claims**

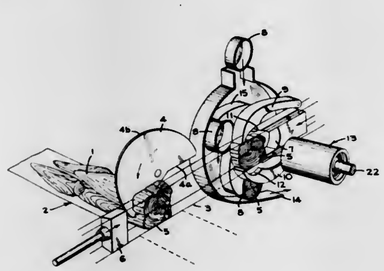
An extruded stile is shaped as a shallow channel within which is a relatively deep channel. The narrow outer walls are rigid and at right angles to the web, and the wider inner walls normally flare outwardly and exhibit spring action when forced inwardly to parallel relation. The outer portions of the inner walls are outwardly offset from their inner portions, and

their edges terminate in inwardly turned lips. The edges of decorative face sheets of hollow core panels are captured between the outer and inner walls, with the offset portions of the inner walls forced to parallel relation and thereby outwardly biasing the sheets. Within its inner walls, the stile matingly receives a rod or tubing that is integral with stands or casters, and also splines for supporting panels end to end. The space between confronting outer and inner walls is also



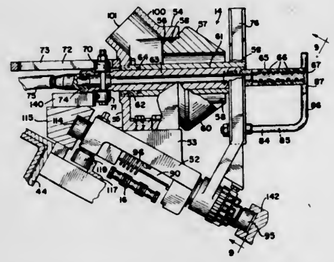
adapted to nestably receive an extrusion with a slotted wall to support shelving. Interlocking the stile and face sheets is effected by bonding the offset portions of the inner walls to the face sheets, by locking elongated bars at their ends to the lips of the inner edges of opposite sides of the panel, or by nailing or screwing the web to an interior frame or block. On its outer surface the web is provided with parallel grooves to receive seal strips, and the web forms a support surface for a decorative face strip.

3,700,386
APPARATUS FOR CANNING FISH
Samuel A. Mencacci, Saratoga, Calif., assignor to International Machinery Corporation S.A., St. Nicklaas-Waas, Belgium
Filed Nov. 10, 1970, Ser. No. 88,429
Claims priority, application Belgium, Nov. 12, 1969, 49677
Int. Cl. B65d *63/02*
U.S. Cl. 53—123 **7 Claims**



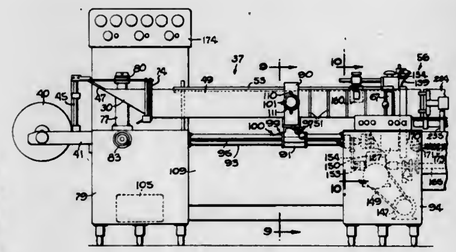
A fish can filling apparatus including a conveyor for advancing fish fillets past a rotary cutter which cuts the fish into segments and then advances the segments into a compression chamber. A piston then transfers the segments of fish against a forming surface corresponding in shape to a portion of the side wall of the can to be filled. Shaping knives are then closed to form part of the remainder of the fish segments into a shape corresponding to the shape of the remaining portion of the side walls of the can. A reciprocating piston then transfers the formed charge of fish into the open can, and when approaching the end of its transfer stroke and at the beginning of its return stroke, the piston is oscillated about its axis to minimize the tendency of the fish to stick to the piston and also to prevent flakes or chips of the fish from being pulled off the surface of the charge of fish.

3,700,387
VACUUM BAGGING MACHINE
Lowell B. Moore, Moline, Ill.; Raymond J. Keating, Bettendorf, Iowa, and Warren Underwood, Minneapolis, Minn., assignors to The Kartridg Pak Co., Davenport, Iowa
Filed April 26, 1971, Ser. No. 137,412
Int. Cl. B65 *31/06*
U.S. Cl. 53—77 **32 Claims**



A semi-automatic machine adapted to vacuumize and close bags of flexible material for packaging products such as, for example, cuts of fresh meat, which may vary in size and shape, the machine including an intermittently advancing belt conveyor on which successive filled bags are supported and a series of vacuum heads mounted on a chain conveyor for travel in a parallel path along one side of the belt conveyor, which heads carry vacuum nozzles each with associated means for gathering and clamping the mouth of a bag on the nozzle after which it is vacuumized and advanced to a mechanism for applying to the gathered portion of the bag mouth a metal clip upon the vacuum nozzle being withdrawn therefrom.

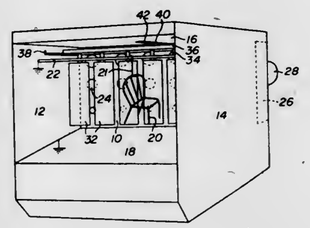
3,700,388
PACKAGING MACHINE FOR FORMING AND FILLING BAGS OF DIFFERENT LENGTHS AND WIDTHS
Kenneth Johnson, and Robert F. Lense, both of Rockford, Ill., assignors to Rexham Corporation, New York, N.Y.
Division of Ser. No. 706,817, Feb. 20, 1968, Pat. No. 3,553,934, which is a continuation-in-part of Ser. No. 689,177, Dec. 8, 1967, Pat. No. 3,545,166. This application Sept. 30, 1970, Ser. No. 76,946
Int. Cl. B65b *9/08*
U.S. Cl. 53—183 **7 Claims**



Bags which may vary in length and width within preselected ranges from one run to another are formed from a web of flexible material and are filled with a quantity of product as they are advanced in vertical planes along a horizontal path by a packaging machine. To reduce the number of adjustments necessary for changing over the machine from running bags of one length and width to running bags of a different length and width, the machine is capable of being set up to maintain the upper ends of both long and short bags moving along a common operating or datum line during the advance of the bags and, at the same time, to maintain the longitudinal center lines of both wide and narrow bags in exact coincidence with the working centers of various mechanisms spaced along the path for operating on the bags before, during and after filling.

The disclosure also specifically pertains to a number of new and improved mechanisms for forming and handling the bags and to the drive mechanism of the machine.

3,700,389
SPRAYING BOOTH
Maurice Paul Wanner, Geneva, Switzerland, and Neil Rudolph Wallis, Goring on Thames, England, assignors to Aerocoat S.A., Geneva, Switzerland
Filed May 26, 1970, Ser. No. 40,592
Claims priority, application Switzerland, June 25, 1969, 9700/69
Int. Cl. B01d *49/00*; F23j *11/00*
U.S. Cl. 55—413 **8 Claims**



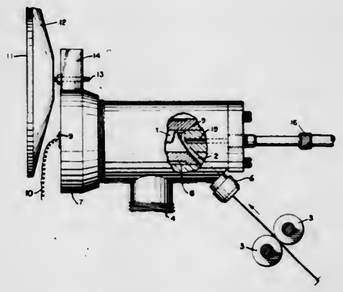
A spraying booth for facilitating the recovery of the surplus of pulverulent material used to coat an object includes at the rear means for enabling it to communicate with an air extraction installation. The booth is open at the front to give access to the gun, and is provided with a plurality of rotatable blades which when rotated into a first transverse plane move air uniformly through the rear of the booth and when rotated into a second perpendicular position may be returned to the interior of the booth without disturbing the air in the booth.

3,700,390

Patent Not Issued For This Number

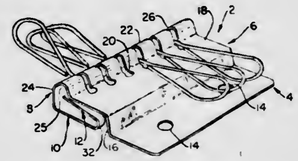
3,700,391
AIR YARN TEXTURIZER
Herbert J. Pike, Martinsville, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed March 3, 1971, Ser. No. 120,566
Int. Cl. D02g *1/16*; D01h *7/92*
U.S. Cl. 57—77.3 **7 Claims**

An air texturizer of the type in which the yarn is fed into a chamber with a blast of air, resulting in some twisting of the yarn, and the yarn untwists as it leaves the chamber and is changed in direction, for example at right angles, resulting in the formation of loops as it untwists. More particularly, the present invention is applied to an air texturizer of the type in which yarn is overfed at an angle into a vortex chamber, with a tangential blast of air causing the yarn to spin in the form of a crank or loop and flow out axially with the air and turn its



direction. The texturizer is provided with a flange in which a beveled plate on a micrometric threaded shaft is mounted with a polished beveled edge over the axial outlet of the texturizer. This permits a very accurate adjustment of distance which controls the loops on the texturized yarn and permits operating overfeed of yarn. Bulkier yarn can be produced at a high rate of speed.

3,700,392
UNITARY SHEET METAL KEY LOOP RETAINER
Stuart T. Shears, Belmont, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed June 3, 1970, Ser. No. 43,075
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 B **5 Claims**



A one piece sheet metal key loop retainer has a leaf spring integrally joined to the forward end of its key loop retainer section through a reversely bent bight. The leaf spring underlies each of a plurality of loop head receiving openings in the loop receiving section of the retainer and terminates in a free end lying above the loop receiving openings.

3,700,393
LIQUID BIPROPELLANT SYSTEM USING AQUEOUS HYDROXYLAMMONIUM PERCHLORATE OXIDIZER
Kurt F. Mueller, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 28, 1969, Ser. No. 880,458
Int. Cl. C06d *5/08*
U.S. Cl. 60—214 **23 Claims**

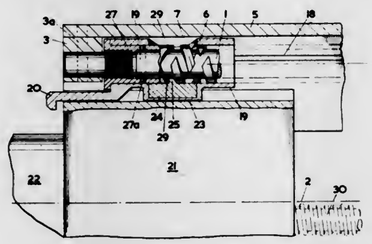
A bipropellant system based on a liquid oxidizer of a concentrated aqueous hydroxylammonium perchlorate solution and a liquid fuel.

3,700,394

COCKING MECHANISMS FOR GUNS

Norman Trevor Brint, Essex, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 28, 1967, Ser. No. 686,356
Int. Cl. F41d *11/00*
U.S. Cl. 89—1 K **6 Claims**



A cocking mechanism for a gun, comprising a rotary shaft, carried by the mounting and having intersecting right and left-handed screw-threads and a coacting retractor member which, on rotation of the shaft, retracts the recoiling parts of the weapon, as a result of its interaction with one screw-thread, to cock certain mechanisms; whereafter run-out occurs under the influence of spring action accompanied by interaction between the retractor member and the reverse thread. The first screw-thread may be of slow pitch to give a mechanical advantage to the operator and the reverse thread of steeper pitch to give a mechanical advantage in favor of the springs.

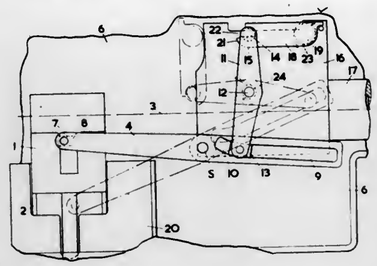
3,700,395

LOADING MECHANISM FOR GUNS

Norman Trevor Brint, Waltham Abbey, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 20, 1967, Ser. No. 684,570
Int. Cl. F41f *9/06*
U.S. Cl. 89—45 **8 Claims**

A loading mechanism for guns, in which the loading tray is moved from its delivery position to its pick-up position by a pair of levers mounted on separate, fixed fulcrums on the gun mounting the levers also being pivotally connected, the first to the loading tray and the second to a member slidable along the first lever. The second lever is engaged and rotated, on recoil of the gun, by a recoiling part to actuate the loading tray.

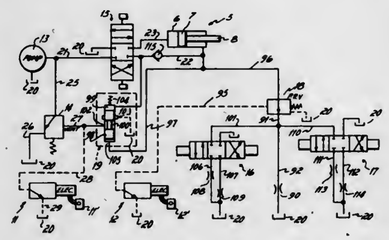


3,700,396

ELECTRO-HYDRAULIC FLOW CONTROL CIRCUIT

Cecil E. Adams, Columbus, Ohio, assignor to Abex Corporation, New York, N.Y.

Division of Ser. No. 16,363, March 4, 1970, Pat. No. 3,636,977. This application June 16, 1971, Ser. No. 153,891
Int. Cl. F15b *13/02, 13/044*
U.S. Cl. 91—449 **23 Claims**



An electronically programmable pressure and flow control hydraulic circuit. The circuit comprises a pair of electronically programmable pressure control valves, one of which is cooperable with a pressure reducing valve and one or more orifices to control flow through the circuit and the other of which controls pressure in the circuit. When the circuit is used in combination with a hydraulic ram or motor, it enables both the force and speed of the ram or motor to be electronically controlled and programmed.

CHEMICAL

3,700,397

CAMOUFLAGED ARTICLE AND METHOD OF PRODUCING SAME

Alvin O. Ramsley, Sherborn, and John T. Walwood, Lowell, Mass., assignors to the United States of America as represented by the Secretary of the Army

Filed May 6, 1969, Ser. No. 822,218
Int. Cl. D06p *3/00;* F41h *3/00*
U.S. Cl. 8—4 **10 Claims**

Method of camouflaging dyeable materials against daylight or nighttime detection comprising dyeing the material with a dye composition producing a desired shade in the visible range of the spectrum and fluorescence in the near infrared range from 0.70 to 0.90 micron wavelength, and over-printing the dyed material with lines of a printing composition containing an energy absorbent pigment, such as carbon; and camouflaged articles produced by the method.

3,700,398

PROCESS FOR DYEING ACID-MODIFIED NYLON FIBERS

John Elton Cole, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 27, 1970, Ser. No. 58,709
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 B **5 Claims**

Acid-modified bulk continuous filament nylon fibers can be dyed in blue to turquoise shades with biscationic anthraquinone dyes prepared by quaternizing the biscondensation product of an N,N-disubstituted C_{2-4} alkylenediamine and quinizarin or 1,4,5,8-tetrahydroxyanthraquinone. The biscationic dyes have excellent reserve on unmodified nylon fibers and fibers so dyed have sufficient light fastness for use in nylon styling carpeting.

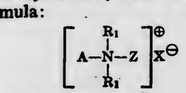
3,700,399

METHOD OF DYEING TEXTILE FIBERS WITH AN ANIONIC DYESTUFF IN THE PRESENCE OF A QUATERNARY AMMONIUM SALT

Shiro Shimauchi, Takatsuki, and Yuko Kitamura, Osamu Iwabuchi, and Takeshi Matsui, Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 609,309, Jan. 16, 1967. This application Apr. 13, 1970, Ser. No. 28,121
Claims priority, application Japan, Jan. 22, 1966, 41/3,552
The portion of the term of the patent subsequent to May 10, 1987, has been disclaimed
Int. Cl. D06p *1/36*
U.S. Cl. 8—30 **4 Claims**

In the dyeing of hydrophobic fibers such as polyvinyl chloride fiber, polyacrylonitrile fiber, modified polyester fiber and cellulose acetate fiber with an anionic dyestuff, a method of further enhancing the dyeability of those of the said fibers which have in themselves a dyeing site for an anionic dyestuff and of making dyeable those of the said fibers which have hitherto had no dyeing site for an anionic dyestuff by the conjoint use of a compound of the following formula:



R_1, R_2: lower alkyl or lower allyl,
Z: benzyl or naphthyl (may be substituted),
A: butyl, or phenyl (may be substituted),
X: halogen or lower alkyl sulfonic acid residue.

3,700,400

SILICONE-POLYALKYLENE OXIDE BLOCK COPOLYMER SUPPRESSING FOAM IN JET DYEING

William Wilson Cuthbertson, Saltcoats, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 3, 1971, Ser. No. 139,812
Int. Cl. D06p *1/68*
U.S. Cl. 8—83 **10 Claims**

Antifoam compositions consisting of silica-containing siloxane/oxyalkylene copolymers which are particularly suitable for jet dyeing.

3,700,401

DETERGENT COMPOSITIONS

William Gilbert Spangler, 14 Charles Place, Chatham, N.J. 07928, and Henry Daniel Cross III, Box 242A, Heyer's Mill Road, Colts Neck, N.J. 07722

No Drawing. Continuation-in-part of application Ser. No. 642,729, June 1, 1967. This application Oct. 30, 1970, Ser. No. 85,822
Int. Cl. D06l *3/06*
U.S. Cl. 8—108 **1 Claim**

Built detergent composition for heavy duty washing of clothing in the presence of added hypochlorite. The composition contains an organic detergent, a builder salt, a small amount of sodium bromide or other alkali metal bromide, and preferably an enzyme material.

3,700,402

RESIST PRINTING UNDER REACTIVE DYE WITH ALKALI HYDROXY METHANE SULFONATE OR AMINO AND AMIDO METHANE SULFONATE

Masajiro Noda, deceased, late of Kyoto, Japan, by Hideyo Noda, heir, Kyoto, Hiroyuki Kajita, Osaka, and Koji Kuwayama, Shiga, Japan, assignors to Meisei Chemical Works, Ltd., Kyoto, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 607,146, Jan. 4, 1967. This application June 29, 1970, Ser. No. 50,917
Int. Cl. D06p *5/00*
U.S. Cl. 8—65 **12 Claims**

A resist process for dyeing fibers by printing on a fiber a resisting agent such as an alkali hydroxy methane sulfonate or a substance capable of producing an alkali hydroxy methane sulfonate followed by treatment with a reactive dye and subsequent dye fixing treatment.

3,700,403

PROCESS FOR FLAMEPROOFING CELLULOSE-CONTAINING FIBROUS MATERIALS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 715,980, Mar. 26, 1968, now Patent No. 3,639,539, dated Feb. 1, 1972. This application Jan. 12, 1971, Ser. No. 105,977
Claims priority, application Switzerland, Apr. 11, 1967, 5,131/67
Int. Cl. D06m *13/32, 15/54*
U.S. Cl. 8—115.6 **12 Claims**

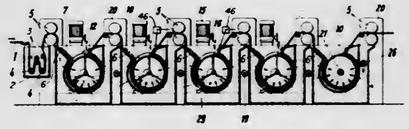
The present invention relates to a process for rendering cellulose-containing fibrous materials flameproof, which comprises applying to said materials an aqueous preparation containing phosphorus-containing N,N-dimethylolcarboxylic acid amides. The flameproof finish is resistant to washing and dry-cleaning and improves the dry crease angle and the wet crease angle of the finished material.

3,700,404

PROCESS AND APPARATUS FOR THE WET TREATMENT OF EXPANDED TEXTILE MATERIAL LENGTHS

Ingo Janisch, Osterreich, and Heinz Fleissner, Frankfurt, Germany, assignors to Vepa AG, Basel, Switzerland

Filed Apr. 8, 1970, Ser. No. 26,708
Claims priority, application Germany, Apr. 8, 1969, P 19 17 770.9; Dec. 13, 1969, P 19 64 343.7
Int. Cl. D06f *17/02;* B05c *3/134, 8/04*
U.S. Cl. 8—158 **35 Claims**



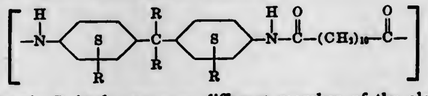
The present disclosure is directed to a process and apparatus for the wet-treating, fulling and/or kneading of textile material lengths which comprises at least one liquor container adapted to contain a treatment liquor, said liquor container containing a sieve drum means, rotatably disposed therein, drive means for rotating said sieve drum means, a liquid-permeable trough means provided in the liquor container and extending a distance from the surface of the sieve drum means, said trough means and the surface of said sieve drum means defining a compression channel therebetween, inlet means for overfeeding the material to be treated to the compression channel thereby plaiting the material at the beginning of said channel, means for supporting and driving the sieve drum means so that it performs an oscillating motion during rotation, thereby subjecting the plaited material length in the compression channel to a mechanical treatment due to the varying compression force of the sieve drum means against the plaited material in said compression channel, and outlet means for removing the plait-like overfeed at the outlet of the compression channel. The present disclosure is also directed to the combination of the wet-treatment process and apparatus with an acidifying, a carbonizing, a padding, and a drying process and apparatus.

3,700,405
DYEING OF POLYCARBONAMIDES OF BIS(PARA-AMINO-CYCLOHEXYL)METHANE AND DODECANEDIODIC ACID WITH ANIONIC DYES

Anthony M. Petite, Yonkers, and Clive E. Thornley, Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,518
Int. Cl. D06p 5/04
U.S. Cl. 8—173 6 Claims

Processes are provided for the dyeing of silk-like linear, high molecular weight polyamide fibers containing at least 90% repeating units of the formula

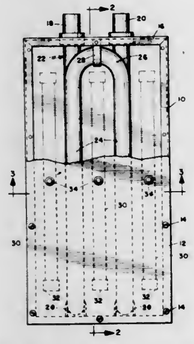


wherein R is the same or different member of the class consisting of hydrogen and methyl with selected anionic dyestuffs under acidic conditions and temperatures of between about 180° to 212° F. By use of selected organic carriers, the use of pressure is not required.

3,700,406
STERILIZER UNIT FOR FLUID MEDIA

Alfred Landry, 7589 Calvocado Drive, Lemon Grove, Calif. 92045

Continuation-in-part of abandoned application Ser. No. 728,408, May 13, 1968. This application Mar. 12, 1971, Ser. No. 123,869
Int. Cl. A61l 1/00, 3/00
U.S. Cl. 21—54 R 11 Claims



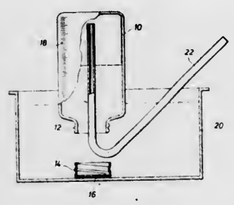
In a sterilizer unit for fluid media wherein a transparent pipe is used to conduct the fluid media and a source of germicidal radiation is used to irradiate the fluid media through the pipe, the improvement disclosed comprises the use of a pipe composed of fluorinated ethylene propylene in combination with ultraviolet lamps. Impurities contained in the fluid media being treated do not stick thereby prohibiting film buildup on the inner surface thereof so that the unit is operational over extended periods of time. In addition, decomposition of the fluid conducting pipe is avoided under extended exposure to ultraviolet rays.

3,700,407
METHOD OF GEOCHEMICAL PROSPECTING

Leo Horvitz, 8116 Westglen Drive, Houston, Tex. 77042

Filed June 30, 1969, Ser. No. 837,800
Int. Cl. G01n 33/24
U.S. Cl. 23—230 EP 5 Claims

A method of geochemical prospecting by the taking of samples of the earth formation at spaced locations, in an area to be investigated, which samples are analyzed to determine the concentration therein of significant hydrocarbon gas leakage products from subterranean petroliferous deposits and the results of such analyses correlated with sample location to provide information concerning the presence of such deposits in the area.

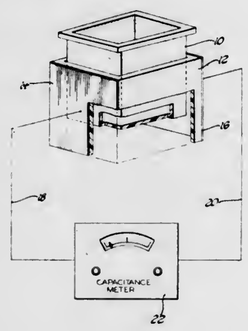


The method includes the taking of soil samples in a manner to obtain and preserve non-adsorbed, pore gases in the samples and the use of such gases with or without the adsorbed gases of the samples in carrying out the analyses whose results are correlated with sample location to obtain the desired information.

3,700,408
BLOOD CELL AGGREGOMETER

Haim I. Bicher, Charleston, S.C., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Dec. 30, 1970, Ser. No. 102,626
Int. Cl. G01n 27/22, 33/16, 27/26
U.S. Cl. 23—230 B 5 Claims



Method for evaluating coagulants and anticoagulants for blood by measuring the capacitive changes of a blood sample to which such quantities are added.

3,700,409
SPOT TEST FOR IDENTIFICATION OF OIL CONTAMINANTS IN WATER

David M. Zall, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy

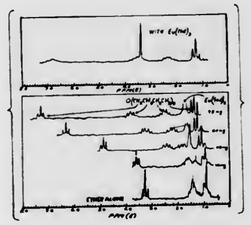
No Drawing. Filed Apr. 23, 1971, Ser. No. 137,046
Int. Cl. G01n 21/00
U.S. Cl. 23—230 R 1 Claim

Method of detecting a hydrocarbon contaminant in an aqueous solution by applying chromic-sulfuric acid to filter paper wetted by the aqueous solution. A positive test is indicated by the development of a bluish-green color.

3,700,410
RARE EARTH COMPLEXES AS NUCLEAR MAGNETIC RESONANCE SHIFT REAGENTS

Robert E. Sievers, 2628 N. Emerald Drive, Fairborn, Ohio 45324

Filed Sept. 24, 1971, Ser. No. 183,488
Int. Cl. C07p 5/00; G01m 27/78
U.S. Cl. 23—230 R 11 Claims

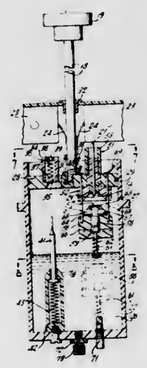


A lanthanide chelate of a fluorinated ligand is used as a nuclear magnetic resonance shift reagent for spectral simplification and clarification. Since the use of the shift reagents of this invention facilitates compound identification and increases the scope of the applicability of nuclear magnetic resonance spectroscopy, the present invention is particularly useful in detecting and analyzing compounds which are or may be pollutants.

3,700,411
GAS ANALYZER

Robert Davis, Far Rockaway, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,107
Int. Cl. G01n 1/24, 27/06, 31/00
U.S. Cl. 23—254 E 10 Claims

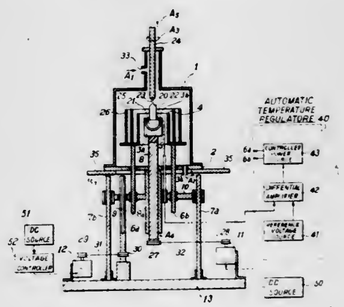


A gas analyzer especially suitable as a portable analyzer to accurately measure the quantity of pollutants in the air. Means are provided for accurately sampling a predetermined quantity of air for highly accurate reproducibility of results. The pollutants to be measured are dissolved in a fluid and the conductivity of the fluid is measured and correlated to the quantity of pollutants in the air.

3,700,412
CRYSTAL PULLING APPARATUS HAVING MEANS FOR MAINTAINING LIQUID SOLID CRYSTAL INTERFACE AT A CONSTANT TEMPERATURE

Seiya Higashi and Kenro Kobayashi, Tokyo-to, Japan, assignors to Kokusai Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 26, 1969, Ser. No. 880,111
Claims priority, application Japan, Dec. 6, 1968, 43/89,142
Int. Cl. B01j 17/18
U.S. Cl. 23—273 SP 9 Claims



Apparatus for growing crystals comprises a crucible for holding molten raw material to be grown into a crystal, means including a shaft for placing a seed crystal in the molten raw material to promote crystal growth, temperature sensing means including a movable thermocouple for measuring the temperature of the boundary interface existing between the grown crystal and the molten raw material and providing a corresponding temperature output signal, and temperature regulating means receptive of the temperature output signal for comparing same with a reference signal representative of the desired temperature which should be maintained at the boundary interface. The temperature regulating means comprises a differential amplifier for comparing the two signals and developing a difference signal which is applied to a controlled power source for controlling the energization of heating electrodes of a heater. In order to stabilize the temperature at the boundary interface, the thermocouple is mounted for movement integrally with the heater and in synchronization with the lowering movement of the boundary interface and actuating means is provided for effecting movement of both the thermocouple and heater in accordance with the lowering rate of the boundary interface to maintain the thermocouple at a constantly spaced-apart distance from the boundary interface thereby providing a more accurate temperature sensing function and resulting in a more stabilized crystal growth.

3,700,413
PROCESS FOR MAKING EXTRA-PURE ARSENIC BY SUBLIMATION IN THE PRESENCE OF CARBON OR BORON

Klaus Bienert, Winfried Lang, Egon Nordt, and Herbert Weidner, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe m.b.H., Burghausen, Upper Bavaria, Germany

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,588
Claims priority, application Germany, Apr. 30, 1970, P 20 21 332.5; Jan. 22, 1971, P 21 03 066.0
Int. Cl. B01d 7/00; C22b 33/00
U.S. Cl. 23—294 6 Claims

Process for making extra-pure arsenic which is particularly low in silicon and oxygen content, which comprises

sublimating a mass of arsenic in the presence of a comminuted surface-active or surface-reactive substance such as carbon or boron, preferably in spectrally pure form.

3,700,414
PROCESS FOR THE PREPARATION OF GRANULAR SODIUM PERBORATE TETRAHYDRATE OF LOW BULK DENSITY AND HIGH ABRASION RESISTANCE
Helmut Dillenburg, Bad Honningen, Helmut Honig, Sehnde, and Wilhelm Moser, Ariendorf, near Honningen, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
No Drawing. Filed July 22, 1970, Ser. No. 57,310
Claims priority, application Germany, July 25, 1969, P 19 37 805.3–41
Int. Cl. C01b *15/12*
U.S. Cl. 23—302 **11 Claims**

A process is presented for preparing granular sodium perborate characterized by low bulk density and high abrasion resistance by quickly crystallizing a mixture of molten sodium perborate tetrahydrate and water while stirring and cooling and drying the obtained crystallisate which contains occluded water. Methods for measuring both the abrasion resistance and the tendency to agglomerate or cake during storage of the sodium perborate tetrahydrate are also presented.

3,700,415
VANADIUM RECOVERY FROM WET PROCESS PHOSPHORIC ACID USING NEUTRAL ORGANOPHOSPHORUS EXTRACTANTS
Ernest L. Koerner, Jr., and Michael F. Lucid, Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,432
Int. Cl. B01d *11/04*; C01g *25/22*
U.S. Cl. 23—312 ME **13 Claims**

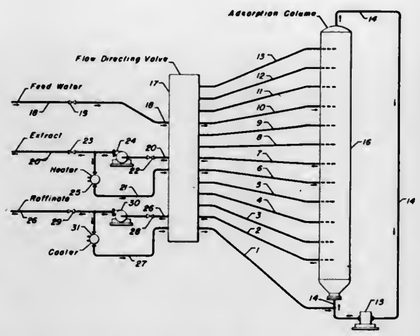
A method for the extraction of vanadium (V) from acidic mixtures containing fluoride, phosphate and vanadium comprising effecting the extraction with a neutral organophosphorus complexing agent in a water-immiscible organic solvent, the vanadium being complexed with the complexing agent and being extracted into the organic phase.

3,700,416
EXTRACTION OF VANADIUM AND COPPER WITH FLUORINATED BETA-DIKETONES
Michael F. Lucid, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,950
Int. Cl. B01d *11/04*; C01g *3/00, 31/00*
U.S. Cl. 23—312 R **7 Claims**

A method for the extraction of metals from aqueous acidic solutions is provided which comprises extracting the metals with a fluorinated β-diketone in an organic solvent, the metal being extracted into the organic phase.

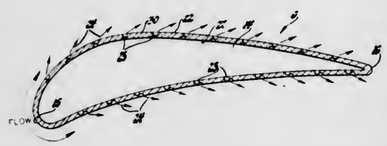
3,700,417
DUAL TEMPERATURE FIXED CARBON BED HEAVY WATER CONCENTRATION PROCESS
Donald B. Broughton, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 4, 1968, Ser. No. 773,213
Int. Cl. B01d *15/00*; C01b *5/02*
U.S. Cl. 23—312 W **2 Claims**

A process for the concentration of a deuterium-containing water stream from a mixture of natural water. A feed stream is contacted with an adsorbent at relatively low temperature conditions to effect adsorption of heavy water by the adsorbent. The heavy water is recovered in a relatively high temperature desorption step. The process is operated in a continuous manner with the



general net flow of feed being countercurrent to the adsorbent.

3,700,418
COOLED AIRFOIL AND METHOD OF MAKING IT
Thomas H. Mayeda, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,094
Int. Cl. B26f *1/00*; C23b *1/02*; F03b *3/00*
U.S. Cl. 29—180 SS **10 Claims**

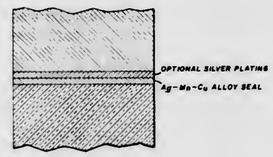


A transpiration-cooled turbine vane or the like has numerous pores for emission of air from the vane for transpiration cooling. These pores are produced by photoetching pits from the outer and inner faces of the outer metal layer of the vane wall, the pits being offset so that their intersection has an axis at an acute angle to the surface of the vane, with the result that the air emitted flows generally with the direction of flow past the vane rather than transverse to the direction of flow.

3,700,419
SMOOTH HIGH TOLERANCE POROUS TUBE AND PROCESS FOR MAKING
Frederick J. Sorgenfrei, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Original application Aug. 28, 1969, Ser. No. 853,972. Divided and this application Jan. 25, 1971, Ser. No. 109,696
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.2 **3 Claims**

Several beneficial properties are achieved by centripetally mechanically working as by rotary swaging of porous metal tubing particularly prepared from sintered powdered metals. These include excellent dimensional tolerance, excellent surface finish, controlled densification depending on the amount of reduction, increased strength and yet the overall porosity of the tube is retained to a very considerable extent. The internal surface retains its initial rough structure.

3,700,420
CERAMIC-TO-METAL SEAL
Robert H. Bristow, Ballston Lake, N.Y., assignor to General Electric Company
Filed Apr. 1, 1971, Ser. No. 130,265
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 **3 Claims**

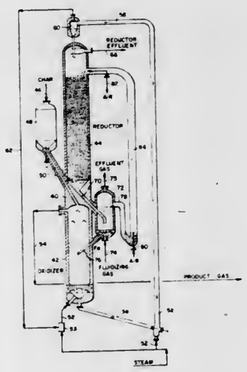


A ceramic-to-metal seal is described which comprises a silver-manganese-copper alloy. Metal may be sealed to ceramic in a one step process without prior metallizing of the ceramic. The alloy melts at temperatures which are sufficiently below the melting point of silver to enable one to seal silver-plated metal parts to ceramic without melting the silver plating.

ERRATUM

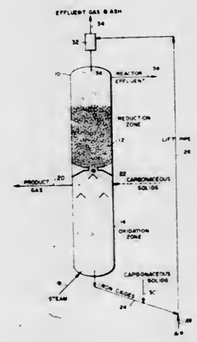
For Class 29—203 B see:
Patent No. 3,700,567

3,700,421
APPARATUS FOR CONDUCTING A CONTINUOUS STEAM-IRON PROCESS
James L. Johnson, Oak Park, Frank C. Schora, Jr., Palatine, and Paul B. Tarman, Elmhurst, Ill., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Original application Feb. 11, 1969, Ser. No. 798,334. Divided and this application Feb. 17, 1971, Ser. No. 116,051
The portion of the term of the patent subsequent to Nov. 9, 1988, has been disclaimed
Int. Cl. C10j *3/20*
U.S. Cl. 48—73 **2 Claims**



Apparatus is provided for conducting a continuous steam-iron process wherein finely divided iron oxides are reduced in a reduction vessel and the reduced iron oxides are reacted with steam in an oxidation vessel to make hydrogen. The reduction of the iron oxides is effected by means of a continuously recirculating stream of hot, finely divided carbonaceous solids which are heated by partial combustion outside the reduction vessel. The mixture of reduced iron oxides and carbonaceous solids from the reduction vessel is separated in a separation vessel into a stream of reduced iron oxides and a stream of carbonaceous solids. The stream of reduced iron oxides is conducted to the oxidation vessel where the reduced iron oxides react with steam to reoxidize the reduced iron oxides. The latter are returned to the reduction vessel. The carbonaceous solids separated in the separation vessel are returned to the reduction vessel after passage through a partial combustion zone.

3,700,422
CONTINUOUS STEAM-IRON PROCESS FOR MAKING FUEL GAS
James L. Johnson, Oak Park, Frank C. Schora, Jr., Palatine, and Paul B. Tarman, Elmhurst, Ill., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Original application Feb. 11, 1969, Ser. No. 798,334. Divided and this application Feb. 17, 1971, Ser. No. 116,054
The portion of the term of the patent subsequent to Nov. 9, 1988, has been disclaimed
Int. Cl. C10j *3/20*
U.S. Cl. 48—197 R **10 Claims**



In a continuous steam-iron process wherein finely divided iron oxides are reduced in a reduction zone and the reduced iron oxides are reacted with steam and hydrocarbonaceous solids in an oxidation zone to make fuel gas, the reduction of the iron oxides is effected by means of a continuously recirculating stream of hot, finely divided carbonaceous solids which are mixed with the iron oxides in a downwardly moving bed under reducing conditions, and heat is supplied to the reduction zone by the carbonaceous solids which are heated by partial combustion outside the reduction zone. In the preferred embodiment of the process, the mixture of reduced iron oxides and carbonaceous solids from the reduction zone is separated in a fluidized separation zone into a stream of reduced iron oxides and a stream of carbonaceous solids. The stream of reduced iron oxides is conducted to the oxidation zone where the reduced iron oxides fall through a fluidized bed of hydrocarbonaceous solids in countercurrent flow relationship to steam, whereby a product gas is produced which contains methane by virtue of the reaction of the hydrogen (produced by the steam-iron reaction) with the hydrocarbonaceous solids.

3,700,423

METHOD OF MAKING A LENS BALANCED LASER ROD AND ROD PRODUCED THEREBY

Joseph W. Kantorski, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

No Drawing. Filed Apr. 28, 1969, Ser. No. 819,992
Int. Cl. C03c 15/00; C03b 21/00; H01s 3/00
U.S. Cl. 65—30 6 Claims

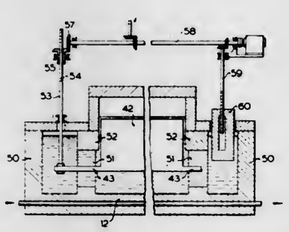
A laser rod, having a length to lateral dimension ratio of at least about 1 to 1 or greater, is formed of an unannealed glass having an active laser ingredient, and the rod, made to desired dimensions, during its manufacture is cooled in such a manner that there is a gradient of strain from the surface to the center and between the ends, producing a zero lens effect at high repetition rates where the resonant optical energy produces high temperatures in the rod. The rod is produced with a negative lens effect, at least at sections intermediate the opposed ends, which is substantially equal to the positive lens effect produced by expansion of the rod due to the heating derived from optical pumping, taking into consideration the differential cooling effect from the exterior surface inwardly of the rod.

3,700,424

WEIR-LIKE BODY EXTENDING FROM BELOW INTO A BODY OF MOVING MOLTEN GLASS

Michel Pernet, Porz-Grengel, Germany, assignor to Erste Deutsche Floatglas G.m.b.H. & Co. OHG, Porz-Cologne, Germany

Filed Dec. 24, 1969, Ser. No. 887,998
Claims priority, application Germany, Jan. 4, 1969, P 19 00 389.5
Int. Cl. C03b 5/26
U.S. Cl. 65—333 9 Claims



A weir-like body extending from below into a body of moving molten glass is supported in a mass of molten material underneath the glass so as to allow vertical adjustment of the position of the body.

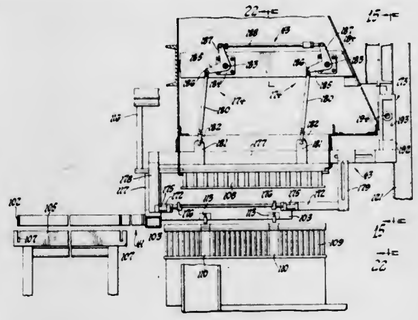
3,700,425

APPARATUS FOR CONVEYING GLASS SHEETS THROUGH ADJACENT BENDING AND TEMPERING STATIONS

Harold A. McMaster, Woodville, Ohio, assignor to Guardian Industries Corporation, Detroit, Mich.

Original application Dec. 18, 1967, Ser. No. 691,326. Divided and this application Apr. 12, 1971, Ser. No. 132,943
Int. Cl. C03b 27/00
U.S. Cl. 65—348 22 Claims

An apparatus for curving a sheet of glass including a furnace having an elongated gas support bed for supporting sheets of glass thereover, conveying means for moving a sheet from the first end to the second end of the bed, a bending station disposed adjacent the second end of the bed and including a sheet supporting surface for supporting a sheet of glass on gases thereover, a shuttle means for moving a sheet of glass from the second end of the bed to the gas supporting surface in the bending station, a blasthead adjacent the bending station for impinging fluid against opposite sides of the sheet for cooling thereof, oscillating means in the blasthead for oscillating a sheet therein, and unitary frame means for lifting a sheet from the gas supporting surface in the bending station for bending the sheet and for thereafter moving the sheet into the blasthead while at the same time removing a sheet from the oscillating means in the blasthead to remove the sheet from the blasthead. The independently novel features of the conveying assembly are the shuttle means and its specific structure for moving a sheet of glass from the furnace to the bending station, the single unitary frame means for supporting a sheet in the bending station and moving it into the blasthead while simultaneously removing a sheet from the blasthead, the unique support of the forming surface means in the bending station against which a sheet is pressed for curving thereof, and an oscillating means in the blasthead for removing a sheet from the frame means and oscillating the sheet in the blasthead while it is being cooled, the latter being the claimed subject matter of this application with various other of the disclosed features claimed in co-pending applications Ser. No. 132,941 filed Apr. 12, 1971 and Ser. No. 133,092 filed Apr. 12, 1971 both also divisional applications of U.S. Pat. 3,607,200.



3,700,426

HERBICIDAL CARBAMATE COMPOUNDS

John H. Cornell, Jr., Arlington, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Original application Apr. 21, 1966, Ser. No. 544,100. Divided and this application Oct. 1, 1968, Ser. No. 798,493
Int. Cl. A01n 9/20; C07c 101/00
U.S. Cl. 71—106 4 Claims

A method for suppressing the growth of pigweed employing alkyl esters of N-alkoxy carbonyl alkylene-N-dialkoxymethylcarbamates as the phytotoxicants.

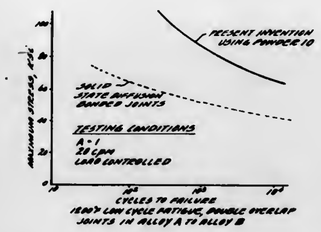
3,700,427

POWDER FOR DIFFUSION BONDING OF SUPERALLOY MEMBERS

George S. Hoppin III, Reed E. Yount, Thomas F. Berry, and James F. Barker, Cincinnati, Ohio, assignors to General Electric Company

Original application July 11, 1969, Ser. No. 841,093, now Patent No. 3,632,319. Divided and this application Mar. 26, 1971, Ser. No. 128,458
Int. Cl. B22f 9/00; C22c 19/00, 19/02
U.S. Cl. 75—.5 R 5 Claims

An improved diffusion bonded, age hardenable joint between superalloy members results from a method which combines the benefits of vacuum high temperature brazing and pressure solid state diffusion bonding through use of an age hardenable bonding powder related to the superalloy and including temperature depressants selected from B, Si, Mn, Cb, Ta and their mixtures. The method avoids the need for pressure during the diffusion bonding portion.



3,700,428

METHOD OF PREPARATION OF ALLOYS OF REFRACTORY METALS

Etienne Bonnier, Colette Allibert, Jean Driole, and Alain Wicker, Grenoble, France, assignors to Agence Nationale de Valorisation de la Recherche, Puteaux, France

Filed May 28, 1970, Ser. No. 41,520
Claims priority, application France, May 30, 1969, 6916424
Int. Cl. C22b 57/00; C22c 1/02; C22d 7/06
U.S. Cl. 75—10 R 8 Claims

The present invention relates to a method of preparation of alloys of refractory metals, in which a solid homogeneous solution of niobium and at least one of two refractory metals such as tungsten or molybdenum is prepared under an inert atmosphere in a liquid bath of a carrier metal (nickel or copper), the said solid solution is separated from the liquid phase and the whole is rapidly cooled so as to solidify the liquid phase thus separated from the solid phase. The separation operation is carried out either by centrifuging or by electro-magnetic means and said latter means may also constitute the heating means. These alloys are especially applied to the manufacture of aeronautical parts or of superconductor devices.

3,700,429

METHOD OF CONTROLLING VACUUM DECARBURIZATION

Sundaresan Ramachandran, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jan. 5, 1970, Ser. No. 751
The portion of the term of the patent subsequent to July 20, 1988, has been disclaimed
Int. Cl. C21c 5/34, 7/10
U.S. Cl. 75—49 4 Claims

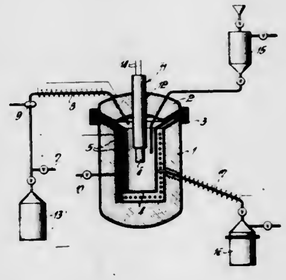
A method of controlling vacuum decarburization of molten steel wherein the ambient pressure within the vessel within which the decarburization is being performed is monitored and compared with an expected pressure calculated from known decarburization reaction parameters to reflect the effectiveness of the decarburization process and the pressure within the vessel or inputs to the reaction are readjusted in order to establish an efficient decarburization reaction while minimizing the oxidation of desired metallic values within the steel.

3,700,430

PROCESS FOR THE MANUFACTURE OF POTASSIUM

Uwe Landt, Hurth, near Cologne, Helmut Seifert, Hermulheim, near Cologne, and Otto Bretschneider, Kirchzarten, Black Forest, Schwarzwald, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed May 27, 1970, Ser. No. 41,016
Claims priority, application Germany, June 25, 1969, P 19 32 129.0
Int. Cl. C22b 27/00
U.S. Cl. 75—66 9 Claims



Production of metallic potassium. K_2SO_4 placed in a reactor is reduced by means of iron in the presence of CaO under reduced pressure and with supply of heat, and the resulting potassium, which distils over, is condensed.

3,700,431

PREPARATION AND METHOD OF FEEDING COPPER CONCENTRATES AND METHOD OF TAPPING COPPER IN THE CONTINUOUS SMELTING AND CONVERTING PROCESS

Nickolas J. Themelis, Beaconsfield, Quebec, and Peter Tarassoff, Dollard des Ormeaux, Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

No Drawing. Application Apr. 14, 1969, Ser. No. 832,529, now abandoned, which is a continuation-in-part of application Ser. No. 627,851, Apr. 3, 1967, now Patent No. 3,561,951. Divided and this application Dec. 29, 1970, Ser. No. 102,564
Claims priority, application Great Britain, Apr. 28, 1966, 18,647/66
The portion of the term of the patent subsequent to Feb. 9, 1988, has been disclaimed
Int. Cl. C22b 15/00, 15/06, 15/14
U.S. Cl. 75—73 8 Claims

In a continuous process for smelting and converting copper concentrates to metallic copper, improvements in terms of minimizing the dust loss from the concentrates can be achieved by feeding the concentrates in the form of pellets. The feeding of the pellets and the injection of oxidizing gas used in such process may be so controlled

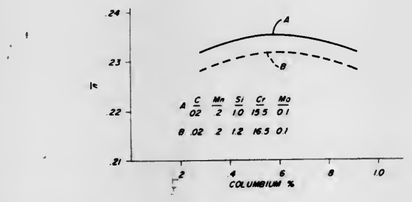
as to provide smelting rates of between about one hundred pounds and about three hundred pounds per square foot of bath surface per hour. Dust losses may be maintained between about 0.85% and 2.14% by weight of the concentrated fed into the furnace. Pellets having an average size of between about ⅜ inch and ½ inch with a moisture content of about 9% may advantageously be used.

3,700,432

FERRITIC STAINLESS STEELS WITH IMPROVED STRETCH-FORMING CHARACTERISTICS

Kenneth G. Brickner, O'Hara Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Aug. 11, 1970, Ser. No. 62,934
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C **7 Claims**



A method for improving the stretch forming characteristics of ferritic stainless steels. A complex equation shows the interrelation of the various alloying elements. Within the compositional range similar to that of Type 430 steel, the stretchability, as represented by $\bar{n}$ value, may be increased by decreasing the C, Mn, and Cr and increasing the Si. Further enhancement may be achieved by additions of Cb, with a maximum at 0.6% Cb. Mo is shown to be detrimental to high $\bar{n}$ value, and if employed for its corrosion enhancement, the C and Mn must be further decreased.

3,700,433

ENHANCEMENT OF TRANSVERSE PROPERTIES OF DIRECTIONALLY SOLIDIFIED SUPERALLOYS

David N. Duhl, Newington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed July 12, 1971, Ser. No. 161,912
Int. Cl. C22c *19/00*
U.S. Cl. 148—32.5 **4 Claims**

The mechanical properties of the columnar-grained, nickel-base superalloys in the transverse direction are significantly improved by the addition thereto of about 1 percent zirconium.

3,700,434

TITANIUM-NICKEL ALLOY MANUFACTURING METHODS

Stanley Abkowitz, Lexington, Mass. (8 A St., Burlington, Mass. 01803), and John M. Siergiej, Wayland, and Ronald R. Regan, Revere, Mass.; assignors to said Abkowitz

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,054
Int. Cl. B22f *1/00*
U.S. Cl. 75—214 **7 Claims**

Titanium and nickel are alloyed by a unique processing procedure to form highly useful titanium-nickel alloys such as the well-known Ti-55 Ni and Ti-60 Ni alloys. The methods include blending of powders of nickel and titanium followed by pressing and sintering to form preforms or final shapes of the desired titanium-nickel alloys.

3,700,435

METHOD FOR MAKING POWDER METALLURGY SHAPES

Vijay Kumar Chandhok, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed Mar. 1, 1971, Ser. No. 120,013
Int. Cl. B22p *1/00*
U.S. Cl. 75—214 **14 Claims**

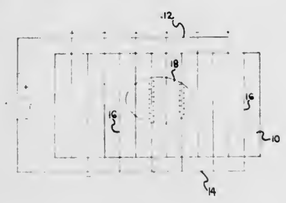
Production of powder metallurgy shapes by introducing a charge of powdered metal to be compacted to a mold having a configuration corresponding generally to the desired configuration of the final article, placing the mold in a container having a secondary pressure media therein and surrounding the mold, heating the entire assembly to an elevated temperature for compacting and isostatically compacting the powder by the application of fluid pressure while at elevated temperature.

3,700,436

ELECTRODE CONFIGURATION FOR ELECTROPHOTOGRAPHY

John D. Grier, Temperance, Mich., assignor to Owens-Illinois, Inc.

Original application Feb. 28, 1969, Ser. No. 803,553, now Patent No. 3,597,073. Divided and this application Jan. 14, 1971, Ser. No. 106,455
Int. Cl. G03g *5/00*
U.S. Cl. 96—1 R **5 Claims**



A persistent internal polarization (PIP) electrophotography printing or copying system wherein a pair of opposite polarity electrodes, each including a plurality of elements disposed in spaced array alternating with each other in the same plane, are utilized in combination with a PIP layer such that an electric field may be simultaneously applied to the PIP layer while permitting light radiation to reach the PIP layer. In the specific practice, the pair of electrodes are positioned on top of or embedded in the surface of the PIP layer which is to be toned; that is, the top surface.

3,700,437

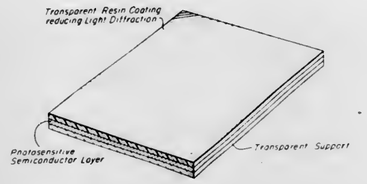
TRANSPARENT IMAGING MEDIUM

William E. Eastler, Jr., Woburn, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of application Ser. No. 708,630, Feb. 27, 1968. This application Dec. 21, 1970, Ser. No. 76,279
Int. Cl. B44d *1/16*; G03g *5/08*
U.S. Cl. 96—1.8 **13 Claims**

A photographic imaging medium comprising a transparent support, a pellucid film of a particulate photosensi-

tive semi-conductor thereon preferably having a thickness of about ½ mil or less, and a transparent film over said pellucid film to decrease light diffraction thereby. The semiconductor preferably has an average particle size of about 300 mμ or less in diameter and preferably is present on the imaging medium in an amount per unit



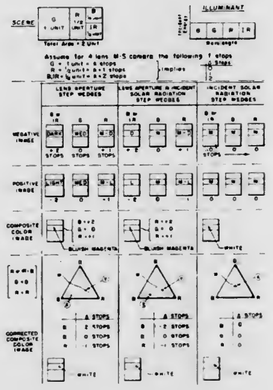
area of about 3 grams per square meter (g./m.²) or less. Method of decreasing the diffraction of light at the surface of an imaging medium comprising a transparent support and a pellucid film of a particulate semiconductor thereon by providing said pellucid film on semiconductor with a transparent coating.

3,700,438

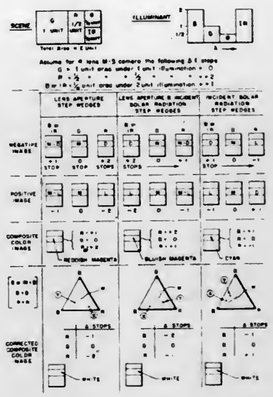
MULITSPECTRAL PHOTOGRAPHY

Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corporation, Hicksville, N.Y.

Filed Jan. 12, 1971 Ser. No. 105,839
Int. Cl. G03b *29/00*; G03c *7/00*
U.S. Cl. 96—2 **6 Claims**



A scene that has arbitrary spectral characteristics and that is illuminated by an illuminant of arbitrary spectral characteristics is photographed a plurality of times simultaneously on different areas of a strip of black-and-white film. Different regions of the electromagnetic spectrum are respectively employed in forming the several photographs. The exposures respectively associated with the photographs are adjusted so that each photograph is on a prescribed part of the characteristic curve of the film. Records of the intensity of the radiation from the scene in each of the spectral regions and of the intensity of the illuminant in each of the spectral regions are also formed. After development, the photographs are projected as images in exactly superimposed relation for viewing, and the brightnesses of the respective images are adjusted as a function of the records.

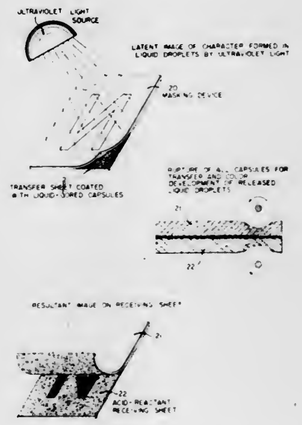


3,700,439

PHOTOCOPY PROCESS UTILIZING A TRANSFER SHEET COATED WITH MICROCAPSULES CONTAINING PHOTOSENSITIVE MICHLER'S KETONE DYE-PRECURSORS

Paul S. Phillips, Jr., Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 5, 1970, Ser. No. 87,026
Int. Cl. G03c *1/52, 5/04*
U.S. Cl. 96—27 R **13 Claims**



A photocopy process and photosensitive sheets for use therein, wherein a substrate sheet is made sensitive to ultraviolet light by a coating of micro-fine liquid droplets, randomly, evenly and closely distributed on a surface of

the substrate sheet, and held in isolation from each other and from the sheet and its environment by ultraviolet-transmitting, organic, polymeric, hydrophilic, film-forming material, said liquid being an organic, liquid solution of a colorless dye-precursor which yields a colorless, acid-colorable dye when irradiated with ultraviolet light. Patterned irradiation of the coated surface of the substrate sheet, as by the use of a patterned masking device, produces a patterned latent image of colorless, but now acid-colorable, dye droplets, against a background of colorless dye-precursor droplets. Subsequent application of pressure to the substrate ruptures the isolating film and exposes the liquid droplets of dye and dye-precursor material for development of color in the dye by contact with acid.

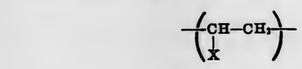
3,700,440

DODGING METHOD IN WHICH THE PHOTOCHROMIC MATERIAL IS STABLE TO LIGHT AND HEAT

Gerald L. McLeod, Lexington, Hollis E. French, Chelmsford, Laura K. Case, Winchester, Elliot Berman, Braintree, and Joseph Casella, Framingham, Mass., assignors to Itek Corporation, Lexington, Mass.

No Drawing. Filed May 20, 1965, Ser. No. 457,481
Int. Cl. G03c 5/04
U.S. Cl. 96—27 R **4 Claims**

An improved photographic medium is disclosed comprising a transparent substrate with a radiation sensitive system thereon comprising a dispersion of a photochromic material in a polymeric binder containing at least 5% by weight of polar groups having the structural formulae



where X represents a hydroxyl group, an amino group, a hydroxyl ether group, an amino ether group or combinations of these. This photographic medium is useful in photographic dodging processes.

3,700,441

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Lucretia J. Weed, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,655
Int. Cl. G03c 5/54
U.S. Cl. 96—29 R **19 Claims**

The present invention is directed to a photographic film unit which comprises a permanent laminate including a support carrying on one surface, in order, a first layer comprising photosensitive silver halide crystals, a layer comprising silver precipitating nuclei and a second layer comprising photosensitive silver halide crystals; and processes employing said film units.

3,700,442

DEVELOPING AGENT PRECURSORS

Rolf S. Gabrielsen and Ismael A. Olivares, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,315
Int. Cl. C03c 5/54
U.S. Cl. 96—29 **20 Claims**

Esters of amino reductones offer improved solubility over the parent reductones in aqueous or mildly alkaline solutions, improved stability when provided as incorporated developing agent precursors in silver halide photographic elements, and are also useful as antioxidants and anti-stain agents. These esters of amino reductones, such as piperidino hexose reductone monoacetate, are useful photographic silver halide developing agent precursors. They can be employed in photographic compositions, elements and/or processing compositions.

3,700,443

FLATPACK LEAD POSITIONING DEVICE

William George Reimann, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 1, 1971, Ser. No. 130,402
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 **2 Claims**

A printed circuit board for mounting integrated circuit and resistor network packages commonly referred to as flatpack components and a process for fabricating the circuit board. The printed circuit board has a conductive pattern of electrical connection pads for connecting to electrical leads from flatpack components and electrical conductors for connecting the pads to circuitry external to the board. A channel for receiving and aligning each electrical lead from a flatpack component is formed by printed circuit techniques. The surface layer of each channel is formed of solder which simplifies the process of electrically connecting flatpack leads and reduces errors occuring in the soldering process.

3,700,444

METHOD OF FORMING A CATHODE RAY TUBE SCREEN

John J. Miller and Thaddeus V. Rychlewski, Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.

Continuation of application Ser. No. 627,745, Apr. 3, 1967. This application Feb. 10, 1970, Ser. No. 9,119
Int. Cl. H01j 9/20, 31/20
U.S. Cl. 96—36.1 **1 Claim**

A method of pattern forming for color television picture tubes which comprises coating the face panel of a tube with a slurry of a photosensitized material and phosphor by utilizing the force of gravity and then exposng the coated panel to a suitable source of radiation through a negative and developing to form a pattern.

3,700,445

PHOTORESIST PROCESSING METHOD FOR FABRICATING ETCHED MICROCIRCUITS

Eddie B. Croson, Ventura, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 29, 1971, Ser. No. 167,325
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 **4 Claims**

A photoresist process especially suitable for fabricating etched thin-film microcircuits. By the use of both positive and negative photoresists during the same processing cycle, most mask alignment problems are eliminated. Also, since only a single post-bake period is necessary, a major reduction in overall processing time is achieved.

3,700,446

PROCESS FOR MANUFACTURE OF STRIPLINE CIRCUIT MODULES

Ernest T. Long, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed June 22, 1970, Ser. No. 48,354
Int. Cl. G03c 5/00
U.S. Cl. 96—362 **3 Claims**

Precision guidelines are added to the original layout of stripline circuit modules and the lines are used in subsequent steps to provide accurate alignment of the negative with a premachined circuit plate in the etching of the plate and also in subsequent inspection, etc.

3,700,447

PRODUCTION OF POSITIVE IMAGE BY DEVELOPING AN IMAGEWISE EXPOSED SEMICONDUCTOR ELEMENT WITH OXIDIZING AND REDUCING AGENTS

Leonard E. Ravich, Boston, Elliot Berman, Quincy, and Carl F. W. Ekman, Bedford, Mass.; said Ravich and said Ekman assignors to Itek Corporation, Lexington, Mass.

No Drawing. Continuation-in-part of application Ser. No. 199,211, May 14, 1962. This application May 2, 1968, Ser. No. 728,869
Int. Cl. G03c 5/24
U.S. Cl. 96—48 **9 Claims**

In a process for recording an image pattern of activating radiation comprising exposing to an image pattern of activating radiation a copy medium comprising a photoconductor which becomes activated upon exposure to activating radiation and thereby capable of causing chemical reactions at portions of said medium corresponding to said image pattern of activating radiation and then applying to said copy medium a chemically reactive image-producing agent, the improvement comprising: either prior to or subsequent to the exposure step applying to the copy medium the first component of a two component image-forming agent reacting on contact at said activated portions to form reaction products which are chemically non-reactive with a second component of an image-producing agent, and then applying to said medium the second component of the image-producing agent to thereby form an irreversible image in the non-exposed areas.

3,700,448

DISPROPORTIONATING IMAGEWISE DISTRIBUTION OF METALLIC NUCLEI TO FORM VISIBLE METALLIC IMAGE

Peter John Hillson, London, and Michael Ridgway, Aldbury, Tring, Herts, England, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 29, 1969, Ser. No. 845,885
Int. Cl. G03c 5/24
U.S. Cl. 96—48 R **9 Claims**

Processes, and elements for use therewith, are described in which images are developed by the disproportionation of a metal compound in the presence of an imagewise distribution of nuclei which accelerate the disproportionation of the metal compound.

3,700,449

PHYSICAL DEVELOPMENT OF A THIN REVERSIBLY ACTIVATABLE PHOTOCONDUCTOR ELEMENT HAVING A RESINOUS BARRIER LAYER

Harry Lerner, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,085
Int. Cl. G03c 5/24
U.S. Cl. 96—48 PD **19 Claims**

This invention relates to a photographic imaging medium comprising a substrate, a reversibly activatable photoconductor layer preferably having a thickness of less than about 2 microns, and a water or alcohol soluble, transparent barrier layer having a low permeability to oxygen over said radiation activatable photo-conductor layer. The photographic imaging medium is characterized by the barrier layer which substantially prolongs decay time of a latent image stored in the photoconductor which latent image has been formed by exposure to a source of activating radiation. Prolonged decay time is believed to be due to the barrier layer preventing mass transport of oxygen from the atmosphere to the photoconductor.

3,700,450

REGENERATION OF BLEACH-FIX SOLUTIONS USED IN PHOTOGRAPHIC PROCESSING

Austin C. Cooley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 8,026, Feb. 2, 1970, now Patent No. 3,634,088. This application Jan. 7, 1971, Ser. No. 104,766
Int. Cl. G03c 5/32, 5/38
U.S. Cl. 96—60 BF **3 Claims**

Photographic bleach-fix solutions employing a ferric salt of an aminopolycarboxylic acid as bleaching agent and a thiosulfate as fixing agent are regenerated by reducing the concentration of silver ion in the solution to a low level and mixing the solution with oxygen in an amount sufficient to convert substantially all ferrous ion in the solution to ferric ion. Removal of silver from the solution can be effected by addition of a chemical precipitant, by metallic replacement, or by electrolytic recovery and the necessary contact with oxygen after silver removal can be accomplished by aerating the solution. Treatment of spent bleach-fix solutions in this manner will essentially restore their original bleaching and fixing capabilities and thereby permit their reuse in photographic processing.

3,700,451

GELABLE AND GELLED COMPOSITIONS

John P. Sullivan, Jr., Malden, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,098
Int. Cl. G03c 5/30, 5/26
U.S. Cl. 96—66 **10 Claims**

Gelable or gelled compositions are disclosed which comprise a liquid medium, agar, and a combination of natural gum gel-forming agents including xanthan gum and locust bean gum. The gelable dispersions are easily gelled by heating to the gel-critical temperature and subsequently cooling them below the setting temperature. In the gelled state, these compositions are useful as carriers for many types of liquids including photoprocessing solutions and therapeutic solutions.

3,700,452

PHOTOSENSITIVE PRINTING-OUT COMPOSITION CONTAINING CHEMICALLY SENSITIZED ORTHO-RHOMBIC CRYSTALLINE Pb(II) OXIDE

Eric Maria Brinckman, Mortsel, Walter August Van den Heuvel, Berchem, Johan Eugeen Van Halst, Wilrijk, and Frans Clement Heugebaert, Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,066
Claims priority, application Great Britain, Nov. 12, 1968, 53,670/68
Int. Cl. G03c 1/00
U.S. Cl. 96—88 **24 Claims**

A print-out recording material and process using a recording layer containing as the essential photosensitive constituent thereof lead(II) oxide consisting at least 25% by weight of lead(II) oxide in the orthorhombic crystalline form, the lead oxide being dispersed in a hydrophilic water-permeable binding agent.

3,700,453

ANTISTAIN AGENTS COMPRISING MIXTURES OF SECONDARY-ALKYLHYDROQUINONES

William F. Knechel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

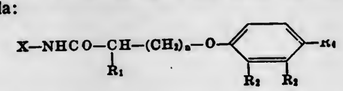
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,330
Int. Cl. G03c 1/76
U.S. Cl. 96—74 **16 Claims**

Mixtures of at least two secondary-alkylhydroquinones in which there are from one to two secondary-alkyl substituents each having from 9 to 20 carbon atoms and,

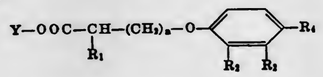
preferably, mixtures that contain secondary-alkylhydroquinone isomers that are eutectics with low eutectic points, i.e., near or below room temperature, are photographic antistain agents that are superior in chemical and physical properties to antistain agents described in the prior art. Dispersions of the immediate antistain agents in hydrophilic colloids can be held before coating at temperatures below room temperature without crystallizing while antistain agents outside the invention do crystallize.

3,700,454
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING COUPLERS AND COUPLER SOLVENTS
Kenro Sakamoto, 8 Ushinuma, Akita-machi, Nishitama-gun; Motoaki Tanaka, 1400 Obwada-cho, Hachioji-shi; Teruo Hanzawa, 32 Ohya-machi, Hachioji-shi; and Keiji Kasai, 127 Oaza-miya, Hino-shi, all of Tokyo, Japan
No Drwing. Filed Aug. 31, 1970, Ser. No. 68,533
Claims priority, application Japan, Sept. 5, 1969, 44/69,946
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **5 Claims**

The light sensitive silver halide color photographic material comprises finely divided liquid particles containing at least one coupler which is capable of coupling with the oxidation product of a primary aromatic amine type developing agent, and at least one compound which is a solvent for the coupler. The coupler has the general formula:



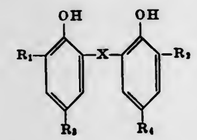
wherein X is a coupler residue of the phenolic, pyrazolone or acetanilide type, R_1 is hydrogen or lower alkyl, R_2 and R_4 are individually hydrogen or alkyl (C_1 to C_{18}), R_3 is hydrogen, or alkyl or alkoxy having 4–18 carbon atoms and n is 0 to 3. When R_3 is hydrogen, R_2 and R_4 are alkyl groups and the total sum of the carbon atoms of R_2 and R_4 is 6 to 25. When R_3 is alkyl or alkoxy, R_2 and R_4 are both hydrogen. The solvent has the general formula:



wherein Y is hydrogen or alkyl (C_1 to C_8) and R_1, R_2, R_3, R_4 and n are as defined above. Coupler dispersions having improved stability are obtained.

3,700,455
COLOR PHOTOGRAPH CONTAINING FADE-PREVENTING AGENTS
Hidehiko Ishikawa, Mikio Sato, and Syun Takada, Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,534
Claims priority, application Japan, Sept. 5, 1969, 44/69,945
Int. Cl. G03c 1/40, 7/00, 1/84
U.S. Cl. 96—100 **4 Claims**

A compound of the formula,



wherein R_1, R_2, R_3 and R_4 are individually a straight chain or branched-chain hydrocarbon radical having 1 to 18 carbon atoms, the total sum of carbon atoms of said R_1, R_2, R_3 and R_4 being less than 32; and X is —S—, —O—, $-SO_2$ or



where n is an integer of 0 to 3, and R_5 is a hydrogen atom or a lower alkyl group, and a color image-forming dye are incorporated into a silver halide photographic composition. When developed, a color image having improved light fastness is obtained. An ultraviolet ray absorbing agent and/or a color coupler may be incorporated into the composition.

3,700,456
SYNTHETIC POLYMERIC PHOTOGRAPHIC EMULSION VEHICLES
Donald A. Smith, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,155
Int. Cl. G03c 1/04
U.S. Cl. 96—114 **18 Claims**

Photographic silver halide emulsions having a vehicle or binding agent comprising a film-forming addition polymer prepared by polymerization of the monomer or monomers in the presence of a redox catalyst system which contains bromate or chlorate ion as the oxidant. Residual bromate or chlorate ion in the finished polymer does not adversely affect the photographic emulsion.

3,700,457
USE OF DEVELOPMENT INHIBITOR RELEASING COMPOUNDS IN PHOTOTHERMOGRAPHIC ELEMENTS
Mary J. Youngquist, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,151
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 **15 Claims**

A silver halide development inhibitor releasing compound, such as a developing agent or coupler containing a development inhibitor moiety which is releasable upon heating, in a photographic and thermosensitive element suitable for dry processing, provides improved black tone, reduced background print-out, improved image stability, and reduction of exposure and processing time in some cases. A combination of a silver halide development inhibitor releasing compound, such as one containing a heat releasable phenylmercaptotetrazole group, in combination with a stable source of silver for physical developmnet are useful in photographic elements for dry processing. The element can contain a sensitizing dye and a stable developed image can be provided by heating the element after exposure. The photographic component can be photographic silver halide, or other suitable photographic metal salts.

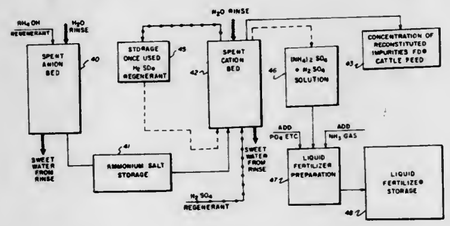
3,700,458
CHEMICAL PROCESS
Robert D. Lindholm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,955
Int. Cl. G03c 1/02, 1/72
U.S. Cl. 96—114.1 **7 Claims**

Noble metal salts of carboxylic acids suitable for use in photosensitive and thermosensitive compositions and elements are prepared by admixing a non-aqueous solution of a noble metal trifluoroacetate or tetrafluoroborate with a non-aqueous solution of a carboxylic acid in the presence of an organic peptizer. Photosensitive and thermosensitive compositions can be made by admixing a non-aqueous dispersion of a noble metal salt of an organic acid, such as silver behenate, with a suitable organic reducing agent and a catalyst. The compositions can contain addenda suitable in photosensitive and thermosensitive compositions and elements.

3,700,459
SHELLED CORN-COTTONSEED ANIMAL FEED
Ray Joe Riley, Hart, Tex., assignor to John Bridges, Earth, John Gilbreath, Hart, and Lewis Thurman, Earth, Tex., fractional part interest to each
No Drawing. Filed Mar. 13, 1970, Ser. No. 19,481
Int. Cl. A23k 1/00
U.S. Cl. 99—2 R **12 Claims**

A ration for fattening beef cattle contains only raw, whole, fuzzy cottonseed mixed with raw, whole shelled corn and mineral-vitamin supplements. To start the cattle upon fattening rations, corn silage is mixed with the rations.

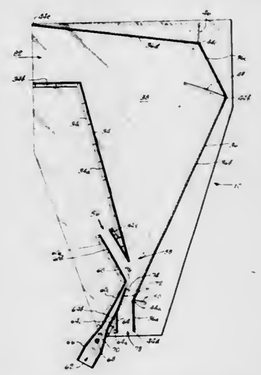
3,700,460
ION EXCHANGE TREATMENT OF SUGAR CONTAINING SOLUTIONS AND PRODUCTION OF A LIQUID FERTILIZER
Stanley E. Bichsel and Tim D. Carpenter, Colorado Springs, Colo., assignors to Holly Sugar Corporation, Colorado Springs, Colo.
Filed June 28, 1968, Ser. No. 750,434
Int. Cl. C05c 3/00
U.S. Cl. 99—2 **1 Claim**



In the ion exchange treatment of sugar containing liquids, to remove non-sugar impurities, the spent anion resins are regenerated by an aqueous ammonia solution to recover an ammonium salt, as in part through a succeeding water rinse, and the spent cation resins are contacted with the ammonium salt solution to reconstitute the impurities, including betaine and amino acids, for use on beet pulp as a food for cattle. The cation resins are thus regenerated to the ammonium form and are converted to the hydrogen form by aqueous sulfuric acid, which forms ammonium sulfate for use in a liquid fertilizer. The initial portion of the aqueous sulfuric acid regenerant is once used acid, thus reducing the cost of acid regeneration. The nitrogen content of the ammonium sulfate solution is increased by the addition of ammonia, while other water soluble fertilizer chemicals, such as phosphate and potassium, may be added, to produce a more commercially acceptable liquid fertilizer.

3,700,461
GAS SUSPERSION AGGLOMERATION
Alvin J. Dickens, Jr., Chapel Hill, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Apr. 7, 1970, Ser. No. 26,204
Int. Cl. A23c 9/00; A23g 7/00
U.S. Cl. 99—26 **12 Claims**

An agglomerator for agglomerating fine particles of matter such as water wettable food particles and/or food additives, including an agglomeration chamber having a greater cross-sectional area in its upper portion than in its lower portion and having adjustably movable walls for controlling the size of the agglomerated product. Material to be agglomerated is supplied to an entrance zone at the base of the chamber where it is wetted and then suspended in a gaseous (air) medium in the chamber. An adjustable baffle at the entrance zone controls



the flow of the wetting or active agglomerating agent and the gaseous medium. The particles are caused to agglomerate to a size sufficient to overcome the buoyant force of the gaseous medium flowing through the chamber and then to be discharged therefrom adjacent the entrance zone, while the gaseous medium leaves the chamber through an exhaust zone at the upper portion of the chamber.

3,700,462
BALANCED COFFEE FLAVORS
Arthur Stefanucci, 119 Merrill Road, Clifton, NJ. 07011, and Slawko Yadlowsky, 308 N. 13th Ave., Manville, NJ. 08835
No Drawing. Filed July 27, 1970, Ser. No. 58,689
Int. Cl. A23f 1/02
U.S. Cl. 99—68 **21 Claims**

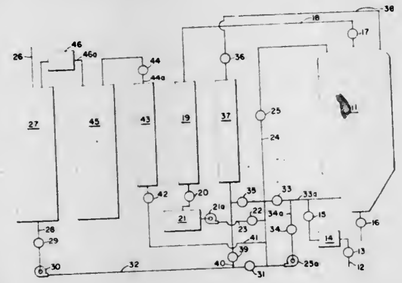
Single varieties of coffee are divided into portions and each portion roasted to a separate and discernible average roasted color, the portions are combined and provide, on infusion, improved flavor characteristics compared to the same variety roasted to its optimum color. Blends of varieties of coffee are similarly treated. The above roasts are blended with roasted low grade coffee and mask the undesirable flavor characteristics of the low grade coffee.

3,700,463
COFFEE EXTRACTION PROCESS
Gregory L. Bolt and Rudolf G. K. Strobel, Colerain Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Oct. 2, 1970, Ser. No. 77,755
Int. Cl. A23f 1/08
U.S. Cl. 99—71 **8 Claims**

A method of producing a soluble coffee extract wherein the flavor balance of brew-likeness, strength, acidity, and aromatic notes are controlled in the fresh extraction column of a multi-column extraction train. The combination of pressures, temperatures, and cycle times of 5 p.s.i.a.–35 p.s.i.a., 160° F.–260° F., and 5–45 minutes, respectively, are used in the fresh extraction column to obtain a desirable balance of flavor components. The temperatures

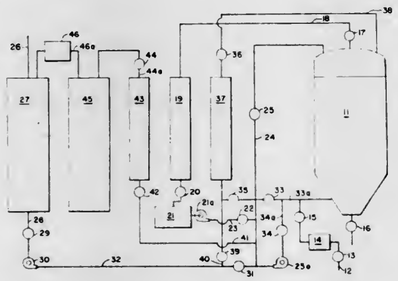
and pressures utilized result in a vapor phase in the fresh extraction column which in turn is responsible for the improved product of this invention.

3,700,464
DECAFFEINATION PROCESS
Jayantilal M. Patel, Reading and Alan B. Wolfson and Benjamin Lawrence, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of abandoned application Ser. No. 23,647, Mar. 30, 1970. This application Feb. 23, 1971, Ser. No. 118,182
Int. Cl. A23f 1/10
U.S. Cl. 99—70 **6 Claims**



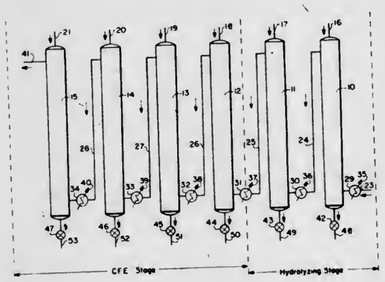
Decaffeination total process times and caffeine extraction times are substantially reduced by utilizing high caffeine extracting temperatures and high pre-wetting moisture ranges.

3,700,465
NONVACUUM DRYING OF DECAFFEINATED GREEN COFFEE BEANS
Benjamin Lawrence and Alan B. Wolfson, Springfield Township, Hamilton County, and Jayantilal M. Patel, Reading, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of abandoned application Ser. No. 23,648, Mar. 30, 1970. This application Feb. 23, 1971, Ser. No. 118,185
Int. Cl. A23f 1/10
U.S. Cl. 99—70 **4 Claims**



Drying times for decaffeinated green coffee beans are substantially reduced by drying green coffee beans in a nonvacuum dryer at bean surface temperatures of from 220° F. to 300° for from 15 minutes to 60 minutes.

3,700,466
METHOD OF MAKING COFFEE EXTRACT
Robert J. Bergeron, Springfield Township, Hamilton County, and Stephen L. Schlichter, Green Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of abandoned application Ser. No. 779,711, Nov. 29, 1968. This application Mar. 15, 1971, Ser. No. 124,454
Int. Cl. A23f 1/08
U.S. Cl. 99—71 **9 Claims**



A method of preparing soluble coffee extract which comprises a two-stage counter-current extraction wherein one stage is a hydrolyzing stage and is operated at temperatures of from 330° to 355° F. and wherein the other stage is a cold, fresh extraction stage operated at temperatures of from 32° to 180° F. and at a pressure of not less than about 200 p.s.i.g.

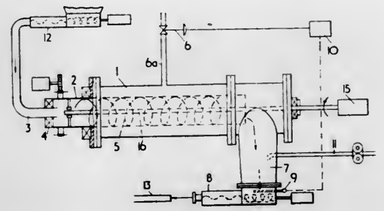
3,700,467
MUSHROOM PUFFS
Thomas Di Cecco, Toughkenamon, Pa. (P.O. Box 370, Avondale, Pa. 19311)
Filed Sept. 9, 1970, Ser. No. 70,767
Int. Cl. A23b 7/02
U.S. Cl. 99—104 **7 Claims**

An edible mushroom product having a puffed structure, a relatively high protein content; free of cholesterol and having a unique and exotic flavor. The product is produced by comminuting mushrooms, mixing the same with flour, and, by a process of steaming, water spraying, cooking, extruding through a suitable die, and cutting into desired lengths, is formed into short sticks or biscuits.

3,700,468
STERILIZING SEPARATE COMPARTMENTS OF PARTICULATE MATERIAL
David Teignmouth Shore, Banstead, and Granville Lewis Starkie, Crawley, England, assignors to The A.P.V. Company Limited, Crawley, England
Filed May 27, 1970, Ser. No. 40,806
Claims priority, application Great Britain, May 28, 1969, 27,009/69
Int. Cl. A23b 1/04
U.S. Cl. 99—216 **3 Claims**

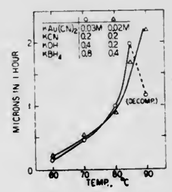
The specification discloses a method and apparatus for sterilizing particulate solid material such as meat cubes or beans. The particles of solid material are positively fed by a conveyor, such as a screw conveyor, through a

chamber with an atmosphere of steam or other heating gas, and the residence time determined by the positive



feeding is such as to ensure that the required treatment in the chamber is completed.

3,700,469
ELECTROLESS GOLD PLATING BATHS
Yutaka Okinaka, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation of abandoned application Ser. No. 872,610, Oct. 30, 1969. This application Mar. 8, 1971, Ser. No. 122,103
Int. Cl. C23c 3/02
U.S. Cl. 106—1 **5 Claims**



Conditions and bath compositions are given for electroless plating of pure gold and gold alloys on a variety of substrates including ones with gold surfaces. The plating bath contains a gold cyanide complex, and free cyanide is added to stabilize this complex. A borohydride or aliphatic-substituted amine borane is used as the reducing agent and the pH is adjusted by the addition of an alkaline agent. The resulting bath is stable, yields plating rates of typically 0.5 to 3 microns per hour at about 75° C. and plating thickness up to a micron or greater.

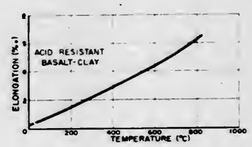
3,700,470
FOAMED CERAMIC MATERIAL AND METHOD OF MAKING THE SAME
Patrick William Barton, Elanora Heights, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,556
Claims priority, application Australia, Sept. 2, 1969, 60,332/69
Int. Cl. B29d 27/04; C04b 37/10
U.S. Cl. 106—75 **10 Claims**

Lightweight foamed solid shapes, e.g. building panels are made by mixing a ceramic filler, a powdered amphoteric metal, preferably aluminum, and aqueous sodium silicate, shaping the mix and subsequently curing it with or without facing sheets. Use of waste ceramic materials, especially power station fly ash, is preferred.

3,700,471
GLASS-CERAMIC ARTICLES
David A. Duke, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Filed Nov. 12, 1970, Ser. No. 89,111
Int. Cl. C03c 3/22, 3/10; C04c 35/00
U.S. Cl. 106—39 DV **1 Claim**

This invention relates to the manufacture of glass-ceramic articles in the PbO-Al_2O_3-SiO_2 composition field utilizing TiO_2 and/or ZrO_2 plus P_2O_5 as nucleating agents. Alpha-cristobalite comprises the predominant crystal phase when the silica content of the articles is at a high level whereas lead feldspar constitutes the predominant crystal phase when the lead oxide content of the article is at a high level. At intermediate concentrations of PbO and SiO_2, the final crystallization will be a mixture of these two phases.

3,700,472
ACID RESISTANT BASALT-CLAY PRODUCT AND SLIP CASTING PROCESS
Elisha Tauber, East St. Kilda, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia
Continuation-in-part of application Ser. No. 421,998, Dec. 29, 1964. This application Aug. 1, 1969, Ser. No. 846,675
Claims priority, application Australia, Jan. 8, 1964, 39,557/64; Apr. 13, 1964, 43,139/64
Int. Cl. C04b 29/00, 33/18, 33/28
U.S. Cl. 106—39 R **7 Claims**



Ceramic articles are prepared by mixing igneous rock particles, preferably basalt particles ranging in size from about 3 mesh to 200 mesh with slip-casting clay and water, slip casting the mixture and then firing the cast product at a temperature in the range of about 950° C. to about 1200° C. By varying the firing temperature, different ceramic products are produced. At a firing temperature of about 950° to 1150° C., a sintered heterogeneous product is obtained which is useful for building and ornamental purposes. The ceramic obtained by firing the cast product at about 1160 to 1200° C. is a substantially homogeneous material related to stoneware and characterized by a high degree of acid resistance as well as resistance to abrasion and to heat shock.

3,700,473
PROCESS FOR TREATING REINFORCING SILICA FILLER
John S. Razzano, Troy, and Alfred H. Smith, Jonesville, N.Y., assignors to General Electric Company
No Drawing. Filed Nov. 4, 1970, Ser. No. 86,972
Int. Cl. C08h 17/04
U.S. Cl. 106—288 Q **9 Claims**

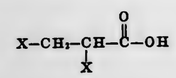
The process for treating reinforcing silica filler so as to render it non-structuring when it is mixed with convertible polyorganosiloxane comprising contacting at a temperature in the range of 50° to 300° C. finely divided silica having a surface area of at least 50 square meters per gram and containing at least 0.2 weight percent absorbed water with a fluorine-substituted aliphatic acid. At the same time, prior or after the fluorine-substituted aliphatic acid is brought into contact with the silica filler, the filler is also contacted with a cyclopolyorganosiloxane.

3,700,474
INCREASE IN CLAY RESPONSIVENESS TO WETTING
William J. Lang, Libertyville, Ill., assignor to International Minerals & Chemical Corporation
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,601
Int. Cl. C09c 1/42
U.S. Cl. 106—288 B 14 Claims

A method for treating a platey-type clay, namely, a clay such as bentonite having a micaceous sheet structure, to make it more readily slakable in water, which comprises compacting fine particles of the clay, having a maximum moisture content of about 20% by weight of water, into sheet form, and crushing the clay sheet thus formed.

3,700,475
METHOD OF PRODUCING A PEARLESCENT BASIC LEAD CARBONATE PIGMENT
David R. Meldrum, Englishtown, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,352
Int. Cl. C09c 1/14
U.S. Cl. 106—291 18 Claims

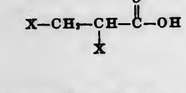
A pearlescent pigment consisting of hexagonal platelets of basic lead carbonate is produced by bubbling carbon dioxide gas into an aqueous solution of a basic lead salt which is derived from the reaction of lead monoxide with an acid. The acid that is reacted with the lead monoxide can be nitric acid, but more preferably will have the formula:



wherein X is a member from the group consisting of hydrogen, methyl and halogen. Reaction of the carbon dioxide with the basic lead salt is carried out in the presence of a ketone dissolved in the aqueous reaction medium, thus facilitating control over the rate and extent of crystal initiation and growth. The resulting basic lead carbonate pigment can be incorporated into plastics, lacquers, and the like to provide articles having the appearance of natural pearl.

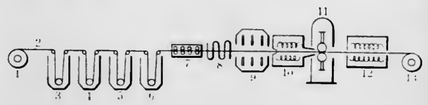
3,700,476
METHOD OF PRODUCING PEARLESCENT BASIC LEAD CARBONATE PIGMENT
David R. Meldrum, Englishtown, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,353
Int. Cl. C09c 1/14
U.S. Cl. 106—291 18 Claims

A pearlescent pigment consisting of hexagonal platelets of basic lead carbonate is produced by bubbling carbon dioxide gas into an aqueous solution of a basic lead salt which is derived from the reaction of lead monoxide with an acid. The acid that is reacted with the lead monoxide can be nitric acid, but more preferably will have the general formula:



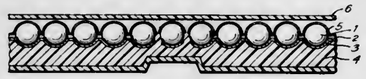
wherein X is a member from the group consisting of hydrogen, methyl and halogen. Reaction of the carbon dioxide with the basic lead salt is carried out in the presence of an alcohol dissolved in the aqeuous reaction medium, thus facilitating control over the rate and extent of crystal initiation and growth. The resulting basic lead carbonate pigment can be incorporated into plastics, lacquers, and the like to provide articles having the appearance of natural pearl.

3,700,477
METHOD OF COATING STEEL ELECTROSTATICALLY WITH ALUMINUM POWDER COATED WITH A HIGHER FATTY-ACID SALT
Hidehisa Yamagishi, Fumitoshi Yokoi, and Tuyoshi Kutino, all % Nippon Kokan Kabushiki Kaisha Technical Institute, 2730 Minamiwataridachio, Kawasakaishi, Kawasakai, Japan
Continuation-in-part of abandoned application Ser. No. 720,178, Apr. 10, 1968. This application Oct. 7, 1970, Ser. No. 78,754
Claims priority, application Japan, Apr. 13, 1967, 42/23,315; Great Britain, Apr. 10, 1968, 17,304/68
Int. Cl. B44d 1/094; C23c 17/02
U.S. Cl. 117—17 7 Claims



A steel surface is coated electrostatically with aluminum powder which is coated with a sodium, calcium or zinc salt of a saturated higher fatty acid having from about 16 to 18 carbon atoms. The coated steel surface is then heated, rolled and heated.

3,700,478
MICROSPHERES HAVING AN ANTIREFLECTION COATING AND THEIR USE
Wallace Karl Bingham, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 9, 1970, Ser. No. 87,858
Int. Cl. G03b 21/60
U.S. Cl. 117—28 4 Claims

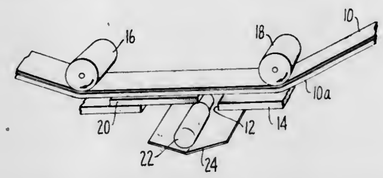


Retroreflective sheet constructions containing high index glass microspheres, which microspheres contain an antireflection coating thereon.

3,700,479
METHOD OF PROVIDING A LUMINESCENT LAYER ON A SUPPORT
Johannes Wilhelmus Maria Arents, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Oct. 6, 1969, Ser. No. 864,223
Claims priority, application Netherlands, Oct. 7, 1968, 6814348
Int. Cl. H01j 1/62
U.S. Cl. 117—33.5 L 9 Claims

A suspension medium for a mixture of a fine-grained luminescent material and a fine-grained non-luminescent solid material containing a temporary binder, an organic non-polar non-aromatic liquid and an organic polar organic non-aromatic liquid, both liquids being solvents for the temporary binder.

3,700,480
VESICULAR FILM
Robert H. Murashige, Los Altos, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
Filed Jan. 6, 1971, Ser. No. 104,290
Int. Cl. G03c 1/52, 1/74
U.S. Cl. 117—34 2 Claims



A method of making vesicular film comprising drying a solution of a diazonium salt and polyvinyl formal onto a subcoated translucent substrate, and uniformly preexposing the uncoated base side of the substrate to a controlled light source to decompose diazonium compounds which have intruded into or near the subcoating whereby blistering of the subcoat is prevented.

3,700,481
ELECTROLESSLY PLATABLE POLYMERIC BLENDS
James Chin and Harry S. Witt, Naugatuck, and Eli Schwartz, New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Aug. 23, 1968, Ser. No. 754,948
Int. Cl. B44d 1/092; C23c 3/02
U.S. Cl. 117—47 A 7 Claims

The present invention relates to the incorporation of an electroless metal depositing aid, which consists of various basic nitrogen-containing polymers wherein the nitrogen has an available electron pair, into a polymeric matrix capable of being formed into a plastic article with the result that the nitrogen-containing polymer renders the surface of such article suitable for electroless plating.

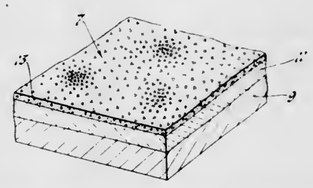
3,700,482
URANIUM SURFACE PREPARATION FOR ELECTROLESS NICKEL PLATING
Germaine F. Jacky, Portland, Oreg., and Richard D. Ehrlich, Oakland, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Dec. 1, 1970, Ser. No. 94,162
Int. Cl. C23c 3/00
U.S. Cl. 117—50 3 Claims

The quality of nickel plating applied to uranium bodies by the electroless plating process is substantially improved if, after degreasing, pickling and etching, the uranium bodies are treated with a saturated solution of palladium chloride or a hot solution of tetrasodium pyrophosphate and rinsed before immersion in the electroless nickel plating solution.

3,700,483
PROCESS FOR THE PRODUCTION OF SHEET-FORM BACKING MATERIALS COATED WITH FUSED SYNTHETIC RESINS
Erich Gentsch, Klaus Bederke, and Walter Selder, Wuppertal-Barmen, Hans Jurgen Fullner, Wuppertal-Langerfeld, and Christa Muhlmann, Wuppertal-Barmen, Germany, assignors to Dr. Kurt Herberts & Co. vormals Otto Louis Herberts, Wuppertal-Barmen, Germany
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,316
Claims priority, application Germany, Dec. 12, 1969, P 19 62 407.8
Int. Cl. B44d 1/44
U.S. Cl. 117—65.2 12 Claims

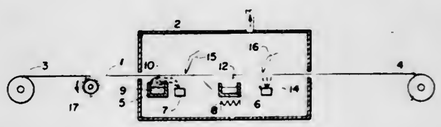
There is provided a process for the production of sheet-form substrates coated with fused, catalyst-containing thermosetting synthetic resins, comprising fusing the catalyst-containing thermosetting resin mixture at a temperature of from 70 to 100° C., applying the fused resin in the form of a melt to one side of the substrate and heating the resin-coated substrate at an elevated temperature up to 200° C. and at an elevated pressure up to 15 kp./cm.² to effect a cure of the resin. The process enables economic production of high-grade plastic coated surfaces with good intermediate storage and molding properties.

3,700,484
METHOD FOR MAKING THE ENCLOSURE WALLS OF A LOW TEMPERATURE SELF-CLEANING COOKING DEVICE
Victor A. Williamitis, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 23, 1970, Ser. No. 21,883
Int. Cl. B44d 1/16
U.S. Cl. 117—70 A 3 Claims



This invention relates to self-cleaning cooking devices wherein the cleaning action results from low temperature, non-catalytic pyrolysis of the staining spatter and condensed vapors resulting from cooking. More particularly, one or more of the metal wall members defining the cooking enclosure are formed with a glazed porcelain enamel undercoating on which an unglazed porcelain enamel-forming coating is provided by underfiring a porcelain enamel-forming slurry containing an extra loading of pulverized granular materials having sharply angular surfaces selected from the group of non-catalytic refractory or abrasive materials comprising alumina, silica, emery, tungsten carbide, silicon carbide, kaolin, and feldspar in an amount of from about 20–30% by weight of the frit materials in the slurry.

3,700,485
VACUUM VAPOR DEPOSITED ZINC COATINGS
Robert G. Rubin, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 682,354, Nov. 13, 1967. This application Apr. 10, 1970, Ser. No. 27,416
Int. Cl. B44d 1/16
U.S. Cl. 117—71 M 9 Claims



Adherent vacuum vapor deposited zinc coatings are provided ferrous substrates by initially vacuum vapor coat-

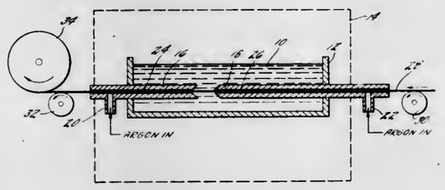
ing the substrates with a first metal comprising either aluminum or magnesium and thereafter vacuum vapor coating the substrates with zinc. The temperature of a substrate during the coating procedure and the elapsed time between application of the successive coatings are controlled within critical limits.

3,700,486

METHOD FOR COATING FILAMENTS

Richard D. Veltri and Asaph U. Merriam, East Hartford, and Malcolm Basche, West Hartford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 31, 1970, Ser. No. 103,208
Int. Cl. C23c 1/08, 1/10
U.S. Cl. 117—71 R **4 Claims**



A method for continuously coating high modulus, high strength filaments having a boron or silicon carbide surface with a complete and uniform ductile metal matrix overcoat of aluminum or magnesium comprising passing the filament through a pair of axially aligned tubular conduits having matable end portions immersed in a molten bath of the metal matrix material, the end portions being initially conjoined to prevent contact of the filament with the molten metal, and separating the conduit end portions a distance sufficient to expose the moving filament to the molten metal and cause uniform coating thereof.

3,700,487

POLYCARBONATE SUBSTRATE WITH DURABLE, ABRASION AND SCRATCH-RESISTANT, ANTI-FOGGING COATING

Harry D. Crandon, Woodstock, Conn., and Albert R. Le Boeuf, Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,092
Int. Cl. G02c 7/02; B32b 27/06
U.S. Cl. 117—72 **1 Claim**

At least one surface of a substrate, initially prepared to provide adequate bonding, is coated with a polyvinyl alcohol that has been lightly crosslinked to provide a permanent, abrasion-resistant antifog coating on the surface.

3,700,488

SATELLITE

Günter Hoff, Meersburg, and Gerhard Langbein, Oberuhldingen, Germany, assignors to Dornier Systems G.m.b.H., Friedrichshafen, Germany

No Drawing. Continuation-in-part of application Ser. No. 671,229, Sept. 28, 1967. This application July 20, 1970, Ser. No. 56,729
Int. Cl. B44d 1/00
U.S. Cl. 117—94 **5 Claims**

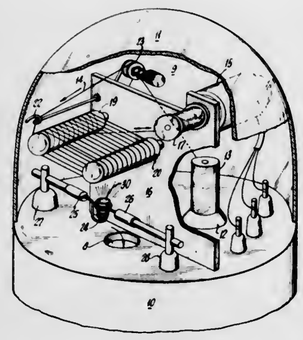
This invention relates to a satellite having a covering on at least a portion of the exterior thereof of a material having low sound wave resistance, good adsorptive power, and high absorption of energy resulting from the impact of gas molecules upon the satellite at high speed.

3,700,489

PROCESS FOR APPLYING A THIN COATING OF POLYTETRAFLUOROETHYLENE

Emil Borysko, Somerville, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed July 30, 1970, Ser. No. 59,415
Int. Cl. B44d 1/02
U.S. Cl. 117—106 R **9 Claims**



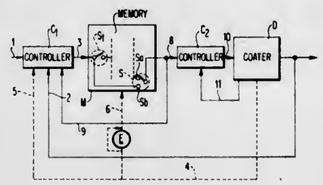
Polytetrafluoroethylene is condensed on the surface of a textile filament by heating the polytetrafluoroethylene in a vacuum to form the vapor phase and passing the filament through the vapor so obtained while rotating the filament on its axis. Surgical needles may be similarly coated by condensing polytetrafluoroethylene from the vapor phase.

3,700,490

METHOD OF COATING BY DELAYING THE CONTROL SIGNAL FOR OPERATING THE COATING APPARATUS

Hirosi Hiyosi and Masao Kanda, Shizuoka, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Claims priority, application Japan, Dec. 23, 1969, 44/103,656
Filed Dec. 23, 1970, Ser. No. 100,940
Int. Cl. G05b 15/02
U.S. Cl. 117—120 **2 Claims**



Upon sensing an abnormal coating condition, a memory automatically transmits a control signal representing normal coating conditions to the controller controlling coating operation and prevents the controller from receiving signals from the memory corresponding to abnormal coating conditions until such abnormal coating condition ceases.

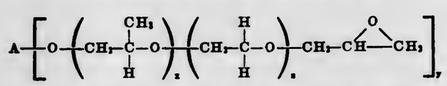
3,700,491

COATED SYNTHETIC ORGANIC POLYMER FIBER

Karl Altau, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,771
Int. Cl. D06m 15/00
U.S. Cl. 117—138.8 UA **7 Claims**

A polyoxypropylene glycol polyepoxide of the formula



wherein A is an alkylene radical having a valence of Y and may contain at least one hydroxyl substituent, X is an integer from 4 to 60, inclusive, Z is an integer from 0 to 40, inclusive, Y is an integer of at least 2, and the ratio of X to Z is greater than about 3 to 2 and a composition comprising at least one polyepoxide of the above formula and at least one other polyepoxide formed as a reaction product of epichlorhydrin and a polyhydroxy compound containing at least three hydroxyl groups are prepared. They are suitable for minimizing the accumulation of charge of static electricity on a synthetic shaped structure. They also cause the shaped structure to attract fluorescent whitening agents from detergent solutions, are fast to bleaching, and do not cause staining during dry cleaning.

3,700,492

COATED SUBSTRATE

Joseph G. Bergomi, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 5, 1971, Ser. No. 104,170
Int. Cl. D21h 1/28
U.S. Cl. 117—155 UA **10 Claims**

Coated substrate comprising a fibrous substrate having a coating thereon comprising a mineral pigment and a polyblend of ethylene/vinyl chloride/acrylamide interpolymer and polyacrylamide.

3,700,493

CELLULOSIC PRODUCTS TREATED WITH IMPROVED QUATERNARY AMMONIUM ELECTROCONDUCTIVE ADDITIVES FROM VINYL-AROMATIC POLYMERS

Lawrence F. Sonnabend, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,639, Oct. 6, 1970, which is a division of application Ser. No. 773,309, Nov. 4, 1969, now Patent No. 3,607,989. This application June 16, 1971, Ser. No. 153,889
Int. Cl. B44d 1/18; C08f 27/03
U.S. Cl. 117—201 **7 Claims**

Electroconductive cellulosic products with improved color and color stability are obtained by treating a base cellulosic product with a quaternary ammonium additive prepared by chloromethylation and amination of an essentially linear vinylaromatic polymer containing less than 0.3 weight percent residual ethylenic unsaturation. The treated products have improved stability as shown by retention of surface brightness and decreased yellowing. They are particularly useful in preparing reprographic printing paper.

3,700,494

BRIGHT-FINISH WELDING WIRE

Samuel C. Avallone, Westlake, Ohio, assignor to United States Steel Corporation

No Drawing. Original application Jan. 29, 1970, Ser. No. 6,929, now Patent No. 3,563,074, dated Jan. 16, 1971. Divided and this application Sept. 16, 1970, Ser. No. 72,840
Int. Cl. B23k 35/22; C23f 7/26
U.S. Cl. 117—202 **3 Claims**

Article of the invention is a bright-finish weld-wire for electric welding purposes having a low hydrogen level and an extended shelf life.

3,700,495

PROCESS FOR COATING SUBSTRATES WITH POLYETHYLENE AND PRODUCTS PRODUCED THEREBY

Jurgen M. Kruse, Lincoln, and John E. Wyman, Lexington, Mass., assignors to Itek Corporation, Lexington, Mass.

No Drawing. Filed Mar. 30 1970, Ser. No. 31,029
Int. Cl. B44d 1/08; C09d 3/60
U.S. Cl. 117—104 R **8 Claims**

This invention is concerned with direct coating of polyethylene on surfaces, particularly heat-sensitive surfaces, by forming a layer of a solution of polyethylene on the surface and thereafter allowing the solvent to evaporate. Additionally, it provides new heat sensitive substrates with polyethylene coatings directly bonded to the surface of the substrate.

3,700,496

APPLICATION OF METAL COATINGS BY THE SEIZURE METHOD

Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Brussels, Belgium

Filed Apr. 29, 1970, Ser. No. 32,967
Claims priority, application Luxembourg, May 2, 1969, 58,564; Great Britain, Mar. 26, 1970, 14,891/70
Int. Cl. C23c 17/00; H05b 3/12
U.S. Cl. 117—211 **14 Claims**

Metal coatings are applied to article surfaces by frictional contact between the surface and a scriber of the metal to be deposited, the metal being a special alloy of aluminum and at least 0.1% by weight of at least one secondary metal giving the alloy a Brinell hardness of not more than 100.

3,700,497

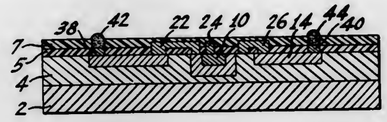
METHOD OF MAKING A SEMICONDUCTOR DEVICE INCLUDING A POLYIMIDE RESIST FILM

Robert Nicholas Epifano, Oceanport, and Eugene Leon Jordan, Piscataway, N.J., assignors to RCA Corporation

Original application Sept. 15, 1967, Ser. No. 668,080. Divided and this application Apr. 8, 1970, Ser. No. 26,806
Int. Cl. B44d 1/18, 1/52, 1/10
U.S. Cl. 117—212 **6 Claims**

Method of manufacturing a semiconductor device or integrated circuit which includes using a masking film composed of a thermoplastic type polyimide synthetic resin. The resin film is deposited either directly on the semiconductor body or on a passivating film of a substance such as silicon dioxide or silicon nitride, while the

resin is in an incompletely cured (incompletely polymerized) state. Openings are etched through the film while it is in this state. Then the film is completely cured. After the



resin film is completely cured it may be subjected to relatively high temperatures and to most solvents, as may be required in later device processing steps, without damage to the resin film.

3,700,498

PROCESS FOR MAKING ELECTROPHOTOGRAPHIC PLATES

Kay Keiji Kanazawa, Hajime Seki, and George Bryan Street, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,052
Int. Cl. B44d 1/34, 1/42; C23c 11/00
U.S. Cl. 117—230 4 Claims

Electrophotographic plates are formed by depositing a layer of beta phase polycrystalline As_4S_4 by evaporation under vacuum onto an electrically conductive substrate held at a temperature between 100° C. and 200° C.

3,700,499

MAGNETIC RECORDING ELEMENT

Gottfried C. Haack, Stamford, and Lindley Clair Beegle, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 17, 1969, Ser. No. 834,160
Int. Cl. H01f 10/02
U.S. Cl. 117—235 2 Claims

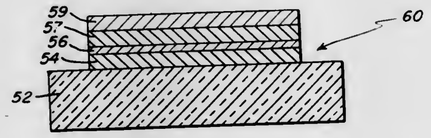
A magnetic recording element comprising a support having thereon a recording film of particulate material consisting essentially of magnetic particles having an iron core with an layer of iron nitride, Fe_4N, coating.

3,700,500

MAGNETIC FILMS HAVING A PREDETERMINED COERCIVITY

Donald Stanley Rodbell, Burnt Hills, and James M. Lommel, Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 4, 1967, Ser. No. 687,822
Int. Cl. H01f 10/06
U.S. Cl. 117—239 2 Claims



Magnetic films having a predetermined coercivity are formed by disposing a vacuum deposited, polycrystalline thin magnetic film of iron, cobalt or nickel in an oxygen bearing atmosphere and subsequently annealing the magnetic film at a temperature between 50° C. and 600° C. for a sufficient period, e.g. between 10 to 300 minutes, to increase the coercivity of the magnetic film to a desired value within a fixed range. In a specific instance, a monotonic increase from 38.4 oersteds to 530 oersteds was observed in the coercive force of 300 A. thick iron film upon a glass substrate when annealed for 130 minutes at a pressure of 5×10^{-5} torr. Annealing of the magnetic films generally was found to produce only a fractional decrease in the magnetization of the films.

3,700,501

PROCESS FOR PRODUCING XYLOSE

Urs Gasche, Luterbach, Herbert Lindlar, Reinach, Max Rutishauser, Attisholz, Riedholz, and Kurt Steiner, Starrkirch, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,060
Claims priority, application Switzerland, Feb. 20, 1970, 2,442/70
Int. Cl. C13k 9/00
U.S. Cl. 127—43 21 Claims

A process for producing xylose from a powder obtained from sulfite waste liquors by treating the powder with a mixture of an organic solvent having strong extraction properties, an organic solvent having weak extraction properties, and 0.5–2.5 percent by volume water.

3,700,502

HIGH ENERGY DENSITY BATTERY

Nobuatsu Watanabe, Kyoto, and Masataro Fukoda, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of abandoned application Ser. No. 814,015, Apr. 7, 1969. This application Apr. 21, 1971, Ser. No. 136,247
Claims priority, application Japan, Apr. 17, 1968, 43/26,218
Int. Cl. H01m 17/00
U.S. Cl. 136—6 6 Claims

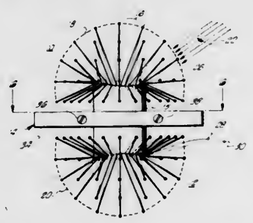
A battery of high energy density which is composed of a negative electrode consisting mainly of a light metal, a non-aqueous electrolyte and a positive electrode having a solid fluorinated carbon as active material, said solid fluorinated carbon being obtained by the fluorination of an amorphous carbon, such as charcoal, active carbon or coke; and which has such advantages that the utility of the positive electrode active material is high, that the flat characteristic of discharge voltage is excellent, that the shelf life is long due to the chemical stability in the electrolyte of the fluorinated carbon used as active material, and that the cost is low.

3,700,503

IRRADIANCE MEASURING DEVICE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Eric G. Laue, San Marino, Calif.

Filed June 9, 1971, Ser. No. 151,413
Int. Cl. H01v 1/02
U.S. Cl. 136—224 8 Claims



A thermopile configured to resemble a pin cushion for enabling direct measurements of incident radiant energy, is disclosed. The thermopile includes a plurality of serially connected hemispherical arrays. A clamping shield separates the respective arrays. One thermocouple array is employed as a sensor to detect incident radiant energy while the other array serves as a thermal reference and is maintained at a reference temperature. Electrical signals developed across a pair of output terminals provide a quantitative indication of incident radiant energy.

3,700,504

METHOD FOR PRODUCING DOUBLE-REDUCED CONTAINER STOCK HAVING GOOD RESISTANCE TO CORROSION AND PRODUCT PRODUCED THEREBY

Carlton E. Roberts, Hilton N. Rahn, Jr., and Walter E. Reid, Jr., Bethlehem, Pa., assignors to Bethlehem Steel Corporation

No Drawing. Continuation of abandoned application Ser. No. 689,000, Dec. 8, 1967. This application Dec. 21, 1970, Ser. No. 100,547
Int. Cl. C21d 7/14
U.S. Cl. 148—2 6 Claims

A method for producing double-reduced container stock including providing steel containing not more than .03% carbon, about 0.25% to about 0.60% manganese, about .014% to about .025% sulfur and not more than about 0.20% copper with a range of about .06% to about .20% copper preferred. A weight ratio of not less than 12 manganese to one carbon is maintained in the steel. The steel is poured into ingot molds, slabbed, hot rolled to coil form, cold rolled to an intermediate gage, annealed and double-reduced cold to a light base weight. Container stock so prepared has a corrosion resistance of not more than 60 microamperes per square centimeter when tested by a phosphoric acid-blue dye test (PABD), and sufficient strength to be processed into containers suitable for containing highly corrosive foods, carbonate beverages and the like.

3,700,505

COATING FERROUS BASE METAL ARTICLES

Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill. 60464

No Drawing. Continuation-in-part of abandoned application Ser. No. 828,707, May 28, 1969. This application Jan. 11, 1971, Ser. No. 105,650
Int. Cl. C23c 17/00
U.S. Cl. 148—6.35 26 Claims

Iron, steel, and iron base alloys are provided with coatings made by forming an adherent oxide layer on the surface, treating the oxide layer with at least one Group III metal, and then oxidizing the Group III metal. The coatings are useful for providing corrosion and oxidation resistance, particularly at elevated temperatures. The coatings also are useful for providing an electrically insulative or dielectric layer.

3,700,506

METHOD FOR REDUCING AN IRON LOSS OF AN ORIENTED MAGNETIC STEEL SHEET HAVING A HIGH MAGNETIC INDUCTION

Osamu Tanaka and Fumio Matsumoto, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,614
Claims priority, application Japan, Dec. 10, 1968, 43/90,427
Int. Cl. H01f 1/18
U.S. Cl. 148—111 2 Claims

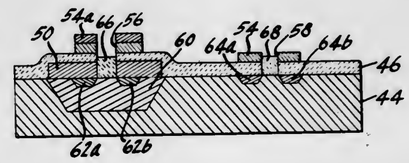
A process for reducing an iron loss of an oriented magnetic steel sheet having a high magnetic induction by subjecting a decarburizing annealing, thereupon coating the thus annealed steel sheet with an annealing separator, to which B and S or Se are added, and then finally annealing the steel sheet.

3,700,507

METHOD OF MAKING COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS

Lawrence Aloysius Murray, Somerville, N.J., assignor to RCA Corporation

Filed Oct. 21, 1969, Ser. No. 868,071
Int. Cl. H01l 7/44, 11/14
U.S. Cl. 148—187 9 Claims



The source and drain regions and the channel insulation of two complementary field effect transistors are diffused simultaneously during a single heat treatment so as to reduce the number of heat treatment steps required to make the device. The method may also include diffusing the well region for one of the field effect transistors during the same heat treatment step that the source and drain regions are diffused and the channel insulation is formed so as to further reduce the number of heat treatment steps.

ERRATUM

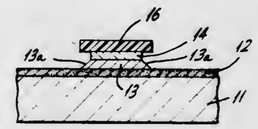
For Class 148—32.5 see:
Patent No. 3,700,433

3,700,508

FABRICATION OF INTEGRATED MICROCIRCUIT DEVICES

Ralph S. Keen, Jr., Harleysville, Pa., assignor to General Instrument Corporation, Newark, N.J.

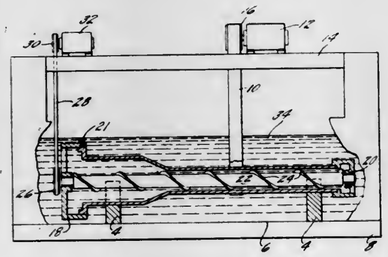
Filed June 25, 1970, Ser. No. 49,697
Int. Cl. C03c 15/00; C23f 1/02
U.S. Cl. 156—3 12 Claims



A process for manufacturing microcircuit devices having multi-level interconnection wiring formed as metal layers separated by layers of dielectric material. To avoid the development of cracks in overlying layers of dielectric material, tapered edges are formed on the underlying metal layer. Prior to photolithographic etching to form the wiring, the metal layer is covered with a relatively thin layer of phosphosilicate glass, as the dielectric, and photoresist is applied thereto. After the photoresist is developed, the exposed glass is removed by subjecting it to an HF etchant solution. Then the exposed surfaces of glass and metal are subjected to a solution of a metal etchant and a glass etchant. As the glass is removed by its etchant, the photoresist is undercut, thereby exposing to the metal etchant progressively more of the upper

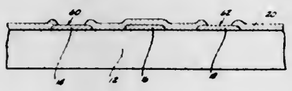
surface of the metal, with resultant formation of sloped or tapered edges on the metal wiring. The relative etch rates, as between the metal and the glass, is used to determine the angle of slope.

3,700,509
APPARATUS AND METHOD FOR CHEMICALLY MILLING THE INNER WALL SURFACE OF A HOLLOW SHAFT
John P. Devitt, Wethersfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 5, 1971, Ser. No. 131,322
Int. Cl. C23f *1/00, 3/04*
U.S. Cl. 156—5 8 Claims



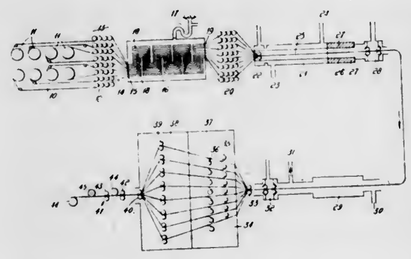
A method and apparatus for chemically milling the inner wall of a hollow shaft to the desired dimension by flowing an etchant through said shaft as by a helix rotating within the shaft and guiding the etchant against and over the inner wall surface of the shaft from one end to the other. The helix may be contoured substantially to the shape of the finished wall surface to more precisely control the etching operation.

3,700,510
MASKING TECHNIQUES FOR USE IN FABRICATING MICROELECTRONIC COMPONENTS
Carl E. Keene, Huntington Beach, and Ruth D. Bradley, Newport Beach, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 9, 1970, Ser. No. 17,399
Int. Cl. H01l *7/00*
U.S. Cl. 156—11 8 Claims



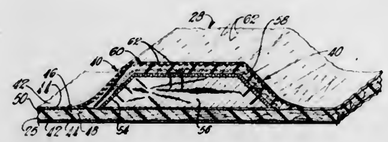
A film with tapered openings of selected size and shape is formed on a substrate surface by the progressive growth of the film about the base of a mushroom-shaped mask. The mask is formed on, and thereby masks, selected surface areas. The film is then deposited on the surface and the masks by sputtering to form the tapered openings simultaneously in the film about the base of the mask. These openings can later be used to advantage, particularly for gaining access to any of the selected surface areas beneath the film by etching and floating away the mushroom mask from the formed openings.

3,700,511
METHOD OF PRODUCING TAPES OF LONGITUDINALLY ALIGNED CARBON FIBRES
Ian Whitney, Wirksworth, Edward Bailey White, Gedling, and Michael Roger Rowland, Linby, England, assignors to Secretary of State for Defence, London, England
Filed July 31, 1970, Ser. No. 59,874
Claims priority, application Great Britain, Aug. 4, 1969, 38,869/69
Int. Cl. B29h *9/04*; B32b *31/00*
U.S. Cl. 156—60 10 Claims



A method of producing tapes of carbon fibres in which a sheet of longitudinally aligned polyacrylonitrile fibres is pyrolysed and subsequently divided longitudinally to form a plurality of tapes of the carbon fibres thus produced.

3,700,512
METHOD OF FORMING A FLUID RETAINING WALL
Lee E. Pearson, Newark, and Jeri O. Clark, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation
Original application Feb. 14, 1967, Ser. No. 616,088. Divided and this application Sept. 5, 1969, Ser. No. 870,956
Int. Cl. B32b *17/04*
U.S. Cl. 156—62.4 9 Claims

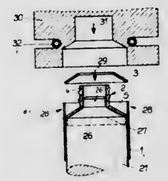


A composite wall of reinforced synthetic resin, for retaining both gases and liquids, that is particularly adapted for underground use in gasoline storage tanks, which are resistant to external compression forces; such as, water flooded earth. The wall is characterized by a very high stiffness factor, produced by a combination of spaced ribs of filament wound material and that are hollow, retained on top of a chopped strand-resin wall, where the chopped strand bridges the spaces between the ribs.

A process involving the steps of forming a tank end cap on a mandrel and thereafter supporting the end cap in space and laying up a resin-rich wall layer of chopped strand and resin in joined relation to the end cap, and curing the wall partially; then forming over the outer surface of the wall a hollow shell structure which comprises a combination of woven roving and filament wound layers

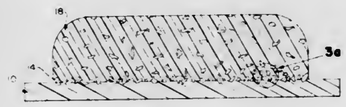
superimposed and saturated with wet resin. Then completely curing the composite wall to produce a monolithic structure.

3,700,513
METHOD OF MAKING TUBE
Karl Haberhauer, Upper Palatinate, Manfred Jutzi, Alt-Leiningen, and Reinhold Kiess, Eisenberg, Germany, assignors to C. F. Spiess & Sohn
Filed Sept. 18, 1969, Ser. No. 858,958
Int. Cl. B29c *27/02*
U.S. Cl. 156—69 3 Claims



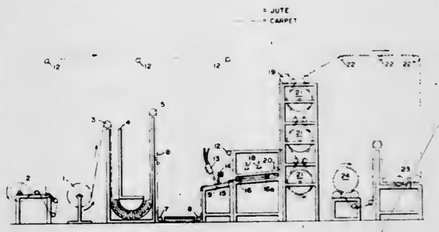
A container tube comprises a tubular body and a prefabricated head secured upon one end of said body. The body may be formed by wrapping a plastic laminated foil sheet about a spindle, or it may be a length of extruded plastic tubing. The body has an inturned shoulder terminating in an edge that is embedded or otherwise so disposed as to be protected against contact with the tube contents. The tube has a welded longitudinal seam wherein the edges are shielded from contact with the tube contents. Welding heat and pressure are provided by an induction coil mounted in a non-metallic member adapted to press the junctures to be fused against a high heat conductive support such as a metal spindle or block.

3,700,514
MAKING LAYERED STRUCTURES
Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.
Filed Feb. 2, 1971, Ser. No. 111,939
Int. Cl. B32b *31/12*
U.S. Cl. 156—280 7 Claims



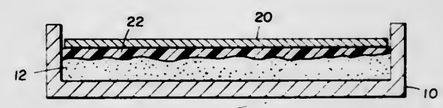
Forming a two-layer laminate from layers formed of different thermoplastic materials, of which the first thremoplastic material has a substantially higher softening temperature than the second, by spreading into the surface of the first thermoplastic material particles of a porous filler of irregular configuration, slightly softening this surface and applying pressure to imbed the particles only partially but firmly into the first thermoplastic material, cooling this first layer, placing the material of the second layer on this surface, and subjecting the two layers to a temperature below the softening range of the first thermoplastic material but within the softening range of the second to adhere the second thermoplastic material to the exposed surfaces of the filler particles.

3,700,515
METHOD OF APPLYING A BACKING TO A CARPET AND PRODUCT
Claude Edward Terry, Rockmart, Ga., assignor to Textile Rubber & Chemical Company, Dalton, Ga.
Filed Feb. 2, 1971, Ser. No. 111,860
Int. Cl. D05c *15/00*
U.S. Cl. 156—72 4 Claims



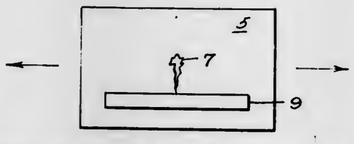
A carpet is formed by adhering a secondary backing to a primary backing with a thixotropic polyurethane composition so that there is substantially complete saturation of the bundle wrap with the composition without penetration through the primary backing. The composition contains water, a polyol with a hydroxyl number less than 100, a diisocyanate, a filler and a catalyst and has an initial viscosity of between 30,000 and 100,000 cps. #7 spindle Brookfield RVF, a pot life of between 10 and 60 seconds and is expandable between 100 and 400 when completely reacted. It is applied to the underside of the primary backing with a doctor knife and heated. A secondary backing is applied to the uncured composition after it is spread on the primary backing and the resultant laminate is subjected to pressure prior to curing to disintegrate substantially all of the cells in the polyurethane.

3,700,516
METHOD OF MAKING CELLULAR PLASTIC BUILDING PANEL
Wayne S. Sullivan, Iowa City, Iowa, assignor to Camelot Stone, Inc., Iowa City, Iowa
Filed Dec. 29, 1970, Ser. No. 102,437
Int. Cl. B32b *5/18, 31/14*
U.S. Cl. 156—79 4 Claims



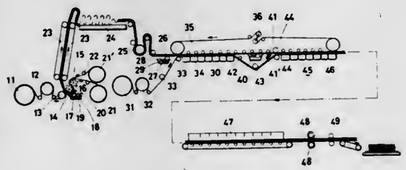
A method for producing decorative building panels for use in both exterior and interior construction. The panels have an insulating cellular plastic core with a cement veneer permanently bonded to the core. The exposed veneer surface of the panel can be of any desired shape or color to simulate brick, stone, etc., and is produced by making an impression in a bed of dry cement and allowing liquid plastic to solidify in the molds thus formed. The liquid plastic will form a solid core with a thin veneer of the dry cement impregnated to it, the veneered surface having the shape of the initial impression made.

3,700,517
METHOD FOR ARRESTING PROPAGATING FRACTURES IN STRESSED-SKIN MONOCOQUE TYPE OF CONSTRUCTION
Charles D. Roach, Newport News, Va., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 24, 1970, Ser. No. 92,443
Int. Cl. B23p 7/04
U.S. Cl. 156—94 4 Claims



A method for arresting fractures in stressed-skin monocoque type of construction used in aircraft comprising the bonding of fiber straps generally parallel to the maximum load trajectory thereby arresting the fracture when it progresses to the fiber straps.

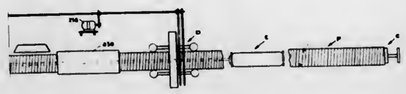
3,700,518
METHOD FOR MANUFACTURING A COMPOSITE CORRUGATED PAPER BOARD
Koichiro Ohmori, Fujisawa, Japan, assignor to Honshu Paper Limited, Tokyo, Japan
Original application Dec. 11, 1969, Ser. No. 884,279. Divided and this application Mar. 17, 1971, Ser. No. 125,249
Int. Cl. B32b 29/00, 3/10, 31/00
U.S. Cl. 156—152 1 Claim



There are described a method for producing a composite corrugated paper board which may be termed "X-wave type corrugated paper board" for its sectional structure and a method for manufacturing the same. The X-wave type paper board consists of two corrugated sheets of paper interposed between two liner sheets, said corrugated sheets being bonded to each other and to the liner sheets in such a disposition that the ridges of one corrugated sheet are in abutment against the ridges of the other corrugated sheet.

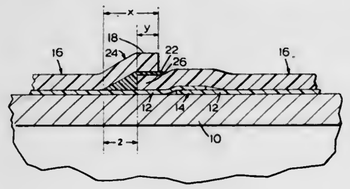
3,700,519
METHODS OF FORMING A FIBER REINFORCED PIPE ON AN INFLATABLE MANDREL
J. Warne Carter, Wichita Falls, Tex., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of application Ser. No. 577,035, Sept. 2, 1966, now Patent No. 3,507,412, which is a continuation-in-part of application Ser. No. 387,372, Aug. 4, 1964, now abandoned; of which application Ser. No. 705,564, Feb. 14, 1968 is a continuation. This application May 13, 1969, Ser. No. 824,153
Int. Cl. B65h 81/06; B65c 3/26
U.S. Cl. 156—156 33 Claims

A method and apparatus is provided for continuously making fiber reinforced plastic pipe in which a conveyor tube is formed on an axially fixed hollow rotatable mandrel. A plurality of bands of resin impregnated fiber elements are wound on the conveyor tube as it advances to provide the pipe assembly. The terminal end of the generated pipe assembly is sealed with a plug. A fluid under



pressure is fed through the hollow mandrel and out the forward end of the mandrel into a chamber formed by the generated pipe assembly, the plug, and a fluid sealing means within the pipe assembly being generated, thereby causing the pipe assembly to advance.

3,700,520
METHOD OF APPLYING CORROSION AND MECHANICAL PROTECTIVE COATINGS IN FORM OF TAPES TO A METAL PIPE
Ralph Hielema, Locust Hill, Ontario, Canada, assignor to The Kendall Company, Chicago, Ill.
Filed July 13, 1970, Ser. No. 54,489
Claims priority, application Canada, Apr. 16, 1970, 080,271
Int. Cl. B31c 13/00; B65h 81/00; F16l 9/14
U.S. Cl. 156—162 6 Claims

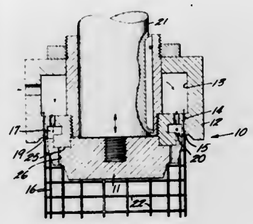


A method of coating a pipe and a pipe coated thereby, said method comprising the steps of progressively spirally winding a corrosion protective adhesive coated plastic tape onto the outer surface of the pipe with a spiral overlap, covering the coated pipe by progressively winding a film thereon with a predetermined overlap, and, as the film is wound onto the coated pipe, introducing and distributing under pressure a hot melted adhesive into intimate contact with the surface of the marginal portion of the trailing edge of the film and the surfaces of the overlapped portion along the leading edge thereof and of the portion of the tape immediately adjacent the leading edge of the film.

3,700,521
METHOD FOR THE EXTRUSION OF PLASTIC NET AND NETLIKE STRUCTURES
Bernard J. Gaffney, Stillwater, Minn., assignor to Conwed Corporation
Filed Nov. 10, 1969, Ser. No. 875,476
Int. Cl. B29c 19/00; D04h 3/16
U.S. Cl. 156—167 5 Claims

An improved extrusion apparatus and method for the extrusion of plastic net and netlike structures is provided. The apparatus is comprised of a plurality of die members at least one of which reciprocates in a vertical direction. One of the die members has a plurality of orifices therein for the extrusion of a first group of strands and at least one other die member has a forming surface thereon which

coacts with a second forming surface on another die member to form a variable opening for the independent extrusion of a second group of strands. The distance between each orifice is maintained constant and the second group of strands is extruded at a point below that at

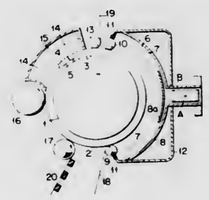


which the orifices communicate with a polymer supply. The forming surfaces and orifices are so arranged relative to each other that at least one group of strands is forcefully urged toward the other group to cause the two groups of strands to weld together subsequent to extrusion.

3,700,522
PROCESS OF MAKING HONEYCOMB PANELS
Clifford L. Wonderly, Orlando, Fla., assignor to Florida Gas Company, Winter Park, Fla.
Filed Dec. 3, 1970, Ser. No. 94,897
Int. Cl. B31d 3/02; B32b 3/12
U.S. Cl. 156—197 14 Claims

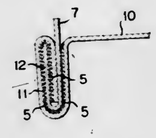
A honeycomb sandwich panel manufacturing process for applying an adhesive to the edges of paper honeycomb core material for the application of flat surfaces to the honeycomb. Paper honeycomb which has been expanded and cured is compressed and an adhesive is applied to the compressed honeycomb which is then caused to expand to its expanded position. The flat surfaces are applied and pressed to the two edges of the expanded honeycomb and the adhesive cured for securing the edge surfaces of the honeycomb to the flat surfaces to form the sandwich panel.

3,700,523
METHOD FOR MANUFACTURING PLASTIC CUSHIONING MATERIAL
Wasuke Sato, Kawasaki, Shigeyuki Hatakeyama and Masashi Koide, Yokohama, Sadao Yamamoto, Kawasaki, and Mitsumaro Fujisawa, Yokohama, Japan, assignors to Showa Denko K.K., Tokyo, Japan
Filed Jan. 30, 1970, Ser. No. 7,156
Claims priority, application Japan, Feb. 1, 1969, 44/7,049; Feb. 25, 1969, 44/13,582; Jan. 22, 1970, 45/5,491, 45/5,492
Int. Cl. B32b 3/30
U.S. Cl. 156—210 2 Claims



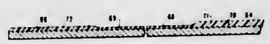
A method and apparatus for manufacturing plastics cushioning material which consists in feeding a first film made of thermoplastic material to the surface of a molding drum having a plurality of molding recesses formed therein, and air exhausting means communicating with said recesses and a cooling means disposed near the bottom of said recesses, heating said first film to a temperature over its softening point, pressing it for embossment with compressed air, feeding a second film similarly made of thermoplastic material to the surface of said molding drum to be attached to said first film in such a manner that said second film closes the openings of embossments formed on said first film, heating said second film to a temperature over its softening point, and integrally bonding both films by maintaining the temperature of both films at a higher level than their softening points, thereby hermetically sealing up the embossments of said first film.

3,700,524
METHOD OF SEALING THE SEAMING PORTIONS OF A CAN
Yoshikatsu Sato, Yokohama-shi, Japan, assignor to Toyo Seikan Kabushiki Kaisha, Tokyo-to, Japan
Filed May 26, 1969, Ser. No. 827,716
Claims priority, application Japan, June 4, 1968, 43/37,785
Int. Cl. B29d 23/00
U.S. Cl. 156—218 2 Claims



A can body is sealed to the top or bottom plate by applying a rubber compound to the periphery of the plate, then applying a film of urethane resin to the rubber to improve the resistance to solvents which may be in the can contents, and then rolling up the laminated portion of the plate overlappingly with the end of the can in such a way that a triple rolled up layer of the laminated portion mates with a U-shaped inverted fold of the can body.

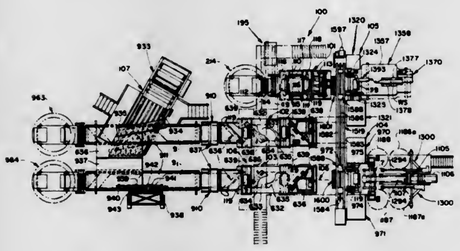
3,700,525
METHOD OF MAKING A LAMINATE HAVING VARYING THICKNESS
Glenn M. Violette, Greenwich, and Leon J. Paquin, Glens Falls, N.Y., and James A. Lock, Mobile, Ala., assignors to International Paper Company, New York, N.Y.
Original application Jan. 26, 1968, Ser. No. 700,968. Divided and this application Apr. 3, 1969, Ser. No. 835,837
Int. Cl. B29c 19/00
U.S. Cl. 156—244 5 Claims



The present invention contemplates an apparatus, a process and a product produced by the process, whereby preselected areas of a moving paperboard substrate are coated with a thermoplastic film having zones of different thickness, so that the substrate areas are in predetermined

registry with the film zones, by employing a threaded deckle rod during the extrusion of the thermoplastic film. The threaded deckle rod imparts the varying thickness profile to the film.

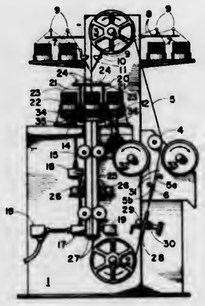
3,700,526
TIRE BUILDING MACHINE HAVING MEANS ADVANCING A PLURALITY OF DRUMS THROUGH A PLURALITY OF ASSEMBLY STATIONS
Wilhelm Brey, Cuyahoga Falls, Ohio, William Hostetler, Santa Ana, Calif., and Earl Ferdnand Loeffler, Akron, Hubert Ernest Kolm, Louisville, and Fred Grove Elder, Atwater, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Feb. 11, 1970, Ser. No. 10,579
Int. Cl. B29h *17/20*
U.S. Cl. 156—396 **49 Claims**



A fully automatic machine for producing "green tires" or unvulcanized tire carcasses, especially suitable for making tubeless tires. The machine comprises a plurality of interconnected and dependent assemblies or stations where specialized operations, normally done semi-automatically or by hand, are carried out by mechanical devices acting in sequence. The machine includes a plurality of conventional tire building drums continuously moving between horizontally disposed, stationary table assemblies where innerliner and chafer strips, and first and second ply material are successively wrapped on the drums as they move across the table on which the material is positioned. The wrapped drums from these assemblies, are sent to turret units where they are arcuately positioned for receiving beads, tread cushion, stitching, strips of whitewall, if required, and are discharged from the collapsed drums for removal and storage. The stripped drums, or drums from which tires are removed, are automatically expanded and recycled through the assemblies for building more tire carcasses.

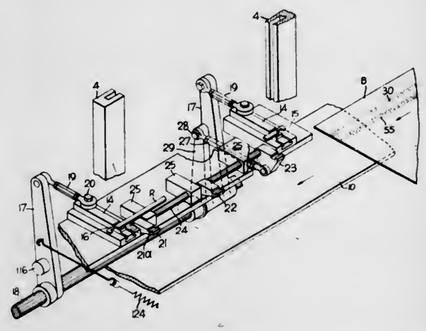
3,700,527
TRANSVERSE FILAMENT REINFORCING TAPE AND METHODS AND APPARATUS FOR THE PRODUCTION THEREOF
James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Continuation of abandoned application Ser. No. 641,963, May 29, 1967. This application Mar. 11, 1970, Ser. No. 18,740
Int. Cl. B65h *81/08*
U.S. Cl. 156—426 **4 Claims**

A longitudinally extending nonwoven tape comprising longitudinally extending tacking strands supporting a multiplicity of transverse filament bundles. The tape is manufactured by continuously depositing adhesive coated tacking strands onto both sides of a continuous moving double band and continuously winding filament bundles over said strands and around said band. The band is passed between rollers and heated to bond the filament to the tacking strand. The band is then passed against a



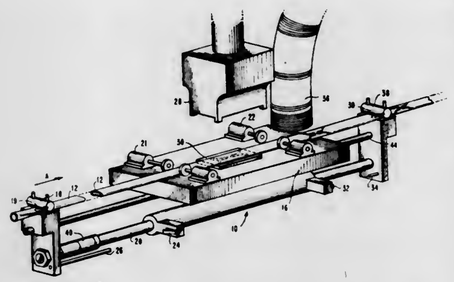
cutter which severs the wound filaments between the bands and permits the longitudinally extending tape to be removed from the band. The tape is used to provide longitudinal reinforcement of reinforced plastic pipe by winding the tape around the mandrel in the pipe fabrication process.

3,700,528
MACHINE FOR MAKING HANGING FILE FOLDERS
Arthur H. Kidd, Menomonee Falls, Wis., assignor to Condes Corporation, Milwaukee, Wis.
Filed June 28, 1971, Ser. No. 157,181
Int. Cl. B31f *1/00*
U.S. Cl. 156—475 **16 Claims**



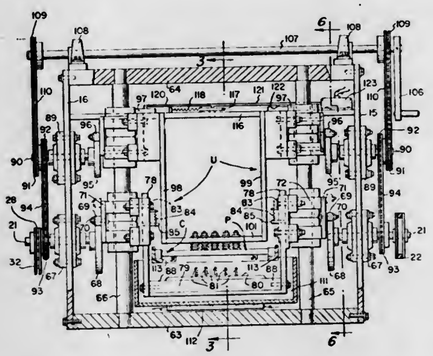
A machine for applying a support rod along opposite edges of a paperboard blank or the like in which the rod is glued to the blank and edges of the blank are then folded over the rod and glued thereover. The machine includes means for transferring the rods from a magazine and to a precise position on a glue pattern of the blank, and the machine also includes an edge turning means for the blank whereby the longitudinal edge of the blank is folded over the glued rod and firmly pressed into contact therewith.

3,700,529
METHOD AND APPARATUS FOR TUBULAR ARTICLES
Frank Monaghan, Glendale, Calif., assignor to M & H Plastics, Inc.
Filed Oct. 27, 1970, Ser. No. 84,362
Int. Cl. B32b *31/00, 15/34*
U.S. Cl. 156—510 **6 Claims**



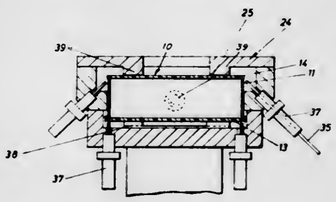
This invention relates to a tube sealing and cut-off machine comprising a machine adapted to take extruded plastic tubing and, by a reciprocating continuous feed, concurrently cutting off sections of the tubing by spaced operable knives and trimming dies and sealing end portions of said tubing by a sealing die.

3,700,530
APPARATUS FOR ASSEMBLING AND GLUING PAPER CUPS IN TRAY FORMATION
Albert L. Ehe, Jamaica Estates, N.Y., assignor to Multicup Automation Company, Inc., Long Island, N.Y.
Original application Nov. 22, 1968, Ser. No. 778,233, now Patent No. 3,579,399. Divided and this application Jan. 8, 1971, Ser. No. 105,064
Int. Cl. B32b *31/12;* **B05c** *1/00*
U.S. Cl. 156—559 **15 Claims**



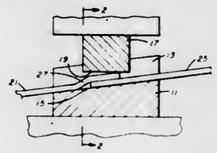
This invention discloses a method of assembling a plurality of paper cups in tray formation and gluing them together in said assembled relation together with apparatus for carrying out the method. The method consists essentially of the steps of: arranging a plurality of paper cups in a series of tray units, each of a predetermined cup number and formation, moving said tray units through a gluing station at which the cups are held in position relative to one another; applying glue to engaging cup portions; and discharging finished trays. The apparatus comprises, as characteristic elements an endless conveyor; cup receiving plates carried by the conveyor; a gluing station including a supply of heated glue below the upper ply of the conveyor, devices for holding cups in position in the plates while glue is applied, and glue applying means in the form of a gang of upright pile coated wires: means for indexing the conveyor with a stepped motion; mechanism for operating the cup holding devices and glue applying means in proper relation to movement of the conveyor, and a block out device for rendering the gluing means ineffective on certain predetermined steps to provide trays in a separated state.

3,700,531
APPARATUS FOR CLOSING A FILM CASSETTE MADE OF SYNTHETIC PLASTICS
Horst Schruff, Mulheim (Ruhr), Helmut Lehmann and Jakob Siefen, Leverkusen, Hermann Mathner, Cologne, Willi Adams, Leverkusen, and Gunter Weiss, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 21, 1971, Ser. No. 108,524
Claims priority, application Germany, Feb. 21, 1970, P 20 08 103.2
Int. Cl. B05b *13/02;* **B05c** *5/00*
U.S. Cl. 156—575 **11 Claims**



A synthetic plastics film cassette which consists of a cassette body covered by a U-shaped cassette cover is closed by spraying a solvent between the cover and body of the cassette. The spraying arrangement consists of several measuring cylinders and pistons, with which certain positions on the cassettes are sprayed with solvents through thin tubes.

3,700,532
ULTRASONIC SPLICING
Charles W. Pierson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original application July 15, 1968, Ser. No. 744,817, now Patent No. 3,519,507, dated July 7, 1970. Divided and this application Dec. 4, 1969, Ser. No. 870,529
Int. Cl. B32b *31/20;* **B23k** *27/00*
U.S. Cl. 156—580 **1 Claim**



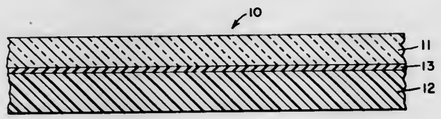
Splicing the overlapping ends of thermoplastic moving picture films between an anvil and an ultrasonic horn which have plane non parallel surfaces inclined at an acute angle to one another. This eliminates the embrittlement which occurs when the horn and anvil have parallel surfaces.

3,700,533
DECORATIVE PANEL
Robert D. Schmitz, Burlingame, Calif., assignor to Hodges Chemicals Company
Filed Oct. 23, 1970, Ser. No. 83,355
Int. Cl. B32b 3/10, 5/16, 21/02
U.S. Cl. 161—5 9 Claims



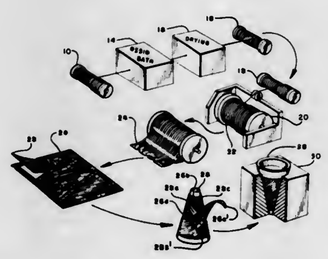
Twigs and limbs which ordinarily would be wasted are formed in a mold with a resin and after the resin has set, slices are made of the thus molded material. The slices are decorative and may be used as wall panels, as a veneer on a plywood base or as flooring.

3,700,534
HARD FACED PLASTIC ARMORPLATE
Richard L. Cook, Phoenix, Ariz., assignor to Goodyear Aircraft Corporation, Akron, Ohio
Original application Mar. 28, 1963, Ser. No. 268,765, now Patent No. 3,509,833, dated May 5, 1970. Divided and this application May 1, 1970, Ser. No. 33,952
Int. Cl. A41d 3/04; B35b 3/10
U.S. Cl. 161—38 3 Claims



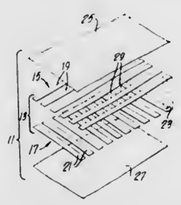
Armorplate comprising a relatively thick base of transparent stretched methyl methacrylate and a relatively thick facing layer of transparent window glass is secured to the base by a relatively thin layer of methyl methacrylate cement.

3,700,535
CARBON FIBER STRUCTURE AND METHOD OF FORMING SAME
J. C. McCoy and James W. Steele, Overland Park, Kans., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 12, 1971, Ser. No. 123,696
Int. Cl. B32b 5/12, 31/12
U.S. Cl. 161—47 9 Claims



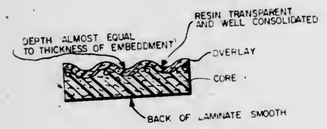
An annular carbon fiber structure including a multiplicity of carbon fiber layers, with each layer composed of a plurality of similar elongated quadrangular carbon fiber sheets laid side by side along the long dimensions of said sheets in generally spiral fashion about the structure with each sheet being made of unidirectional fibers laid side by side parallel to a long dimension of said sheets and with the fiber sheets of adjoining overlying layers disposed in oppositely angled relationship with respect to fibers of sheets in an adjoining layer and the process for making the same.

3,700,536
TAPE REINFORCED LAMINATED PRODUCT
Joseph Maria Bentvelzen, Raleigh, N.C., and Alan Dennis Millington, Montreal, Quebec, Canada, assignors to Consolidated Papers (Bahamas) Limited, Nassau, Bahamas
Filed Dec. 9, 1970, Ser. No. 96,489
Claims priority, application Canada, Dec. 18, 1969, 70,332
Int. Cl. B32b 5/12, 29/02
U.S. Cl. 161—57 10 Claims



A laminate and method of making same formed from a central reinforcing layer comprising a plurality of spaced-apart oriented ribbons of polymeric material, arranged in parallel side-by-side relationship, said ribbons having a thickness of .5 to 3 mil, a width of greater than 1/32 inch, an ultimate elongation of less than 50%, and a lateral spacing between ribbons of less than 1 inch.

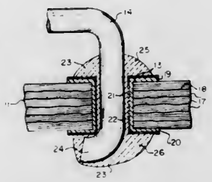
3,700,537
HIGH PRESSURE LAMINATES WITH DEEPLY EMBOSSED SURFACE
Herbert I. Scher, Randallstown, Md. (% Enjay Fibers and Laminates Co., Odenton, Md. 21113)
Filed Dec. 1, 1970, Ser. No. 94,096
Int. Cl. B32b 3/30, 31/26
U.S. Cl. 161—89 8 Claims



A high pressure laminate with deeply embossed surface is produced using as a decorative sheet beneath the overlay, a relatively thick element of varying cross section, such as woven cane, lace, or a paper sheet containing holes of various shapes. During laminating, a thermoplastic layer is included between the parting sheet and the upper caul plate, the thermoplastic layer is reduced to the fluid state during the laminating operation, and the resultant laminate is found to be debossed to a depth that is substantially equal to the thickness variation in the

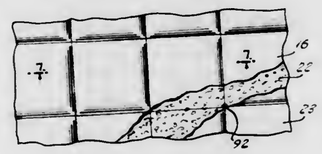
ply of varying cross section. In addition, the depressed portions of the laminate surface are fully consolidated. The process enables economic production of decorative high pressure laminates having deeply embossed surfaces, which are highly desirable to architects and furniture designers.

3,700,538
POLYIMIDE RESIN-FIBERGLASS CLOTH LAMINATES FOR PRINTED CIRCUIT BOARDS
Bobby W. Kennedy, Arab, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 10, 1970, Ser. No. 71,048
Int. Cl. B32b 15/08, 15/14, 31/26
U.S. Cl. 161—93 6 Claims



Nonflammable printed circuit board laminates having a low coefficient of thermal expansion in the thickness direction are made of multiple plies of polyimide-resin-impregnated fiberglass cloth. A stacked array of resin-impregnated cloth sheets is heated under pressure to B-stage curing temperature, and the resulting laminate is post cured by further heating in air. Copper cladding is applied by placing adhesive-coated foil in contact with the laminate before or after B-stage curing. Further control of thermal and electrical properties of the laminate is realized by use of a finely divided inorganic filler such as silica or calcium silicate.

3,700,539
LAMINATED SHEET MATERIAL HAVING A CONTOURED SURFACE
Joseph Pufahl, 81 Gerard Ave., New Hyde Park, N.Y. 11040
Original application Mar. 22, 1962, Ser. No. 181,527, now Patent No. 3,328,221, dated June 27, 1967. Divided and this application Nov. 14, 1966, Ser. No. 605,115
Int. Cl. B32b 3/00
U.S. Cl. 161—120 10 Claims

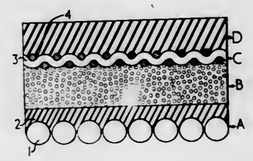


Laminated sheet material having a resilient base and at least one overlying layer wherein the layer is adhered to the base in selected areas by an adhesive therebetween, the adhesive penetrating the base and causing the surface layer to have a contoured appearance.

3,700,540
BIAXIALLY ORIENTED POLYETHYLENE-1:2-DIPHENOXYETHANE-4:4'-DICARBOXYLATE SHEETS
Richard Harold Barclay Buteux, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England
No Drawing. Continuation-in-part of application Ser. No. 717,960, Apr. 1, 1968. This application Mar. 24, 1970, Ser. No. 22,384
Claims priority, application Great Britain, Apr. 20, 1967, 18,285/67
Int. Cl. B29d 7/24; B32b 27/36
U.S. Cl. 161—165 4 Claims

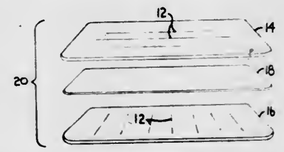
Balanced biaxially oriented sheet of polyethylene-1:2-diphenoxyethane-4:4'-dicarboxylate of thickness at least 750 gauge which has been heat set before orientation.

3,700,541
PRINTERS' BLANKETS
Ronald Horace Shrimpton, Lichfield and Keith William Dunkley, Birmingham, England, assignors to Dunlop Holdings Limited, London, England
Filed Apr. 5, 1971, Ser. No. 131,142
Claims priority, application Great Britain, Apr. 11, 1970, 17,303/70; June 24, 1970, 30,611/70
Int. Cl. B32b 3/26, 5/16
U.S. Cl. 161—160 17 Claims



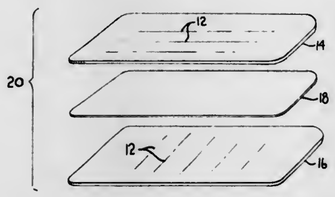
A printers' blanket comprises a printing surface, at least one strengthening layer and, between the surface and the layer, a compressible layer of a cellular resilient polymer the cells of which have been produced by incorporation of hollow microspheres in the polymer.

3,700,542
SAFETY WINDSHIELD AND METHOD OF MAKING SAME
Harry P. Davis, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 3, 1971, Ser. No. 139,412
Int. Cl. B32b 17/10
U.S. Cl. 161—125 16 Claims



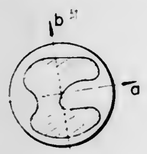
In making safety windshields from float or sheet glass, at least one of the sheets is made from glass cut WSW. Preferably, a blank cut WLW is paired with a blank cut WSW, the usual plastic interlayer being provided. This technique improves quality or yield and is of particular usefulness in making windshields from extra-thin float or sheet glass. Windshields made in this manner have distortion lines in one glass sheet oriented at an angle with respect to distortion lines in a second glass sheet.

3,700,543
SAFETY WINDSHIELD AND METHOD OF MAKING SAME
Harry P. Davis, Tarentum, Pa. assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 12, 1970, Ser. No. 88,580
Int. Cl. B32b 17/10
U.S. Cl. 161—165 6 Claims



In making safety windshields from float glass, a blank cut WLW is paired with a blank cut WSW, the usual plastic interlayer being provided. This technique improves quality or yield and is of particular usefulness in making windshields from extra-thin float glass. Windshields made in this manner have distortion lines in one glass sheet oriented perpendicularly with respect to distortion lines in a second glass sheet.

3,700,544
COMPOSITE SHEATH-CORE FILAMENTS HAVING IMPROVED FLEXURAL RIGIDITY
Masao Matsui, Osaka-fu, Japan, assignor to Kanegafuchi Boseki Kaisha, Tokyo, Japan
Filed July 29, 1965, Ser. No. 475,667
Int. Cl. D02g 3/36
U.S. Cl. 161—175 7 Claims



A composite filament of synthetic fiber-forming high polymer is melt-spun having two different components arranged in a sheath-core relationship and exhibiting improved flexural rigidity due to an appropriate non-circular shape given to the cross-section of the core. The sheath component has a better dyeability than the core component.

3,700,545
NOVEL SYNTHETIC MULTI-SEGMENTED FIBERS
Masao Matsui, Takatsuki, Susumu Tokura, Osaka, and Masahiro Yamabe, Neyagawa, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,673
Claims priority, application Japan, Nov. 13, 1968, 43/83,151; July 31, 1969, 44/60,893, 44/60,894, 44/60,895
Int. Cl. D01d 5/28
U.S. Cl. 161—175 28 Claims

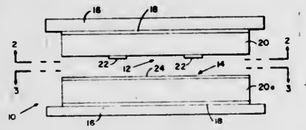
A novel synthetic multi-segmented fiber having a touch similar to natural fiber, an excellent water absorbing property and an improved gloss, which comprises at least 10 fine segments which are composed of at least one component of fiber-forming linear polyamide and polyester, extend substantially continuously along the longitudinal direction of the fiber and occupy at least a part of the periphery of the unitary multi-segmented fiber, said fine segments having their cross-sectional shapes and areas irregular and uneven to each others, and adjacent segments having an average space therebetween of at least 0.1μ at least on the periphery of the unitary multi-segmented fiber can be produced. When a part of polyamide or polyester is removed from the multi-layer structure, a fiber having a silk-like deep gloss and highly improved water absorbing property and touch can be obtained.



3,700,546
HIGH IMPACT WEATHERABLE RIGIDIFIED STRUCTURES
Joseph Francis Terenzi, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Feb. 17, 1971, Ser. No. 116,242
Int. Cl. B32b 17/06
U.S. Cl. 161—195 10 Claims

A high impact thermoplastic sheet having at least one surface thereof reinforced with a fiberglass and polyester resin composition and a method for the production thereof, are disclosed.

3,700,547
BONDING PROCESS FOR POLYPHENYLENE OXIDEDIELECTRIC MICROWAVE CIRCUITS AND BONDED ASSEMBLY
Homer E. Satterfield, North Syracuse, N.Y., Keith D. Stottlemyer, Statesboro, Ga., and David L. Brown, Liverpool, and Leslie Roberts, Baldwinsville, N.Y., assignors to the United States of America as represented by the Secretary of the Army
Filed Oct. 20, 1970, Ser. No. 82,251
Int. Cl. C09j 5/06, 7/00
U.S. Cl. 161—213 11 Claims

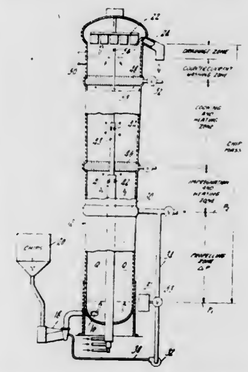


Microwave striplines are formed by intimately bonding circuit planes to polyphenylene oxide shield planes by use of heat and pressure in combination with an interface bonding material comprised of a polymeric resin composed of a random copolymer product of copolymerization of ethylene and acrylic acid.

3,700,548
APPARATUS AND METHODS OF CONTINUOUS DIGESTING
John Parker Rich, Nashua, and Lawrence Allan Carlsmith, Amherst, N.H., assignors to Improved Machinery, Inc., Nashua, N.H.
Filed Apr. 28, 1971, Ser. No. 138,295
Int. Cl. D21c 3/26
U.S. Cl. 162—17 3 Claims

Methods for the continuous pulping of a compacted mass of wood chips in an upright elongated reaction vessel having means for feeding wood chips substantially continuously into the inlet end of the vessel and discharging

them substantially continuously from the opposite outlet end of the vessel, the mass of wood chips being advanced through the vessel for treatment in liquid submergence by advancing liquid through a portion of the submerged chip mass adjacent the inlet end of the vessel. In one embodiment this is accomplished by recirculating from one intermediate strainer back to the entrance end of the vessel, at a turbulent liquid flow rate directed generally along the length of the chip mass for a substantial distance of at least about one-half the cross section dimension of the mass, such providing a wood chip propelling force effective to advance the mass of wood chips continuously

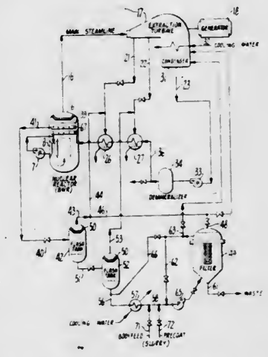


throughout the length of the vessel. In another embodiment, it is accomplished by generating liquid propelling pulses, preferably by utilizing an accumulator at one end of the vessel and a cycling timer for operating it, such propelling pulses being effective to cause the rate of movement of the submergence liquid relative to the wood chips in the mass to vary cyclically to produce a cyclic advancing movement of the liquid at a rate at least not less than that of the alternating intervening movement of the liquid, such advancing movement of the liquid being effective to advance the wood chips throughout the length of the vessel from the input to the output end thereof.

3,700,549
PROCESS FOR MANUFACTURING CROSS-LINKED PAPER AND VISCOSE PULP AND PRODUCTS PRODUCED ACCORDING TO THE PROCESS
Ingemar Liss-Albin Croon and Nils Verner Blomqvist, Ornskoldsvik, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Continuation of application Ser. No. 597,794, Nov. 29, 1966. This application Sept. 14, 1970, Ser. No. 72,796
Claims priority, application Sweden, Dec. 1, 1965, 15,579/65
Int. Cl. D21f 11/00; D21h 5/12
U.S. Cl. 162—157 C 11 Claims

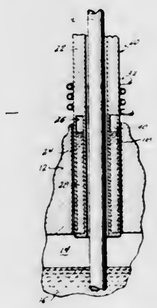
1. A method of manufacturing paper and viscose pulp having improved water-absorption properties according to SCAN–P–13:64, improved softness, and improved resistance to alkali according to SCAN-C2:61, which comprises reacting cellulose pulp with an alkaline aqueous solution containing alkali in an amount of at most about 2.1% by weight of the solution and from about 0.5 to about 12% by weight of the dry pulp, and a cross-linking agent selected from the group consisting of polyhalides, polyepoxides, and epoxyhalides in an amount within the ranges from about 0.05 to about 8.8% by weight of the solution and from about 0.5 to about 50% by weight of the dry pulp, at a temperature of between 25° C. and 95° C. at which cross-linking of the cellulose takes place, for a period of time sufficient to increase resistance to an 18% aqueous sodium hydroxide solution by from about 1 to about 16%.

3,700,550
PROCESS FOR PURIFYING WATER UTILIZED IN A BOILING WATER REACTOR
Daniel A. Shiells, 1155 Jones St., #308, San Francisco, Calif. 94109
Filed Nov. 21, 1969, Ser. No. 878,619
Int. Cl. G21c 19/30
U.S. Cl. 176—37 5 Claims



The purity of reactor coolant is controlled by removing a stream of water from the reactor system at the pressure existing in the reactor. The removed stream is then passed to at least one low pressure area wherein the pressure is reduced to release flash steam which is employed to heat feedwater fed to the system. The water remaining after flashing is filtered to remove solids and is demineralized and is then returned as pure feedwater to the system.

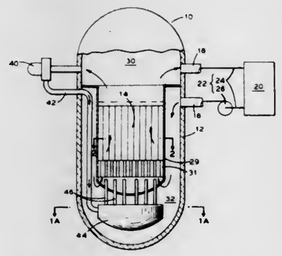
3,700,551
DEVICE TO PREVENT SODIUM FREEZING AROUND SHAFT PENETRATION
John H. Germer, San Jose, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 18, 1971, Ser. No. 116,575
Int. Cl. G21c 1/02
U.S. Cl. 176—40 10 Claims



A device for preventing sodium vapor from freezing around a movable shaft extending into a pool of hot sodium through a cover gas provided thereabove. The device consists of a sealed hollow-wall tube containing

sodium positioned around the shaft in the region of possible freezing with its lower end in heat exchange contact with the cover gas. Means may be provided for passing inert gas through the annulus between the shaft and the hollow-wall tube countercurrent to sodium vapor rising from the pool of hot sodium.

3,700,552
NUCLEAR REACTOR WITH MEANS FOR ADJUSTING COOLANT TEMPERATURE
Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Nov. 19, 1969, Ser. No. 878,125
Int. Cl. G21c *15/00*
U.S. Cl. 176—50 **4 Claims**



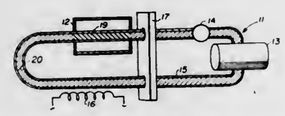
A nuclear reactor system which includes a reactor pressure vessel having a core predominately made up of fuel elements that define coolant flow passageways within the core, is connected in primary coolant flow communication with a heat exchanger and provided with apparatus for circulating primary coolant around the exchanger for mixing with coolant returning from the heat exchanger to adjust the temperature of the coolant entering some of the fuel element passageways, thereby adjusting the average temperature of the coolant leaving the core.

3,700,553
NUCLEAR REACTOR FUEL ELEMENT
Siegfried Malang, Karlsruhe, Germany, assignor to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany
Filed Dec. 15, 1969, Ser. No. 885,108
Claims priority, application Germany, Dec. 23, 1968, P 18 16 544.1
Int. Cl. G21c *3/18*
U.S. Cl. 176—72 **11 Claims**



A nuclear reactor fuel element has a can surrounding the fuel and defining at least one void kept under pressure and cooled by a flowing coolant. The void forms a fission gas plenum subdivided into two regions separated from each other so as to be gastight by means of a movable separating element. One region is connected with the fissile and fertile material to accommodate the fission gases, while the other region contains steam which condenses as a function of the increasing quantity of fission gases in the one region.

3,700,554
SPACE REACTOR GROUND SAFETY AND CONTROL SYSTEM
Viktor E. Hampel, Livermore, Joseph D. Lee, III, Fremont, and Carl E. Walter, Pleasanton, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed June 20, 1968, Ser. No. 738,680
Int. Cl. G21c *7/22*
U.S. Cl. 176—86 M **6 Claims**



A reactivity control system for fast nuclear reactors using liquid metal coolant having high and low neutron-absorption cross section components, which maintains the high neutron-absorption cross section components in solidified form in the coolant channels throughout the reactor core prior to start-up for ground safety, and which liquefies and mixes the high neutron absorption component with a low neutron-absorption cross section component, to adjust the reactor reactivity to the desired operating level. Reactivity is subsequently grossly adjusted by adding to or replacing a portion of the coolant mixture with additional quantities of one or the other appropriate component.

3,700,555
METHOD AND APPARATUS FOR LYMPHOCYTE SEPARATION FROM BLOOD
Rudolph M. Widmark, New York, Bernard Lichtenstein, Yorktown Heights, Lynn Paseltiner, Yonkers, and Jacques Padawer, Hastings-on-Hudson, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Oct. 12, 1970, Ser. No. 79,913
Int. Cl. B01d *43/00*
U.S. Cl. 195—1.8 **12 Claims**

New and improved method and apparatus for the separation of lymphocytes from whole blood samples with very high, heretofore unattainable combined degrees of purity, yield and viability are provided and comprise the physiological stabilization of the white cells or leukocytes immediately upon the withdrawal of the blood from the patient, the subsequent mixture of the blood with a suitable separating agent including sensitized magnetic particles and a suitable erythrocyte sedimenting agent to form a whole-blood sample-separating agent mixture, the incubation of the whole blood sample-separating agent mixture to effect the tagging of the phagocytic leukocytes, to the substantial exclusion of the lymphocytes, by the sensitized magnetic particles through leukoadhesion, phagocytosis and clumping, respectively, the settling and removal of a major portion of the erythrocytes, passage of the incubated whole blood sample-separating agent mixture through magnetic separating means to separate the thusly tagged phagocytic cells from the lymphocytes, and the removal and collection of the thusly separated lymphocytes. The method and apparatus of the invention are fully automatable, and are particularly adapted to the separation of the lymphocytes from the whole blood samples from a plurality of different patients on a continuous flow basis.

3,700,556
PROCESS FOR PRODUCING L-VALINE
Shigeo Abe, Tokyo, and Kenichiro Takayama, Chofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 565,104, July 14, 1966. This application July 15, 1968, Ser. No. 744,691
Claims priority, application Japan, July 16, 1965, 40/42,597
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **12 Claims**

L-valine is produced by fermentation by culturing an isoleucine-, threonine- or homoserine-requiring microorganism in an aqueous nutrient medium under aerobic conditions at 25–40° C. Hydrocarbons are used in the medium as the major source of carbon. Preferred strains employed are *Arthrobacter paraffineus* and *Corynebacterium hydrocarboclastus*.

3,700,557
PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION
Kiyoshi Nakayama, Sagamihara-shi, Haruo Tanaka, Machida-shi, and Hiroshi Hagino, Hachioji-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 563,030, July 6, 1966. This application Aug. 6, 1968, Ser. No. 750,456
Claims priority, application Japan, Mar. 4, 1966, 41/15,376
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **11 Claims**

A process for producing L-lysine by fermentation. A microorganism which requires threonine, methionine, arginine, histidine, leucine, isolecucine, phenylalanine, cystine or cysteine and is capable of producing L-lysine is cultured in an aqueous nutrient medium containing a source of carbon and nitrogen under aerobic conditions. Microorganisms belonging to the genera Brevibacterium, Corynebacterium, Arthrobacter and Microbacterium are exemplified.

3,700,558
PRODUCTION OF L-TRYPTOPHAN BY FERMENTATION
Josef Ernst Thiemann, Como, and Hermes Pagani, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy
No Drawing. Filed Nov. 18, 1968, Ser. No. 776,784
Claims priority, application Italy, Nov. 20, 1967, 22,882/61
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **6 Claims**

The invention is concerned with the improved production of L-tryptophan by fermentation of a microorganism named S–10 (ATCC No. 21,336), obtained by mutation of *Bacillus subtilis*. The yields obtained, particularly on synthetic medium, are much higher than those described in previous processes of L-tryptophan production.

3,700,559
METHOD OF PRODUCING TRYPTOPHAN BY FERMENTATION
Isamu Shiio and Hiroko Sato, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,109
Claims priority, application Japan, Aug. 28, 1969, 44/68,178
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **8 Claims**

Certain mutants of Brevibacterium, Corynebacterium, Microbacterium and Micrococcus which are resistant to 5-methyl-DL-tryptophan produce L-tryptophan in a culture medium.

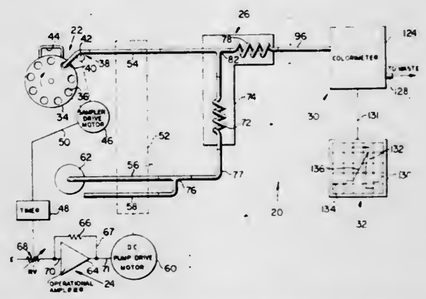
3,700,560
ENZYMATIC PRODUCTION OF CATECHOL FROM PHENOL
Robert A. Oppermann, 9104 Lynwood Drive, Oak Lawn, Ill. 60453
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,170
Int. Cl. C12d *13/00*
U.S. Cl. 195—49 **4 Claims**

In the enzymatic production of catechol from phenol utilizing tyrosinase, the monophenolase activity is favored by utilizing crude Neurospora enzyme directly or in combination with mushroom tyrosinase together with a catechol trapping metal salt selected from barium, lead, copper, aluminum and ferric ammonium citrate adjusted to a pH of about 5.8. Optional additives include anionic buffers and mild reducing agents such as cysteine and sodium ascorbate.

3,700,561
RECOVERY OF ENZYMES
Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,148
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **9 Claims**

Enzymes are recovered from a bacterial whole fermentation culture medium by the addition of water soluble inorganic compounds to the medium after fermentation. The compounds react with one another to produce an insoluble precipitate "in situ" which carries down with it the bacterial cells used in the fermentation and other various contaminants. The residual liquid contains the desired enzyme or enzymes which can be recovered.

3,700,562
METHOD AND APPARATUS FOR SAMPLE ANALYSIS ON A CONTINUOUS FLOW BASIS
Stanley W. Morgenstern, Teaneck, N.J., Daniel L. Vlastelica, Pomona, N.Y., Leon Chaparian, Waldwick, N.J., and Alfred Kiederer, Mount Vernon, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,298
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.51 S **12 Claims**



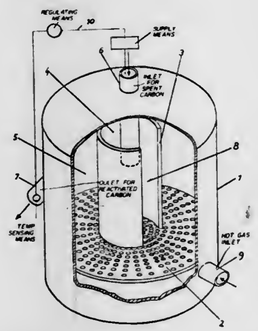
New and improved method and apparatus for the fully automatic, highly accurate quantitative analysis of a series of samples with regard to a constituent thereof on a continuous flow basis through rate reaction determination are provided and are operable through the continuous mixing of said samples and a suitable reactant in constant proportion, and the flow of the resultant sample constituent-reactant mixtures by pumping on a continuous basis through reaction promoting means to promote the sample-reactant rate reaction in such manner that different portions of each of the sample-reactant mixtures are

reacted for different times to effect a differential in a characteristic of said mixtures as developed as a result of said reaction. Following this, the thusly reacted sample-reactant mixture portions are flowed through detector means for detection of said characteristic differential and resultant provision of an output signal which is indicative of the sample constituent quantity of interest. A step change in the flow rate of each of said sample-reactant mixtures through said reaction promoting means is utilized to provide for the different sample-reactant mixture portion reaction times. As specifically disclosed herein, the method and apparatus of the invention are particularly adaptable to the analysis of a series of blood samples with regard to an enzyme constituent thereof.

3,700,563
METHOD OF REACTIVATING SPENT ACTIVATED COAL

Joachim Karweil, Essen and Josef Degel, Bochum, Germany, assignors to Bergwerksverband G.m.b.H., Essen, Germany

Filed Aug. 19, 1969, Ser. No. 851,308
Claims priority, application Germany, Aug. 20, 1968, P 17 92 323.7
Int. Cl. C10b *49/10*
U.S. Cl. 201—1 **9 Claims**



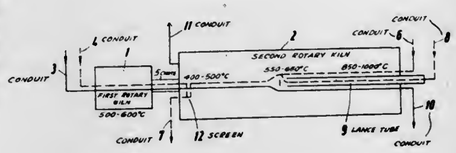
Spent activated coal is reactivated by confining a body of it in a fluidized-bed reactor and subjecting it to fluidization under continuous admission of flue gases of a predetermined temperature and containing water vapor or carbon dioxide. Treated coal is continuously removed from the fluidized bed and the temperature of the latter in the region from which the treated coal is removed is maintained at a constant temperature level below the temperature of the flue gases, the regulation of the constant temperature level being accomplished by controlling the admission of additional spent coal into the reactor as an inversely proportional of fluctuations of the temperature level.

3,700,564
CONTINUOUS PROCESS OF PRODUCING SHAPED METALLURGICAL COKE

Willibald John, Frankfurt, Paul Schmalfeld, Bad Homburg, and Paul Lange and Roland Rammler, Frankfurt, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Reuterweg, Germany

Filed Sept. 4, 1969, Ser. No. 855,431
Claims priority, application Germany, Sept. 5, 1968, P 17 96 129.4
Int. Cl. C01b *47/20, 49/18*
U.S. Cl. 201—6 **5 Claims**

Improved process of producing shaped coke articles made by pelletizing coal with or without admixture therewith of coke and/or minerals such as ore, which process carbonizes the shaped article in a first stage for about 2 to 5 minutes with a concurrent solid, particulate heat carrier at about 500 to 600° C.; a second stage for about 30 to 90 minutes with a counter-current or transverse current

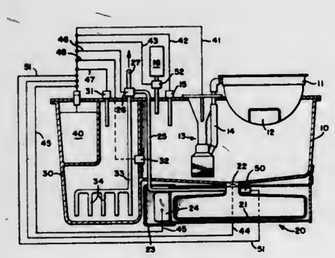


solid, particulate heat carrier having an initial temperature of about 400 to 500° C. increasing to a final temperature of 500 to 600° C.; and then in a third stage with a counter-current or transverse current solid, particulate heat carrier having an initial temperature of about 550 to 650° C. increasing to a final temperature of 850 to 1000° C.

3,700,565
MICROWAVE SEWAGE SYSTEM WITH DISTILLATION MEANS

Alan H. Cornish, Robert C. Helke, and Alex N. LeDonne, Dayton, Ohio, and Hugh E. Masters, Old Bridge, N.J., assignors to Koehler-Dayton, Dayton, Ohio

Filed Apr. 3, 1970, Ser. No. 25,475
Int. Cl. B01d *3/00;* **C02c** *1/04;* **E03d** *7/00*
U.S. Cl. 203—1 **23 Claims**



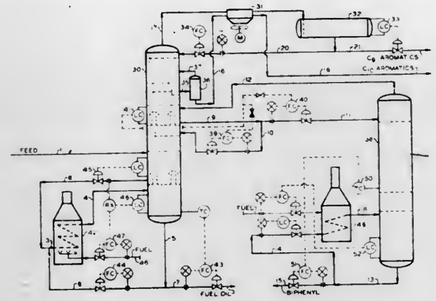
A self-contained sewage system in which a microwave energy source is provided to vaporize the liquid phase of the sewage so that it may be removed from the system and the interval between servicings of the system lengthened. The sewage is transferred from the sewage receiving tank to an evaporating tank for evaporation and, in certain embodiments used in situations where power is not at a premium, a portion of the liquid vaporized from the sewage may be returned to the system for flushing purposes.

3,700,566
BIPHENYL PURIFICATION PROCESS BY PLURAL STAGE FRACTIONAL DISTILLATION

Robert M. Bellinger, Bartlesville, Okla., and John T. Cabbage, Guayama, Puerto Rico, assignors to Phillips Petroleum Company

Filed Oct. 13, 1969, Ser. No. 865,650
Int. Cl. C07c *7/04, 3/58*
U.S. Cl. 203—1 **4 Claims**

A method is disclosed for recovering a biphenyl stream for recirculation to a hydrodealkylation process for producing benzene which involves fractionating the product stream after the removal of the benzene to produce a C_9

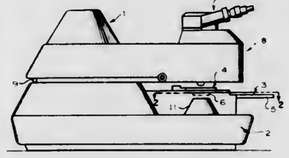


aromatics cut, a C_{10} aromatics cut, a fuel oil cut and a biphenyl stream of about 88 percent purity.

3,700,567
WAFER LOADING APPARATUS

Karl-Heinz Johannsmeier, 555 W. Middlefield, Road, Mountain View, Calif. 94040

Filed Nov. 12, 1970, Ser. No. 88,726
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **15 Claims**



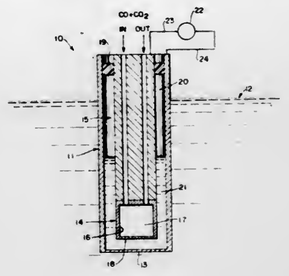
An optical alignment and exposure device is provided with wafer loading apparatus including a rotary loading arm pivotably mounted over a loading platform. The rotary loading arm includes a forked portion for engaging the side edge of a first unexposed wafer placed in a wafer loading position on the loading platform. It also includes another diametrically opposed forked portion for engaging the side edge of a second previously exposed wafer supported in a work area position on a vacuum chuck. The rotary loading arm rotates to slide the first unexposed wafer into the work area position on the vacuum chuck while at the same time sliding the second previously exposed wafer from the work area position on the vacuum chuck into an off-loading recess in the loading platform.

3,700,568
ELECTROCHEMICAL CARBON METER

Nathan Fuhrman, Shrub Oak, N.Y., granted to the United States Atomic Energy Commission under the provisions of 42 U.S.C. 2182

Filed Apr. 14, 1969, Ser. No. 815,947
Int. Cl. G01n *27/26, 27/30, 27/40*
U.S. Cl. 204—1 T **13 Claims**

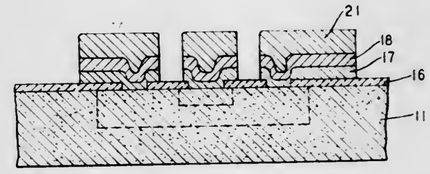
The carbon content in a high temperature fluid such as molten metal or a carburizing gas is measured by immersing thereinto a probe to form an equilibrium electrolytic cell. The probe is in the form of a metallic closed-end tube impervious to the fluid but permeable to carbon. Inside the tube is a carbon reference electrode electrically insulated therefrom except through its annulus which is filled with a fused salt electrolyte containing carbon ion charge carriers in solution.



3,700,569
METHOD OF METALLIZING DEVICES

Kenneth Russ Newby, Murray Hill, and Dennis Robert Turner, Chatham Twp., Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 10, 1971, Ser. No. 179,287
Int. Cl. C23b *5/48, 5/46*
U.S. Cl. 204—15 **8 Claims**



In the fabrication of devices, as, for example, semiconductor devices of the beam lead type, one technique employed to metallize electrode surfaces is to electrodeposit a layer of gold onto a previously deposited layer of platinum, which in turn has been deposited on a layer of titanium. A photoresist layer, deposited directly on the platinum layer, is used to define regions to be gold plated to form electrode contacts and interconnective patterns. Oxidation, preferably by anodizing, of the platinum layer prior to the deposition of the photoresist layer increases the adherence of the photoresist layer. The increased adherence significantly reduces underplating of the photoresist layer during the electrodeposition of the gold layer and results in improved definition of the gold electrode surface.

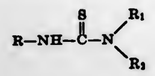
3,700,570
ZINC ACID BATH ELECTROPLATING

Josef Hartenstein, Hilden Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,321
Claims priority, application Germany, Oct. 13, 1969, P 19 51 558.3
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R **7 Claims**

Novel acid aqueous electroplating baths for forming lustrous zinc deposits containing a water-soluble zinc

salt, usual lustering agents and wetting agents, optionally an additional conducting salt and a thiourea derivative of the formula



(I)

wherein R is selected from the group consisting of alkyl of 6 to 22 carbon atoms, a mono- or polynuclear aryl which may optionally be substituted with an aliphatic or aromatic group, arylalkyl and cycloalkyl, R_1 is selected from the group consisting of hydrogen and hydroxyalkyl of 2 to 6 carbon atoms which may optionally be interrupted by an ether oxygen and R_2 is hydroxyalkyl of 2 to 6 carbon atoms which may be optionally interrupted by an ether oxygen and to a novel electroplating method for forming lustrous zinc deposits and zinc deposits formed by said method.

3,700,571

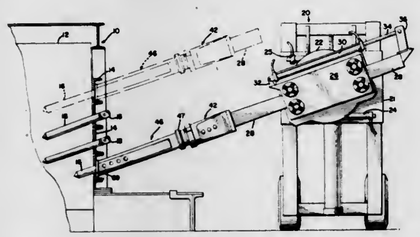
METHOD FOR MANIPULATING ALUMINUM REDUCTION CELL ANODE PINS

Raymond Joseph Dill, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Original application May 3, 1965, Ser. No. 452,493, now Patent No. 3,493,486, dated Feb. 3, 1970. Divided and this application July 10, 1969, Ser. No. 862,103

Int. Cl. C22d 3/12

U.S. Cl. 204—67 **1 Claim**



Method and apparatus for extracting the anode pins of an electrolytic reduction cell and for resetting such pins while still hot. The equipment comprises a modified fork truck having, in addition to the conventional vertically movable carriage and a revolving apron, an extensible boom mounting a puller-driver mechanism which includes a pin clamping head. Means are also provided for reacting the pin withdrawal force against the cell structure.

3,700,572

METHOD OF ELECTROLYTICALLY REDUCING AROMATIC HYDROCARBONS

Takefumi Hatayama, Yoshihiko Hamano, and Tsuyoshi Yamamoto, Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,931

Claims priority, application Japan, Dec. 22, 1969, 44/102,440

Int. Cl. C07b 29/06; C07c 5/10, 13/48

U.S. Cl. 204—73 R **7 Claims**

This invention relates to a method of the production of dihydroaromatic hydrocarbons which comprises subjecting a catholyte composed of a heterogeneous mixture of an aromatic hydrocarbon and an aqueous solution of one or more quaternary ammonium salts to electrolysis carried out at a temperature from 30° to 100° C. and subsequently recovering the resulting dihydro aromatic hydrocarbon.

3,700,573

METHOD OF PREPARATION OF HYDROPHILIC SILICONES BY RADIOCHEMICAL GRAFTING

Jacques Laizier, 23 Rue de la Marseillaise, Vincennes, France, and Georges Wajs, 23 Rue de Bordeaux, Charenton, France

No Drawing. Continuation of application Ser. No. 684,607, Nov. 21, 1967. This application Nov. 20, 1969, Ser. No. 871,704

Claims priority, application France, Dec. 1, 1966, 85,735

Int. Cl. C08f 1/16, 35/02

U.S. Cl. 204—159.13 **5 Claims**

In a method of preparation of hydrophilic silicones by radiochemical grafting, a compound of the silicone family is first exposed to ionizing radiation in an oxidizing medium. The irradiated body is then put in the presence of a monomer at a temperature within the range of 120 to 160° C. and thus endowed with an absorptive capacity for water.

3,700,574

PHOTOCURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application June 23, 1970, Ser. No. 44,607, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,970

Int. Cl. C08d 1/00; C08f 1/16; C08c 11/54

U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new photocurable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule, and a photocuring rate accelerator. The photocurable liquid polymer composition upon curing in the presence of actinic light forms odorless, solid, elastomeric or resinous products which may serve as sealants, coatings, adhesives and molded articles.

3,700,575

METHOD OF FORMING TRANSPARENT FILMS OF ZnO

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Paul H. Egli, 73 Maple Ave., Collingwood, N.J. 08108

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,398

Int. Cl. C23c 15/00

U.S. Cl. 204—192 **8 Claims**

A method of forming thin transparent film of zinc oxide on a transparent refractory substrate, which comprises sputtering pure zinc metal to form a thin metallic film on the substrate and then reacting the zinc film with oxygen from air to form a luminescent and transparent ZnO coating.

3,700,576

ION-ACTIVITY MEASURING ELECTRODE

René A. Bloch, Savion, Mordechay Furmansky, Petach Tiqva, and Saul Gassner, Rehovot, Israel, assignors to Hydronautics-Israel Ltd., Rehovot, Israel

Filed Oct. 27, 1970, Ser. No. 84,300

Claims priority, application Israel, Feb. 27, 1970, 33,983

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M **9 Claims**

A measuring electrode for the selective determination of the activity of certain ions in aqueous solutions. A

holder is provided with a protruding conductor and the protruding conductor is covered by a cap removably attached to the holder. An ion-specific membrane is located over an aperture in the cap and the cap is adapted to hold a standard electrolyte solution.



3,700,577

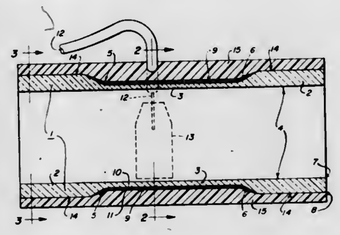
pH SENSING APPARATUS

Oscar H. Grauer, Philadelphia, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed July 21, 1966, Ser. No. 566,877

Int. Cl. G01n 27/36

U.S. Cl. 204—195 G **17 Claims**



Through-flow pH-sensing apparatus including a thin glass membrane of pH sensitive glass having a thickness of the general order of .010", more or less, whose inner surface is generally a projection of the inner surface of the pipe-line on which the apparatus is mounted, such inner surface of said membrane facing and being adapted to and in contact with the liquid passing through said pipeline, the outer surface of said membrane being de-glazed to form minute recesses therein, an electrically-conductive coating on said de-glazed outer surface, and a dielectric membrane-backing covering and in intimate contact with the outer surface of said membrane and the metal coating thereon and insulating the said conductive coating from the inner surface of said membrane.

3,700,578

APPARATUS FOR MEASURING THE CONCENTRATION OF DISSOLVED OXYGEN IN AN AQUEOUS SOLUTION

John Stephen Clifton, Harpenden, and Dawood Parker, London, England, assignors to National Research Development Corporation, London, England

Filed Aug. 10, 1970, Ser. No. 62,553

Claims priority, application Great Britain, Aug. 11, 1969, 40,041/69

Int. Cl. G01n 27/46

U.S. Cl. 204—195 P **4 Claims**

A membrane of silicone rubber is arranged in contact with two electrodes, for example of silver and lead respectively, so that an electrochemical cell will be formed when water with an appropriate ion content is absorbed by the membrane. In use the characteristics of the cell are affected by oxygen diffusing into the membrane from a solution under investigation.

3,700,579

APPARATUS FOR MEASURING THE CONCENTRATION OF DISSOLVED OXYGEN IN AN AQUEOUS SOLUTION

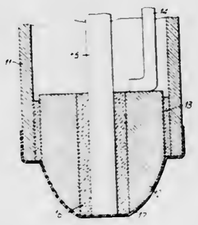
John Stephen Clifton, Harpenden, and Dawood Parker, London, England, assignors to National Research Development Corporation, London, England

Filed Mar. 4, 1971, Ser. No. 121,077

Claims priority, application Great Britain, Mar. 12, 1970, 11,949/70

Int. Cl. G01n 27/46

U.S. Cl. 204—195 P **6 Claims**



A membrane of a fluorocarbon polymeric material is arranged in contact with two electrodes so that an electrochemical cell will be formed when water with an appropriate ion content is absorbed by the membrane. In use the characteristics of the cell are affected by oxygen diffusing into the membrane from a solution under investigation.

3,700,580

APPARATUS FOR MEASURING THE CONCENTRATION OF DISSOLVED OXYGEN IN AN AQUEOUS SOLUTION

Norman MacLeod, Edinburgh, Scotland, and David Proctor, Highett, Victoria, Australia, assignors to National Research Development Corporation, London, England

Filed Aug. 10, 1970, Ser. No. 62,502

Claims priority, application Great Britain, Aug. 11, 1969, 40,040/69

Int. Cl. G01n 27/46

U.S. Cl. 204—195 P **6 Claims**

A water-absorbent oxygen-permeable membrane for example of polyethylene, is arranged in contact with two

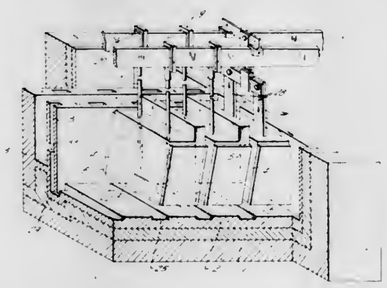
electrodes, for example of silver and lead respectively, so that an electrochemical cell will be formed when water with an appropriate ion content is absorbed by the membrane. In use the characteristics of the cell are affected by oxygen diffusing into the membrane from a solution under investigation.



3,700,581
CRYOLITIC VAT FOR THE PRODUCTION OF ALUMINUM BY ELECTROLYSIS

Giuseppe de Varda, Milan, Italy, assignor of a fractional part interest to Montecatini Edison S.p.A., Milan, Italy

Continuation of application Ser. No. 651,448, July 6, 1967. This application Mar. 17, 1970, Ser. No. 19,623
Claims priority, application Italy, July 6, 1966, 15,623/66, Patent 19,888
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—243 R 7 Claims



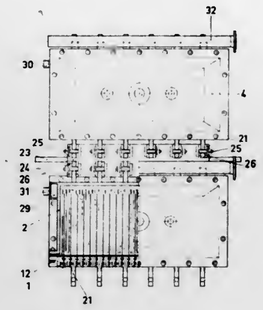
Disclosed are monocell and multicell furnaces for fused bath electrolysis of alumina (Al_2O_3) dissolved in molten fluoride baths. The invention is characterized by an internal vat constituted entirely or partially of substantially pure cryolite, either natural or synthetic.

3,700,582
ELECTROLYTIC CELL

Umberto Giacopelli, Via Piave, Rosignano Solvay, Italy

Filed Sept. 16, 1970, Ser. No. 72,566
Claims priority, application Germany, Sept. 18, 1969, P 19 47 157.9
Int. Cl. B01k *3/00*
U.S. Cl. 204—275 12 Claims

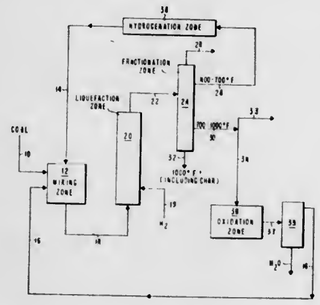
An electrolytic cell has a removable conductive wall carrying spaced parallel plate electrodes. The wall is composed of a series of elongated vertical elements which are individually secured to adjacent elements by male-female threaded members which screw into one another. The borders of the electrode plates are clamped between successive wall elements with selected pressure by individually tightening the threaded members.



3,700,583
COAL LIQUEFACTION USING CARBON RADICAL SCAVENGERS

James E. Salamony, Summerville, S.C., and William H. Starnes, Jr., Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Mar. 19, 1971, Ser. No. 125,970
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 10 Claims



Coal liquefaction yields are increased by liquefying the coal in a liquefaction zone as a slurry in a hydrogen-donor solvent in the presence of a carbon radical scavenger selected from quinones and the halogens iodine, bromine and chlorine, and the hydrogen halides thereof. Preferably a coal liquids stream which boils within the range from about 500° F. to about 1000° F. is oxidized to generate quinones, and the oxidized stream is recycled to the liquefaction zone.

3,700,584
HYDROGENATION OF LOW RANK COAL

Edwin S. Johanson, Princeton, Ronald H. Wolk, Lawrence Township, and Clarence A. Johnson, Princeton, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,225
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 12 Claims

Low rank coal having a high oxygen content is hydrogenated into hydrocarbonaceous products while reducing the hydrogen consumption by conducting the hydrogenation of such coal in first and second stage ebullated bed reaction zones with the separate withdrawal of the gasiform effluent stream containing carbon monoxide and carbon dioxide between the first and second hydrogenation stages.

3,700,585
DEWAXING OF OILS BY SHAPE SELECTIVE CRACKING AND HYDROCRACKING OVER ZEOLITES ZSM-5 AND ZSM-8

Nai Yuen Chen, Hopewell Township, Mercer County, Stanley J. Lucki, Runnemede, and William E. Garwood, Haddonfield, N.J., assignors to Mobil Oil Corporation

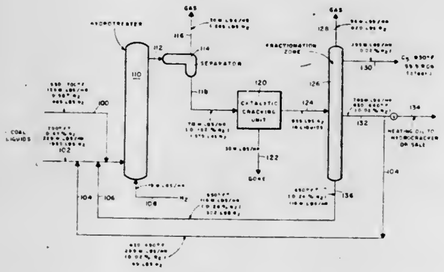
No Drawing. Filed Oct. 10, 1969, Ser. No. 865,470
Int. Cl. C10g *13/02, 11/02*
U.S. Cl. 208—111 11 Claims

Straight-chain hydrocarbons and slightly branched-chain hydrocarbons are selectively converted utilizing novel crystalline zeolites having unique molecular sieving properties. The catalyst preferably contains acidic cations and can also contain a component having a hydrogenation/dehydrogenation function. The process of this invention is particularly useful for the dewaxing of hydrocarbon oils including removal of high freezing point paraffins from jet fuel to lower freezing, as well as improving the octane rating of naphtha fractions.

3,700,586
PRODUCTION OF HIGH OCTANE GASOLINE FROM COAL LIQUIDS

Bernard L. Schulman, Livingston, N.J., assignor to Esso Research and Engineering Company

Filed Aug. 10, 1970, Ser. No. 62,301
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 10 Claims



A high octane gasoline is obtained, without addition of lead-containing compounds, by the hydro-treating and catalytic cracking of coal-derived liquids. A heating oil stream obtained from the catalytic cracking step is recycled to the hydrotreater, resulting in an improvement in the Research Octane Number (clear; i.e., measured without addition to tetraethyl lead) of the naphtha obtained from the coal-derived liquid. Hydrocracking of the heating oil, with the resultant reduction in octane number, is avoided. Catalytic cracking with a molecular sieve containing catalyst is preferred, because of its highly selective action in denitrogenating the heating oil stream.

3,700,587
SILICONE OIL ANTIFOAM

James A. Hyde, Downers Grove, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Mar. 1, 1971, Ser. No. 119,756
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 2 Claims

The foaming occasioned by the conversion of residual petroleum stocks into coke by delayed coking processes is controlled by treating such stocks with a polydimethyl siloxane which has a centistoke viscosity of at least 150,000.

3,700,588
NOVEL HYDROREFORMING CATALYSTS AND A METHOD FOR PREPARING THE SAME

Joseph Edouard Weisang and Philippe Engelhard, Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, Seine, France

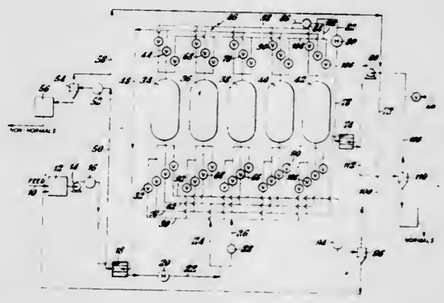
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,325
Claims priority, application France, Feb. 14, 1969, 6903646
Int. Cl. C10g *35/08*; B01j *11/78, 11/08*
U.S. Cl. 208—139 8 Claims

Novel hydroreforming catalysts are disclosed which improve the reforming of hydrocarbon feeds. These novel catalysts are a combination of the platinum group metals with tin and/or lead.

3,700,589
ISOPARAFFIN-n-PARAFFIN SEPARATION PROCESS

Martin Francis Symoniak, Mahopac, N.Y., David Allen Torke, Dusseldorf, Germany, and Ervine Stout Holmes, Yorktown Heights, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

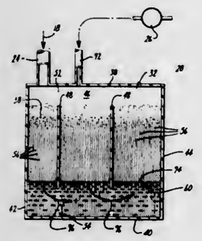
Filed Sept. 14, 1970, Ser. No. 71,895
Int. Cl. C10g *25/04*
U.S. Cl. 208—310 6 Claims



Normal paraffins are separated from admixture with non-normal paraffins in the vapor phase at super-atmospheric pressure using a fixed adsorption bed containing a 5-A. zeolitic molecular sieve adsorbent. High purity normals are obtained if the adsorption stroke is continued until the stoichiometric point of the normals mass transfer zone has traversed to between 85 and 97 percent of the bed length and thereafter two countercurrent purge

stages using a non-sorbable permanent gas are employed, the first being only sufficient to flush the vapors from the bed void space.

3,700,590
SEPARATION OF ORGANIC SOLIDS FROM WASTE LIQUIDS
Robert Edward Burton, Willits, Calif., assignor to Microphor, Inc., Willits, Calif.
Continuation-in-part of abandoned application Ser. No. 842,667, July 17, 1969. This application Aug. 31, 1970, Ser. No. 68,428
Int. Cl. C02c *1/04*
U.S. Cl. 210—17 **29 Claims**



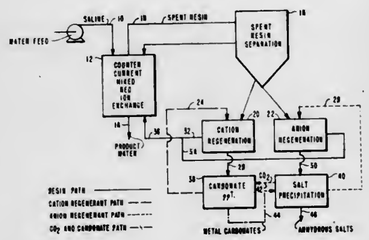
System for treating waste liquids to separate organic solid contaminants and to reduce the biological oxygen demand of the clarified liquids so that they can be freely and safely discharged from the system. Liquid wastes are introduced to the system together with oxygen-containing gas which may be under slight pressure. The system makes use of masses or bundles of bark fiber or other fibrous material containing microbiological communities which thrive upon and consume the organic solid wastes. The liquid waste treating systems are particularly adapted for marine, rail, vehicular or aircraft use in the form of small compact wholly self-contained units.

3,700,591
CLEANING OF USED MEMBRANE WITH OXALIC ACID
Willard S. Higley, Glendora, Calif., assignor to the United States of America as represented by the Secretary of the Interior
No Drawing. Filed Sept. 24, 1970, Ser. No. 75,246
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **7 Claims**

A method for cleaning and rejuvenating a used reverse osmosis membrane by treating the membrane in situ with a solution of oxalic acid. Not only are deleterious deposits removed from the membrane, but the original osmotic properties of the membrane may be partially restored. The membrane properties may be further improved by a subsequent treatment with a swelling agent or a hot water solution.

3,700,592
PROCESS FOR THE REMOVAL AND RECOVERY OF MINERAL POLLUTANTS FROM WATER
David O. De Pree, Lommis, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Dec. 4, 1970, Ser. No. 95,286
Int. Cl. B01d *33/16, 15/06*
U.S. Cl. 210—33 **15 Claims**

This patent describes a process for the treatment of an aqueous stream containing ionic pollutants to remove the ions from the stream and recover the ions which comprises: optionally countercurrently passing said aqueous stream through a bed of mixed ion exchange material to remove ionic pollutants from the stream and produce a substantially ion-free water, removing spent mixed ion exchange material from said bed and separating the same into anionic and cationic ion exchange material, removing the ionic pollutants from the separated spent anionic and cationic ion exchange material with anionic and cationic regenerant streams to regenerate the anionic and cationic ion exchange material and to form spent anionic and cationic regenerant streams, returning the regenerated



anionic and cationic exchange material to said bed, treating said spent cationic regenerant stream with a metal precipitant to form precipitated metal carbonates and recover the cationic regenerant stream for recycle to said spent cationic ion exchange material, and contacting said spent anionic regenerant stream with said precipitated metal carbonates at elevated temperatures to precipitate metal salts and recover metal precipitant for recycle to said spent cationic regenerant stream and anionic complexing agents for recycle to said spent anionic ion exchange material.

3,700,593
APPARATUS AND METHOD FOR REMOVING OIL PRODUCTS FLOATING ON WATER
Cornelis Bezemer, Harco J. Tadema, and Jacob J. H. C. Houbolt, Rijswijk, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Continuation of abandoned application Ser. No. 753,695, Aug. 19, 1968. This application Dec. 21, 1970, Ser. No. 100,376
Claims priority application Great Britain, Sept. 18, 1967, 42,331/67
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **22 Claims**



An apparatus and method for removing oil slicks from a water surface wherein an elongated absorbent porous body is positioned along the water surface by base means

which include squeezers for removing oil from the body, a container for collecting the oil and drive means for moving the body past the squeezers.

3,700,594
CARBON DISULFIDE EMULSIONS
Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.
No Drawing. Filed Dec. 17, 1969, Ser. No. 886,016
Int. Cl. E21b *43/00*
U.S. Cl. 252—8.55 B **6 Claims**

Non-Newtonian formulations containing carbon disulfide (CS_2) of reduced toxicity and flammability. These formulations are illustrated by high internal phase ratio (HIPR) emulsions containing carbon disulfide in the internal phase, said internal phase containing more than about 60% of the formulation by volume and preferably more than about 80% of the formulation by volume. These formulations are particularly useful in cleaning oil and gas wells by the removal of wax and/or sulfur.

3,700,595
FERROFLUID COMPOSITION
Robert Kaiser, Cambridge, Mass., assignor to Avco Corporation, Cincinnati, Ohio
No Drawing. Filed June 15, 1970, Ser. No. 46,556
Int. Cl. H01f *1/10*
U.S. Cl. 252—62.56 **7 Claims**

The present invention relates to a ferrofluid composition usable to control oil spills floating on open bodies of water. Such a process involves dispersing the present hydrocarbon base ferrofluid into the oil slick, then using a magnetic field to attract and pick up the oil. The same ferrofluid composition is also useful to separate water hydrocarbon oil emulsions.

3,700,596
PIEZOELECTRIC CERAMIC COMPOSITIONS
Fumio Naito, Toshiyuki Kudo, and Masanobu Kubosaki, Hirakata, Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi City, Osaka, Japan
Filed July 31, 1968, Ser. No. 748,993
Claims priority, application Japan, Aug. 1, 1967, 42/49,453
Int. Cl. C04b *35/46, 35/48, 35/50*
U.S. Cl. 252—62.9 **3 Claims**

A piezoelectric ceramic composition which consists essentially of the ternary solid solution

$$Pb[(Co_{1/3}, Nb_{2/3})_x, Zr_y, Ti_z]O_3$$

where $x+y+z=1$ and the composition lies within the area A-B-C-D-E-F of the triangular composition diagram of the drawing, wherein an oxide of tantalum or thorium is added with the range of from about 0.2 to about 1.0 weight percent of the composition to improve the electromechanical coupling coefficient and the mechanical quality factor of the composition.

3,700,597
DIELECTRIC COMPOSITIONS
Ernest L. Kastenbein, Rutherford, and Gerald L. Geltman, Wayne, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 10, 1967, Ser. No. 622,242
Int. Cl. H01b *3/00, 3/02*
U.S. Cl. 252—63.2 **2 Claims**

This specification discloses methods of preparing solid dielectric compositions containing boron nitride by admixing suitable boron nitride particles of high purity with suitable particles of a thermoplastic resin and fabricating a solid article from this mixture using heat and pressure. The unusual properties of boron nitride, particularly its low dielectric constant and anisotropic thermal conductivity, are utilized to advantage and the problem of severe power factor variation upon exposure of boron nitride articles to moisture has been eliminated. At high boron nitride concentrations, the relative particle size of boron nitride and resin particles was found to be critical in order to obtain high strength, solid articles.

3,700,598
FUEL AND LUBRICATING OIL COMPOSITIONS
Larry Plonsker, Bloomfield Hills, Warren L. Perlstein, Orchard Lake, and Robert E. Malec, Birmingham, Mich., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,003
Int. Cl. C10l *1/22*; C10m *1/32*
U.S. Cl. 252—50 **16 Claims**

The dispersant and detergent properties of lubricating oils and liquid hydrocarbon fuels such as gasoline are improved by addition of a small but effective amount of an N-hydrocarbyl-substituted nitrilotris ethylamine. The hydrocarbyl group is preferably a polyolefin group, such as a polybutene group, having a molecular weight of from about 300 to 20,000, more preferably from 500 to 2,000.

3,700,599
COMPOSITION FOR MECHANICALLY CLEANING HARD SURFACES
William G. Mizuno and James L. Copeland, St. Paul, and Arlene E. Scholze, Burnsville, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.
No Drawing. Filed Sept. 25, 1970, Ser. No. 75,676
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **9 Claims**

Detergent compositions for mechanically cleaning hard surfaces (e.g. dishes) are characterized by the presence therein of a mixture of metallic salt of citric acid (e.g. sodium citrate) and water soluble polymeric, organic polyelectrolyte (e.g. hydrolyzed maleic anhydride polymers). This mixture permits the reduction of or elimination of condensed phosphate salts commonly used in detergent compositions of this type (e.g. machine dishwashing detergents).

3,700,600
PROCESS OF PREPARING PULVERULENT TO GRANULAR PERBORATE CONTAINING WASHING COMPOSITIONS
Horstmar Nagel, Hilden, Markus Berg, Dusseldorf-Holthausen, Albrecht Lohr, Hosel, and Wilfried Adler, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,353
Claims priority, application Germany, Oct. 12, 1969, P 19 51 556.1; Dec. 20, 1969, P 19 63 898.3
Int. Cl. C11d *7/18, 7/56*
U.S. Cl. 252—99 **8 Claims**

Pulverulent to granular, perborate containing washing composition comprising

(a) From 5% to 40% by weight of anionic, and optionally amphoteric and non-ionic surface-active compounds with the proviso that any non-ionic surface-active compound present does not constitute more than 50% by weight of the total amount of surface-active compounds,

(b) From 7.5% to 50% by weight of a perborate whose water of crystallization is below that of a perborate tetrahydrate,

(c) From 15% to 80% by weight of compounds capable of complexing calcium ions and, optionally other alkaline builders,

(d) From 0 to 10% by weight of non-washactive compounds selected from the group consisting of neutral inorganic compounds and water, and

(e) From 0 to 10% by weight of other customary washing composition additives,

said composition being a mixture of at least two pulverulent components comprising

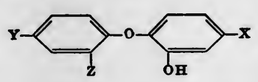
(A) a pulverulent component comprising (1) said anionic and any amphoteric and non-ionic surface-active compounds, (2) optionally present non-hydrolysable complex-formers, (3) not more than 20% by weight of hydrolysable complex-formers, and (4) other customary washing composition additives utilized in small amounts, said pulverulent component being prepared by drying with heat an aqueous suspension or slurry of the said components,

(B) said perborate component, and

(C) a pulverulent component comprising the remainder of the hydrolysable complex-formers and alkaline builders, if any. The process of producing the washing composition is also part of the invention.

3,700,601
COLOR-STABLE LIQUID DETERGENT CONTAINING DISINFECTANTS
Helmut Bloching, Hilden, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany
No Drawing. Filed Aug. 14, 1969, Ser. No. 850,228
Claims priority, application Germany, Sept. 11, 1968, P 17 92 513.2
Int. Cl. C11d 7/54, 3/48, 3/066
U.S. Cl. 252—105 **12 Claims**

Color stable liquid detergents comprising 5 to 40 wt. percent of at least one anionic and/or non-ionic surfactant, 0.1 to 5 wt. percent of at least one substituted diphenyl ether having the formula:

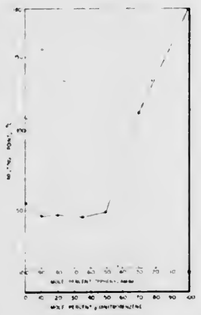


wherein X, Y and Z are chlorine, with the proviso that Y can also be hydrogen, 0.01 to 5 wt. percent referred to the surfactant and disinfectant of at least one water soluble reducing agent and 0.001 to 2%, based on the total solids content present, of an optical brightener. The optical brightening action of said brighteners is not impaired by the presence of the substituted diphenyl ether disinfectant.

3,700,602
METHOD FOR MASS TAGGING SAND WITH A RADIOACTIVE ISOTOPE
Elick H. Acree and Forrest Neil Case, Oak Ridge, Tenn., and Nancy H. Stephens, Laurinburg, N.C., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Sept. 4, 1969, Ser. No. 855,390
Int. Cl. G21h 5/02
U.S. Cl. 252—301.1 R **3 Claims**

A procedure for tagging sand with ^{196}Au for use in the study of sediment transport involves precipitation of ^{196}Au directly onto the sand particles from an appropriate aqueous solution containing the radioisotope by means of a reaction with immiscible organic reducing agent such as p-isopropylbenzaldehyde. This process provides a radioisotope labeling technique in which the number of radiations detected per unit weight of sand is approximately proportional to the mass rather than being proportional to the surface area.

3,700,603
HEAT DETECTION AND COMPOSITIONS AND DEVICES THEREFOR
Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed June 25, 1969, Ser. No. 836,280
Int. Cl. C09d 11/00; C09k 3/00, 11/12
U.S. Cl. 252—408 **10 Claims**



Temperature change of a substrate such as a microelectronic component is sensed and detected by means of a mixture of a weak molecular complex of an electron donor compound such as an organic amine and an electron acceptor compound such as nitroaromatic compound. The mixture is encapsulated in a clear binder such as a vinyl resin.

3,700,604
ACID CATALYST SYSTEM FOR FURAN RESINS OF FILLER CONTAINING ACID SALTS
Ignatius Metil, Buffalo, N.Y., assignor to Ameron, Inc.
No Drawing. Filed May 5, 1969, Ser. No. 821,964
Int. Cl. B01j 11/82
U.S. Cl. 252—428 **13 Claims**

Powdered acidic catalyst for furan resins is formed in situ on powdered inert filler material which may or may not contain a powdered cocatalyst dispersed therein. The acidic catalyst is a salt of a strong acid. In situ formation of the acidic salt is obtained by blending the acid and base into the filler, and uniform, homogenous dispersion of the salt is effected by blending one of them, as a liquid, into the filler whereafter the other is added, as a liquid, into the blend to produce a dry powder which is the acidic catalyst formed on and dispersed uniformly throughout the filler.

3,700,605
CATALYSTS
David Dodman, Kenneth William Pearson, and John Mathers Woolley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,133
Claims priority, application Great Britain, Apr. 18, 1969, 19,974/69
Int. Cl. B01j 11/06
U.S. Cl. 252—471 **3 Claims**

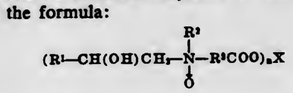
Manufacture of catalysts by contacting a manganese oxide precipitate containing bound alkali (especially a precipitate obtained by reduction of a permanganate with formaldehyde) with a salt of cobalt, copper, silver or lead, to replace the alkali by the heavy metal. Use of the catalysts in reducing nitro compounds to nitroso, azo, azoxy or amino compounds.

3,700,606
ELECTROCONDUCTIVE GLAZE AND METHOD FOR PREPARATION
Charles F. Parks, Grand Island, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.
No Drawing. Continuation of application Ser. No. 704,268, Feb. 9, 1968. This application Sept. 30, 1970, Ser. No. 76,971
Int. Cl. H01b 1/06
U.S. Cl. 252—518 **1 Claim**

An alumina compatible electroconductive glaze composition comprising finely divided particles of thallium oxide dispersed in an at least partially devitrified solder glass matrix.

3,700,607
DETERGENT COMPOSITIONS CONTAINING N-OXIDE-AMINOCARBOXYLATES
Bjorn Sundby, Piscataway, Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,977
Int. Cl. C11d 1/84
U.S. Cl. 252—527 **21 Claims**

Built synthetic organic detergent compositions comprise oxides of aminocarboxylates or aminocarboxylic acids of the formula:



wherein R^1 is an aliphatic hydrocarbon radical of 4 to 20 carbon atoms, R^2 is a hydrocarbon radical of 1 to 7 carbon atoms or is R^3COOX_m, R^3 is a divalent aliphatic or aromatic hydrocarbon radical of 1 to 9 carbon atoms, which may be the same as or different from any other R^3 radical in the compound, X is hydrogen, alkali metal, alkaline earth metal, other suitable salt-forming metal, ammonium, alkylamine or alkanolamine, which may be the same as or different from any other X in the formula, m is from ⅓ to 1 and n is from 1 to 3, both m and n being dependent on the valence(s) of X. In addition to the aminocarboxylate, such compositions comprise an inorganic builder salt, such as sodium tripolyphosphate or potassium pyrophosphate, and also may include other adjuvant materials, such as trisodium nitrilotriacetate, enzymes, anti-redeposition agents, bleaches or bluing agents, germicides, hydrotropes, auxiliary detergents and softening agents, etc. Usually, the aminocarboxylate comprises from 3 to 30% of the composition and the inorganic builder is from 10 to 70% thereof.

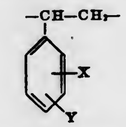
The products made may be in liquid or solid form, and are preferably employed as liquids or powders. They may be utilized as washing-softening agents in laundering or may be employed in pre-soaking or after-soaking of laundry, to improve the softening of the washed material. In some instances, the aminocarboxylate may be used without inorganic builder salt, in which cases it normally functions primarily as a softening agent and is preferably utilized after completion of washing.

3,700,608
PROCESS FOR PREPARING ALKYLENE OXIDE POLYMER
Katsuji Ueno and Takao Oshima, Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,809
Claims priority, application Japan, Jan. 7, 1970, 45/2,628
Int. Cl. C08d
U.S. Cl. 260—2 A **10 Claims**

A process for preparing alkylene oxide polymers or copolymers having high molecular weights comprising polymerizing at least an alkylene oxide in the presence of a ternary catalyst system comprising an organo-aluminum compound, an organo-zinc compound and an orthophosphoric acid is disclosed.

3,700,609
GRAFT COPOLYMERS
Geoffrey W. Tregear, North Clayton, Hendrik A. J. Battaerd, Nottinghill, Gunter A. Lang, Port Melbourne, Kevin Catt, Middle Park, and Hugh D. Niall, Armadale, Victoria, Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia
No Drawing. Continuation of abandoned application Ser. No. 628,818, Apr. 6, 1967. This application Feb. 1, 1971, Ser. No. 111,748
Claims priority, application Australia, Apr. 26, 1966, 4,671/66; Dec. 30, 1966, 16,002/66
Int. Cl. C08f 19/02, 41/04
U.S. Cl. 260—2.5 R **28 Claims**

A graft copolymer comprising a polymeric backbone and surface grafted on to it polymeric side-chains comprising a multiplicity of mer units of the formula



wherein X is at least one protein reactive group and Y stands for one or more optional substituents which is non-reactive with proteins. Processes of manufacture of the graft copolymer and its protein complexes are also described.

3,700,610
COPOLYMERS OF VINYLPYRIDINES WITH 1,3,5-TRIACRYLOYLHEXAHYDRO-1,3,5-TRIAZINE
Jacobo Zelik Zabicky-Zissman, Rehovoth, Ida Oren, Hasharon, and Ephraim Katchalski, Rehovoth, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovoth, Israel
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,150
Claims priority, application Israel, Aug. 28, 1969, 32,912
Int. Cl. C08f 19/00
U.S. Cl. 260—2.1 E **9 Claims**

Copolymers of vinylpyridines, which may be alkyl substituted, with 1,3,5-triacryloylhexahydro - 1,3,5 - triazine. These copolymers may be quaternized and utilized as ion exchangers. Alternatively, they are capable of complex formation with molecular halogen and may thus be utilized for the removal of elementary halogen from or its introduction into a desired medium.

3,700,611
POLYVINYL ALCOHOL-GLYOXAL-POLYOL ADHESIVE COMPOSITION
Ralph F. Nickerson and Harold D. Weymouth, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 775,146, Nov. 12, 1968. This application Jan. 4, 1971, Ser. No. 103,914
The portion of the term of the patent subsequent to June 17, 1988, has been disclaimed
Int. Cl. C09j 3/16
U.S. Cl. 260—17 R **16 Claims**

Disclosed herein is an adhesive composition comprising (A) a polyvinyl alcohol resin, (B) glyoxal and (C) a polyol selected from the group consisting of cis 1,2-polyols and certain 1,3-polyols dispersed in an aqueous

medium. The adhesive compositions may contain minor amounts of adjuvants such as inert fillers or extenders, methyl cellulose, potassium tripolyphosphate, sodium acetate and mixtures thereof.

3,700,612

AQUEOUS SURFACE-COATING COMPOSITIONS CONTAINING HYDROXYALKYL ETHERS OF GALACTOMANNAN GUMS AS THICKENERS

Joseph Fath, Lebanon, and Marvin Rosen, Warren, N.J., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed June 23, 1971, Ser. No. 156,050
Int. Cl. C08d 9/06; C08g 5/20
U.S. Cl. 260—17.4 ST 8 Claims

Aqueous surface-coating compositions that contain as thickener a hydroxyalkyl ether of a galactomannan gum having a degree of substitution of 0.10 to 3.0 are characterized by excellent flow and leveling characteristics, viscosity stability, and other valuable properties.

3,700,613

FILLED COMPOSITIONS CONTAINING 3,9-DIVINYL SPIROBI

David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, Ohio, assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 843,815, July 22, 1969. This application July 15, 1971, Ser. No. 163,088
Int. Cl. C08f 4/18
U.S. Cl. 260—17.4 CL 3 Claims

Compositions comprising 3,9-divinyl spirobi (meta dioxane) and a filler such as alpha cellulose, glass fibers, polyester fibers and mixtures thereof have excellent stain resistance and hardness. Such compositions find application in articles of manufacture including dinnerware.

3,700,614

HIGH IMPACT POLYPROPYLENE BLENDS

William F. Schenkerberg, Bogota, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed May 7, 1971, Ser. No. 141,358
Int. Cl. C08f 19/14, 21/04
U.S. Cl. 260—23 H 10 Claims

The addition of finely divided particles of stearic acid coated calcium carbonate to blends of substantially crystalline polymers and copolymers of propylene and an elastomeric material results in a product having improved impact strength and improved flexural stiffness over the blends without the finely divided particles.

3,700,615

WASTE RUBBER DISPOSAL

Charles E. Scott, Yardley, Pa., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,359
Int. Cl. C08d 13/38
U.S. Cl. 260—2.3 1 Claim

Waste vulcanized rubber is depolymerized in a liquid hydrocarbon medium by means of agitation, heat, free-radical initiators, and molecular oxygen. The resulting solution of rubber-modified hydrocarbon can then be utilized in the manufacture of end-use products, thereby disposing of the waste rubber without pollution of the ecological environment. The rubber-modified hydrocarbon can, for instance, be vulcanized to produce a moisture barrier or insulation coating. It can also be mixed with asphalt to provide rubberized asphaltic compositions. In still another application, the rubber-modified hydrocarbon can be thermally decomposed to produce carbon black.

3,700,616

SCULPTURABLE MOLDING COMPOSITIONS

Thomas Zawadzki, Princeton, N.J., assignor to Paul F. O'Neil, Rumson, N.J.

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,904
Int. Cl. C08f 45/38, 45/40
U.S. Cl. 260—31.6 R 4 Claims

Compositions comprising vinyl chloride and vinyl chloride copolymers, plasticizers, thixotropic agents and fillers are disclosed which are hand and tool workable like modeling clay, at room temperatures and form a hard, fused mass at elevated temperatures.

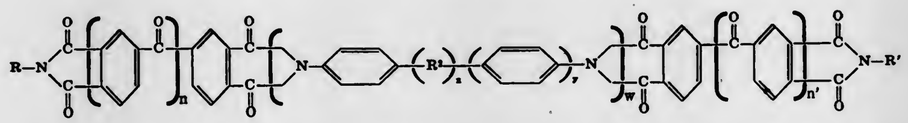
3,700,617

EPOXY-TERMINATED POLYIMIDES

Robert F. Golownia, Warrensville Heights, and Stanley Oswitch, University Heights, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,052
Int. Cl. C07d 27/52
U.S. Cl. 260—326 C 6 Claims

Thermally stable epoxy terminated polyimides are employed with a fiber mat such as fiberglass to prepare thermosetting high temperature resistant laminates stable at temperatures as high at 600° F. The novel polyimides have the formula:



wherein R and R′ are propoxides, R^2 is SO_2, CH_2 or O and n, n', w, x and y are integers of from 0 to 1, providing that when x is 1, y is 1.

3,700,618

POLYAMIDES EXHIBITING IMPROVED FREEZE-THAW CHARACTERISTICS IN PRINTING INK COMPOSITIONS

Hubert Joseph Sharkey and Robert J. Sturwold, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed July 31, 1969, Ser. No. 846,611
Int. Cl. C08f 45/34
U.S. Cl. 260—33.4 R 8 Claims

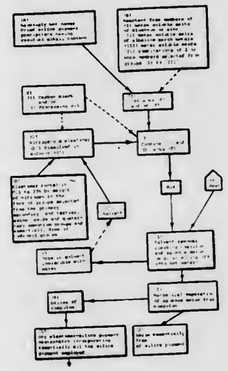
Poyamide resins exhibiting improved freeze-thaw characteristics in printing ink compositions comprise the reaction product of a diamine with a selected mixture of carboxylic acids comprising from about 20 to 90 equivalent percent of a polymeric carboxylic acid having an acid functionality of at least 3; from about 10 to 80 equivalent percent of a polymeric carboxylic acid having an acid functionality of about 2; in a ratio of the former polymeric carboxylic acid to the latter polymeric carboxylic acid of from about 1:4 to 9:1; and from about 10 to 60 equivalent percent of a chain-stopping monocarboxylic acid.

3,700,619

ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of applications Ser. No. 798,215 and Ser. No. 798,216, both Sept. 16, 1968, now abandoned, which are divisions of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, both now abandoned, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,472
Int. Cl. C08c 11/10; C08k 1/08
U.S. Cl. 260—33.6 AO 9 Claims



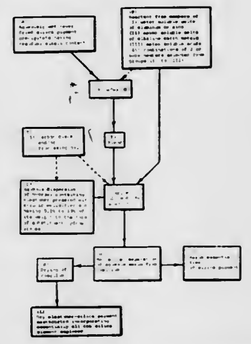
Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueous slurry of hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously kept in an aqueously wet state without having been dried after its precipitation—with or without addition in aqueous solution of (2) reactant selected from the members of Group (I) the water soluble salts of aluminum and zinc, Group (II) the water soluble salts of alkaline earth metals, Group (III) the water soluble acids and Group (IV) combinations of any two or more of the foregoing members—with (b) an organic solvent dispersion of elastomer consisting essentially of nitrogenous polymer containing 0.1 to 20% of nitrogen in the form of groups selected from the class consisting of amide primary, secondary and tertiary amine, and quaternary ammonium groups—with or without (3) carbon black and/or processing oil—and (b) removing the solvent and aqueous phase and recovering the resulting combination as a masterbatch. New products prepared by the process are also claimed.

3,700,620

ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,216, Sept. 16, 1968, now abandoned, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, both now abandoned, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,487
Int. Cl. C08c 11/12; C08d 9/00
U.S. Cl. 260—33.6 AO 8 Claims



Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch is effected by (a) combining (1) an aqueous wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous solution of alkali metal silicate, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation, with or without treatment with a selected reactant and (2) an aqueous dispersion of hydroxy containing elastomer and anionic dispersing agent, with or without (3) carbon black and/or processing oil, and (4) selected coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. The product prepared by the process is a hydroxyl-group containing elastomer-silica pigment masterbatch.

3,700,621

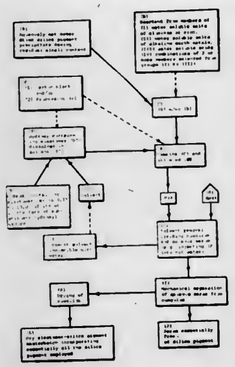
ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of applications Ser. No. 798,215 and Ser. No. 798,216, both Sept. 16, 1968, now abandoned, which are divisions of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, both now abandoned, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,488
Int. Cl. C08c 11/10; C08k 1/08
U.S. Cl. 260—33.6 AO 12 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-

silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation—with or without addition in aqueous solution of (2) reactant selected from the members of Group (I) the water soluble salts of aluminum and zinc, Group (II) the water soluble salts of alkaline earth



metals, Group (III) the mineral acids and water soluble organic acids and Group (IV) combinations of any two or more of the foregoing members—with (b) an organic solvent dispersion of hydroxy containing elastomer having from 0.1 to 10% of its weight consisting of substituent hydroxyl groups—with or without (3) carbon black and/or processing oil—and (b) removing the solvent and aqueous phase and recovering the resulting combination as a masterbatch containing essentially all of the silica pigment employed.

3,700,622
PROCESS FOR PREPARATION OF RUBBER MODIFIED STYRENE-ACRYLONITRILE POLYMERS
Joseph Francis Terenzi, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,473
Int. Cl. C08f *15/42, 45/52*
U.S. Cl. 260—33.6 AO **5 Claims**

A process for the continuous production of rubber modified styrene-acrylonitrile polymers wherein styrene and acrylonitrile are copolymerized in the presence of an inert organic solvent and in at least two stages of polymerization, the resultant copolymer is charged with a grafted polybutadiene latex to a shearing zone at a specific temperature, pressure and time so as to produce a uniform composition having both a microscopic and macroscopic dispersion of ingredients and the resultant dispersion is devolatilized and extruded under specific conditions, and compositions of said ingredients, are disclosed.

3,700,623
REACTION PRODUCTS OF EPIHALOHYDRIN AND POLYMERS OF DIALLYLAMINE AND THEIR USE IN PAPER
Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 5,956, Jan. 26, 1970. This application Apr. 22, 1970, Ser. No. 30,986
Int. Cl. C08f *3/84, 13/06*
U.S. Cl. 260—80.3 R **12 Claims**

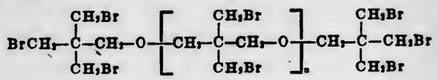
Water-soluble, alkaline curing resins which are the reaction products of an epihalohydrin and a polymer of a diallylamine are disclosed. The resins are particularly useful as wet strength agents for paper and additionally give superior dry strength to paper.

3,700,624
RESINOUS COMPOSITION
Toshio Adachi and Sayoko Funakisako, Osaka, Akio Furuya, Yokohama, and Masakatsu Uchida, Kamakura, Japan, assignors to Dai Nippon Toryo Co., Ltd., and Leben Utility Co. Ltd., both of Osaka-shi, Japan
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,316
Claims priority, application Japan, Apr. 29, 1970, 45/37,073; June 16, 1970, 45/52,027; June 18, 1970, 45/53,139; July 24, 1970, 45/64,921
Int. Cl. C08f *45/36*
U.S. Cl. 260—31.6 **9 Claims**

A resinous composition comprising a vinyl chloride resin, an unsaturated polyester resin, a polymerization initiator, a reactive plasticizer, and optionally a non-reactive plasticizer and/or a vinyl monomer, and a molded article or film prepared from said composition, which is excellent in physical and chemical properties.

3,700,625
FLAME-RETARDED OLEFIN POLYMERS AND ADDITIVE SYSTEMS THEREFOR
Donnie G. Brady, Ernest A. Zuech, and Roy A. Gray, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Aug. 30, 1971, Ser. No. 176,259
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.75 R **5 Claims**

Flame-retarded olefin polymers are provided by admixing with the polymer a flame-retardant additive system which consists essentially of (A) a compound of the formula



wherein n is 0 to 5 and (B) antimony trioxide.

3,700,626
FLAME-RETARDED POLYMER COMPOSITIONS
Robert William Murray, Lebanon, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 20, 1970, Ser. No. 39,156
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.8 R **10 Claims**

Flame-retarded compositions comprising a thermoplastic polymer and a flame-retarding amount of 1,1,4,4-tetrakis(2-cyanoethyl) - 1,4 - diphosphoniacyclohexane dibromide or diiodide, are disclosed.

3,700,627
DECOLORIZED POLYTETRAFLUOROETHYLENE
Henry C. Miller, Hatfield, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
No Drawing. Filed May 25, 1970, Ser. No. 40,386
Int. Cl. C08f *45/56*
U.S. Cl. 260—45.85 **1 Claim**

Polytetrafluoroethylene film free of color is produced by adding metal salts to an aqueous polytetrafluoroethylene dispersion containing hydrocarbon surfactants, casting a film from the latex and sintering the film in air. The salts are added in 5 to 300 parts per million based on the weight of the latex.

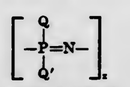
3,700,628
BODY IMPLANTABLE ENCAPSULANT AND METHOD OF PREPARATION
William J. Dermody, Washington Crossing, N.J., and Alan E. Varker, Philadelphia, Pa., assignors to ESB Incorporated
No Drawing. Filed Feb. 8, 1971, Ser. No. 113,619
Int. Cl. A61n *1/36*
U.S. Cl. 260—47 EN **10 Claims**

A process is provided for encapsulating devices that may be implanted in the body without causing unfavorable reactions in and rejection by the body. An example of a device which may be encapsulated by the process is a heart pacer.

The process includes purification of the epoxy resin, preparation of an amine-epoxy hardener, and controlling the curing conditions of the mixture of hardener and resin.

3,700,629
PHOSPHONITRILE ELASTOMERS
Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated
No Drawing. Filed Mar. 26, 1971, Ser. No. 128,496
Int. Cl. C08g *33/16*
U.S. Cl. 260—47 P **10 Claims**

Copolymers were prepared which contained the random repeat units



in which Q is either $F(CF_2)_pCH_2O$— or $H(CF_2)_pCH_2O$—
and B is either RC_6H_4O or RZC_6H_4O. The value of p is not greater than 9; Z is —CH_2—, oxygen, NH or NR' and R and R' are $H(CH_2)_q$—, or $F(CF_2)_q$— where q is 0 to 5. These copolymers were found to be much more stable than the poly(phosphazenes) reported in the past.

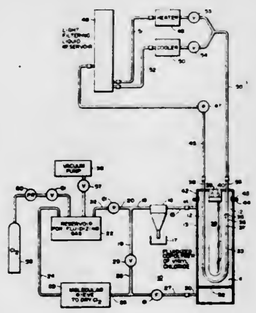
3,700,630
MODIFIED POLYPHENYLENE OXIDE AND METHOD FOR PRODUCTION THEREOF
Takaki Hamada, Nihama, Seizo Nakashio, Nishinomiya, Isao Maruta, Ibaragi, and Kazuo Hayatsu, Tetsuki Seto, and Yoichi Kono, Takatsuki, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 845,066, July 25, 1969. This application Aug. 23, 1971, Ser. No. 174,138
Claims priority, application Japan, Aug. 8, 1968, 43/56,501
Int. Cl. C08g *23/20*
U.S. Cl. 260—17.2 S **14 Claims**

Modified polyphenylene oxides excellent in processability and moldability are obtained by graft-polymerizing on a polyphenylene oxide a styrene type compound or a mixture of the styrene type compound and an α-alkyl substitution product of said compound, in an aqueous dispersion containing an anionic or nonionic surfactant, a radical initiator and a solvent for the polyphenylene oxide.

3,700,631
METHOD FOR THE PRODUCTION OF ACRYLONITRILE POLYMERS AND COPOLYMERS
Francesco Siciari, Barlassina, Milan, Pietro Paolo Rossi, Garlasco, Pavia, and Seba Calgari and Roberto Jacuone, Cesano Maderno, Milan, Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy
Filed July 23, 1969, Ser. No. 844,072
Int. Cl. C08f *3/76, 15/22*
U.S. Cl. 260—85.5 **7 Claims**

An improved method for polymerization or copolymerization of acrylonitrile is disclosed, of the kind in which the polymerization step is carried out within a polar organic solvent, wherein the catalyst system is of the so-called Redox type and comprises a peroxide, a reducing agent, a first metal, a second metal and a polymerization stopper which is soluble in the polar organic solvent. Also the metals or their compounds must be soluble in the organic polar solvent aforesaid. The metals are copper as a first metal and iron or cerium as the second metal. The stopper should also be a sequestering agent for metals. The preferred stoppers are some derivatives of ethylene diamino tetra acetic acid; a few of these derivatives, such as the nitrate, the chloride and the phosphate of EDTA have not yet been described heretofore in the technical literature. The advantage obtained with the method and the compounds of the invention is that acrylonitrile polymers and copolymers are obtained, which show improved physical properties and a highest whiteness rating.

3,700,632
READILY EXTRUDED CHLORINATED COPOLYMERS AND PROCESS OF PREPARING SAME
John H. Beale, Wallingford, and William Mayo Smith, Jr., Allentown, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.
Filed June 8, 1971, Ser. No. 151,100
Int. Cl. C08f *27/62, 27/03*
U.S. Cl. 260—87.5 C **10 Claims**



Postchlorinated copolymers of vinyl chloride and 2–10% by weight of either isobutylene or a vinyl ether have the advantageous combination of ready extrudability at 190° C. and a Vicat temperature of at least 100° C. The molecular weight of the resin selected as the starting material should be greater than about 10,000, and less than about 50,000, such range being also expressed by values of from about 150 to about 750 for the total number of C_2 groups in the polymer. The starting material can be represented by:

$$(CHClCH_2)_m(CQYCH_2)_n$$

in which $m+n=p$, in which n/p is in a range permitting 2–10% by weight of the comonomer. Y is methyl or hydrogen; Q is methyl if Y is methyl; Q is OR if Y is hydrogen, the R being an alkyl group having less than 20 carbon atoms, any chlorine substituents on the R or methyl groups not imparing the R or methyl terminology. The products can be represented as:

$$(CCl_2CH_2)_q(CHClCHCl)_r(CHClCH_2)_s$$
$$(CQYCH_2)_t(CQYCHCl)_u$$

in which $q+r+s+t+u=v$ and v is about equal to p and within the 150–750 range. The Degree of Substitution is

0.3–0.8 so that s is $(0.7–0.2)m$ and t is usually more than $(0.7–0.2)n$. The combination of ready moldability at 190° C. and a Vicat temperature of at least 100° C. is attributed to the relatively large ratio of r/q, possibly resulting from the directive influence of $CQYCH_2$ upon the chlorination of $CHClCH_2$, the bulkiness of the Q and Y tending to promote formation of higher than random proportions of CHClCHCl groups during the postchlorination.

3,700,633
SELECTIVELY HYDROGENATED BLOCK COPOLYMERS
Milton M. Wald, Walnut Creek, Calif., and Myron G. Quam, deceased; said Wald assignor to Shell Oil Company, Houston, Tex.
No Drawing. Continuation-in-part of application Ser. No. 806,763, Dec. 24, 1968, which is a continuation-in-part of abandoned application Ser. No. 333,671, Dec. 26, 1963. This application May 5, 1971, Ser. No. 140,612
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C08f 19/06, 19/08
U.S. Cl. 260—880 B 5 Claims

Block copolymers having low melt viscosity and improved processability comprise selectively hydrogenated block copolymers comprising A and B, non-elastomeric block A being substantially non-hydrogenated homopolymer blocks of mono alpha alkenyl arenes and elastomeric blocks B being random copolymer blocks of mono alpha alkenyl arenes and conjugated dienes wherein at least 90% of the aliphatic double bonds are hydrogenated.

3,700,634
ACETIC ANHYDRIDE MODIFIED DISPROPORTIONATED ROSIN
Charles Glenn Wheelus, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.
No Drawing. Original application Nov. 27, 1968, Ser. No. 779,600, now Patent No. 3,583,934, dated June 8, 1971. Divided and this application Apr. 24, 1970, Ser. No. 31,804
Int. Cl. C09f 1/04
U.S. Cl. 260—97.5 2 Claims

In synthetic rubber manufacturing processes wherein aqueous emulsions of butadiene and styrene or butadiene and acrylonitrile or other vinyl monomer are prepared with an emulsifying agent containing a water-soluble soap of a disproportionated rosin and are polymerized in the presence of a free radical catalyst system, the adverse action of free oxygen on the polymerization is offset by heat-modifying the disproportionated rosin before it is converted into its soap. This is done by heating it at about 250°–300° C. for about 1 to 4 hours in admixture with about 0.5% to 5% of its weight of acetic anhydride.

3,700,635
POLYMERS OF N-[TRIS(HYDROXYMETHYL) METHYL]ACRYLAMIDE
David Philip Brust, Louis Morton Minsk, and Edward Peter Abel, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Apr. 2, 1969, Ser. No. 812,882. Divided and this application Feb. 16, 1971, Ser. No. 115,723
Int. Cl. C08f 15/02
U.S. Cl. 260—80.3 N 3 Claims

Photographic silver halide compositions and elements having improved covering power and sensitometric properties, obtained by employing polymeric additives in a photographic binder are disclosed. Said polymers comprise recurring N-[tris(hydroxymethyl)methyl] acrylamide units. Processes for effecting said improved properties and novel polymers are also disclosed.

3,700,636
2-METHYL-5-VINYLTETRAZOLE: ACRYLIC ESTER: ACRYLIC ACID POLYMERS
Hermann S. Haiss, Indian Head, and James U. Lowe, Jr., Landover, Md., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Dec. 26, 1967, Ser. No. 694,031
Int. Cl. C08f 17/00
U.S. Cl. 260—80.72 3 Claims

A terpolymer of 2-methyl-5-vinyltetrazole/acrylic ester/acrylic acid and a method of preparing it by reacting 2-methyl-5-vinyl tetrazole acrylic acid and an acrylate in the presence of a chain transfer agent. The resulting composition provides a new fuel binder composition for propellant formulations and also a new gumstock composition.

3,700,637
DIENE-NITRILE RUBBERS
Albert M. T. Finch, Jr., Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 689,274, Dec. 11, 1967. This application May 8, 1970, Ser. No. 35,874
Int. Cl. C08f 27/25; C08d 5/00
U.S. Cl. 260—83.3 7 Claims

Substantially alternating copolymers of conjugated dienes and unsaturated nitriles, and their hydrogenated derivatives, are useful rubbers having high strength without vulcanization.

3,700,638
PROCESS FOR PREPARING ALTERNATING COPOLYMER OF BUTADIENE AND α-OLEFINE
Akiharo Kawasaki and Isao Maruyama, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
No Drawing. Filed Apr. 17, 1970, Ser. No. 29,678
Claims priority, application Japan, Apr. 25, 1969, 44/31,429; May 13, 1969, 44/36,162; June 19, 1969, 44/47,918; July 3, 1969, 44/52,149; Aug. 15, 1969, 44/64,143; Sept. 10, 1969, 44/71,260; Sept. 25, 1969, 44/75,828; Sept. 30, 1969, 44/77,410, 44/77,411; Oct. 9, 1969, 44/80,281; Oct. 31, 169, 44/86,898, 44/86,899; Dec. 4, 1969, 44/96,888; Mar. 17, 1970, 45/21,993
Int. Cl. C08f 19/08; C08d 1/14, 3/02
U.S. Cl. 260—84.1 8 Claims

A process for preparing an alternating copolymer of butadiene and α-olefine having the formula of CH_2=CHR, wherein R represents phenyl or a normal or branched chain lower alkyl radical, which comprises contacting butadiene and the α-olefine in liquid phase with a catalyst system of an organoaluminum compound, a vanadium compound having V–X linkage (X is halogen) and a compound having M–OR linkage, M is an atom whose electro negativity is lower than 2.2 and R is a hydrocarbon radical of alkyl, aryl, cycloalkyl or halogenated ether radical or a compound having $(O—M)_x—(O—M')_y—OR$ linkage (M is defined as above and M' can be defined by the same definition given in M). Optionally, a halogen atom, a halogen containing compound, a metal oxide or a metalloid oxide can be added to the catalyst system.

3,700,639
CRYSTALLINE POLYSTYRENE PRODUCTS
George E. Hulse and James J. Harris, Pittsburgh, Pa., assignors to Sinclair-Koppers Company
Filed Dec. 22, 1971, Ser. No. 210,832
Int. Cl. C08f 15/40, 19/04, 27/26
U.S. Cl. 260—88.2 C 4 Claims

Highly crystalline, isotactic polystyrene products having molecular weight of less than 1,000,000 are prepared by the thermal degradation in air at temperatures between 100° C. and 260° C. of high molecular weight, highly crystalline copolymers of styrene with 2–20 percent by

weight of an alpha-olefin having 3 to 10 carbon atoms. The initial copolymers have a molecular weight in excess of 1,000,000. The rate of degradation of the copolymers of this invention is greater than the rate of degradation of polystyrene at the same temperatures. The crystallinity of the resulting polystyrene product is generally higher than that of the initial copolymers.

3,700,640
MANUFACTURE OF AROMATIC FORMALDEHYDE RESINS
Harry E. Cier, Baytown, Tex., assignor to Esso Research and Engineering Company
Continuation-in-part of abandoned application Ser. No. 757,046, Sept. 3, 1968. This application Dec. 9, 1970, Ser. No. 96,571
Int. Cl. C08g 7/00
U.S. Cl. 260—67 A 6 Claims

Aromatic-formaldehyde resins of controlled oxygen content and viscosity are produced by reacting xylenes and formaldehyde under selected conditions of H_2SO_4 catalyst strength, acid:oil ratio, oil residence time, and selected temperatures.

3,700,641
PRODUCTION OF STABLE UREA, FORMALDEHYDE, POLYAMINE CONDENSATION PRODUCTS
Karl-Heinz Jung and Klaus-Gunther Gartner, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft
No Drawing. Continuation-in-part of application Ser. No. 64,010, July 17, 1970, which is a continuation-in-part of abandoned application Ser. No. 667,332, Sept. 11, 1967. This application Apr. 8, 1971, Ser. No. 132,564
Claims priority, application Germany, Sept. 10, 1966, D 51 07 439
Int. Cl. C08g 9/10
U.S. Cl. 260—70 R 4 Claims

Condensation product of urea, formaldehyde and at least two different polyamines of the formula

$$H_2N—[CH_2—CH_2—NH]_{1-5}H$$

in mole ratio of 1:2 to 2.8:0.1 to 0.2 respectively at 70 to 100° C.; and acidifying to a pH of 4.0 to 4.5, and then at a pH of about 4 to 6. Product has good solution stability and paper impregnated therewith has improved wet strength.

3,700,642
POLYESTER-POLYOXYALKYLENE SULFONATE COMPOSITIONS
Masao Mizuno and Keishiro Igi, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan
No Drawing. Filed Dec. 2, 1970, Ser. No. 102,505
Claims priority, application Japan, Dec. 29, 1969, 45/45,824
Int. Cl. C08g 39/04
U.S. Cl. 260—75 S 16 Claims

Polyester compositions exhibiting improved dyeability and anti-static properties comprising an aromatic polyester and an effective amount of a polyoxyalkylene sulfonate represented by the formula:

$$(MO_3S)_lRO(AO)_mR'(SO_3M')_n$$

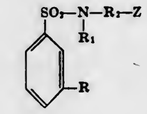
wherein A is an alkylene or aralkylene group; R and R' can be the same or different and are each selected from the group consisting of alkylene, arylene and alkarylene radicals; M and M' are alkali metals or alkaline earth metals; m is an integer greater than 3 and l and n are numbers which may be the same or different and which range from 0 to 2, inclusive, and satisfy the relationship that $l+n \geqq 1$.

3,700,643
RADIATION-CURABLE ACRYLATE-CAPPED POLYCAPROLACTONE COMPOSITIONS
Oliver Wendell Smith, South Charleston, W. Va., James Edward Weigel, White Plains, N.Y., and David John Trecker, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 6,918, Jan. 29, 1970. This application Sept. 2, 1970, Ser. No. 69,127
Int. Cl. C08g 22/16, 17/02, 41/04
U.S. Cl. 260—77.5 AN 9 Claims

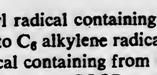
Unsaturated acrylate-capped polycaprolactone polyol derivatives are produced having terminal acrylyl groups and at least one polycaprolactone polyol chain residue in the molecule. In one of its simplest forms the final product can be the reaction product of a polycaprolactone diol an organic isocyanate and hydroxyethyl acrylate. These novel derivatives can be used to produce novel coating compositions that are readily cured to solid protective films.

3,700,644
DEEP DYEABLE COPOLYESTER RESINS
John A. Price, Swarthmore, and Mary J. Stewart, Media, Pa., assignors to FMC Corporation, Philadelphia, Pa.
No Drawing. Filed Mar. 31, 1971, Ser. No. 129,945
Int. Cl. C08g 17/08
U.S. Cl. 260—75 S 6 Claims

A copolyester resin product of (a) an aromatic dicarboxylic acid or its lower alkyl diester, (b) a glycol and (c) a minor amount of a compound represented by the formula



wherein R is —$COOR_3$ or



R_1 is a lower alkyl radical containing from 1 to 6 carbon atoms, R_2 is a C_2 to C_6 alkylene radical, R_3 is hydrogen or a lower alkyl radical containing from 1 to 6 carbon atoms, and Z is a hydroxyl or —$COOR_3$ radical.

3,700,645
PROCESS FOR PREPARING MERCAPTO-TERMINATED CHLOROPRENE COPOLYMERS
Ichiro Fukuoka and Satoshi Takahashi, Tokyo, and Norio Yagi, Kanagawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Mar. 16, 1971, Ser. No. 124,929
Claims priority, application Japan, Mar. 18, 1970, 45/22,473, 45/22,474
Int. Cl. C08g 22/00
U.S. Cl. 260—77.5 CR 12 Claims

Mercapto-terminated chloroprene-copolymer is prepared by the steps of dissolving a mixture of chloroprene monomer and a comparatively large amount of sulfur into organic solvent, copolymerizing said mixture by the solution polymerization method, and cleaving the obtained copolymer by the action of nascent state hydrogen in the solution.

The obtained copolymer is liquid at ambient temperature and can be easily cured using ordinary curing agents.

3,700,646

POLYFLUOROISOALKOXY-ALKYL SULFIDES AND POLYSULFIDES

Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 119,957, Mar. 1, 1971. This application May 3, 1971, Ser. No. 139,944

Int. Cl. C07c *149/12*

U.S. Cl. 260—608 13 Claims

Novel sulfides and polysulfides of the formula

$$R_f—S_x—R'_f$$

wherein R_f and R'_f are polyfluoroisoalkoxyalkyl radicals and x is an integer 1 to 8. These novel compounds are useful as oxidation-resistant lubricants, additives to lubricants and cutting oils, and intermediates in the preparation of valuable surface active compounds.

3,700,647

ALTERNATING COPOLYMERS OF ALPHA-OLEFINS AND ACRYLIC COMPOUNDS

Kohei Nakaguchi, Shohachi Kawasumi, Masaaki Hirooka, and Hiroshi Yabuuchi, Nihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

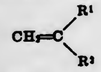
No Drawing. Original application Jan. 27, 1965, Ser. No. 428,531. Divided and this application Feb. 16, 1971, Ser. No. 115,874

Claims priority, application Japan, Jan. 30, 1964, 39/4,401

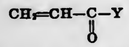
Int. Cl. C08f *19/10, 15/18*

U.S. Cl. 260—63 R 41 Claims

Novel alternating copolymers of terminally unsaturated hydrocarbons of the formula



wherein R^1 and R^2 each is hydrogen or an alkyl, aryl aralkyl, alkylaryl or cycloalkyl radical and an acrylic compound of the formula



wherein Y is R, SR, ZH, ZMe, NR'R'', halogen or hydrogen in which Z is oxygen or sulfur, R is a hydrocarbon or halohydrocarbon radical, R' and R'' each is hydrogen or a hydrocarbon radical, Me is a metal or ammonium radical and their method of production comprising contacting the aforementioned monomers with an organo-aluminum halide of the formula AlR'''_nX_{3-n} wherein R''' is a hydrocarbon radical, X is a halogen and n is 1, 1.5 or 2, said alternating copolymers being useful as molded products, films, fibers, calking compounds, coating materials, adhesives and the like.

3,700,648

METHOD FOR PRODUCING ALTERNATING COPOLYMERS

Masaaki Hirooka, Ibaragi-shi, Seimei Yasui and Kentaro Mashita, Takatsuki-shi, and Fumiyuki Kimura, Ibaragi-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,153

Claims priority, application Japan, Sept. 30, 1968, 43/70,976

Int. Cl. C08f *19/10, 15/18*

U.S. Cl. 260—63 R 13 Claims

Alternating copolymers are produced according to a process in which at least one group (A) monomer selected from a terminal unsaturated olefinic compound, an internal olefinic compound, a non-conjugated polyenic compound, an acetylenic compound and a carbonyl- or thiocarbonyl-containing non-conjugated, unsaturated compound, and at least one group (B) monomer, selected from conjugated vinyl and substituted vinyl compounds having nitrile or carbonyl groups at the position conjugated to the carbon-carbon double bond are copolymerized in the presence of a catalyst system prepared by mixing, in the presence of at least the above-mentioned group (B) monomer, a compound of a transition metal of Groups IV*a*, V*a*, VI*a* and VIII of the Mendeleef's Periodic Table which has at least one member selected from the group consisting of a halogen atom and alkoxy, β-diketo and acyloxy groups with an organo-aluminum or -boron halide, whereby the transition metal compound enhances the reaction carried out in the presence of an organo-aluminum or -boron halide.

3,700,649

POLYIMIDES OF BENZOPHENONE TETRACARBOXYLIC ACID ESTERS AND AROMATIC DIAMINES HAVING A BASICITY CONSTANT OF LESS THAN 10^{-7} AND METHOD OF PREPARATION

William R. Boram, San Diego, and Luis Acle, Jr., Sanford, Calif., assignors to International Harvester Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 851,070, Aug. 18, 1969, which is a division of application Ser. No. 712,908, Mar. 14, 1968, now Patent No. 3,506,583. This application July 6, 1971, Ser. No. 160,102

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 13 Claims

Monomeric, resinoid, solid state solutions of certain aromatic diamines in derivatives of benzophenonetetracarboxylic acid. Process for preparing such solutions and for converting them to polyimides and to polyamic acid precursors.

3,700,650

VULCANIZATION OF EPIHALOHYDRIN POLYMERS

Hiroshi Hani, Bunji Amemiya, Ginnosuke Tanaka, Hiroshi Kawahara, and Minoru Yamada, Kanagawa-ken, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed June 5, 1970, Ser. No. 43,691

Claims priority, application Japan, June 12, 1969, 44/45,749; Sept. 5, 1969, 44/70,411; Oct. 14, 1969, 44/81,565; Oct. 28, 1969, 44/85,673; Dec. 9, 1969, 44/98,363

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 6 Claims

Epihalohydrin polymers, or epihalohydrin polymer-sulfur curable rubber systems, are vulcanized in the presence of a novel cross-linking formulation consisting essentially of (1) at least one compound selected from the group consisting of nickel carbonates, basic lead sulfates, basic lead sulfites and dithiocarbamates of sodium, copper, calcium, cadmium, lead, antimony, bismuth, selenium, manganese, iron, cobalt and amines, and (2) at least one member selected from the group consisting of 2-mercapto-imidazolines and 2-mercaptopyrimidines, thioureas, polyamines, or in the presence of a novel cross-linking formulation consisting of (1), (2) and (3) sulfur, as the case may be.

3,700,651

L-LEUCYL-L-LEUCYL-L-VALYL-L-TYROSINOL

Yuichi Yamamura, Toyonaka, Tatsuo Kokubu, Osaka, Keisuke Shigezane, Urawa, and Tomishige Mizoguchi, Yamato-machi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed July 7, 1970, Ser. No. 53,012

Claims priority, application Japan, July 15, 1969, 44/56,276

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 2 Claims

L-leucyl-L-leucyl-L-valyl-L-tyrosinol and its pharmaceutically acceptable acid addition salts have antihypertensive activity. An ester of L-leucyl-L-leucyl-L-valyl-L-tyrosine having a terminal-α-amino group which is either protected or unprotected is reduced. If the terminal α-amino group is protected, the protective group is then removed.

3,700,652

(4-L-THREONINE)-MESOTOCIN

Maurice Manning, Toledo, Ohio, assignor to The Medical College of Ohio at Toledo, Toledo, Ohio

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,569

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 1 Claim

A novel biologically active (4-L-threonine)-mesotocin which is an analog of mesotocin in which the glutamine residue in position four is replaced by a threonine residue.

3,700,653

DYE PREPARATIONS CONTAINING A METALLIZED DISAZO DYE AND MONOPROPANOLAMINE

Alfred Frei, Binningen, Basel-Land, and August Schweizer, Muttenz, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,652

Claims priority, application Switzerland, Oct. 30, 1967, 15,207/67; Nov. 24, 1967, 16,573/67; Dec. 6, 1967, 17,060/67

Int. Cl. C09b *45/28*

U.S. Cl. 260—148 15 Claims

Stable, concentrated dye preparations containing one metallized dye of the azo or azomethine series and monopropanolamine or an aminothiole.

3,700,654

NAD SALTS AND METHODS OF PREPARATION

Donald R. Brusca, Bainbridge Island, Wash., assignor to Enzomedic Laboratories, Inc., Seattle, Wash.

No Drawing. Continuation-in-part of application Ser. No. 619,935, Mar. 2, 1967. This application May 19, 1969, Ser. No. 825,917

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 3 Claims

Neutral, solid salts of nicotinamide adenine dinucleotide are produced as a physiologically acceptable and stable form of the coenzyme. The salts are useful in the treatment of alcoholism, drug addiction, ileus and shock associated therewith, schizophrenia, and rheumatoid arthritis.

3,700,655

ANTIBIOTICS OF AGRICULTURAL FUNGICIDES, POLYOXINS A AND B; AND PROCESS FOR PREPARING THE SAME

Saburo Suzuki, Kiyoshi Isono, and Junsaku Nagatsu, Tokyo, and Takeo Akashiba and Shigeki Sasaki, Kanagawa-ken, Japan, assignors to Rikagaku Kenkyusho, Yamato-machi, Kitaadachi-gun, Saitama-ken, Japan

Continuation-in-part of application Ser. No. 490,001, Sept. 24, 1965. This application July 12, 1968, Ser. No. 744,455

Claims priority, application Japan, Sept. 24, 1964, 39/54,088

Int. Cl. A61k *21/00*

U.S. Cl. 260—211.5 17 Claims

Polyoxins A and B are each a novel antibiotic to be used as an agricultural fungicide for the protection of plants.

Said polyoxins A and B are prepared by collecting polyoxin complex containing polyoxins A and B from a culture medium in which has been cultivated a novel strain of *Streptomyces cacaoi* var. *asoensis* that is a mutant of *Streptomyces cacaoi* and is on deposit with the American Type Culture Collection (ATCC) in an unrestricted deposit as ATCC access numbers 19093 and 19094, and then separating said complex into each of polyoxins A and B.

3,700,656

PROCESS FOR THE PREPARATION OF LACTAMS

Mitsuo Masaki, Chiba, and Kiyoshi Fukui, Tetsuro Kuramasu, and Masahiro Ueda, Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed Aug. 25, 1970, Ser. No. 66,768

Claims priority, application Japan, Aug. 29, 1969, 44/67,957; Sept. 1, 1969, 44/68,631

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 8 Claims

A process for the preparation of lactams, which comprises treating a lactam-stannic halide complex with an alicyclic ketoxime to form the corresponding lactam and alicyclic ketoxime-stannic halide complex.

3,700,657

TETRAHYDROPYRAZOLODIAZEPINONE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Ivan C. Nordin, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed May 18, 1971, Ser. No. 144,628

Int. Cl. C07d *53/02*

U.S. Cl. 260—239.3 B 6 Claims

3 - methyl - 4,6,7,8 - tetrahydropyrazolo[4,3-e][1,4]-diazepin-5(1H)-one, substituted in the 1-position by lower alkyl and optionally in the 4- and 7-positions by methyl; salts thereof; and their production by catalytically hydrogenating a dihydropyrazolodiazepinone, or by reacting one of the 7-unsubstituted tetrahydropyrazolodiazepinones with a methylating agent. The compounds of the invention are useful as anticonvulsant agents.

3,700,658

N-ALKYL-N-ARYLCARBAMOYL LACTAMS

Adolf Steinhofer, 11 Wolframstrasse; Helmut Doerfel, 7 Edenkobener Strasse; and Georg Falkenstein, 6 Hafenstrasse, all of 6700 Ludwigshafen, Germany; and Wolfgang-Dieter Jeserich, 25 Eulenweg, 6715 Lambsheim, Germany

No Drawing. Original application July 3, 1968, Ser. No. 742,142. Divided and this application Sept. 25, 1970, Ser. No. 75,721

Claims priority, application Germany, July 5, 1967, P 17 20 280.1

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R 4 Claims

New N-alkyl-N-arylcarbamoyl lactams which are suitable as activators for the anionic polymerization of lactams.

3,700,659

(+)-CIS - 1,3-DIBENZYL-HEXAHYDRO-1H-FURO-[3,4-d]IMIDAZOLE - 2,4 - DIONE, PROCESSES AND INTERMEDIATES

Max Gerecke, Reinach, Switzerland, and Jean Pierre Zimmermann, St. Louis, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,478

Int. Cl. C07c *173/10*; C07d *99/04*

U.S. Cl. 260—239.5 11 Claims

(+)-Cis-1,3-dibenzyl - hexahydro - 1H - furo[3,4-d]-imidazole-2,4-dione, prepared starting with cis-1,3-dibenzyl-hexahydro-1H-furo[3,4-d]-imidazole - 2,4,6- - trione, is described. The end product is a valuable intermediate in the synthesis of (+)-biotin, as well as derivatives and related products thereof.

3,700,660

CATALYTIC PREPARATION OF 17α-ACYLOXY-20-KETO-STEROIDS

Gerhard Hempel, Bergkamen, Reinhold Wieske, Berlin, Bernhard Krieger, Bergkamen, and Emanuel Kaspar, Kamen, Germany, assignors to Schering AG, Berlin, Germany

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,946
Claims priority, application Germany, Oct. 2, 1968, P 18 01 389.3; July 31, 1969, P 19 39 607.4
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 12 Claims

A process for the preparation of a 17α-acyloxy-20-keto-steroid of the pregnane or 19-norpregnane series, said process comprising the step of catalytically converting the corresponding 20-acyloxy - 17α,20 - epoxy-steroid with a catalytically effective amount of a concentrated strong acid such as perchloric acid, H_2SO_4, BF_3, HCl, p-toluene sulfonic acid and the like. The final products have the known activities associated with steroids of the pregnane and 19-nor-pregnane series, e.g., progestational, anti-inflammatory, etc.

3,700,661

TOTAL STEROID SYNTHESIS EMPLOYING SUBSTITUTED ISOXAZOLE DERIVATIVES

Gabriel Saucy, Essex Fells, and John William Scott, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 22, 1968, Ser. No. 778,314
Int. Cl. C07d *85/22*
U.S. Cl. 260—240 E 22 Claims

The novel intermediates and processes of this invention provide a new synthetic route for the preparation of pharmaceutically valuable 19-nor-steroids. Further, the intermediates and processes of the invention provide a novel route for the preparation of pharmaceutically valuable estrones. The present invention provides a facile total synthesis of 13β-alkyl-C/D-trans-steroidal materials. This desirable result is obtained via a unique asymmetric induction followed by subsequent stereo-specific reaction steps. As a precursor to the steroidal Ring A, a 3,5-disubstituted-4-isoxazolylmethylene group is employed in this synthesis.

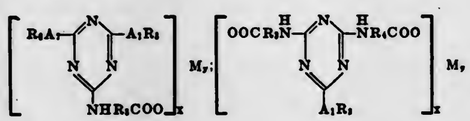
3,700,662

TRIAZINE DERIVATIVES AND COMPOSITIONS THEREOF

Tatsuo Ishikawa, 6–3 Kitashinkoji; Shiro Hiruta, 4770 Yamatsukicho; Teruomi Wakabayashi, 1 Sakurazonocho; Yoshihiko Inamoto, 3–1 Nakagawaracho-2-chome; Tetsuhiro Kusunose, 4850 Nakagawaracho-2-chome; Tatsuichi Tsumaki, 4920 Nakagawarachi-2-chome; and Masami Ota, 4993–374 Shimonagahamacho, all of Nobeokashi, Japan

Filed Aug. 28, 1968, Ser. No. 755,875
Int. Cl. C07d *55/18, 55/20*
U.S. Cl. 260—242 4 Claims

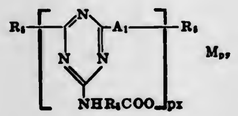
Triazine derivatives represented by any one of the following formulae:



M_y

M_y,

and

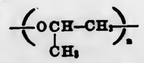


M_{pz}

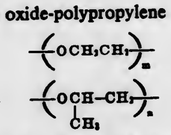
wherein, A_1 and A_2 are same or different and each denotes a polyalkylene oxide selected from the group consisting of polyethylene oxide



polypropylene oxide



and polyethylene oxide-polypropylene oxide copolymer



wherein n is an integer of 1 to 200 and $m+n$ is an integer of 2 to 200 (m and $n \geqq 1$); R_3 and R_4 are same or different and each denotes a member selected from the group consisting of alkylene of 1 to 12 carbon atoms, o- and p-cyclohexylene, o- and p-methylene cyclohexylene, o- and p-phenylene, and o- and p-methylene phenylene; M denotes a member selected from the group consisting of hydrogen, a metal selected from the group consisting of calcium, barium, magnesium, tin, aluminum, copper, potassium sodium, zinc, manganese, nickel, strontium and cadmium, and an organic amine selected from the group consisting of mono-, di- and tri-ethanol amines, and primary, secondary and tertiary amines of 1 to 17 carbon atoms; x and y each denotes an integer of 1 to 4 depending on the valency of the metal; p is an integer of 2 to 5; and R_5 and R_6 are same or different and each denotes a member selected from the group consisting of hydroxy, alkoxy of 1 to 10 carbon atoms, naphthoxy, benzoxy, secondary amino of 1 to 17 carbon atoms, and

wherein R_7 denotes a member selected from the group consisting of alkyl of 1 to 17 carbon atoms, phenyl, p-carboxy phenyl



and naphthyl prepared by alcohol interchange reaction between sodium or potassium salt of di-(or mono)alkoxy-mono - (or di-respectively)-ω-aminoacid-syn-triazine and polyalkylene glycol or derivative thereof, are superior antistatic agents for polymer materials such as polyamides, polyesters, polyolefines, polystyrene, polyvinyl chloride, polyvinylidene chloride, polymethylmethacrylate, polyacrylonitrile butadiene styrene terpolymer.

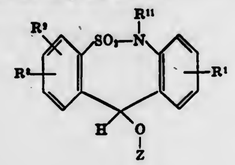
3,700,663

DIBENZOTHIAZEPINE ETHERS

Abraham Weber, Paris, and Jacques Jean Frossard, Champigny, France, assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Original application Aug. 2, 1967, Ser. No. 657,785, now Patent No. 3,519,633, dated July 7, 1970. Divided and this application Mar. 18, 1970, Ser. No. 24,971
Int. Cl. C07d *93/42*
U.S. Cl. 260—243 B 8 Claims

Novel compounds of Formula I having antihistaminic and other pharmacological activity.



Formula I

3,700,664

PREPARATION OF THIONAMIDES

Mikhail M. Girgis, Guelph, Ontario, Canada, assignor to Uniroyal, Ltd., Montreal, Quebec, Canada

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,063
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 10 Claims

Thionamides are formed in high yield by reacting alkyl, aryl, heterocyclic nitriles, or phenylacetonitriles and hydrogen sulfide under pressure in the presence of a minimal amount of basic catalyst. The use of a minimal amount of catalyst prevents the reverse decomposition of the thionamide to nitrile and hydrogen sulfide.

3,700,665

DIAMINO-s-TRIAZINES

Raymond Seltzer, New York, and David A. Gordon, Scarsdale, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,110
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 6 Claims

Amine-s-triazines, such as 2-phenyl-4,6-bis(4-aminophenyl)-s-triazine, are useful in preparing triazine-based polyimide polymers. These compounds are prepared by reacting a cyano alkyl or aryl nitro compound and an acid chloride in the presence of a Friedel-Crafts catalyst followed by a reduction of an intermediate dinitro compound.

3,700,666

TRIAZINE DERIVATIVES OF THIOBISPHENOLS AND PROCESS OF PREPARATION

Michael Robin, Colonia, and Sheldon R. Schulte, Highland Park, N.J., assignors to Ashland Oil & Refining Company, Houston, Tex.

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,633
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 8 Claims

Reaction products of a triazine compound such as a cyanuric halide and a hindered thiobisphenol are obtained. Such products are useful as antioxidants and ultraviolet stabilizers in various compositions and materials.

3,700,667

METHOD FOR MANUFACTURING PURIFIED ISOCYANURATES

Hisao Kitano, 1–6–205, 3-chome, Harima-cho, Abeno-ku, Osaka, Japan, and Fumio Tanimoto, 275 Tenjinyamacho, Shinmachi-Higashiiru, Nishikikoji-dori, Kyoto, Japan

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,939
Claims priority, application Japan, Mar. 2, 1970, 45/18,095
Int. Cl. C01d *55/38*
U.S. Cl. 260—248 NS 23 Claims

A method for manufacturing purified isocyanurates, comprising contacting crude isocyanurates containing 0.01 to 10.00% by weight of impurities with a basic solution containing at least 5% by weight of a nitrogen compound having from 0 to 4 of carbon atoms at a temperature between 20 and 200° C. and under a pressure between 1.5 and 30 kg./cm.².

3,700,668

2-(3,4,4-TRIFLUORO-3-BUTENYLTHIO)-4,4,6-TRIMETHYLDIHYDROPYRIMIDINE

Mervin E. Brokke, Richmond, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Nov. 20, 1969, Ser. No. 877,539, now Patent No. 3,654,293, which is a division of application Ser. No. 490,664, Sept. 27, 1965, now Patent No. 3,513,172. Divided and this application May 27, 1971, Ser. No. 147,705
Int. Cl. C07d *51/34*
U.S. Cl. 260—251 R 1 Claim

The compound 2-(3,4,4-trifluoro-2-butenylthio)-4,4,6-trimethyldihydropyrimidine, useful as a nematocide.

3,700,669

SEPARATION AND PURIFICATION PROCESS FOR LACTAMS

Shigeru Wakamatsu, Nagoya, Ryozo Kondo, Anjoshi, Aichi, and Masayasu Shinomiya, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,369
Claims priority, application Japan, Oct. 31, 1967, 42/69,788
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 9 Claims

By extracting a lactam-containing reaction mixture obtained from the Beckmann rearrangement reaction of a cyclic ketoxime in the presence of water with liquid sulfur dioxide, the lactam can be effectively separated in the pure state.

3,700,670

PROCESS FOR MAKING Δ^5 (10)-ESTRENES OR PREGNENES AND PRODUCTS OBTAINED THEREBY

Hans Detlef Berndt and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Continuation-in-part of application Ser. No. 763,934, Sept. 30, 1968. This application Mar. 20, 1970, Ser. No. 26,187
Claims priority, application Germany, Mar. 20, 1969, P 19 14 898.2
Int. Cl. C07c *173/00, 169/20*
U.S. Cl. 260—239.55 R 9 Claims

Method of preparing 3β-hydroxy-$\Delta^{5(10)}$-estrenes or 19-nor-pregnenes by catalytically reducing a corresponding 3-keto-$\Delta^{5(10)}$-steroid under a pressure of at least 10 atmospheres and at normal pressure when active Raney nickel is used as catalyst. The process permits obtaining a high yield of the 3β-hydroxy compositions which are important for the synthesis of 10β-methyl-androstanes and pregnanes.

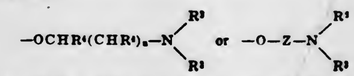
3,700,671

CHELATING COMPOSITIONS

Gaetano F. D'Alelio, South Bend, Ind., assignor to Walter J. Monacelli, Petersburg, Fla.

No Drawing. Original application May 15, 1967, Ser. No. 638,654. Divided and this application Dec. 30, 1968, Ser. No. 804,036
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 7 Claims

Triazine compounds are disclosed which are derivatives of symmetrical triazine having 1, 2 or 3 radicals of the structure

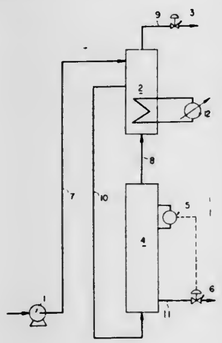


there being at least one metal coordinating group of the structure —CHR⁴COOM, wherein M, Z, R², R³ and R⁴ are as defined hereinafter. These compounds are useful for coordinating with and removing metals from solutions or for preparing resins capable of removing metals from solutions.

3,700,672
PROCESS FOR RECOVERING BY-PRODUCT GASES AT HIGH PRESSURE IN MELAMINE PRODUCTION

Ryo Kokubo; Yasuo Takakuwa; Akihiro Shiroishi, and Mitsuji Kihara, all of Fuchumachi, Neigun, Japan, assignors to Nissan Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed April 15, 1969, Ser. No. 816,331
Int. Cl. C07d 55/24
U.S. Cl. 260—249.7 P 8 Claims



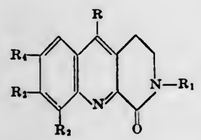
In the process of producing melamine by the thermal decomposition of urea or its derivatives, an improved method for separating the molten material (composed mainly of melamine formed in a pressurized reactor) from the gases (composed mainly of ammonia and carbon dioxide) under nearly the same conditions as prevail in said reactor, and for recovering the by-product gases as pressurized by-product gases, with the crude liquid melamine eliminated therefrom.

3,700,673
3-4-DIHYDROBENZO(B) (1,7)NAPHTHYRIDIN-1(2H)-ONES

Edward John Watson, Jr., West Chester, Pa., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 12, 1971, Ser. No. 115,042
Int. Cl. C07d 39/00
U.S. Cl. 260—287 R 14 Claims

Compounds of the formula:



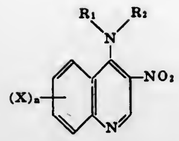
wherein R is hydroxy, phenoxy, chloro, amino, or di(lower)alkylamino (lower)alkylamino; R_1 is hydrogen or acetyl; R_2 is hydrogen or methoxy; R_3 is hydrogen or methoxy; and R_4 is hydrogen, methoxy or dimethylamino are antispasmodic agents abolishing spastic contractions and lowering hypertonicity of the ileum and colon.

3,700,674
4-ALKYLAMINO-3-NITROQUINOLINES

Robert Eugene Diehl, Trenton, and Richard Joseph Magee, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed April 30, 1969, Ser. No. 820,649
Int. Cl. C07d 33/52
U.S. Cl. 260—288 R 5 Claims

The herbicidal compounds have the formula:



wherein:
R_1 and R_2 are each hydrogen, lower alkyl, or (lower alkylthio)lower alkyl except that R_1 and R_2 may not both be hydrogen,
X is hydrogen, halo, or trifluoromethyl.

3,700,675
ESTER OF 2-HYDROXY-CYCLOHEXANE-2-SUBSTITUTED CARBOXYLIC ACIDS

Luigi Turbanti, Via Bonaccorso Da Padule, 10, Pisa, Italy

Division of Ser. No. 632,563, April 21, 1967, abandoned. This application Sept. 11, 1970, Ser. No. 71,360
Int. Cl. C07d 29/24
U.S. Cl. 260—293.82 7 Claims

The invention provides esters of 2-phenyl-2-hydroxy-cyclohexane-carboxylic acid and of 2-cyclohexyl-2 hydroxy-cyclohexane-carboxylic acid, as well as physiologically compatible salts thereof, which esters and salts have a substantial antispastic activity.

3,700,676
PROCESS FOR PREPARING SALTS OF PYRIDINETHIOL N-OXIDES AND 2,2'-DITHIOPYRIDINE N,N-DIOXIDES

Ralph A. Damico, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 692,274, Dec. 21, 1967, Pat. No. 3,590,035. This application Aug. 10, 1970, Ser. No. 62,723
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 G 5 Claims

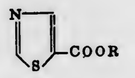
Process for preparing 2-pyridine N-oxide carbanion salts, 2-pyridinethiol N-oxides, salts thereof and 2,2'-dithiopyridine N,N-dioxides which comprises the steps of (1) reacting a pyridine N-oxide with a strong base at from −70° to 150° C. to form a novel pyridine N-oxide carbanion salt and (2) reacting the carbanion salt formed with a sulfur-containing reagent.

3,700,677
CERTAIN THIAZOLE-5-CARBOXYLATES

Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel-UcLaf, Paris, France

Filed July 15, 1969, Ser. No. 842,016
Claims priority, application France, July 18, 1968, 68159716; Oct. 16, 1968, 68170114
Int. Cl. C07d 91/32
U.S. Cl. 260—294.8 D 8 Claims

5-thiazol carboxylates of the formula



I

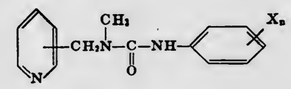
wherein R is an alkali-metal atom, the residue of an organic base or the alkyl radical of an aliphatic, arylaliphatic or alkyl-heterocyclic alcohol having hypolipemiant activity and their preparation.

3,700,678
1-PICOLYL-3-PHENYL UREAS

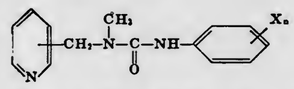
Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed April 30, 1971, Ser. No. 139,221
Int. Cl. C07d 31/40
U.S. Cl. 260—295 E 4 Claims

Compounds of the formula



in which X is nitro, methyl or trifluoromethyl, and n is an integer 1 or 2. The utility as post and pre-emergence herbicides of the compounds of the formula



in which X is hydrogen, halogen, nitro, methyl, and trifluoromethyl, and n is an integer 1 or 2.

3,700,679
NUCLEAR SUBSTITUTED DERIVATIVES OF 1-HYDROXY-6-METHOXYPHENAZINE 5,10-DIOXIDE

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 8, 1970, Ser. No. 44,555
Int. Cl. C07d 51/8 0
U.S. Cl. 260—267 5 Claims

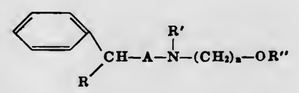
Nuclear substituted derivatives of 1-hydroxy-6-methoxyphenazine 5,10-dioxide which possess broad spectrum antimicrobial activity are disclosed.

3,700,680
AMINOALKANOL ESTERS AND THEIR PHARMACEUTICALLY ACCEPTABLE ACID-ADDITION SALTS

Hidehiko Kaneko, Minoo-shi, Osaka-fu; Jiro Aritomi, Nara-shi, Nara-ken, and Keiji Nakamura, Neyagawa-shi, Osaka-fu, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd.

Filed Oct. 9, 1968, Ser. No. 766,297
Claims priority, application Japan, Oct. 13, 1967, 42/65896; Oct. 13, 1967, 42/65897
Int. Cl. C07d 31/34; C07c 69/78
U.S. Cl. 260—295.5 R 10 Claims

Aminoalkanol esters of the formula:



wherein R is hydrogen or phenyl, R' is hydrogen or alkyl having one to four carbon atoms, R'' is acyl, A is ethylene or methylmethylene and n is an integer of 2 or 3. The aminoalkanol esters and their pharmaceutically acceptable acid-addition salts are useful as medicaments for treatment of cardiovascular diseases.

3,700,681
2-HYDROXYMETHYL-3-HYDROXY-6-(1-HYDROXY-2-AMINOETHYL)PYRIDINES

Wayne E. Barth, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,878
Int. Cl. C07d 31/42
U.S. Cl. 260—296 AE 9 Claims

2-Hydroxymethyl-3-hydroxy-6-(1-hydroxy-2-aminoethyl)-pyridines and salts thereof, a novel class of β-adrenergic agonist bronchodilators in mammals, and 2-hydroxymethyl-3-benzyloxy-6-pyridinecarboxaldehyde a valuable intermediate in the preparation of the subject compounds.

3,700,682
CERTAIN PYRIDINIUM DERIVATIVES OF CYCLOHEPTYL-IMIDAZOLES

Nobuo Soma; Mitsuo Watatani; Junichi Nakazawa; Yoshio Sato, all of c/o Central Research Laboratories Sankyo Co., Ltd. 2-58, 1-chome Hiromachi, Shinagawa-ku, Tokyo; Yoshimi Kuwabara, 18, 2-chome Naka-machi, Koganei-shi, Tokyo, and Hidehiko Ishikawa, 921, 4-chome Juji, Odawara-shi, all of Japan

Filed March 13, 1967, Ser. No. 622,475
Claims priority, application Japan, March 19, 1966, 41/17040
Int. Cl. C07d 31/44; G03c 5/32
U.S. Cl. 260—295.5 1 Claim

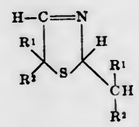
The present invention encompasses certain 2-aryl or 2-pyridinium cycloheptyl-imidazoles. These compounds may be prepared by reacting 2-halogeno-tropone or 2-methoxy-tropone with the appropriately substituted amidine. They are useful as desensitizers for light sensitive silver halide photographic materials.

3,700,683
PROCESS OF MAKING THIAZOLINES-3

Friedrich Asinger, Aachen; Heribert Offermanns, Grossauheim, and Mikols Ghyczy, Laurensberg, all of Germany, assignors to Deutsche Gold- Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Sept. 4, 1969, Ser. No. 855,417
Claims priority, application Germany, Sept. 6, 1968, P 17 95 299.7
Int. Cl. C07d 91/24
U.S. Cl. 260—306.7 11 Claims

2,5,5-substituted thiazolines-Δ^3 of the formula



(I)

in which R^1 and R^2 are alkyl and may be the same or different, alkyl having one to four carbon atoms are made by reacting an aldehyde of the formula



(II)

wherein R has the same meaning as above, with sulfur and ammonia or an ammonium or sulfur compound in the presence of a secondary or tertiary amine while azeotropically removing the reaction water.

The process results in very high yields.

3,700,684
CERTAIN 2-AMINO-1,3,4-THIADIAZOLES

William Alan Remers, Lafayette, Ind.; Gabriel Joseph Gibs, Pearl River, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 766,986, Oct. 11, 1968, Pat. No. 3,564,002. This application Oct. 30, 1970, Ser. No. 85,736
Int. Cl. C07d 91/62
U.S. Cl. 260—306.8 D 3 Claims

The preparation of 2-amino or substituted amino-5-substituted thiadiazoles are described. They are useful in the treatment of ascariasis and as intermediates for the preparation of, for example, 2-(2-amino-5-1,3,4-thiadiazolyl)-1-methyl-5-nitroimidazole which has anti-protozoal and antibacterial properties.

3,700,685
NITROIMIDAZOLE DERIVATIVES

Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co. Inc., Rahway, N.J.

Filed May 15, 1970, Ser. No. 37,894
Int. Cl. C07d 49/36
U.S. Cl. 260—309 4 Claims

5-Nitroimidazoles substituted with 2-lower-alkylene sulfides and the corresponding sulfoxides and sulfones are disclosed, as well as their preparation from the 2-(haloloweralkyl)-5-nitroimidazoles and a salt of a mercaptan. Compositions containing these compounds as the active ingredient for treatment of bacterial and prolozaal infections are also disclosed.

3,700,686
O-ALKYL-O-PYRAZOLYL-PHOSPHORIC, PHOSPHONIC, THIONOPHOSPHORIC AND THIONOPHOSPHONIC ACID ESTERS

Christa Fest, Wuppertal-Elberfeld; Ingeborg Hammann, and Wolfgang Behrenz, both of Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 5, 1970, Ser. No. 16,934
Claims priority, application Germany, March 14, 1969, P 19 12 972.7
Int. Cl. C07d 49/18 ; C07f 9/40
U.S. Cl. 260—310 R 10 Claims

O-alkyl-O-pyrazolyl-phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, i.e., (alkyl, phenyl and O-alkyl)-O-alkyl-O-[1-([alkyl, phenyl and O-alkyl]-O-alkyl-[phosphoryl, phosphonyl, thionophosphoryl and thionophosphonyl])-5-methyl-pyrazol-3-yl]-phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, which possess arthropodicidal, especially acaricidal and insecticidal, properties, and which may be produced by conventional methods.

3,700,687
(THIONO) PHOSPHORIC (PHOSPHONIC)-ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 31, 1970, Ser. No. 24,397
Claims priority, application Germany, April 15, 1969, P 19 17 741.4
Int. Cl. C07d 49/18 ; C07f 9/40
U.S. Cl. 260—310 R 12 Claims

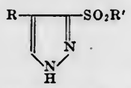
Esters of (thiono) phosphoric or phosphonic acid esters and ester amides as the acid moiety and [3-methyl-5-hydroxy-pyrazolyl-1]-(thiono) phosphoric or phosphonic acid esters as the alcohol moiety, which possess arthropodicidal, especially acaricidal and insecticidal, properties, and which may be produced by conventional methods.

3,700,688
ARYLSULFONYLPYRAZOLE COMPOUNDS

Issei Iwai; Yukichi Kishida, and Tadahiro Iwashige, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Oct. 1, 1970, Ser. No. 77,347
Claims priority, application Japan, Oct. 3, 1969, 44/79073
Int. Cl. C07d 49/18
U.S. Cl. 260—310 R 5 Claims

Arylsulfonylpyrazole compounds having the formula



wherein R and R′ are the same or different and each represents an aryl group which may be substituted with a straight or branched lower alkyl, lower alkoxy or halogen, are useful as an anti-fogging agent. The pyrazole compounds are prepared by reacting an arylsulfonylacetylene compound having the formula

$$R\text{-}C \equiv C\text{-}SO_2\text{-}R'$$

wherein R and R′ are the same as above with diazomethane in the presence of an inert organic solvent such as ether.

3,700,689
2(SUBSTITUTED PHENYL)-8H-PYRAZOLO-(5,1A)ISOINDOL-8-ONE

Blaine Chase McKusick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 10, 1970, Ser. No. 97,030
Int. Cl. C07d 57/24
U.S. Cl. 260—310 R 5 Claims

Certain 8H-pyrazolo[5,1-a]isoindol-8-ones are effective plant growth modifiers.

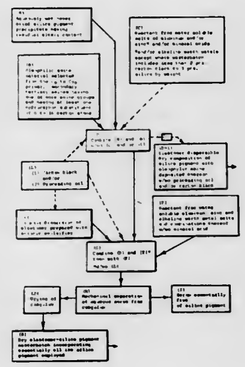
3,700,690
SILICA PIGMENTS AND ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., 1510 S.W. 13th Court, P.O. Box 2266, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 55,384, July 16, 1970, and a continuation-in-part of Ser. No. 55,476, July 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 798,215, Sept. 16, 1968, abandoned, which is a division of Ser. No. 611,250, Jan. 24, 1967, Pat. No. 3,523,096, which is a continuation-in-part of Ser. No. 458,420, May 24, 1965, abandoned, and a continuation-in-part of Ser. No. 458,379, May 24, 1965, abandoned, and a continuation-in-part of Ser. No. 479,806, Aug. 16, 1965, Pat. No. 3,401,017. This application Jan. 11, 1972, Ser. No. 216,948
Int. Cl. C08c 11/10; C08k 1/08
U.S. Cl. 260—33.6 AO 12 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without drying therefrom after its precipitation, with (2) a quantity of oleophilic amine material, (3) combining the resulting treated silica pigment with an aqueous dispersion of the elastomer containing an anionic dispersing agent, with or without (4) carbon black and/or processing oil, and (5) with selected reactant-coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. Prior to combination with the elastomer dispersion the amine treated alkaline silica pigment may be

recovered as a useful dispersible alkaline silica pigment product, or the wet pigment may be treated with water soluble salt of aluminum, or zinc or the alkali earth metals and/or with water soluble mineral acid or organic acids, as well as with the



said amine, and after such treatment the resulting pigment composition may be recovered as a useful dispersible silica pigment product, or the so treated wet silica pigment may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.

3,700,691
3,3-DISUBSTITUTED-3,4-DIHYDROBENZODIOXEPINS

Burton K. Wasson, 103 Broadview, Valois, Quebec, and Haydn W. R. Williams, 348 Barberry Place, Dollard des Ormeaux, Quebec, both of Canada, assignors to Charles E. Frosst & Co., Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 755,442, Aug. 26, 1968, abandoned. This application June 9, 1969, Ser. No. 832,879
Int. Cl. C07d 13/00
U.S. Cl. 260—340.3 23 Claims

3-Hydroxy-3-(substituted-aminoalkyl)-3,4-dihydro-2H-1,5-benzodioxepin products are described that exhibit β-adrenergic stimulating properties and are therefore suitable for use as broncho-dilating agents. The products are prepared essentially by four principal routes from 3-oxo-3,4-dihydro-2H-1,5-benzodioxepins. By one route the 3-oxobenzodioxepin is treated with a nitroalkane to give a 3-hydroxy-3-nitroalkyl-benzodioxepin the nitro group of which is reduced to an amine and the resulting compound reacted with an aldehyde or ketone under hydrogenating conditions to introduce the desired substituent into the amino function. By a second route the 3-oxobenzodioxepin is reacted with an alkali metal nitrile to form the cyanhydrin which upon reduction forms the 3-hydroxy-3-aminoalkyl-benzodioxepin that can be treated with a ketone or aldehyde to give the desired products or can be reacted with sodium nitrite or other agent to form a 3-spiro-benzodioxepin-2′-oxirane which upon reaction with an amine provides the desired product. The 3-spiro-benzodioxepin-2′-oxirane also can be obtained by treatment of the 3-oxo-benzodioxepin with a sulfurylide. A fourth method involves forming a benzodioxepin-3-spiro-5′-oxazolidin-2′-one which upon treatment with dilute alkali gives the desired 3-hydroxy-3-(substituted aminoalkyl)-3,4-dihydro-2H-1,5-benzodioxepin. The intermediate oxazolidinone compounds can be treated if desired with various agents to attach substituents on the benzenoid moiety of the starting substance. These oxazolidinones exhibit β-stimulating and skeletal muscle relaxant properties.

3,700,692
1-(4′-HYDROXY-3′-(HYDROXY METHYL)-PHENYL)-1-HYDROXY-2-ARALKYLAMINOETHANES

John T. Suh, Mequon, and Thomas M. Bare, Milwaukee, both of Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed June 4, 1971, Ser. No. 150,220
Int. Cl. C07d 13/10
U.S. Cl. 260—340.5 6 Claims

The 1-[4′-hydroxy-3′-(hydroxymethyl)-phenyl]-1-hydroxy-2-aralkylaminoethanes are useful as bronchodilating agents. The compound α^1-[[(α-methyl-3,4-methylene-dioxyphenethyl)amino]-methyl]-4-hydroxy-m-xylene-α^1,α^3-diol is especially useful since it is an excellent bronchodilator and yet exerts only a minimal effect on cardiac muscle.

3,700,693
FLUOROORGANOCOPPER COMPOUNDS, COMPLEXES AND SOLUTIONS THEREOF FOR COPPER-COATING SUBSTRATES

Allan Cairncross, and William Arthur Sheppart, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 725,541, May 30, 1968, abandoned, which is a continuation-in-part of Ser. No. 557,605, June 15, 1966, abandoned. This application Dec. 2, 1970, Ser. No. 102,569
Int. Cl. C07d 15/00; C07f 1/08
U.S. Cl. 260—340.6 8 Claims

Described and claimed are fluoroorganocopper compounds prepared preferably by the metathetical reaction of a fluoroorganometallic compound with a copper-containing compound. These are highly soluble in inert organic solvents and have a greater thermal stability compared to non-fluorinated organocopper compounds. Complexes are formed by interaction of fluorganocopper compounds with dioxane. Fluoroorganocopper compounds are useful for the preparation of finely divided copper metal and for copper-coating various substrates.

3,700,694
INSECT CONTROL

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 860,086, Sept. 22, 1969, abandoned. This application June 14, 1971, Ser. No. 153,073
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 15 Claims

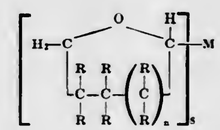
Methods of employing and compositions comprising alkylated lactones for the control of insects.

3,700,695
FLUORINATED TETRAHYDRO-PYRANS

Russell L. K. Carr, Grand Island, N.Y., and Charles F. Baranauckas, Edina, Minn., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. Nos. 178,227, March 8, 1962, abandoned, and Ser. No. 716,273, March 14, 1968, abandoned. This application Oct. 16, 1969, Ser. No. 868,288
Int. Cl. C07d 7/04
U.S. Cl. 260—345.8 1 Claim

There are described new compositions of matter having the following general formula



wherein *n* is from 0 to 1, wherein one of the R's is selected from the group consisting of fluorine, alkyl, cycloalkyl, aryl, perfluoroalkyl, perfluorocycloalkyl and perfluoroaryl, wherein another one of the R's may be selected from the group consisting of alkyl and perfluoroalkyl, wherein the remaining R's are selected from the group consisting of hydrogen and fluorine, provided that at least one of the R's contains fluorine or is fluorine, *s* is a number from 1 to 3 inclusive, and M is a substance selected from the group consisting of fluorine, chlorine, bromine, iodine, cyano, alkylcarbonyloxy, arylcarbonyloxy, cycloalkylcarbonyloxy, alkylsulfonyloxy, cycloalkylsulfonyloxy, arylsulfonyloxy, phosphinylidynetrioxy, phosphinidynetrioxy, alkoxyphosphinidenedioxy, dialkoxyphosphinoxy, aryloxyphosphinidenedioxy, diaryloxyphosphinoxy, alkylphosphinylidenedioxy, arylphosphinylidenedioxy, sulfonyl and sulfinyl. The preparation of these compounds and their uses in improving the clarity of plastic films and as herbicides are also described.

3,700,696

BOLL WEEVIL SEX ATTRACTANT

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Jan. 7, 1970, Ser. No. 1,305
Int. Cl. C07d 7/06
U.S. Cl. 260—343.5 **10 Claims**

Synthesis of cis 2-(1′-methyl-2′-iso-propenylcyclobutyl)ethanol, a component of the boll weevil sex attractant, and 3-methyl-pent-2-eno-5-lactone and 2,3-cycloethylene-3-methylpentano-5-lactone which are intermediates therefor.

3,700,697

(2,3-DIHYDRO-2-BENZOFURANYLMETHYL) GUANIDINES AND THEIR PREPARATION

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed April 22, 1968, Ser. No. 723,234
Int. Cl. C07d 5/42
U.S. Cl. 260—346.2 R **7 Claims**

(2,3-Dihydro-2-benzo-furanylmethyl)guanidines and (2,3-dihydro-2-benzofuranylmethyl)-aminoguanidines, having anti-hypertensive activity, are prepared by reacting the corresponding respective 2,3-dihydro-2-benzo-furanylmethylamine or (2,3-dihydro-2-benzofuranylmethyl)hydrazine with a guanylating agent, e.g., 2-(lower-alkyl)-2-thiopseudourea or cyanamide. Preparation of various intermediates are given, e.g., 2,3-dihydro-2-benzofuranylmethyl halides, N-(2,3-dihydro-2-benzofuranylmethyl)phthalimides, 2,3-dihydro-2-benzofuranylmethylamines and (2,3-dihydro-2-benzofuranylmethyl)hydrazines.

3,700,698

1,2-EPOXY-3-(3-IODO-2-PROPYNYLOXY)-PROPANE

Alden Gamaliel Beaman, North Caldwell, N.J.; Robert Duschinsky, Pully-Lausanne, Switzerland, and William Paul Tautz, New York, N.Y., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 61,516, Aug. 5, 1970, Pat. No. 3,641,047, which is a division of Ser. No. 840,077, April 23, 1969, Pat. No. 3,549,653, which is a division of Ser. No. 556,585, June 10, 1966, Pat. No. 3,468,902, which is a continuation-in-part of Ser. No. 447,087, April 9, 1965, abandoned. This application May 12, 1971, Ser. No. 142,777
Int. Cl. C07d 1/18
U.S. Cl. 260—348 R **1 Claim**

The compound 1,2-epoxy-3-(3-iodo-2-propynyloxy)-propane, which is useful in preparing antimicrobial-2-nitroimidazole derivatives.

3,700,699

N-(1-AZIDO-(2,2,2-TRIHALOETHYL) SULFONAMIDES

Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 789,595, Jan. 7, 1969, Pat. No. 3,636,062. This application June 28, 1971, Ser. No. 163,521
Int. Cl. C07c 117/00; C07d 109/00
U.S. Cl. 260—349 **4 Claims**

Azides of the formula



in which X is Cl or Br and R is a carboxyacyl, sulfonylacyl or alkoxycarbonyl group. These azides are nematocidal.

3,700,700

PROCESS FOR THE MANUFACTURE OF AMINOANTHRAQUINONES

Hans Altermatt, Reinach, Basel-Land, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 631,879, April 19, 1967, abandoned. This application Dec. 8, 1969, Ser. No. 883,343
Claims priority, application Switzerland, May 11, 1966, 6880/66
Int. Cl. C09b 1/22
U.S. Cl. 260—371 **15 Claims**

Process for the preparation of anthraquinones containing a primary amino group by heating the corresponding aminoanthraquinones containing a secondary or tertiary amino group in an organic solvent.

3,700,701

PREPARATION OF BENZOQUINONES BY OXIDATION OF PARA-SUBSTITUTED PHENOLS

Hans K. Dietl, and Howard S. Young, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1971, Ser. No. 151,904
Int. Cl. C07c 49/64
U.S. Cl. 260—396 R **5 Claims**

Process for producing substituted benzoquinones through oxidation of para-substituted phenols by manganese dioxide in a mixture of aqueous sulfuric acid and a cosolvent. A typical para-substituted phenol reactant is 2,6-di-tert-butyl-p-cresol, and its oxidation product is 2,6-di-tert-butyl-p-benzoquinone.

3,700,702

NEW 15β,16β-METHYLENE STEROIDS

Andor Furst, Basel; Marcel Muller, Frenkendorf; Peter Muller, Arlesheim; Arno Johannes Schocher, Benken, and Elisabeth Becher, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 2, 1970, Ser. No. 94,585
Int. Cl. C07c 169/32
U.S. Cl. 260—397.45 **12 Claims**

A new series of 15β,16β-methylene pregnanes is disclosed and methods for their preparation are described. The compounds are particularly useful as antiinflammatory agents.

3,700,703

STEROIDS OF THE ANDROSTANE SERIES, METHODS OF PRODUCING THE SAME, PHARMACEUTICAL PREPARATIONS CONTAINING SAID COMPOUNDS AS ACTIVE INGREDIENTS AND METHODS OF PRODUCING THE SAID PREPARATIONS

Rudolf Van Moorselaar, Van Houtenlaan, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 743,647, July 10, 1968, abandoned. This application July 2, 1970, Ser. No. 56,122
Claims priority, application Great Britain, July 11, 1967, 31,786/67
Int. Cl. C07c 169/20
U.S. Cl. 260—397.4 **11 Claims**

New 18-methyl-9β,10α-steroids of the androstane series, methods of producing the same, pharmaceutical preparations containing said compounds as active ingredients and methods of producing the said preparations.

3,700,704

TRIGLYCERIDE REFINING

Albert S. Zambone, Vineland, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 27, 1970, Ser. No. 15,238
Int. Cl. C11b 3/06, 3/16
U.S. Cl. 260—425 **10 Claims**

A new use for a centrifuge having an axial screw conveyor, heretofore used only for liquid-solids separation, is proposed for liquid-liquid separation in the refining of triglycerides.

3,700,705

METHOD OF REFINING TRIGLYCERIDES

Albert S. Zambone, Vineland, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed April 16, 1970, Ser. No. 29,275
Int. Cl. C08h 17/36
U.S. Cl. 260—425 **16 Claims**

In triglyceride refining, with soapstock produced as a by-product, the mixture resulting from the introduction of an alkaline reagent is separated by introducing it to a zone of centrifugation formed about an axis and in which the soapstock occupies an outer portion of the zone and the refined triglyceride occupies an inner portion of said zone, and the refined triglyceride is withdrawn from the zone, the separated soapstock is uniquely withdrawn from the zone by advancing it axially and inwardly toward the axis away from the refined triglyceride, and then discharging the separated soapstock from said zone.

3,700,706

SELECTIVE CARBONYLATION OF OLEFINICALLY UNSATURATED HYDROCARBONS USING PALLADIUM-PHOSPHINE CATALYSTS PROMOTED WITH TIN SALTS

Stephen A. Butter, Boundbrook, N.J., assignor to Mobil Oil Corporation

Continuation-in-part of Ser. No. 13,170, Feb. 20, 1970, abandoned. This application Aug. 17, 1970, Ser. No. 64,631
Int. Cl. C07c 51/14
U.S. Cl. 260—410.9 R **13 Claims**

A carbonylation process is provided for conversion of olefinically unsaturated hydrocarbons to a mixture of esters or acids with an increased ratio of normal:iso (i.e., straight:branched) ester or acid by reaction with carbon monoxide and a hydroxylic compound, said process being carried out in the presence of a palladium salt complexed with a phosphine ligand as a catalyst and tin cocatalysts or promoters. For example, the catalyst may be palladium dichloride bis(triphenylphosphine) and the tin cocatalyst or promoter present may be stannous chloride dihydrate.

3,700,707

TITANIUM TRIHALIDE-AMINE HYDROHALIDE COMPLEXES

Richard R. Durst, Stow, and Heinz Uelzmann, Cuyahoga Falls, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 824,670, May 14, 1969, Pat. No. 3,627,797, which is a division of Ser. No. 493,868, Oct. 7, 1965, abandoned. This application Aug. 13, 1971, Ser. No. 171,740
Int. Cl. C07f 7/28
U.S. Cl. 260—429.5 **9 Claims**

Compositions of aluminum trihydrocarbyls (triisobutyl aluminum) and titanium (III) halide-amine hydrohalide complexes are useful in the polymerization of cyclic oxides such as ethylene oxide, allyl glycidyl ether, propylene oxide, oxetane and the like. The complex has the formula $YH^+(TiX_4)^-$ where Y is an amine having up to 20 carbon atoms and a pK value of not greater than 12, X is halogen and Ti has a valence of three and is prepared by reacting a mercaptan and an amine with a titanium tetrahalide. The resulting complex and disulfide can be separated from each other by virtue of their different solubilities.

3,700,708

BIS(DIFLUOROAMINO) ALKYL SUBSTITUTED COMPOUNDS AND METHOD OF PREPARATION

Robert C. Petry, Huntsville, Ala., assignor to Rohm & Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 790,023, Jan. 29, 1959, abandoned. This application Sept. 4, 1959, Ser. No. 838,354
Int. Cl. C07c 8 7/20, 119/04, 127/16
U.S. Cl. 260—453 AL **19 Claims**

2. Bis(difluoroamino) alkane and alkene compounds containing bis(difluoroamino) substituents in which the difluoroamino groups are attached to carbon atoms, said carbon atoms containing at least one hydrogen substituent, and said carbon atoms being adjacent to one another or in a 1,4 position to one another.

3,700,709

AZOMETHINE PIGMENTS

Eric Richard Inman, Bridge of Weir, Renfrewshire; Ian Alexander MacPherson, Paisley, and John Andrew Stirling, Glasgow, all of Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 20, 1970, Ser. No. 39,163
Int. Cl. C07f 11/00
U.S. Cl. 260—438.1 **17 Claims**

Copper complexes of substituted 2,2′-dihydroxyphenyl-napthyl-azomethines are prepared by reacting the products of o-hydroxy-naphthaldehydes and o-aminophenols with a coppering agent. Said compounds are pigments for organic materials.

3,700,710

METHYLENE BIS(ALUMINUM DIHALIDES) USEFUL AS POLYMERIZATION CATALYST COMPONENTS

Edward H. Mottus, Ballwin, and Morris R. Ort, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 621,036, March 2, 1967, abandoned, which is a continuation-in-part of Ser. No. 539,662, April 4, 1966, abandoned. This application March 10, 1970, Ser. No. 23,109
Int. Cl. C07f 5/06
U.S. Cl. 260—448 A **2 Claims**

An electrolytic process is described for making certain bis-(halometal)methanes such as bis(dichloroaluminum)methane, $Cl_2AlCH_2AlCl_2$, which is a new compound, and these compounds can be combined with transition metal compounds such as $VOCl_3$ to make very active catalysts for polymerizing olefinic compounds such as ethylene. In the electrolytic process boron, a Group II, Group III A or Group

IV A metal, e.g., aluminum, is used as an anode with an electrolyte such as $HOAlCl_2$ in the presence of a methylene dihalide such as CH_2Cl_2 or a gem dihalide which does not readily dehydrohalogenate or alkylate. It is preferred to carry out the electrolysis in the presence of ethylene or another olefinic compound to promote conductivity. Also, it is preferred that all reactants be substantially free of water, except for small known amounts of water which may be added to promote electrolysis. Also, it is preferred to blanket the electrolysis with ethylene which also serves to promote conductivity, or an inert gas to exclude moisture, oxygen and other undesirable materials. The catalysts polymerize olefinic compounds to liquid or solid polymers depending on the particular catalyst used and the olefin being polymerized. The catalysts are promoted or modified by small amounts of water or other electron donor compounds.

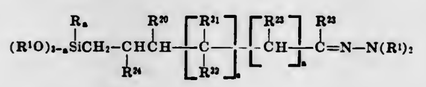
3,700,711

SILICONE COMPOUNDS CONTAINING HYDRAZONE FUNCTIONAL GROUPS THEREON

Abe Berger, and Terry G. Selin, both of Schenectady, N.Y., assignors to General Electric Company

Filed Aug. 16, 1971, Ser. No. 172,293
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.8 R **7 Claims**

A new class of silicone compounds of the formula,



where R, R^1, R^{20}, R^{21}, R^{22}, R^{23} and R^{24} are independently selected from hydrogen and hydrocarbon radicals, s varies from 0 to 1 and u varies from 0 to 20, and a is a whole number that varies from 0 to 2. These class of compounds are particularly useful for flocculating colloidal organic matter.

3,700,712

PROCESS FOR PREPARING SILICON PEROXIDE COMPOUNDS

Robert Leopold Ostrozynski, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,453
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E **17 Claims**

A process for preparing a silicon peroxide compound comprising reacting a dimethylamino silicon compound with a hydroperoxide compound.

3,700,713

NITROGEN-CONTAINING COMPOUNDS

John Heathcote Atherton, Stevenston, and John Beckett Plumb, West Kilbride, both of Scotland, assignors to Imperial Chemical Industries Limited, Millbank, England

Filed July 10, 1969, Ser. No. 840,853
Claims priority, application Great Britain, July 26, 1968, 35,859/68
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.2 N **11 Claims**

Nitrogen-containing compounds comprising organo-silicon compounds containing at least one unit of the average general formula

$$B_a(DO)_uA_vSiO_{\frac{4-r-s-t}{2}}$$

where A is a group of the general formula

$$-R[OR'CN(R^3)R^3NR^4R^5]_c$$

in which R is an organic group free from olefinic unsaturation and having a valency of $c+1$ and is selected from the group consisting of hydrocarbon groups having from three to 11 carbon atoms and groups consisting of carbon, hydrogen and oxygen, the latter in the form of ethereal linkages, having from six to 17 carbon atoms, R^1 is selected from the group consisting of lower alkylene groups, R^2 is selected from the group consisting of hydrogen, hydrocarbyl groups having not more than 12 carbon atoms and groups of the general formula $[R^3NRR^4R^5]$, R^3 is a divalent radical attached at its extremities to two nitrogen atoms and is selected from the group consisting of hydrocarbon groups having not more than 12 carbon atoms, polyimino groups of the general formula $[(R^7NH)_qR^8]$ where R^7 and R^8 are alkylene groups having not more than four carbon atoms and q is a positive integer not greater than 100, and groups forming a heterocyclic structure with the amino nitrogen and R 4 or with R^2, R^4 and the two nitrogen atoms attached to the extremities of R^3, R^4, when not a member of a heterocyclic structure, is selected from the group consisting of hydrogen, hydrocarbyl and hydroxy substituted hydrocarbyl groups and amino-alkyl and N-substituted amino-alkyl groups, R^5 is selected from the group consisting of hydrogen, hydrocarbyl groups, hydroxy substituted hydrocarbyl groups, amino-alkyl and N-substituted amino-alkyl groups, c is 1, 2 or 3, B is a hydrocarbyl group free from aliphatic unsaturation, D is selected from the group consisting of hydrocarbyl groups and groups of the general formula $B(OC_nH_{2n})_x$, r is 1 or 2, s is 0, 1, 2, or 3, t is 0, 1, 2, or 3 and $r+s+t$ is not greater than 4.

3,700,714

CURABLE COMPOSITIONS

Stephen B. Hamilton, 931 Vrooman Avenue, Schenectady; Melvin D. Beers, 14 Cornelia Avenue, Ballston Lake; Abe Berger, 1504 Barclay Place, and Terry G. Selin, 2279 Dean Street, both of Schenectady, all of N.Y.

Division of Ser. No. 34,576, May 4, 1970. This application June 24, 1971, Ser. No. 156,464
Int. Cl. C07f 7/18
U.S. Cl. 260—448.2 B **13 Claims**

Room temperature vulcanizing silicone elastomers are prepared by the addition of a novel cross-linking agent such as acetoxypropenylenyltriacetoxysilane to a silanol chain-stopped polydiorganosiloxane fluid. These compositions are stable, free flowing fluids in the absence of moisture but cure to a rubbery, solid elastic state upon exposure to moisture. These compositions are particularly useful as adhesives in difficult bonding situations such as attaching glass window panes to aluminum window frames.

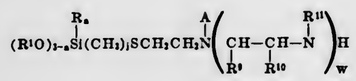
3,700,715

POLYAMINOALKYLTHIOALKYL SILANES

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 23, 1971, Ser. No. 174,164
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.8 R **8 Claims**

A novel class of silicone compounds of the formula,



where R and R^1 are independently selected from monovalent hydrocarbon radicals, R^9, R^{10} and R^{11} are selected from the

class consisting of hydrogen, alkyl radicals and aryl radicals, A is selected from hydrogen, alkyl radicals, aryl radicals and amino alkyl radicals, j varies from 2 to 20, w varies from 1 to 500 and varies from 0 to 2. The novel compounds are useful as flocculants for colloidal organic matter.

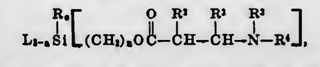
3,700,716

AMINO-FUNCTIONAL SILANE COMPOUNDS

Abe Berger, and Terry G. Selin, both of Schenectady, N.Y., assignors to General Electric Company

Filed Aug. 12, 1971, Ser. No. 171,337
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.2 N **7 Claims**

A silicone compound of the formula,



where L is selected from secondary amine groups and R^10 groups, R^1 and R^2 are selected from hydrocarbon groups and R^3 and R^4 are selected from hydrogen, hydrocarbon groups and other amine groups. Further, n is a whole number that varies from 1 to 20 and a is a whole number that varies from 0 to 2. These amino-functional silane compounds may be used as sewage flocculents.

3,700,717

PROCESS FOR THE MANUFACTURE OF LAVANDULIC ACID AND DERIVATIVES

Heinrich Kappeler, Wurenlos, and Jost Wild, Zurich, both of Switzerland, assignors to Gevaudan Corporation, Clifton, N.J.

Filed Dec. 23, 1968, Ser. No. 786,413
Claims priority, application Switzerland, Jan. 10, 1968, 536/68
Int. Cl. C07c 57/02, 121/30
U.S. Cl. 260—465.2 **8 Claims**

A synthetic process for producing lavandulol (III) and lavandulyl acetate (V) economically and in pure form is disclosed. This is accomplished by a novel process involving making lavandulic acid (II) by the rearrangement of a novel compound, 2-methyl-buten-2-yl-β, β-dimethyl acrylate (I). The lavandulic acid so formed may be reduced to lavandulol (III) or lavandulal (IV), converted into a lower alkyl ester (V) or into the novel lavandulic acid nitrile (VI). Lavandulol (III) may be transformed into the novel lavandulyl $\beta\beta$-dimethyl a acrylate (VII).

3,700,718

METHOD FOR CONTINUOUS PRODUCTION OF PURE ACETONE CYANOHYDRIN

Akio Yamagishi; Hisashi Kondo; Genya Matsumoto, and Shigekatsu Kondo, all of Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 854,461, Sept. 2, 1969, abandoned. This application Nov. 24, 1969, Ser. No. 879,366
Int. Cl. C07c 121/34
U.S. Cl. 260—465.6 **6 Claims**

Pure acetone cyanohydrin is produced continuously and economically by reacting acetone with hydrogen cyanide in the presence of an alkaline substance to produce an acetone cyanohydrin synthesis reaction mixture, acidifying the resultant reaction mixture with an acidic substance, filtering off the resultant salt from the mixture to obtain crude acetone cyanohydrin, stripping unreacted acetone and hydrogen cyanide from the crude acetone cyanohydrin with an inert gas, recovering pure acetone cyanohydrin, on the other hand, contacting the resultant inert gas containing the unreacted materials with the above-mentioned acetone cyanohydrin synthesis reaction mixture to absorb the unreacted materials into the reaction mixture, and then recycling the inert gas for next stripping.

3,700,719

PROCESSES FOR THE PREPARATION OF N-(DIETHYLAMINOETHYL)-4-AMINO-5-CHLORO-2-METHOXYBENZAMIDE

Masuo Murakami; Noriyoshi Inukai; Akio Koda, all of Tokyo, and Koji Nakano, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1969, Ser. No. 877,500
Claims priority, application Japan, Dec. 2, 1968, 43/87574; Dec. 9, 1968, 43/89521; April 4, 1969, 44/26274
Int. Cl. C07c 103/28
U.S. Cl. 260—471 R **10 Claims**

Improved processes for obtaining N-(diethylaminoethyl)-4-amino-5-chloro-2-methoxybenzamide from p-aminosalycylic acid as starting material, each of which comprises only three or four steps.

3,700,720

PROCESS FOR THE PRODUCTION OF HALOGENATED BENZILIC ACID ALKYL ESTERS

Yair Sprinzak, Rehovoth, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed Oct. 20, 1969, Ser. No. 867,890
Claims priority, application Israel, Oct. 21, 1968, 30 923
Int. Cl. C07c 69/76
U.S. Cl. 260—473 A **13 Claims**

Halogenated benzilic acid alkyl esters are prepared by oxidizing the corresponding halogenated diphenylacetic acid alkyl ester in a polar-aprotic solvent in the presence of a quaternary ammonium hydroxide.

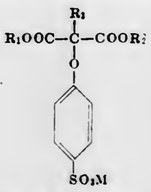
3,700,721

SULFOPHENOXY MALONATE COMPOUNDS

John A. Price, 225 North Princeton Avenue, Swarthmore, Pa., and Mary J. Stewart, 2 War-Trophy Lane, Riddlewood, Pa.

Division of Ser. No. 37,838, May 15, 1970, Pat. No. 3,624,034, which is a continuation-in-part of Ser. No. 867,375, Oct. 17, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 119,013
Int. Cl. C07c 143/52
U.S. Cl. 260—470 **4 Claims**

Sulfophenoxy malonate compounds and copolyester resins utilizing said malonate compounds comprising the condensation product of (a) an aromatic dicarboxylic acid or its lower alkyl diester, (b) an aliphatic glycol, and (c) a minor amount of a substituted acid or ester thereof represented by the formula:



wherein R_1 and R_2 are both hydrogen or lower alkyl radicals, R_3 is hydrogen or a lower alkyl radical, and M is a metal.

3,700,722

DI(1-ACYLOXY-ALIPHATIC) ETHERS AND DERIVATIVES THEREOF

Lucian W. McTeer, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 569,017, Aug. 1, 1966, Pat. No. 3,499,028, which is a division of Ser. No. 458,757, May 25, 1965, Pat. No. 3,326,969, which is a continuation-in-part of Ser. No. 65,943, Oct. 31, 1960, abandoned, which is a continuation-in-part of Ser. No. 839,057, Sept. 10, 1959, abandoned. This application Dec. 27, 1968, Ser. No. 787,543
Int. Cl. C07c 69/52, 69/54, 69/56
U.S. Cl. 260—486 R **5 Claims**

Asymmetrical di(1-acyloxyaliphatic) ethers produced by reacting a symmetrical di(1-acyloxyaliphatic) ether or a 1,2-

ethylenically unsaturated aliphatic 1-acyloxyaliphatic ether with a monocarboxylic acid.

3,700,723
2,2-BIS (DIFLUORAMINO)-5-FLUORO-5,5 DINITRO-1-PENTYL ACRYLATE

Clifford L. Coon, Fremont; Marion E. Hill, Palo Alto, and Donald L. Ross, Menlo Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 10, 1969, Ser. No. 866,436
Int. Cl. C07c 69/52
U.S. Cl. 260—486 H 3 Claims

The propellant additive 2,2-bis (difluoramino)-5-fluoro-5,5 dinitro-1-pentyl acrylate is synthesized by reacting acryloyl chloride with 2,2-bis (difluoramino)-5-fluoro-5,5-dinitro-1-pentanol.

3,700,724
PREPARATION OF ALLYLIC ESTERS WITH PALLADATE AND PLATINATE CATALYSTS

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 21, 1971, Ser. No. 108,617
Int. Cl. C07c 67/00
U.S. Cl. 260—491 9 Claims

Tetrahalopalladate and tetrahaloplatinate catalysts effectively catalyze the preparation of allyl esters of carboxylic acids in the reaction between allyl halides and salts of carboxylic acids.

3,700,725
DIALKYL PHTHALATE PROCESS

Louis R. Kray, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 29, 1971, Ser. No. 111,144
Int. Cl. C07c 69/8 0
U.S. Cl. 260—475 R 3 Claims

Mercuric chloride catalyses the production of dialkyl phthalate esters from the reaction of a primary alkyl bromide and phthalic acid provided that the temperature is maintained in the range 155° to 180° C.

3,700,726
PROCESS FOR THE MANUFACTURE OF GLYCOL ETHER ACETATES

Sam H. Johnson, Jr., and Howard N. Wright, Jr., both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1971, Ser. No. 116,842
Int. Cl. C07c 67/02
U.S. Cl. 260—491 10 Claims

A process for the production of glycol ether acetates according to the reaction:

$$R(OCH_2CH_2)_nOH + CH_3CO_2R' \overset{Catalyst}{\rightleftharpoons} CH_3CO_2(CH_2CH_2O)_nR + R'OH$$

wherein R and R′ represent the same or different aliphatic radicals with one to four carbon atoms and *n* is equal to 1 or 2. Preferred catalysts include aluminum alkoxide, titanium alkoxide and organo-metallic salts. The reaction is conducted at pressures from 25 psia to 150 psia and temperatures of from about 150° C. to about 225° C.

3,700,727
INTRODUCTION OF ORGANIC GROUPS INTO ETHYLENICALLY UNSATURATED ESTERS USING A GROUP VIII METAL SALT

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated

Division of Ser. No. 479,665, Aug. 13, 1965, Pat. No. 3,527,794. This application Dec. 8, 1969, Ser. No. 883,288
Int. Cl. C07c 69/76
U.S. Cl. 260—476 R 9 Claims

The process involves the introduction of an organic group into an ethylenically unsaturated carboxylic acid or nitrile or ester thereof. As an example, a mixture of phenylmercuric chloride, lithium palladium chloride and methyl acrylate is formed in acetonitrile as solvent. This results in the formation of an unstable adduct between the methyl acrylate and phenylpalladium chloride. Decomposition of the adduct by maintaining it above its decomposition temperature provides methyl cinnamate as the product.

3,700,728
SOLUBILIZATION OF HUMIC ACIDS, LIGNITES AND COALS

Speros E. Moschopedis; Ernst Czakert, and Stephen M. Creighton, all of Edmonton, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Dec. 30, 1968, Ser. No. 787,995
Claims priority, application Canada, Jan. 4, 1968, 9,114
Int. Cl. C07c 143/52
U.S. Cl. 260—507 R 7 Claims

A process for the preparation of water-soluble products from humic acids, lignites and pre-oxidized coals which are reacted with a sulfonating agent to form a sulfite or a bisulfite in situ, in an alkaline medium. The water-soluble product is useable as a well-drilling fluid.

3,700,729
PREPARATION OF AROMATIC ACIDS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 6, 1965, Ser. No. 512,012
Int. Cl. C07c 63/00, 63/06, 63/10
U.S. Cl. 260—515 R 17 Claims

An aromatic acid is prepared by reacting in the liquid phase an aromatic with carbon monoxide in the presence of a catalyst selected from the group consisting of palladium and ferric chloride and bromides and mixtures thereof and an anhydrous organic liquid inert to the above reactants and catalyst at a temperature between about 100° C. and 300° C. and at a pressure to maintain liquid phase, and then hydrolyzing the resultant carbonylated compound to said aromatic acid.

3,700,730
2-CARBOXY OR 2-CARBOXYLOWER ALKYL DERIVATIVES OF 5-FLUORO-1-(P-METHYLSULFINYL-BENZYLIDINE)-INDENYL-3-ACETIC ACID

David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1970, Ser. No. 33,973
Int. Cl. C07c 147/00
U.S. Cl. 260—515 A 4 Claims

Process for preparing 1-(p-methylsulfinylbenzylidene)-2-methyl-5-fluoro-3-indenylacetic acid by methylating 1-(p-methylsulfinylbenzylidene)-5-fluoro-3-indenylacetic acid or a derivative thereof. Also included are novel 1-(p-methylsulfinylbenzylidene)-5-fluoro-3-indenylacetic acid intermediates.

3,700,731
PROCESS FOR OXIDIZING XYLENES TO PHTHALIC ACIDS

Robert H. Sullivan, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 667,646, Sept. 14, 1967, abandoned, and Ser. No. 742,150, July 3, 1968, abandoned. This application Feb. 28, 1969, Ser. No. 803,441
Int. Cl. C07c 63/02
U.S. Cl. 260—524 R 10 Claims

Continuous process for the oxidation of xylenes with oxygen at about 105° to 150° C wherein xylene is added at the same rate as phthalic acid is formed and xylene and partially oxidized intermediates, including those entrained in the phthalic acid are recycled continuously, a critical hold-up time is exceeded and the reaction mixture contains at least about 0.1 mole percent xylene based on the total of xylene and its oxidation products.

3,700,732
N-(1,1-DIMETHYL-2-BUTYNYL)-3,5-DICHLOROBENZAMIDE

Colin Switchenbank, Parkasie, and Kenneth L. Viste, Warminster, both of Pa., assignors to Rohn and Hass Company, Philadelphia, Pa.

Filed March 26, 1969, Ser. No. 810,814
Int. Cl. C07c 103/30
U.S. Cl. 260—558 D 1 Claim

Novel compounds which belong to the class of N-(1,1-dimethyl-2-alkynyl)-3,5-disubstituted and 3,4,5-trisubstituted benzamides. These compounds are potent herbicides.

3,700,733
PREPARATION OF POLYHALOISOALKOXYALKANOIC ACIDS AND DERIVATIVES THEREOF

Richard Francis Sweeney, Elma, N.Y., and Charles Cheng-Yu Yao, Long Valley, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,953. The portion of the term of this patent subsequent to Feb. 3, 1987, has been disclaimed.
Int. Cl. C07c 51/58
U.S. Cl. 260—544 F 30 Claims

Antimony pentahalides selected from the group $SbCl_5$, SbF_5 and SbF_3Cl_2 catalyze the oxidation of polyhaloisoalkoxy-alkyl iodides with SO_3 or oleum. The products of the reaction are the corresponding acid halides and pyrosulfuryl halides which may be converted to the free acids or acid derivatives. The acids, salts and esters thereof are surface active. The acids are further useful as stain repellent agents.

3,700,734
2′-HYDROXY-2,3,5-TRIMETHYL-6,7-BENZOMORPHAN

Franklin M. Robinson, Ambler, and Paul S. Anderson, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 23, 1969, Ser. No. 793,571
Int. Cl. C07d 39/00
U.S. Cl. 260—293.54 1 Claim

Novel 2,3,5-trisubstituted-2′-hydroxy-6,7-benzomorphan compounds, their methods of preparation and their use as effective analgesic agents is described.

3,700,735
METHYLACETYLENE CHLORINATION

Chester E. Pawloski, Bay City, and Russell L. Stewart, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 22, 1968, Ser. No. 723,242 The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.
Int. Cl. C07c 45/06
U.S. Cl. 260—597 R 7 Claims

1,1-Dichloro-2-propanone is produced by a process comprising reacting by contacting methylacetylene with chlorine in the presence of water, preferably at a temperature between 50° and 105° C. The product is biologically active.

3,700,736
PREPARATION OF P-METHYLSULFONYL BENZALDEHHYDE

Michihiro Yamamoto, Takarazuka-shi, and Kozo Shimago, Minoo-shi, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed July 16, 1969, Ser. No. 842,392
Int. Cl. C07c 147/06
U.S. Cl. 260—607 A 3 Claims

Para-methylsulfonylbenzaldehyde is readily produced by reacting methyl para-tolyl sulfone with bromine under heating to prepare novel para-methylsulfonylbenzylidene bromide, and subsequently hydrolyzing the resultant para-methylsulfonylbenzylidene bromide.

Para-methylsulfonylbenzaldehyde is useful as an intermediate for the production of medicines such as thiamphenicol.

3,700,737
PERFLUOROALKYL VINYL SULFONES

Ronald A. Mitsch, and Robert J. Koshar, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 732,865, May 29, 1968, Pat. No. 3,578,717. This application Dec. 14, 1970, Ser. No. 98,096
Int. Cl. C07c 147/02
U.S. Cl. 260—607 A 1 Claim

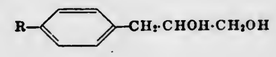
Perfluoroalkyl vinyl sulfones, $CF_3SO_2CH{=}CH_2$ and higher, are provided which are homopolymerized to oligomers in the presence of tertiary amine basic catalysts.

3,700,738
3-(P-SUBSTITUTED PHENYL) PROPANE-1,2-DIOLS

Peter Thomas Bysouth, and Anthony Musgrave Wild, both of London, England, assignors to BDH Pharmaceuticals Limited, Edinburgh, Scotland

Filed July 23, 1970, Ser. No. 57,803
Claims priority, application Great Britain, July 30, 1969, 38,250/69
Int. Cl. C07c 31/16, 43/20
U.S. Cl. 260—613 R 6 Claims

3-(p-Substituted phenyl) propane -1,2-diols of the formula



where R is phenyl, alkoxyphenyl, phenoxy or cycloalkenyl are disclosed. These compounds are useful as anti-inflammatory agents.

3,700,739
FLAME RETARDANT COMPOSITIONS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Division of Ser. No. 728,913, May 14, 1968, Pat. No. 3,644,599. This application Feb. 19, 1971, Ser. No. 117,038
Int. Cl. C07c 43/28
U.S. Cl. 260—613 R 9 Claims

Polyol adjuvants are provided which have the property of imparting flame-retardant characteristics to polyurethane foams. The adjuvants are prepared by condensing at least one mole of 3-halo-1,2-propanediol and at least one mole of 1,3-dihalo-2-propanol with a tetrahalo bisphenol A or, alternatively, with the reaction product of at least one mole of a phenol, a chlorophenol and at least one mole of the same or another phenol with at least one mole of formaldehyde. The condensa-

tion products are subsequently reacted with the salt of a saturated or unsaturated partial ester of phosphoric acid and optionally brominated in the latter case. Flame-retardant polyurethane foams are disclosed containing the novel polyol adjuvants.

3,700,740

PROCESS FOR PRODUCING ACETYLENIC ALCOHOLS

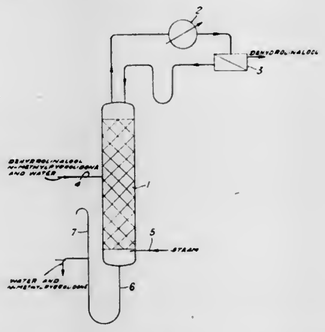
Emile Mourier, 35 rue du 8 mai 1945, Villeurbanne, France

Filed Jan. 30, 1969, Ser. No. 795,256

Claims priority, application France, Jan. 31, 1968, 68138158

Int. Cl. C07c *33/04, 35/08, 29/26*

U.S. Cl. 260—631.5 **2 Claims**



Acetylenic alcohols especially dehydrolinalool are produced by reaction of a ketone with acetylene in N-methylpyrrolidone in the presence of sodium hydroxide. The resulting mixture of dehydrolinalool and N-methylpyrrolidone is preferably separated by distillation through a column and washing the vapors with water.

3,700,741

PROCESS FOR CYCLOPENTADIENE DIMERIZING

Jean Aubry, and Emile Yax, both of Moselle, France, assignors to Societe Chimique des Charbonnages Tour Aurore, Courlevoie, France

Filed June 2, 1971, Ser. No. 149,326

Claims priority, application France, June 3, 1970, 7020437

Int. Cl. C07c *13/14*

U.S. Cl. 260—666 A **2 Claims**

The invention relates to the improvement in the process of thermally dimerizing a concentrated cyclopentadiene monomer feed said improvement consisting in introducing said feed in a single reactor at atmospheric pressure, heating same to the boiling temperature of said feed, maintaining slight reflux conditions, letting the temperature increase from said boiling temperature to the boiling temperature of substantially pure dicyclopentadiene, stopping the reaction and recovering said substantially pure dicyclopentadiene.

3,700,742

AROMATIC HYDROGENATION PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 855,725, Sept. 5, 1969, Pat. No. 3,617,510, which is a continuation-in-part of Ser. No. 839,086, July 3, 1969, abandoned. This application April 26, 1971, Ser. No. 137,615

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 R **8 Claims**

A process for hydrogenating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a rhenium component, a germanium component and a Group VIII noble metal component. A specific example of one such process involves the hydrogenation of benzene to produce cyclohexane.

3,700,743

CONVERSION OF DIACETYLBENZENES TO UNSATURATED DERIVATIVES

Howard M. Relles, Rexford, N.Y., assignor to General Electric Company

Filed Aug. 26, 1970, Ser. No. 67,212

Int. Cl. C07c *15/04*

U.S. Cl. 260—668 R **6 Claims**

The use of a solvent mixture consisting essentially of from 30–70 volume percent dichloromethane with the balance being chloroform, has a profound beneficial effect on the yield of the β, β'-dichlorobenzenediacrolein obtained by reaction of the complex of phosgene and N,N-dimethyl-formamide with m- or p-diacetylbenzene. The diacrolein products are readily converted to the corresponding diethynylbenzenes which are useful in the making of acetylenic polymers and copolymers.

3,700,744

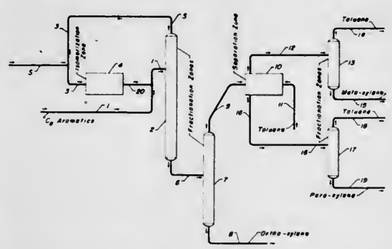
SIMULTANEOUS RECOVERY AND PRODUCTION OF PURE XYLENES FROM A C AROMATIC MIXTURE

Charles V. Berger, and Donald B. Broughton, both of 30 Algonquin Road, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 18, 1970, Ser. No. 73,467

Int. Cl. C07c *15/08*

U.S. Cl. 260—668 A **12 Claims**



Each xylene isomer, in relatively pure form, is recovered and produced from a C_8 mixture containing the same and ethylbenzene by a combination of fractionation and selective zeolitic molecular sieve separation involving fractionation of a C_8 aromatic stream to produce an ortho-xylene free, ethylbenzene, meta-xylene and para-xylene fraction for subsequent isomerization, a relatively pure ortho-xylene fraction and a mixed, ortho-xylene and ethylbenzene free, meta-xylene and para-xylene fraction which is further separated by selective zeolitic adsorption.

3,700,745

HYDRODEALKYLATION PROCESS WITH PROMOTED GROUP VIII METALS

Stephen M. Kovach, Ashland; Ralph E. Patrick, Flatwoods, and Ronald A. Kmecak, Ashland, all of Ky., assignors to Ashland Oil Inc.

Filed Oct. 22, 1968, Ser. No. 769,729

Int. Cl. B01j *11/06*; C07c *3/58*

U.S. Cl. 260—672 R **4 Claims**

A hydrodealkylation process comprising contacting alkyl aromatic hydrocarbons with a catalyst, including an active Group VIII metal, such as, platinum, rhodium, palladium, ruthenium and nickel, a promoter selected from the group of alkali, alkaline earth and rare earth metals, such as, potassium,

rubidium, cesium, calcium, strontium, cerium and thorium, and an inert oxide support such as, gamma aluminas, silica-alumina, silica, silica-magnesia, alumina-magnesia and silica-zirconia at a temperature of 1,050° to 1,200° F, a pressure of 100 to 1,000 psig., a liquid hourly space velocity of 0.1 to 5 and a hydrogen-to-hydrocarbon mole ratio of 3–15/1.

3,700,746

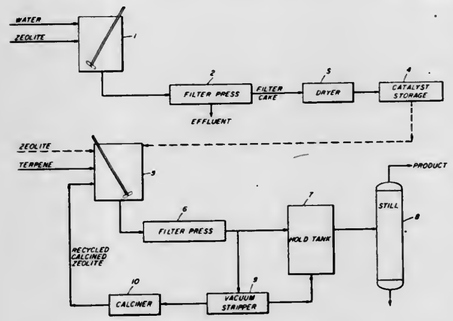
ISOMERIZATION OF ALPHA-PINENE

Edward Andrew Takacs, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 845,432, July 28, 1969, abandoned. This application April 1, 1971, Ser. No. 130,120

Int. Cl. C07c *13/00*; C09f *3/02*; C01b *33/28*

U.S. Cl. 260—675.5 **10 Claims**



A method for producing dipentene is given whereby a pinene-containing feed is isomerized at high temperatures in the presence of a small amount of a molecular sieve zeolite catalyst of the 13X-type which can be represented as follows:

$$1.0\pm0.2\ M_2O : Al_2O_3 : 2.5\pm0.5\ SiO_2 : y\ H_2O$$

wherein M is an alkali metal and y is a value from 0 to 8.

3,700,747

ISOMERIZATION OF TERPENES

Edward Andrew Takacs, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 845,432, July 28, 1969, abandoned. This application April 6, 1971, Ser. No. 131,831

Int. Cl. C07c *13/00*; C09f *3/02*; C01b *33/28*

U.S. Cl. 260—675.5 **10 Claims**

A method for producing terpinolene is given whereby a terpene-containing feed is isomerized in the presence of a small amount of an alkali metal zeolite molecular sieve catalyst of the 13X-type.

3,700,748

SELECTIVELY HYDROGENATED BLOCK COPOLYMERS

De Loss E. Winkler, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed May 22, 1970, Ser. No. 39,919

Int. Cl. C08f *19/08, 27/24*

U.S. Cl. 260—879 **8 Claims**

Block polymers are provided having substantially improved capability of forming stable elastomeric polar derivatives, these block polymers being prepared by block polymerizing a monovinyl arene with butadiene, the butadiene block containing between about 8 and about 80 percent 1,2-structure and thereafter selectively hydrogenating so as to substantially eliminate the unsaturation in the pendant vinyl groups.

3,700,749

DEHYDROGENATION PROCESS OVER PLATINUM ON LITHIATED MORDENITE

John K. Robinson, Houston, Tex., and Hervey H. Voge, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,494

Int. Cl. C07c *5/18*

U.S. Cl. 260—683.3 **8 Claims**

Normal alkanes containing from six to 16 carbon atoms are selectively dehydrogenated to mono-alkenes and side reactions are minimized by contacting a hydrocarbon feedstock with a noble metal catalyst supported on a lithiated synthetic mordenite in the presence of hydrogen under appropriate dehydrogenation conditions.

3,700,750

STABILIZED POLYPHENYLENE OXIDE COMPOSITION

Saburo Yamanouchi, Kobe; Kiyoshi Yasuno, Ibaragi; Kou Sota, Yamatokohriyama, and Takuzo Okumura, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Dec. 29, 1970, Ser. No. 102,509

Claims priority, application Japan, Jan. 7, 1970, 45/2630; Jan. 9, 1970, 45/3087

Int. Cl. C08g *43/02*; C08d *9/10*

U.S. Cl. 260—874 **13 Claims**

A stabilized composition of modified polyphenylene oxide comprising a graft polymer obtained by polymerizing a styrene-type compound in the presence of a polyphenylene oxide with or without a rubber-like polymer and incorporated with (a) 0.1 to 10 percent, preferably 0.5 to 7 percent by weight of a sterically hindered phenol and (b) 0.1 to 10 percent, preferably 0.5 to 7 percent by weight of at least one compound selected from the group consisting of thioethers of carboxylic acid esters, trialkyl or triaryl phosphites, trialkyl or triaryl thiophosphites, and arylamines; or alternatively, incorporated with (c) 0.1 to 10 percent, preferably 0.5 to 7 percent by weight of at least one compound selected from the group consisting of metal salts of dithiocarbamic acids, 2-mercaptoimidazoline, and zinc salt of mercaptobenzothiazole.

The said stabilized composition has an excellent thermal stability and its impact resistance will hardly be deteriorated when heated at high temperatures for a long period of time.

3,700,751

MOLDING MATERIAL FROM POLYAMIDE AND ACRYLIC ESTER OF A T-ALIPHATIC ALCOHOL

Gerhard Mueller, 40 Kastanienweg, Wesseling; Helmut Doerfel, 7 Edenkobener Strasse, Ludwigshafen/Rhein, and Georg Schmidt-Thomee, 5 Werrgasse, Heidelberg, all of Germany

Filed June 11, 1968, Ser. No. 735,961

Claims priority, application Germany, June 19, 1967, P 16 69 702.2

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 L **5 Claims**

Impact-resistant thermoplastic molding material based on polyamides and olefin polymers and methods for the production of the same by mixing polyamides and copolymers of an olefin and an acrylic and/or methacrylic ester of a tertiary alcohol under the action of shearing forces with simultaneous removal of gaseous elimination products.

3,700,752
GEL POLYMERIZED POLYURETHANE PRECURSORS AND VINYL MONOMERS
Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Jan. 13, 1970, Ser. No. 2,641
Claims priority, application Great Britain, Jan. 27, 1969, 4,446/69
Int. Cl. C08g 41/04
U.S. Cl. 260—859 R 36 Claims

A process for the preparation of shaped polymeric articles by gel-polymerizing a homogeneous composition comprising from 5 to 95% by weight of the precursors of a cross-linked polyurethane and from 95 to 5% by weight of at least one vinyl monomer in which the gelatin of the polyurethane is substantially completed before polymerization of the vinyl monomer is allowed to proceed to the extent that the vinyl polymer so produced forms a separate phase, and thereafter completing polymerization of the vinyl monomer; also shaped polymeric articles comprising a homogeneous dispersion of from 5 to 95% by weight of a cross-linked polyurethane and from 95 to 5% by weight of a polymer of at least one vinyl monomer.

3,700,753
POLYMER COMPOSITIONS COMPRISING POLYETHYLENE AND ETHYLENE/PROPYLENE COPOLYMER
Hiroshi Terada, and Kenzo Shirayama, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 735,573, June 10, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,579
Claims priority, application Japan, June 28, 1967, 42/41829
Int. Cl. C08f 29/12
U.S. Cl. 260—876 B 5 Claims

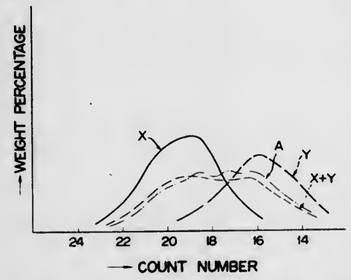
A polymer composition consisting of 70–99.5 percent by weight of low density polyethylene having a density of 0.940 or less and 0.5–30 percent by weight of a substantially amorphous propylene-ethylene copolymer having an ethylene content of 20 percent by weight or less, an intrinsic viscosity in tetralin at 135° C. in the range of 1.0–2.8 and a crystallinity of 35 percent by weight or less according to ordinary X-ray analysis.

This composition improves the high speed processability of the low density polyethylene.

3,700,754
COMPOSITIONS OF POLYMERS OF METHYL METHACRYLATE AND POLYMERS OF ETHYLENE
Joseph Michael Schmitt, Ridgefield; Jeffrey Rufus Sherry, Danbury, and Albert George Robustelli, Norwalk, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Continuation of Ser. No. 817,155, April 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 618,107, Feb. 23, 1967, abandoned. This application Sept. 8, 1970, Ser. No. 70,572
Int. Cl. C08f 1/60, 15/00
U.S. Cl. 260—878 R 7 Claims

This invention relates to a process for the production of transparent, high impact, molding compositions of matter comprising (1) a polymer of methyl methacrylate with or without comonomers copolymerizable therewith and (2) a copolymer of ethylene having grafted thereon the monomers of (1) and to weatherable modifications thereof.

3,700,755
PROCESS FOR PRODUCING RUBBERY POLYMERS
Koretaka Yamaguchi, Kawasaki-shi; Kazuo Toyomoto, Yokohama-shi, and Kuniaki Sakamoto, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed April 15, 1969, Ser. No. 816,233
Claims priority, application Japan, April 27, 1968, 43/27997
Int. Cl. C08f 19/02, 19/08, 1/58
U.S. Cl. 260—879 10 Claims



Process for producing rubbery polymers having good uniformity, processability and performances which comprises polymerizing one or more conjugated diolefin monomers or copolymerizing a monomeric mixture of conjugated diolefin and monovinyl-substituted aromatic compound in a solution of a polymer of conjugated diolefin or a copolymer of conjugated diolefin and monovinyl-substituted aromatic compound in an inert solvent in the presence of an alfin catalyst.

3,700,756
CATALYTIC BLOCK COPOLYMERIZATION OF POLAR MONOMERS
Theodore F. Niemann, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Division of Ser. No. 862,962, Oct. 1, 1969, Pat. No. 3,609,101. This application Feb. 17, 1971, Ser. No. 116,237
Int. Cl. C08f 15/38, 15/16, 15/22
U.S. Cl. 260—881 7 Claims

Polar monomers can be copolymerized to obtain block copolymers by the sequential addition of the polar monomers when the polymerization is initiated with an organolithium compound in combination with a compound containing a sulfinyl or sulfonyl group. Acrylonitrile, methacrylonitrile and alkyl acrylates and methacrylates are copolymerized to two- and three-block copolymers with alkyl lithium-diphenyl sulfone or alkyl lithium-diphenyl sulfoxide initiator systems.

3,700,757
PROCESS FOR THE PREPARATION OF GEL-CONTAINING SYNTHETIC CONJUGATED DIENE SOLUTION POLYMERS
Gerardus E. La Heij, and Gerrit J. Van Amerongen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Division of Ser. No. 797,712, Feb. 7, 1969, Pat. No. 3,642,762. This application June 30, 1971, Ser. No. 158,543
Claims priority, application Great Britain, March 15, 1968, 12,779/68
Int. Cl. C08d 9/16, 5/02, 5/04
U.S. Cl. 260—894 3 Claims

Conjugated diene solution rubber compositions having improved green strength combined with satisfactory processability are obtained by treatment of a solution diene rubber, in aqueous dispersion, with a redox hydroperoxide system to produce a composition having 5–60 weight percent toluene-insoluble gel.

3,700,758
HOT MELT ADHESIVE COMPOSITIONS COMPRISING POLYOLEFIN AND DAC-B RESIN
Sam H. Johnson, Jr.; Robert A. Mears, and Vernon K. Park, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,563
Int. Cl. C08f 29/12
U.S. Cl. 260—897 R 9 Claims

Improved hot melt adhesives and processes for their preparation are disclosed. These hot-melt adhesive compositions are composed of a mixture of a polyolefin component and a new hydrocarbon resin prepared from a fraction resulting from a thermal cracking operation.

3,700,759
MOLDING SUBSTANCES OF LOW- AND HIGH-PRESSURE POLYETHYLENE
Hans Breuer, Ludwigshafen/Rhine; Erich Manner, Burghausen-Upper Bavaria, and Karl-Heinz Michl, Munich-Solln, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Bavaria, Germany
Filed Oct. 26, 1970, Ser. No. 84,239
Claims priority, application Germany, Oct. 29, 1969, P 19 54 488.8
Int. Cl. C08f 29/12
U.S. Cl. 260—897 A 1 Claim

A molding substance consisting of 90 to 99 percent by weight of low-pressure polyethylene with a density of 0.940 to 0.965 and a grader value of 0.05 to 0.3, and 1 to 10 percent by weight of high pressure polyethylene with a density of 0.918 to 0.930 and a grader value of 0.05 to 0.3.

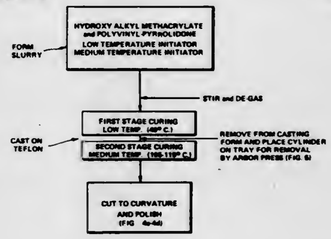
3,700,760
DIESTERS OF HALO-SUBSTITUTED ALKYLOXYALKYLPHOSPHONATES
Isaac Benghiat, New City, N.Y., assignor to Universal Oil Products Company, Des Plains, Ill.
Filed Dec. 29, 1969, Ser. No. 888,966
Int. Cl. C07f 7/40; D06c 27/00
U.S. Cl. 260—950 6 Claims

Novel compositions of matter comprising diesters of halo-substituted alkyloxyalkylphosphonates containing at least two halogen atoms as exemplified by dimethyl 3-chloro-2,3-dibromopropoxymethylphosphonates are utilized as components in preparing compounds such as plastics, polymers, resins, etc. and will impart desirable physical characteristics of flame retardance or fire resistance to these compounds.

ERRATUM
For Class 260—404 see:
Patent No. 3,700,844

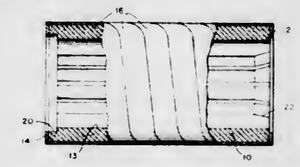
ERRATUM
For Class 260—31 see:
Patent No. 3,700,957

3,700,761
FABRICATION OF SOFT PLASTIC CONTACT LENS BLANK
Kenneth F. O'Driscoll, Williamsville, and Allan A. Isen, Buffalo, both of N.Y., assignors to Griffin Laboratories Incorporated, Buffalo, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,828
Int. Cl. B29d 11/00
U.S. Cl. 264—1 8 Claims



Graft or block copolymers of hydroxy alkyl methacrylate esters and polyvinyl pyrrolidone are (1) cast in a shaping mold as a monomer-polymer dispersion, polymerized to a solid at 40°–60° C. in the presence of low and medium temperature free radical initiators, (2) the solid taken out of the mold and heated to 90°–120° C., and then post-polymerized by (3) radiation while dry and by (4) hydrogen peroxide treatment to form hygroscopic, solid, shaped masses which may be cut in the dry state, after step (2), into contact lenses. The lenses may be equilibrated in the wet state by hydrating with normal saline solution. The lenses may be maintained by treatment with hydrogen peroxide. Steps (3) and (4) toughen the lens, increase its elasticity and its elastic recovery and improve its dimensional stability. From 20 to 45 percent by weight of polyvinyl pyrrolidone imparts hygroscopic and unusual water-swelling characteristics while retaining elastic recovery. The water-swollen lens contains from 40–80 percent water, preferably from 50–55 percent, and in isotonic saline, the water content changes to about 52–58 percent. As a result of the polyvinyl pyrrolidone incorporation, the lens is readily cleaned after use in the eye with dilute hydrogen peroxide to rid it of imbibed muco-protein, catalase and the like.

3,700,762
PROPELLANT GRAIN
David W. Carpenter, and Charley R. Rodgers, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 4, 1070, Ser. No. 34,032
Int. Cl. C06b 21/02
U.S. Cl. 264—3 2 Claims

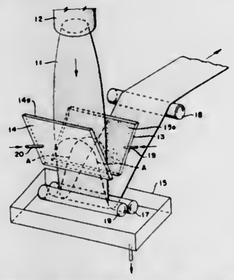


A propellant grain is wrapped with glass fiber tape and fitted with epoxy end pieces to inhibit burning in those areas. A fluorocarbon grain is etched with hydrochloric acid and then immersed in lacquer before being wrapped.

3,700,763
TUBULAR WATER QUENCH PROCESS WITH WATER FILM COOLING

Peter H. van Kralingen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,849
Claims priority, application Great Britain, Dec. 31, 1968, 61,899/68
Int. Cl. B29c 17/07, 25/00; B29d 7/20
U.S. Cl. 264—95 4 Claims



Film of an organic thermoplastic polymer is manufactured by drawing an extruded, inflated, hot, tubular film from an extruder and passing the film into contact with layers of cooling liquid supported by symmetrically disposed collapsing elements adapted to effect a partial but not complete collapse of the tubular film to the lay flat form, cooling liquid being simultaneously supplied to a plurality of locations distributed over the surfaces of the collapsing elements at a rate sufficient to maintain layers of cooling liquid thereon.

3,700,764
PROCESS FOR THE PRODUCTION OF SYNTHETIC RESIN PIPES

Satoshi Tago, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,667
Claims priority, application Japan, Dec. 27, 1969, 44/104952
U.S. Cl. 264—273 2 Claims



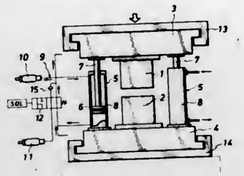
A process for the production of pipes having excellent anti-flattening characteristics under a load comprises the steps of placing in a metallic mold capable of being rotated, a reinforcing frame having a shape capable of being rotated in the metallic mold by rotation of the same and a powdered synthetic resin, heating the resin to melt the synthetic resin and cause it to adhere to the inside surface of the metallic mold, whereby a pipe containing the reinforcing frame material therein is formed, and after solidifying the pipe by cooling, recovering the pipe.

3,700,765
METHOD FOR KEEPING METAL MOLD IN A CLAMPED STATE

Katashi Aoki, 6037 Oaza Minamijo, Hanishina-gun, Japan

Filed May 20, 1971, Ser. No. 145,385
Claims priority, application Japan, May 30, 1970, 45/46688
Int. Cl. B29f 1/06; B30b 15/16
U.S. Cl. 264—328 1 Claim

A method and device for keeping metal mold in a clamped state characterized in that the mold-halves of the metal mold are respectively coupled to a plurality of hydraulic cylinders and pistons, the mold-halves are forced to close so that the displacement of the pistons causes a hydraulic fluid to flow from one space to the other in the hydraulic cylinders and also to an accumulator through a control valve, and upon the completion of the closure, shifting the control valve to another position so that the remaining fluid in the above mentioned one space is further evacuated to another accumulator at a low pressure with the simultaneous communication maintained between the other space of the hydraulic cylinders and the first accumulator, whereby a pressure difference is created between the two spaces separated by the pistons, and the mold-halves are thereby clamped.



3,700,766
METHOD FOR PRODUCING SOLUTIONS OF HIGH ALUMINA CONCENTRATION BY ALKALINE EXTRACTION OF ALUMINUM-CONTAINING OIL SHALE

Robert T. MacMillan, Silver Spring, Md., and Jesse Jackson, Jr., Washington, D.C.

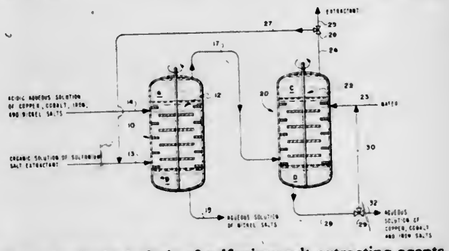
Continuation-in-part of Ser. No. 861,162, Sept. 25, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,204
Int. Cl. C01f 7/02
U.S. Cl. 423—119 10 Claims

Aluminum values are leached from retorted oil shale with 0.5N to 1N sodium hydroxide solution present in sufficient quantity such that the mol ratio between sodium in the solution and aluminum in the shale is in a range of 2:1 to 2.5:1 ($Na_2O:Al_2O_3$). As pH falls to 12 during extraction, the liquid is fortified with additional NaOH to raise pH above 12. Mol ratio between said additional NaOH and undissolved aluminum, expressed as $Na_2O:Al_2O_3$, is in a range of 1:3 to 1:1.

3,700,767
RECOVERY OF SULFONIUM SALT EXTRACTING AGENTS

Jan P. Campen, and Riekert Kok, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed April 23, 1971, Ser. No. 136,961
Claims priority, application Great Britain, May 4, 1970, 21,259/70
Int. Cl. C01g 3/04, 49/10, 9/04
U.S. Cl. 423—24 4 Claims



Recovery by hydrolysis of sulfonium salt extracting agents from metal value separation streams is improved when a portion of the aqueous hydrolysis effluent is recycled.

3,700,768
ANTIBIOTIC AM374 AND METHOD OF PRODUCTION USING STREPTOMYCES EBUROSPOREUS

Martin Paul Kunstmann, Pearl River, N.Y., and John Norman Porter, Ramsey, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 815,652, April 14, 1969, abandoned. This application April 6, 1970, Ser. No. 26,101
Int. Cl. A61k 21/100
U.S. Cl. 424—118 6 Claims

A new antibiotic is produced, designated AM374, by fermenting under controlled conditions *Streptomyces eburosporeus* n.s. The new antibiotic is active against gram-positive bacteria and thus is useful in inhibiting the growth of such bacteria wherever they may be found.

The invention also relates to a novel use of the new antibiotic as a growth promoter for animals.

3,700,769
ANTIFUNGAL BH890

John Henry Edward James Martin, New City, N.Y., and John Norman Porter, Ramsey, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed April 14, 1969, Ser. No. 815,610
Int. Cl. A61k 21/00
U.S. Cl. 424—119 3 Claims

A new antifungal compound, designated BH890, is produced by cultivating a new strain of *Streptomyces misionensis* NRRL 3609. The new antifungal can be used to inhibit growth of a variety of fungi, as, for example, *Candida albicans* and *Cryptococcus neoformans*.

3,700,770
PHENYLALANINE DERIVATIVES FOR TREATMENT OF MEASLES INFECTIONS

Ernest D. Nicolaides, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Oct. 21, 1966, Ser. No. 588,306
Int. Cl. A61k 27/00
U.S. Cl. 424—177 5 Claims

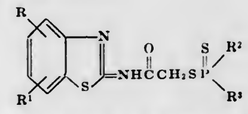
Pharmaceutical compositions in dosage unit form comprising a pharmaceutical carrier and N-carbobenzoxy-D-phenylalanyl-D-phenylalanine or a pharmaceutically-acceptable salt. Methods for the prophylaxis or treatment of measles infections, by administering N-carbobenzoxy-D-phenylalanyl-D-phenylalanine or a pharmaceutically-acceptable salt.

3,700,771
2-AMINOBENZOTHIAZOL PHOSPHATES AND PHOSPHONATES USED AS INSECTICIDES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 837,880, June 30, 1969, Pat. No. 3,597,439. This application Feb. 16, 1971, Ser. No. 115,871
Int. Cl. A01n 9/36
U.S. Cl. 424—200 7 Claims

Compounds of the formula



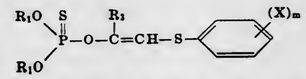
in which R and R^1 are hydrogen or halogen, R^2 is alkoxy, and R^3 is alkoxy or alkyl, are used as insecticides.

3,700,772
PHENYLTHIOVINYL PHOSPHOROTHIOATES AS INSECTICIDES AND ACARICIDES

Roger Williams Addor, Pennington, and Thomas Walter Drabb, Jr., Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 808,006, March 17, 1969, Pat. No. 3,632,862. This application May 17, 1971, Ser. No. 144,406
Int. Cl. A01b 9/36
U.S. Cl. 424—216 10 Claims

The insecticidal and acaricidal compounds have the formula:



and include the trans and cis isomeric forms of the above compound as well as mixtures of the trans and cis isomers wherein:

R_1, R_2,8R_3 are each lower alkyl,

X is chloro, fluoro, or nitro,

m is 0 or 1, except that when X is chloro, *m* is 1 to 3.

The compounds are prepared by reaction of an α-phenylthioketone with a phosphorothioate compound in the presence of an inert reaction solvent and certain strong bases.

3,700,773
SUBSTITUTED PHENYLSULFAMYL SALICYCLIC ACIDS AND DERIVATIVES THEREOF IN THE TREATMENT OF INFLAMMATION

Tsung-Ying Shen; Bruce E. Witzel, and Gordon L. Walford, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed June 25, 1969, Ser. No. 836,605
Int. Cl. A61k 27/00
U.S. Cl. 424—230 4 Claims

Substituted phenyl sulfamyl or sulfonamido salicylic acids and non-toxic pharmaceutical accepted salts, esters, amides and various derivatives thereof are claimed. Also a method of treating inflammation which comprises administering various substituted phenyl sulfamyl or sulfonamido salicylic acids and the various derivatives are also claimed. The substituted phenyl sulfamyl or sulfonamido salicylic acids described herein have anti-inflammatory, anti-pyretic and analgesic activity.

3,700,774
DIAZEPAM AND PROPANTHELINE COMPOSITION

Irwin Lerner, West Caldwell, and Robert Paul McGrath, Wayne, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 793,546, Jan. 23, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,746
Int. Cl. A61k 27/00
U.S. Cl. 424—244 4 Claims

Compositions comprising diazepam and propantheline halide, useful in treating gastrointestinal disorders are disclosed.

3,700,775
CHOLERETIC ACTIVITY

Luigi Turbanti, Via Bonaccorso Da Padule, 10, Pisa, Italy

Division of Ser. No. 632,563, April 21, 1967, abandoned. This application Sept. 11, 1970, Ser. No. 71,359
Int. Cl. A61k 27/00
U.S. Cl. 424—317 3 Claims

This invention provides 2-phenyl-2-hydroxy-cyclohexane-carboxylic acid and 2-cyclohexyl-2-hydroxy-cyclohexane-carboxylic acid as highly effective choleretic agents. The administration of effective dosages of these compounds by various routes results in marked choleresis.

3,700,776
USE OF P,P'-BIS-UREIDODIPHENYL SULFONE IN TREATING MAREK'S DISEASE

Tsung-Ying Shen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed March 10, 1970, Ser. No. 18,293
Int. Cl. A61k 27/00
U.S. Cl. 424—322 **12 Claims**

The use of p,p'-bis-ureidodiphenyl sulfone and soluble salts thereof in reducing mortality and decreasing lesion incidence of poultry exposed to Marek's disease and to compositions comprising the p,p'-bis-ureidodiphenyl sulfone as the active ingredient are provided.

3,700,777
MODIFICATION OF ENDOCRINE STATUS WITH HYDRAZINE DERIVATIVES

Dora Nellie Richardson; Arthur Leonard Walpole, both of Macclesfield, and George Edward Paget, Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 32,589, May 31, 1960, abandoned, and a continuation of Ser. No. 378,966, June 29, 1964, abandoned. This application Aug. 8, 1969, Ser. No. 851,143
Claims priority, application Great Britain, June 17, 1957, 20,758/57; Nov. 23, 1959, 39627/59
Int. Cl. A61k 27/00
U.S. Cl. 424—323 **19 Claims**

The disclosure relates to pharmaceutical and veterinary compositions containing as active ingredient at least one N^1,N^2-dithiocarbamoylhydrazine derivative, and to a method for using such compounds for the modification of the endocrine status in humans and in animals. Typical of the active ingredients used is N^1-α-methylallylthiocarbamoyl-N^2-methylthiocarbamoylhydrazine.

3,700,778
INSECTICIDAL COMPOSITION CONTAINING TRIFLUOROMETHYL SUBSTITUTED BENZANILIDES AND METHOD OF USING THE SAME

Harry L. Hyndman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 23, 1970, Ser. No. 57,790
Int. Cl. A01n 9/20
U.S. Cl. 424—324 **16 Claims**

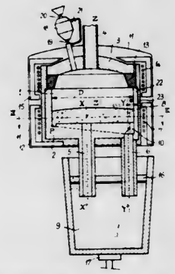
Insecticidal compositions and methods utilizing benzanilides having a trifluoromethyl group on either of the benzene rings.

ELECTRICAL

3,700,779
METHOD OF TREATMENT OF LIQUID STEEL UNDER VACUUM

Jacques Pomey, Billancourt, France, assignor to Societe des Aciers Fins de l'Est, Billancourt, France

Division of Ser. No. 744,744, July 15, 1968. This application July 30, 1970, Ser. No. 64,896
Int. Cl. H05b 5/16
U.S. Cl. 13—26 **8 Claims**

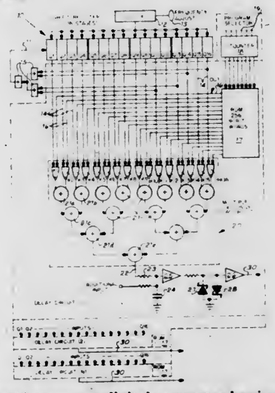


A method of de-gasification of steel in fusion poured into a casting ladle in which are immersed the lower extremities of two vertical refractory pipes, the upper parts of which open into the bottom of a vacuum-tight refractory chamber, the one in the proximity of its center and the other into its peripheral portion, a constant vacuum ensuring the rise of the steel bath and its stabilization at a pre-determined height being maintained in said chamber, the steel being heated by induction, a circulation of the liquid steel through the pipes between the ladle and the chamber being effected by means of an inductor winding surrounding the chamber and for a period sufficient for the desired degree of purification under vacuum to be obtained.

3,700,780
DUAL DELAYED SEQUENCE GENERATOR WITH READ ONLY MEMORY CONTROL FOR 256 OUTPUT TRIPLES FOR PLANE AND SPHERICAL WAVE-FRONT SIMULATIONS

Eugene R. Roeschlein, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1971, Ser. No. 140,167
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 **8 Claims**

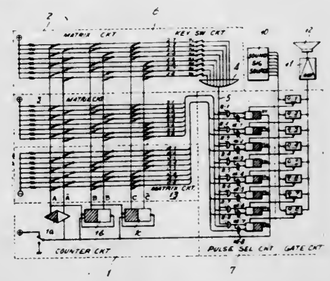


A dual delayed sequence digital generator having a plurality of shift register modules connected to generate linear sequences, each module stage having an output to a solid state switch under the control of a read only memory (ROM) circuit to switch the shift register outputs to a combination of OR gates operating in a modulo-2 manner to sift all shift register outputs to a single digital output through a filter, limiter and buffer, the combination of similar circuits providing a plurality of delayed signals simulating a sonar signal wavefront from a simulated target in inner space.

3,700,781
ELECTRONIC MUSICAL INSTRUMENT

Nobuharu Obayashi, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed Jan. 3, 1972, Ser. No. 215,055
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 **6 Claims**

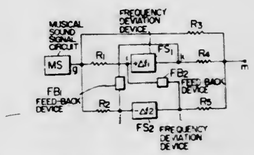


Circuit for an electronic musical instrument in which a matrix coupled to a counter is connected through key switches to an OR gate and thence via a common line to a plurality of gate controlled flip flops also controlled by a second matrix which is coupled to the counter. The flip flops control gates which selectively pass audio signals to a speaker; a third matrix resets the flip flops.

3,700,782
ELECTRONIC TREMOLO EFFECT PRODUCING DEVICE

Yasuji Uchiyama, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Jan. 25, 1971, Ser. No. 109,440
Claims priority, application Japan, Jan. 26, 1970, 45/6274; Jan. 26, 1970, 45/7206
Int. Cl. G10h 1/02
U.S. Cl. 84—1.24 **1 Claim**



An electronic tremolo effect producing device in which a musical sound signal frequency is deviated by as much as frequencies of two signals having different frequencies each sufficiently lower than that of said musical sound signal by means of two frequency deviation devices. Respectively a part of the output signal of each frequency deviation device mentioned above is fed back to an input side of its own frequency deviation device or the other frequency deviation device

thereby to obtain a multiple spectrum signal and this signal is mixed with an original musical sound signal thereby to produce a tremolo effect sound.

3,700,783

VIBRATO EFFECT PRODUCING APPARATUS USING A PLURALITY OF REPRODUCING HEADS WHICH ARE INDIVIDUALLY RECIPROCALLY DISPLACED RELATIVE TO EACH OTHER

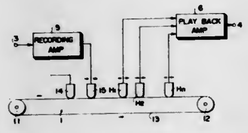
Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Nov. 4, 1970, Ser. No. 86,823

Claims priority, application Japan, Nov. 8, 1969, 44/106291; Nov. 8, 1969, 44/106292; Nov. 8, 1969, 44/106293; Nov. 8, 1969, 44/106294; Dec. 19, 1969, 44/120913; Jan. 29, 1970, 45/9093; Jan. 29, 1970, 45/9094; Jan. 29, 1970, 45/9095

Int. Cl. G10h *1/04*; **G11b** *21/02*

U.S. Cl. 84—1.25 **10 Claims**



A vibrato effect producing apparatus using at least one recording head and a plurality of reproducing heads and at least a magnetic tape having at least one recording track and a tape drive means. The apparatus is provided with means for producing periodical variations to relative motions between said tape and said recording head and between the former and the reproducing heads whereby various frequency modulated tone signals may be derived at the respective reproducing heads simultaneously. These tone signals imparted with different frequency modulations are mixed to provide music sounds having rich frequency spectra.

3,700,784

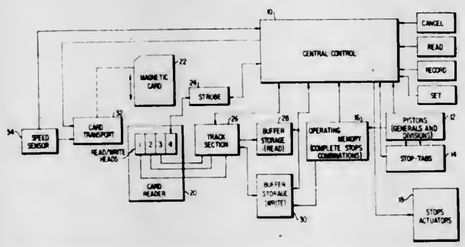
CAPTURE COMBINATION SYSTEM

Laszlo A. Molnar, Tustin, Calif., assignor to North American Rockwell Corporation, Anaheim, Calif.

Filed Oct. 9, 1970, Ser. No. 79,612

Int. Cl. G10b *3/10*

U.S. Cl. 84—345 **30 Claims**



A capture combination system for use in an electronic organ provides rapid reprogramming of the entire combination memory while permitting manual selection of desired stop combinations at any time. Desired stop combinations are selected for each piston and set into the working memory of the system. These combinations, upon command, are transferred from the working memory to a storage or external memory. A full combination of stop settings may be stored on the external memory by transfer from the internal memory, and a number of such external memories corresponding to a number of different full combinations of stop settings thus may be prepared and, subsequently, selectively presented to the system as desired. The combination settings from the external memory are transferred upon command into the internal working memory for establishing the desired combination of stop settings therein. Transfer into or out of the external memory requires but a few seconds. Whenever desired, the working memory may be altered to modify one or more stop combinations, whether set manually, or entered therein from the external memory and, in the latter case, while retaining the combinations recorded in the external memory.

3,700,785

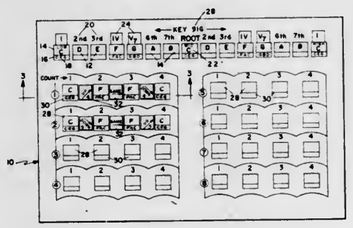
MEANS FOR SIMPLIFIED REWRITING OF MUSIC

Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.

Filed July 2, 1971, Ser. No. 159,134

Int. Cl. G09b *15/00*

U.S. Cl. 84—470 **2 Claims**



The combination of a specially developed work sheet and sticker elements to guide original composition as well as rewriting of music in simplified form without resort to staff paper, a principal feature being means for simply and unmistakably indicating the raising or lowering in the pitch of the next succeeding note and/or chord, a relationship found by music instructors to be not immediately obvious to students, and the pattern of such succeeding relationships, necessary to achieve a desired feeling, mood, or impression in an original composition being found to be quickly and easily recognizable by even somewhat more advanced musicians when recorded according to the present invention. The work sheet carries a representation of a root tone and the notes of the corresponding scale and principal chords in an octave above and an octave below the same, marked writing areas with spaces therebetween, and pre-marked stickers are selectively adhered in the spaces so that the pitch relationships can be recognized at a glance.

3,700,786

MULTI-CONDUCTOR ELECTRIC CABLES

Thomas Lawrenson, Helsby, via Warrington, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Feb. 29, 1972, Ser. No. 230,325

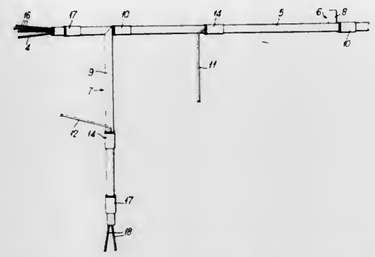
Claims priority, application Great Britain, March 3, 1971, 5,905/71

Int. Cl. H01b *7/08*

U.S. Cl. 174—72 A **30 Claims**

A multi-conductor cable for forming a cable harness, for instance for use in automobiles or aircraft, comprises at least one length of tape cable enclosed in a heat-shrunk tubular sheath of insulating material. At least one branch length of tape cable is electrically connected to the length of tape cable, or to at least one of the lengths of tape cable, at at least one of a number of longitudinally spaced locations, the free end of the branch length protruding from the tubular sheath. An individually insulated conductor and/or a twin or multi-conductor insulated cable may also be enclosed within the tubular

sheath. In a cable harness incorporating the multi-conductor cable at least some of the conductors of the length or lengths



of tape cable and/or of the branch length or lengths of tape cable are electrically connected to insulated terminal leads.

3,700,787

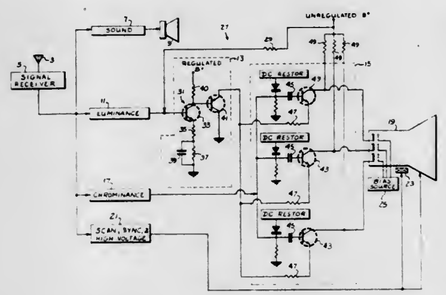
LINE VOLTAGE COMPENSATING CIRCUITRY FOR RGB COLOR DRIVE SYSTEM

Rangaswamy Arumugham, Oakfield, N.Y., assignor to GTE Sylvania Incorporated

Filed Jan. 7, 1971, Ser. No. 104,601

Int. Cl. H04n *9/20*

U.S. Cl. 178—5.4 R **7 Claims**



A color television receiver employing an RGB color drive system wherein a plurality of color amplifier stages are each coupled to a color cathode ray tube electrode, to a source of video signals, to a source of color difference signals, and to an unregulated potential source. Feedback circuitry couples the unregulated potential source to the video signal whereby variations in the unregulated potential source, due to line voltage changes, applied to the color cathode ray tube electrodes are also applied to the video signal source to effect variations in the DC gain thereof providing compensation for the potential source variations applied to the color cathode ray tube electrodes.

3,700,788

ELECTRICAL COMPONENT PACKAGE

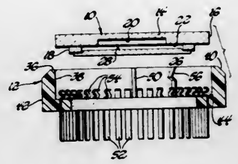
Richard F. Spurck, Golden, Colo., assignor to Coars Porcelain Company, Golden, Colo.

Filed Jan. 28, 1971, Ser. No. 110,693

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 S **12 Claims**

A package for electrical components comprising a carrier for encapsulating the component and a socket for receiving the carrier. The carrier is in the form of a leadless circular flat-pack. The socket is an annular receptacle dimensioned for accepting the carrier therein and includes a plurality of electrical



connectors which engage deposited conductive patterns on the flatpack carrier to complete electrical circuit connections.

ERRATUM

For Class 174—36 see:
Patent No. 3,700,825

3,700,789

MISREGISTRATION CORRECTION FOR COLOR TELEVISION CAMERAS

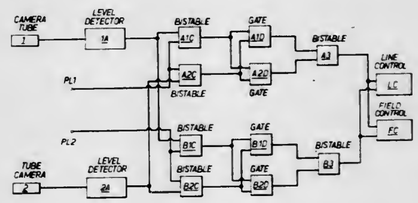
Derek Vernon Ryley, and Gyongyver Claydon, both of Essex, England, assignors to The Marconi Company Limited, London, England

Filed Sept. 23, 1970, Ser. No. 74,739

Claims priority, application Great Britain, Oct. 1, 1969, 48,168/69

Int. Cl. H04n *9/00*

U.S. Cl. 178—5.4 M **7 Claims**



A color television equipment has a plurality of component camera tubes and means for bringing the rasters of the tubes into registration one with another. The time interval between signals produced from each of a pair of tubes when that tube scans an oblique boundary on a test card is used to provide a correction signal to effect registration. Correction signals are derived to correct misregistration in both line and field directions.

3,700,790

COLOR TELEVISION CAMERAS

Derek Vernon Ryley, Claydon, Gyongyver, Essex, England, assignor to The Marconi Company Limited, London, England

Filed July 23, 1970, Ser. No. 57,707

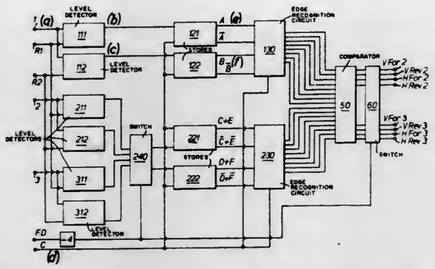
Claims priority, application Great Britain, July 29, 1969, 37,994/69

Int. Cl. H04 *9/08*

U.S. Cl. 178—5.4 M **16 Claims**

A system for correcting misregistration errors in color television camera compares indirectly one with another, the video signals derived from the different camera tubes. Certain variations in the video signals which satisfy predetermined conditions are used to produce further signals by means of

which the comparisons are made, and which if a result of the comparison a misregistration situation is detected which



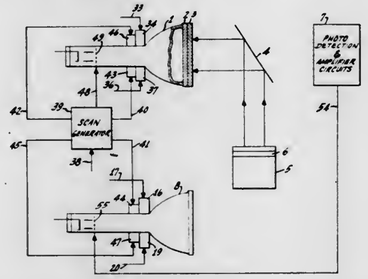
satisfied further predetermined conditions an error correction signal is provided.

3,700,791

CHARACTER GENERATOR UTILIZING A DISPLAY WITH PHOTOCHROMIC LAYER

Douglas Robert Bosomworth, Hightstown, N.J., assignor to RCA Corporation

Filed Oct. 15, 1969, Ser. No. 866,489
Int. Cl. H04n 7/18 ; G02f 1/36
U.S. Cl. 178—6.8 **9 Claims**



A photochromic cathode ray storage tube and means for optically projecting onto the photochromic screen of said tube any one of a number of different fonts. Any character in the font subsequently may be read out and displayed by scanning the electron beam of the storage tube over the portion of the screen storing the character, sensing the light produced during the scanning, and intensity modulating the screen of a display means, such as a concurrently scanned display kinescope, in response to the light which is sensed. The location and size of the area of the display means at which the character is to be displayed may readily be controlled. The font may easily be changed by erasing the one stored and then optically projecting a new font onto the same photochromic screen.

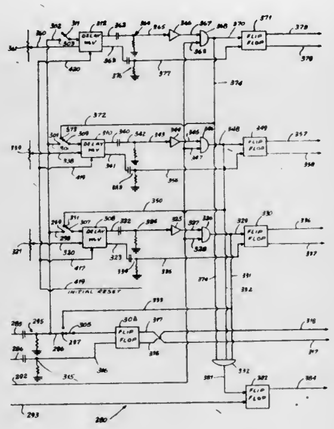
3,700,792

COMPUTER ANIMATION GENERATING SYSTEM

Lee Harrison, III, Englewood; Francis J. Honey, and Edwin J. Tajchman, both of Denver, all of Colo., assignors to Computer Image Corporation, Denver, Colo.

Filed Dec. 4, 1969, Ser. No. 882,125
Int. Cl. H04n 3/30
U.S. Cl. 178—6.8 **29 Claims**

A system for automatically animating scenes viewed by a video camera and displaying the animated scenes. Animation can be collectively of the entire scene or separately of individual sections of the scene viewed by the video camera. Real time animation is selected from any of several pre-programmed animation sequences synchronized with the video camera.

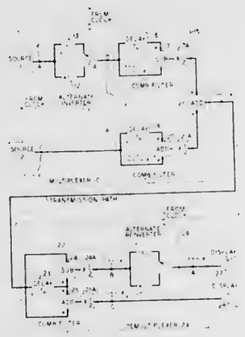


3,700,793

FREQUENCY INTERLEAVED VIDEO MULTIPLEX SYSTEM

Michael Howard Borsuk, Red Bank, N.J., and Sotirios Constantine Kitsopoulos, Zurich, Switzerland, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 9, 1970, Ser. No. 44,711
Int. Cl. H04n 7/08
U.S. Cl. 178—6.8 **3 Claims**



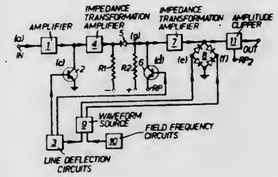
Two video signals having substantially all their energy distributed at the same discrete line harmonics are interleaved to form a multiplexed output. One signal is processed to form a modified signal whose alternate lines are phase inverted so that its energy spectrum is displaced by one-half line frequency from the original harmonics. The modified signal and the other unprocessed signal are algebraically added to produce the multiplexed output. After transmission, the signals are separated by comb characteristic filters and inverse processing reconstructs the original signal.

3,700,794

IMPROVEMENTS IN OR RELATING TO TELEVISION CAMERA CLAMPING ARRANGEMENTS

Peter William Loose, Essex, England, assignor to The Marconi Company Limited, London, England

Filed Sept. 28, 1970, Ser. No. 76,170
Claims priority, application Great Britain, Nov. 1, 1969, 53,661/69
Int. Cl. H04n 5/16
U.S. Cl. 178—7.1 **10 Claims**



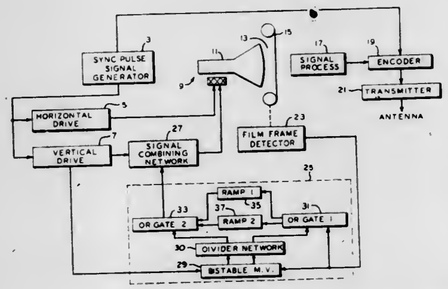
A video signal level clamping arrangement for a television camera in which input video signals are clamped to a fixed potential once during each line flyback. The clamped video signals are fed to a signal path into which signals are gated, each of the signals extending for at least the duration of one line flyback period. The resultant spurious free waveform is clamped to a further fixed potential source which is controlled such that it does not clamp during line flyback or outside field suppression. The waveform resulting from the last mentioned clamping is amplitude clipped to produce a stabilized D.C. level corresponding to a predetermined shade, e.g., black.

3,700,795

FLYING SPOT SCANNER FOR CONTINUOUSLY ADVANCED FILM

Robert Roy Eckenbrecht, East Bethany, N.Y., assignor to GTE Sylvania Incorporated

Filed July 16, 1971, Ser. No. 163,253
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 **8 Claims**



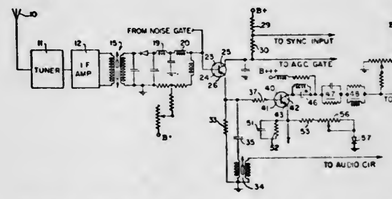
A system for providing a composite color television signal derived from a continuously advancing film of film frames in a flying spot scanner system includes a sync pulse signal generator, encoder, transmitter, horizontal and vertical scan circuitry, film frame detector, and a vertical scan modification signal development means wherein dual ramp signals in analog form are developed and selectively switched in accordance with the positional location of a film frame within a film scanning zone to effect modulation of vertical scanning of the film in accordance with the continuous advancement of the film through the film scanning zone.

3,700,796

D-C COUPLED SYNC CLIPPING VIDEO AMPLIFIER

Donald E. Griffey, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 696,163, Jan. 8, 1968, abandoned.
This application July 17, 1970, Ser. No. 56,247
Int. Cl. H04r 5/20; H04n 5/48
U.S. Cl. 178—7.3 R **6 Claims**



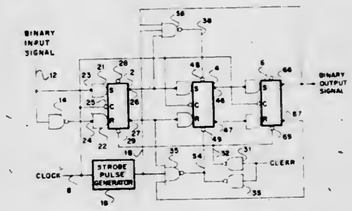
A diode in series with the emitter of the video output transistor prevents conduction of the transistor during all or the greater portion of the synch pulse. This permits a greater swing of the video information signal coupled to the cathode ray tube of a television receiver.

3,700,797

FACSIMILE NOISE DELETION AND CODING SYSTEM

Robert E. Wernikoff, Belmont, Mass., assignor to Electronic Image Systems Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,526
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **14 Claims**



The disclosed circuit and method detect and delete certain pulse sequence patterns from a binary data stream. When used in a facsimile system to eliminate single pulses from a binary data stream derived by scanning graphic information on a document, the resolution of the scanning system and the size of the graphic information areas being such that two or more pulses in the binary data stream are required to represent the minimum normal elemental area of graphic information, the invention both reduces appreciably the number of pulse sequences required to be communicated and also helps to eliminate isolated noise marks from the facsimile copy.

3,700,798

METHOD OF RECORDING AND/OR REPRODUCING VIDEO SIGNALS

Robert Nestor Joseph Sluys; Johannes Hendrik Wessels, and Willem Van Den Busschе, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 30, 1965, Ser. No. 468,326
Claims priority, application Netherlands, July 4, 1964, 6407633
Int. Cl. G11b 5/52; H04n 5/78 , 7/12
U.S. Cl. 178—6.6 SF **4 Claims**

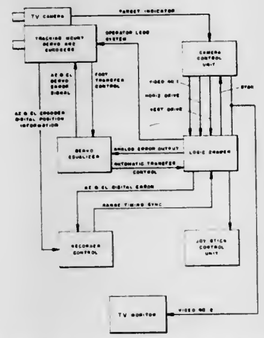
A method of recording and reproducing video signals by recording KN fields of every kn^2 fields of the video signal, and

by scanning each recorded field *n* times. Apparatus including



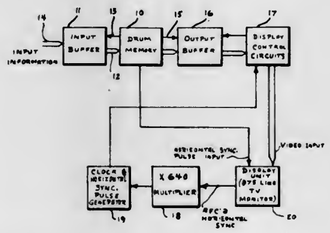
a drum around which recording tape is helically wound within which *n* recording heads rotate is also disclosed.

3,700,799
VIDEO GATE
Robert J. Stedman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed April 3, 1970, Ser. No. 25,477
Int. Cl. H04n 7/02
U.S. Cl. 178—6 **6 Claims**



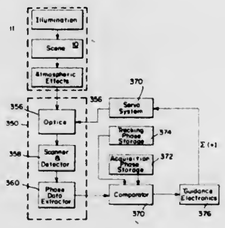
A video gate generator for excluding the sensing of any target other than a target inside the gate generated by digitally sampling a portion of a television raster and producing an output gate comprising left and right boundaries and upper and lower boundaries for superposition on a TV monitor.

3,700,800
DRUM-DISPLAY SYNCHRONIZER
Frederic C. de Learie, Manlius, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force
Filed May 18, 1971, Ser. No. 144,477
Int. Cl. G11b 31/00; H04n 5/04, 5/78
U.S. Cl. 178—6.6 DD **2 Claims**



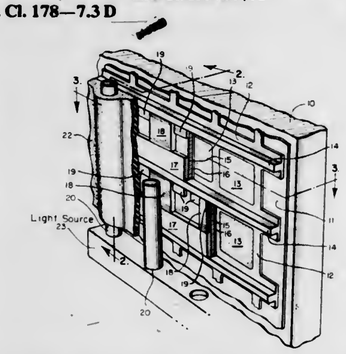
An apparatus for the synchronization of a drum memory to a display unit utilizing a AFC'd horizontal sync pulse from a television monitor. The start of the horizontal sweep and the video signal are both synchronized to the horizontal sync pulse which is derived from clock pulses on the drum surface.

3,700,801
IMAGE ANALYSIS AND CORRELATION SYSTEM AND METHOD
Charles B. Dougherty, Northridge, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Oct. 3, 1966, Ser. No. 583,866
Int. Cl. H04n 7/00
U.S. Cl. 178—6.8 **19 Claims**



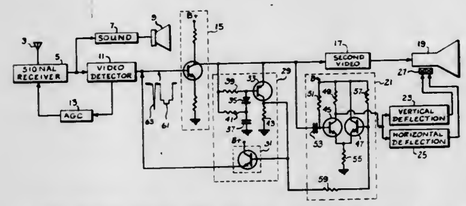
This invention described improved correlation techniques between images by reducing the optical images into electrical signals. Unreliable techniques eliminate variations due to perspective sun angle and optical distortion by using improved techniques for relating the data received from different sources. An improved system and method is described for the analysis of a reference image to an optically-sensed image which performs a Fourier analyses on the electrical signals representing an image. Spatial frequency component amplitudes and/or phases comprising the Fourier frequency components are isolated and quantified for use in a computer.

3,700,802
MATRIX-TYPE IMAGE DISPLAY WITH LIGHT-GUIDE ADDRESSING SYSTEM
Joseph Markin, and Alan Sobel, both of Evanston, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 21, 1970, Ser. No. 100,240
Int. Cl. H04n 9/12
U.S. Cl. 178—7.3 D **10 Claims**



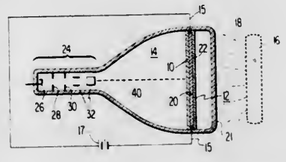
An image-display panel includes a plurality of light-displaying elements, such as electroluminescent capacitors or liquid crystals, disposed in an array of rows and columns. Associated with each light-displaying element is a photoconductor or other light-responsive device for activating the light-displaying elements. A pair of crossed arrays of fiber-optic light pipes have their crossings in juxtaposition with the photosensitive devices, the light pipes including localized light-emitting apertures near the crossings. A system is included for injecting light into the light pipes in a manner to provide systematic sequential scanning of the photosensitive devices by concurrent light emission from the localized apertures of selected light-conductive elements of both of the arrays. Light emitted from a single light-pipe aperture reduces the resistance of part of the associated photoconductor, but the resistance of the remaining part is sufficient to prevent the light-displaying element from functioning. When light is emitted from both light-pipe apertures associated with the photoconductor at a single display element, the photoconductor resistance is sufficiently reduced that the light-displaying element produces a useful output. In an alternative embodiment, the light pipes are utilized for scanning activation in but one direction, while electrical conductors are used to perform the coordinate scanning function.

3,700,803
SELF-TRACKING NOISE SUPPRESSING CIRCUIT
Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated
Filed March 15, 1971, Ser. No. 124,341
Int. Cl. H04n 5/44
U.S. Cl. 178—7.3 R **12 Claims**



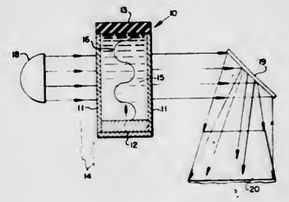
Video signals which may include noise signals are applied via peak signal detecting and signal averaging circuitry to an electron device to effect signal clamping at a given level which varies in accordance with variations in magnitude of the applied video signal and wherein noise signals above the given clamping level are fed back in inverse polarity relationship to cause cancellation of the noise signals in the applied video signal.

3,700,804
METHOD OF IMPROVING CATHODOCHROMIC SENSITIVITY
Philip Michael Heyman, Trenton, N.J., assignor to RCA Corporation
Filed Oct. 8, 1970, Ser. No. 79,036
Int. Cl. G02f 1/28
U.S. Cl. 178—7.5 D **8 Claims**



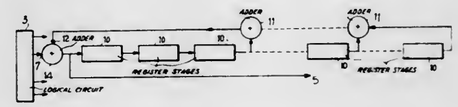
Method of operating a display tube comprising a screen including a cathodochromic material. The method comprises steps of heating the cathodochromic material to a temperature below the total erase temperature and writing information on the cathodochromic material (by electron impingement thereon) while the heating is continued. Heating can be done by the writing electron beam and/or supplemental heating means.

3,700,805
BLACK-AND-WHITE IMAGE CONTROL BY ULTRASONIC MODULATION OF NEMATIC LIQUID CRYSTALS
Thomas F. Hanlon, 337 Tremont Avenue, Fort Lee, N.J.
Continuation of Ser. No. 782,659, Dec. 10, 1969. This application Aug. 26, 1971, Ser. No. 175,395
Int. Cl. H04n 3/02
U.S. Cl. 178—7.3 D **9 Claims**



A modulator in which ultrasonic waves are generated by a video carrier potential applied to a piezoelectric transducer mounted in a glass-sided cell containing a nematic liquid crystal, is positioned in the path of light from a source consisting of a stroboscopically pulsed (at the rate of the speed of sound) visible light laser or non-coherent light source, to produce a complete black-and-white television image.

3,700,806
KEY GENERATORS FOR CRYPTOGRAPHIC DEVICES
Jean-Pierre Vasseur, Paris, France, assignor to CSF-Compagnie Generale de Telegraphie sans Fil
Filed Sept. 18, 1967, Ser. No. 668,447
Int. Cl. H04l 9/04
U.S. Cl. 178—22 **5 Claims**

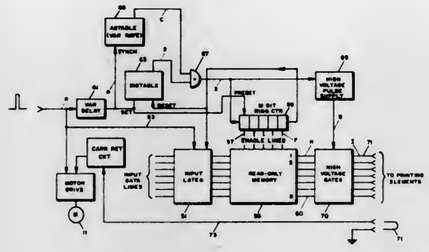


In a digital key generator, comprising a network of counters triggered by a clock, and feeding a logical circuit having a plurality of outputs supplying the digits of a quasi-random member, at least some of those outputs respectively feed corresponding shift-register converters whose outputs are substituted for the corresponding outputs of the logical circuit, in order to improve the quasi-random nature of the number delivered by the logical circuit.

3,700,807
IMPACTLESS PRINTER
Raoul E. Drapeau, Vienna, Va., assignor to Scope Incorporated, Reston, Va.
Filed Feb. 13, 1970, Ser. No. 11,147
Int. Cl. H04l 15/24, 15/34, 17/16
U.S. Cl. 178—30 **5 Claims**

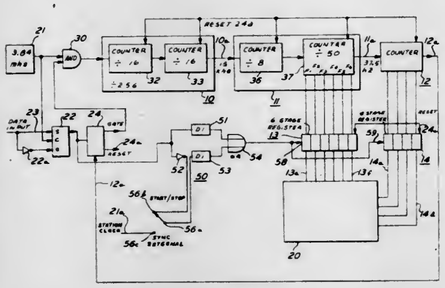
An impactless printer and control having movable heads with stylii extending therefrom for marking a coated paper. A stepping motor is used to transmit motion to the head so that

the printer is asynchronous. Gating means control the output of a memory device connected to input data lines. The gating



means are responsive to and actuated by a strobe pulse which controls the timing operation of the device.

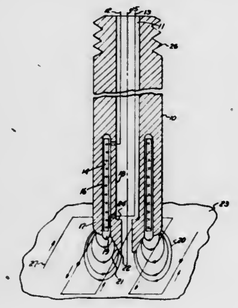
3,700,808
DISTORTION ANALYSIS SYSTEM AND METHOD
Ronald M. Lowery, Lutherville, and Daniel J. Summers, Jr., Kingsville, both of Md., assignors to Computest Corporation, Cherry Hill, N.J.
Filed Oct. 7, 1971, Ser. No. 187,320
Int. Cl. H04l *25/02*
U.S. Cl. 178—69 A **23 Claims**



A distortion analysis system and method in which the occurrence of each actual transition of bits in a character is displayed in its position with reference to a first transition of the character. A plurality of light emitting elements are formed in an array of columns and mapped rows. At the time of the first transition, a first count is made to a predetermined value and then continuously repeated with each count being associated with a different one of the columns. Each time the first count reaches the predetermined value, a second count counts up one with the second count being associated with a different one of the mapped rows. The first and second count which have accrued at the time of each transition are detected and an element is lit which is in both a column associated with the accrued first count and the mapped row associated with the second count.

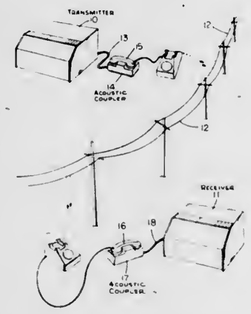
3,700,809
INDUCTIVELY COUPLED GRID CURSOR
Donald J. Nadon, 31449 Fairfax, Livonia, Mich.
Filed Aug. 31, 1971, Ser. No. 176,453
Int. Cl. H04l *21/02*
U.S. Cl. 178—87 **14 Claims**

A cursor for taking position signals from a grid is includes a coil through which inductive coupling with the grid is established. Because inductive coupling is employed, there need be no physical contact between the cursor and the grid. The cursor is configured so that the effects of orientation changes of the sensor parallel to the plane of the grid are eliminated and the effects of orientation changes normal to the plane of the grid are minimized. Furthermore, the cursor includes a low reluctance magnetic element which provides a



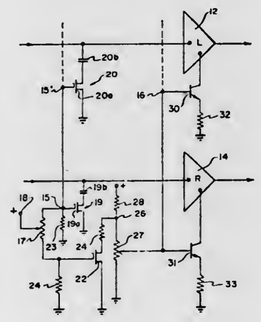
low impedance path for the magnetic flux within the cursor. An air gap is provided in the low reluctance element in the vicinity of the cursor which is in the closest proximity to the grid so that the magnetic field is concentrated at the grid, thereby permitting inductive coupling without the cursor physically contacting the grid.

3,700,810
FACSIMILE REVERSE SIGNALING SYSTEM
William E. Richeson, Jr., and Joel K. Roach, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed March 26, 1970, Ser. No. 22,930
Int. Cl. H04m *11/06*
U.S. Cl. 179—4 **8 Claims**



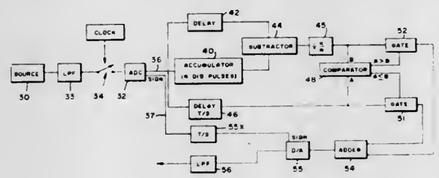
A facsimile transmission system utilizing telephone lines for its communication link is disclosed which is adapted to provide signals from the receiving unit to the transmitting unit to indicate failures of transmission to the transmitter. Provision is also made to simultaneously disable the echo suppressors present in long communication links so that two way communication is possible and to indicate to the transmitter that the receiver is ready to begin operation.

3,700,811
TONE AND VOLUME CONTROL FOR A MULTI-CHANNEL AUDIO AMPLIFIER SYSTEM
John R. Davidson, Rolling Meadows, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed July 20, 1970, Ser. No. 56,312
Int. Cl. H03j *5/04*
U.S. Cl. 179—1 D **4 Claims**



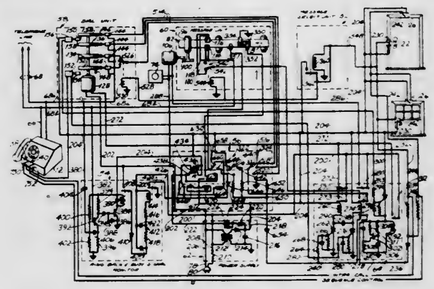
A tone control circuit for an audio amplifier system whereby the bass tones are enhanced by increasing the total gain or volume of the audio system, the treble tones are shunted to ground potential by a variable impedance network, and the bass and treble controls are effected by the DC control of discrete current control devices.

3,700,812
AUDIO SYSTEM WITH MEANS FOR REDUCING NOISE EFFECTS
James C. Springett, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed March 11, 1971, Ser. No. 123,253
Int. Cl. H04b *15/00*
U.S. Cl. 179—1 P **17 Claims**



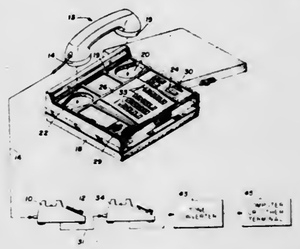
A system for eliminating noise pulses in the waveform of an audio signal is disclosed. The audio signal is used to produce an envelope signal whose amplitude is a function of the amplitude of a waveform section received during a time period T. The amplitude of the center segment of the waveform section is compared with the envelope signal amplitude. If the former is greater than the envelope signal amplitude it represents a noise pulse, and it is substituted by a pulse whose amplitude is either the envelope signal amplitude or the amplitude of a waveform segment adjacent to the noise representing segment.

3,700,813
TELEPHONING SYSTEM
Robert Colman, New York, N.Y., assignor to General Alarm Corporation, New York, N.Y.
Division of Ser. No. 587,589, Oct. 18, 1966, Pat. No. 3,519,745. This application Dec. 4, 1969, Ser. No. 879,963
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P **30 Claims**



Automatic telephoning systems which include means for generating signals in response to the occurrence of ringback and busy signals following a dialing operation and means for controlling the operation of a message broadcast unit and of a call sequence unit in response to the generated signals.

3,700,814
PORTABLE INPUT-OUTPUT TERMINAL
Earl D. Spraker, Dallas, Tex., assignor to Electronic Data Systems Corporation, Dallas, Tex.
Division of Ser. No. 773,680, Sept. 16, 1968, abandoned. This application April 16, 1969, Ser. No. 842,747
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 **10 Claims**

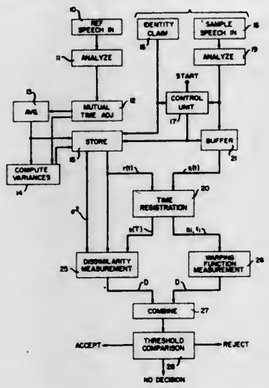


A pushbutton tone generator having a housing to receive the handpiece of conventional, dial-type telephones for converting same by means of audio-coupling to a tone transmitting station with automatic call and identification means and selectable data encoding means.

3,700,815
AUTOMATIC SPEAKER VERIFICATION BY NON-LINEAR TIME ALIGNMENT OF ACOUSTIC PARAMETERS
George Rowland Doddington, Richardson, Tex.; James Loton Flanagan, Somerset, and Robert Carl Lummis, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed April 20, 1971, Ser. No. 135,697
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 SA **12 Claims**

Speaker verification, as opposed to speaker identification, is carried out by matching a sample of a person's speech with a

reference version of the same text derived from prerecorded samples of the same speaker. Acceptance or rejection of the person as the claimed individual is based on the concordance of a number of acoustic parameters, for example, formant frequencies, pitch period and speech energy. The degree of match is assessed by time aligning the sample and reference



utterance. Time alignment is achieved by a nonlinear process which maximizes the similarity between the sample and reference through a piece-wise linear continuous transformation of the time scale. The extent of time transformation that is required to achieve maximum similarity also influences the decision to accept or reject the identity claim.

3,700,816

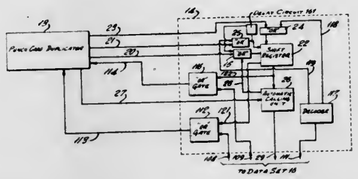
TELEMETERING REMOTE RECORDING UNIT

Ross Hugh Evans, Queens Village, N.Y.; Daniel Arron Seltzer, Cincinnati, Ohio, and Robert Leonard Young, Florence, Ky., assignors to Gamon-Calmet Industries, Inc., Florence, Ky.

Filed Dec. 31, 1970, Ser. No. 103,067

Int. Cl. G06f *3/00*; H04m *11/00*

U.S. Cl. 179—2 DP **9 Claims**



A system is disclosed for reading utility meters over a switched telephone network. In the system, information, including a telephone number is stored on a first punch card and reproduced by a card duplicator on a second initially blank punch card. The information representing the telephone number in addition to being reproduced on the second card, is also entered into a storage register. The number in the storage register is called up by an automatic calling unit and pulsed out onto a switched telephone network. The switched telephone network activates a meter reading circuit at an appropriate location represented by the telephone number. The meter reading circuit generates signals indicative of the meter reading and sends them back over the switched telephone network to be stored in the same storage register where the telephone number was entered When the complete meter reading signal is in the storage register, the card duplicator is again activated to now receive information from the storage register. This information is then punched onto a still blank area on the second punch card. Details of the storage register and the circuitry at the meter are also disclosed.

3,700,817

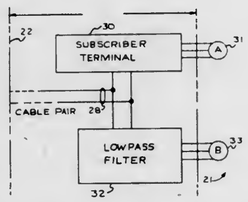
SINGLE CHANNEL CARRIER TELEPHONE SYSTEM

Julian Garcia, and James C. Carroll, both of Raleigh, N.C., assignors to International Telephone and Telegraph Corporation

Continuation-in-part of Ser. No. 700,784, Jan. 26, 1968, abandoned. This application Oct. 16, 1970, Ser. No. 81,506

Int. Cl. H04h *1/04*

U.S. Cl. 179—2.5 R **8 Claims**



The described system provides a single channel carrier system for doubling the capacity of existing subscriber lines and PBX lines. Systems of this type have been made before, but they have generally failed for a number of reasons ranging from their inability to cope with variations in line impedances to microphonics and position sensitivity of telephone transmitters. The invention provides circuits which overcome these and other "bugs."

3,700,818

AUTOMATIC ANSWERING TELEPHONE SET

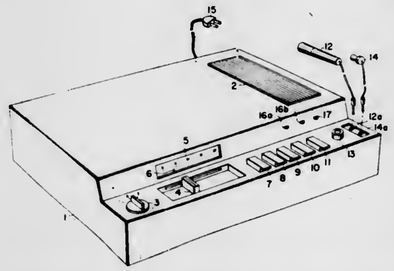
Kenzo Tatematsu, Amagasaki-shi; Hiroo Hosono, Osaka; Toshio Katagiri, Neyagawa-shi; Yoshiaki Hayashi, Toyonaka-shi, and Hiroyuki Ando, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sept. 14, 1970, Ser. No. 71,876

Claims priority, application Japan, Aug. 4, 1970, 45/68571; Sept. 20, 1969, 44/89787; Sept. 20, 1969, 44/89816; Sept. 20, 1969, 44/90295; Sept. 22, 1969, 44/92588; Nov. 12, 1969, 44/107985; Dec. 29, 1969, 44/358; Aug. 4, 1970, 45/77977; Aug. 12, 1970, 45/80825

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **25 Claims**



In an automatic answering telephone set which is arranged to operate after receiving a call through an office line, then to send a preliminarily recorded message on a magnetic tape as an answer to the caller, and after sending, to record a message from the caller with a spiral track on a wide endless magnetic tape, the structure is improved as any one of the messages

from the callers may be readily selected and reproduced by an operator and other operations are also simplified.

3,700,819

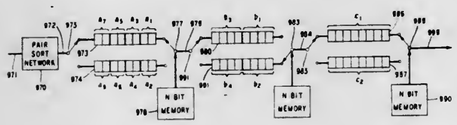
TIME DIVISION SWITCHING SYSTEM WITH TIME SLOT INTERCHANGE

Michael Jay Marcus, Cambridge, Mass., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 7, 1970, Ser. No. 95,706

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AQ **21 Claims**



A multistage network for permuting an input sequence of signals is described. Typically, this sequence corresponds to time division multiplexed communication signals. The overall permuting is accomplished by partially permuting the signals at each stage of selectively delaying these signals in accordance with stored control information. Techniques are described for deriving the required control information and a number of alternate embodiments for the delay circuitry are presented.

3,700,820

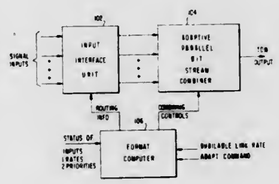
ADAPTIVE DIGITAL COMMUNICATION SYSTEM

Herman L. Blasbalg, Baltimore; Joshua Y. Hayase, Bethesda; Richard C. Crutchfield, Jr., Potomac, all of Md., and Hann F. Najjar, Annandale, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 542,934, April 15, 1966, Pat. No. 3,534,264. This application March 18, 1969, Ser. No. 870,721

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 BV **4 Claims**



An adaptive digital multiplexer including a multiplex format computer, a time slot generator, and a combiner. The format computer determines the number of time slots required within a time frame and assigns input signals to time slots according to the information rate and priority of each input signal. Assignments are made such that transmission of lower priority input signals are interleaved between transmission of higher priority signals thereby allowing the multiplexed output to be adapted to a reduced transmission rate of increased bit duration by progressively eliminating transmission of lower priority signals.

3,700,821

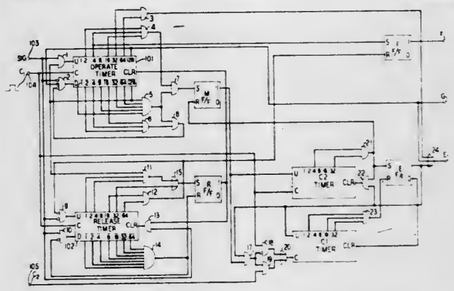
DIGITAL CONSTANT-PERCENT-BREAK PULSE CORRECTING SIGNAL TIMER

Bruce Russell Savage, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1970, Ser. No. 87,851

Int. Cl. H04g *1/36*

U.S. Cl. 179—16 E **4 Claims**



In a constant-percent-break pulse corrector circuit, pulses to be corrected are applied to first and second digital counters, the first of which counts a control clock signal at a first rate set in accordance with the minimum rate of pulses to be corrected. Circuitry including logic means is responsive to the input pulses and to the operation of the first counter for initiating the operation of the second counter, first at the minimum control clock rate and then at a second rate set in accordance with the maximum rate of pulses to be corrected. The transition between rates is determined by the rate of input pulses. Circuitry responsive to the outputs from the counters generates a pulse train with a constant-percent-break ratio irrespective of the rate of the input pulses.

3,700,822

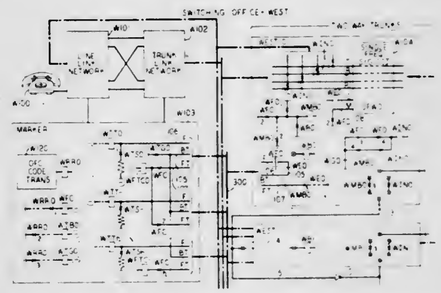
ARRANGEMENT FOR REDUCING GLARE ON TWO-WAY TRUNKS

Walter William Fritschi, Denver, Colo., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed April 30, 1971, Ser. No. 139,011

Int. Cl. H04m *7/00*

U.S. Cl. 179—18 AH **13 Claims**

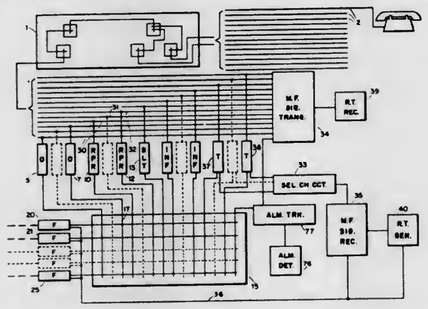


An arrangement is disclosed for minimizing the possibility that two-way interoffice trunks will be seized at both ends, simultaneously, for calls originating at each office. Each time a predetermined number of trunks are seized at either office a busy condition is imposed at the opposite end of at least two other trunks. These trunks become, in effect, temporary one-way trunks.

3,700,823
COMBINED ALARM TRANSMISSION AND SERVICE CALL SYSTEM

William Chulak, Chambly, Quebec, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed Sept. 2, 1971, Ser. No. 177,389
Int. Cl. H04m 3/42
U.S. Cl. 179—18 B 33 Claims

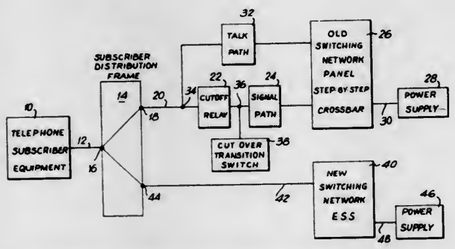


Multifrequency signaling equipment is used to transmit alarm initiation and alarm cancelling signals and also signals for connecting calls over channels selected from a plurality connecting two locations at each of which a large access switch is located. Just after a channel is seized by a connection through one switch a multifrequency signal is sent over the connection and channel to direct the connection at the other switch. Alarm signals bypass the second switch. A reply tone releases the transmitter lockout circuit dropping the multifrequency signaling equipment off the call and allowing it to process another call. Alarm signals are periodically repeated if not acknowledged by reply tone. The system may operate in both directions or a one way system may be used with manual calling in the other direction. An alternative form of systems uses a particular channel for the signaling function and in this case alarm signals do not pass through either of the large access switches. The system is designed particularly for operator assistance, information and repair service calls into a telephone company service center.

3,700,824
CUTOVER TRANSITION SWITCHING APPARATUS AND METHOD FOR TELEPHONE OFFICE EQUIPMENT

Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.

Filed June 26, 1970, Ser. No. 50,248
Int. Cl. H04q 1/18
U.S. Cl. 179—98 24 Claims

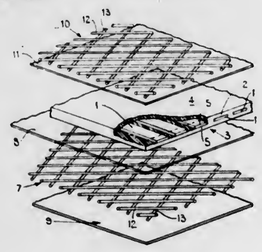


An electrical transition switching apparatus and method for permitting transition switching of subscribers lines from earlier generation switching system units such as, panel, crossbar and step-by-step to similar generation systems or to new generation systems such as, the new electronic switching system units (E.S.S.), comprising cut through relay members, power distribution members and relay actuation means for selectively actuating and deactuating said relay members to thereby permit reversible connection of the subscribers' lines to either of the similar generation units and the new E.S.S. units or to the earlier generation units to which they were originally connected.

3,700,825
CIRCUIT INTERCONNECTING CABLES AND METHODS OF MAKING SUCH CABLES

Stanley Donovan Taplin, Hitchin, and Malcolm Jack Pettitt, Stevenage, both of England, assignors to International Computer Limited, London, England

Filed June 1, 1971, Ser. No. 148,369
Claims priority, application Great Britain, Oct. 1, 1970, 46,844/70
Int. Cl. H01b 7/08
U.S. Cl. 174—36 6 Claims

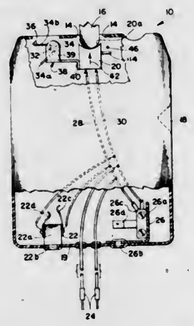


A circuit interconnecting cable construction includes a cable having a group of side-by-side spaced apart conductors embedded in insulating material to provide a cable of tape like form with a surface substantially parallel to the conductors. An electrically conductive screen is located adjacent this surface and a lattice structure is placed between the screen and the surface to space the screen a predetermined distance from the conductors.

3,700,826
MULTI-TRACK ADAPTER CARTRIDGE ADAPTER UNIT FOR A MULTI-TRACK CARTRIDGE TYPE MAGNETIC TAPE PLAYER

Donald V. O'Neal, 2459 Rhodes, River Grove, Ill.

Continuation of Ser. No. 883,224, Dec. 8, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,499
Int. Cl. G11b 31/00
U.S. Cl. 179—100.2 Z 4 Claims



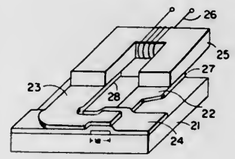
A transducer mounted within a cartridge housing is positioned so as to be urged against the playback head of the tape

player. One or more terminals are provided at the other end of the cartridge housing for easy connection to other signal producing means such as cassette tape recorders, transistor radios, or the like.

3,700,827
MAGNETIC HEAD INCLUDING THIN MAGNETIC FILM SEPARATED BY A GAP SPACER

Morimasa Nagao, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 27, 1971, Ser. No. 110,054
Claims priority, application Japan, Jan. 31, 1970, 45/8658; Jan. 31, 1970, 45/8659
Int. Cl. G11b 5/22
U.S. Cl. 179—100.2 C 4 Claims

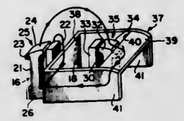


A thin film magnetic head includes a substrate on which thin film core portions are formed. The core films overlap at one end and a gap spacer is interposed between the overlying ends of the core portions to form a gap having a width defined by a reduced width end portion of one of the core portions and corresponding to the track width.

3,700,828
MAGNETIC HEAD ASSEMBLY WITH LOW READ TO WRITE CROSSTALK

Edward C. Zacaroli, Utica, N.Y., assignor to Hamilton Digital Controls, Inc., Utica, N.Y.

Continuation-in-part of Ser. No. 34,138, May 4, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 191,545
Int. Cl. G11b 5/10
U.S. Cl. 179—100.2 C 13 Claims

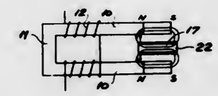


A low crosstalk read and write magnetic tape recording head assembly includes longitudinally spaced banks of transversely spaced dual gap electromagnetic transducer elements provided with respective windings. A shield formed of a low reluctance, magnetically soft material includes a first panel disposed between and spaced from the transducer banks and offset toward the write transducers, a second panel extending outwardly from the outer front edge of the read transducers with its inner edge spaced closely from the transducer edge, and a pair of transversely spaced parallel panels interconnecting the first and second panels.

3,700,829
MAGNETIC STEREOPHONIC PHONOGRAPH PICKUP

Vilhelm Anneberg, Herlev; Ellen Clemmensen, Birkerod; Robert Gudmandsen, Tastrup, and Axel Scheibel, Kobenhavn NV, all of Denmark, assignors to Fonofilm Industri A/S, Copenhagen, Denmark

Filed Dec. 15, 1969, Ser. No. 885,220
Claims priority, application Denmark, March 25, 1969, 1636/69
Int. Cl. H04r 11/12
U.S. Cl. 179—100.41 K 21 Claims

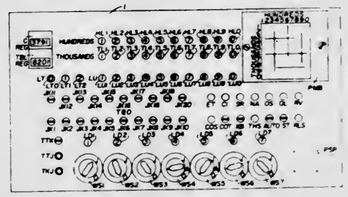


A magnetic stereophonic pickup having four coil carrying core members arranged symmetrically around the axis of an annular ceramic magnet against the inner pole and end face of which one end of said core members abut the opposite ends being magnetically interconnected. A magnetic armature connected to a stylus is so supported within and coaxial with the magnet that it can oscillate in any direction about a point adjacent the outer end thereof. The armature acts as a variable magnetic load converting stylus movements into variations of the magnetic potentials at the magnet abutting ends of the core members, said potential variations in turn causing flux variations in the coil carrying core members.

3,700,830
AUTOMATIC CALL THROUGH TEST SET

David C. Naylor, Dollard des Ormeaux, Quebec, and Derek Leyburn, Mississauga, Ontario, both of Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed July 7, 1970, Ser. No. 52,792
Int. Cl. H04m 3/22
U.S. Cl. 179—175.2 R 19 Claims

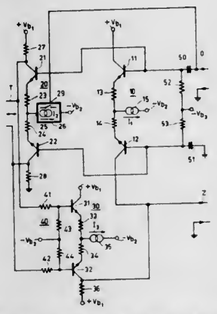


This application discloses a test set for testing the telephone switching equipment at an automatic telephone office. The test set can be connected by patch cords to 20 subscriber lines at the office, and the test set can be set to "dial" any desired seven figure telephone number. The test set takes each trunk in turn and "dials" the selected number. Prior to each "digit," automatic tests are carried out to check for (a) open loop; (b) open sleeve; and (c) reversed loop. At the completion of the dialing operation i.e. the 7th digit, two further tests are carried out (d) no answer, and (e) slow release. If a fault appears at any test, the test set stops and indicates the faulty trunk and the type of fault. If no fault appears, once one trunk is tested the next trunk is seized and tested. Further, after one set of "connectors" is tested, the next set of "connectors" is similarly tested.

3,700,831
HYBRID CIRCUIT

Einar Andreas Aagaard; Johannes Anton Greefkes, and Adrianus Wilhelmus Maria van den Enden, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,023
Claims priority, application Netherlands, Jan. 13, 1970, 7000395
Int. Cl. H03f 3/62; H04b 1/58
U.S. Cl. 179—170 NC 2 Claims



Hybrid circuit for coupling a two-direction transmission path with a one-direction transmitting path and a one-direction receiving path, the arrangement comprising a first amplifier whose input is connected to the receiving path and whose output is connected to the two-direction transmission path, a second amplifier whose input is connected to the two-direction transmission path and whose output is connected to the transmitting path and a third amplifier whose input is connected to the receiving path and whose output is connected to the transmitting path, wherein the second amplifier is a direct-voltage differential amplifier and the first amplifier comprises a balanced direct-voltage-coupled output, while a damping network is connected between the two-direction transmission path and the input of the second amplifier.

3,700,832
N-PORT CIRCULATOR

Henry Richard Beurrier, Chester Twp., Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Aug. 19, 1971, Ser. No. 172,967
Int. Cl. H04b 3/36
U.S. Cl. 179—170 NC 10 Claims

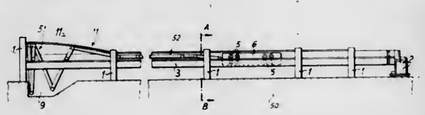


This application describes an *n*-port circulator comprising *n* identical circuit units arranged in a closed loop configuration. Each unit is a three terminal circuit including two transistors and two equal, impedance-matching impedances. The first terminal is connected to the base of the first transistor, and to the emitter of the second transistor through one of the impedances. The second terminal is connected to the collector of the second transistor, and to the emitter of the first transistor through the other impedance. The third terminal is connected to the collector of the first transistor, while the base of the second transistor is grounded. The units are interconnected such that the third terminal of each is coupled to the first terminal of the next adjacent unit in the loop. The second terminals of the units constitute the ports of the circulator.

3,700,833
DEVICE FOR CONVEYING FLUIDS OR ELECTRIC CURRENT BETWEEN A STATIONARY SOURCE AND A MOBILE CONSUMER

Henning Behme, Haan, Germany, assignor to Th. Kieserling & Albrecht Werkzeugmaschinen Iabrik, Solingen, Germany

Filed Dec. 14, 1970, Ser. No. 97,524
Claims priority, application Germany, Dec. 12, 1969, P 19 62 268.5
Int. Cl. H02g 11/06
U.S. Cl. 191—12 R 10 Claims

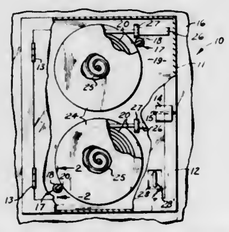


A device for conveying fluids or electric current between a stationary source and a mobile consumer, such as one or more motors on the reciprocable carriage of a drawing machine, has a package of elongated sections wherein the upper end of each intermediate section is pivoted to the upper end of one neighboring section and the lower end of each intermediate section is pivoted to the lower end of the other neighboring section. One end of one outer section is connected to the carriage which is reciprocable toward and away from the source along one or more elongated first guide rails tracked by roller followers provided on alternating sections of the package close to the upper ends of such sections. The upper ends of some or all of the sections carry roller followers which track a second guide rail located above the first guide rails and having a downwardly sloping portion close to the source. When the carriage moves toward the source, successive sections are pivoted in the region of the sloping portion to assume substantially vertical positions close to each other. When the carriage is moved away from the source, successive sections are pivoted to move into a substantially horizontal plane and to form an elongated pipeline extending lengthwise of the first guide rails.

3,700,834
ELECTRICAL CABLE APPARATUS

Cyril L. Schaefer, P.O. Box 33, Potosi, Wis.

Filed Feb. 10, 1971, Ser. No. 114,129
Int. Cl. H02g 11/00
U.S. Cl. 191—12.2 R 1 Claim

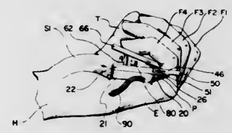


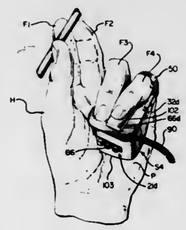
A device for attachment to service vehicles. This device consists of a hinged doored case, having on its interior a pair of reels with spring return means for the heavy duty electrical cables thereon. The cables, when extended, allow for the service vehicles battery and electrical system to supply a boosting current for starting stalled vehicles.

3,700,835
HAND HELD, FINGER CONTROLLED SWITCH DEVICE

Chester B. Rackson, 22 Orchard Drive, Woodbury, N.Y.

Filed April 5, 1971, Ser. No. 131,359
Int. Cl. H01h 3/02, 13/08
U.S. Cl. 200—52 R 20 Claims





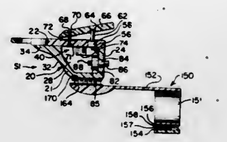
A control device for apparatus is adapted for support on the fourth finger of a hand, has a housing of contoured shape to fit in the palm of the hand. A loop extends outwardly of one end of the housing for receiving and encircling the base of the fourth finger. Switches on other control units in the housing have operating members extending upwardly of the housing for operation by third and fourth fingers. Operating levers may be pivotally mounted over the operating members. Other clips on one of the levers and a lateral extension of the loop can provide additional stabilization from rotational movement of the control device on the fourth finger. Other operating members can extend laterally outward of the housing. The control device may contain units for actuating electrical, pneumatic or hydraulic apparatus and combinations of the aforementioned types of apparatus.

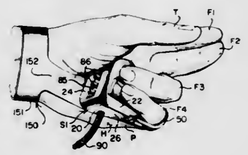
3,700,836
HAND HELD FINGER CONTROLLED SWITCH DEVICE WITH FLEXIBLE WRIST STRAP MOUNT

Chester B. Rackson, 22 Orchard Drive, Woodbury, N.Y.

Filed May 10, 1971, Ser. No. 141,726
Int. Cl. H01h 3/02, 13/08
U.S. Cl. 200—52 R 20 Claims

A control device for apparatus is adapted for support on the fourth finger of an operator's hand, has a housing of contoured shape to fit in the palm of the hand. A loop extends outwardly of one end of the housing for receiving and encircling the base of the fourth finger. Switches or other control units in the housing have operating members extending upwardly of the housing for operation by third and fourth fingers. The holder is connected to the housing integrally or separably. The holder may include a wrist band and strap integrally or separably connected together. Barb and loop fastener members may adjustable connect the strap and housing. Loop members to engage the back of the hand can be integral with the strap or with the housing. The holder can have a fingerless glove-like form with integral wrist band, strap and back portion.

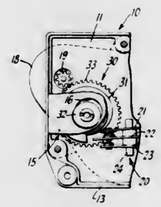




3,700,837
ADJUSTABLE TIMER CAM ASSEMBLY SPRING BIASED BY CONTACTS FOR NORMAL ENGAGEMENT WITH SYNCHRONOUS MOTOR DRIVEN GEAR

Karl J. Schulze-Berge, Manitowoc, Wis., assignor to AMF Incorporated

Filed July 6, 1971, Ser. No. 159,615
Int. Cl. H01h 43/10
U.S. Cl. 200—38 R 8 Claims



A time switch having a rotor of unitary construction mounted at its ends in slots and having a meshed gear connection with drive means. Switch means providing a biasing force to said rotor for maintaining the meshed gear connection and said rotor being adapted for manual rotation relative to said drive means and against the biasing force causing its ends to move in said slots and said gears providing the drive connection to move out of mesh.

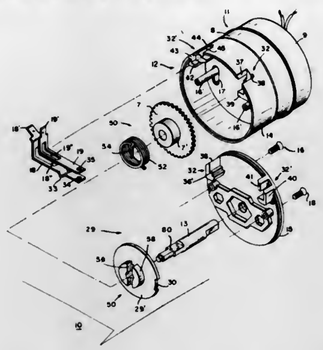
3,700,838
TIMER UTILIZING SPRING CLUTCH

William R. Brown, Beech Grove, and Veron E. Bang, Indianapolis, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed April 23, 1971, Ser. No. 136,773
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 R 19 Claims

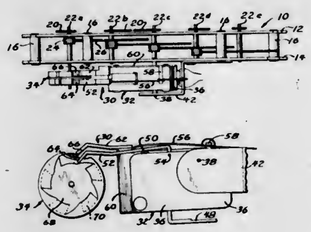
A coil spring is frictionally carried by a member of a drive means which drives a cam programming means of a timer, a

distal end of the spring being coupled to a shaft which carries



the cam programming means. Electrical contact blade retaining means are formed as integral parts of the timer housing.

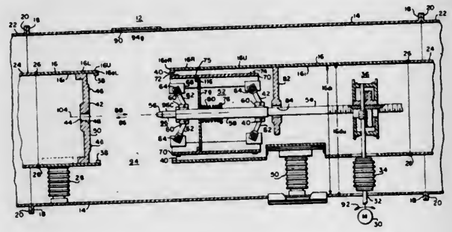
3,700,839
WATTHOUR METER INDICATOR WITH IMPROVED CAM AND MICROSWITCH OPERATOR STRUCTURE
Donald A. Eggleston, Springfield, and Trevor N. Samuel, Rochester, both of Ill., assignors to Sangamo Electric Company, Springfield, Ill.
Filed June 28, 1971, Ser. No. 157,484
Int. Cl. G01d *13/26*
U.S. Cl. 200—56 R **12 Claims**



An arrangement for effecting snap-action transfer of a switch between first and second switch conditions in response to movement of a slowly rotating control cam. The switch has a pair of actuating arms secured thereto one of which is movable to effect snap-action transfer of the switch from a first to a second switch condition in response to movement of the control cam, the other of arms being movable to effect snap-action transfer of the switch from the second back to the first switch condition in response to further movement of the control cam.

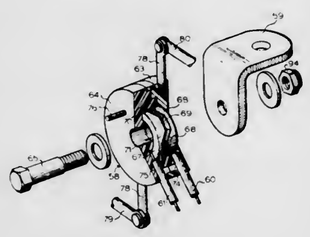
3,700,840
ISOLATING SWITCH
John R. Wilson, Westmont, Ill., and Arthur B. Niemoller, Cincinnati, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 11, 1971, Ser. No. 114,631
Int. Cl. H01h *31/24*
U.S. Cl. 200—48 R **12 Claims**

An isolating switch comprising cylindrical hollow conductors capable of carrying high electrical currents and mounted within gas filled, sealed cylindrical enclosures for insulating purposes. The switch when open provides an insulating gap for withstanding high voltages. The gap is bridged when the switch is closed by a telescoping bridging members. This bridging member retracts inside one of the associated hollow poles or conductors when the switch is opened, and extends to bridge the gap between the two cylindrical poles when the switch is closed thus providing a continuous electrical path from one pole to the other. The contacting member is moved



by a suitable driving mechanism. During the closing of the switch, mechanical or structural contact between the poles or conductors to be connected is made prior to electrical contact. This is done by actuating the bridging member to move axially from within its recess in one hollow conductor toward the other conductor where it joins mechanically with or engages a guiding means and then expands radially outwardly to make electrical contact with the insides of both the associated hollow conductors simultaneously.

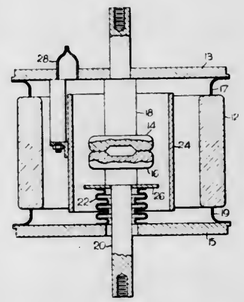
3,700,841
A SWITCH FOR SENSING DISPLACEMENT
James H. Wernig, P.O. Box 501, Kennebunkport, Maine
Division of Ser. No. 869,697, Oct. 27, 1969. This application April 19, 1971, Ser. No. 135,273
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.44 **5 Claims**



A switch for closing an electric circuit upon movement of either or both of two members in either direction which includes a double contact and a contact disposed between the elements of the double contact which are movable to bring the contact and one of the elements of the double contact together upon movement of either or both of the two members in either direction.

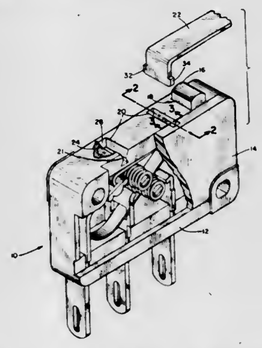
The switch also includes means for varying the clearance between the contact and the elements of the double contact when the former is centered with respect to the latter in order to vary the sensitivity of the switch.

3,700,842
VACUUM INTERRUPTER CONTACTS AND METHOD FOR MAKING THE SAME
Edward A. Attia, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 23, 1971, Ser. No. 201,465
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **6 Claims**



A vacuum type electric circuit interrupter comprises a glass envelope, stainless steel end plates, a pair of relatively movable studs with a contact on each within the envelope, and shielding means within the envelope. Each stud and its associated contact are integrally formed of an alloy comprising by weight 0.4 to 0.6 percent tellurium, 0.007 to 0.012 percent phosphorus and the balance O.F.H.C. copper (oxygen free high conductivity copper which is 99.95 percent pure copper). The integrally formed stud and contact are subjected to a treatment wherein it is: raised slowly to 500°C. and held there for approximately ½ hour; exposed to ultra-pure hydrogen and raised slowly to about 900°C.; exposed to a vacuum and raised to about 975°C. to effect brazing of components thereto; lowered to about 500°C. in the vacuum and held there to cause effusion of certain gases; and cooled in the vacuum prior to final assembly.

3,700,843
SNAP-IN RIGID LEVER ACTUATING ARRANGEMENT
John S. Resh, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 5, 1971, Ser. No. 196,116
Int. Cl. H01h *3/04*
U.S. Cl. 200—172 A **5 Claims**



A rigid lever actuator which is snap fastened into place in a support means provided on an electrical switch base, for example, for association with a driver member of a switch mechanism supported from the base.

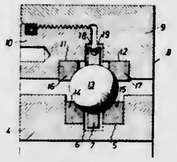
ERRATUM

For Class 200—148 R see:
Patent No. 3,700,848

3,700,844
QUATERNARY FLUORSILICON DISPERSANT
Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed May 7, 1971, Ser. No. 141,420
Int. Cl. C07c *103/30*
U.S. Cl. 260—404.5 **2 Claims**

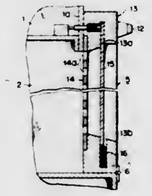
Surface active agents are produced by forming quaternary fluorosilicon compounds by reacting perfluoro-alkyl esters with tertiary diamines.

3,700,845
WIRE RACE BALL BEARING
Karl-Erik Arnold Jonsson, Gavle, Sweden, assignor to Brundell och Johsson AB, Gavle, Sweden
Filed June 22, 1971, Ser. No. 155,543
Claims priority, application Sweden, June 24, 1970, 8737/70
Int. Cl. F16c *33/58*
U.S. Cl. 308—216 **2 Claims**



A wire race ball bearing containing two outer and two inner wire race rings, the distance between the inner races being smaller than the distance between the outer races, whereby the axes of rotation of the balls are kept unchanged when the bearing is subjected to an uneven axial load.

3,700,846
HIGH FREQUENCY HEATING APPARATUS
Teruo Ishikawa, Kanagawa-ken; Koji Kawashima; and Tetuo Togashi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed April 15, 1971, Ser. No. 134,265
Claims priority, application Japan, April 30, 1970, 45/41849
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **5 Claims**

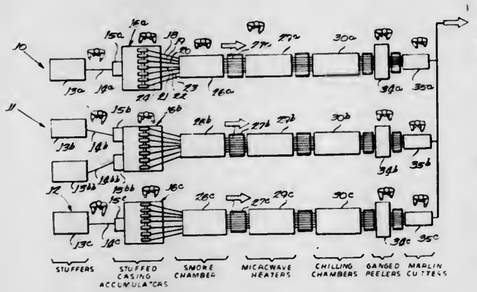


In high frequency heating apparatus, particularly a high frequency electronic oven having a door with a perforated metal plate, a transparent cover plate is removably mounted on the door on the outside of the perforated metal plate and means is provided to operate a switch in the oven for deenergizing the high frequency oscillator in response to the removal of the transparent plate.

3,700,847
SYSTEM FOR CONTINUOUS PROCESSING OF VIENNA SAUSAGE USING MICROWAVE ENERGY

Robert B. Rendek, Hillside, and Evan F. Binkerd, Downers Grove, both of Ill., assignors to Armour & Company, Chicago, Ill.

Filed July 6, 1970, Ser. No. 52,504
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims

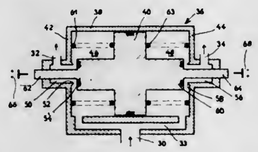


A plurality of casings stuffed with vienna emulsion are conveyed simultaneously through a chamber for smoking and then through a microwave heat applicator which cooks the sausage. The sausage strands are then chilled, peeled and cut to size for packaging. All of the processing from smoking to cutting is performed continuously on a plurality of long stuffed casings conveyed longitudinally through the processing apparatus or stations.

3,700,848
DIFFERENTIAL VALUE SAFETY DEVICE FOR COMPRESSED GAS CIRCUIT INTERRUPTERS

Gerard Billon; Jean Claude Henry, both of Grenoble, and Eugene Vincent, La Tronche, all of France, assignors to Merlin Gerin, Grenoble, France

Filed Feb. 11, 1971, Ser. No. 114,605
Claims priority, application France, Feb. 23, 1970, 7006450
Int. Cl. H01h 33/54
U.S. Cl. 200—148 R 6 Claims



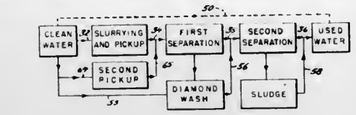
Safety device for a multibreak gas-blast circuit breaker supplied from a common pressure gas source through a gas line distribution system. A leaking branch of this system is automatically isolated by the safety device detecting a pressure difference between the feeded branches while the undamaged part of the circuit breaker remains in operation. The safety device comprises balanced three way valve means.

3,700,849
MULTIPLE GROOVING OF PAVEMENT

Edward A. Zuzelo, 652 Broad Acres Road, Narberth, Pa.

Filed Feb. 16, 1970, Ser. No. 11,470
Int. Cl. E01c 23/09
U.S. Cl. 299—18 12 Claims

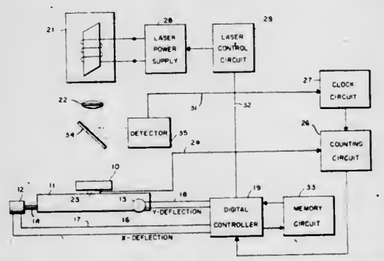
Particles of pavement removed by cutting thereof into multiple grooves to impart antiskid properties thereto are slurried with water and the slurry disposed of remote from the pavement. Particles of cutting material slurried therewith are reclaimed therefrom for reuse, and pavement particles are optionally recovered from the slurry as well. Such reclamation and recovery may be accomplished by centrifugal methods, such as hydrocycloning.



3,700,850
METHOD FOR DETECTING THE AMOUNT OF MATERIAL REMOVED BY A LASER

Robert Miller Lumley, Trenton, and Victor John Tarassov, Princeton, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,851
Int. Cl. B23k 27/00
U.S. Cl. 219—121 LM 19 Claims



A pulsed or Q-switched laser removes material from a workpiece during a numerically-controlled machining process. The amount of material removed after each laser pulse is monitored by measuring the time taken for the shock waves generated by the laser pulse to traverse the remaining portion of the workpiece.

3,700,851
WELDING ELECTRODE

Jarl A. Bjorkroth, Avesta, Sweden, assignor to Avesta Jernverks Aktiebolag, Avesta, Sweden

Continuation of Ser. No. 786,472, Dec. 23, 1968, abandoned.
This application June 24, 1971, Ser. No. 156,534
Int. Cl. B23k 9/00
U.S. Cl. 219—137 4 Claims

The invention relates to a welding electrode for electric arc welding intended for joint welding and built-up welding stainless steels, particularly steels with a ferrite-martensitic, ferrite-martensite-austenitic or martensite-austenitic structure, and is characterized in that the electrode in the shape of a bare wire or a wire with a coating deposits a weld metal whose alloying constituents affecting the structure lie within the following analysis limits: 0.01–0.05 percent carbon, 0.1–0.9 percent silicon, 0.5–4.5 percent manganese, 15.0–18.0 percent chromium, 4.5–7.5 percent nickel, 0.2–2.5 percent molybdenum, 0.02–0.12 percent nitrogen and 0.2–3.5 percent tungsten, the remainder iron apart from the unavoidable impurities. The alloying constituents shall be adapted manually in such a way that the following two equations with the chromium equivalent (Cr_e) and the nickel equivalent (Ni_e) are satisfied:

Equation 1 $Cr_e + Ni_e$ 26.0 and 32.0

Equation 2 $1.4 \times Cr_e - Ni_e$ 15.0 and 20.0

where $Cr_e = \%\,Cr + \%\,Si + \%\,Si + 0.5 \times \%\,W$

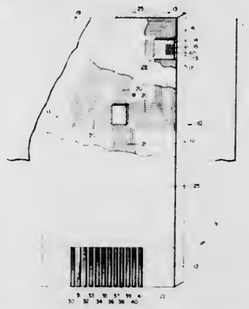
and $Ni_e = \%\,Ni + 0.5 \times \%\,Mn + (\%\,C + \%\,N - 0.03)$;

as a result the structure of the weld metal in a welded or heat treated condition contains martensite, ferrite, and austenite of such a composition that the martensite part lies between 5 and 50 percent and the ferrite plus austenite parts between 50 and 95 percent.

3,700,852
THERMAL DISPLAY MODULE

Edward M. Ruggiero, Dallas, Tex., assignor to Displaytek Corporation, Dallas, Tex.

Filed Oct. 9, 1970, Ser. No. 79,505
Int. Cl. H05b 1/00
U.S. Cl. 219—216 13 Claims

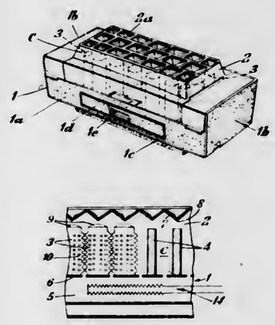


Disclosed is a thermal display module having an array of heater elements, thermal drive matrix, character generator, and deposited conductive interconnections therebetween disposed upon an insulating substrate. The heater elements and drive matrix are initially formed as integral portions of a semiconductor wafer, the wafer being mounted to the substrate at one face by way of thickened or plated up contacts on the wafer interconnecting with a conductive pattern on the substrate, the heater elements extending to the opposite face in communication with thermally sensitive record material. Trapezoidal shaped heater elements are provided as a result of a unique sequence of processing steps.

3,700,853
APPARATUS FOR HEATING OF HAIRWINDERS

Jorgen Bent Jensen; Borge Jensen; Rasmus Krohn, all of Kalundborg, and Erik Keldmann, Jerslev, all of Denmark, assignors to Bristol-Myers Company, New York, N.Y.

Filed April 26, 1971, Ser. No. 137,348
Int. Cl. A45d 4/12; H05b 1/00
U.S. Cl. 219—222 8 Claims

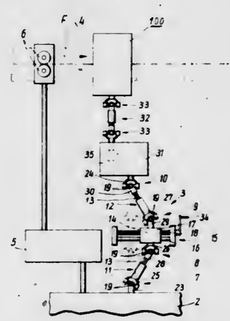


Apparatus for heating hair curlers by means of vaporized liquid which includes a chamber for holding a liquid normally applied to the hair such as water or hair conditioning agents, electrical heating means for vaporizing the liquid and a condensation chamber having curlers mounted therein. The apparatus is provided with a special lid having recesses in its outer surface and downwardly extending projections on its inner surface which may be of various shapes and configurations. The design of the lid and the projections allow for control of the amount and distribution of the condensing liquid onto the curlers. The projections correspond in number and position to the curlers as mounted in the condensation chamber and are of such shape and are so disposed above each curler as to direct the downward flow of condensed liquid from the projections onto and over the surface of each of the curlers.

3,700,854
DRIVE FOR A MOVING WELDING APPARATUS

Otto Beck, Stuttgart-Heumaden, and Georg Spalding, Stuttgart, both of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed March 5, 1971, Ser. No. 121,352
Claims priority, application Germany, March 7, 1970, P 20 10 961.9
Int. Cl. H05b 1/00
U.S. Cl. 219—243 7 Claims



A drive including a plurality of Kardan joints, adapted to provide adjustable cyclic variations, for a movable welding or sealing equipment station effective to establish a transverse seam in a foil web movable at a uniform rate. The above equipment is used in conjunction with a machine for making, filling or closing packages.

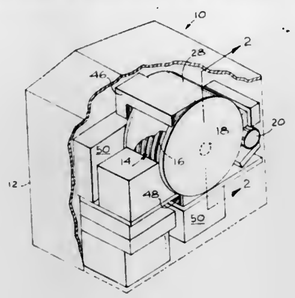
3,700,855
MAGNETIC DISC ASSEMBLY

Clifford J. Helms, Woodland Hills; Norman McMillan, Santa Monica, and Stelios B. Papadopoulos, Westlake Village, all of Calif., assignors to Sperry Rand Corporation, New, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,242
Int. Cl. F27b 9/06
U.S. Cl. 219—388 8 Claims

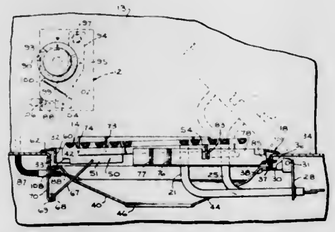
A magnetic disc assembly including a system for efficiently maintaining the temperature in the disc compartment at a prescribed operating level. Disc compartment temperature is maintained at a prescribed level elevated above ambient by the combined effect of moving ambient air around a cylindrical convoluted shroud surrounding the disc compartment for cooling and by selectively activating elements within the compartment for heating. The shroud is surrounded by a concentric cylindrical cover and the ambient air flows between the shroud and the cover. The heater elements serve to quickly bring the disc compartment temperature up to the elevated operating level and to add heat as required to maintain that level. The heater elements are incorporated in the compartment within the shroud convolutions and are activated in

response to a temperature sensor within the compartment. An ambient air temperature sensor controls the ambient air flow. A disc stack assembly supported in the disc compartment includes a plurality of discs mounted on a common shaft secured to a rotatable hub. In operation, the discs spin very rapidly



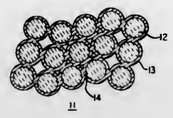
causing the air within the compartment to move in the same direction as the disc surfaces. A flared baffle mounted within the compartment interrupts the moving air and creates a pressure differential between the upstream and downstream sides of the baffle. This pressure differential is employed to circulate the air within the compartment through a filter.

3,700,856
HINGED SURFACE HEATING UNIT SYSTEM
William G. Kullman, Bloomingdale, Ill., assignor to General Electric Company
Filed Dec. 20, 1971, Ser. No. 209,922
Int. Cl. H05b 3/68
U.S. Cl. 219—451 **8 Claims**



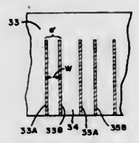
A surface heating unit in combination with a remote selector switch that controls the flow of current to the heating unit. A metal sheathed heating means of coiled configuration is provided with hinging means for mounting the heating unit in an opening in a cooktop so that food soils may be cleaned from therebeneath. A trim ring surrounds the heating means and supports the same for slight vertical movement therebetween. A utensil support framework comprising a series of ring members is telescoped with the heating means and is attached to the trim ring. A choke cable is connected between the selector switch and the heating means so that the changing of the selector switch from an ON position to its OFF position acts to lower the heating means out of contact with a utensil carried by the utensil support framework and vice versa.

3,700,857
ELECTRICAL RESISTANCE HEATER
Raymond G. Brandes, Meyersville, N.J., and Charles M. Pleass, Reiffton, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 838,862, July 3, 1969, Pat. No. 3,635,824.
This application April 14, 1971, Ser. No. 133,843
Int. Cl. H05b 3/16
U.S. Cl. 219—543 **2 Claims**



A resistance heater comprising a sintered mass of refractory particles, each particle comprising an insulating core coated with a thin film of an electrically conducting material, is obtained by a processing sequence involving coating the particles of interest, compacting the coated particles to form a pellet and sintering the pellet. Devices produced in accordance with the described technique manifest enhanced reliability and uniformity as compared with prior art heaters, and permit a new degree of freedom in the design of heating elements.

3,700,858
DATA PROCESSING SYSTEM EMPLOYING PARTICULAR BAR CODE CONFIGURATION
Nanjundiah N. Murthy, Redding, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.
Filed Feb. 24, 1971, Ser. No. 118,224
Int. Cl. G06r 7/10, 9/18
U.S. Cl. 235—61.11 E **8 Claims**

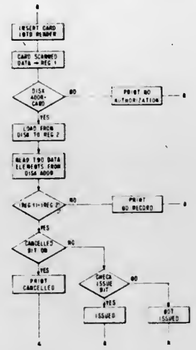


An illustrative embodiment of the invention is directed to an electro-optically readable coded document in which the code appears as a row of printed bars separated by spaces of controlled widths between the individual bars. The substitution of a pair of fine lines, termed a pulse pair, for each bar in the row, substantially enhances code reliability. These pulse pairs, when employed to define bar widths and used in combination with the associated spaces of different widths, constitute a binary code that is registered through an electro-optical system, e.g., a hand held reader which is drawn along the length of the document. Use of pulse pairs permits the generation of pulses of the same polarity, as well as AC coupled circuits that eliminate DC drift in order to provide a system which is less sensitive to differences in contrast variations and reader angle.

3,700,859
PROGRAMMABLE KEY AND LOCK
George J. Laurer, and Ralph O. Skatrud, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed March 19, 1971, Ser. No. 126,213
Int. Cl. G06k 7/10, 15/00, 19/06
U.S. Cl. 235—61.7 R **11 Claims**

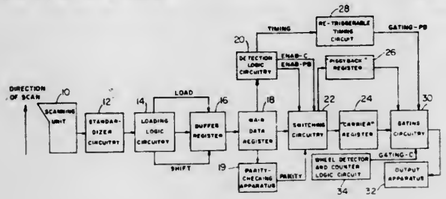
A programmable electronic lock and key in which the key consists of a card having non-visible coded indicia thereon

designating an address in memory and the contents thereof. The lock includes a card reader for scanning the coded indicia, memory means storing arbitrary patterns at designated



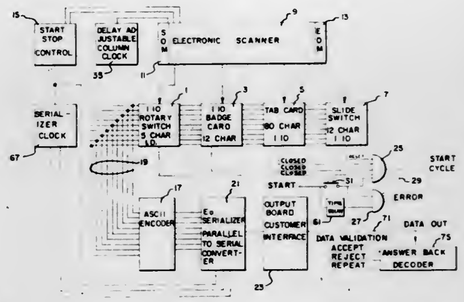
locations; and means for comparing the scanned card data and the data extracted from the memory address specified by the card. A mismatch indicates a non-valid key.

3,700,860
DATA STORAGE AND TRANSFER APPARATUS FOR PLURAL-VEHICLE IDENTIFICATION SYSTEM
Christopher C. Reynolds, Homewood, Ill., assignor to Servo Corporation of America, Hicksville, N.Y.
Filed July 26, 1971, Ser. No. 165,480
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 E **17 Claims**



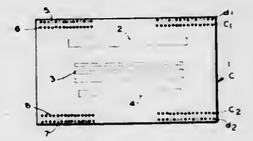
A system for identifying a carrier vehicle and piggyback vehicles positioned thereon. Each of the vehicles is equipped with an information-coded label, the information encoded in the carrier vehicle label and in the piggyback vehicle labels including features distinguishing the two types of labels and, therefore, the two types of vehicles, from each other. As the carrier and piggyback vehicles move through a label-reading area, a scanning apparatus senses the information encoded in the various labels and produces successive signals representative of the information. These signals are then processed by signal processing circuitry and applied to and stored in succession in a main data register. The signals stored in the main data register are examined by detection logic circuitry to determine the nature thereof, that is, whether carrier vehicle information or piggyback vehicle information, and, based on these determinations, selectively steered into a "carrier" register or into a "piggyback" register and stored therein. Each signal applied to and stored in the "piggyback" register is read out therefrom shortly after being stored therein but prior to the departure of the carrier and piggyback vehicles from the label-reading area. The signal stored in the " carrier" register is read out in response to the departure of the carrier and piggyback vehicles from the label-reading area. Timing circuitry is also provided in the system for preventing multiple readings of a piggyback vehicle label.

3,700,861
DATA CARD TERMINAL
Vander Heyden, and Eric Ernest, both of Hummelstown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 19, 1970, Ser. No. 81,985
Int. Cl. G06k 7/04
U.S. Cl. 235—61.11 B **8 Claims**



The disclosure relates to a high speed electronic scanner terminal for scanning information on a column by column basis which is located in switch operated and card operated devices. The system includes a start cycle device which permits an operating cycle to start only if all information containing devices are closed and all card receiving units have data cards inserted in them. The system includes a pair of clocks and converts information readout in one out of ten code one column by column basis into serial code compatible with a remote receiving unit.

3,700,862
INDICIA SYSTEM FOR CREDIT CARDS AND THE LIKE
Richard K. Snook, Bridgeton, and Rodney W. Stout, Webster Groves, both of Mo., assignors to Diginetics Incorporated
Filed Aug. 26, 1969, Ser. No. 853,138
Int. Cl. G06k 19/00
U.S. Cl. 235—61.12 M **11 Claims**

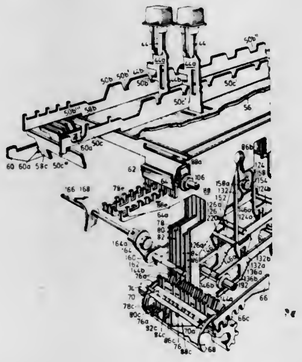


A system for imprinting indicia in binary form on credit cards and similar plastic members which includes a printing mechanism for printing two tracks of clock or synchronizing pulses and two tracks of data pulses on spaced portions of a credit card. One data track is recorded in such manner that it is a complement of the other data track in order to provide at least 100 percent redundancy. A reading system is also disclosed and which involves a gating structure for determining true states of the complementary data in each of the data tracks at clock pulse time. In addition, the reading system compensates for a condition of skew in the printing or in the reading of the card.

3,700,863
CONTROL APPARATUS

Gosta Roland Englund, Stockholm; Bjorn Sven Hilding Eriksson, Jacobsberg; Mats Erik Mattsson, Sollentuna, and Claes-Goran Lindelow, Taby, all of Sweden, assignors to Swenska Dataregister AB, Solna, Sweden

Filed Dec. 23, 1969, Ser. No. 887,667
Claims priority, application Sweden, Dec. 3, 1968, 17739/1968
Int. Cl. G06c 23/00
U.S. Cl. 235—62 F 51 Claims

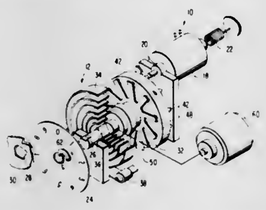


A device for performing functions in a cash register includes coupling plates which are affected by programmable cams detachably fastened to function keys and a function means movable to different positions. The cams are easily accessible and can be exchanged by other cams with different configurations in order to change the program of the function selection operations. The programmable cams on the function keys and the function means cooperate in order to affect the coupling plates which control the performance of the different functions.

3,700,864
HIGH SPEED ELECTRICAL COUNTER

John H. Knight, Dayton, Ohio, assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed March 19, 1971, Ser. No. 126,117
Int. Cl. G06m 1/10
U.S. Cl. 235—92 F 5 Claims

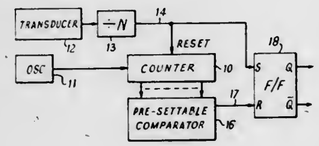


This is a high speed non-electronic counter having a solenoid to trigger a spring driven counter mechanism. The counter mechanism comprises a numerated disc and a coil spring driven wafer having spring loaded detent pins each of which engage a stop mechanism to position the numbers on the disc. Actuation of the solenoid disengages the detent from the stop to permit the coil spring to rotate the wafer and disc until the next detent engages the stop mechanism thereby positioning the number corresponding to the position of the pin and stop.

3,700,865
LINEARIZING CIRCUIT FOR FREQUENCY DOMAIN TRANSDUCERS

Anthony John Ley, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed May 7, 1971, Ser. No. 141,816
Claims priority, application Great Britain, May 12, 1970, 23001
Int. Cl. G01f 15/02
U.S. Cl. 235—150.53 11 Claims

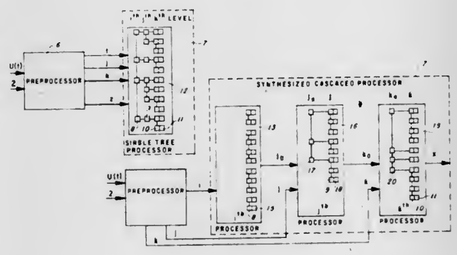


The output of a frequency domain transducer is linearized by converting the output to a mark-space signal which changes level in one sense at each pulse (or each N'the pulse) from the transducer and in the other sense when a fixed number of clock pulses have been counted from the occurrence of the transducer pulse. The mark space signal then operates on an analogue network to effect the linearization by switching the configuration of this network. The analogue network operates either on a fixed analogue signal or an analogue signal representing a second variable when it is desired to multiply the second variable by the first variable transduced by the transducer.

3,700,866
SYNTHESIZED CASCADED PROCESSOR SYSTEM

Fredrick J. Taylor, El Paso, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 28, 1970, Ser. No. 84,858
Int. Cl. G06f 15/18
U.S. Cl. 235—150.1 47 Claims

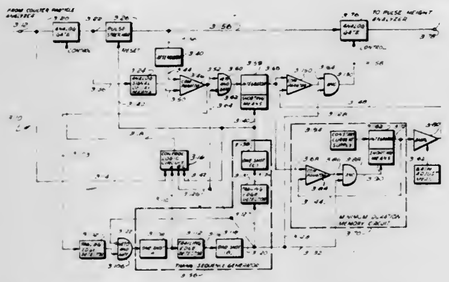


A single trainable nonlinear processor is trained with a single pass of training data through such processor. The single processor is then converted into a system of cascaded processors. In an execution mode of operation, each processor of the synthesized nonlinear cascaded processor system generates a probabilistic signal for the next processor in the cascade which is a best estimate for that processor of some desired response. The last processor in the cascade thereby provides a minimum entropy or minimum uncertainty actual output signal which most closely approximates a desired response for the total system to any input signal introduced into the system. The system is particularly useful for identification, classification, filtering, smoothing, prediction and modeling.

3,700,867
AXIAL TRAJECTORY SENSOR FOR ELECTRONIC PARTICLE STUDY APPARATUS AND METHOD

Walter R. Gogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 84,440, Oct. 27, 1970. This application Dec. 24, 1970, Ser. No. 101,325
Int. Cl. H03k 5/18
U.S. Cl. 235—151.3 32 Claims

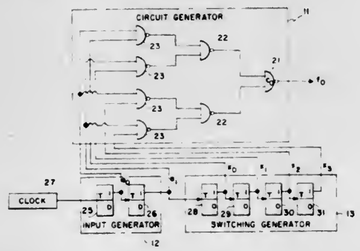


A sensor for use with apparatus operating in accordance with the principles of the Coulter electronic particle studying device, for differentiating between signals from particles passing on axial or near axial paths through an aperture and particles passing off center. The pulse duration is measured at some fraction of the individual pulse amplitudes and only those which meet the criteria of duration established by the electronic circuitry are permitted to pass for use in pulse height analysis apparatus following the sensor. The other pulses are discarded on the basis of their greater durations. The apparatus of the invention provides structure for deriving a duration-measuring pulse whose duration is that of the particle pulse at its fractional amplitude, structure for converting the signal into one which has an amplitude proportional to duration, and then measuring the latter signal against a certain maximum level to operate gating means automatically for rejecting the longer duration pulses and passing the shorter duration pulses. The maximum level is automatically produced by structure which responds to the level of prior passed pulses thereby establishing a maximum duration which when exceeded will cause a pulse to be discarded.

3,700,868
LOGICAL FUNCTION GENERATOR

Wilford E. Silvertson, Jr., Yorktown, V.I., assignor to The United States of America as represented by the National Aeronautics and Space Administration

Filed Dec. 16, 1970, Ser. No. 98,798
Int. Cl. G06f 7/38, 15/34
U.S. Cl. 235—152 6 Claims

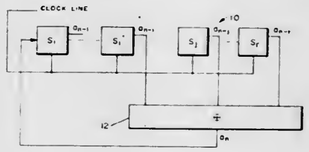


Apparatus and technique for generating logical functions and circuits, and for defining the circuit connections required to generate these functions thereby providing an aid in designing and constructing hardware to generate logical circuits.

3,700,869
PSEUDONOISE SEQUENCE GENERATORS WITH THREE-TAP LINEAR FEEDBACK SHIFT REGISTERS

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marvin Perlman, 11000 Dempsey Avenue, Granada Hills, Calif.

Filed Dec. 4, 1970, Ser. No. 95,183
Int. Cl. G06f 1/02, 15/34
U.S. Cl. 235—152 11 Claims

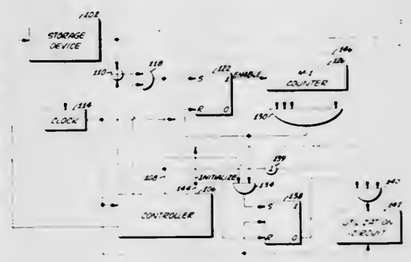


A PN linear recurring binary sequence generator is described. It comprises a linear feedback shift register of r stages with three-tap feedback logic. The three stages which are fed back are i, j and r, wherein $i<j<r$. The stages i, j and r are selected to correspond to the exponents of a tetranomial which includes either an $(r-1)^{th}$ degree or an $(r-2)^{th}$ degree primitive polynominal over GF(2) as a factor. The PN sequence length is $2^{r-1}-1$ or $2^{r-2}-1$ when the shift register is properly initialized.

3,700,870
ERROR CONTROL ARRANGEMENT FOR ASSOCIATIVE INFORMATION STORAGE AND RETRIEVAL

Thomas H. Howell, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed April 9, 1971, Ser. No. 132,860
Int. Cl. G11c 29/00, 15/00
U.S. Cl. 235—153 9 Claims

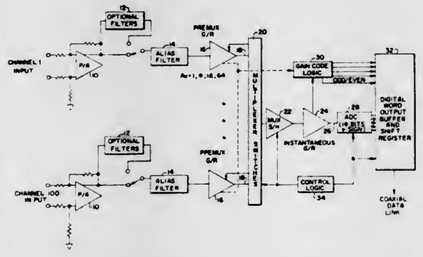


Data key words, encoded in a certain error correcting code, are read from a storage device and compared with a similarly encoded master key word. If, for any pair of words compared, the pattern of digit positions having differing digits does not correspond to an error pattern which is correctable by the error correcting code, then a mismatch between the pair is assumed. If, on the other hand, the pattern of digit positions having differing digits does correspond to a correctable error pattern, then a match is assumed. The stored data associated with the matching or mismatching data key word may then be utilized in accordance with the outcome of the comparison.

3,700,871
MULTIPLE MULTIPLEXER GAIN-RANGING AMPLIFIER

William C. Montgomery, Jr., and Charles B. Vogel, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 864,998, Oct. 9, 1969. This application June 21, 1971, Ser. No. 155,084
Int. Cl. G01v 1/28 ; H03r 13/02
U.S. Cl. 235—154 4 Claims

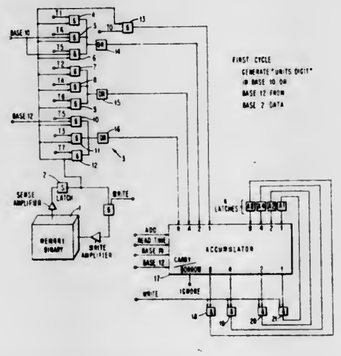


One hundred low frequency analog signal channels having a very large dynamic range may be amplified to at least half of full scale of a 14-bit analog to digital converter without distortion by an amplifier system that includes a preamplifier for each channel, a filter system for each channel, a gain-ranging multiplexer time-shared between 10 channels, and a second multiplexer that time shares the output of the gain-ranging multiplexers with an instantaneous gain-ranging amplifier. The gain-ranging multiplexer performs part of the multiplexing function and supplies sufficient gain ahead of the second multiplexer, a high speed, higher noise level multiplexer to mask the noise introduced into the system thereby. The output of the system is typically digitized.

3,700,872
RADIX CONVERSION CIRCUITS

Frederick T. May, Austin, Tex., assignor to International Business Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 517,764, Dec. 30, 1965, abandoned. This application Aug. 22, 1969, Ser. No. 852,272
Int. Cl. H03k 13/24
U.S. Cl. 235—155 10 Claims



Data conversion circuits with optimized common hardware convert numbers expressed in a first radix C to other radices $m1$, $m2$, etc., with the mode of operation being controlled to establish a radix C to radix $m1$ conversion in one mode, a radix C to radix $m2$ conversion in another mode, etc., on a selective basis, as desired. In a first embodiment, numbers represented in a binary (base 2) radix C are converted to a base 10 ($m1$) or base 12($m2$) representation. In a second embodiment, numbers stored in a ternary (base 3) radix C representation are converted to a base 12 ($m1$) or base 10 ($m2$) representation. The circuits are predicated upon recognition of the fact that a number represented in a first radix can be converted readily to a second radix using shared hardware if the following equation is satisfied:

$$m=C^n(PC+1)$$

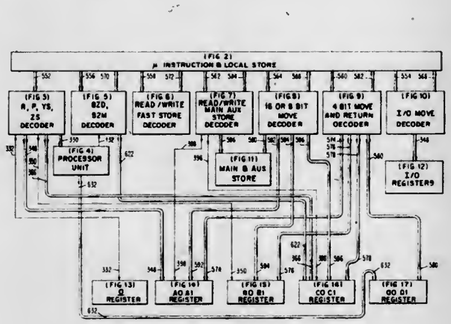
$$m=C^nX$$

In the equation, m represents the divisor, that is, the base or radix to which the existing data is to be converted. C represents the radix or base of the original data. The factors P and n are positive integers used in the equation for convenience. If any set of values for P and n satisfy the equation for m in the specified base C of the dividend, then division by m can be implemented. The determination that the equation is satisfied for any original source data is first made in order to develop the circuits appropriate for converting the source data to other radices.

3,700,873
STRUCTURED COMPUTER NOTATION AND SYSTEM ARCHITECTURE UTILIZING SAME

Ernesto F. Yhap, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 6, 1970, Ser. No. 26,029
Int. Cl. G06f 7/38
U.S. Cl. 235—156 17 Claims



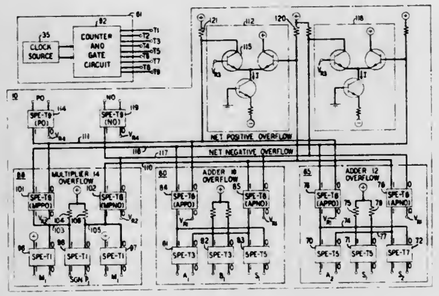
An idealized language notation is disclosed for a computer system whereby both data and instructions may be logically combined and operated upon utilizing a set of micro-instructions which have desirable algebraic qualities for this structural concept of a computer language and an embodiment is given of a structured computer architecture. This set of micro-instructions lends itself to simple hardware realizations requiring minimal levels of logic. The nature of the hardware is highly amenable to realization with large scale integration techniques and should facilitate the emulation of a wide set of more specific machine language instructions.

The disclosed hardware while simple is capable of decoding and performing a relatively large number of primitive logical operations, which operations are representative of the particular micro-program which originated same and which micro-programs are further combinable to perform all normal machine operations.

3,700,874
THRESHOLD LOGIC OVERFLOW DETECTOR

John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed March 4, 1971, Ser. No. 120,833
Int. Cl. G06f 7/48
U.S. Cl. 235—164 12 Claims

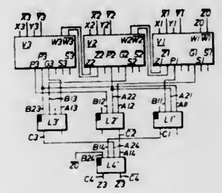


An overflow detector circuit for a digital filter comprises threshold logic arrangements that detect the occurrence and the polarity of any overflows generated in two adders and a multiplier. In addition, threshold logic circuitry detects all possible net overflow conditions of either polarity resulting from computations made in the adders and the multiplier. Every net overflow signal corrects for the net overflow condition.

3,700,875
PARALLEL BINARY CARRY LOOK-AHEAD ADDER SYSTEM

Franz Saenger, and Dieter Straub, both of Konstanz, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 18, 1971, Ser. No. 116,585
Claims priority, application Germany, Feb. 18, 1970, P 20 07 353.4
Int. Cl. G06f 7/50
U.S. Cl. 235—175 4 Claims

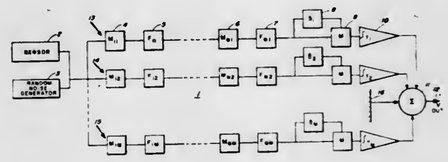


A multiple bit binary parallel adder system including a plurality of multiple bit group parallel adders with the output carry from the highest-bit of each group adder constituting the input carry of the next highest order group adder. The output carry of the highest order bit of each group adder is rapidly formed by means of logic switching circuits which compile values corresponding to all of the input values to the group adder while the remaining output carries within the group adders are formed as conventional propogated carries.

3,700,876
REDUCED TIME DELAY AUTO-CORRELATION SIGNAL PROCESSOR

Lawrence S. Gray, Virginia Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 9, 1970, Ser. No. 97,450
Int. Cl. G06g 7/19
U.S. Cl. 235—181 10 Claims

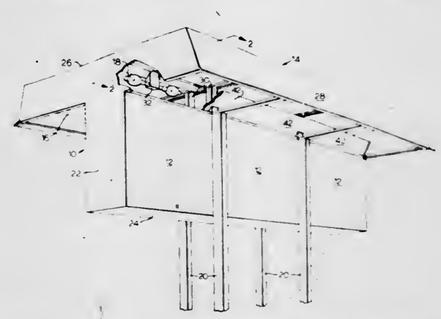


A signal processor utilizing the auto-correlation technique for detecting a signal in the presence of noise. The device reduces both the required time delay and integrating time in conventional auto-correlation processes by the use of a (N) by (M) matrix analog correlator. The device accepts noise and signal which are assumed to be statistically independent and by linearly multiplying both (N) reiterated times and filtering out the d.c. or base band products from each multiplication, forms the final function for correlation. This process of linear multiplication is repeated over (M) parallel paths. The (N) reiterated linear multiplications reduce the required time delay to a small fraction. The (M) parallel paths reduce the required integrating time also to a very small fraction.

3,700,877
LIGHTING STRUCTURE

Arthur K. Wilson, 50 Coleman Avenue, Toronto, Ontario, Canada

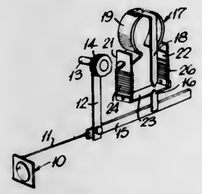
Filed Aug. 11, 1971, Ser. No. 170,848
Int. Cl. F21p 5/00
U.S. Cl. 240—3 9 Claims



Lighting structure is described for both illuminating display panels associated therewith and for providing illumination to the area surrounding the structure. A plurality of mercury vapor lamps are disposed above and rearwardly of a display panel whilst a reflector extends forwardly of said panel above said lamps whereby said panel is illuminated on its rear face by direct transmission of light from said lamps and on its front face by reflected light; the area surrounding the structure being illuminated by light reflected from said reflectors and light transmitted through said panel. Said area may also be illuminated by direct light transmitted through a translucent baffle located above said panel below said reflector, or said translucent baffle may be omitted altogether. Alternatively, direct illumination of said area may be prevented by means of

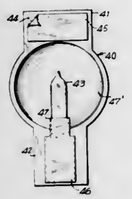
a grating-like baffle extending forwardly of and above the or each display panel.

3,700,878
LIGHTING SYSTEMS FOR ROAD VEHICLES
Alfred Dickens Baker, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation of Ser. No. 796,326, Feb. 4, 1969, abandoned. This application May 14, 1971, Ser. No. 143,641
Claims priority, application Great Britain, Feb. 23, 1968, 8,814/68
Int. Cl. B60q 1/06
U.S. Cl. 240—7.1 LJ **5 Claims**



In a lighting system for a road vehicle automatic sensing means senses the attitude of the body of the road vehicle relative to the ground and operates a first indicator means within the vehicle so that the occupant knows the attitude of the vehicle relative to the ground. There is also control means operable by an occupant of the vehicle for adjusting the attitude of the headlamp and a second indicator means, which can be brought into alignment with the first indicator means by adjusting the headlamp to the correct position.

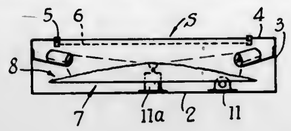
3,700,879
ILLUMINATION DEVICE
Charles Franc, Box 36-R Wading River, New York, N.Y.
Continuation-in-part of Ser. No. 755,303, Aug. 26, 1968, abandoned. This application Oct. 8, 1970, Ser. No. 79,040
Int. Cl. F21b 1/02
U.S. Cl. 240—10 R **7 Claims**



A portable illumination device consisting of a substantially flat concave reflector for mounting to a card or package, and including a lamp for illuminating the card or package. The reflector may also include a flat battery having a bulb receiving connector for receiving a lamp. The illumination device may be supported from a wire or string, or mounted on a vertical edge.

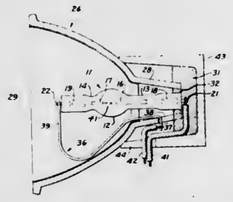
3,700,880
DISPLAY SYSTEM
Victor S. Smith, Channing House, Wargrave, England
Continuation-in-part of Ser. No. 813,953, April 7, 1969, Pat. No. 3,609,339. This application Dec. 8, 1970, Ser. No. 96,092
Claims priority, application Spain, Dec. 12, 1969, 374478/69
Int. Cl. F21p 1/02
U.S. Cl. 240—10 R **6 Claims**

A shallow box-like housing has a front wall composed of a translucent screen surrounded by an opaque frame. Within the housing is or are one or more rotating discs faced with randomly oriented reflective plastic. Rays from a plurality of



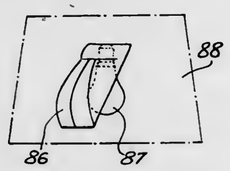
lights hidden behind the opaque frame are reflected by the disc or discs onto the inner side of the translucent screen.

3,700,881
LAMP AND REFLECTOR ASSEMBLY
Stanley L. Slomski, Lyndhurst, Ohio, assignor to General Electric Company
Filed April 29, 1971, Ser. No. 138,474
Int. Cl. F21v 7/00
U.S. Cl. 240—41.35 R **10 Claims**



A high-intensity arc lamp having anode and cathode stems extending in opposite directions from the bulb, is positioned in a reflector. The anode stem extends within a tapered hollow collar at the rear of the reflector, and the lamp is attached to the reflector by means of cement at the remote ends of the anode stem and hollow collar, whereby the hollow collar provides a heat-confining space around the anode stem for controlling the temperature and reducing the likelihood of thermal-stress cracking of the anode stem. A specially shaped connector within the reflector provides electrical connection to the cathode lead.

3,700,882
FACETED REFLECTOR
Jean Planchon, 9, rue Chaptal, Paris 9eme, France
Continuation-in-part of Ser. No. 695,522, Jan. 3, 1968, abandoned. This application Sept. 2, 1970, Ser. No. 68,951
Int. Cl. F21v 7/09
U.S. Cl. 240—41.36 **3 Claims**



The present invention provides a reflector, e.g. for a desk lamp, which is designed to provide an unusual predetermined pattern of illumination on a surface, for instance a pattern having non-concentric isolux curves around a point of strongest illumination, and which results in a more even distribution of light over the surface illuminated. The reflector is particularly designed for uniformly illuminating a predetermined area, even at a comparatively large distance from the vertical

projection of the light source on the said area. For that purpose, the reflector is built in the form of a complex surface comprising a plurality of elementary reflecting surfaces each of which has a distinct shape.

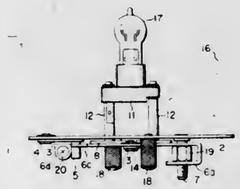
The elementary reflecting surfaces are linked to one another at their upper and lower edges through continuous surfaces portions and at their lateral edges through stepped surfaces portions called redans. The horizontal and vertical traces of the tangent planes to the various points of said individual elementary reflecting surfaces are so located respectively on horizontal planes containing said various points and on vertical planes containing both said points and a predetermined point of the source of radiation which cooperates with the reflector so as to provide, on a horizontal area to be illuminated, a plurality of images of the source, said images cooperating for giving a continuous predetermined level of illumination of the said area.

3,700,883
FACETED REFLECTOR FOR LIGHTING UNIT
Robert J. Donohue, Birmingham, and Bernard W. Joseph, Berkley, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 23, 1970, Ser. No. 74,563
Int. Cl. F21v 7/09
U.S. Cl. 240—41.36 **4 Claims**



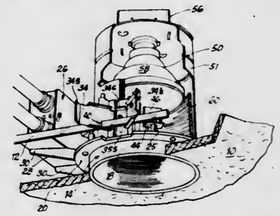
A reflector for a lighting unit includes a plurality of discrete reflecting facets which are individually oriented with respect to a light source such that the superposition of the reflected images synthesizes a predetermined lighting pattern. The prescription for making the reflector, by the techniques disclosed herein, involves selecting the number, size, curvature, and location of each facet to produce undistorted reflected images of the light source, the cumulative effect of which produces the desired illumination distribution within prescribed limits. Glare from the lighting unit is substantially eliminated by positioning contiguous facets such that uncontrolled reflecting surfaces are shaded from the light source.

3,700,884
DEVICE FOR ADJUSTING POSITION OF LIGHT SOURCE FOR PROJECTORS AND THE LIKE
Sakae Fujimoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Nov. 10, 1970, Ser. No. 88,304
Claims priority, application Japan, Nov. 12, 1969, 44/107399
Int. Cl. F21v 19/02
U.S. Cl. 240—44.2 **2 Claims**



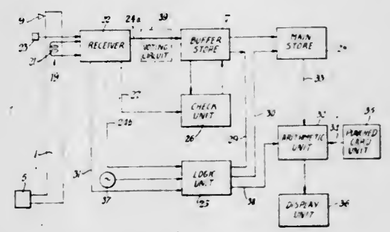
A device is provided for precisely positioning a light source in the optical system of a projector or the like, especially relative to a condenser system and a reflecting mirror. It consists of two position adjustment members, one being adjustable along two coordinate axes and the other being adjustable along the third coordinate axis. It is extremely compact in size, especially in thickness and is well adapted for miniaturization of a projector or the like. It is also very simple in operation to attain a highly uniform field with high luminance.

3,700,885
ARCHITECTURAL LIGHT AND ADJUSTMENT MEANS THEREFOR
Mitchell Bobrick, Culver City, Calif., assignor to Air King Corporation
Filed Oct. 1, 1970, Ser. No. 77,259
Int. Cl. F21s 13/06
U.S. Cl. 240—78 H **10 Claims**



A recessed lighting fixture is provided with a frame adapted for adjustable mounting longitudinally on hanger bars, and a light-carrying can which can be adjusted axially with respect to the frame without using tools. Spring-biased gripping members are provided for both adjusting the position of the frame on the hanger bars and for permitting transverse adjustment of the can relative to the frame.

3,700,886
COMMUNICATION SYSTEMS BETWEEN A TRACKWAY AND VEHICLES
Michael Sambrook Birkin, Derby, England, assignor to British Railways Board, London, England
Filed Oct. 30, 1970, Ser. No. 85,317
Claims priority, application Great Britain, Nov. 3, 1969, 53,895/69
Int. Cl. B61l 1/08
U.S. Cl. 246—63 A **5 Claims**



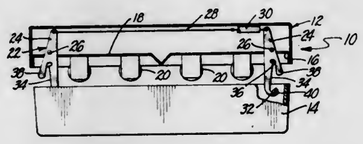
A communication system is provided between a trackway and a vehicle running along the trackway, in which information is transmitted between the trackway and the vehicle through an energy coupling such as an inductive coupling between a conductor system laid along the trackway and a pickup aerial on the vehicle. The trackway is divided into sections for each of which respective geographical information is valid for use by a vehicle in that section. An information transmitter is provided on the trackway for transmitting to a vehicle, while it is in a section, geographical information relevant

to a section of the trackway ahead. An information store such as a buffer store of a computer is provided on the vehicle for storing the geographical information. Signalling means are provided on the trackway for causing the stored information to be transferred from the storage means to information processing means on the vehicle, i.e., from the buffer store to the main store of the computer when the stored information becomes valid for use.

3,700,887
LATCH AND HINGE STRUCTURE FOR DIFFUSER OF FLUORESCENT LIGHT FIXTURE

George M. Marx, Palos Verdes Estates, Calif., assignor to Nu-Lite Fluorescent Mfg. Co., Inc., Commerce, Calif.

Filed Oct. 6, 1971, Ser. No. 186,863
Int. Cl. F21v 17/00
U.S. Cl. 240—147 3 Claims



A combination hinge and latch structure for the diffuser of a fluorescent light fixture, comprising at each end of the fixture two transversely spaced, transversely pivotable latch members on the housing of the fixture spring biased into engagement with two latch elements on the diffuser. The latch members are provided at their lower ends with transversely-outwardly-facing hooks and transversely-outwardly-facing cam surfaces which extend upwardly from the hooks to transversely-outwardly-facing notches in the latch members. The latch elements are engageable with the hooks to support the diffuser in a lowered position, and are slidable upwardly along the cam surfaces into the notches to support the diffuser in a raised position. When the diffuser is in its lowered position, one latch element of each pair can be disengaged from the corresponding hook to permit the diffuser to swing downwardly for access to the interior of the housing. Fingers on the latch members transversely outwardly from the notches therein are engageable with the diffuser to prevent unhooking of one side of the diffuser when the other side thereof is unhooked.

ERRATUM

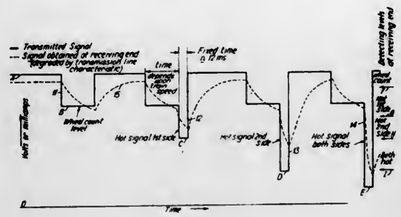
For Class 246—63 A see:
Patent No. 3,700,886

3,700,888
INFORMATION TRANSMISSION

Lionel Raymond Frank Thompson, Hatfield, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, England

Continuation-in-part of Ser. No. 766,569, Oct. 10, 1968, abandoned. This application Dec. 4, 1970, Ser. No. 95,116
Claims priority, application Great Britain, Oct. 10, 1967, 46,249/67
Int. Cl. B61k 9/06
U.S. Cl. 246—169 D 7 Claims

An electrical signal transmission system, applicable to the transmission of signals from trackside hot box detector equipment for railroad locomotives and rolling stock, wherein a basic pulse train is transmitted whereof the pulses are of a selected first amplitude and represent a train axle count, and a spike pulse of greater selected amplitude is transmitted, occurring immediately after the axle count pulse to which it relates, whenever an overheated axle box is detected. To enable the signal receiving equipment to determine on which side of a train the overheated box is located, the spike pulses are of two

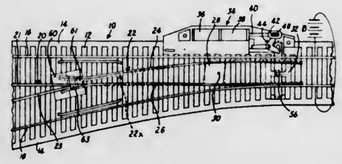


different amplitudes corresponding, respectively, to opposite sides of the train.

3,700,889
MODEL RAILWAY SWITCH ASSEMBLY

Clarence K. Edwards, 865 Morrison Street, and Lawrence D. Edwards, 2816 Rosemont Avenue, both of Medford, Oreg.

Filed July 29, 1971, Ser. No. 167,263
Int. Cl. A63h 19/32
U.S. Cl. 246—415 A 4 Claims



A model railway switch assembly is provided for the kind in which the switch includes blades or rails depended upon both (*a*) for controlling which of two track forks a locomotive or train will be delivered onto from a main track section, and (*b*) for delivering electrical energy selectively through the two track forks to operating instrumentalities on the locomotive and/or the cars.

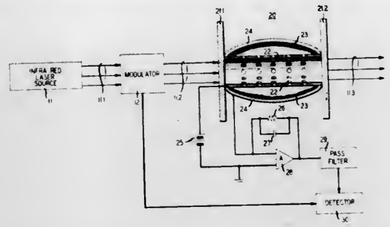
Firm but yielding conductive pressure of both ends of either switch rail with required cooperating rails is assured by making the switch rails independently yieldable so that either rail, seemingly blocked against completion of the switchover operation, may be caused to complete such operation, thereby to establish and maintain the required mechanical and electrical relationships.

3,700,890
MEASUREMENT OF GAS IMPURITY CONCENTRATION BY INFRARED ABSORPTION SPECTROSCOPY

Lloyd Barton Kruezer, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 2, 1970, Ser. No. 85,884
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 R 9 Claims

An impurity in a gas medium is detected and its concentration measured by an infrared absorption spectroscopy technique. An infrared laser beam, whose wavelength is at or near an absorption line of the suspected impurity, is amplitude modulated at a fundamental acoustic frequency; and the modulated beam is incident upon the gas medium. The amplitude of the second harmonic acoustic frequency component of the resulting induced pressure (or temperature)

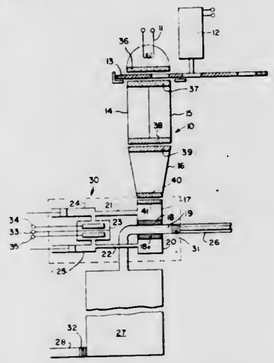


variation of the gas medium is indicative, with great sensitivity, of the presence and concentration of the impurity.

3,700,891
DEVICE FOR THE NONDISPERSIVE INFRARED GAS ANALYSIS

Karl Friedrich Luft, am Wunnesberg 32, Essen, Germany

Continuation-in-part of Ser. No. 745,197, July 16, 1968, abandoned. This application May 12, 1971, Ser. No. 142,616
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 R 8 Claims



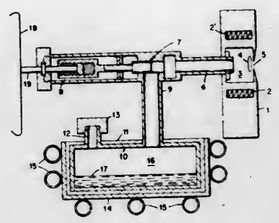
This invention comprises a device for detecting and measuring a gas component of a gas mixture using the optical-pneumatic effect produced by absorption of infrared radiation by a gas. The device comprises, in optical alignment, a radiation source, filter means, a cuvette system and a receiver unit which contains a measuring chamber and a comparison chamber. Pressure differential means such as a diaphragm condenser measures the optical-pneumatic effect produced by the absorption of radiation. The device is provided with porous means for flow of gases to eliminate interfering fluctuations in gas flow.

3,700,892
SEPARATION OF MERCURY ISOTOPES

William A. Bell, Jr, and Allen M. Veach, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 25, 1971, Ser. No. 174,841
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 S 4 Claims

An improvement in apparatus for the electromagnetic separation of the isotopes of mercury consists of a reservoir containing elemental mercury for placement within the ion source of the apparatus wherein the reservoir is enveloped in heating coils adapted for liquid flow therein and the assemblage is further enclosed in a soft-solder-filled outer shell of good thermal conductivity. Improved isotopic separations

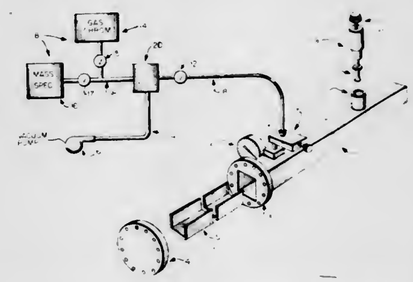


result from the thermal stabilization provided by the liquid flow in the heating coils as it removes spurious heat from the ion source and imparts the desired heat to the mercury charge material in the reservoir.

3,700,893
METHOD AND APPARATUS FOR DETERMINING THE CONTENTS OF CONTAINED GAS SAMPLES

Benjamin Seidenberg, Baltimore, and Alfred J. Hobbs, Middletown, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1971, Ser. No. 114,846
Int. Cl. B01d 59/44
U.S. Cl. 250—41.9 S 1 Claim



An apparatus for analyzing gas samples in containers comprising a vacuum chamber, a sealable opening in said vacuum chamber for inserting a sample holder, means to open said sample and release the gas in the container, pressure sensing means, and means for analyzing the gas released by opening the sample. The apparatus is operated by placing a sample containing the gas to be analyzed on the sample holder, sealing and evacuating the chamber, taking a background gas analysis, opening the sample container to allow the gas contained therein to escape into the evacuated chamber and withdrawing the released gas to the analysis apparatus.

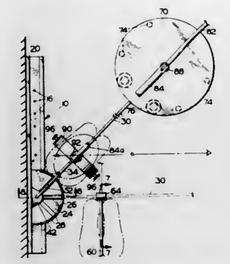
3,700,894
PATIENT POSITIONING APPARATUS FOR USE IN TAKING MEDICAL X-RAYS

Lulu B. Counsell, 1101 "O" Avenue, La Grande, Oreg.

Filed Jan. 18, 1971, Ser. No. 107,218
Int. Cl. G01n 23/00
U.S. Cl. 250—50 10 Claims

Patient positioning apparatus for use in taking medical X-rays is designed for properly aligning the patient at the optimum angle to the X-ray camera and film. The apparatus includes a base, a horizontal arm, angle indicating means on the

base, and arm mounting means for mounting the arm on the base at a horizontal angle selected on the angle indicating means. A head clamp also is provided. The horizontal arm and



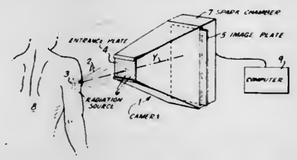
head clamp are so arranged as to require the patient to place his feet in alignment with the arm, and his head in alignment with his feet. This aligns his entire body at the desired angle with respect to the X-ray apparatus.

3,700,895

SCATTERHOLE CAMERA AND METHOD FOR USING SAME INCLUDING THE STEP OF CONVOLUTING THE IMAGE

Robert H. Dicke, Princeton, N.J., assignor to Research Corporation, New York, N.Y.

Filed Aug. 14, 1969, Ser. No. 849,954
Int. Cl. G03b *41/16*
U.S. Cl. 250—65 R **20 Claims**



Apparatus and method useful for recording high resolution images of radiation, such as from X-ray or gamma ray-emitting objects, comprising the use of an entrance plate having a number of randomly distributed pinholes which pass the impinging rays from the radiating objects, casting a number of overlapping images of the pinhole pattern on a sensing plate, which may be in the form of a photographic film, spark chamber or other readout or recording means. A comparison of the pinhole pattern with the overlapping image pattern by evaluating their convolution integral, which may be accomplished by one or more optical methods, such as passing radiation through the two patterns as they are successively shifted with respect to each other, or digitally on a computer will provide a high resolution reconstruction of the pattern of the radiation sources in the object field.

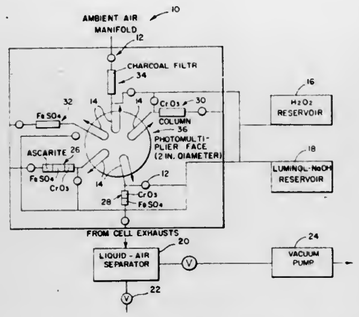
3,700,896

CHEMILUMINESCENCE AIR POLLUTANTS MONITORING DEVICE

Howard H. Anderson, Covina; Rudolph H. Moyer, West Covina; Donald J. Sibbett, Cucamonga, and David C. Sutherland, El Monte, all of Calif., assignors to Geomet, Incorporated, Rockville, Md.

Continuation-in-part of Ser. No. 63,844, Aug. 14, 1970, Pat. No. 3,659,100. This application Sept. 10, 1970, Ser. No. 71,057
Int. Cl. G01n *21/52*
U.S. Cl. 250—71 R **17 Claims**

Device or apparatus for chemiluminescence air pollutants monitoring including a plurality of microreactors simultaneously active to receive ambient air and reagents, monitoring of the microreactors being accomplished sequentially by a single photomultiplier and wherein channel monitoring is controlled by a rotary shutter which moves discretely from microreactor



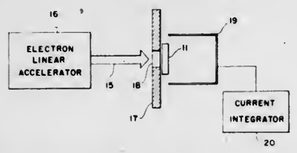
to microreactor, the microreactors consisting of channels. A quantitative analysis of gaseous components of the atmosphere is obtained by comparison of the signals obtained from the separate channels with appropriate calibration standards and processing circuitry.

3,700,897

INFRARED DETECTORS

George M. Low, Acting Administrator of the National Aeronautics & Space Administraton with respect to an invention of; Chris Gross, 118 Glascock Court, Hampton, Va., and Robert J. Mattauch, 615 Moseley Drive, Charlottesville, Va.

Filed Feb. 5, 1971, Ser. No. 112,998
Int. Cl. G01j *5/10*
U.S. Cl. 250—83 R **4 Claims**



High quality performance infrared photodetectors and a method for making them from a semiconductor material. The semiconductor material is irradiated with an electron beam to produce defect levels in a semiconductor material thereby improving the performance of the photodetectors.

3,700,898

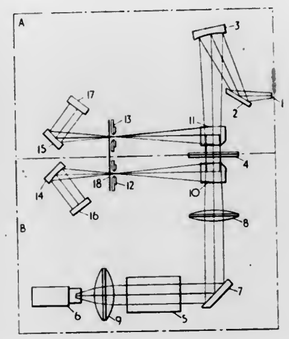
INSTRUMENTS FOR ANALYZING SUBSTANCES BY DETERMINING THEIR RADIATION ABSORPTION CHARACTERISTICS

Hugh Angus McIntosh Macleod, Newcastle-upon-Tyne, England, assignor to Sir Howard Grubb Parson & Company Limited, Walkergate, Newcastle-upon-Tyne, England

Filed Feb. 3, 1971, Ser. No. 112,377
Claims priority, application Great Britain, Feb. 3, 1970, 5,076/70
Int. Cl. G01j *3/02*
U.S. Cl. 250—83.3 H **6 Claims**

An instrument for analyzing substances by determining their radiation absorption characteristics when subjected to a beam of radiation, wherein, the optical components of the instrument are mounted on support members which lie in at

least two intersecting planes. The support members may take the form of two flat plate members lying at an angle to one



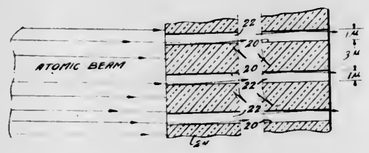
another in the manner of a pitched roof with the optical components supported on each flat member.

3,700,899

METHOD FOR PRODUCING A BEAM OF POLARIZED ATOMS

Manfred S. Kaminsky, Hinsdale, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 26, 1971, Ser. No. 175,245
Int. Cl. G21k *1/00*
U.S. Cl. 250—84 **11 Claims**



A polarized beam of atoms is generated by forming a plurality of apertures of micron-sized diameter through a magnetically saturated monocrystalline material and passing in a partial vacuum a collimated beam of atoms through said apertures incident to the walls thereof. The monocrystalline material effects a charge-transfer reaction with the atomic beam to produce a polarized beam of atoms, the nuclei of which are subsequently polarized by hyperfine interaction in a weak external magnetic field.

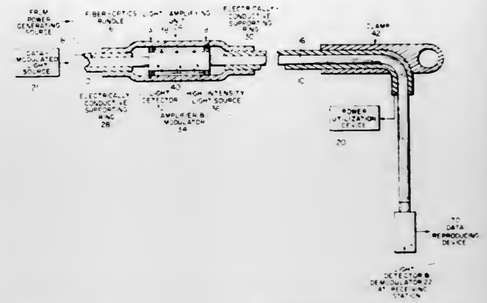
3,700,900

DUAL PURPOSE TRANSMISSION LINE

Arne J. Herleikson, 732 W. Highland Drive, Camarillo, Calif.

Filed Feb. 6, 1969, Ser. No. 798,858
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **10 Claims**

A high-voltage power transmission line in the form of a hollow tubular conductor which serves as a conduit for a high-intensity light beam modulated with data having security requirements. The high voltage of the power line effectively



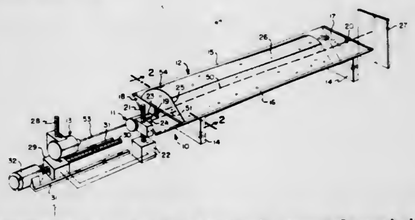
precludes unauthorized access to the data carried by the light beam enclosed therewithin.

3,700,901

APPARATUS FOR LOCATING THE GEOMETRIC CENTER OF A WORKPIECE

Edwin Broslaw, Lincoln Park, N.J., assignor to Crest-Foam Corporation, Moonachie, N.J.

Filed Aug. 21, 1970, Ser. No. 65,788
Int. Cl. G01j *1/26*; G01n *21/30*; G05b *1/00*
U.S. Cl. 250—201 **9 Claims**



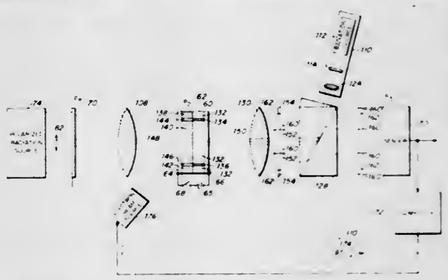
Apparatus for locating the geometric center of a workpiece includes a workpiece holder, a movably mounted photoelectric control element and a tool controlled by said control element and movable in the same axis as said control element.

3,700,902

OPTICAL INFORMATION PROCESSING USING VARIABLE ELECTRO-OPTIC SPATIAL FILTER

William R. Buchan, Lincoln, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 13, 1971, Ser. No. 106,075
Int. Cl. G01j *1/20*; G06g *9/00*
U.S. Cl. 250—201 **1 Claim**



Apparatus is disclosed including an optical information processing system including a variable electro-optic spatial

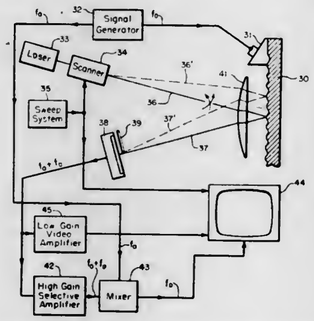
filter including an electro-optic medium having a characteristic that varies as a function of the intensity of an associated electric field, means for applying an electric field to the electro-optic medium, means for providing to the electro-optic medium a first Fourier transform of radiation representative of information to be processed, means for varying the intensity of the associated electric field to vary the characteristic of the electro-optic medium in a predetermined pattern for modulating information of predetermined spatial frequency included in the first Fourier transform, to produce a modified form of the first Fourier transform, and means for providing a second Fourier transform of the modified form of the first Fourier transform to reproduce a replica of the radiation representative of information to be processed with information of predetermined spatial frequency modified in accordance with the intensity pattern of the associated electric field.

3,700,903

OPTICAL DETECTING SYSTEMS FOR SENSING VARIATIONS IN THE LATERAL MOTION OF LIGHT RAYS

Robert Adler, Northfield, and Adrianus Korpel, Prospect Heights, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Continuation of Ser. No. 763,682, Sept. 30, 1968, abandoned. This application Dec. 9, 1970, Ser. No. 96,581
Int. Cl. G01b 11/30; G01n 21/30, 21/48
U.S. Cl. 250—217 **4 Claims**



An instrument is described which renders Rayleigh or surface waves visible on a television screen. A flying spot scanner uses a laser beam to scan a substrate horizontally and vertically at standard television rates. The periodic tilting or warping of the surface caused by the passage of an acoustic wave modulates the light reflected from the surface. This modulation is picked up by a photocell, filtered, amplified and heterodyned with a reference signal taken from the sound generator. The resulting difference signal reproduces the surface wave pattern on the television screen, with the waves standing still as if their motion had been arrested by a stroboscope. Normally visible features of the substrate may also be reproduced to serve as background. In a further embodiment, the system is expanded to provide for recording of acoustic holograms.

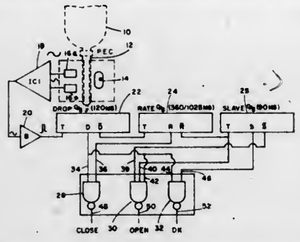
3,700,904

LIQUID FLOW CONTROL ARRANGEMENT

Richard P. Stobbie, Haines City, and Richard V. Knapp, Winter Haven, both of Fla., assignors to Nilsen Mfg. Co., Haines City, Fla.

Filed March 2, 1971, Ser. No. 120,209
Int. Cl. G01n 21/26
U.S. Cl. 250—218 **9 Claims**

A monitor arrangement for controlling liquid flow rate in a line which passes before drop sensing means which sense the passage of drops. Drop trigger means are coupled to and responsive to the drop sensing means and provide an output pulse at the passage of each drop. Triggered by this output pulse are time trigger means which provide a pulse of a



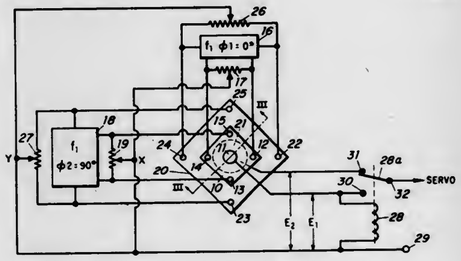
predetermined time interval. Logic and comparison means are coupled to said drop and time trigger means to judge the flow rate and motor means are in turn driven by said logic and comparison means. A line valve is responsive to the motor means which regulates the liquid flow in the valve.

3,700,905

MULTIPLE ELEMENT SENSING APPARATUS

William J. Parkin, Natick, and Joe C. Wilson, Jr., Pepperell, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 4, 1964, Ser. No. 409,355
Int. Cl. G01s 3/78
U.S. Cl. 250—203 R **15 Claims**



A multiple field optical signal detection apparatus employing a plurality of rotating field detector areas of increasing size, each such area corresponding to an increasing field of view. Each detector area includes a plurality of outer input electrodes and an inner output electrode. A pair of quadrature-phased, alternating current bias signals are applied to corresponding axis-defining pairs of input electrodes. Each output electrode is coupled to a switch which switches from one detector area to another corresponding with its respective field of view. The detector is coupled to a servo system which orients the detector along an axis corresponding with a signal source. The detector areas may be searched with a sweep signal sequentially to provide position signals for a plurality of signals.

3,700,906

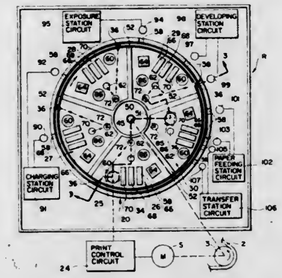
MAGNETICALLY CONTROLLED MACHINE PROGRAMMER

Lionel Russell Hickey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 16, 1970, Ser. No. 19,644
Int. Cl. H01j 39/12
U.S. Cl. 250—208 **11 Claims**

A machine programmer is provided for controlling work performed on a work piece which moves through separate

work stations wherein a shift register selectively energizes and deenergizes the work stations in response to movement of the work. The shift register includes a multisectioned cylinder divided into individual light-tight sectors, each having a slot along the periphery of the cylinder through which light can pass, and is rotatably driven by an endless photoconductive member. Each sector has a switching circuit which includes a lamp and a photosensitive device. When it is desired to make electrophotographic copies of an original, the lamp is turned on by an input signal from an electromagnet adjacent the



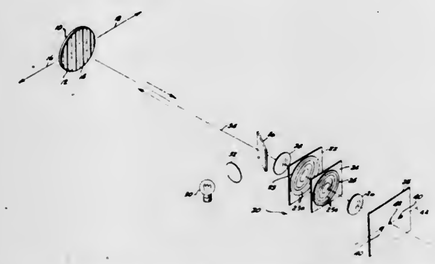
cylinder which is energized in accordance with the number of copies to be made. As each sector moves along a circular path past the electromagnet, a reed switch is operated to turn on the lamp, whose light by means of a photosensitive device maintains the circuit, and hence the lamp itself, in activated condition. As the cylinder is rotated the light in each lighted sector activates a series of photosensitive devices spaced around the cylinder to energize circuits connected to electrophotographic stations along the path of the photoconductive element in response to movement of the photoconductive element to make copies of the original.

3,700,907

CODE READING SYSTEM FOR IDENTIFICATION OF MOVING AND STATIONARY OBJECTS UTILIZING NONCOHERENT OPTICS

Jon H. Myer, Woodland Hills; Thomas R. O'Meara, and John M. Richardson, both of Malibu, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 770,241, Oct. 24, 1968, abandoned. This application July 20, 1971, Ser. No. 164,373
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D **10 Claims**



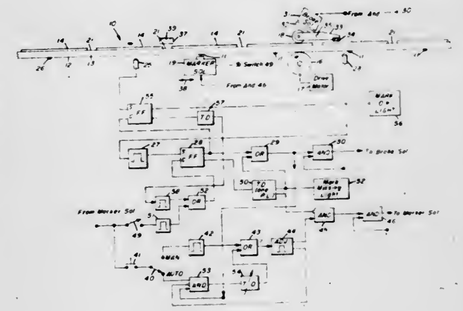
For purposes of material handling and inventory management of railway cars, trucks, crates, packaged and unpackaged goods, and similar objects, markings, comprising a plurality or a composite of coded patterns, on such moving and stationary objects are used for their identification or identification of their contents. To permit such identification, an extended source of spatially incoherent light is modulated by passage through or reflection from the markings to provide input images of the coded patterns. The input images are projected through a pair of plates each having a Fresnel zone thereon for transformation of the input images into output signals corresponding to the optical Fourier transforms of the input images. Since the spatial positions and angular orientations of the output signals are dependent upon the spatial frequencies and orientations of the input images, the coded markings comprise a plurality of distinct patterns of different orientation and spatial frequency which can be correlated to a numerical identification system corresponding to information concerning the objects. The system is designed to operate as close to the geometrical optics limit as is practically feasible.

3,700,908

APPARATUS FOR PLACING MARKS ON A WEB

Mark J. Devaney, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,835
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DR **4 Claims**



An apparatus is disclosed for placing chop-marks on the back of a web of photographic prints to facilitate the automatic chopping of the web into individual prints. The apparatus includes a first photoelectric cell that is located downstream of a marker, and which cell, in cooperation with logic circuitry, is used to so control a web drive means that the web is stopped at particular intervals so that a chop-mark may be placed on the back of each print. The apparatus further includes a second photoelectric cell located upstream of the marker which, in cooperation with the logic circuitry, is adapted to check the web for chop-marks which have previously been placed on the back of some of the prints so that the prints having such pre-existing chop-marks are advanced past the marker without having a second mark placed thereon.

3,700,909

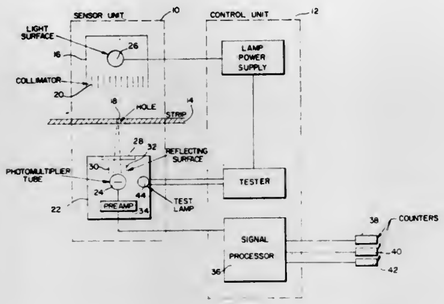
METHOD FOR DETECTING PINHOLE DEFECTS IN FOIL MATERIAL

Russell Murray, Laurel, Md., and Dominique Gignoux, Washington, D.C., assignors to Columbia Research Corporation, Gaithersburg, Md.

Filed March 9, 1972, Ser. No. 233,239
Int. Cl. G01n 21/32
U.S. Cl. 250—219 DF **8 Claims**

A system for detecting the number of pinhole defects in any given segment of advancing foil material. Particularly a narrow width ultra-violet light source and corresponding ultra-violet and photomultiplier unit, as well as associated circuitry for shaping and counting electrical pulses, corresponding to

the diameter of the pinhole defects. The system distinguishes from the prior art in that it makes possible the detection of



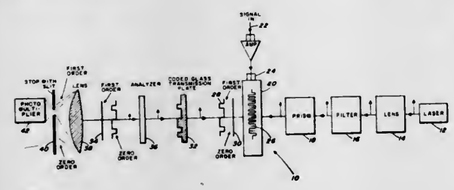
holes in a material having a large density of holes as well as discriminating as to the number of given defects in several different sizes or threshold categories.

3,700,910

BRAGG ANGLE OPTICAL MATCHED FILTER SYSTEM WITH CODED GLASS TRANSMISSION PLATE

Richard M. Smith, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 23, 1970, Ser. No. 64,908
Int. Cl. G02f *1/18*
U.S. Cl. 250—225 **9 Claims**



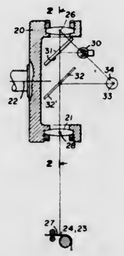
The optical matched filter system provides a means of achieving pulse compression for pulse radar with an improved range resolution. The system separates zero and first order light at low frequencies (30–60MC region) by making use of the polarization properties of shear mode acoustic waves in quartz. Linear polarized collimated zero order light from a laser illuminates an acoustic modulator. An electrical signal is converted by transducers into an acoustic shear wave signal which is propagated through the acoustic modulator and modulates the laser light beam to generate first order light containing a coded phase front polarized orthogonal to the zero order light from the laser containing a plane phase front. When the first order coded phase front and a coded glass transmission plate are matched at the moment of correlation a first order plane phase front is produced. An analyzer blocks most of the zero order light to reduce the bias on a photomultiplier. The first order plane phase front is focused to a spot by a transform lens and the light is passed through an optimized aperture or slit to the photomultiplier where the optical output is converted to an electrical output.

3,700,911

OPTICAL SCANNER WITH STRAIGHT SCANNING LINE

Ernest Wildhaber, 124 Summit Drive, Brighton, N.Y.

Filed April 2, 1971, Ser. No. 130,735
Int. Cl. H01j *3/14*
U.S. Cl. 250—236 **10 Claims**



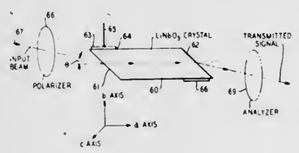
A rotor contains a plurality of lenses spaced about its axis at a constant distance therefrom. As it turns each lens successively forms an image of a narrow area moving along a straight scanning line. The image is formed adjacent a point eccentric of the rotor axis, the eccentricity being computed so that this point remains stationary as the rotor turns. A stationary plane mirror placed inside the lens circle displaces the image to a convenient location. Photocells are placed there. Preferably illumination of said narrow area of the record is through a lens of the rotor from a line-like area of light.

3,700,912

RADIATION-RESISTANT LINBO AND OPTICAL DEVICES UTILIZING SAME

Alastair Malcolm Glass, Millington, and George Earl Peterson, Short Hills, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 12, 1971, Ser. No. 142,477
Int. Cl. H03f *7/04*; G02f *1/28*
U.S. Cl. 307—88.3 **9 Claims**



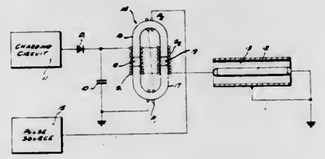
Room temperature use of $LiNbO_3$ in devices involving transmission of coherent radiation has been restricted by the observation that the material "damages" in relatively short periods at commonly used intensity levels. Such damage takes the form of the development of local refractive index inhomogeneities which scatter the radiation. Such damage is reduced to a level sufficient to permit use of $LiNbO_3$ in any such device at room temperature by maintenance of the concentration level of Fe^{2+} impurity at less than 10 ppm and by annealing at temperatures below 700° C. In a preferred embodiment, at least a portion of such said annealing is carried out with the sample under the influence of an imposed electric field.

3,700,913

TRIGGER TRANSFORMER FOR PULSE FORMING NETWORK

Rodney J. Dahlinger, Canoga Park, and Robert P. Farnsworth, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 12, 1970, Ser. No. 63,136
Int. Cl. H01f *3/00*
U.S. Cl. 307—107 **10 Claims**



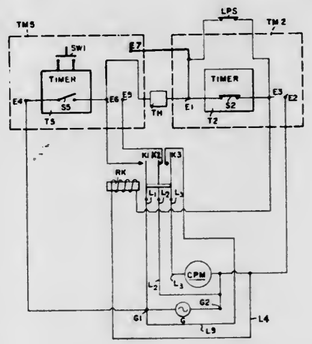
The inductor of a pulse forming network comprising a storage capacitor and inductor is provided by the secondary winding of a series-connected trigger transformer. Electromagnetic radiation is minimized while the stored energy is discharged through a flash lamp with a current waveform determined by the inductance of the secondary winding and the capacitance of the storage capacitor. The waveform is maintained at a desired level determined by the design of the secondary windings on cores of high saturation material. The secondary windings are tightly wound to minimize radiation from the sides of the cores, and the ends of the cores are closed by high permeability, high saturation density material to minimize radiation of the ends of the cores. The cap which prevents saturation of the main transformer core is filled with high permeability, low saturation density material to facilitate use as a trigger transformer.

3,700,914

CONTROL APPARATUS FOR AIR CONDITIONING AND LIKE SYSTEMS

George John Granieri, Piscataway, and Edward Herbert Lefkowitz, Edison, N.J., assignors to The Tappan Company, Mansfield, Ohio

Filed Nov. 20, 1970, Ser. No. 91,446
Int. Cl. H01b *43/00*
U.S. Cl. 307—141 **14 Claims**



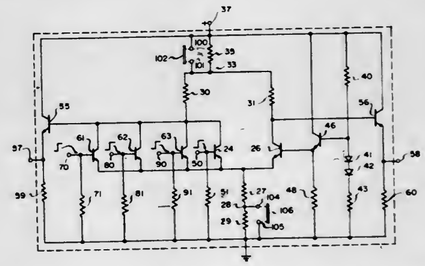
Control equipment for power-operated mechanism, such as an air-conditioning system including circuitry for preventing the operation or re-operation of the compressor or other load until the expiration of a substantial predetermined interval of time after the compressor or load has been released. This equipment will prevent the frequent intermittent operation of the motor of a compressor if, for example, the thermostat or a switch or any other control element were jiggled or moved erratically. This equipment also prevents the operation of the compressor or other load unless, within a second predetermined time interval, the pressure in the supply line feeding fluid to the compressor or load has reached a desired or predetermined pressure. If the predetermined pressure has not been attained, the circuitry will release the compressor motor or load.

3,700,915

FULL-POWER/HALF-POWER LOGIC GATE

Robert R. Marley, San Jose, Calif., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 18, 1971, Ser. No. 107,149
Int. Cl. H03k *19/34*, *19/30*
U.S. Cl. 307—215 **5 Claims**



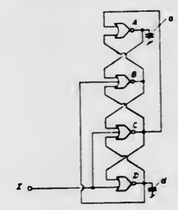
An integrated circuit logic gate suitable for use in LSI arrays provides OR and NOR logic outputs and includes additional collector and emitter resistors causing the array to be operated at half power levels. If a full power array is desired optional metalization shunting of the additional emitter and collector resistors is provided while maintaining the full logic swing across the same DC reference level which exists for half power operation. Thus, full power and half power gates may be interconnected without necessitating the use of additional interface circuits.

3,700,916

LOGICAL FREQUENCY DIVIDER

Eric Andre Vittoz, Neuchatel, Switzerland, assignor to Centre Electronique Horloger SA, Brequet, Neuchatel, Switzerland

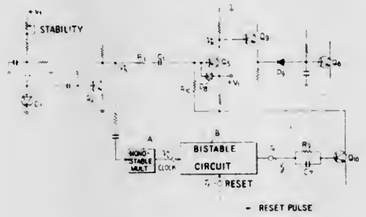
Filed Nov. 15, 1971, Ser. No. 198,794
Claims priority, application Switzerland, Nov. 19, 1970, 17138/70
Int. Cl. H03k *19/34*
U.S. Cl. 307—215 **6 Claims**



A logical frequency divider comprising at least one stage of division by two consisting of four logical gates A, B, C and D, the gates being connected as follows: the output from the first gate A controls an input to the second gate B; the output from the second gate B controls an input to the first gate A and an input to the third gate C; the output from the third gate C con-

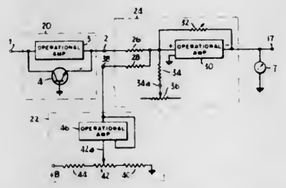
trols a second input to the first gate A, a second input to the second gate B and an input to the fourth gate D; the output from the fourth gate D controls a third input to the second gate B, a second input to the third gate C. The input signal to the stage of division by two controls a third input to the third gate C and a second input to the fourth gate D.

3,700,917
COUNT-DOWN CIRCUIT USING A TUNNEL DIODE
Koji Suzuki, Tokyo, Japan, assignor to Iwassaki Tsushinki Kabushiki Kaisha (also known as Iwatsu Electric Co., Ltd.), Tokyo-to, Japan
Filed May 14, 1971, Ser. No. 143,367
Claims priority, application Japan, May 18, 1970, 45/42312
Int. Cl. H03k *21/00*
U.S. Cl. 307—225 B **3 Claims**



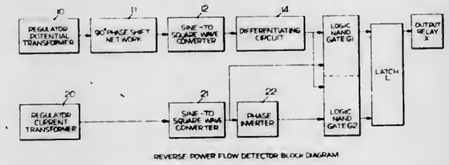
A count-down circuit using a tunnel diode for counting down a repetition frequency of an input pulse signal applied from an input terminal to one electrode of the tunnel diode so as to produce a counted-down output from an output terminal connected to said one electrode of the tunnel diode, in which a series-connection comprising a resistor and a collector-emitter path of a transistor is connected to the output terminal. A bias current is applied through at least a part of the series-connection and the tunnel diode so that an operating point of the tunnel diode is maintained in a low-voltage region. A pulse generator is connected to a path between the input terminal and the tunnel diode for generating a pulse having a repetition period equal to an integer multiple of a repetition period of the input pulse signal in synchronism with the input pulse signal. A bistable circuit is connected to the base of the transistor so as to be set in response to each output pulse of the pulse generator and reset until a just succeeding one of output pulses of the pulse generator.

3,700,918
LOGARITHMIC AMPLIFIER
Katsuhiko Kawashima, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed April 13, 1970, Ser. No. 27,820
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **4 Claims**



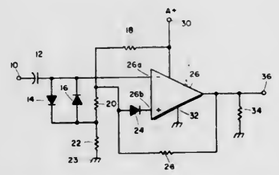
A circuit including a semiconductor logarithmic transfer element is connected to an operational amplifier through a resistor having a resistance proportional to its absolute temperature. A comparison voltage dependent upon the transfer element is also applied to the amplifier through another resistor similar in temperature dependency to the first resistor to be substracted from the output from the circuit. The resulting difference is completely temperature compensated and indicated on an indicator having an indication span controlled by a variable resistor connected across the amplifier and a zero point adjusted by a bias to the amplifier.

3,700,919
PHASE SHIFT DETECTOR
Frederick A. Stich, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Feb. 22, 1971, Ser. No. 117,342
Int. Cl. G01r *25/00*; H03d *13/00*
U.S. Cl. 307—232 **11 Claims**



A reverse power flow relay having high load current sensitivity over a wide power factor range receives input signals representative of the voltage on and the current in a power line, shifts the phase of the voltage signal 90°, and has a first high-gain operational amplifier for deriving rectangular positive voltage pulses from the phase-shifted signal, a differentiator for deriving a sharp voltage pulse at the leading edge of each rectangular voltage pulse when the voltage input signal crosses the zero axis, a second high-gain operational amplifier for deriving first rectangular positive current pulses from the current input signal, an inverter for deriving second rectangular positive current pulses shifted 180° in phase from the first rectangular current pulses, a NAND gate logic circuit for providing a first output when the sharp voltage pulses coincide with the first rectangular current pulses, thereby indicating forward power flow, and for providing a second output when the sharp voltage pulses coincide with the second rectangular current pulses, thereby indicating reverse power flow, and a latch circuit operated by the NAND gate logic circuit.

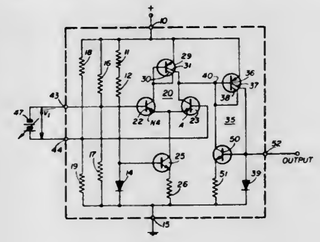
3,700,920
FREQUENCY INDEPENDENT PEAK DETECTOR
Francis R. Eyler, Hanover, Pa., assignor to The Bendix Corporation
Filed May 6, 1971, Ser. No. 140,930
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 A **3 Claims**



A frequency independent peak detector includes a circuit for differentiating the signal whose peak is to be detected, with the output of the differentiating circuit being applied to a high gain amplifier whose output is either in a high or low state, depending on what state the differentiated signal is in. The differentiating circuit is comprised of a capacitor and a diode operating as a resistance which varies inversely proportional

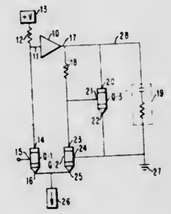
to frequency by virtue of the fact it is biased to operate in the exponential region of its volt-ampere characteristic. This compensates for the change in capacitor reactance as the input signal frequency varies to maintain the frequency-RC time constant product of the circuit relatively constant.

3,700,921
CONTROLLED HYSTERESIS TRIGGER CIRCUIT
Michael J. Gay, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed June 3, 1971, Ser. No. 149,482
Int. Cl. H03k *5/20*; H03f *3/68*
U.S. Cl. 307—235 **9 Claims**



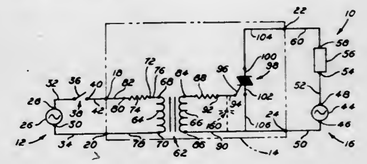
A monolithic integrated trigger circuit has its upper switching threshold determined by different emitter area ratios of a differential amplifier supplied from a first current source, and its lower switching threshold determined by the ratio of the current supplied by the first current source with the ratio of current supplied by a second current source rendered operative by a regenerative switch coupled with the output of the differential amplifier.

3,700,922
FAST ACTING TURN-OFF CIRCUIT
Anatol Furman, Fairfax, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,925
Int. Cl. H03k *17/60*
U.S. Cl. 307—246 **5 Claims**



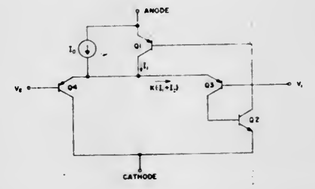
A transistorized power gating circuit for providing a positive pull down of the capacitive load which derives from the load, via a feedback loop, the turn-off drive voltage required to discharge the capacitive load which drive voltage disappears as the load capacitance discharges. The circuit obviates the need of a continuous current flow to initiate the device used in discharging the load capacitance and eliminates the attendent turn-on delays associated with disabling direct coupled pull down circuits.

3,700,923
SOLID STATE RELAY ARRANGEMENT
George E. Platzer, Jr., 30720 Woodgate, Southfield, Mich.
Filed Dec. 22, 1969, Ser. No. 886,864
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **8 Claims**



A Triac connected in series circuit with an alternating current electrical load has its gate electrode connected to a secondary winding of a transformer the primary winding of which is connected to a source of alternating electrical current; when a related control switch is closed the primary winding causes an induced voltage in the secondary winding which is out of electrical phase with the source; the induced voltage is then sufficient to develop a triggering current, at least equal to the gate threshold current, which is applied to the gate electrode as the potential across the Triac swings through a zero potential.

3,700,924
DIFFERENTIAL SNAP ACTING SWITCHING CIRCUIT
David E. Fulkerson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 58,326, July 27, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 223,927
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **20 Claims**

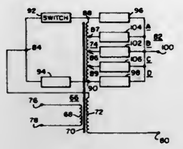


A snap-acting switching circuit having a temperature independent threshold switching voltage contains a pair of complementary transistors forming a regenerative feedback loop and a differential pair of transistors connected in one of the branches of the feedback loop to control the gain of the loop by a differential voltage.

3,700,925
THYRISTOR TAP CHANGER FOR ELECTRICAL INDUCTIVE APPARATUS
Peter Wood, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed March 29, 1971, Ser. No. 128,728
Int. Cl. H03k *17/00*, *17/56*
U.S. Cl. 307—252 Q **2 Claims**

Tap changing arrangements comprising winding sections

which are bridged by gate controlled switches which interconnect each winding section to aid, oppose or bypass other winding sections. The tap changing arrangements and switching sequences permit lower switch ratings without sacrificing performance.

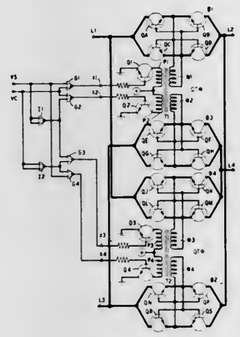


3,700,926

ELECTRONIC BILATERAL BETA ELEMENT SWITCH

James Edwin Dalley, Sherrelwood Estates, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 28, 1971, Ser. No. 147,757
Int. Cl. H03k *17/00*
U.S. Cl. 307—257 **3 Claims**



An electronic reversing switch or beta element is disclosed which functions to interconnect terminals on both half cycles of a carrier signal. Connections are switched between the terminals in response to a change in a control signal. The terminals are connected via selectively enabled bridge circuits containing parallel branches that may be energized on alternate half cycles of the carrier. Each branch includes a serially connected pair of oppositely poled semiconductor devices that exhibit a high impedance between the terminals when off and a low impedance when on for any polarity of external signals. A two-telephone intercom arrangement employing the electronic switches is also disclosed.

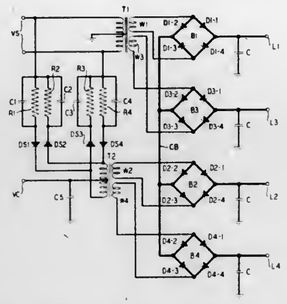
3,700,927

ELECTRONIC REVERSING SWITCH

James Edwin Dalley, Sherrelwood Estates, and Nelson Tsin Tsao-Wu, Boulder City, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 28, 1971, Ser. No. 147,758
Int. Cl. H03k *17/00*
U.S. Cl. 307—257 **10 Claims**

A reversing switch which changes connection paths for external circuits in response to a change in polarity of a control signal is disclosed. The control signal alters the phase in which a carrier signal is applied to select different sets of diode bridges that provide the connection paths for the external circuits. Switches capable of providing connection paths on alternate and successive half cycles of the carrier are shown.

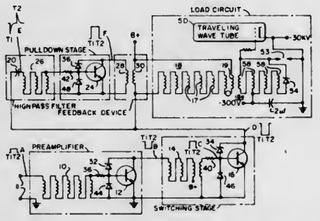


3,700,928

FAST PULLDOWN TRANSMISSION LINE PULSER

Walter E. Milberger, Severna Park, and Wayne L. Weigle, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1969, Ser. No. 846,154
Int. Cl. H03k *5/00*
U.S. Cl. 307—268 **12 Claims**



A switching transistor is used to pulse a high voltage radar transmission tube on and off. Each time the switching transistor turns off, positive feedback is applied thereto by a pulldown transistor to steepen the trailing edge of the switching transistor output pulse and overcome the inherent delay in transistor turn off due to storage effects. The pulldown transistor is responsive to voltages generated by the transient component of the trailing edge of the switching transistor, and therefore applies the feedback just as the switching transistor starts to turn off. The pulldown feedback is effective immediately because its application is limited only by the relatively short turn on time of the pulldown transistor. Transformers of the transmission line multifilar toroid type or of the loop coupling toroid type are employed to generate a high voltage pulse for controlling the radar transmission tube at its grid or cathode.

3,700,929

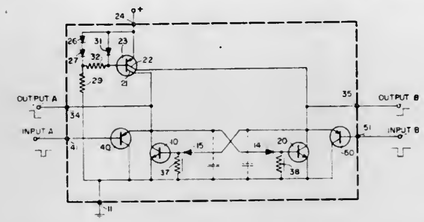
INTEGRATED BISTABLE CIRCUIT

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 116,566, Feb. 18, 1971, abandoned.
This application Jan. 10, 1972, Ser. No. 216,756
Int. Cl. H03k *3/28 6*
U.S. Cl. 307—291 **11 Claims**

A protected monolithic integrated flip-flop circuit comprises a pair of NPN transistors as the active flip-flop elements

with the collectors of each of these transistors being supplied from a constant current source in the form of a dual-collector lateral PNP transistor. Collector-to-substrate distributed capacitance operates to retard the switching time of the flip-flop causing it to be a low speed flip-flop. A pair of substrate PNP transistors are used to apply the input trigger signals to the NPN transistors and operate to provide protection for the circuit against high positive or negative input voltages.

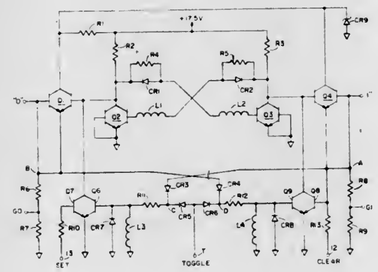


3,700,930

RADIATION HARDENED R-L FLIP-FLOP CIRCUIT

Xavier F. Gonzalez, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed April 23, 1971, Ser. No. 136,691
Int. Cl. H03k *3/28 6*
U.S. Cl. 307—292 **1 Claim**



Radiation hardening is provided by inserting inductors in series with resistors in the coupling cross-over paths of the flip-flop and by shunting the resistors with back connected diodes. The time constant of the circuit is selected such that the flip-flop returns to its initial state after a high radiation level has subsided due to stored energy in one inductor.

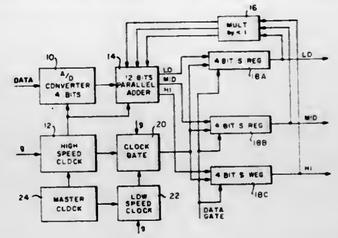
3,700,931

SHIFT REGISTER CLOCKING AT HIGH SPEEDS WHERE PARALLEL OPERATION IS NEEDED

Phillip L. Watkins, Rockville, Md., and Raymond W. Cox, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1971, Ser. No. 201,787
Int. Cl. H03k *3/04*
U.S. Cl. 328—63 **3 Claims**

A system for clocking a plurality of shift registers in parallel at shift rates up to 10 MHz which employs a single high speed master clock to provide a signal to individual clock drivers. Thus improving the isolation of the master clock and providing a two phase clock needed to drive the individual shift registers. The shift registers to be driven and the driving circuits being mounted in close proximity to each other.

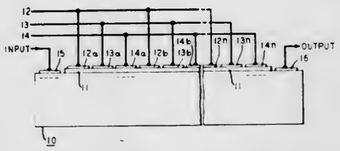


3,700,932

CHARGE COUPLED DEVICES

Dawon Kahng, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 18, 1970, Ser. No. 47,205
Int. Cl. G11c *19/00, 13/00*
U.S. Cl. 307—304 **8 Claims**



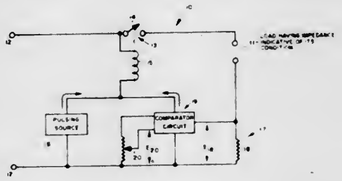
The specification describes a charge coupled device for information storage and processing in the form of discrete charge bundles. The device is characterized in that the storage medium is a semi-insulating material such as ZnO or ZnS. The carriers representing the information can normally be introduced and retrieved through ohmic contacts.

3,700,933

CONTROL CIRCUIT

Robert J. Harkenrider, and John L. Moe, both of Winona, Minn., assignors to Waynco, Incorporated, Winona, Minn.

Filed Sept. 28, 1970, Ser. No. 76,000
Int. Cl. G05d *23/24*; H03k *17/14, 17/66*
U.S. Cl. 307—310 **18 Claims**

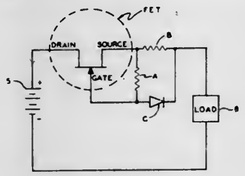


An electrical circuit is provided wherein pulsed energy samples are applied to a load at spaced intervals and monitored to determine the condition of the load and any changes in pulse energy through the load are compared to a reference and used to initiate control action.

3,700,934
TEMPERATURE-COMPENSATED CURRENT REFERENCE

Charles Gardner Swain, Arlington, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Sept. 23, 1971, Ser. No. 183,063
Int. Cl. H03k 17/00
U.S. Cl. 307—310 10 Claims

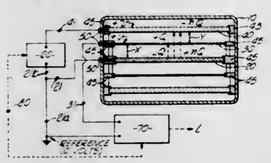


Electrical circuits are described that can be connected in series with a voltage source and a load in the same manner as a field-effect current-regulator diode to supply the load with a constant current having a temperature coefficient below 0.01%/°C. from 0° to 60° C. at current levels as low as 10 microamperes and having a voltage coefficient below 0.1%/volt from 5 to 12 volts. Very precise temperature compensation can be achieved at the desired current by adjustment of two resistors in these circuits.

3,700,935
FISSION-ELECTRIC CONVERTER

George M. Safonov, 327 Swarthmore Ave., Pacific Palisades, Calif.

Filed May 26, 1969, Ser. No. 827,829
Int. Cl. G21d 7/00
U.S. Cl. 310—3 R 24 Claims

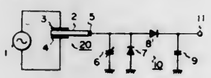


Electric generator apparatus for producing useful electric energy through direct conversion of kinetic energy of positively charged atomic fragments produced by nuclear fission by utilizing a fragment collecting electrode selectively permeable as respects the negatively charged electrons. These electrons are decelerated and collected by a collector electrode and returned through a suitable electrode to the source electrode.

3,700,936
HIGH VOLTAGE GENERATING APPARATUS

Masuo Shimizu, Tokyo, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 25, 1970, Ser. No. 75,407
Claims priority, application Japan, Sept. 30, 1969, 44/92794
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 2 Claims

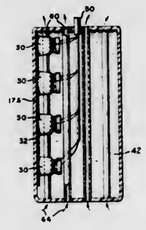


In a high voltage generating apparatus utilizing a piezoelectric transformer element driven by an AC voltage, the resonance frequency of the piezoelectric transducer element is varied by connecting a variable capacitor of small capacity between the output electrode of the piezoelectric transformer element and the ground.

3,700,937
SUBMERSIBLE ULTRASONIC TRANSDUCER ASSEMBLY

Herman A. Rissolo, Norwalk, Conn., assignor to Branson Instruments Incorporated, Stamford, Conn.

Filed July 1, 1971, Ser. No. 158,959
Int. Cl. H04r 17/00
U.S. Cl. 310—8.9 16 Claims

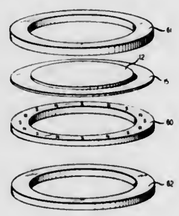


An ultrasonic processing apparatus includes an ultrasonic transducer assembly comprising a submersible enclosure made of material having a low thermal conductivity. Electroacoustic transducers are coupled to an interior surface of the enclosure which is filled with a heat conductive liquid. The interior of the enclosure is traversed by tubes which establish heat transfer between the interior of the enclosure and the liquid at the outside of the enclosure and in which the assembly is immersed.

3,700,938
ELECTROACOUSTIC TRANSDUCER WITH MAGNETIC TRANSDUCING ELEMENT CLAMPING

Herbert William Bryant, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 15, 1971, Ser. No. 208,307
Int. Cl. H04r 17/00
U.S. Cl. 310—9.1 12 Claims

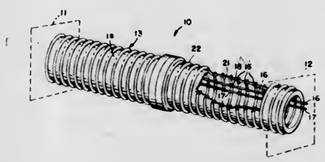


An electromechanical transducing element is bonded to a magnetic plate, and the composite structure is clamped within a transducer housing by means of one or more magnets attached thereto or embedded therein. The magnets serve to semirigidly clamp the plate to the housing, obviating the need for cement or other rigid clamping means, thereby reducing undesirable high or non-uniform stresses in the plate and allowing radial expansion and contraction of the plate due to thermal variations without damage to the transducer or alteration of its performance.

3,700,939
FERROELECTRIC CERAMIC STACK

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 10, 1971, Ser. No. 179,347
Int. Cl. H04r 17/00
U.S. Cl. 310—9.8 4 Claims

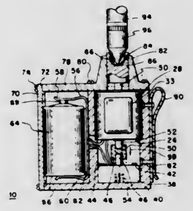


A unique coupling arrangement for joining the thin leaf conductors interposed between adjacent ones of a stack of ferroelectric elements functioning as an acoustic energy projecting transducer is provided. A separate resilient helical spring element is secured to each metalic conductor and has an orthogonally shaped portion to slidably contact one of two longitudinally extending bus bars sized to reach through the orthogonal portions. By coupling alternate ones of the helical springs to one of the bus bars and the other alternate ones of the helical springs to the other bus bar, the ferroelectric rings are connected electrically in parallel to provide an additive composite driving force for the transducer when a suitable driving field is impressed across the stack. Having the resilient, orthogonally shaped helical springs mounted in slidable contact with the bus bars allows responsive reciprocal travel by the stack yet does not permit the electrical interconnections between the bus bars and their conductors to be torn apart as is the case with rigidly soldered connections in conventional transducers.

3,700,940
PORTABLE ARROW CHECKING DEVICE

Jon D. Sigl, P.O. Box 22, Conway, Mich.

Filed Feb. 3, 1971, Ser. No. 112,249
Int. Cl. H02k 7/00
U.S. Cl. 310—66 4 Claims

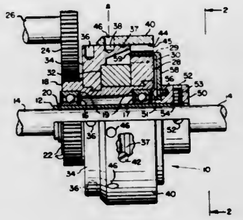


A portable device for checking the straightness of an archery arrow which comprises a housing, an electric motor and an arrangement for selectively energizing the motor in the housing. The motor has an output shaft to which is coupled means for engaging the head of an archery arrow, whereby the arrow can be rotated rapidly about its axis and any warp in the arrow observed.

3,700,941
ADJUSTABLE HYSTERESIS CLUTCH AND BRAKE

John E. Duncan, 70 Gardenville Parkway West, Buffalo, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,243
Int. Cl. H02k 49/02
U.S. Cl. 310—105 8 Claims

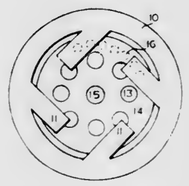


This hysteresis type magnetic device has a permanent magnet secured between two magnetizable pole members on a sleeve which is rotatably mounted on the output shaft coaxially thereof. One pole member is disposed within the other and has a plurality of axially extending external teeth or poles which confront but are radially spaced from a like plurality of internal teeth or poles on the outer pole member. A magnetizable, cup-shaped rotor is secured to the output shaft and has its annular wall projecting into the radial space between the inner and outer poles. The outer pole member is angularly adjustable relative to the inner to vary the angular separation between inner and outer poles, respectively, and hence to vary the transmittable torque in continuous slip braking and continuous or zero slip clutching connections.

3,700,942
SELF-STARTING SYNCHRONOUS MOTORS

Max Alth, 6 Tamarack Road, Port Chester, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,206
Int. Cl. H02k 21/00
U.S. Cl. 310—164 6 Claims



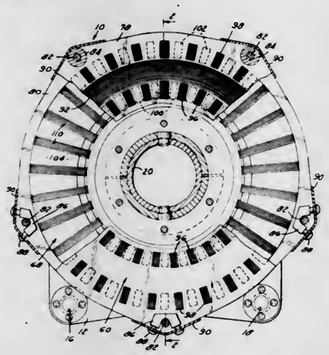
A conductive metal disc is mounted on a shaft. A number of magnets are mounted on said disc in a cicle, equidistant from each other, equidistant from said shaft and a distance in from the edge of the disc. This is the rotor. The stator comprises a number of coils mounted on U-shaped iron cores. The cores are positioned, open ends inwards, towards the shaft, overlapping the edge of the disc, circumferentially about the rotor. Cores are directed at equal angles , from 15° to 90° to the radii of the disc. As flux propagation is in relatively narrow bands at an angle other than radial to the shaft, the conductor is repulsed and turns. Synchronization occurs at a speed related to number of driving poles and rotating fields.

Alternately, PMs may be replaced by coils powered by DC taken from slips rings; by induced AC power converted to DC by rectifiers connected to the coils and mounted on the rotor, and by shorted turns on said rotating poles.

3,700,943
DISC-TYPE VARIABLE RELUCTANCE ROTATING MACHINE

Walter K. Heintz, Westland, and Lewis E. Unnewehr, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 8, 1971, Ser. No. 196,615
Int. Cl. H02k 19/07
U.S. Cl. 310—168 11 Claims

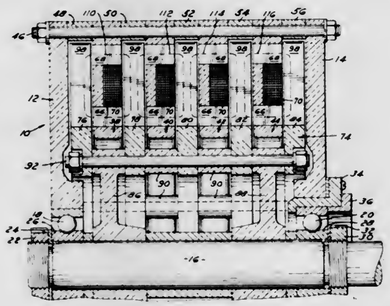


Described is a novel design for a disc-type variable reluctance rotating machine. The rotating machine, preferably used as a motor, is brushless and in the preferred form comprises a plurality of stator sections supported by a frame. A shaft is rotatably journaled in the frame structure and the stator sections are separated from one another by a plurality of rotor assemblies attached to the shaft for rotation therewith. The stator sections each have a helically wound coil surrounding the shaft and a plurality of inner and outer inserts made from magnetic material. The rotor assemblies also have inserts made from magnetic material to form a flux path around the stator coils. The rotating machine of the invention may be operated as an AC synchronous machine or as a pulsed current variable speed machine.

3,700,944
DISC-TYPE VARIABLE RELUCTANCE ROTATING MACHINE

Walter K. Heintz, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 8, 1971, Ser. No. 196,614
Int. Cl. H02k 19/02
U.S. Cl. 310—168 9 Claims

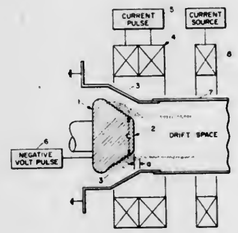


Described is a novel design for a disc-type variable reluctance rotating machine. The rotating machine, preferably used as a motor, is brushless and in the preferred form comprises a plurality of stator discs that are supported by a frame including a pair of spaced and parallel end plates. A shaft is rotatably journaled in the end plates and the stator discs are separated from one another by a plurality of rotor discs attached to the shaft for rotation therewith. The stator discs each have an annular channel in which a helically wound winding is positioned. Each of the stator discs also includes a plurality of equally spaced inner and outer inserts made from a magnetic material. The rotor discs also have inserts made from magnetic material to form a flux path around the winding in each of the stator discs. The rotating machine of the invention may be operated as an AC synchronous machine or as a pulsed-current variable speed machine.

3,700,945
HIGH POWER PULSED ELECTRON BEAM

Mushe Friedman, Washington, D.C., and Michael G. Ury, Ithaca, N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 30, 1971, Ser. No. 175,888
Int. Cl. H01j 29/46
U.S. Cl. 313—84 5 Claims

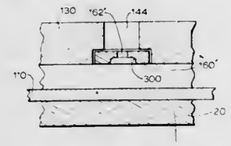


Apparatus for generating a relativistic annular electron beam with a power in the 10^{10} watt range utilizing a solid conical cathode of blunted shape and a surrounding truncated anode. A high intensity, pulsed magnetic field guides and focuses the electrons emitted from roughened areas of the cathode by a cold field emission process to form the annular beam.

3,700,946
GASEOUS DISPLAY PANEL WITH APERTURED, METALLIC STRIP-LIKE, SCANNING CATHODES

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 20, 1971, Ser. No. 173,373
Int. Cl. H01j 61/08, 61/30
U.S. Cl. 313—188 3 Claims



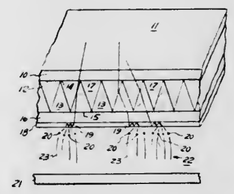
A gas-filled display panel includes a top plate, a bottom plate, an apertured center plate, and a plurality of arrays of electrodes associated therewith. The bottom plate is provided with slots for receiving an array of scanning anode electrodes; an array of scanning cathode electrodes is disposed between the bottom plate and the center plate, and an array of display anode electrodes is disposed between the center plate and the top plate. The electrodes and plates are interrelated to provide upper and lower layers of gas-filled cells. The cathode electrodes comprise metal strips which are elongated and have an

array of apertures disposed along their lengths, each aperture providing communication between a cell in the lower layer and a cell in the upper layer. The cathode strips are of sufficient thickness to provide strength and rigidity except for a thinner central portion which extends along, and is aligned with, the array of apertures therein whereby the apertures are of minimum depth.

3,700,947
INCREASED SENSITIVITY PHOTOCATHODE STRUCTURE

George W. Goodrich, Bloomfield Hills; William B. Colson, Troy, and Calvin C. Matle, Dearborn, all of Mich., assignors to The Bendix Corporation

Filed April 8, 1971, Ser. No. 132,372
Int. Cl. H01j 43/00
U.S. Cl. 313—103 11 Claims

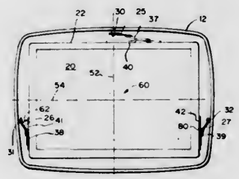


A photocathode substrate includes a plurality of prisms to refract radiation before it impinges upon a photocathode material. The refraction causes most of the radiation to meet the photocathode material at an angle other than 90° so that internal reflection of the energy within the photocathode material occurs. This greatly enhances the probability of electrons being released from the photocathode material.

3,700,948
EDGE-BONDED BI-METALLIC STRIP EXTENDING FROM METAL PLATE ON SHADOW MASK TO STUD VIA SPRING OF SUBSTANTIALLY SMALLER CROSS-SECTIONAL AREA THAN STRIP

Kazimir Palac, Carpentersville, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 9, 1970, Ser. No. 53,485
Int. Cl. H01j 29/06, 29/08, 29/02
U.S. Cl. 313—85 S 4 Claims

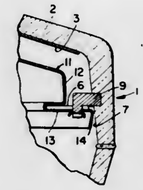


A three point support for a shadow mask screen within the faceplate panel of a color cathode ray tube is provided by three studs embedded in the glass side walls of the panel and spring mounting members which are connected to the studs and to edge bonded bimetallic strips which in turn are connected to the shadow mask. The springs and bimetallic strips are of dissimilar metals, and each spring has a cross-sectional area substantially less than the cross-sectional area of each bimetallic strip thereby thermally insulating the bimetallic strip from the stud of the faceplate panel.

3,700,949
COLOR TELEVISION PICTURE TUBE

Takeshi Watanabe, and Yuzi Saito, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1971, Ser. No. 108,366
Int. Cl. H01j 29/46, 29/56
U.S. Cl. 313—85 S 4 Claims



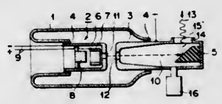
A color television picture tube comprises an integrally formed shadow mask unit including electron beam passing apertures, and skirt, and flange portions. The unitary mask construction is secured to a bulb housing via studs, and bimetal is employed for temperature compensation.

The structure obviates welding and welding associated nonuniformity and expense, and also permits accurate registration of the mask structure within the tube.

3,700,950
X-RAY TUBE

Terasawa Michitaka, Yokohama, Japan, assignor to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 5, 1971, Ser. No. 140,481
Claims priority, application Japan, May 8, 1970, 45/38908
Int. Cl. H01j 35/08
U.S. Cl. 313—55 5 Claims



An X-ray tube whose vacuum vessel contains a target made of electrical insulation material, a source of charged particles and an electrode for accelerating charged particles emitted from said source wherein the target is impacted by a beam of charged particles thus accelerated so as to produce soft X-rays of particularly great intensity.

3,700,951
DISCHARGE LAMPS HAVING IMPROVED THERMIONIC CATHODES

Maurice George Clarke, and Norman Burgess, both of London, England, assignors to Thorn Lighting Limited, London, England

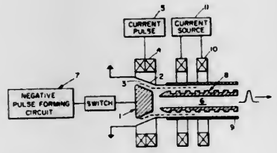
Filed Feb. 9, 1971, Ser. No. 113,934
Claims priority, application Great Britain, Feb. 11, 1970, 6,662/70
Int. Cl. H01j 1/14, 19/06
U.S. Cl. 313—346 R 3 Claims



A thermionic cathode for discharge lamps is a two part structure consisting of a wire stem bearing a cup at its end, the

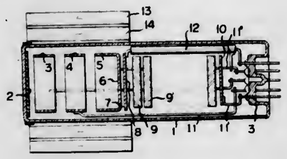
cup being a receptacle for an electron-emitting composition and ensuring that electrons can only issue from the mouth of the cup and not by passage through the side of the cup. In one form, a foil is rolled around the end region of the stem, the rolled foil projecting beyond the end of the stem and thereby forming the cup. Instead of foil, a welded-coil may be used in a similar way to define the cup.

3,700,952
HIGH POWER PULSED MICROWAVE SOURCE
John A. Nation, Ithica, N.Y., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 30, 1971, Ser. No. 175,887
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **5 Claims**



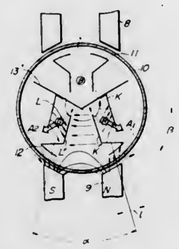
Microwave pulses at power levels in excess of 10 megawatts and of short duration and narrow bandwidth are produced by propagating an annular relativistic electron beam carrying currents of 30–40 kA at energies of 200–500 keV through a cylindrical, symmetrical annular, ridged wave guide. The interaction between this beam and a backward wave in the guide leads to the oscillations.

3,700,953
IMAGE DISSECTOR TUBE
Yoshiji Suzuki, Shizuoka; Ikuo Hayashi, Hamamatsu; Kazuo Kurasawa, Hamamatsu, and Mitsuhiro Shimada, Hamamatsu, all of Japan, assignors to Hamamatsu TV Company Limited, Prefecture, Japan
Filed April 28, 1969, Ser. No. 819,889
Claims priority, application Japan, April 30, 1968, 43/34840
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **1 Claim**



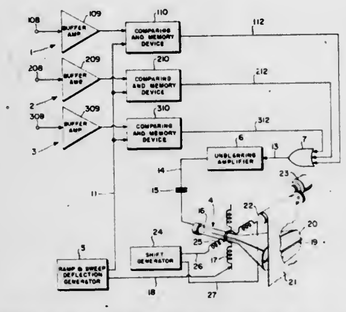
The present disclosure is directed to an image dissector tube having an image forming and scanning section and an electron multiplier section in which a control electrode is provided between said sections so as to apply a blanking voltage synchronously with a retrace period to cut off the beam and thereby present a black background level during the retrace period of the signal produced by the image dissector tube.

3,700,954
COLOR PICTURE TUBE DEVICE
Susumu Egawa, Osaka; Shigeya Ashizaki, Takatsuki-shi; Katsumi Shimizu, Ibaragi-shi, and Toshiko Miyati, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 19, 1970, Ser. No. 3,899
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 C **5 Claims**



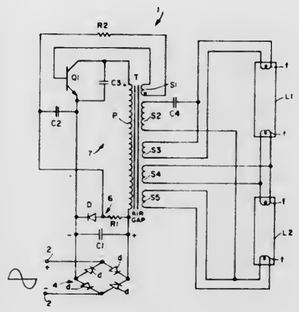
A color picture tube device having a "blue" convergence pole piece and a pair of "red" and "green" convergence pole pieces provided therein, wherein the "red" and "green" convergence pole pieces are disposed in opposing relationship to each other at an angle smaller than 120°C, electrodes are provided such that each is in parallel with each of the pair of pole pieces respectively, "red" and "green" beams being made to pass between the electrodes and the pair of pole pieces so that three, "red", "blue" and "green", beams may be moved on the screen with an angle of 120° being maintained therebetween.

3,700,955
CATHODE RAY TUBE DISPLAY APPARATUS WITH EXTENDED TUBE LIFE
Peter R. Lowe, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 1, 1970, Ser. No. 68,626
Int. Cl. H01j *29/72*
U.S. Cl. 315—20 **3 Claims**



The beam of a line scan fiber optics cathode ray tube is repeatedly swept along the phosphor element of the tube by a horizontal deflection coil to provide traces, representing the values of a plurality of data signals, which are recorded on a record sheet drawn continuously over the face of the fiber optics strip of the tube. A vertical shift deflection coil, energized by the trianglular wave output signal of a shift deflection generator, slowly and continuously shifts the path, along which the beam sweeps on the phosphor, up and down between the boundaries of the area of the phosphor which is coextensive with the active area of the fiber optics strip.

3,700,956
ARC DISCHARGE LAMP CONTROL CIRCUIT
Ronald D. Cluett, Gloucester, Mass., assignor to GTE Laboratories Incorporated
Filed Jan. 4, 1971, Ser. No. 103,582
Int. Cl. H05b *41/29*
U.S. Cl. 315—101 **5 Claims**



A high-frequency, lightweight, solid-state ac ballast for operating arc discharge lamps such as fluorescent lamps. An ac ballast in accordance with the invention includes a single transistor and a storage capacitor interconnected with a lightweight air-gap ferrite core transformer provide a blocking oscillator circuit capable of high-frequency ac operation. To initiate operation of the blocking oscillator circuit, low-frequency (e.g., 50-60 hertz) ac input voltage signals are converted to a dc voltage and applied to a starting circuit for producing a voltage for charging the storage capacitor. When the voltage developed across the capacitor reaches a predetermined value, the transistor is forward biased into conduction thereby initiating operation of the blocking oscillator circuit. After a predetermined period of time, the transistor is reversed biased by a voltage produced across a regenerative feedback winding of the air-gap transformer thereby terminating operation of the blocking oscillator circuit. During the operation of the blocking oscillator circuit through several cycles, high-frequency ac voltage signals (e.g., 20 kilohertz) are produced across a load winding of the air-gap transformer for operating a pair of fluorescent lamps.

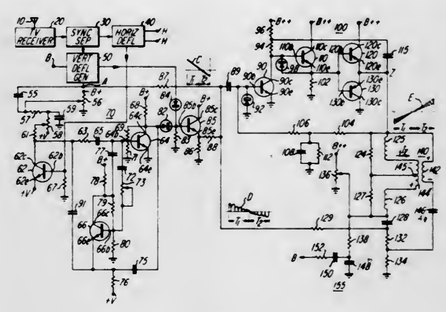
A modified version of the abovedescribed ac ballast includes a square hysteresis loop ferrite toroid in the blocking oscillator circuit, in addition to the air-gap transformer, for causing the transistor to switch more quickly between its conducting and non-conducting states.

3,700,957
FLAME RETARDANT POLYESTER PLASTICIZER CONTAINING 2,2-DIBROMOMETHYLENE-1,3-PROPANEDIOL
David A. Daniels, Kendall Park, N.J., assignor to W. R. Grace & Co., New York, N.Y.
Filed Jan. 13, 1971, Ser. No. 106,258
Int. Cl. C08f *45/38*; C08g *17/06*; C07c *69/34*
U.S. Cl. 260—31.6 **6 Claims**

Disclosed herein are novel compositions of matter having both flame-retarding and plasticizing properties and have the following mole percent compositions:

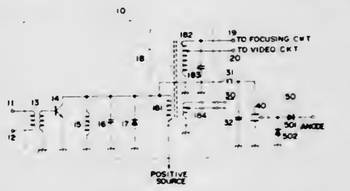
dicarboxylic acids	20 to 50
glycol	5 to 25
) 2,2-dibromomethyl-1,3 propanediol	5 to 25
terminating agent	0 to 40
alkyl phosphite	0 to 10

3,700,958
DEFLECTION AND PINCUSHION CORRECTION CIRCUIT
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation
Filed March 5, 1971, Ser. No. 121,370
Int. Cl. H01j *29/70*
U.S. Cl. 315—24 **10 Claims**



Combined vertical deflection and top and bottom pincushion correction signals are applied to a single amplifier circuit which provides the required vertical deflection n output current as well as pincushion correction signals for a television receiver. Since the frequency of the vertical deflection and pincushion correction signals are substantially different, a series resonant circuit tuned to the horizontal deflection frequency is employed at the output of the amplifier to apply the pincushion signal to the vertical deflection yoke. The resonant circuit includes an inductor which is the primary winding of a transformer whose secondary winding is coupled in series with the vertical deflection yoke to inject the pincushion correction information into the vertical deflection yoke. Negative feedback is employed in the amplifier to preserve the parabolic waveform of the applied pincushion correction signal.

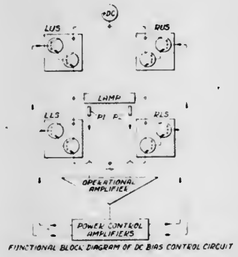
3,700,959
HORIZONTAL DEFLECTION CIRCUITS FOR TELEVISION RECEIVERS
Yasunobu Sakurai, Kawasaki, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed Sept. 23, 1970, Ser. No. 74,550
Claims priority, application Japan, Sept. 30, 1969, 44/92793
Int. Cl. H01j *29/70*
U.S. Cl. 315—29 **4 Claims**



In a television receiver comprising a high voltage generating apparatus including a piezoelectric transducer, a pulse transformer having a primary winding responsive to the deflection current and a secondary winding and means to energize the piezoelectric transducer by a pulse voltage supplied to the primary winding at the time of blanking, there is provided a horizontal deflection circuit comprising a parallel resonance circuit comprised by the secondary winding of the pulse trans-

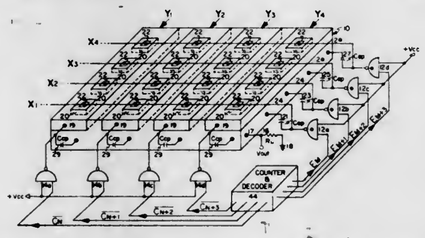
former and a capacitor for producing a third harmonic voltage wave of the blanking frequency of the horizontal oscillation signal, said third harmonic voltage wave acting to decrease the peak value of the pulse voltage.

3,700,960
METAL HALIDE LAMP SYSTEM
William H. Lake, Novelty, Ohio, assignor to General Electric Company
Filed Sept. 23, 1971, Ser. No. 183,094
Int. Cl. H05b *37/02*
U.S. Cl. 315—151 **10 Claims**



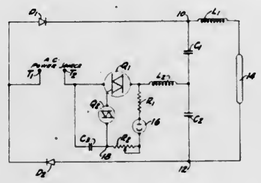
A major difficulty with long linear metal halide type lamps is nonuniformity of light output along the axis of the lamp. The extent of nonuniformity increases with the number of metals included in the lamp filling and the factors primarily responsible for it are cataphoresis and thermal gradients. The cataphoretic effect is the stronger and the nonuniformity may be overcome by supplying a DC component to the discharge current and controlling its polarity and magnitude. In one system, the lamp is operated from a DC power supply through a control circuit using semi-conductors for polarity reversing switches wherein the time of current flow in one polarity is determined by the direction and degree of unbalance of the spectral output.

3,700,961
PHOTOTRANSISTOR IMAGING SYSTEM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; William F. List, 521 Greenwood Road, Linthicum, Md., and David L. Farnsworth, 13005 Old Stagecoach Road, Apt. 1516, Laurel, Md.
Filed Aug. 19, 1971, Ser. No. 173,185
Int. Cl. H05b *37/00*; **H02b** *1/04*
U.S. Cl. 315—169 TV **7 Claims**



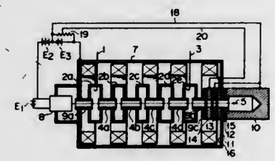
A phototransistor Imaging system employing a mosaic of phototransistors formed on a semiconductor substrate and operated in a charge-storage mode and in which a charge-storage effect occurring between the substrate and an electrical conductor interconnecting emitters of the phototransistors is used to provide a system output across a load circuit connected between the substrate and a system ground.

3,700,962
CONTROL CIRCUIT FOR MERCURY ARC LAMPS
Robert D. Munson, Jennings, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 4, 1970, Ser. No. 86,720
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 **13 Claims**



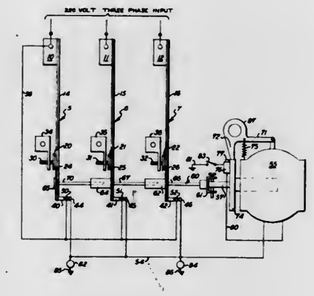
A starting and regulating circuit for mercury arc lamps comprising a voltage doubler network in which a pair of capacitors parallel connected across and a.c. power supply are alternately charged during alternate half cycles through signal controlled solid stage switching and rectifying means to provide a starting potential for the lamp, are then alternately discharged through the lamp and a series inductor and alternately act to limit current flow through the lamp; in which conduction of the switching means is delayed each half cycle until supply voltage has substantially increased; and in which conduction of the switching means is variably delayed in accordance with variations in an operating condition of the lamp to maintain a predetermined operating condition.

3,700,963
MICROWAVE TUBE ASSEMBLY
Takashi Shimada, Tokyo, Japan, assignor to Tokyo Shibaura Electric, Ltd., Kawasaki-shi, Japan
Filed July 13, 1971, Ser. No. 162,206
Claims priority, application Japan, July 16, 1970, 45/61766; Oct. 6, 1970, 45/98807
Int. Cl. H01j *23/02*
U.S. Cl. 315—5.38 **6 Claims**



A microwave tube assembly comprising a main collector for trapping electrons passing through the microwave outlet of the high frequency section of a microwave tube where incoming microwaves and the electrons act on each other; a plurality of subcollectors disposed between the microwave outlet and the main collector; and a magnetic shield plate for shutting off a magnetic field acting in the axial direction of the microwave tube wherein said plural subcollectors consist of at least first and second units; at least part of the first subcollector is disposed on the side of the main collector and the second subcollector is placed on that side which faces the microwave outlet; the second subcollector and main collector are maintained at a substantially equal voltage; the first subcollector is held at a higher voltage than the second subcollector; and the magnetic shield plate is disposed in the region where said first subcollector which faces the main collector is arranged.

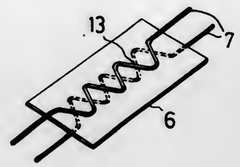
3,700,964
MOTOR OVERLOAD PROTECTOR AND VOLTAGE CUT-OUT DEVICE
Thomas Moore, 7235 Leavitt Road, Elyria, Ohio
Continuation-in-part of Ser. No. 773,923, Nov. 6, 1968, Pat. No. 3,530,377. This application Sept. 22, 1970, Ser. No. 74,277
Int. Cl. H02h *5/04, 7/08*
U.S. Cl. 317—13 C **15 Claims**



A current responsive motor overload protector for a three-phase AC motor wherein there are three bimetallic elements each of which is incorporated in a switch, each such switch being in series with a phase lead of a three-phase AC voltage source and also with a motor lead. Each of the bimetallic elements normally maintaining its respective switch in a closed position and opening automatically or bending towards an open condition due to the heating effects of a current passing through it when the motor is in an overload condition. A further circuit is included in the protector which is responsive to the opening, or bending, of each bimetallic element switch and when one of a bimetallic element switch opens at least in part, it energizes the further circuit which actuates a solenoid which, in turn, simultaneously causes each of the bimetallic element switches to open in a quick acting movement. A movable biased toggle mechanically secures the solenoid so that the bimetallic strip switches are retained in the open position until the toggle is manually reset. The toggle also opens a switch in a further circuit which serves to secure the current to the solenoid. An indicia means such as a lamp, buzzer or bell, or combination thereof, is connected between one of the electrical phase sources on one side and to a ground or a motor-phase lead via contacts which are closed responsive to the opening of each metallic switch on the other side. Warning indicia may be provided which is energized by a contact with each bimetallic element prior to the opening thereof when the overload condition of the metallic element is not sufficient to energize the further circuit.

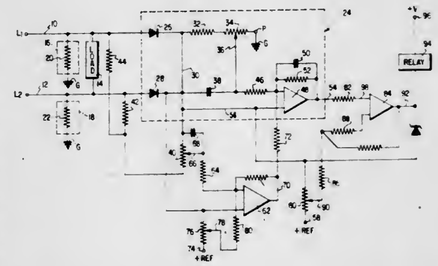
3,700,965
TRANSFORMER SHORTING DEVICE
Kunio Tone, Tokyo, Japan, assignor to Tokyo Keideniki Kabushiki Kaisha, Ota-ku, Tokyo, Japan
Filed Feb. 3, 1971, Ser. No. 112,356
Claims priority, application Japan, Feb. 4, 1970, 45/11614; May 11, 1970, 45/45823
Int. Cl. H02h *7/04*
U.S. Cl. 317—15 **12 Claims**

A small size transformer comprises a short-circuit inducing device placed within a coil of coils of the transformer and electrically connected between a primary coil and a power supply. The device comprises a spacer of an electrically insulative material capable of melting at a given temperature, and a pair of conductors electrically insulated from each other by the spacer, but closely spaced enough to contact each other upon melting of the spacer. This arrangement prevents the burning of the transformer upon occurrence of an overcurrent



flow through or short-circuit condition across the transformer coils by disconnecting the primary coil from the power supply.

3,700,966
MONITORING CIRCUIT FOR DETECTING LEAKAGE CURRENTS
Paul Morrow, Basin Road, New Castle, Del.
Filed May 19, 1971, Ser. No. 144,914
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **14 Claims**

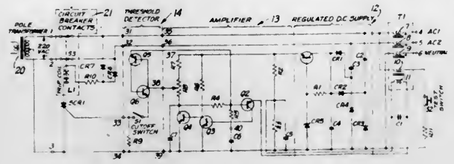


The leakage currents to ground from the power input conductors connected to a load are detected. When these leakage currents reach a selected magnitude, an amplifier responds to produce a usable output for indicating dangerous leakage current conditions. Detection takes place by means of a diode connected to each input conductor, the latter carrying an ac voltage, which diodes are connected in common to ground through a load resistor to provide paths for purely resistive leakage currents in phase with the ac voltage. An amplifier is connected to this load resistor to detect the in phase leakage currents. To detect out of phase or wattless leakage currents due to capacitive coupling between the input conductors and ground, a further diode, load resistor and amplifier combination is used and its output is summed with the in phase output to drive a further amplifier whose output is adjusted to operate only when the sum of the in phase and out of phase inputs reaches a selected value.

3,700,967
GROUND FAULT DETECTOR CIRCUIT
Robert J. Hoss, Plano, Tex., assignor to Zinsco Electrical Products, Los Angeles, Calif.
Filed Jan. 10, 1972, Ser. No. 216,526
Int. Cl. 323 *70*; **H02h** *3/28*
U.S. Cl. 317—18 D **19 Claims**

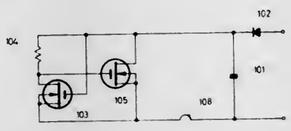
A ground fault detector providing protection from leakage current to ground by sensing unbalance in supply and neutral conductor currents to actuate a circuit breaker. A solid state circuit including amplifier and detector and having the unbalance signal of a current transformer as an input for energiz-

ing a trip coil of the breaker when the unbalance current exceeds a predetermined level. Improved circuitry providing



temperature compensation, insensitivity to turn on and other transients and noise, and protection against overheating due to breaker hang-up.

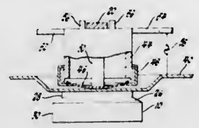
3,700,968
ELECTRIC FUSE CIRCUIT
Johann Spies, Pfaffenhofen, Ilm, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munchen, Germany
Filed Dec. 30, 1971, Ser. No. 214,302
Claims priority, application Germany, Jan. 20, 1971, P 21 02 499.7
Int. Cl. H01h *47/18*
U.S. Cl. 317—31 **7 Claims**



An electric timing circuit, for the time-delayed delivery of a voltage pulse to an electric fuse element, has a voltage source, preferably designed as a capacitor which can be charged from an external source of electric potential. The capacitor discharges across a resistance and a threshold value switch connects the fuse element with the voltage source when the source voltage falls below a preset value. The threshold value switch is constituted by a first field effect transistor having its drain-source path in the electric timing circuit and a second field effect transistor having its drain-source path connected in parallel with that of the first transistor, and having an insulated grid electrode. The drain electrode of each transistor is connected to the grid electrode of the other transistor. The fuse element, in one embodiment of the invention, is in series with a thyristor whose gating circuit is connected to a resistor connected in the drain-source path of the second transistor. In a second embodiment of the circuit, the fuse element is connected in series with the source voltage capacitor and the drain-source path of the second transistor.

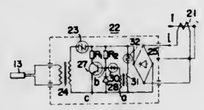
3,700,969
REPAIRABLE SEMICONDUCTOR ASSEMBLY
Thomas J. Furnival, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 14, 1972, Ser. No. 225,740
Int. Cl. H011 *1/12*
U.S. Cl. 317—40 R **3 Claims**

A transient suppressor for an electronic circuit includes a hermetically sealed housing for a Zener diode having a thin thermally conductive cover in thermal engagement with the Zener diode near the junction thereof and a heat dissipating member extending from the diode through the bottom of the package. A thermal circuit breaker seated in the depressed portion of the dish-shaped cover has a temperature responsive element normally in intimate engagement with the cover to sense the diode junction temperature. A base member supporting the diode housing and the circuit breaker carries a leaf spring for biasing the circuit breaker against the diode housing. The spring is removable to allow easy replacement of the



diode or the circuit breaker when defective. External circuit connections which may include a fuse, places the circuit breaker in series with the Zener diode to prevent current flow through the diode when the junction temperature reaches a critical point.

3,700,970
CURRENT CIRCUIT BREAKER
Noriomi Miyoshi, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Continuation-in-part of Ser. No. 791,635, Jan. 16, 1969, abandoned. This application Feb. 18, 1971, Ser. No. 116,587
Claims priority, application Japan, Jan. 20, 1968, 43/3183; Jan. 31, 1968, 43/6193
Int. Cl. H01h *3/08*
U.S. Cl. 317—58 **8 Claims**

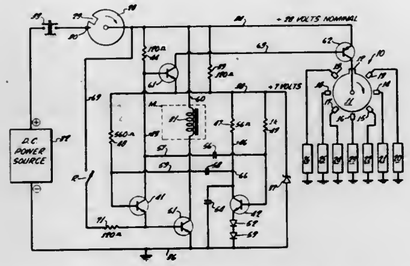


The electrical energy for detonating an explosive in a circuit-opening mechanism of a current circuit breaker to cut a circuit path is derived through a current transformer from the circuit path to which the circuit breaker itself is connected. The circuit-opening mechanism can thereby be exploded to cut the circuit path without the necessity of supplying electrical energy from any outside agency other than the circuit path. Furthermore, rapid extinguishing of the arc generated by the circuit path cutting is afforded by an insulative medium blown against the arc by the explosion, and the path parts thus cut apart are prevented by a unique construction from recontacting to remake the circuit.

3,700,971
ELECTROMECHANICAL INTERVALOMETER, AND METHOD OF USING SAME
Charles E. Everest, Los Angeles, and Henry P. Voznick, Arcadia, both of Calif., assignors to William Wahl Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 882,431, Dec. 5, 1969, abandoned. This application Jan. 29, 1971, Ser. No. 111,048
Int. Cl. F23g *21/00*
U.S. Cl. 317—80 **50 Claims**

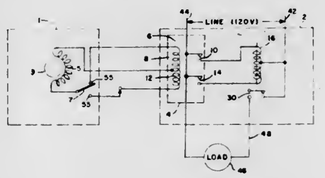
Apparatus and method for effecting firing, at predetermined intervals, of rockets, flares or the like. An astable, asymmetrical multivibrator oscillator is adapted to maintain energized, during the major portion of each cycle of oscillation, a solenoid which operates a stepping switch connected to the rockets. The multivibrator is adapted to complete a firing circuit through the stepping switch during the remaining or minor portion of each oscillatory cycle. The relative lengths of the cycle portions are so correlated to the firing times and shock wave-transmission times of the rockets that the solenoid is energized when the shock resulting from any firing reaches

the stepping switch. The multivibrator is so constructed that pressing of the pilot-operated start button always effects initiation of operation of the long (major) portion of the cycle, but



for only an abbreviated time period adapted to effect initial stepping of the stepping switch. An isolated power storage capacitor maintains operation of the multivibrator during temporary power dropouts.

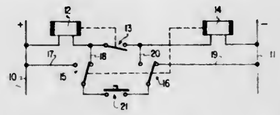
3,700,972
WIRE OPERATED REMOTE CONTROL SYSTEM
Reginald A. Bates, Chittenango, N.Y., assignor to Pass & Seymour, Inc., Syracuse, N.Y.
Filed April 16, 1971, Ser. No. 134,772
Int. Cl. H01h *47/22*
U.S. Cl. 317—137 **19 Claims**



A system for remotely controlling the energization of a load is disclosed. The system may be used for example to turn on and off lights, motors and the like. With this system the voltage being controlled is not utilized for control purposes. The system comprises a switch capable of generating a control voltage and a relay assembly actuated by the switch. The switch assembly comprises a magnet and coil so arranged that movements of the switch handle causes the magnet to rotate and induce a voltage in the coil. This voltage is transmitted by wire to the relay assembly which comprises an "on" reed relay, an "off" reed relay and a power relay. The power relay comprises an "on" latch coil and an "off" latch coil. When the "on" latch coil is energized voltage is applied to the load and when the "off" latch coil is energized the voltage is removed from the load.

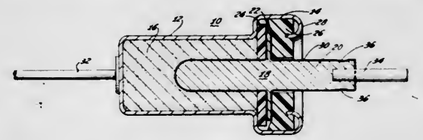
3,700,973
RELAY COUNTING CIRCUIT
Bjorn J. Gruenwald, Easton, Pa., assignor to Alpha Press Electronics, Inc., Alpha, N.J.
Filed Sept. 17, 1971, Ser. No. 181,461
Int. Cl. H01h *47/00*
U.S. Cl. 317—140 **5 Claims**

A relay circuit responsive to input impulses, represented by the closings and openings of a push button switch, wherein the relay circuit includes at least two relay windings and contacts and conductors interconnected to permit each closing and each opening of the push button switch to bring about a change in the energization state of the relays in the circuit. The basic circuit includes two windings in series circuit relationship with a contact set operated by one of the windings, the other winding being coupled to operate two single-pole double-throw contact sets capable of connecting one of two shunt circuits across one of the windings and the normally open contact set. Four events (two closings and two openings) of the push button switch cause the circuit to take four distinct



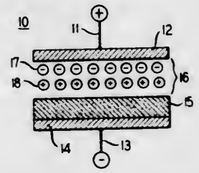
and identifiable states. Outputs from the winding can be used to feed an appropriate logic circuit and display means, if desired. More sophisticated versions using transistor relay drive and embodiment using sets of four and six relay windings, with appropriate steering diodes and the like, are disclosed. In each case each relay contact set opens and closes under conditions of zero potential difference, thereby eliminating arcing and greatly extending contact life.

3,700,974
ELECTROLYTIC CELL WITH INNER ELECTRODE HAVING NON-REACTIVE SURFACE
Edward J. Plehal, 5321 De Roja Avenue, Woodland Hills, Calif.
Division of Ser. No. 871,583, Nov. 10, 1969, which is a continuation of Ser. No. 610,140, Jan. 18, 1967, abandoned. This application Nov. 10, 1971, Ser. No. 197,454
Int. Cl. H01g *9/04*
U.S. Cl. 317—230 **10 Claims**



The present invention relates to a particular structure for electrolytic cells. The present invention is particularly directed to structures for the inner electrodes of electrolytic cells and to methods of manufacturing such inner electrode structures wherein a base member is provided which is formed under pressure and which requires a thin layer of an inert material to be plated on the base member.
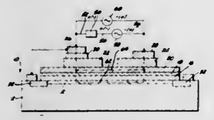
3,700,975
DOUBLE LAYER CAPACITOR WITH LIQUID ELECTROLYTE
Alexander Duane Butherus, and Kenneth Russ Newby, both of Murray Hill, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Nov. 12, 1971, Ser. No. 198,320
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **10 Claims**



A capacitor utilizing the space charge polarization effect is described. The device employs a liquid electrolyte, resulting in

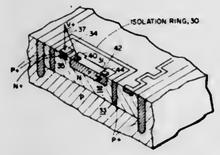
a high capacitance-to-volume ratio, and a higher voltage than usually found in such devices. The capacitor is intended primarily for use in filter applications in transistor circuits.

3,700,976
INSULATED GATE FIELD EFFECT TRANSISTOR ADAPTED FOR MICROWAVE APPLICATIONS
Hans G. Dill, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Nov. 2, 1970, Ser. No. 86,017
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **5 Claims**



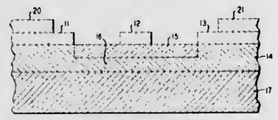
Solid state field effect switch devices useful in microwave applications. Devices disclosed embody resistive noninsulative layer material insulated from a supporting semiconductor body. Electrodes connected to the layer material and the body are arranged so that signals applied to one electrode can, by field effect action, alter the electrical conductivity of a path within the device which extends between two other electrodes.

3,700,977
DIFFUSED RESISTOR
Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 17, 1971, Ser. No. 116,144
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **3 Claims**



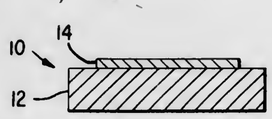
There is disclosed an improved technique for reducing or eliminating parasitic capacitance associated with diffused resistors in which the normal buried layer is eliminated and in which each resistor is either fully or partially surrounded by an isolation ring. The epitaxial layer between the resistive element and the isolation ring is provided with a back bias either at one end of the resistor or at the point along the resistor at which no signal exists. In one case this may be accomplished by shorting the epitaxial layer to the low impedance end of the resistor. In the embodiment in which one end of the resistor is shorted to the epitaxial layer, the resistor is polarized having a low impedance end and a high impedance end, such that the end to which the epitaxial layer is shorted is the end which is coupled to the low impedance node of a circuit. In the case where the resistor is to be coupled across nodes having equal impedance, the epitaxial layer is provided with back bias adjacent that point along the length of the resistor at which no signal appears. There is also disclosed a guard circuit, which minimizes parasitic capacitance in cases where a low resistivity epitaxial layer or a buried layer is provided. The guard circuit is in the form of an impedance convertor having a high impedance output applied to the high impedance end of the resistor while the low impedance of the convertor is coupled to an epitaxial layer contact adjacent this high impedance end. In the guard circuit embodiment, an additional epitaxial layer contact is provided adjacent the low impedance end of the resistor and is shorted thereto so as to provide the aforementioned back bias.

3,700,978
FIELD EFFECT TRANSISTORS AND METHODS FOR MAKING FIELD EFFECT TRANSISTORS
James Clayton North, and Bernard Roger Pruniaux, both of New Providence, N.J., assignors to Bell Telephone Laboratories, Murray Hill, N.J.
Filed March 18, 1971, Ser. No. 125,528
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **2 Claims**



The insulative gate layer of an insulated gate field effect transistor (IGFET) is made by exposing a channel region of a semiconductor wafer to high energy proton bombardment. The bombardment damages the crystal structure of the semiconductor to a predetermined depth to make that part of the semiconductor nonconductive.

3,700,979
SCHOTTKY BARRIER DIODE AND METHOD OF MAKING THE SAME
Arjun Nath Saxena, Princeton, N.J., assignor to RCA Corporation
Filed April 7, 1971, Ser. No. 131,955
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **4 Claims**

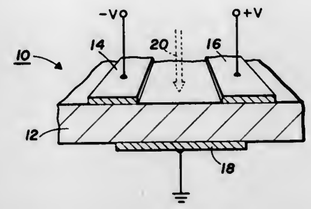


A Schottky barrier diode diode including a body of P type single crystalline silicon and a film of hafnium on a surface of the body and forming a surface barrier rectifying junction with the body. The diode has a barrier height of approximately 0.90 electron volts.

3,700,980
SCHOTTKY BARRIER PHOTOTRANSISTOR
Melvin Belasco, Dallas, and Sebastian R. Borrello, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 652,653, July 5, 1967, abandoned. This application April 8, 1971, Ser. No. 132,368
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **12 Claims**

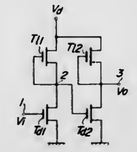
Disclosed is a metal-semiconductor-metal phototransistor formed by a pair of closely spaced, thin metal films in rectifying contact with the surface of a lightly doped p-type indium arsenide substrate. The spacing between the metal films is substantially less than the diffusion length of a minority carrier in the indium arsenide at the operating temperature, which is on the order of −78° C. One metal film may be considered the collector region, the semiconductor material the base region, and the other metal film the emitter region. When the

transistor is biased like an NPN transistor, the collector current is varied in proportion to the radiation striking the base



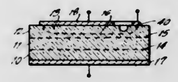
region generally in the same manner as a photodiode, but the current modulation is many times that produced by a photodiode for a given radiation level.

3,700,981
SEMICONDUCTOR INTEGRATED CIRCUIT COMPOSED OF CASCADE CONNECTION OF INVERTER CIRCUITS
Toshiaki Masuhara, Tokorozawa; Minoru Nagata, Kodaira, and Masharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 24, 1971, Ser. No. 146,154
Claims priority, application Japan, May 27, 1970, 45/44892
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **2 Claims**



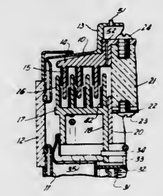
A semiconductor device composed of cascade connected inverter circuits each comprising a load depletion type MIS transistor and a driving enhancement type MIS transistor. The semiconductor device can be properly operated by setting the threshold voltage of the load MIS transistors at a predetermined value, by selecting the dimensions and materials thereof.

3,700,982
CONTROLLED RECTIFIER HAVING GATE ELECTRODE WHICH EXTENDS ACROSS THE GATE AND CATHODE LAYERS
Harold Weinstein, Van Nuys, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Dec. 12, 1968, Ser. No. 751,804
Int. Cl. H01l *11/10*
U.S. Cl. 317—235 R **7 Claims**



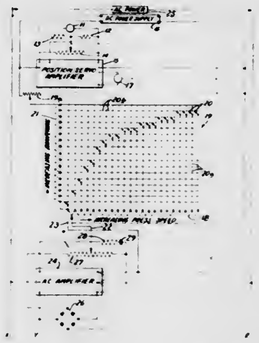
To permit high rate-of-rise-of-current in a controlled rectifier, the gate electrode extends from the emitter region across the uppermost junction and into contact with the opposite conductivity region under the cathode electrode. When a positive pulse is applied to the gate, the cathode region adjacent the gate is less negatively charged than it would otherwise be if placed conventionally on the P region only. This will reduce current concentration at the emitter edge adjacent to the gate region so that a greater rate-of-rise-of-current is permissible. A groove is interposed between the gate and cathode electrode providing a means of adjusting the impedance between both. This permits limiting of excessive gate-cathode currents through the joining N emitter layer.

3,700,983
VARIABLE CAPACITOR HAVING A SOLID DIELECTRIC BETWEEN ITS ELECTRODES
Manlio Goetzl, Yonkers, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed June 10, 1971, Ser. No. 151,658
Int. Cl. H01g *5/02*
U.S. Cl. 317—245 **13 Claims**



A capacitor having a stationary electrode, a movable electrode, and a solid dielectric material between the electrodes. The solid dielectric occupies no more than a portion of the gap between the electrodes, and the remaining portion may be filled by a pressurized gas. Each electrode may be a series of spaced concentric tubular plates interleaved with the plates of the other electrode. The solid dielectric may be a layer covering some or all of the plate surface of one or both electrodes, and the dielectric layer may vary in thickness in the direction of relative movement of the electrodes.

3,700,984
DAMPENER CONTROL SYSTEM FOR LITHOGRAPHIC PRINTING PRESS
William H. Rouse, Downers Grove, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed March 8, 1971, Ser. No. 121,875
Int. Cl. H02p *5/46*
U.S. Cl. 318—77 **4 Claims**



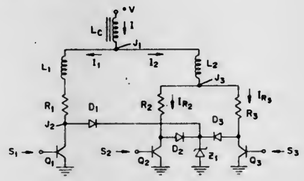
A dampening system for a lithographic printing press which has a plurality of feed motors for controlling the rate at which dampening fluid is supplied to the printing plate in the press. The system includes a tachometer generator for producing an electrical signal representing the press speed, and means for converting the electrical signal to a mechanical displacement.

The mechanical displacement is applied to a resistor matrix which produces a second electrical signal which represents a predetermined non-linear function of the press speed, with the particular nature of the function being determined by the setting of the resistor matrix. This second electrical signal is supplied to the speed control means associated with the feed motors so as to automatically vary the speed of the feed motors according to the predetermined non-linear function of the press speed.

3,700,985
METHOD AND CIRCUIT FOR DRIVING INDUCTIVE LOADS

James E. Applequist, Saratoga, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Dec. 17, 1970, Ser. No. 99,129
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 R **15 Claims**



The relative current in a pair of inductive loads is rapidly varied by maintaining a current in each load, so that when current is removed from one the rapid decay of current in that coil permits a substantial relative current differential since the other load need not rise from zero current due to the current pre-established therein. To further enhance the rapid current differential a choke in series with a low voltage supply provides a constant current source so that a large voltage spike is generated when the current goes to zero in one load thus enhancing the current buildup in the other load.

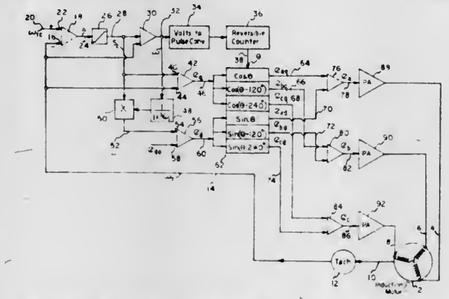
ERRATUM

For Class 318—77 see:
Patent No. 3,700,984

3,700,986
CO-ORDINATED VOLTAGE CONTROL FOR INDUCTION SERVOMOTORS

Paul G. Cushman, and Albert A. Clark, both of Pittsfield, Mass., assignors to General Electric Company

Filed Jan. 18, 1971, Ser. No. 107,347
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **6 Claims**

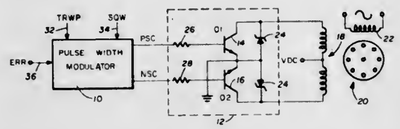


A system for control of an induction motor at all speed and load conditions through the application of stator voltages which are co-ordinated with respect to magnitude, frequency and phase to maintain rated flux and a quadrature special relationship between air-gap flux and rotor current.

3,700,987
PULSE MODULATION MOTOR CONTROL

Charles S. Deering, Richardson, Tex., assignor to E-System, Inc., Dallas, Tex.

Filed March 29, 1971, Ser. No. 128,962
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **17 Claims**

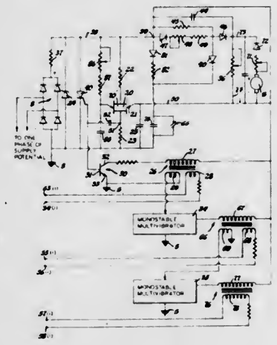


A typical alternating current servomotor has two windings displaced 90°; these windings are identified as a reference winding and a control winding. Rotational direction and speed of the motor may be controlled by applying AC voltages of the proper wave form, amplitude and phase relationship to these windings. When controlling the direction of rotation and speed of the motor in accordance with a DC error signal, pulse width modulation techniques are employed. The error signal is compared with a triangular wave function to generate a first and second series of pulses each having a width related to the magnitude of the error signal. These series of pulses are logically combined with a square wave function to produce first and second digital motor energizing signals. The motor energizing signals control a power amplifier switch connected to the windings of the motor to be controlled.

3,700,988
SPEED CONTROL SYSTEM FOR ALTERNATING CURRENT INDUCTION MOTORS

Bohdan I. Pryjmak, Dayton, Ohio

Filed May 27, 1971, Ser. No. 147,459
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **3 Claims**

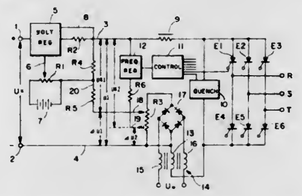


A speed control system for alternating current induction motors wherein a reference potential, which is a rectified phase of the alternating current supply potential, is connected across the series combination of a variable resistor and the timing capacitor of a unijunction transistor type relaxation oscillator circuit and a direct current control potential, which is a function of motor speed and which may be selectively varied in magnitude to change the speed of the motor, is connected across the variable resistor in the same polarity relationship as the reference potential. The unijunction transistor type relaxation oscillator circuit and associated circuitry produces a trigger signal at the electrical angle of each potential cycle of each phase of the alternating current supply potential as determined by the difference of magnitude between the reference and control potentials which trigger respective silicon controlled rectifiers conductive to complete an energizing circuit for the corresponding phase winding or the motor. Another capacitor, connected across the series combination of the variable resistor and the timing capacitor, establishes the difference of magnitude between the reference and control potentials at substantially zero upon motor start and increases the difference at a predetermined rate to a maximum as determined by the selected magnitude of the control potential.

3,700,989
CONTROL SYSTEM FOR AN ALTERNATING CURRENT MOTOR

Arne Jensen, Skolegade, Havnbjerg, near Nordborg, Denmark, assignor to Danyoss A/S., Nordborg, Denmark

Continuation of Ser. No. 805,177, March 7, 1969, abandoned.
This application March 31, 1971, Ser. No. 129,966
Claims priority, application Germany, March 16, 1968, P 16 13 775.0
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **3 Claims**

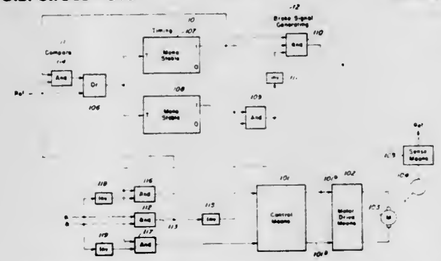


The invention relates to a control system for an alternating current motor such as a polyphase induction motor. The control system includes a DC to AC inverter in combination with voltage and frequency regulators with the voltage and frequency being dependent upon each other. Control means are provided which sense the inverter current and translate the data sensed into two voltages which are separately subtracted from the output of the voltage regulator to provide two corrected voltages for regulating the voltage regulator and the frequency regulator.

3,700,990
BRAKING METHODS AND APPARATUS

David R. Shuey, Webster, and Roger F. Norian, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1971, Ser. No. 118,827
Int. Cl. H02p *3/14*
U.S. Cl. 318—375 **25 Claims**



Braking methods and the apparatus therefor are provided in accordance with the teachings of the present invention. According to one embodiment of this invention the rotation of a rotating device is detected and the angular disposition thereof is determined. The relative angular disposition of said rotating device is compared with the time of occurrence of a condition requiring the arrest of said rotating device. A brake signal adapted to produce hysteresis braking of the rotating device is generated in accordance with the comparison, whereby the velocity of said rotating device is rapidly reduced such that said rotating device halts at a desired angular disposition.

3,700,991
MACHINE CONTROL CIRCUIT

Edward J. Freeland, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Salem, Ohio

Filed Sept. 23, 1971, Ser. No. 183,202
Int. Cl. H02p *15/00*
U.S. Cl. 318—447 **14 Claims**

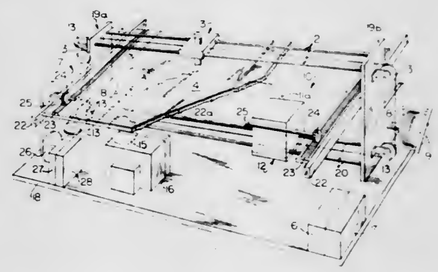


A control circuit for a press is arranged for requiring an operator to hold control buttons depressed for more than one complete press cycle before it will run in a continuous mode.

3,700,992
CURVE TRACER

Jacques A. Pontigny, Montmorency, France, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 26, 1971, Ser. No. 165,472
Int. Cl. G05b *19/42*
U.S. Cl. 318—568 **14 Claims**



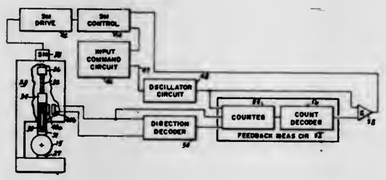
A curve tracer of two variables respectively represented on axes of variables Y and X on a recording rack, capable of being removed at a speed depending upon the first of the said variables, said tracer comprising a first regulation loop having a first movable organ, the removal of which is regulated by the variations of the second of the said variables, a second regula-

tion loop having a second movable organ, allowing to trace a curve on the said recording rack, a scale transformation device, mechanically coupled with the first said movable organ and having a second recording rack on which is traced a scale transformation curve representing for each value to be transformed of the second variable, represented on the axis of X, a transformed value represented on the axis of Y, and detector means mounted in the second said regulation loop and adapted so as to be able to move along the axis of Y of the curve of the said second recording rack, the movement of the second movable organ being regulated by the movement of the detector means.

3,700,993
APPARATUS FOR CONTROLLING RELATIVE MOTION BETWEEN GAGE JAWS ON A CONTACTING GAGE

Thomas R. Fischer, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed May 27, 1971, Ser. No. 147,432
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **4 Claims**



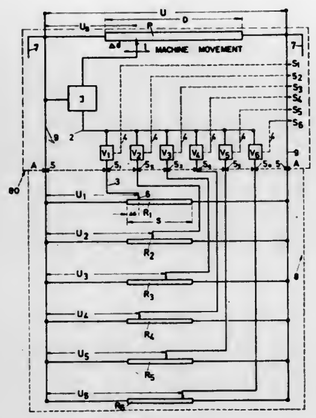
An apparatus for controlling the relative motion and final position between gage jaws on a contacting type of gage. A driving mechanism is coupled to one of the gage jaws to provide relative motion between said jaws. A command circuit supplies command signals to the driving mechanism. Each time the driving mechanism is commanded to move, a feed back circuit measures the actual motion of the gage jaw and produces a control signal in response to a predetermined magnitude of said motion. The control signal is used to gate a subsequent command signal to the driving mechanism. Consequently, the gage jaw can be brought in contact with a workpiece and held in position thereon without the danger of damage to the workpiece.

3,700,994
MACHINE-CONTROL SYSTEM

Max Gopfert, Munich, Germany, assignor to Krauss-Maffei, Munich, Germany

Filed Aug. 26, 1970, Ser. No. 67,073
Claims priority, application Germany, Sept. 23, 1969, P 19 48 047.8
Int. Cl. G05b *19/36*
U.S. Cl. 318—579 **1 Claim**

A machine-control system is disclosed wherein a potentiometer is connected to a moving machine part to produce a control signal which is compared with a reference voltage developed across a reference potentiometer to operate control circuitry through a comparator amplifier. The reference resistors are mounted on a replaceable plate interchangeable with other plates upon alteration of the machine program. Alternatively, or in addition, a programming plate may be provided for each program automatically to set a number of

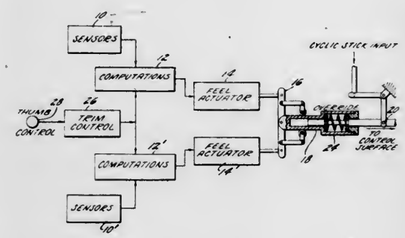


reference resistors or the program may be established by the use of switches associated with respective taps on the reference resistors.

3,700,995
TRIM REFERENCE FOR HELICOPTER FEEL AUGMENTATION SYSTEM

Gerald W. Parkinson, West Haven, and Jack R. Cutting, Trumbull, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 20, 1971, Ser. No. 146,570
Int. Cl. G05b *11/01*
U.S. Cl. 318—628 **5 Claims**

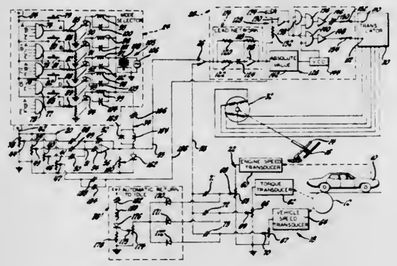


In a feel augmentation system for helicopters in which a force is generated in response to sensed inputs to oppose the pilot's movement of the cyclic stick, a grip mounted thumbwheel controlled trim system is utilized for trimming the no-force position of the stick. Duplicate thumbwheels are provided for both the pilot and copilot which can be operated independently to provide a full control range for each thumbwheel. Each thumbwheel controls a stepping motor which rotates either the case or the wiper of a potentiometer to provide the desired trim position signal.

3,700,996
REMOTE THROTTLE CONTROL VIA STEP MOTOR MOVEMENT AND RESPONSIVE TO VEHICLE OR ENGINE CONDITION

James I. Gutting, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1971, Ser. No. 183,552
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **2 Claims**

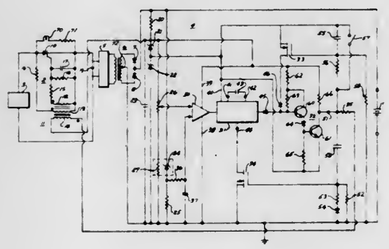


Apparatus for controlling the operation of a vehicle by manipulating the vehicle's throttle. A stepping motor manipulates the throttle in response to differences between a reference signal indicative of a selected operating condition of the vehicle and a feedback signal indicative of the corresponding actual operating condition of the vehicle. Either the vehicle engine speed, the torque generated by the vehicle engine at the driven wheels, or the vehicle speed is controlled by the apparatus. It also allows increasing any of these conditions at a uniform rate up to a predetermined maximum. If any of these conditions actually exceed certain maximums, the throttle is automatically returned to its normal setting, which may also be effected by the operator closing a certain switch.

3,700,997
RAPID CHARGING OF BATTERIES

Stephen Hagar Smith, Manhattan Beach, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Feb. 24, 1971, Ser. No. 118,420
Int. Cl. H01m *33/00*; H02j *7/10*
U.S. Cl. 320—20 **15 Claims**

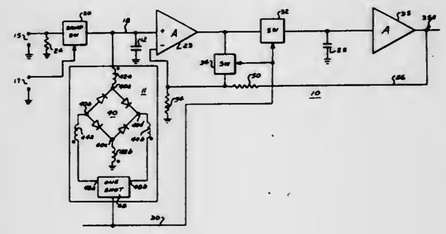


The high rate changing of a battery is terminated by monitoring the battery voltage during a fixed interval of time in which high rate charge current is removed. If the battery voltage decreases to a predetermined value in the fixed interval of time, then high rate charge current is again applied for a second fixed interval of time. The steps are repeated until the battery voltage with high rate charge current removed does not decrease to the predetermined value within the fixed interval of time.

3,700,998
SAMPLE AND HOLD CIRCUIT WITH SWITCHING ISOLATION

Don N. Lee, Lindenwold, and Roy B. McMennamin, Cinnaminson, both of N.J., assignors to Computer Test Corporation

Filed Aug. 20, 1970, Ser. No. 65,388
Int. Cl. G06g *7/02*; H03f *1/00*
U.S. Cl. 320—1 **6 Claims**



Sampling an unknown signal only for a single time interval and holding the resultant sampled signal value with these operations being substantially independent of frequency. A discharge circuit in shunt with the storage capacitor comprises a diode bridge having four matched diodes. A pair of common mode chokes are connected to the nodes of the diode bridge in order to provide isolation between the switching signal of the discharge circuit and the storage capacitor.

3,700,999
AUTOMATIC BATTERY POLARIZING CIRCUIT

Stanley J. Gourse, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Army

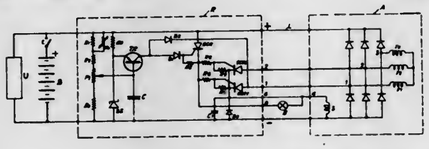
Filed Jan. 11, 1972, Ser. No. 216,935
Int. Cl. H02j *7/00*
U.S. Cl. 320—26 **5 Claims**

Disclosed is and automatic battery polarizing circuit employing transistors in the arms of a bridge circuit configuration wherein the transistors are operative to couple a battery connected to the input thereof in a manner that the bridge output voltage will always be of the same polarity regardless of how the battery is connected to the bridge input with respect to polarity.

3,701,000
ELECTRONIC DEVICE FOR REGULATING THE VOLTAGE OF ALTERNATORS, PARTICULARLY FOR MOTOR VEHICLES

Eugenio Basso, Levico; Guglielmo Ravaschio, Genova, and Vittorio Frangilli, Gallarate, all of Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milano, Italy

Filed April 8, 1971, Ser. No. 132,515
Claims priority, application Italy, April 11, 1970, 23183 A/70
Int. Cl. H02p 9/30
U.S. Cl. 320—64 2 Claims

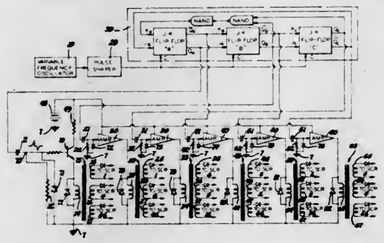


An alternator for a motor vehicle is provided with an electronic device for regulating output voltage. The field winding of the alternator is energized through a power circuit controlled by an SCR triggered by a control circuit when voltage drops below a preset value. The triggering signal to the SCR and initial flow in the field winding through the SCR is governed by-the control circuit. Initial current flow in the field winding also takes place through an indicator lamp connected for battery recharging. The control circuit output applied to the SCR is also connected through a diode to the anode of a medium power SCR connected to one phase of the alternator.

3,701,001
THREE-PHASE INVERTER CONTROL CIRCUIT

Joseph A. Riess, Kettering, and Conrad P. Vespie, Brookville, both of Ohio, assignors to Genral Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1971, Ser. No. 188,083
Int. Cl. H02m 7/48
U.S. Cl. 321—5 4 Claims

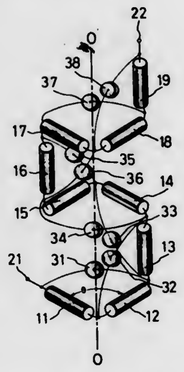


A three-stage shift register circuit, responsive to the output signals of a variable frequency oscillator, produces a repeating series of six equally spaced electrical timing signals. A differentiating circuit corresponding to each electrical timing signal is responsive to the leading edge of each corresponding electrical timing signal to produce a corresponding gate signal pulse. Each gate signal pulse is amplified by a corresponding amplifier, the output of which is connected across the primary winding of a pulse transformer having three secondary windings, a respective secondary winding of each pulse transformer is connected across the gate-cathode electrodes of each the extinguishing silicon controlled rectifier of a three-phase inverter circuit through which a three-phase motor may be energized from a direct current supply potential source which corresponds to the inverter silicon controlled rectifier to be extinguished, the inverter silicon controlled rectifier next to be triggered conductive and the inverter silicon controlled rectifier last triggered conductive.

3,701,002
VOLTAGE-MULTIPLYING RECTIFIER APPARATUS

Takao Toba, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Ohtaku, Tokyo, Japan

Filed March 13, 1972, Ser. No. 233,959
Claims priority, application Japan, March 13, 1971, 46/16768
Int. Cl. H02m 7/00
U.S. Cl. 321—15 19 Claims

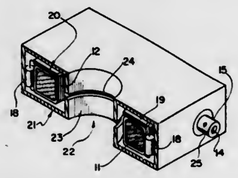


A voltage-multiplying rectifier apparatus comprised of a plurality of rectifier elements which are connected in series and a plurality of capacitors which are connected in parallel with said rectifier elements, wherein the rectifier elements are spirally arranged around a vertical axis of the apparatus.

3,701,003
CURRENT TRANSFORMERS WITH IMPROVED COAXIAL FEED

John M. Anderson, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 14, 1970, Ser. No. 97,918
Int. Cl. G01r 19/00; H01f 40/06
U.S. Cl. 323—6 9 Claims

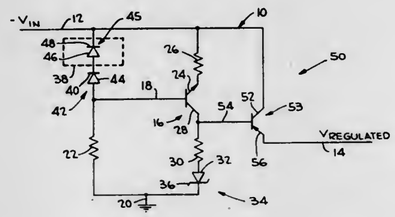


Current transformer apparatus includes a toroidal core with a secondary winding thereabout. A metallic shield and coupling member surrounds the core and has a central longitudinal opening therein for the insertion of a coaxial current carrying conductor, the current of which is to be sensed. The shield and coupling member within the longitudinal opening is laterally slotted about the cylindrical surface thereof to allow direct and close electromagnetic coupling between the coaxial conductor and the core. In one embodiment, an inner shield is provided about the core and is slotted about the exterior periphery thereof. The impedance of the coaxial conductor and the transformer may be matched by a coaxial line extending through the opening in the shield and coupling member to optimize coupling. In another embodiment, a secondary winding terminating resistance is variable by inclusion in a removable coaxial resistance cartridge. Several transformers may be cascaded in tandem by passing the output of one coaxially into the input of another.

3,701,004
CIRCUIT FOR GENERATING A REPEATABLE VOLTAGE AS A FUNCTION OF TEMPERATURE

Thomas E. Tuccinardi, Silver Spring, and Joseph W. Miller, Jr., Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed May 13, 1971, Ser. No. 143,071
Int. Cl. G05f 3/14
U.S. Cl. 323—69 10 Claims

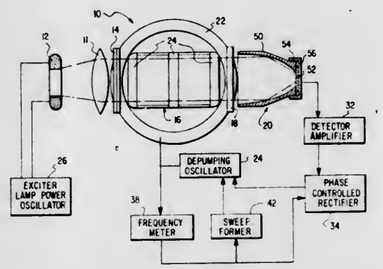


A circuit for producing a repeatable predetermined voltage as a function of temperature and includes a component having a known temperature coefficient characteristic. A transistor stage connected to the component multiplies the temperature coefficient. Linear as well as non-linear temperature characteristics can be multiplied by the circuit.

3,701,005
APPARATUS

Ralph E. Hartline, Tulsa, Okla., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 4, 1968, Ser. No. 695,785
Int. Cl. G01r 33/08
U.S. Cl. 324—0.5 R 12 Claims

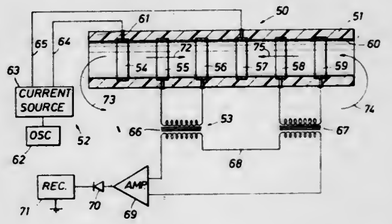


A device for measuring the intensity of minute magnetic fields comprising an optical magnetometer having a source for the emission of radiation, a radiation absorption cell means having the emitted radiation directed therethrough, and detector means for producing an output proportional to the intensity of impinging radiation from the source, wherein the detector means comprises a paraboloidal mirror and a detector element sensitive to the radiation and arranged within the mirror in a plane parallel to and in front of the latus rectum of the mirror, the open end of the mirror facing the cell means and having a diameter sufficient to receive the full beam of radiation passing through the cell whereby the radiation is collected by the mirror and directed toward the detector element.

3,701,006
METHODS AND APPARATUS FOR MEASURING THE ELECTRICAL RESISTIVITY OF FLOWING DRILLING MUDS

George D. Volkel, and Milton E. Cram, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,037
Int. Cl. G01n 27/42
U.S. Cl. 324—30 R 15 Claims

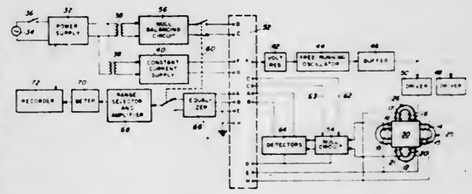


As a representative embodiment of the invention disclosed herein, one or more electrical measuring devices are placed at selected locations in the drilling mud circulating system of a conventional drilling rig for accurately determining the resistivity of the drilling mud flowing past those locations. To obtain these measurements, electrical current is passed between spaced electrodes arranged in an electrically-isolated conduit that is disposed in a stream of the drilling mud. In one embodiment of the invention, new and improved means are provided for measuring all of the current passing between the electrodes regardless of the diverse paths which the current may follow. In an alternative embodiment of the invention, unique means are employed for assuring that all of the current passing between the electrodes will be only along specified paths within the electrically-isolated conduit so that a measurement of the current flowing along only of these specified paths will be sufficient for accurately determining the resistivity of the mud. New and improved thermally-responsive control means are also disclosed for converting the resistivity measurements obtained while practicing the present invention to resistivity measurements at a selected temperature.

3,701,007
MAGNETOMETER CONSISTING OF TWO SENSORS WITH MEANS FOR UNBALANCING EACH SENSOR AT NULL CONDITION

Charles A. Schad, Tulsa, Okla., assignor to Kalium Chemicals Limited, Regina, Saskatchewan, Canada

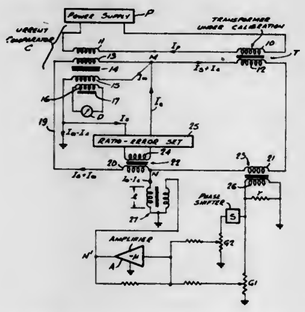
Continuation-in-part of Ser. No. 791,039, Jan. 14, 1969, abandoned. This application July 21, 1971, Ser. No. 164,558
Int. Cl. G01r 33/04
U.S. Cl. 324—43 R 34 Claims



A highly sensitive magnetometer consisting of at least one pair of generally rectangular core elements having square hysteresis loops is disclosed. The primary windings of each of the cores are driven by an oscillator, with the secondary

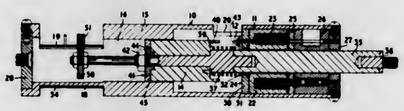
windings of each core being differentially connected through a null circuit, which serves to balance the effects of background fields, and a detector to a suitable indicator. The primary windings of the cores are operated in a resonance and the secondary windings are arranged to provide a high null output which eliminates the dead band caused by the threshold value of the diodes in the output detector circuit. This high null output may be accomplished by unbalancing the core windings or by feeding a portion of the primary winding drive current, or a signal synchronous therewith, to the corresponding secondary winding, thereby permitting measurement of the small magnetic fields which previously fell within the dead band of the device. Also disclosed is a method of aerial surveying and a guidance system for off-vertical drilling using the magnetometer.

3,701,008
PHANTOM BURDEN ARRANGEMENT FOR CURRENT TRANSFORMER CALIBRATION
Norbert L. Kusters, and William J. M. Moore, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Aug. 16, 1971, Ser. No. 172,093
Int. Cl. G01r 31/06
U.S. Cl. 324—55 **8 Claims**



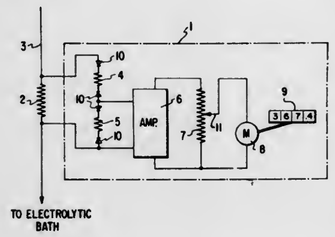
The power and reactive volt-amperes normally dissipated to furnish a burden are returned to the power supply either through a current comparator or an auxiliary current transformer. This effect is achieved by the use of an amplifier connected to generate a voltage that is an adjustable complex function of the secondary current of the calibration circuit, such voltage being applied across the secondary of the transformer undergoing calibration in order to furnish an effective burden therefor.

3,701,009
ELECTROMECHANICAL TRANSDUCER
Douglas Albert Leadbeater, Cromer, England, assignor to George Salter & Co., Ltd., Straffordshire, England
Filed Dec. 5, 1969, Ser. No. 882,557
Int. Cl. G01r 27/26; H01g 5/00
U.S. Cl. 324—61 P **9 Claims**



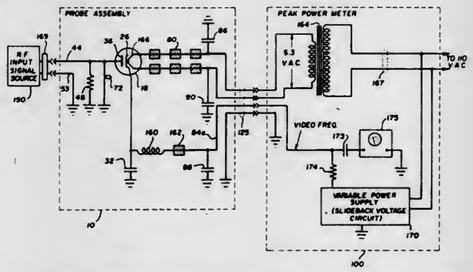
An electromechanical transducer, especially suitable for use with weighing apparatus for precision measurements, includes an oscillator providing an output of which the frequency is controlled by extent of displacement of a movable sensing member, and has fine adjustment means for setting the precise functional relationship between the change in output frequency and extent of displacement of the sensing member.

3,701,010
METAL WEIGHT COUNTER
Hans-Wilhelm Lieber, and Rolf Kramer, both of, Berlin, Germany, assignors to Fernsteuergerate Zacharia - Oelsch - Meier, Berlin, Germany
Filed June 24, 1970, Ser. No. 49,494
Claims priority, application Germany, July 1, 1969, P 19 33 261.7
Int. Cl. G01m 27/00
U.S. Cl. 324—71 R **7 Claims**



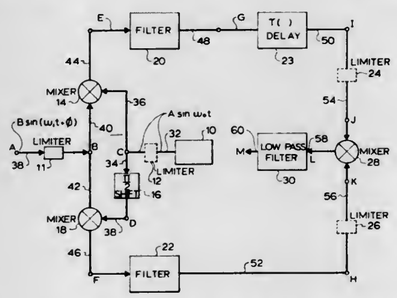
An instrument for measuring and indicating the weight of a material, in particular metals, converted in an electrolytic bath. In the instrument a voltage proportional to the current flowing through the bath is measured by means of a voltage divider connected in series with a preferably linearly divided potentiometer. The divider ratio is adapted to the equivalent weight of the particular element being converted, while the sliding contact of the potentiometer is set to compensate for the current efficiency of the particular electrolyte being utilized. The weight of the converted material is indicated by means of a counter mechanism which provides an indication proportional to the voltage at the output of the potentiometer.

3,701,011
PROBE CONTAINING DIODE ASSEMBLY FOR RADIO FREQUENCY PEAK POWER DETECTION
Alvaro D. Biagi, Huntington Station, N.Y., and Sirio S. D'Amato, Rocky Hill, Conn., assignors to Republic Electronics Industries Corp., Huntington Station, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,159
Int. Cl. G01r 31/02, 21/04, 19/16
U.S. Cl. 324—72.5 **4 Claims**



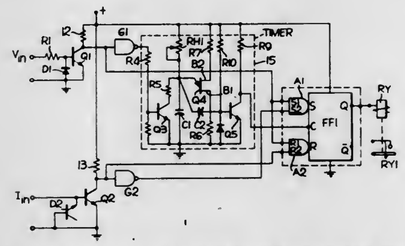
A probe assembly for applying to a peak power meter detected radio frequency signals whose peak power is to be measured, comprising a tubular conductive member having a plurality of interconnected detachable cylindrical parts. A coaxial transmission line at one end of the tubular member receives the radio frequency signals which are applied to a disk resistor and an anode of a thermionic ceramic planar diode within the tubular member. The cathode of the diode is connected to a filter which includes a geometric capacitor. The diode detects the radio frequency signals and produces a video frequency envelope which after filtering is passed to the peak power meter.

3,701,012
CIRCUIT AND METHOD FOR DEVELOPING SIGNAL INDICATIVE OF UNKNOWN FREQUENCY
Gordon R. Lang, Bolton, Ontario, Canada, assignor to E. S. E. Limited, Rexdale, Ontario, Canada
Filed July 6, 1970, Ser. No. 52,472
Int. Cl. G01r 23/14
U.S. Cl. 324—79 R **28 Claims**



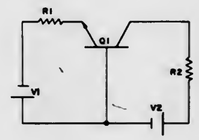
An unknown signal is mixed with a first reference signal and, in a separate mixing, with a second reference signal obtained by altering the phase of the first reference signal by $\pi/2$ radians (where the signals are of the same frequency). The sum or the difference product of the first mixing is filtered out and the corresponding product of the second mixing is also filtered out; one of the two last-mentioned products is delayed relative to the other, and then the undelayed product and the delayed product are mixed while ensuring that the products mixed are of substantially constant amplitude.

3,701,013
POWER FACTOR RELAY
Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed March 18, 1971, Ser. No. 125,531
Int. Cl. G01r 25/00; H03d 13/00
U.S. Cl. 324—83 D **12 Claims**



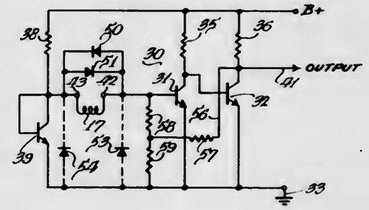
Power factor measuring apparatus receives voltage and current input signals representative of the voltage on and the current in a power line and derives rectangular voltage and current pulses from half cycles of one polarity of the input signals. The timing cycle of an adjustable timer is initiated by the crossing of the zero axis by one of the input signals, and a clocked flip-flop receiving the timer output on its clock input and the rectangular pulse derived from the other input signal on a set input changes states to provide logic 1 on its Q output when the rectangular pulse is present when the timer output is received, thereby indicating that the phase difference between voltage and current input signals is greater than the power factor bandwidth established by adjustment of the timer delay interval.

3,701,014
MEASURING SYSTEM EMPLOYING A SENSING LOOP AND A REFERENCE LOOP IN BUCKING RELATIONSHIP TO PROVIDE CURRENT-TO-VOLTAGE CONVERSION
Chien San Wang, 1201 Hudson, Denver, Colo.
Division of Ser. No. 639,534, May 18, 1967, Pat. No. 3,542,952. This application Jan. 23, 1970, Ser. No. 8,758
Int. Cl. G01r 17/02
U.S. Cl. 324—98 **8 Claims**



This invention is a current-to-voltage conversion system. The use of the conversion system is in measuring AC or DC signals and in sound reproduction systems. The DC conversion system comprises a reference loop and a sensing loop connected in current bucking relation. A transistorized "zero junction circuit" senses the current differential between the two loops and generates an output voltage that is related to the current differential. The DC conversion system is used to sense current changes for a measuring instrument. the AC conversion system is used to sense output current flow in an audio reproduction system and to provide a feedback voltage directly related to the current flow, for example.

3,701,015
MAGNETIC PICKUP WITH FEEDBACK CIRCUIT
Kenneth C. Dittman, Deerfield, Ill., assignor to Electro Products Laboratories, Inc.
Filed Jan. 20, 1971, Ser. No. 108,052
Int. Cl. G01p 3/48
U.S. Cl. 324—174 **1 Claim**



A magnetic pickup having an electronic switch circuit for generating a high level digital signal having improved signal form and an improved signal to noise ratio. The switch has an input transistor connected to a sensing coil and an output transistor which generates a digital output signal. The circuit further includes a feedback connection between the output transistor and the input transistor to stabilize operation for low level voltages induced in the pickup coil.

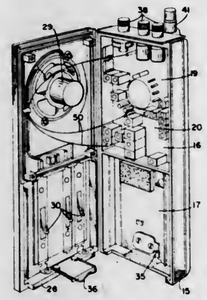
ERRATUM

For Class 324—158 F see:
Patent No. 3,701,021

3,701,016
MINIATURE TRANSMITTER RECEIVER HOUSING

Leonard W. Bennett, Berkeley; Thomas R. Hutchinson, Oak Park, and Winston H. Schilling, Park Ridge, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed April 14, 1969, Ser. No. 815,693
Int. Cl. H04b *1/40*
U.S. Cl. 325—16 **7 Claims**

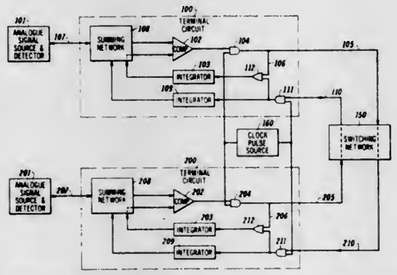


A radio transmitter and receiver housing is formed of a rectangular frame structure which is open at the front and back sides thereof. Separate front and rear cover means are detachably mounted to the rectangular frame structure to cover the front and rear openings. A printed circuit board carries substantially all of the components of the radio transmitter receiver device and is mounted within the rectangular frame structure. The circuit side of the printed circuit board is substantially level with one of the front and back openings. The rectangular frame structure is formed of a material having poor soldering characteristics and capable of withstanding soldering temperatures so that the components may be mounted on the printed circuit board and the assembly soldered without removal of the printed circuit board from the rectangular frame. The rectangular frame structure also permits the addition of other rectangular frame structures thereto to enlarge the size of the housing.

3,701,017
DELTA-MODULATION TERMINAL CIRCUIT

Rein Raymond Laane, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1970, Ser. No. 97,902
Int. Cl. H04b *1/52*
U.S. Cl. 325—38 B **11 Claims**

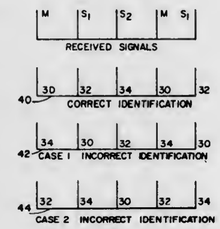


A delta-modulation coder-decoder terminal circuit in which incoming digital signals are applied to both the coder and decoder integrators. Reconstructed identical signal outputs of both relating to the digital input are applied to the inputs of the comparator via a summing network which also receives originating analogue signals for transmission. Cancellation of the incoming digital reconstructions is achieved thereby preventing regeneration of the latter for retransmission back to its source. The reconstructed incoming signal output from the decoder integrator is transmitted to the receiver via the summing network.

3,701,018
ACQUISITION METHOD FOR MULTI-TRANSMISSION POSITION LOCATING OR NAVIGATING SYSTEMS

Edward John Groth, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 22, 1971, Ser. No. 117,493
Int. Cl. H04l 7/00
U.S. Cl. 325—58 **11 Claims**



A method is disclosed for reducing the time needed to synchronize N code receivers at one station with respect to ones of N code transmitters at different stations wherein all transmitters radiate the same code word, but time delayed relative to each other by fractional word length intervals which may be inversely proportional to the number (N) of transmitters and include an additional small time interval, which may be a lead or a lag, added to or subtracted from all codes but one for identification purposes. In the initial search mode of the synchronization, all N of the receivers are used with the receiver coders being moved together but retaining a fixed relationship with each other. Code words, which are generated locally in each receiver, and which are identical with the transmitted code words, are time-delayed with respect to each other by a fractional word length interval which may be inversely proportional to the square of the number of transmitters, whereby the initial search time for one of the receivers to lock up with or acquire one of the transmitters is reduced on the average to a small fraction equal to $1/2N^2$, for example, of a word length. When synchronization of any one transmitter with any one receiver is accomplished, the known delay between the transmissions (without taking into account the identification delay) is used to synchronize transmissions of the remaining transmitters with locally generated signals of the remaining receivers. Then the known identifying lag or lead delay is used to identify the particular transmitters which have been synchronized with particular receivers.

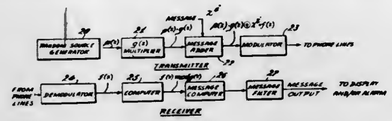
3,701,019
ALARM SYSTEM USING CODED SIGNALLING

Charles L. Jackson, Arlington, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed March 25, 1970, Ser. No. 22,503
Int. Cl. H04b *1/04*, *1/16*
U.S. Cl. 325—64 **10 Claims**

A signaling system for detecting at a central station a message from a remote location at which one or more different messages can be generated. A coded signal is generated at the remote location and an "error" uniquely determined by the message to be transmitted is inserted into the coded signal

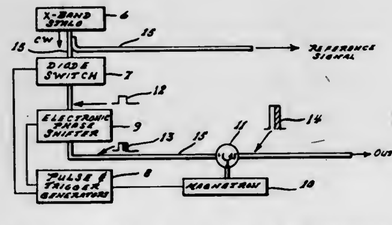
and the altered signal transmitted. A receiver at the central station is arranged to detect the presence of such inserted "error" so as to correctly identify the message that has been transmitted, whereby such message can be displayed or used to activate an alarm device.



3,701,020
PHASE CODED RF PULSE GENERATOR

Peter A. De Vito, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 15, 1970, Ser. No. 54,953
Int. Cl. H04b *1/04*
U.S. Cl. 325—121 **1 Claim**

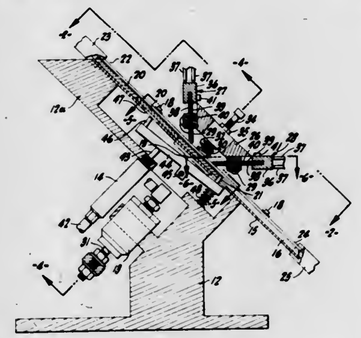


The low power RF injection pulses of an injection-locked pulsed magnetron are phase controlled in coded sequence to provide high power phase coded coherent RF output pulses. The magnetron transmits pulses having identical phase patterns as those of the injected signals. Complex coding is achieved by multiple alternate 180° phase shifts and by varying degrees of phase shifts within individual pulses.

3,701,021
APPARATUS FOR TESTING CIRCUIT PACKAGES

George L. Isaac, Sunnyvale; Richard F. Kingsbury, San Jose, and John G. Surak, Los Gatos, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Nov. 27, 1970, Ser. No. 93,322
Int. Cl. G01r *31/22*; B07c *5/344*
U.S. Cl. 324—158 F **7 Claims**

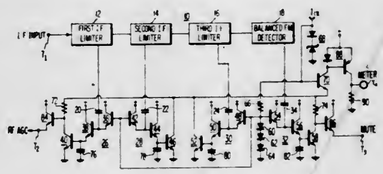


Apparatus for testing circuit packages including a test sequence generator which is connected to a contactor for making contact to the leads of a circuit package. The contactor includes an inclined track for slidably receiving integrated circuit packages, and circuit package storage tubes connected to the ends of the inclined track. The contactor has a test region at which a circuit package is held by a rocker member. Contact means having a plurality of fingers is operated to make contact with the leads of an integrated circuit package in the test region. A test sequence may then be conducted. After the test sequence the rocker member is operated to release the integrated circuit package which has just been tested from the test region. Another circuit package then moves into the test region and the testing sequence is initiated again.

3,701,022
PEAK-TO-PEAK DETECTOR

Jack Craft, Somerville, N.J., assignor to RCA Corporation

Filed June 8, 1971, Ser. No. 151,115
Int. Cl. G01r *19/04*; H02m *7/24*; H04b *1/16*
U.S. Cl. 325—318 **10 Claims**

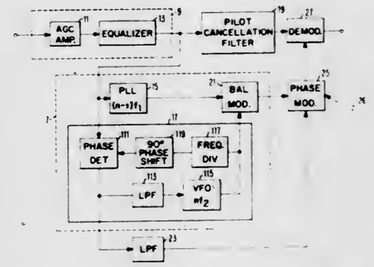


Peak-to-peak signal detection apparatus adapted for construction in monolithic integrated circuit form. The base-emitter junctions of three like conductivity transistors are direct current coupled in cascade across a source of forward bias voltage (e.g., $3V_{BE}$). Signals to be detected are capacitively coupled to the junction of the base of the second and the emitter of the first transistors. A detector filter capacitor is connected across the base-emitter of the third transistor. Peak-to-peak detected signals are provided at the output of the third transistor.

3,701,023
PHASE JITTER EXTRACTION METHOD FOR DATA TRANSMISSION SYSTEMS

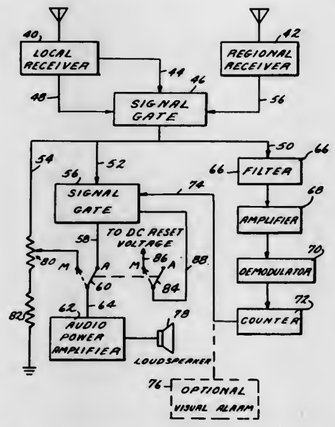
Yang Fang, Clarksburg, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,908
Int. Cl. H04b *1/10*, *1/16*, *1/68*
U.S. Cl. 325—329 **7 Claims**



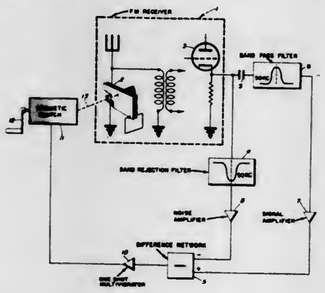
A carrier recovery method and apparatus for generating a carrier having the proper frequency, relative phase and phase jitter to accurately demodulate a modulated signal having phase jitter. The phase jitter is detected with minimal distortion and modulated onto a carrier signal generated by means of phase locked oscillators.

3,701,024
LOCAL AND NATIONAL WARNING ALARM SYSTEM
James H. Knowles, Rt. 3, Box 49, Jackson, Miss.; Billie Joe Ball, P.O. BOX 2848, and Donald F. Fitzgerald, P.O. Box 791, both of State College, Miss.
Filed Dec. 30, 1970, Ser. No. 102,844
Int. Cl. H04b 1/16
U.S. Cl. 325—364 7 Claims



An alarm and information communication system utilizing existing radio broadcast facilities to transmit a warning alarm signal and emergency information to the population in the event of a local or national emergency; the system consists of a warning alarm signal generator as an available program source at the broadcast stations and warning alarm signal and emergency information receivers are provided for use by the general public. The system provides for designation of some radio broadcast stations as "local stations" and some as "regional stations" by Civil Defense or other appropriate authority; each alarm signal and information receiver is adapted to continuously monitor one local and one regional broadcast station whereby, upon reception of a signal of a specified frequency from the local station or reception of a signal from the regional station, the receiver will emit an alarm signal and then broadcast the pertinent information.

3,701,025
SELECTIVE SIGNAL TUNING DEVICE
Nelson D. Foley, North Little Rock, Ark., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 2, 1954, Ser. No. 466,460
Int. Cl. H04b 1/32
U.S. Cl. 325—470 2 Claims

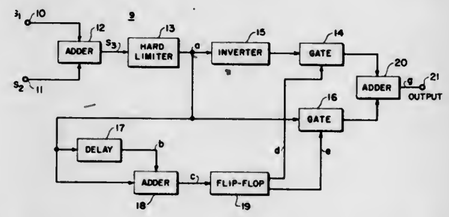


A receiver control apparatus is disclosed for locating an emitted signal by utilizing an automatic tuning means with a mechanical clutch mechanism will release the receiver tuning means after the frequency has been found.

ERRATUM

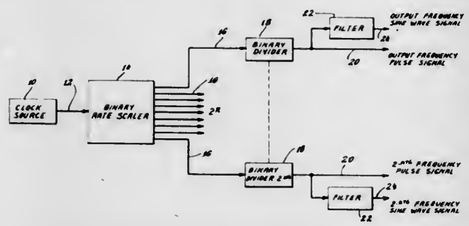
For Class 328—63 see:
Patent No. 3,700,931

3,701,026
MEDIAN FREQUENCY GENERATOR
Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed May 13, 1971, Ser. No. 142,963
Int. Cl. H03b 19/00
U.S. Cl. 328—15 3 Claims



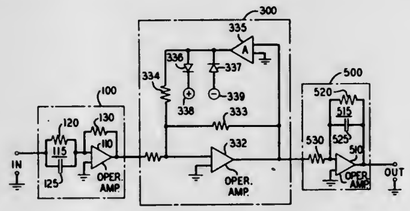
The median frequency generator linearly adds two input signals having the same amplitude to obtain a third signal having a frequency equal to the median of the frequencies of the two input signals, an amplitude which varies with time, and a phase which reverses at a frequency equal to the difference in the frequencies of the input signals. Timing pulses are generated by a flip-flop in synchronism with the phase reversals and are used as gating signals to invert the phase reversed portions of the third signal to produce the median frequency output signal.

3,701,027
DIGITAL FREQUENCY SYNTHESIZER
John Price Belton, Jr., Columbia, Md., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed April 15, 1971, Ser. No. 134,296
Int. Cl. H03b 19/00
U.S. Cl. 328—17 7 Claims



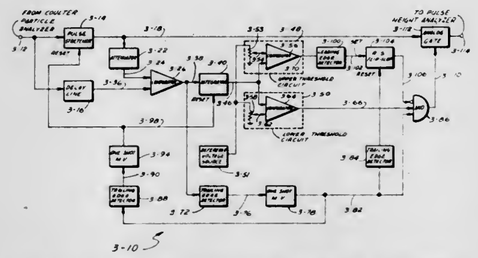
A circuit for simultaneously generating a plurality of signals at related frequencies. A clock source, the frequency of which is greater than the frequency of any of the signals to be generated, is applied to the input to a scaler circuit. The scaler circuit generates a plurality of output signals, there being an output signal from the scaler circuit corresponding to each of the related frequency signals to be generated. At least some of the signals from the scaler have non-uniform pulse-to-pulse spacing. The outputs from the scaler circuit are then converted into signals at the desired frequencies with substantially uniform pulse-to-pulse spacing. For the preferred embodiment of the invention, this is accomplished by scaling the signals from the scaler circuit at frequencies which are multiples of the corresponding signals of related frequencies and then dividing down each signal from the scaler to obtain the desired signals.

3,701,028
REDUCTION OF HARMONIC DISTORTION
John Anthony Markevich, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 13, 1971, Ser. No. 162,129
Int. Cl. H03b 1/04
U.S. Cl. 328—167 4 Claims



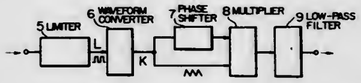
Harmonic distortion generated in signal processors is reduced by pre-emphasizing the processor input signal and de-emphasizing the processor output signal.

3,701,029
AXIAL TRAJECTORY SENSOR HAVING GATING MEANS CONTROLLED BY PULSE DURATION MEASURING
Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 27, 1970, Ser. No. 84,440
Int. Cl. H03k 17/02, 5/20
U.S. Cl. 328—91 33 Claims



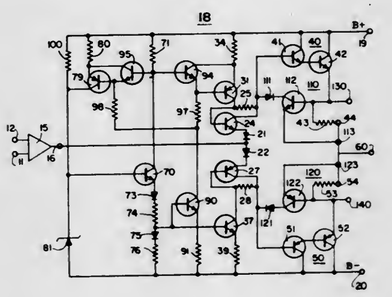
A sensor for use with apparatus operating in accordance with the principles of the Coulter electronic particle studying device, for differentiating between pulses produced by particles passing on axial or nearly axial paths through an aperture and pulses produced by particles passing off center. The pulse duration is measured at some fraction of the individual pulse amplitudes and only those which meet the criteria of duration established by the electronic circuitry are permitted to pass for use in pulse height analysis apparatus following the sensor. The other pulses are discarded on the basis of their greater durations. The apparatus of the invention provides structure for deriving a duration-measuring pulse whose duration is that of the particle pulse at its fractional amplitude, converting the signal into one which has an amplitude proportional to duration, and then subjecting the latter signal to the criteria of duration established as amplitude levels to operate gating means automatically for rejecting the longer duration pulses and passing the shorter duration pulses.

3,701,030
FM DEMODULATOR CIRCUIT USING PHASE-SHIFTING MULTIPLIER
Yukisato Gocho, Yamato, and Takahiro Inokuchi, Tokyo, both of Japan, assignors to Tokyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Sept. 20, 1971, Ser. No. 181,908
Claims priority, application Japan, Sept. 22, 1970, 45/83095
Int. Cl. H03d 3/00
U.S. Cl. 329—134 3 Claims



An FM demodulator circuit in which is used a phase-shifting multiplier comprising a limiter for obtaining an output of a substantially rectangular waveform, a phase shifter for shifting the phase of the output of the limiter by 90°, a multiplier for producing the vector product of the output of the limiter and the output of the phase shifter, and a low-pass filter for obtaining a demodulated signal, is further improved by the provision of a waveform converter for converting the rectangular waveform into a substantially triangular waveform, between the limiter and the phase shifter, so that a reference signal for the multiplier is thereby made to assume a substantially triangular waveform.

3,701,031
COMPLEMENTARY POWER AMPLIFIER
Thomas M. Frederiksen, Scottsdale, and Ernest L. Long, Tempe, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 26, 1970, Ser. No. 66,924
Int. Cl. H03f 3/18
U.S. Cl. 330—17 27 Claims

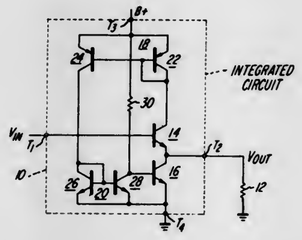


An integrated power amplifier circuit providing high current gain and substantially unity voltage gain for operating as a current boost amplifier includes temperature stabilized current sources operated from a stabilized voltage supply to cause the operation of the amplifier to be independent of supply voltage and temperature variations. In addition, protection against reverse current flow and output current limiting of the output stage is provided.

3,701,032
ELECTRONIC SIGNAL AMPLIFIER

Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation

Filed Feb. 16, 1971, Ser. No. 115,472
Int. Cl. H03f 3/42
U.S. Cl. 330—18 15 Claims

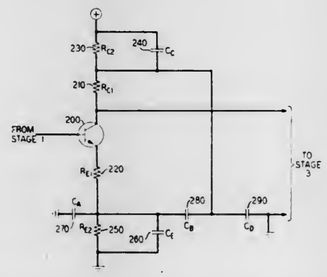


Semiconductor voltage follower arrangements adapted for construction in integrated circuit form. A load circuit is coupled to the emitter of a voltage follower transistor. Operating potential is supplied to the collector of the follower transistor via the base-emitter circuit of a second transistor arranged in a common emitter transistor. The collector-emitter circuit of a regulator transistor is coupled across the load circuit. Feedback is provided from the output of the common emitter transistor to the input of the regulator transistor such that the collector current of the follower transistor is substantially independent of input voltage variations applied to the base of the follower transistor.

3,701,033
BROADBAND AMPLIFIER HAVING IMPROVED GAIN CHARACTERISTICS

Gerard White, Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1970, Ser. No. 94,451
Int. Cl. H03f 3/04
U.S. Cl. 330—21 5 Claims

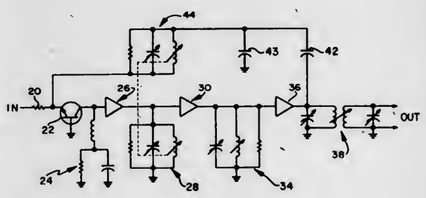


A broadband amplifier including a high-frequency amplifier embedded in a low-frequency circuit is described. The broadband amplifier is characterized by a flat gain response from direct current (d.c.) to the high-frequency cutoff of the unmodified high-frequency amplifier configuration. Further, the broadband amplifier provides this low- and high-frequency gain without compromise to the high-frequency response characteristic of prior art circuits.

3,701,034
EQUALIZER CIRCUIT FOR MULTISTAGE FEEDBACK AMPLIFIER

Warren B. Bruene, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed March 23, 1971, Ser. No. 127,214
Int. Cl. H03f 1/08
U.S. Cl. 330—28 8 Claims

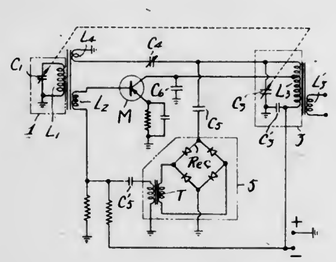


Stability of a three stage amplifier is improved by providing a feedback loop from the amplifier output to the amplifier input, and including a compensating circuit in the loop which tends to offset phase shift of one coupling circuit in the amplifier. Mixer means is provided for mixing the feedback signal with the input signal.

3,701,035
HIGH FREQUENCY AMPLIFICATION SYSTEM

Toichi Chikuma, Kawagoe, Japan, assignor to Girling Limited, Birmingham, England

Filed Oct. 9, 1970, Ser. No. 79,567
Int. Cl. H03f 3/04
U.S. Cl. 330—31 1 Claim

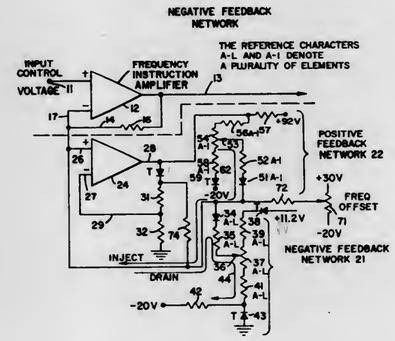


A high radio frequency amplification system applicable to radio receiving in which a low input voltage having a particular frequency fed from an input tuning circuit is amplified in amplifier to provide an output signal voltage having the same frequency as that of the said input signal voltage, a portion of said output signal voltage is fed back to said amplifier, another portion of the rest of said output signal voltage is fed back to said amplifier after doubling the frequency of the second portion of signal voltage whereby said low input voltage having the particular frequency, said fedback voltage having the same frequency as that of the input voltage and constituting a portion of said output voltage and a voltage constituting another portion of the rest of said output voltage and having a frequency two times as high as that of the first-mentioned two types of voltage are mixed together in said mixing amplifier so as to obtain a high output voltage having the same frequency as that of said input voltage.

3,701,036
VARIABLE GAIN AMPLIFIER SYSTEM

Rudy S. Stefenel, San Jose, Calif., assignor to Wiltron Company, Palo Alto, Calif.

Filed Sept. 28, 1970, Ser. No. 76,187
Int. Cl. H03f 1/36
U.S. Cl. 330—85 7 Claims

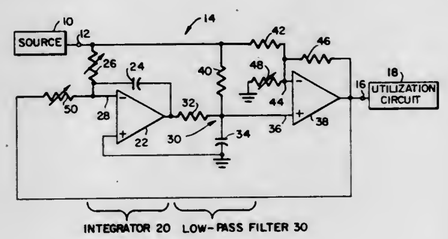


A variable gain amplifier system for providing a tuning voltage to a radio frequency oscillator to linearize its voltage to output frequency characteristic includes an operational amplifier where the feedback loop which controls the gain of the amplifier is coupled to both positive and negative feedback networks. The positive feedback network consists of several diode-resistor legs which inject current into the feedback loop at different input control voltage levels to thus vary the gain of the amplifier. Similarly a negative feedback network consists of several diode-resistor legs which drain current from the amplifier feedback loop at various levels of the input control voltage to increase gain.

3,701,037
ACTIVE FILTER

Jerry L. Holsinger, Lexington, Mass., assignor to Intertel, Inc., Burlington, Mass.

Filed June 24, 1971, Ser. No. 156,380
Int. Cl. H03f 1/36
U.S. Cl. 330—107 7 Claims

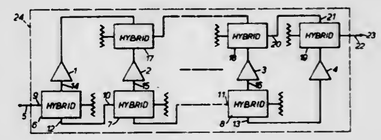


An active filter circuit. Two cascaded phase shift networks are in circuit with the non-inverting input terminal of an operational amplifier. A resistive feedback network couples the amplifier output back to the first of the phase shift networks. When an external input signal is applied to both phase shift networks and the inverting input terminal of the amplifier, the filter circuit has a pass band and a stop band. Inputs to any single one of these points selectably provide high-pass, low-pass and band-pass operation.

3,701,038
PARALLEL AMPLIFIERS WITH INPUT AND OUTPUT SEQUENCES OF HYBRIDS

Boleslaw Marina Sosin, Chelmsford, England, assignor to The Marconi Company, London, England

Filed Dec. 14, 1970, Ser. No. 97,953
Claims priority, application Great Britain, Dec. 19, 1969, 62,152/69
Int. Cl. H03f 3/68
U.S. Cl. 330—124 R 5 Claims

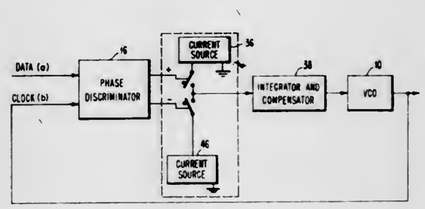


An amplifier arrangement for operating at least 3 amplifiers in parallel includes a first and second sequence of hybrids, there being one less hybrid in each sequence than there are amplifiers. The first sequence of hybrids have one output connected to an amplifier and the other output connected to the input of the following hybrid, except the last hybrid in the sequence which has its other output connected to the last amplifier input. The second sequence of hybrids have two inputs, one from an associated amplifier and another from the preceding hybrid, except the first hybrid in the second sequence which has both inputs supplied from amplifiers.

3,701,039
RANDOM BINARY DATA SIGNAL FREQUENCY AND PHASE COMPENSATION CIRCUIT

Paul C. Lang; Anthony N. La Pine, both of San Jose, and Julian E. Vaughn, Campbell, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,205
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 2 Claims

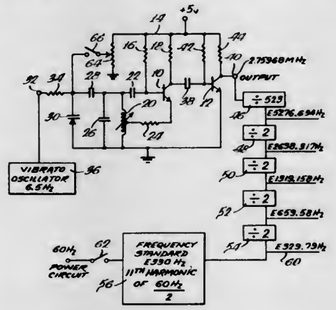


A phase lock oscillator includes a phase discriminator that develops an error signal by comparing a clock from a voltage controlled oscillator with incoming random data bits. In the absence of data, the phase lock oscillator is inactive. However, when data is sensed, a logic and delay network in the phase discriminator develops an error voltage of suitable polarity and amplitude, indicative of the lead or lag between the data and clock signals. The error voltage is applied to the voltage controlled oscillator to modify the frequency and phase of the clock. Furthermore, first and second integrations are provided by the phase discriminator and an integrator respectively so that the steady state phase error is held close to zero.

3,701,040
ELECTRONIC MUSICAL INSTRUMENT MASTER OSCILLATOR WITH PROVISION FOR FREQUENCY CONTROL

Alexander J. Borrevik, Babylon, N.Y., and Charles J. Tennes, Palatine, Ill., assignors to Hammond Corporation, Deerfield, Ill.

Filed Jan. 11, 1971, Ser. No. 105,309
Int. Cl. G10h 5/06; H03b 3/04, 23/00
U.S. Cl. 331—44 **5 Claims**

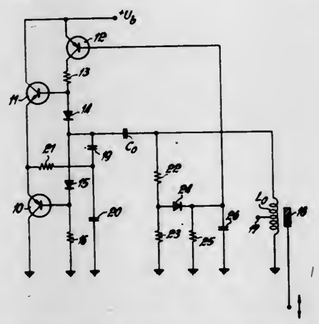


A master oscillator operating in the MHz range for supplying a signal suitable for providing the notes of the musical scale, the various note signals being arrived at by frequency division of the master frequency. The oscillator has a high order of frequency stability together with ease of control for shifting the frequency to supply vibrato, portamento, trill, transposition features and the like. Control is exercised by incorporating a voltage-variable capacitance diode, "Varicap," as an effective element in the oscillator tank and varying the diode bias. Features provide for isolation of the bias voltage from the main tank circuit, a zero-bias condition at the true frequency, and a novel comparison tuning system using a slightly off-pitch tuning reference standard for obtaining true pitch.

3,701,041
AMPLITUDE STABILIZED COMPLEMENTARY TRANSISTOR OSCILLATOR

Karl-Heinz Adler; Helmut Domann Leonberg, and Johannes Locher, all of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 5, 1971, Ser. No. 112,963
Claims priority, application Germany, Feb. 26, 1970, P 20 08 902.5
Int. Cl. H03b 3/02, 5/12
U.S. Cl. 331—65 **10 Claims**

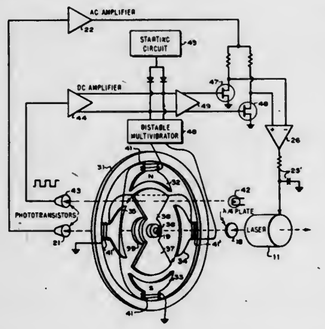


Part of the output of a push pull Clapp oscillator is rectified and smoothed to provide a voltage for stabilizing the oscillation amplitude, the control voltage being fed to the base of a transistor that acts as a variable resistance in a voltage divider connected to the bases of the push pull oscillator transistors, the controlled conduction of the voltage divider transistor acting to control the working points of the oscillator transistors so as to maintain a substantially constant oscillation amplitude.

3,701,042
D. C. MOTOR CIRCUIT FOR ROTATING A POLARIZER AND PROVIDING A DETECTOR SYNCHRONIZER SIGNAL FOR A LASER STABILIZING SYSTEM

John N. Dukes, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 3, 1970, Ser. No. 15,802
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 **10 Claims**

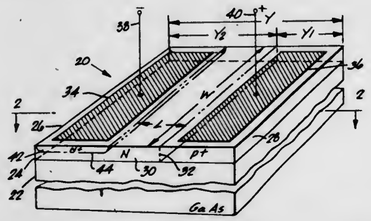


A stabilizing circuit for a two frequency laser wherein the two modes of oscillation of the laser are converted by a quarter wave plate and a rotating polarizer into two separate components, the difference in intensity of these components serving to produce an error signal from a detector circuit synchronized with the rotating polarizer, the error signal controlling a piezoelectric transducer coupled to the cavity resonator of the laser to tune the laser. A brushless D.C. motor serves to rotate the polarizer and at the same time provide the synchronizing signals to the detector circuit.

3,701,043
NEGATIVE RESISTANCE LIGHT EMITTING DIODE DEVICE

Rainer Zuleeg, Huntington Beach, and Uri Ranon, Pacific Palisades, both of Calif., assignors to McDonnell Douglas Corporation

Filed Feb. 16, 1970, Ser. No. 11,410
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 **3 Claims**



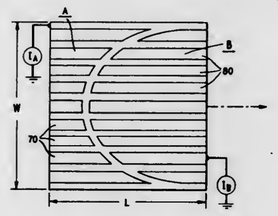
Diode device comprising a light emitting diode fabricated of a semiconductor having bulk negative resistance properties.

The diode includes a light emitting P⁺N junction and a N-type layer or section of predetermined resistivity and geometry. The diode device has a voltage-current characteristic including two current-controlled, negative resistance portions separated by a region wherein the device is unstable and produces free oscillations which are in phase with intensity variations simultaneously produced in the emitted light. Bistable operation of the device can be obtained by suitable placement of its load line through either of the negative resistance portions. A diode device embodiment including a Fabry-Perot cavity structure therein produces a coherent light beam which can be readily modulated at microwave frequencies.

3,701,044
OPTICAL COUPLING OF ADJACENT STRIPE CONTACT GEOMETRY SEMICONDUCTOR LASERS

Thomas Lee Paoli, Chatham, and Jose Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1970, Ser. No. 50,459
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 **2 Claims**



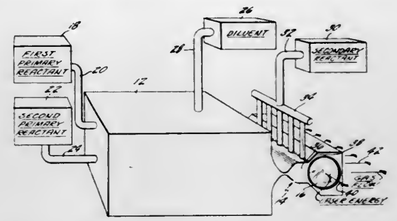
Adjacent stripe contact geometry semiconductor lasers are optically coupled if the stripe contacts are sufficiently close that the optical fields of adjacent lasers overlap; i.e., the field of one laser penetrates the active region of adjacent lasers and/or the fields of adjacent lasers mutually interact in the lossy region between lasers. In the case of two such coupled lasers, the combination oscillates at some frequency intermediate the natural frequencies of oscillation of the two lasers taken separately. Also disclosed are several embodiments employing a plurality of parallel stripe contacts electrically divided into two sets of complementary contacts, a separate current source being connected to each set. The two sets are formed by a physical separation between the corresponding contact segments, the shape of the separation obeying a prescribed functional relationship between contact length and contact position. When, for example, the functional relationship is linear, beam scanning is produced. When the relationship is parabolic, variable beam widths are produced.

3,701,045
CHEMICAL MIXING LASER

Barry Robert Bronfin; Wayne Gregory Burwell, both of Wethersfield, and Richard August Meinzer, Glastonbury, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 23, 1970, Ser. No. 83,432
Int. Cl. H01s 3/22, 3/09
U.S. Cl. 331—94.5 **20 Claims**

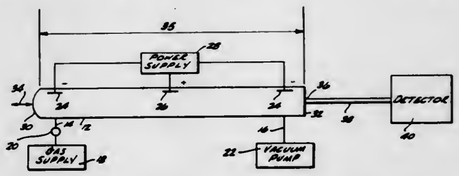
Primary reactants in nonstoichiometric proportions interact chemically in a reaction chamber to produce a high temperature, high pressure gas containing a substantial percentage of free atoms. Aerodynamic expansion of the gas effluent from the reaction chamber preserves the free atoms in an unrecombined condition. A secondary reactant is admixed with the main gas stream after the expansion process and reacts chemically with the free atoms to produce a gas which is in a vibrational state population inversion condition and which lases in an appropriate optical cavity.



3,701,046
GAS LASER MATERIALS AND SYSTEM THEREFOR

Oscar M. Stafsudd, and Frederik A. Haak, both of Boston, Mass., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 734,778, June 5, 1968, abandoned.
This application March 5, 1971, Ser. No. 121,586
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 **32 Claims**

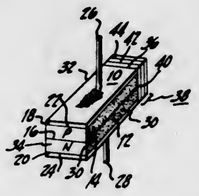


The present invention provides gas laser materials and a laser system utilizing them to produce laser emissions in the far infrared region between 300 microns and 1,000 microns. Specific materials are selected from the methane and ethane group useful in combination with nitrogen to provide active laser media.

3,701,047
SEMICONDUCTOR LASER DEVICES UTILIZING LIGHT REFLECTIVE METALLIC LAYERS

Sandor Caplan, Trenton, and Michael F. Lamorte, Princeton, both of N.J., assignors to RCA Corporation

Filed Aug. 16, 1966, Ser. No. 572,845
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 **3 Claims**



A P-N junction semiconductor laser diode in which light reflective metallic layers are provided on the optically flat op-

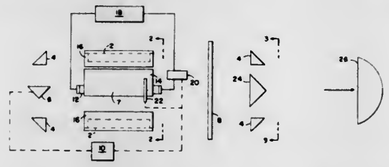
posed surfaces of the diode. A transparent insulating coating having a particular thickness covers each of the semiconductor end surfaces. A thin metallic layer is disposed on each of the insulating layers. One of the metallic layers is sufficiently thick to totally reflect light emitted from the P-N junction, whereas the other metallic layer is such as to reflect approximately 99 percent of the radiated light. A transparent insulating material protects the exposed surfaces of each of the metallic layers.

3,701,048

MULTI-ROD SINGLE PUMP SOURCE LASER

Walter B. Jennings, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 15, 1967, Ser. No. 668,246
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **2 Claims**



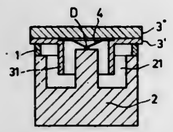
A device for achieving laser output at a high repetition frequency wherein a plurality of laser rods are pumped by a singular source and the output beams of the laser rods are directed in substantially the same path.

3,701,049

MICROWAVE OSCILLATOR EMPLOYING A CAVITY RESONATOR HAVING DIELECTRIC WALLS USED AS A QUARTER WAVE IMPEDANCE TRANSFORMER

Bernardus Bastiaan Van Iperen, and Hindrik Tjassens, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,766
Claims priority, application Netherlands, Oct. 25, 1969, 6916126
Int. Cl. H03b 5/12, 5/24
U.S. Cl. 331—107 R **7 Claims**



A microwave oscillator comprising a semiconductor device employed in a cavity resonator having dielectric walls. The cavity is matched to external loads by utilizing the dielectric walls of the resonator as a quarter-wave impedance transformer.

3,701,050

SOLID STATE MICROWAVE OSCILLATING DEVICE

Hiroyuki Mizuno, Toyonaka; Shinichi Nakashima, Suita, and Yukio Miyai, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 599,524, Dec. 6, 1966. This application April 21, 1971, Ser. No. 135,867
Int. Cl. H03b 7/06
U.S. Cl. 331—107 R **3 Claims**

The present invention provides a device for producing microwave oscillations which generally comprises a solid state oscillating element and a cavity resonator, said element comprising a semiconductor substrate with a metal layer thereon and a rectifying junction formed therebetween. An electric



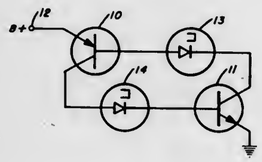
potential is impressed on the depletion layer of the rectifying junction in the backward direction, thus producing microwave oscillations.

3,701,051

STABLE OSCILLATOR

Dudley V. Simms, 14 Civic Center Drive, East Brunswick, N.J.

Filed July 28, 1971, Ser. No. 166,788
Int. Cl. H03b 7/08
U.S. Cl. 331—107 T **5 Claims**



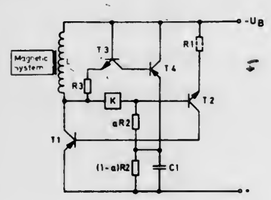
A configuration of complementary transistors and a pair of matched tunnel diodes forming a stable, sinusoidal oscillator.

3,701,052

METHOD OF AMPLITUDE CONTROL OF ELECTROMECHANICAL OSCILLATORS

Hans Keller, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 15, 1971, Ser. No. 162,882
Claims priority, application Germany, July 22, 1970, P 20 36 330.8
Int. Cl. H03b 5/36
U.S. Cl. 331—116 M **4 Claims**



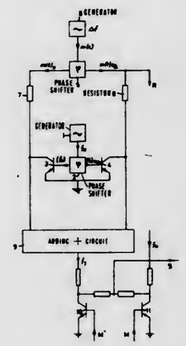
This is a method and circuit for controlling electromechanical oscillators in electronic watches which are excited by a circuit containing only one driving coil. The voltage which is induced in the coil by the oscillator is used as a measure for controlling the width of the exciting pulse.

3,701,053

PROCESS AND APPARATUS FOR TRANSMISSION OF BINARY MESSAGES BY SYNCHRONIZED FREQUENCY SHIFT KEYING

Jean-Marie de Rubinat, Mont-sur-Marchienne, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium

Filed March 17, 1971, Ser. No. 125,307
Claims priority, application Belgium, March 18, 1970, 86557
Int. Cl. H04l 27/12
U.S. Cl. 332—9 T **2 Claims**



A process for frequency modulation of binary messages in which the variables 0 and 1 are represented by signals of respective frequencies f_0 and f_1 differing by frequency Δf. The process is characterized in that, to prevent undesirable phase modulation during the switching from one frequency to the other, frequency f_1 is related to frequency f_0 by deriving the signal of frequency f_1 from a carrier wave form at the frequency f_0 through modulation of such frequency f_0 to obtain a single sideband by means of a signal of frequency Δf which determines the rate of the switching intervals of the binary message. The apparatus comprises a first generator providing a carrier wave form of frequency f_0, a first phase shifting circuit providing two first signals of frequency f_0 shifted by 90°, a second generator providing a signal of frequency Δf, a second phase shifting circuit providing two second signals phased 90° from each other, two modulators for amplitude modulating the two first signals by the two second signals respectively, an adding circuit for adding the outputs of said two modulators and having means for suppressing one of the sidebands and the carrier waveform so as to generate a signal of frequency f_1, an electronic switching means operated at the frequency Δf or a submultiple thereof for switching the signals of frequencies f_0 and f_1 in accordance with the message to be transmitted.

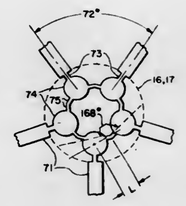
3,701,054

IMPEDANCE MATCHING STRUCTURE HAVING REDUCED PORTIONS OF TRANSMISSION LINES CONNECTED TO OFFSET STRIPLINE CENTER CONDUCTORS WITH STRIP GUIDES CONNECTING SAID CENTER CONDUCTORS

Thomas A. Hagler, and William C. Heithaus, both of Clearwater, Fla., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 4, 1969, Ser. No. 873,874
Int. Cl. H01p 1/32, 5/12
U.S. Cl. 333—1.1 **1 Claim**

This invention relates to an impedance matching structure and technique that is particularly useful in junction circulators. The improved impedance match between the circulator junction and a strip transmission line, for example, is accomplished by abruptly reducing the size of the transmission line that is under the conventional ferrite puck or disk structure by a factor of approximately four. A broadband impedance match structure is obtained by this structure and technique, and the impedance plot can be shifted reactively or resistively



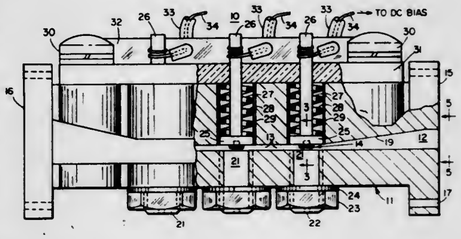
by: (1) varying the strip width of the transmission line under the puck, or (2) varying the amount that the ferrite puck overlaps the full-width portion of the transmission line, or (3) varying the length of the reduced width transmission line.

3,701,055

KA-BAND SOLID-STATE SWITCHING CIRCUIT

Charles W. Stiles, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 26, 1972, Ser. No. 220,998
Int. Cl. H01p 1/10
U.S. Cl. 333—7 **13 Claims**



A solid-state switching circuit for use in the Ka frequency band is disclosed wherein a body casting which a waveguide passageway therethrough includes one or more packaged PIN diodes in shunt across a reduced height portion of said waveguide. A quarter wavelength bias rod engages the PIN diode package at one terminal and a tuning screw engages the PIN diode package at the other terminal, the tuning screw being turnable into and out of the waveguide.

3,701,056

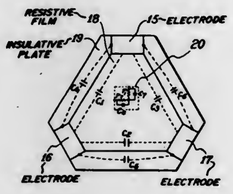
RESISTIVE FILM BLEEDER RESISTOR FOR USE IN AN BRANCH CIRCUIT

Syuichi Ozawa, and Noboru Tomimura, both of Tokyo, Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha (a/k/a Iwatsu Electric Co., Ltd.), Tokyo-to, Japan

Filed Aug. 24, 1970, Ser. No. 66,292
Claims priority, application Japan, Aug. 25, 1969, 44/66626
Int. Cl. H01p 1/22; H01c 7/00
U.S. Cl. 333—8 **5 Claims**

A bleeder resistor used in a branch circuit for dividing a high frequency electric power into a plurality of parts, in which three electrodes are disposed at vertex corners of a regular triangle on an insulative plate, and in which a resistive

film is deposited on the surface of the insulative plate so as to be connected to all the three electrodes so that a resistance

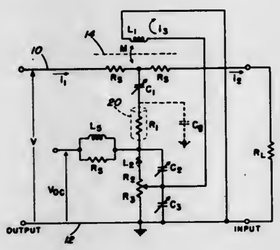


between any two of the three electrodes is substantially equal to a desired value in a wide frequency range.

3,701,057
BROAD-BAND LUMPED-ELEMENT DIRECTIONAL COUPLER

Cletus A. Hoer, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1971, Ser. No. 145,153
Int. Cl. H01p *5/14*
U.S. Cl. 333—10 **10 Claims**



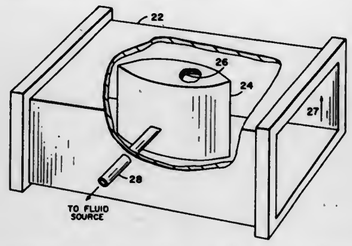
A broad-band lumped element directional coupler for measuring either the forward or reflected power in a coaxial transmission line. A resistive voltage divider is coupled to the center conductor of a transmission line with a capacitor to keep the phase of the voltage sampling circuit equal to the phase of the current sampling circuit. Capacitors shunting the resistors make the voltage ratio of the resistive voltage divider independent of frequency over a large frequency range. Directivity greater than 50 dB is achieved over a large frequency range for coupling ratios of 30, 40 and 50 dB.

3,701,058
FLUIDIC PHASE SHIFTER

Bob L. Smith, 442 Judith Lane, Apt. 5B, Huntsville, Ala.

Continuation-in-part of Ser. No. 23,120, March 27, 1970, abandoned. This application June 3, 1971, Ser. No. 149,418
Int. Cl. H03h *7/36*
U.S. Cl. 333—31 A **4 Claims**

Apparatus including an expandable dielectric container and dielectric fluid therein disposed in a waveguide for propagating electromagnetic waves to change the phase thereof. The fluid may be introduced slowly or rapidly into the waveguide

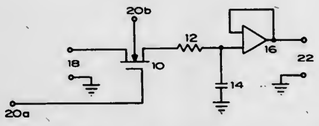


or may be continuously circulated through the waveguide to provide cooling.

3,701,059
REMOTE CONTROLLED, ADJUSTABLE BANDWIDTH LOW PASS FILTER

Reuben E. Nyswander, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 16, 1971, Ser. No. 134,777
Int. Cl. H03h *7/10, 11/00*
U.S. Cl. 333—70 A **4 Claims**

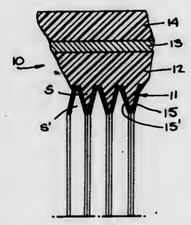


A bandwidth controlled, low pass filter circuit having a resistor, capacitor, voltage follower amplifier, and an insulated gate, metallic oxide semiconductor, field effect transistor utilized as a switch, in which the transistor and the resistor, together, provide the effective circuit filter resistance, and the bandwidth is controlled by the transistor gate pulse frequency and pulse width. The use of several such filters as a filter bank is also disclosed.

3,701,060
HELICAL WAVEGUIDE

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Aug. 31, 1971, Ser. No. 176,499
Claims priority, application Italy, Feb. 17, 1971, 20647 A/71
Int. Cl. H01p *3/14*
U.S. Cl. 333—95 A **8 Claims**

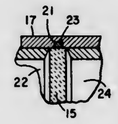


A waveguide having an internal wall formed by a plurality of insulated straps of conductive material wound on edge in a helix so that the major surfaces thereof face each other, each strap being of a different cross-section or being differently disposed so as to leave a space between adjacent major surfaces. The helix is covered by a sheath of flexible insulating material which may be covered by an armor which, in turn, may be covered by a protective layer of flexible insulating material.

3,701,061
RADIOFREQUENCY WINDOW ASSEMBLY HAVING SHIELDED SOLDER JOINTS AND REWELDABLE REPLACEMENT FLANGES

William A. Novajovsky, and Max W. Hoelscher, both of Lancaster, Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 20, 1970, Ser. No. 82,379
Int. Cl. H01p *1/08 , 11/00;* **B23k** *31/02*
U.S. Cl. 333—98 P **6 Claims**

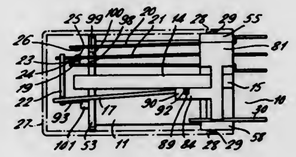


A radiofrequency window brazed at its periphery to a sleeve by means of solder contained in a groove in the sleeve. The groove is from one-third to one-half the thickness of the window and the diameter of the window is equal to the inside diameter of the sleeve. To provide a shielded solder joint without fillets or voids, the window is held in place during brazing with a pair of snap rings having bevelled faces held against the edges of the window to ensure that solder does not run beyond the edges of the window. The sleeve is mounted within a pair of supporting rings having a pair of truncated conical flanges attached at opposite ends for welding at their outer edges with similar truncated conical flanges attached to respective waveguide flanges. The conical flanges may be cut and rewelded near their outer edges for convenient removal and replacement of the window assembly in a waveguide system.

3,701,062
ELECTROMAGNETIC RELAY

Hirohumi Koga, and Ryuichi Sato, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 20, 1971, Ser. No. 145,380
Claims priority, application Japan, May 26, 1970, 45/45822; Sept. 9, 1970, 45/80118
Int. Cl. H01h *51/06*
U.S. Cl. 335—135 **15 Claims**

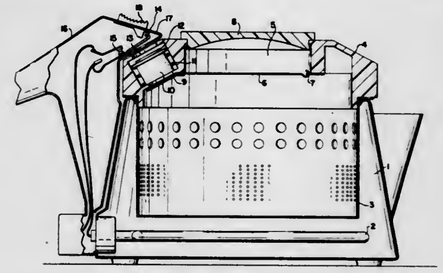


An electromagnetic relay including a spool member having a base with recesses in opposite sides, a flange, and a stem portion connecting the base and flange. The stem portion surrounds the core, a coil is wound on the stem portion. The armature is disposed generally parallel with the core. A plug member is adapted to be fitted into the recesses in the spool base to hold the armature.

3,701,063
TEMPERATURE RESPONSIVE ELECTRIC CONTROL DEVICE

Georges Jean Louis-Marie Clausse, Laleham, England, assignor to The Hoover Company, North Canton, Ohio

Filed Oct. 9, 1970, Ser. No. 79,568
Claims priority, application Great Britain, Oct. 9, 1969, 49,708/69; Dec. 3, 1969, 59,044/69; Dec. 17, 1969, 61,560/69; May 5, 1970, 21,672/70
Int. Cl. H01h *51/00*
U.S. Cl. 335—146 **8 Claims**

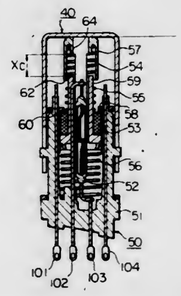


A temperature responsive electric control device has electric contacts, a body of thermo-magnetic material, and a magnet movable between two positions in the first of which it is held by magnetic attraction with the body while this body is at a temperature below its Curie point, and in the second of which it operates by magnetic attraction to actuate the contacts.

3,701,064
PUSH-BUTTON SWITCH

Ryohei Kinoshita, and Masami Ishizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

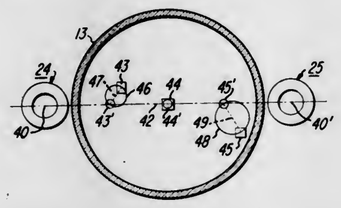
Filed Dec. 27, 1971, Ser. No. 212,096
Claims priority, application Japan, Dec. 29, 1970, 45/133336; Dec. 30, 1970, 45/123070; Dec. 31, 1970, 45/123326; Dec. 31, 1970, 45/134737
Int. Cl. H01h *5/02*
U.S. Cl. 335—205 **10 Claims**



This disclosure relates to a push-button switch comprising a housing provided with a support means for supporting a magnetic member, a reed switch element fixedly and vertically positioned in the housing, a lower spring contained in the housing, a magnet mounted on the lower spring which is capable of moving up and down with respect to the reed switch while its upward movement is restrained by the support means and also said magnet is capable of being attracted to the magnetic member in the ordinary state, a pusher capable of moving up and down, a first upper spring applied to the pusher member at its one end, and mounted on the magnet at its other

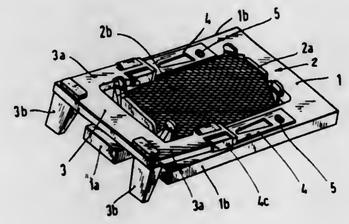
end and a second upper spring also mounted on the magnet and vertically distant from the pusher at a first pushed down displacement of the pusher whereby, before a state in which the pushed down force applied to the pusher overcomes the critical resistance of the sum of the initial resilient force of the lower spring and the magnetic attractive force acting between the support means and the magnet, whereby the magnet carried out the downward snap action thus forming a magnetic field which operates the reed switch, firstly the pusher undergoes the first pushed down displacement while being opposed by the resistance from the first upper spring so that the pushing down force on the pusher equals the force of the sum of the resilient force of the first upper spring and the initial resilient force, and then, the pusher is further pushed to a critical displacement where the pushed down force overcomes the above-mentioned critical resistance force.

3,701,065
COLOR PICTURE TUBE BEAM CONVERGENCE APPARATUS
John Walter Mirsch, Princeton, N.J., assignor to RCA Corporation
Filed Feb. 3, 1971, Ser. No. 112,348
Int. Cl. H01f 1/00
U.S. Cl. 335—212 **10 Claims**



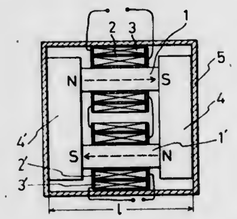
For a color picture tube having a plurality of electron beams emanating from the neck of the tube in a nominally common plane two pairs of diametrically magnetized ceramic ferrite discs mounted on opposite sides of the tube neck are rotatable to vary the strength and orientation of their respectively produced magnetic fields, thereby converging the beams at the screen of the tube.

3,701,066
ELECTROMAGNET ASSEMBLY FOR RELAYS
Werner Bosch, and Ulrich Kobler, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 3, 1971, Ser. No. 139,590
Claims priority, application Germany, May 15, 1970, P 20 23 983.2
Int. Cl. H01f 7/13
U.S. Cl. 335—274 **14 Claims**



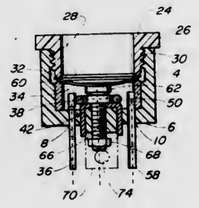
An electromagnet assembly has a U-shaped armature mounted on an electromagnet yoke by means of leaf springs forming extensions of the armature arms and serving to hold the armature normally spaced from the magnetizable yoke, the armature arms and springs being related and connected in an especially advantageous manner.

3,701,067
SATURABLE REACTOR
Shuzo Tsubakihara, Kanagawa, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Jan. 28, 1972, Ser. No. 221,742
Claims priority, application Japan, Jan. 28, 1971, 46/3795
Int. Cl. H01f 21/00
U.S. Cl. 336—90 **9 Claims**



A saturable reactor including a pair of bar type cores which are respectively provided with a primary coil and a secondary coil and are arranged in parallel and a pair of magnets which are provided respectively at both ends of the cores and are arranged to contact the ends of both cores at the same time. The magnets have opposed magnetic poles of different polarity so that a biased magnetic flux flows in the cores. The primary coils are arranged so that primary magnetic fluxes are generated in the same direction with reference to the direction of the biased magnetic flux while the secondary coils are arranged so that secondary magnetic fluxes are generated in the opposite direction to each other in reference to the direction of the biased magnetic flux.

3,701,068
MOTOR PROTECTOR
Eric C. Johnsen, Santa Monica, Calif., assignor to Gem Products, Inc., Santa Monica, Calif.
Filed Nov. 9, 1971, Ser. No. 196,965
Int. Cl. H01h 61/04
U.S. Cl. 337—102 **12 Claims**



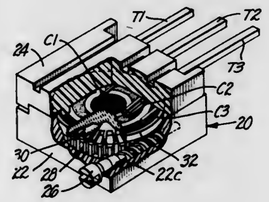
A motor protector especially adapted for action as an electrical switch for the protection of appliance motors from overheating wherein the components of the protector are easily fabricated and are economically and readily assembled for long periods of trouble free use wherein a continuous body contact member is utilized to inhibit or prohibit sparking and the attendant erosive effect of electrical contact members normally encountered in conventional electrical switches.

3,701,069
ELECTRIC CARTRIDGE FUSE
Richard A. Belcher, Hampton Falls, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed May 13, 1971, Ser. No. 142,877
Int. Cl. H01h 8 5/04, 8 5/14, 8 5/18
U.S. Cl. 337—160 **9 Claims**



An electric cartridge fuse includes a tubular main casing and a tubular sub-casing inside of the main casing. The latter is closed at least one one side thereby by an additional cover means resting against an axially outer edge of the sub-casing and held in position by a radially outwardly projecting bulge formed in the fusible element of the fuse and engaging the cover means adjacent the center thereof. Further disclosed are other applications of the fusible element bulge concept for positioning partitions in electric cartridge fuses.

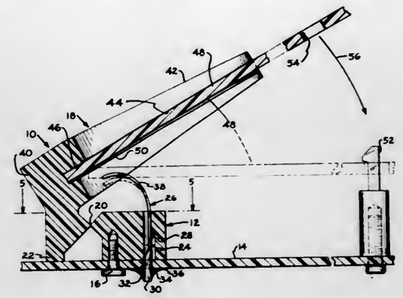
3,701,070
WORMGEAR ACTUATED POTENTIOMETER
Kenneth B. Baldwin, Corona, and Ronald D. Sullivan, Riverside, both of Calif., assignors to Bourns, Inc.
Filed Oct. 18, 1971, Ser. No. 190,012
Int. Cl. H01c 1/16
U.S. Cl. 338—162 **5 Claims**



An exceptionally efficient inexpensive miniature wormscrew potentiometer in which three dual-purpose conductors are embedded intermediate their ends in one of two housing members, and positioned to brush respectively upon arcuate or circular conductors and an arcuate resistance element that are carried upon a rotor interlocked with a drive plate which is driven by a wormwheel whose teeth are engaged with a wormscrew that is seated, with the rotor, in a second housing member.

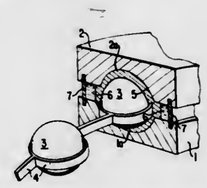
3,701,071
HINGE TYPE CIRCUIT BOARD CONNECTOR BLOCK
Dirk Landman, Mechanicsburg, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed Jan. 18, 1971, Ser. No. 107,267
Int. Cl. H01r 13/54
U.S. Cl. 339—4 **10 Claims**

A connector block in which a daughter type circuit board is secured to a mother board by a hinge connection and then rotated about the hinge connection so that contact pads on the daughter board are brought into engagement with contacts on the mother board to form electrical connections therewith.



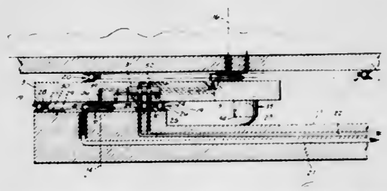
Locking means are provided to hold the daughter board in the contact position relative to the mother board.

3,701,072
MERCURY LOADED BRASS BALL BEARING
James M. Bjorn, 69 18th Avenue, and Frederick Marx, Jr., 1510 North D Street, both of Lake Worth, Fla.
Filed Feb. 22, 1971, Ser. No. 117,465
Int. Cl. H01r 39/46
U.S. Cl. 339—5 L **2 Claims**



The ball bearing has inner and outer ball races of brass and a series of balls made of brass running in annular grooves in the mating faces of the races. The entire space within the recesses around the balls contain mercury. Bearing seals are disposed between the races adjacent their outer sides. The spaces between the seals and the sides of the mercury are filled with oil. The races are adapted to be connected in an electric circuit to permit the transmission of low voltage signals without frictional audio interference during rotation of the races.

3,701,073
ARTICULATED TV PLATFORM
Walter G. Lale, Downey, Calif.
Filed Aug. 24, 1971, Ser. No. 174,371
Int. Cl. H01r 39/10
U.S. Cl. 339—5 P **7 Claims**



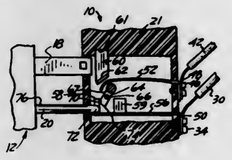
Articulated platform means for allowing adjustable uniplanar orientation of electrical apparatus mounted

thereon, while avoiding cable wrap-up and the like. A first and second arm are mutually hinged at a first extremity thereof for rotation about a first axis, the first arm being longer than the second and being hingeable at a second extremity thereof about a second axis parallel to and displaced from the first. A platform is rotatably mounted upon the second arm for rotation about a third axis of rotation parallel to and intermediate the said first and second axes of rotation. Slip ring means, at a respective one of the second and third axes and mutually intercabled, allow interconnecting of an electrical power source and a coaxial antenna feedline with a TV set mounted on the platform.

3,701,074
GROUNDING RECEPTACLE

Claude Oster, 976 Stuguessant, Birmingham, Mich.

Continuation-in-part of Ser. No. 829,566, June 2, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,025
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **9 Claims**

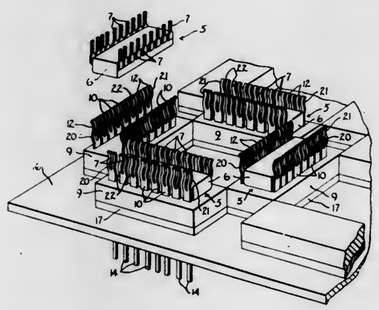


An electrical grounding receptacle for receiving an electrical plug having power blade terminals and a grounding prong, carries an insulative bar which cooperatively pivots upon insertion of the grounding prong into the receptacle, to cause electrical engagement between power contacts receiving the plug blade terminals and, for example, resilient conductors connected to receptacle power input terminals.

3,701,075
ELECTRONIC MICROELEMENT ASSEMBLY

Sten Gunde Schullstrom; Ingvar Freijd; Arne Schader, and Nils Gunnar Olofsson, all of Linkoping, Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Sept. 22, 1970, Ser. No. 74,327
Claims priority, application Sweden, Sept. 25, 1969, 13161/69
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF **4 Claims**

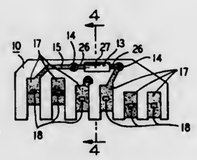


An electronic circuit microelement, seated on the upper surface of a supporting member, has its terminals projecting upwardly away from said surface to a level well above its body. Elongated connectors, one for each terminal, have medial parts anchored in the supporting member, pin-like lower parts projecting beneath the lower surface of the supporting member, and upper parts formed as upstanding S-shaped spring arms that engage the migroelement terminals in a plane spaced above the microelement body so that the connectors can be soldered to the terminals by immersion.

3,701,076
INTERCEPT CONNECTOR HAVING TWO DIODE MOUNTING HOLES SEPARATED BY A DIODE SUPPORTING RECESS

Carleton D. Irish, Neptune, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 18, 1969, Ser. No. 886,259
Int. Cl. H01r *5/04*; H05k *1/02*
U.S. Cl. 339—17 C **4 Claims**

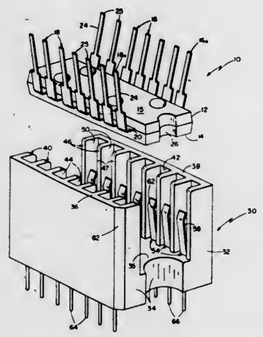


An intercept connector for providing alternative bridging connections between terminals is disclosed in which circuit paths and contact clips are combined on a circuit board in predetermined circuit configurations.

3,701,077
ELECTRONIC COMPONENTS

Cornelius J. Kelly, Jr., Holliston, Mass., assignor to K-Tech, Inc., Framingham, Mass.

Filed Dec. 29, 1969, Ser. No. 888,326
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF **6 Claims**

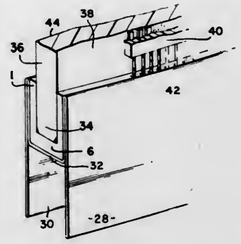


A socket for electronic components particularly useful for "dual-in-line" packages, comprising a housing of electrical insulating material having an end wall defining a closed end, an opposite open end, and a plurality of elec trical contact members extending generally between these ends, each having a spring portion providing a contact surface, each contact surface engaging the outer surface of one of the leads of the electronic component at a point along the length of the lead, when the component is inserted into the socket through its open end in such a way that the circuitry of the component is adjacent the closed end of the socket, and its leads extend therefrom toward the open end of the socket.

3,701,078
BUSSING CONNECTOR

James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 4, 1971, Ser. No. 112,602
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **7 Claims**

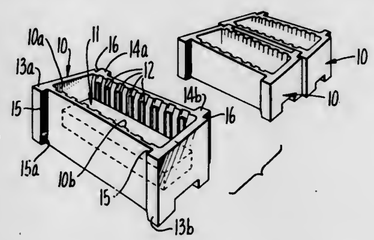


A holder simultaneously operating as a bussing connector for discrete electrical circuits paths on opposed sides of a substrate. The holder is mounted on a circuit board and is provided with discrete electrical paths receiving the discrete electricaL paths of the circuit board. An elongated clamp retains the circuit paths of the holder in electrical contact with the electrical paths of the circuit board. The clamp additionally retains the holder in clamped position on the circuit board.

3,701,079
INTERCONNECTING CARRIER BODIES FOR SEMICONDUCTOR DEVICES

James E. Bowden, 356 Silvertip Court, Milpitas, Calif., and William L. Glick, 1731 Franck Avenue, Santa Clara, Calif.

Filed July 10, 1970, Ser. No. 53,904
Int. Cl. H01r *13/60*; B65d *21/02*
U.S. Cl. 339—36 **5 Claims**



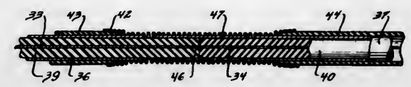
Carrier bodies for semiconductor devices, each carrier having first and second pairs of spaced surfaces, the first pair of surfaces being spaced apart and complementary to the second pair of surfaces so that the first pair of surfaces of one carrier body may be engaged with the second pair of surfaces on a second carrier body, whereby a plurality of carrier bodies may be assembled to form a stack.

3,701,080
MINIATURE COAXIAL CABLE CONNECTOR

George J. Balsz, Downers Grove, Ill., and Francis R. Shonka, deceased, late of North Riverside, Ill. (by Louise M. Shonka, administratrix), assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 2, 1971, Ser. No. 149,309
Int. Cl. H01r *17/04, 9/12*
U.S. Cl. 339—48 **3 Claims**

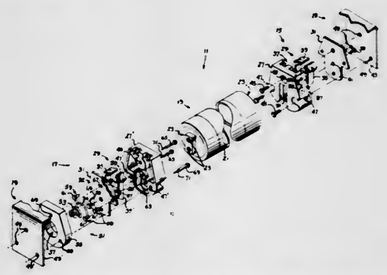
A connector for coaxial cables is formed by using a spring to pull the center conductors of a coaxial cable together to maintain electrical contact therebetween. The spring also connects the outer conductors of the coaxial cable to provide an electrical connection between the outer conductors. A sleeve is positioned between the center conductor and the spring to provide for alignment of the cable.



3,701,081
FLUORESCENT LAMP HOLDER ASSEMBLY

Max L. Jayne, and Charles A. Williams, both of Warren, Pa., assignors to Sylvania Electric Products Inc.

Filed June 18, 1970, Ser. No. 47,203
Int. Cl. H01r *33/08*
U.S. Cl. 339—53 **10 Claims**

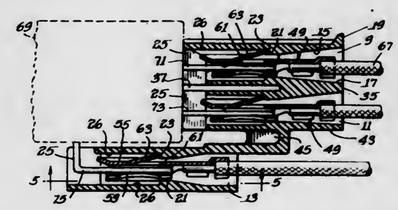


A fluorescent lamp holder assembly having two oppositely opposed socket members, one socket member being rigidly affixed, the other socket member being resilient. Both members are designed so that insertion of a fluorescent lamp is possible without twisting or bending the lamp. Removal of the lamp is also made substantially less difficult.

3,701,082
ELECTRICAL CONNECTOR

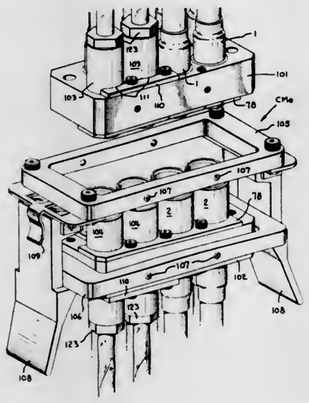
Bruno Baumanis, River Forest, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed March 25, 1971, Ser. No. 128,041
Int. Cl. H01r *13/48*
U.S. Cl. 339—61 M **6 Claims**



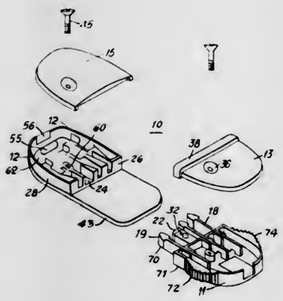
A connector has a dielectric body with hollow parallel body sections each containing a female terminal for receiving a male terminal of a switch. The body sections are joined together such that the body sections may be independently flexed where they are joined. This flexure permits variation in the spacing of the front end openings in the connector, thereby to accommodate in the connector switch terminals of varying spacing.

3,701,083
COAXIAL CONNECTOR MOUNTING MEANS
George William Ziegler, Jr., Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 732,447, May 27, 1968, Pat. No. 3,566,334. This application Sept. 18, 1970, Ser. No. 73,652
Int. Cl. H01r 13/62
U.S. Cl. 339—64 M 7 Claims



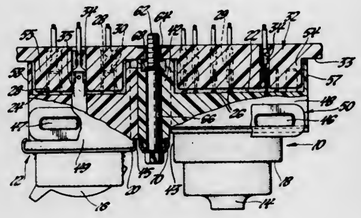
Coaxial connector mounting means comprises mounting block means connectable together to connect coaxial connector means floatably mounted in the mounting block means.

3,701,084
MULTIPOLAR CONNECTOR FOR TELEPHONE SETS
Lorenzo Martinez Gomez, Malaga, Spain, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,408
Int. Cl. H01r 13/62
U.S. Cl. 339—66 M 2 Claims



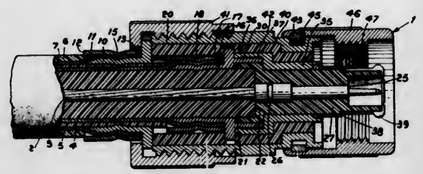
A flat multiple contact connector including a plug and mating socket. The plug contactor springs are paired and the contactor springs of a pair are mounted on opposite sides of an insulating tongue. The tongues are aligned asymmetrically for mating with like openings in the socket bearing individual receiver springs for each contactor spring.

3,701,085
ELECTRICAL CONNECTOR ASSEMBLY
Willard E. Graddy, and Willis H. Anderson, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 18, 1971, Ser. No. 116,537
Int. Cl. H01r 13/54
U.S. Cl. 339—92 M 2 Claims



An electrical connector assembly is disclosed wherein a pair of joined connector members are clamped to a third electrical connector member. The paired connector members have a first joint therebetween which prevents relative movement between the members in all but two directions and a second joint between the members and a joint member which prevents relative movement between the paired connector members in the other two directions. The joined pair of connector members are clamped to the third connector member by a fastener which cooperates with the joint member of the second joint.

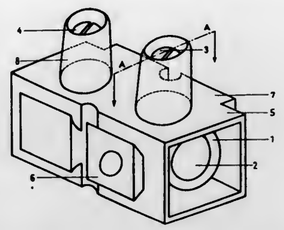
3,701,086
COAXIAL CONNECTOR
Sherman J. Somerset, Marblehead, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 28, 1971, Ser. No. 148,046
Int. Cl. H01r 21/20
U.S. Cl. 339—177 R 1 Claim



This invention is for an electrical connector for a coaxial cable, such as a triaxial cable, which has two concentric outer conductors and an inner conductor, the connector comprising means to clamp separately each of the outer conductors by crimping means to securely fasten each outer conductor to its clamping means.

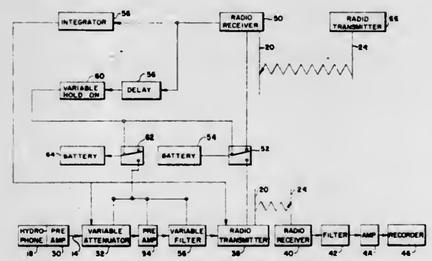
3,701,087
ELECTRIC CONNECTOR DEVICE
Henri Gabriel Bernard, 9, Avenue de Belfort, Saint Claude, France
Filed Feb. 11, 1971, Ser. No. 114,421
Claims priority, application France, Oct. 29, 1970, 7039105
Int. Cl. H01r 9/00
U.S. Cl. 339—198 G 3 Claims

The invention relates to an electric connector device enabling several connector devices to be connected mechanically as well as electrically; it comprises a metal nucleus perforated axially, at least one means of gripping the electric wire to be connected and a box made of insulating material enclosing the metal core, while leaving access to the extremities of the perforation free; the box and the core comprise in addition



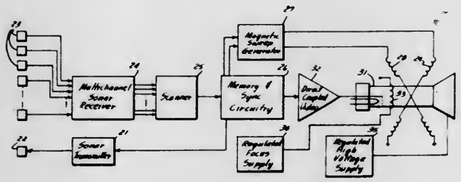
a transversal opening passing through them from end to end located perpendicularly to the axis of the perforation of the core and passing through this perforation.

3,701,088
DEMAND SONOBUOY
Richard J. Haase, and William L. Roever, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed June 18, 1970, Ser. No. 47,468
Int. Cl. G01s 9/66
U.S. Cl. 340—2 2 Claims



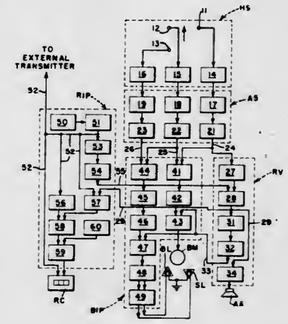
A demand sonobuoy having both sending and receiving radio equipment therein. The transmission of seismic data detected by a hydrophone connected to the demand sonobuoy is controlled by radio signal from a remote point.

3,701,089
DISPLAY FOR MULTI-CHANNEL SONARS
John G. Cowan, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 20, 1970, Ser. No. 82,247
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R 10 Claims



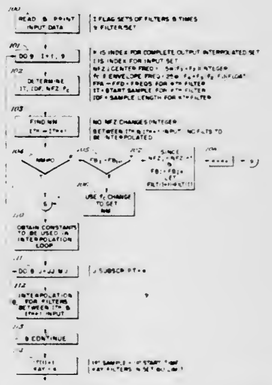
This invention discloses an improved visual display arrangement incorporated in and uniquely combined with a multichannel sonar system. The arrangement is characterized as having a low persistance cathode ray tube with low direct current potential on the grid thereof. Improved sweep drive using electromagnetic deflection and an improved magnetic focusing arrangement contribute to the operation thereof. A direct coupled video amplifier and a regulated high voltage power supply complete the novel display arrangement.

3,701,090
SHIPBOARD ACOUSTIC RECEIVER
Donald B. Heckman, Alexandria, Va., assignor to AMF Incorporated
Filed Dec. 22, 1970, Ser. No. 100,650
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R 6 Claims



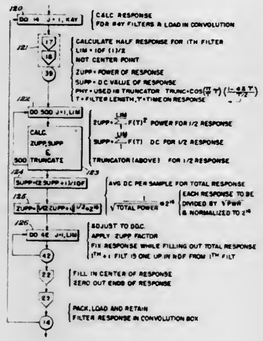
A shipboard receiver, with means for initiating a coded command to an underwater transponder, which receives the transponder response while discriminating against ambient noise and computes and displays the slant range and bearing of a submerged package with the transponder from the receiver.

3,701,091
PROCESS OF FORMING TIME-VARIANT FILTERS FOR FILTERING SEISMIC DATA
Jeremiah P. Lenihan, Carrollton, Tex., assignor to Mobil Oil Corporation
Filed Feb. 19, 1971, Ser. No. 116,788
Int. Cl. G01r 1/28
U.S. Cl. 340—15.5 AF 9 Claims



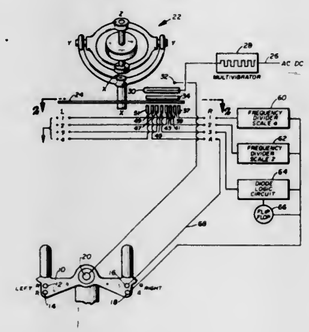
The specification discloses a process of forming a set of time-variant filters from an input set of filters having predeter-

mined start times. The center frequency and envelope frequency of the input filters are determined and filters are interpolated between adjacent input filters, based upon the difference in center frequency between the adjacent input filters. In the embodiment disclosed, the number of filters interpolated between adjacent input filters is equal to the number of integer frequency changes between adjacent input filters



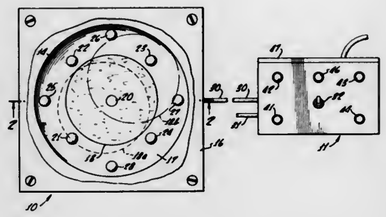
minus one. The envelope frequencies of the interpolated filters are determined by a linear interpolation between the envelope frequencies of adjacent input filters and the interpolated filters are placed at equally spaced time intervals between adjacent input filters. The length of the input filters and interpolated filters are determined as inversely proportional to their envelope frequencies. The time responses of the filters are determined and truncated with a special truncator.

3,701,092
VEHICULAR ATTITUDE-CONTROL DISPLAY
Albert Howard Hasbrook, Blanchard, Okla., assignor to Stanley W. Wilcox, Tulsa, Okla., a part interest
Continuation-in-part of Ser. No. 654,571, July 19, 1967, abandoned. This application Nov. 9, 1970, Ser. No. 88,070
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 AT **14 Claims**



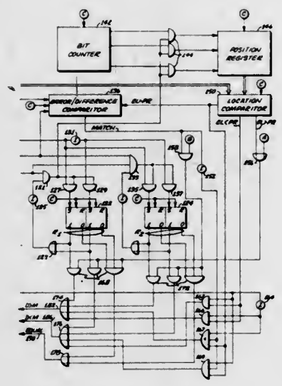
Aircraft attitude, particularly roll attitude, is displayed principally by a visual light system. The lights are positioned within the pilot's peripheral vision space so as to give inattentive control stimulus.

3,701,093
TILT INDICATION APPARATUS
Steve J. Pick, 18192 San Carlos, Fountain Valley, Calif.
Filed July 29, 1971, Ser. No. 167,318
Int. Cl. H01h *35/02*
U.S. Cl. 340—52 H **8 Claims**



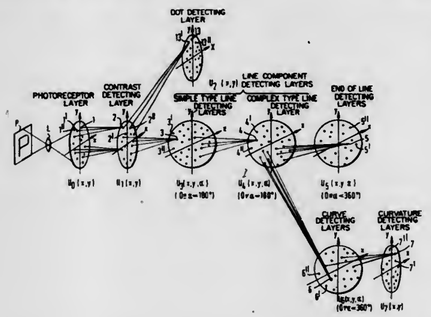
Direction and one of several discrete magnitudes of tilt are indicated by a mercury switching arrangement having secondary and tertiary contacts differently spaced from a central primary contact. The secondary contacts are employed to energize low tilt indicators and to give direction of tilt. The tertiary contacts indicate high tilt.

3,701,094
ERROR CONTROL ARRANGEMENT FOR INFORMATION COMPARISON
Thomas H. Howell, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed April 19, 1971, Ser. No. 134,941
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **8 Claims**



A data key word, encoded in a certain error correcting code, is read from a storage device, the information portions thereof are compared to a master key word, and the outcome of the comparison is recorded. The data key word, if in error, is also decoded to obtain an error pattern word and an error location indication. From the above information, it is determined whether the data key word is greater than, equal to, or less than the master key word. Error protection is provided for the data key word without the necessity of buffering or actually correcting the data key word.

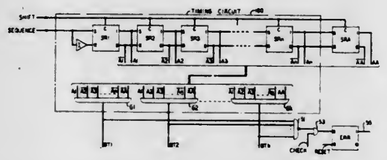
3,701,095
VISUAL FEATURE EXTRACTION SYSTEM FOR CHARACTERS AND PATTERNS
Yukiya Yamaguchi, Yokohama; Kunihiko Fukushima, Tokyo; Minoru Yasuda, Tokyo, and Shojiro Nagata, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan
Filed Sept. 14, 1970, Ser. No. 71,659
Claims priority, application Japan, May 25, 1970, 44/44014
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 MA **4 Claims**



A visual feature extraction system comprising electric circuit models having a similar construction with the visual system of higher animals. The system comprises analog threshold elements as the corresponding elements to visual neuron cells. An analog threshold element is composed in a manner that to each of a plurality of its inputs an interconnecting coefficient is allocated respectively and if an algebraic sum of all of the inputs is positive, a weighted sum of the inputs is derived as the output, and if the algebraic sum is negative, the output becomes zero.

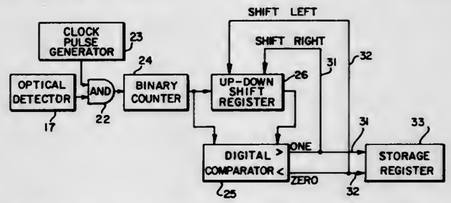
The system is composed by such elements connected to form multilayered parallel network, wherein each layer recognizes one of features such as, contrast, dot, line component of simple type, line component of complex type, end of line, curved portion and curvature, and the layers are interconnected with a predetermined interconnecting characteristics between each other so as to detect the linear portion, the curved portion, etc. of an input pattern.

3,701,096
DETECTION OF ERRORS IN SHIFT REGISTER SEQUENCES
Paul Douglas Hunter, Middletown Twsp., and Richard Erving Machol, Jr., Freehold, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 1, 1971, Ser. No. 177,047
Int. Cl. H03k *5/18*; G06m *3/12*
U.S. Cl. 340—146.1 D **9 Claims**



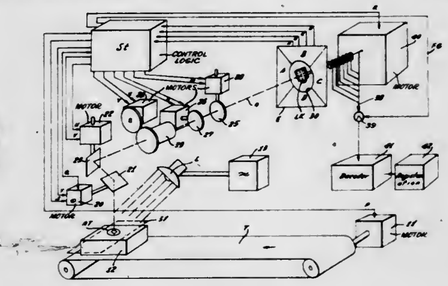
Errors occurring in shift register sequences, such as due to noise bursts or internal shift register faults, are detected by adding a single additional stage to the decoding shift register and connecting it to the usual decoding logic gates in the same pattern as the other shift register stages. Errors are thus caused to appear as a predetermined output from the decoding logic, which output is detected readily by a flip-flop connected thereto.

3,701,097
DECODING BAR PATTERNS
Gerald Wolff, Framingham, Mass., assignor to Identicon Corporation, Waltham, Mass.
Continuation-in-part of Ser. No. 44,910, June 10, 1970. This application Jan. 20, 1971, Ser. No. 107,996
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 Z **13 Claims**



A photoelectric detector and width-coded bar or interval are relatively displaced to produce a corresponding sequence of pulses or pulse intervals of timed duration corresponding to the pattern with variation in the scan velocity. A logical circuit arrangement recalibrates during a scan interval so that the width patterns are accurately detected, despite the variation in scan velocity resulting from relatively displacing the photoelectric detector and pattern to be detected manually.

3,701,098
DEVICE FOR MACHINE READING OF INFORMATION WITHOUT MANIPULATION OF THE INFORMATION CARRIER
Norbert K. Acker, Koenigstein, Germany, assignor to Scanner, Inc., Houston, Tex.
Continuation of Ser. No. 788,302, Dec. 31, 1968, abandoned. This application June 15, 1971, Ser. No. 153,392
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 H **17 Claims**

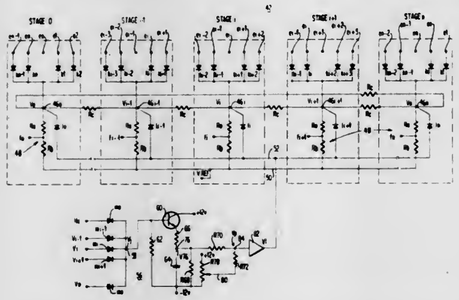


A system is disclosed for reading digitally expressable information from randomly positioned and randomly oriented data fields by detecting presence of a data field in a search field through imaging the search field onto a recognition device and changing position, distortion and magnification of the image until projected onto a read head. Through relative rotation between read head and image or an image therefrom correct orientation for readout is obtained. Particular boundary markings of the data field facilitate position control, particular control markings are used for orientation control. The position control for the data field image is obtained electron optically or through adjustable optical elements.

3,701,099
DYNAMIC DISCRIMINATION REFERENCE LEVEL GENERATOR FOR A PARALLEL CHANNEL OPTICAL DOCUMENT SCANNER

Richard E. Hall, and Lawrence P. Segar, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 846,834, Aug. 1, 1969, abandoned. This application June 8, 1971, Ser. No. 150,935
Int. Cl. G06k 9/00, 7/14
U.S. Cl. 340—146.3 AG **9 Claims**

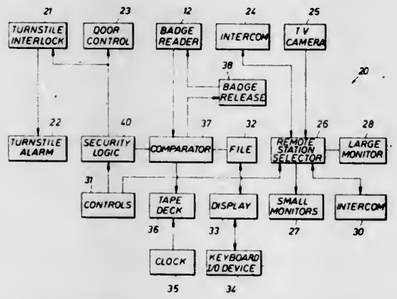


A discrimination reference level generator which provides a dynamically adjustable reference level for discriminating between the white background of a document and black characters imprinted on the document. The maximum contrast signal from document areas on either side of the document area being scanned are used to control the black-white discrimination level of the scanned area. Furthermore, correlation between the discrimination reference levels of adjacent document areas prevents a sudden decrease in the discrimination reference level between two adjacent document areas. The discrimination reference level is not permitted to fall below a predetermined minimum level which is constant for normal contrast but which is automatically raised when there is an extremely high contrast between the document and the characters imprinted thereon.

3,701,100
CONTROLLED ACCESS SECURITY SYSTEM

Kenneth A. Yarbrough, Dallas, Tex., assignor to World Computer Systems Engineering Corporation

Filed Dec. 16, 1970, Ser. No. 98,613
Int. Cl. G08b 1/08
U.S. Cl. 340—149 A **10 Claims**

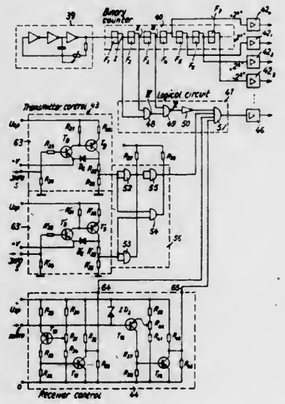


For use in a building to limit access to a secured area, an apparatus which includes a badge reader installed at the point of entrance, numbered badges for those desiring entrance into the secured area, a remote badge number file storage, an electronic scanner which scans the file when supplied with the number from the badge, and means for remotely electrically opening a door or other entrance to the secured area upon ascertaining authority for the badge holder to enter that particular secured area as evidenced by data from the storage file.

3,701,101
MODULAR REMOTE CONTROL AND SUPERVISORY SYSTEM SWITCHGEAR

Max Heiz, Suhr, Aargau, Switzerland, and Rudolf Kalocay, Hannover, Germany, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Nov. 6, 1969, Ser. No. 874,664
Claims priority, application Switzerland, Nov. 6, 1968, 16559/68; Oct. 15, 1969, 15452/69
Int. Cl. H04q 9/00
U.S. Cl. 340—163 **19 Claims**



A switchgear or switchboard comprises a plurality of switching units including command devices, switching devices and signalling devices which are combined according to given switching functions, each of the command devices and switching devices comprises transmitters for delivering command signals and each of the switching devices and signalling devices comprises receivers for receiving the command signals. The command, switching and signalling devices are contained in slide-in units inserted into shelves of a switchbox. Each switch-in unit comprises the transmitters and receivers for the devices contained in the respective switch-in unit, and the transmitters and receivers of all slide-in units are connected to a control cable interconnecting the slide-in units. The control cable is connected to a central unit producing address signals in cyclic sequence and comprising a signal generator for producing read-out signals of a time period which is shorter than that of the address signals.

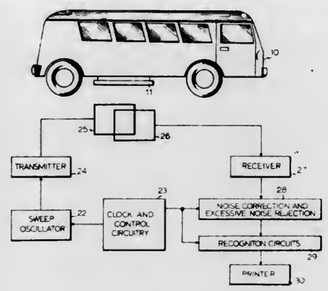
3,701,102
NOISE ERROR CORRECTING AND EXCESSIVE NOISE REJECTING SYSTEM

Max Berman, and Gary W. Bowen, both of Roanoke, Va., assignors to General Electric Company

Filed May 3, 1971, Ser. No. 139,662
Int. Cl. G08b 29/00; G08g 1/00
U.S. Cl. 340—168 R **7 Claims**

A noise error correcting and excessive noise error rejection system for use preferably in an identification interrogation system in which a scanned or swept frequency spectrum is transmitted and certain discrete frequencies are reradiated depending upon the frequency of tuned circuits located on the

object to be identified. The system uses a constant number of bits out of a larger number of bit positions for all symbols or digits used. A check for excessive noise is made by counting the number of bits per digit or symbol received on a first

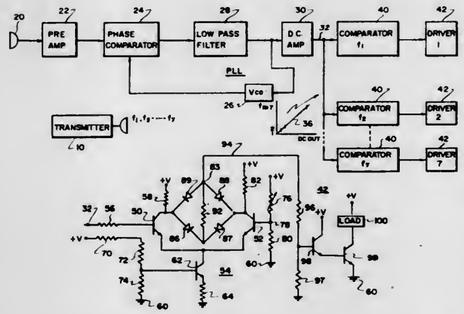


sweep. Excessive noise is defined as a predetermined excess of bits in a predetermined number of digits. On a second sweep, the data received on the first sweep is corrected and further checks to insure accuracy are made.

3,701,103
REMOTE CONTROL RECEIVER USING A PHASE LOCKED LOOP

William J. Padgett, Berwyn, and Donald A. Wison, Chicago, both of Ill., assignors to Warwick Electronics Inc.

Filed April 7, 1971, Ser. No. 132,129
Int. Cl. H04q 9/02
U.S. Cl. 340—170 **7 Claims**

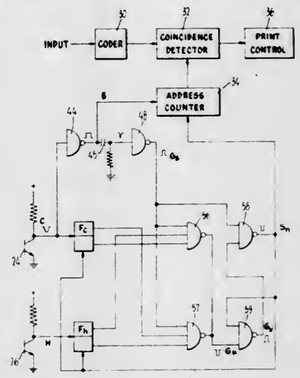


A remote control receiver selectively responsive to a plurality of different frequency command signals to control corresponding different command functions. The receiver uses a phase locked loop including a controlled oscillator having a variable frequency output which is compared in a phase comparator with the received command signal. The detected phase difference generates an error voltage which shifts the oscillator from its quiescent frequency to the incoming frequency and phase locks the controlled oscillator to the command signal. The error voltage also activates only one of several DC voltage comparators, with a different comparator corresponding to each command function. Each comparator includes a means of establishing a reference voltage and means for activating a driver stage for the corresponding remote function when the error voltage generated by the phase comparator to lock the receiver to a particular command frequency and equals the corresponding reference voltage.

3,701,104
ADDRESS SYNCHRONIZER

Neil L. Wiseman, San Ramon, Calif., assignor to The Singer Company

Filed Sept. 6, 1968, Ser. No. 757,870
Int. Cl. G06f 7/02; G06k 15/06
U.S. Cl. 340—172.5 **9 Claims**

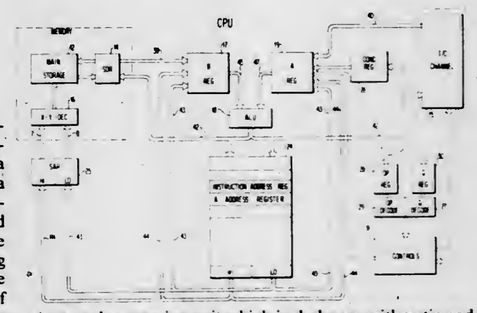


A synchronizer for the address counter of an on-the-fly print wheel has two flip-flops complemented by paired photoelectric signals. One flip-flop responds to all character pads, or spaces, of the wheel and the other to all but one. When the two flip-flops fall out of step, a synchronizing signal is gated for setting the address counter and for also resynchronizing the two flip-flops, which then stay synchronized until the next unpaired signal.

3,701,105
CENTRAL PROCESSING UNIT IN WHICH ALL DATA FLOW PASSES THROUGH A SINGLE ARITHMETIC AND LOGIC UNIT

Edward D. Finnegan; Leonard Roy Harper, both of San Jose, Calif.; Nicholas S. Mitrofanoff, Rochester, Minn., and Allen C. Slutman, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 24, 1970, Ser. No. 57,920
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 **6 Claims**

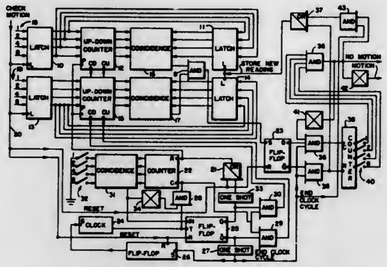


A central processing unit which includes an arithmetic and logic unit, local store registers and general registers, allows for the use of the arithmetic and logic unit for housekeeping purposes such as address modification during portions of a machine cycle. The processing unit contains no counters or compare circuits other than the single arithmetic and logic unit with all data flow being through the arithmetic and logic unit.

3,701,106
DATA CHANGE DETECTOR

Richard C. Loshbough, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Dec. 7, 1970, Ser. No. 95,614
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **11 Claims**

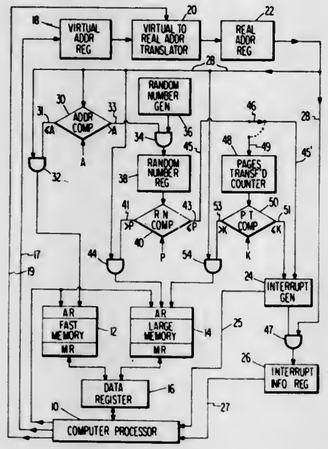


A detector for sensing change in data to determine whether or not the change is within tolerance and to determine whether or not data within tolerance remains in tolerance for a period.

3,701,107
COMPUTER WITH PROBABILITY MEANS TO TRANSFER PAGES FROM LARGE MEMORY TO FAST MEMORY

John Garland Williams, Princeton, N.J., assignor to RCA Corporation

Filed Oct. 1, 1970, Ser. No. 77,141
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **9 Claims**

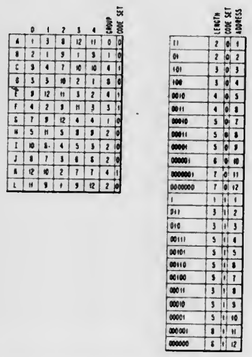


A computer system includes a relatively fast, small, random-access memory, and a large, relatively slow, directly-addressable, random-access memory. An address comparator is receptive to the contents of a real address register and has a first output indicating that the desired word is stored in the fast memory, so that the contents of the real address register can be used to address the fast memory. The address comparator has a second output indicating that the desired word is in the large memory. In this second case, the contents of the real address register is used to directly address the large memory a majority of the time, under control of a random probability device. The remaining small proportion of the time, the computer is interrupted and caused to transfer a page of memory words, including the desired word, from the large memory to the fast memory.

3,701,108
CODE PROCESSOR FOR VARIABLE-LENGTH DEPENDENT CODES

Louis S. Loh, Mohegan Lake; Jacques H. Mommens, Briarcliff Manor, and Josef Raviv, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,576
Int. Cl. G06f *5/00*
U.S. Cl. 340—172.5 **16 Claims**



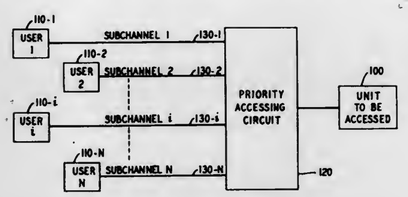
A processor for encoding fixed-length code words into variable-length code words and for decoding variable-length code words into fixed-length code words. The fixed-length code words are assigned to a number of groups and one of several possible coding sets determined by the probability of each word occurring after a preceding word. Each of the fixed-length code words is stored in a first associative memory unit along with its group number, its coding set assignment and a number of addresses arranged in groups. An input fixed-length code word is compared in the memory and will match the corresponding fixed-length stored word. One of the addresses is read out of the memory. The particular group from which the address is read out is determined by the group number of the previously received fixed-length code word. The selected address that is read out and the coding set membership, number of the previous word is entered into a second associative memory containing all the addresses arranged in several coding sets along with the variable-length code words. A match in the second memory unit on an address and a coding set number produces a variable-length code word for the input fixed-length code word. The first memory unit also provides the group number and coding set number for the next input fixed-length code word to be encoded. Decoding is performed in a similar but reverse manner starting with the variable-length coded data being entered into the second memory.

3,701,109
PRIORITY ACCESS SYSTEM

Theodore Richmond Peters, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 9, 1970, Ser. No. 87,980
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **14 Claims**

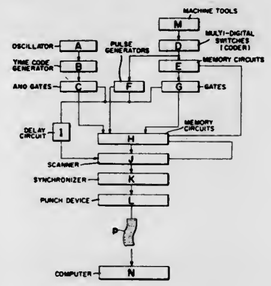
Methods and apparatus are described which provide for granting access to a computer or other system to a plurality of users having different priorities. Each user is assigned to a priority group within which all users receive sequential access. Priority groups as a whole are granted access in accordance with their usage requirement and associated relative priorities. Each group is assured access for at least a minimum period within a longer reference period.



3,701,110
APPARATUS FOR PRODUCING A PUNCHED TAPE RECORD FOR RECORDING WORKING CONDITIONS OF MACHINE TOOLS

Taisuke Tsugami, No. 415, 1-chome, Shimo-Ochiai, Shinjuku-ku, Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,668
Claims priority, application Japan, Nov. 22, 1969, 44/93371
Int. Cl. G01d *9/00*; G06k *1/00*
U.S. Cl. 340—172.5 **1 Claim**



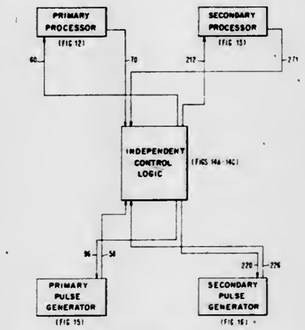
Apparatus for producing a punched tape record for recording working conditions of machine tools, to be supplied to an electronic computer for automatically computing information representing working efficiency. The apparatus comprises a time code generator for producing binary coded time data, first and second memory devices, one for each machine took, gating means for transferring in response to selected pulses the binary coded time data and the memory contents of the first memory devices into the second memory devices, and means for sequentially scanning the memory contents of the second memory devices and activating a punch device to punch the memory contents of the second memory devices into a tape.

3,701,111
METHOD OF AND APPARATUS FOR DECODING VARIABLE-LENGTH CODES HAVING LENGTH-INDICATING PREFIXES

John Cocke, Mt. Kisco; Jacques H. Mommens, Briarcliff Manor, and Josef Raviv, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,473
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **20 Claims**

This code conversion method enables data which has been coded in the form of variable-length bit strings for data compaction purposes to be processed by hardware units of conventional design that handle data in the form of fixed-length bit strings. The coding scheme is such that in the bit string of each variable-length code whose length exceeds a certain fixed number of bits N, the first N bits constitute a "length prefix" which uniquely designates the code length. This N-bit prefix is decoded by a first decoding table to give a base address in a second decoding table. The remaining bits of the variable-length code, whose number is known from the length prefix, then are decoded to give a displacement value relative to the base address for locating the address at which the decoded fixed-length word is found. Concurrently with the execution of this second decoding step, the first step in the decoding of the next variable-length code is performed. If a variable-length code does not have more than N bits, it is decoded in one step by the first decoding table, which stores the decoded word at every address therein which may be designated by all possible N-bit combinations containing the aforesaid variable-length code as their leading portion. A length indication read out of the first table then shifts the address register contents by an appropriate amount to bring the next succeeding variable-length code into the leading position therein.

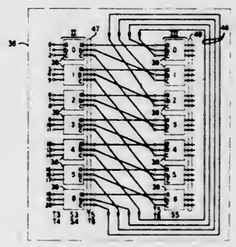


BLOCK DIAGRAM OF INDEPENDENT DECODER

3,701,112
BALANCED, INCOMPLETE, BLOCK DESIGNS FOR CIRCUIT LINKS INTERCONNECTING SWITCHING NETWORK STAGES

David William Hagelbarger, Morris Twp., Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 4, 1971, Ser. No. 150,138
Int. Cl. H04l *11/00*
U.S. Cl. 340—172.5 **26 Claims**



A first stage of a switching network includes a plurality *v* of switching matrices each including a predetermined number *r* of input signal terminals and output signal terminals. At least

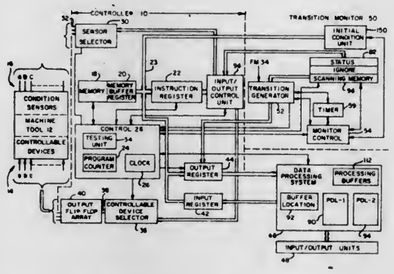
one different pair of links for signal path connection is provided for outputs of each pair of first stage matrices to some one of *b* k-input switching matrices of a second stage of the network. Links from any first stage matrix extend to only a portion of the output stage matrices and are arranged in accordance with a balanced, incomplete block design derived from combinatorial theory to distribute the link connections substantially evenly among the second stage matrices. The 2-stage network is itself a block design switching matrix that is useful for building higher order networks. A block design matrix also is combined, through time slot interchanging circuits or another switching stage, with a network of mirror image configuration so that signal path pairs established in the second network are the mirror image of path pairs established for the same communication through the first network.

3,701,113

ANALYZER FOR SEQUENCER CONTROLLER

Donald E. Chace, Concord; James A. Melvin, Jr., Norwood, both of Mass.; Alan W. Ricketts, Jr., Derry, N.H.; Edward P. Steinberger, Marlboro, and David T. Symmes, Danvers, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 13, 1971, Ser. No. 171,542
Int. Cl. G06f *15/46*; G05b *11/32*, *1/01*
U.S. Cl. 340—172.5 **16 Claims**



A monitor for a programmed sequence of operations. A sequence controller responds to successive instructions. Some instructions correspond to elements of governing functions and test the status of independent variables to activate controllable devices, which correspond to dependent variables, when functions are satisfied. The monitor, operating in synchronism with the controller, generates a transition word each time the controller either (1) tests a sensor for an independent variable in the function or (2) prepares to alter a controllable device, if a comparison with the last condition of that sensor or device in a memory unit indicates a change has occurred or will occur. The monitor also updates this memory unit to the new condition. Each transition word identifies the changing element and describes the change. A data processing system stores each transition word in sequence for comparison with a reference list of transition sequences.

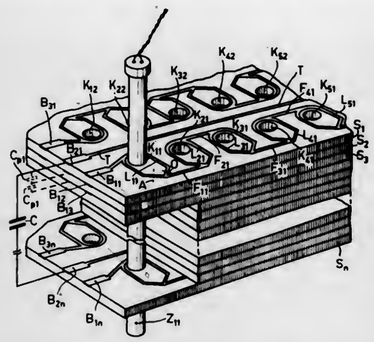
3,701,114

CAPACITIVE SYMMETRIZATION OF A STORAGE

Josephus Theodorus Maria Kuijper, Beekbergen, Netherlands, assignor to U.S. Philip Corporation, New York, N.Y.

Filed April 3, 1970, Ser. No. 25,351
Claims priority, application Netherlands, April 4, 1969, 6905736
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP **1 Claim**

The invention relates to a "read-only" storage formed by a pile of plates having printed circuits. The parasitic capacitances between the wirings of these plates differ with the lower and upper plates from those with the other plates.



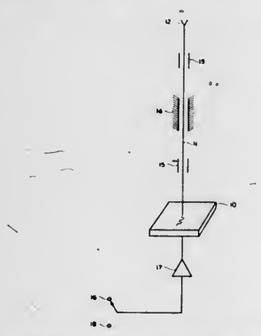
By providing an additional capacitance between the input terminals of the circuits of the lower and upper plates this assymmetry is obviated.

3,701,115

RECORDING INFORMATION ON A LAYER OF ORTHOFERRITE WITH AN ELECTRON BEAM

Sidney Ivor Joseph Ingrey, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 22, 1971, Ser. No. 117,312
Int. Cl. G11c *11/14*, *13/00*; G01d *15/34*
U.S. Cl. 340—173 CR **7 Claims**



Recording information on a layer of orthoferrite by exposing the layer to an electron beam. The electron beam alters the electrical conductivity of the layer wherever it impinges. Information can be retrieved by scanning with an electron beam to detect the variations in conductivity.

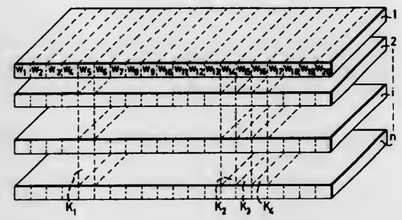
3,701,116

MEMORY STORE WITH REDUNDANCY

Hermanes Johannus Maria de Haan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 799,466, Feb. 14, 1969, abandoned. This application July 27, 1971, Ser. No. 166,614
Claims priority, application Netherlands, Feb. 19, 1968, 6802365
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **3 Claims**

A word-organized memory store wherein information is stored in the form of digitized words along parallel lines in a matrix arranged in stacked relationship with other parallel matrices containing similarly arranged redundant words. The matrices containing redundant words are displaceable in a direction transverse to the direction in which the words are stored.

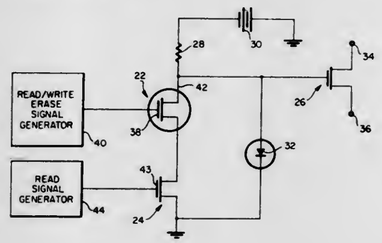


3,701,117

PHOTO-SELECT MEMORY SWITCH

Melvin L. Fuller, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 29, 1970, Ser. No. 6,744
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **5 Claims**



The disclosed microcircuit and integrated circuit arrays are adapted to be functionally configured in response to radiant energy applied thereto during a configuring period. Elements and circuits of the arrays are selectively interconnected by photo select switching devices which operate as either an open or closed switch depending on whether the particular photo select switching device was illuminated by a light beam, for example, during the configuring (setting) period. Each photo select switching device comprises a solid state memory device operatively coupled to a photo diode such that the non-volatilely stored conductive characteristics of the memory device are determined by the conductive state of the photo diode during the setting period. The memory device in turn controls a solid-state switching transistor which is coupled in a connecting path of the array, thereby providing a desired switching function determined by the pattern of the illuminating energy during the setting period.

3,701,118

OPTICAL STORAGE MEDIUM & METHOD OF MAKING & USING

James E. O'Connor, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 72,235, Sept. 14, 1970. This application July 23, 1971, Ser. No. 165,710
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LS **14 Claims**

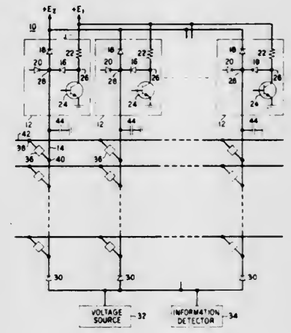
This disclosure is directed to a reversible, yet optionally permanent dual electro-optical record and storage medium, bistable in both the optical and electrical modes and non-volatile in the electrical mode having high resistivity contrast in the electrical mode between the write and erase states, high resolution and contrast in the optical mode between the write and erase states, high resolution and contrast in the optical mode between the write and erase states. The record medium can be used for display purposes and is capable of high bitpacking density and thermal micro-recording and erasure and comprises a fired ceramic glaze containing an intimate mixture of reducible lead oxide and reducible copper oxide as a major component and silica and alumina as minor components and wherein the mole ratio of lead (as lead oxide) to copper (as copper oxide) can range from about 0.1 to about 12.0:1. Magnesia can be included in said glaze as a minor component.

3,701,119

CONTROL CIRCUITRY AND VOLTAGE SOURCE FOR USE WITH CHARGE STORAGE DIODE

Sigurd Gunther Waaben, Princeton, and Walter Ira Weiss, Montclair, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,131
Int. Cl. G11c *5/02*, *11/36*
U.S. Cl. 340—173 R **7 Claims**



A control circuit consists of essentially a first charge storage diode and means for creating a reservoir of minority carriers within the first diode which, when desired can be utilized to almost instantaneously cause minority carriers to be created in a second charge storage diode. The second diode is useful as a switch which, for a preselected period of time, becomes a short circuit that allows current flow in the reverse direction through the diode, but then automatically becomes an open circuit. A voltage source, especially adapted for use with the control circuit is also described.

3,701,120

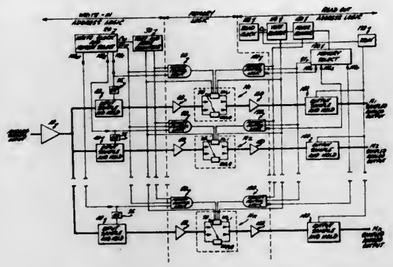
ANALOG CAPACITOR MEMORY WITH SLOW WRITE-IN AND FAST NONDESTRUCTIVE READ-OUT

Robert L. Charters, Bellevue; James M. Bartlemay, Seattle; John M. Folline, Kent, and Thomas G. Donich, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 18, 1969, Ser. No. 862,633
Int. Cl. G11c *7/00*, *11/24*, *27/00*
U.S. Cl. 340—173 R **16 Claims**

An analog memory capable of write-in at a relatively low rate and independent, nondestructive read-out at a relatively high rate. A single write-in and read-out address logic is pro-

vided for as memory units are desired. Each memory unit includes a matrix of sample and hold microcircuits, each having



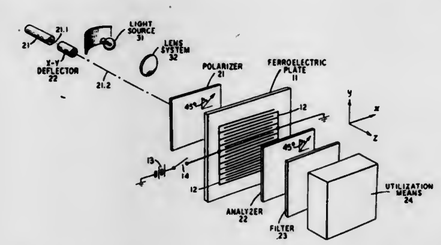
an external storage capacitor, an isolation amplifier and independent input and output analog switching in response to vertical and horizontal write-in and read-out addressing.

3,701,121

FINE GRAIN FERROELECTRIC CERAMIC OPTICAL DISPLAY DEVICE UTILIZING THERMAL DEPOLING WRITE-IN

David Bruce Fraser, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 22, 1970, Ser. No. 30,633
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **10 Claims**



An optical display device includes a fine grain polycrystalline ferroelectric ceramic plate, which is located between an optical polarizer and an analyzer. The ferroelectric plate is "reset" by means of an applied electric field, which electrically polarizes the entire plate. Then, the plate is subjected to a "write-in" by means of an intensity modulated scanning electron (or laser) beam, which locally heats and thereby selectively depolarizes portions of the plate. The plate is then subjected to a "readout" beam of light, which is selectively transmitted through the device at those portions of the plate which have been exposed to maximum intensity of the "write-in" beam.

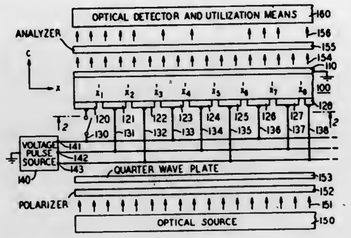
3,701,122

FERROELECTRIC DOMAIN SHIFTING DEVICES

Joseph Edward Geusic, Berkeley Heights; Terence John Nelson, New Providence, and David Paul Schinke, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 25, 1971, Ser. No. 174,727
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **10 Claims**

Ferroelectric crystals which are also ferroelastic, such as gadolinium molybdate, can support stable internal ferroelectric polarization domains. These domains are expanded and moved in the ferroelectric crystal by means of a sequence of voltages applied to electrodes on the surface of the crystal. Thereby, optically readable, shift register logic functions are



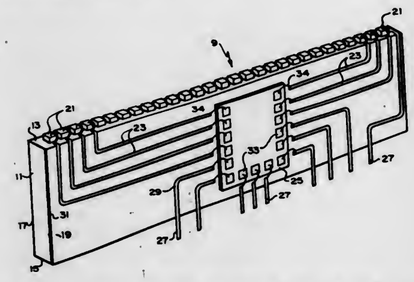
achieved using (for readout) an incident optical beam with respect to which the ferroelectric domains are birefringent.

3,701,123

HYBRID INTEGRATED CIRCUIT MODULE

John C. Barrett, Sunnyvale; Howard C. Borden, Atherton, and Egon E. Loebner, Palo Alto, all of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1969, Ser. No. 872,031
Int. Cl. G11c *11/42*; H01l *11/22*; H05b *33/14*
U.S. Cl. 340—173 LS **8 Claims**



A visual display module includes a thin thermally conductive substrate. The substrate has a narrow top edge surface on which a linear array of closely spaced electroluminescent display elements are mounted, a bottom edge surface along which there are disposed terminals for receiving input power and binary coded signals for controlling the display elements, and a lateral surface on which an integrated circuit chip and a signal conductors are located. The integrated circuit chip contains a decoding network for selectively addressing the display elements in response to the binary coded signals, write-erase gating means for conditioning an addressed display element into an "on" or "off" state, and memory circuits for holding each display element in its "selected" state. The display elements are disposed in a viewing plane perpendicular to the lateral surface of the substrate, so that a plurality of modules can be stacked adjacent to one another to produce an expandable high density display field.

3,701,124

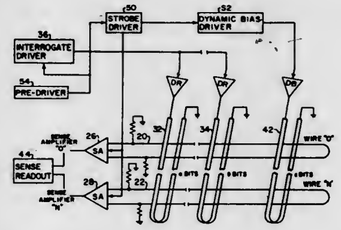
APPARATUS TO EFFECT IMPROVED READOUT OF MEMORY ELEMENTS

Anthony M. Apicella, Jr., Massillon, and Jon M. Surprise, Akron, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed July 1, 1970, Ser. No. 51,469
Int. Cl. G11c *7/02*, *11/04*, *11/14*
U.S. Cl. 340—174 RC **2 Claims**

The invention provides an improved signal to noise ratio for readout of memory elements. Essentially, the idea comprises

apparatus associated with a memory element to act coincident with the normal interrogation of the memory element to provide a dynamic electrical bias coincident with the electrical signal induced as a result of flux change in the memory element caused by interrogation, which dynamic bias signal will always be in a known direction, and will either add to or subtract from the electrical signal representing flux change in the



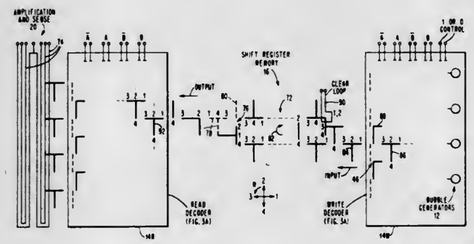
memory element during interrogation so as to either enhance or substantially eliminate the electrical readout signal from the memory element. With the application of proper logic in the sense determination of the electrical readout signal from the memory element, the information stored in the memory element is thereby determined with a significant improved resultant in signal to noise ratio.

3,701,125

SELF-CONTAINED MAGNETIC BUBBLE DOMAIN MEMORY CHIP

Hsu Chang, and Eugene R. Genovese, both of Yorktown Heights, N.Y., assignors to Internaional Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,046
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **21 Claims**



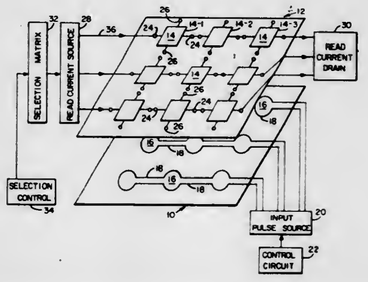
A complete on-chip memory system for cylindrical bubble domains and a magnetic chip decoder for the system. Write and read decoding, memory storage, and sensing are provided on a single magnetic chip with a minimum number of interconnections and ease of fabrication. Decoding is achieved using magnetic overlays for propagation and current loops to provide selective switching at various locations. N control lines enable selective connections between 2^N domain generators and 2^N shift registers. The decoders have 2^N double propagation channels, each of which has two parallel paths. One path connects a generator to a shift register while the other path terminates in a bubble buster. Each shift register comprises a storage loop having bubble splitters, thus enabling NDRO. The storage loops are connected to a double propagation channel in a read decoder. Sensing means are connected to the output of the read decoder.

3,701,126

STATIC NON-DESTRUCTIVE SINGLE WALL DOMAIN MEMORY WITH HALL VOLTAGE READOUT

Robert W. Reichard, Wellesley, Mass., assignor to Honeywell Information Systems, Waltham, Mass.

Filed Jan. 4, 1971, Ser. No. 103,408
Int. Cl. G11c *11/14*, *11/18*
U.S. Cl. 340—174 HA **11 Claims**



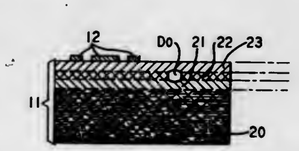
A memory system having single wall domains movable between determinate stable positions and including a Hall probe element matrix arrangement, each element in alignment with one of such positions.

3,701,127

MAGNETIC DOMAIN PROPAGATION ARRANGEMENT INCLUDING MEDIUM WITH GRADED MAGNETIC PROPERTIES

Andrew Henry Bobeck, Chatham, and Hyman Joseph Levinstein, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed March 31, 1971, Ser. No. 129,866
Int. Cl. G11c *19/00*, *11/14*
U.S. Cl. 340—174 TF **16 Claims**



The movement of single wall domains in an internal layer of a film of magnetic material permits operation unencumbered by surface defects or interactions with substrates on which the film is formed for bias fields over a range which is large compared to the range of bias fields characteristic of films in which single wall domains extend from surface to surface.

3,701,128

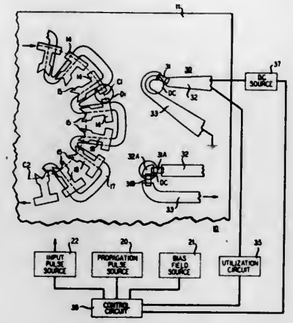
DETECTOR FOR MAGNETIC DOMAIN ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 30, 1971, Ser. No. 158,288
Int. Cl. G11c *19/00*, *11/14*
U.S. Cl. 340—174 TF **3 Claims**

A magnetoresistance detector for single wall domains exhibits particularly attractive properties if a captive domain is permanently associated with the element which has its resistance varied in the presence of an information representative domain. The latter domain varies the position of the cap-

tive domain. The arrangement relieves the constraints on positioning and alignment of a plurality of detectors as might be



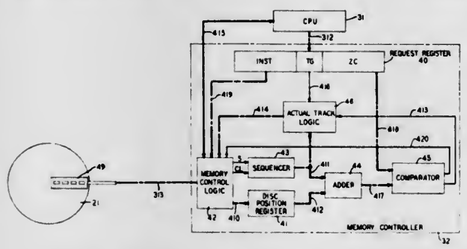
required for multiple channel domain propagation arrangements.

3,701,129
SELF-BIASING SINGLE WALL DOMAIN ARRANGEMENT
John Alexander Copeland, III Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 28, 1971, Ser. No. 193,454
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **14 Claims**



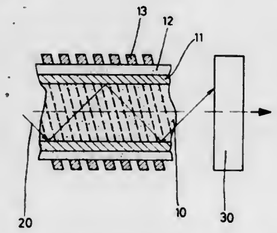
A zero bias, single wall domain propagation arrangement is achieved by forming a layer of magnetic material in which single wall domains can be moved in stripes having dimensions to be self-biasing. A number of different types of domains are found to coexist in such strips leading to a relatively flexible storage arrangement.

3,701,130
MEMORY ACCESS SYSTEM
Cyrus Frank Ault, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 10, 1971, Ser. No. 114,295
Int. Cl. G11b *27/10*
U.S. Cl. 340—174.1 J **13 Claims**



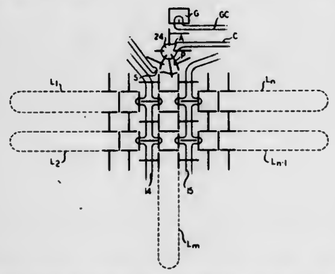
A memory controller, in compliance with a memory access request from a central processor, selectively accesses a revolving memory surface. The memory controller supervises this access by expanding a memory position address specifying the memory access apparatus' relationship to the revolving memory surface, and then comparing the expanded position address with a requested address which designates a memory zone to which access is desired. A straightforward expansion of the memory position address is made possible by beneficially organizing the addresses identifying the memory zones on the memory surface.

3,701,131
MAGNETO-OPTIC STORAGE ELEMENT
Klaus J. Brauser, Baldham; Athanasios Kritikos; Walter Kroy, both of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messeschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed June 1, 1970, Ser. No. 42,012
Claims priority, application Germany, June 18, 1969, P 19 30 907.0
Int. Cl. G11b *5/00*; G02b *5/14, 11/22*
U.S. Cl. 340—174 YC **7 Claims**



Magneto-optic storage element for the storage of information. A nonconductive carrier, such as glass, is provided with a ferromagnetic metal or metal alloy coating which is in turn coated with an evaporated homogenous dielectric and optically transparent layer. An electromagnetic field is caused to surround the ferromagnetic layer. If plane-polarized light is reflected from the magnetic layer, the plane of polarization thereof is rotated due to the Kerr effect. If plane-polarized light penetrates the magnetic layer, same is then rotated due to the Faraday effect. The magnetization applied to the magnetic layer determines the rotation of e plane of polarization and same constitutes the input information. The rotation achieved for the output light constitutes the read out signal and same can be read by any analyzer capable of interpreting the plane.

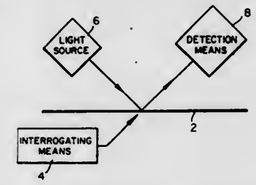
3,701,132
DYNAMIC REALLOCATION OF INFORMATION ON SERIAL STORAGE ARRANGEMENTS
Peter Istvan Bonyhard, Edison, and Terence John Nelson, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 27, 1971, Ser. No. 192,834
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **19 Claims**



The field access mode of operating a single-wall domain mass memory is adapted for the reordering of stored informa-

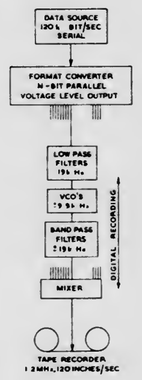
tion depending on the recency of use of the information. The memory is organized in the familiar major-minor loop arrangement where information is transferred from minor loops to the major loop for write and read operations. Reordering is permitted by a modification of the elements which define the major loop.

3,701,133
MODULATED MAGNETOOPTIC READOUT SYSTEM
Philip Smaller, and David Treves, both of Palo Alto, Calif.
Continuation-in-part of Ser. No. 593,934, Nov. 14, 1966, abandoned. This application May 5, 1967, Ser. No. 637,872
Int. Cl. G11b *11/10*; G11c *13/04*
U.S. Cl. 340—174.1 **5 Claims**



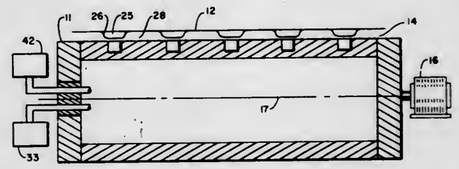
A noise reduction scheme for magnetooptic readout systems using magnetic media wherein the state of magnetization which represents the stored information is modulated by the application of a modulating field wherein the light reflected from respective binary bits is distinctive thereof, and wherein the modulated component of the distinctive reflected light is detected to determine the state of magnetization and thus the information stored.

3,701,134
HIGH DENSITY AND HIGH FREQUENCY DIGITAL RECORDING USING ELONGATED BITS TO OVERCOME THE EFFECTS OF TAPE DROUPOUTS
Paul O. Gillard, Salisbury, Australia, assignor to The Commonwealth of Australia Care of the Secretary, Melbourne, Victoria, Australia
Continuation of Ser. No. 659,732, Aug. 10, 1967, abandoned. This application Nov. 27, 1970, Ser. No. 93,441
Claims priority, application Australia, Aug. 1, 1966, 9550/66
Int. Cl. G11b *5/06*
U.S. Cl. 340—174.1 G **12 Claims**



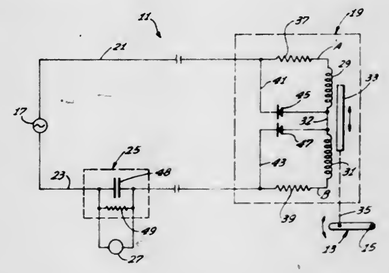
High density and high frequency digital recording in which groups of the serial bits are coded and paralleled and simultaneously recorded on a given magnetic or other track so that each bit is lengthened by a factor up to the number of paralleled bits, and on play back each bit is separated from each other bit by use of a decoding process and if necessary rearranged in serial format.

3,701,135
FOIL BEARING CONTROL APPARATUS
Robert H. Price, Minnetonka, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Oct. 29, 1970, Ser. No. 85,008
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **13 Claims**



A magnetic recording apparatus in which a stationary magnetic recording strip ridges over a rotating drum on a cushion of air. Magnetic heads are located at the surface of the drum, for reading, writing, and erasing information on the magnetic strip. Both vacuum and positive air pressures are used to achieve spacing control between drum and strip. The vacuum pulls the strip down closer to the magnetic heads and the positive air pressure restores the strip to its previous flying height.

3,701,136
SYSTEM FOR DETECTING THE POSITION OF A MOVABLE ELEMENT
Curtis E. Stevens, Irvine, and Chandler A. Phillips, La Canada, both of Calif., assignors to Bertea Corporation, Irvine, Calif.
Filed July 14, 1969, Ser. No. 841,489
Int. Cl. G08c *19/00*
U.S. Cl. 340—199 **9 Claims**

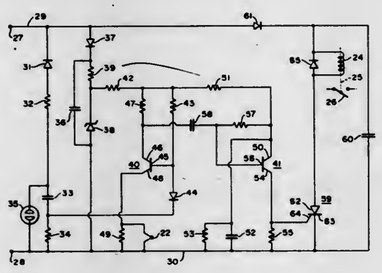


The system includes a position transducer connectible to an ac power supply for providing an electrical signal which is a function of the position of a movable member. The position transducer divides the ac input into at least two components with each component being a function of the position of the movable member. There is an average dc level of the ac signal in accordance with the relationship between the two components of the ac signal. A suitable crossover network separates the dc level from the ac and an indicator provides an indication of the position of the movable element in response to the dc level.

3,701,137
TRANSISTORIZED THERMOCOUPLE FLAME DETECTOR

William H. Hulsman, Needham, Mass., assignor to Control Design, Inc., Needham, Mass.

Filed Sept. 29, 1970, Ser. No. 76,386
Int. Cl. F23m 5/10; G08b 17/06; H01h 47/26
U.S. Cl. 340—228 R 2 Claims

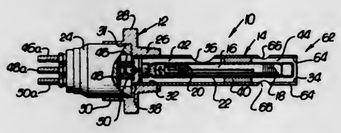


A system for detecting the presence of a burner flame in which the flame heats a thermocouple which is connected to the emitter of a transistor. The transistor is connected to conduct heavily when the thermocouple is cold and to conduct less heavily when the thermocouple is hot. A circuit which generates periodic pulses of voltage is connected to the transistor to cause it to conduct heavily upon the occurrence of each pulse, thus causing a substantial change in the conduction of the transistor only when the thermocouple is hot. This change in conduction generates a control voltage which is used to activate a control relay to control the flow of fuel to the burner.

3,701,138
FLUID LEVEL SENSOR AND SYSTEM

Joseph H. Pulliam, and Thomas W. McCurnin, both of Tucson, Ariz., assignors to Data Engineering, Inc., Tucson, Ariz.

Filed March 25, 1971, Ser. No. 128,038
Int. Cl. G08b 23/00
U.S. Cl. 340—244 R 10 Claims

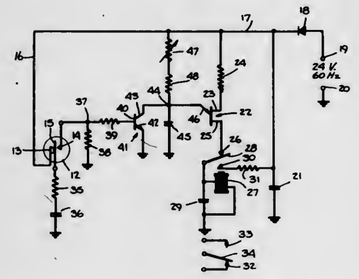


A sensor and system for sensing the level of fluid in a vessel above and below a predetermined level. The sensor comprises a base for mounting on a wall of the vessel with control and reference resistors on a support member extending from the base into the vessel. The resistors form legs of a normally balanced bridge circuit having an indicator connected to its output. A hollow housing having fluid inlet, outlet, and meniscus breaking means surrounds the resistors and support member to insure that the resistors are covered by fluid when fluid in the vessel is at or above the predetermined level and to rapidly drain and expose the control resistor when the fluid drops below the predetermined level to unbalance the bridge circuit and produce an indication at the indicator.

3,701,139
APPARATUS FOR DETECTING INTERRUPTION IN THE CYCLIC MOVEMENT OF A MEMBER

Walter R. Creuz, Chatham, N.J., assignor to Aero-Flow Dynamics, Inc. (The Wing Company Division), Linden, N.J.

Filed Sept. 17, 1970, Ser. No. 73,057
Int. Cl. G08b 21/00
U.S. Cl. 340—271 1 Claim

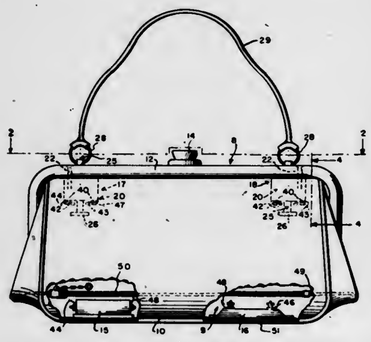


A single-pole double-throw magnetic reed switch responds to the passage of one or more magnets on the periphery of a rotating air-to-air energy exchange wheel to signal through an interval timing circuit any interruption in wheel rotation even if a magnet stops adjacent the switch. Actuation of the reed switch couples a voltage pulse from a charge storage capacitor to a transistor for resetting the timing circuit to start another timing cycle. If a subsequent actuation of the switch does not occur before the timing circuit completes a timing cycle, the signalling device is energized.

3,701,140
PURSE THEFT ALARM

Richard W. Dixon, 5905 St. Lo Avenue, Rockville, Md.

Filed March 5, 1971, Ser. No. 121,410
Int. Cl. G08b 21/00
U.S. Cl. 340—283 5 Claims

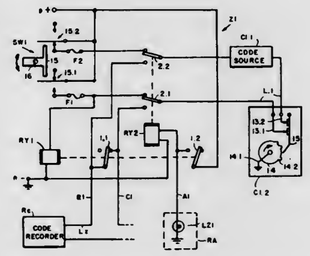


An audible alarm constituting a part of a lady's purse and so consttucted that a sudden pull or jerking force exerted on the purse handle will cause the alarm to be actuated. The alarm unit is so constructed that it will continue to operate until a part of the unit is dismantled to effect a deactivation of the alarm.

3,701,141
WARNING SYSTEM WITH PLURAL IDENTIFICATION OF SIGNALLING STATIONS

Clifton B. Andrews, North Pembroke, Mass., assignor to The Protectowire Co., Hanover, Mass.

Filed April 29, 1971, Ser. No. 138,470
Int. Cl. G08b 25/00
U.S. Cl. 340—287 10 Claims



A signalling system of the type with signalling devices stationed in protected premises and, upon actuation, transmitting a signal to a central receiving location. In the central receiving location, the system situates a plurality of zonal monitoring circuits, each of which is connected to and monitors a plurality of coded signalling devices forming a loop circuit. Each of the zonal monitoring circuits responds to reception of a coded signal by indicating through a first output path that a signal was received and by transmitting through a second output path the coded signal. At the receiving location, the receiver has an annunciator or indicator portion connecting with the first output paths of the zone circuits to indicate, for example by lighting a lamp, from which particular zone a signal originated. Also at the receiving location, a recorder portion is provided which connects in a loop with the second output paths of the zone circuits, and which both receives and records the coded signal, thereby providing a dual basis for positively identifying the location of a particular signalling device which has been actuated.

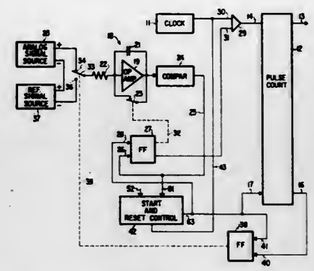
In operation, the coded signalling devices provide a signal by opening their loop circuits. The zone circuits respond to this open circuit condition by de-energizing a relay which was energized through a loop circuit, which simultaneously removes a shunt placed across the zone circuit's second output path, closes a circuit through the first output path to provide an indication that a signal has been generated, and energizes a second relay which transfers the signalling device loop circuit into connection with the zone circuit loop for transmission of the coded signal to the recorder. When the coded signal is completed, a reset switch is closed to one again energize the first relay.

3,701,142
INTEGRATING CONVERTERS WITH SYNCHRONOUS STARTING

Alexander B. Cannara, Denville, N.J., assignor to Ballantine Laboratories, Inc.

Filed March 30, 1970, Ser. No. 23,668
Int. Cl. H03k 19/28, 13/20
U.S. Cl. 340—347 NT 24 Claims

A circuit provides a reset and start pulse synchronized with a clock pulse for accurate starting and timing of the integrating process in a conventional dual-slope converter. A cycle flip-flop is randomly set to a logical one state to enable a gate to pass the next inverted pulse from a clock. Further pulses are inhibited from passing through the gate by an inhibit signal generated by a toggling flip-flop responsively to the trailing edge of the gate output pulse. The leading edge of the gate output pulse is used to reset the counter to zero, to start the integrating process and to open a gate to pass clock pulses to the counter, all substantially coincident with the first negative

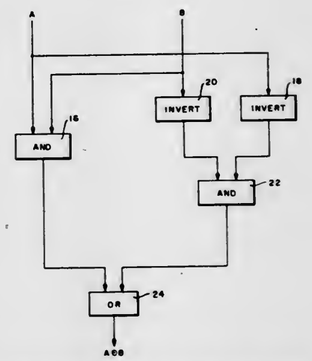


transition of a clock pulse following the setting of the cycle flip-flop to its logical one state.

3,701,143
WALSH FUNCTION GENERATOR

George G. Nacht, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 24, 1970, Ser. No. 66,418
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 2 Claims



A clock driven generator which produces desired Walsh functions in response to binary number input command signals. The input command signals are connected to be operated on by various circuitry and thereby produce output signals which are individually a particular bit of a desired Walsh function. The Walsh function is obtained by scanning the output signals.

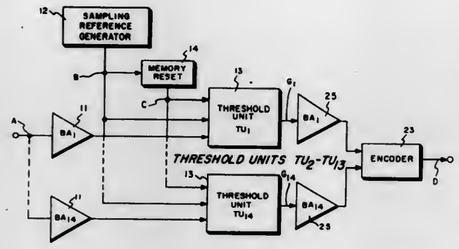
3,701,144
HIGH FREQUENCY ANALOG-TO-DIGITAL CONVERTER

Dennis E. Fineran, Santa Ana, and Samuel J. Eendley, Mountain View, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 28, 1970, Ser. No. 84,684
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 4 Claims

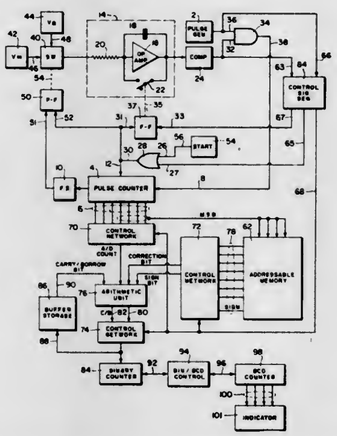
An analog-to-digital converter having a signal generator providing a sinusoidal reference signal which is to be compared to a high frequency analog signal, a plurality of threshold units each biased to trigger an output signal at a predetermined discrete level of the difference between the reference signal and the analog signal, a memory reset unit receiving the reference signal and providing a reset signal for

clearing the output signals therefrom at a predetermined time in each cycle of the reference signal, and an encoder receiving the output signals of the threshold units and converting them



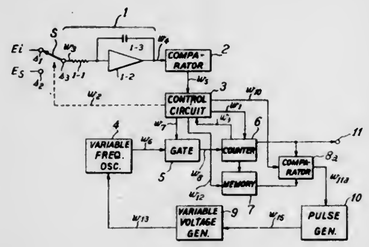
into a digital code. The time of the reset signal is determined to be after either positive or negative peak of the reference signal.

3,701,145
ANALOG TO DIGITAL CONVERTER
William P. Bergin, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 4, 1970, Ser. No. 86,766
Int. Cl. G06f 5/00; H03k 13/02; H04l 3/00
U.S. Cl. 340—347 NT **14 Claims**



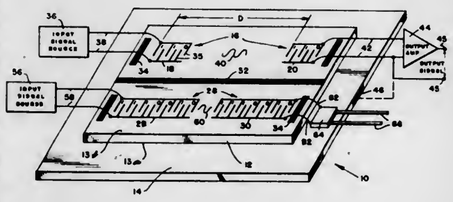
An integrating analog to digital conversion apparatus includes means whereby a non-linear input variable is time integrated for a fixed period of time. A fixed reference source of opposite polarity to said input variable is then time integrated for a variable second period of time. The second variable time period being registered in a digital pulse counter, whereby the digital output of the counter at the termination of the second time period is representative of the value of the input variable. The apparatus includes addressable memory means having stored therein digital correction data, control network means for transferring digital data between elements of the apparatus, arithmetic means for modifying, in singular bit fashion, the digital output of the pulse counter in order to effect digital linearization of the non-linear input variable. Secondary counter means operationally stores within itself the resultant modified singular data bits, whereby the digital output of the secondary counter means is representative of the linearized value of the non-linear input variable.

3,701,146
ANALOG-DIGITAL CONVERTER USING AN INTEGRATOR
Ichiro Haga, and Sieechi Tamada, both of Tokyo, Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha a/k/a Iwatsu Electric Co., Ltd.
Filed Dec. 7, 1970, Ser. No. 95,752
Claims priority, application Japan, Dec. 8, 1969, 44/97813; Dec. 8, 1969, 44/97814
Int. Cl. H03k 13/10, 13/14
U.S. Cl. 340—347 NT **4 Claims**



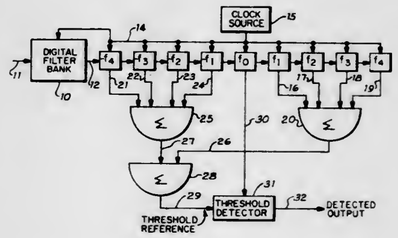
An analog-digital converter using an integrator, in which after an analog signal is integrated by the integrator during a constant time, the input of the integrator is switched to a reference voltage reverse to the polarity of the input analog signal, and the time from the switching time of the input of the integrator to the time when the output of the integrator reaches a predetermined level is measured by counting clock pulses so that the counting result corresponds to the analogue value of the input analog-signal. The clock pulses are generated by a variable frequency oscillator and the repetition frequency of the clock pulses is controlled by a compared result between the counting result of an instant period and the counting result of an immediately adjacent period until the two counting results coincide with each other, so that effect of noise of any repetition frequency superposed on the input voltage is effectively eliminated.

3,701,147
SURFACE WAVE DEVICES FOR SIGNAL PROCESSING
Harper John Whitehouse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Continuation-in-part of Ser. No. 793,148, Jan. 22, 1969, abandoned. This application Feb. 3, 1971, Ser. No. 112,165
Int. Cl. H03k 13/02
U.S. Cl. 340—347 DA **12 Claims**



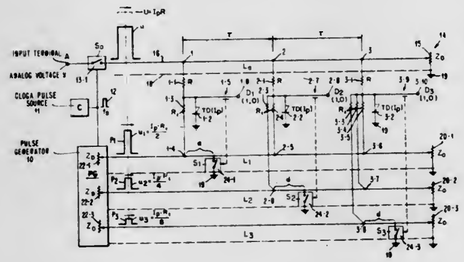
A distributed-transducer surface wave device for signal processing of the type which comprises a crystal substrate upon which is disposed at least one transducer set, including an input transducer adapted for connection to an input electrical signal and an output transducer, each transducer including at least a pair of interdigitated electrodes, the application of an electrical signal to the input transducer causing surface wave propagation on the surface of the crystal substrate, the electrodes of the transducers being aligned in a direction perpendicular to the direction of wave propagation, wherein the interdigitations of the electrodes are generally coded, for example, according to a Barker code. The surface wave device further comprises a logic decision circuit having three input connections: (1) a first input connected to the output transducer; (2) a second adapted for connection to a clock sync source; and (3) a third adapted for connection to a source of binary signals; the output of the logic decision circuit being connected to the input transducer. A function of the logic devision circuit is to enable an incoming pulse from the binary signal source, if present, to be transmitted to the input transducer, otherwise to enable pulses from the output transducer to be circulated through the transducer set, all pulses being clocked by signals from the clock sync source. One of the main functions of the acoustic wave devices of this invention is to serve as a delay line for the propagating surface wave.

3,701,149
FREQUENCY AVERAGING CONTROLLED FALSE ALARM RATE (CFAR) CIRCUIT
Terence R. Patton, Severna Park, and Melvin B. Ringel, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 2, 1971, Ser. No. 159,311
Int. Cl. G01s 7/34
U.S. Cl. 343—5 DP **4 Claims**



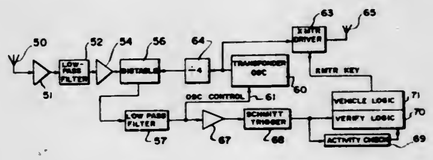
A frequency averaging CFAR circuit having a digital filter bank for receiving radar doppler echoes that are conducted sequentially into serially connected metal oxide semiconductor (MOS) type delay shift register networks with the outputs of shift registers on opposite sides of a center frequency register being summed to produce an average value applied to a threshold circuit together with the output of the center frequency register output to cause the threshold level to vary in accordance with the averaged noise and clutter signals and to detect a target signal whenever the output of the center frequency register exceeds the threshold.

3,701,148
ANALOG TO DIGITAL CONVERTER
Armin H. Frei, Ruschlikon, Zurich, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 817,760, April 21, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 202,034
Claims priority, application Switzerland, June 20, 1968, 9192/68
Int. Cl. H03k 13/06, 13/17; H04l 3/00
U.S. Cl. 340—347 AD **7 Claims**



This disclosure provides an analog to digital converter comprising *n* tunnel diode measuring circuits connected at regular intervals to a transmission line. One end of the line is tied to a gate circuit which samples analog voltages under control of a clock signal; the other end of the line is terminated in its characteristic impedance. The measuring circuits are connected in accordance with their ordinal numbers to n measuring transmission lines supplying calibrated measuring pulses derived by a pulse generator from the clock signal. In each measuring line, a short circuiting switch is inserted after the first connection of the line to a respective measuring circuit, each switch being connected for control to the digital output of the corresponding measuring circuit.

3,701,150
RF TRANSMISSION AND DETECTION SYSTEM
John S. Dame, Oak Park, Ill., assignor to Motorola Inc., Franklin Park, Ill.
Filed June 11, 1970, Ser. No. 45,293
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 SS **13 Claims**

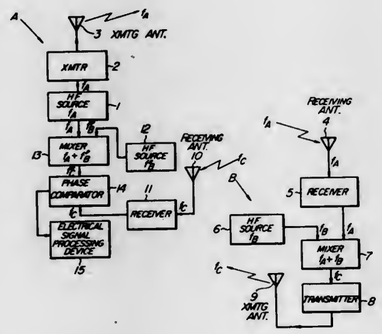


An interrogation station includes a master frequency oscillator controlled to perform as an FSK oscillator for the transmission of data from the interrogation station. In addition this oscillator provides an injection frequency for the mixer of an interrogation station receiver. In a transponder, an oscillator is locked to a multiple of the received interrogation station signal frequency and is used as the transponder transmitter oscillator for controlling the frequency of signals transmitted from the transponder to the interrogation station receiver.

3,701,151
METHOD AND APPARATUS FOR MEASURING THE DISTANCE OF TRAVEL AND THE SPEED OF A MOVING OBJECT

Kazuo Sato, and Takashi Aoki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo-shi, Japan

Filed Feb. 23, 1971, Ser. No. 118,036
Int. Cl. G01s 9/24, 9/46
U.S. Cl. 343—9 3 Claims



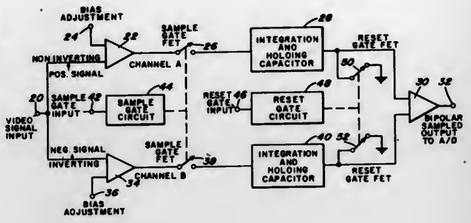
A method and apparatus for measuring the distance traveled by and the speed of a moving object incorporating a frequency mixing system, in which both a transmitter and a receiver are mounted on a moving object to be measured and also at a fixed point so that, when one of the moving objects and the fixed point is assumed as a first point and the other as a second point, a radio wave having a first reference frequency f_A and transmitted from the transmitter at the first point is received at the second point where a secondary frequency f_C is generated with the sum of the first reference frequency f_A received and an internally-generated second reference frequency f_B, and this secondary frequency f_C is then transmitted from the second point and is received at the first point where this received wave of the frequency f_C is mixed with another secondary frequency having the same frequency as that of the secondary frequency f_C, which is generated with the sum of the first reference frequency f_A and another second reference frequency of the same frequency as that of the second reference frequency f_B which is generated at the first point, so as to produce crests or valleys in the resultant waves, whereby in accordance with variations of the distance traveled between the first and second points, and information related to the wavelength of the secondary frequency f_C is obtained which is then quantized to measure the distance traveled by and the travelling speed of the moving object.

3,701,152
BIPOLAR SAMPLE AND HOLD CIRCUIT

Harold K. Howard, Arroyo Grande, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 20, 1970, Ser. No. 56,562
Int. Cl. G01s 9/02, 9/22
U.S. Cl. 343—16 M 7 Claims

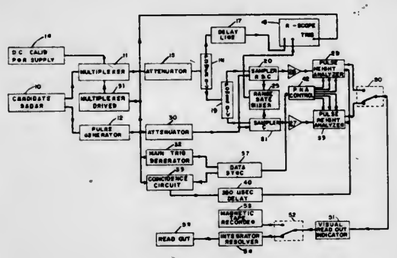
A bipolar sample and hold circuit which samples raw video signal returns from a radar, integrates the energy of the signal during that sample and holds the integrated sample long enough for an analog to digital (A/D) converter to convert the signal energy to a digital number.



3,701,153
RADAR TESTING IN A CLUTTER ENVIRONMENT

Richard P. Gagliardi, China Lake, Calif.; Allen F. Beans, Ivyland; Alfred M. Eddowes, Doylestown, and Herbert Greenblatt, Philadelphia, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 4, 1971, Ser. No. 112,526
Int. Cl. G01s 9/02
U.S. Cl. 343—17.7 9 Claims



An analyzer receives an input signal from a candidate radar and distinguishes by means of timed pulses between a signal in clutter and an adjacent clutter signal. A histogram is formed of each of the signals which shows the amplitude of the received signals as a function of the frequency of the amplitude signals. The data of this histogram is then stored for further evaluation on the performance of the candidate radar.

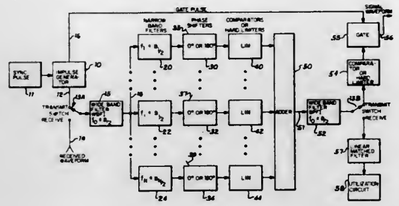
3,701,154
MATCHED FILTER

Edward J. McKinney, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 9, 1971, Ser. No. 122,403
Int. Cl. G01s 7/36, 9/23
U.S. Cl. 343—18 E 3 Claims

A matched filter having a frequency band signal input which is coupled through a wide band filter, through a plurality of narrow band filters coextensive in frequency with the wide band filter to phase code and decode the signal, through a similar number of hard limiters or comparators to an adder,

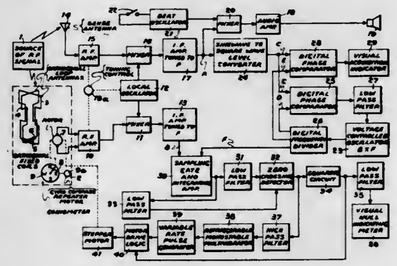
and through a band pass filter, all between transmit-receive (T-R) switches of an electromagnetic echo ranging target detection system to detect targets in noise interference and countermeasure environments.



3,701,155
AUTOMATIC DIRECTION FINDER

Henry G. Adams, West Orange, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 26, 1970, Ser. No. 84,037
Int. Cl. G01s 3/42
U.S. Cl. 343—117 R 16 Claims

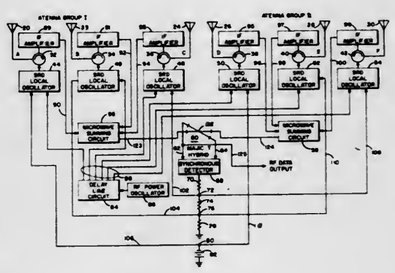


A first radio frequency (RF) intermediate frequency (IF) section is coupled to a sense antenna which receives an RF signal to which direction is to be determined. The IF output signal of this first section is used to phase lock a reference oscillator to this IF output signal. The reference oscillator operates at a frequency eight times the IF frequency to prevent spurious signals from appearing in the circuitry. A digital divide-by-eight frequency divider provides a first reference signal for phase locking the oscillator, a gate signal and a second reference signal which, together with the IF output of the first section, provides a visual indication of phase lock. A goniometer including a rotor and a pair of orthogonally disposed loop antennas also receive the RF signal for application to a second RF/IF section. The IF output signal of the second section is gated by the gate signal into an integrating amplifier. The output signal of the integrating amplifier is detected by a zero crossing detector whose output signal is applied to a squaring circuit and also a monostable multivibrator whose output signal drives a variable frequency (rate) pulse generator. The output signal of squaring circuit and the output signal of the pulse generator are operated on by logic circuitry whose output signal controls a stepper motor. The stepper motor mechanically adjusts the rotor of the goniometer to produce a null in the IF output signal of the second section. The rotor also moves a pointer to indicate relative bearing with respect to the bow. A gyro compass repeater may move a calibrated card or ring to display the true bearing of the signal.

3,701,156
ANTENNA ARRAY BEAM SCANNING SYSTEM

Derling G. Killion, San Diego, Calif., assignor to Ryan Aeronautical Company, San Diego, Calif.

Filed Aug. 18, 1969, Ser. No. 850,973
Int. Cl. H01q 3/26
U.S. Cl. 343—117 A 9 Claims

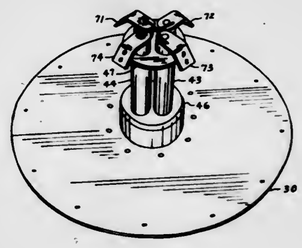


An antenna array beam scanning system in which the antenna system beam pointing positions are scanned by providing a typical discriminator response for targets located at different angles to a given phase front alignment. The discriminator output is used to progressively phase the antenna array through step recovery diode local oscillators by using the discriminator output as a DC bias to linearly phase shift the step recovery diode local oscillators and make the antenna array beam track a target.

3,701,157
HELICOPTER UHF ANTENNA SYSTEM FOR SATELLITE COMMUNICATIONS

Jerome W. Uhrig, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed June 3, 1971, Ser. No. 149,495
Int. Cl. H01q 1/28
U.S. Cl. 343—708 2 Claims

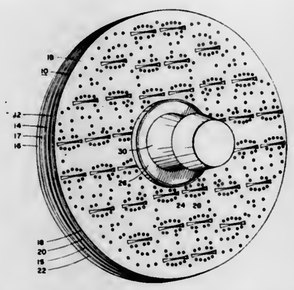


A UHF antenna comprising crossed dipoles in the shape of drooped bow ties, encased by a polyester fiberglass laminated cone, positioned above and rotating with the blades of the helicopter, and orthogonally fed by a coaxial transmission line running through the hollow rotating mast provides an antenna for overhead signal transmission and reception. A coaxial rotary joint is placed inside the mast at the lower end to make a rotating electrical connection with the feed line.

3,701,158
DUAL MODE WAVE ENERGY TRANSDUCER DEVICE

Robert Henry Johnson, Scottsdale, Ark., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 22, 1970, Ser. No. 4,975
Int. Cl. H01q 13/01
U.S. Cl. 343—725 9 Claims

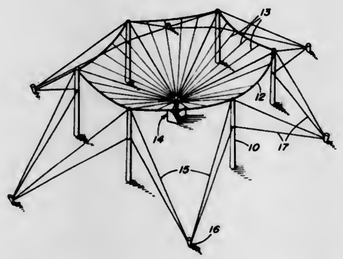


A compact, efficient and inexpensive unitary structure comprising a circular conductive sheet having dipole slots therein and a transducer device operative at a wavelength different than that of the dipole slots centered on the sheet and fixed thereto and extending perpendicular to the sheet is disclosed for sensing both radio waves reflected from a target and infrared or other rays emanating from the target.

3,701,159
DISCONE ANTENNA

Peter Simonds, Ottawa, Ontario, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of the National Defence

Filed Nov. 8, 1971, Ser. No. 196,279
Claims priority, application Canada, Dec. 18, 1970, 101,066
Int. Cl. H01q 1/36
U.S. Cl. 343—745 11 Claims

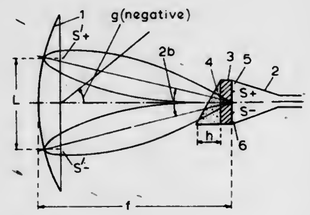


The antenna structure disclosed is of the discone type and comprises six support towers arranged at the vertices of a hexagon. Active element supporting cables extend between the towers along the sides of the hexagon. A plurality of active elements radiate outwardly from a feed point located centrally of the hexagon to terminate on the supporting cables. The supporting towers are guyed by a plurality of guys anchored at six anchor points located on lines of intersection of vertical planes through the supporting cables. The guys extend outwardly of the hexagon within these vertical planes. The supporting tower and guying arrangement is extremely simple compared to prior arrangements. Furthermore, the feed point is supported above a platform raised above actual ground level and a plurality of ground wires extend radially outward of the platform and downwardly therefrom with the major portion of their length being buried beneath the ground. This eliminates problems of high frequency noise adjacent actual ground level and also eliminates problems of wind blown refuse, snow, etc., interfering with proper operation of the antenna. The antenna may be tuned by adjusting the height of the feed point above the platform and by means of a variable capacitor in the feed line to the antenna.

3,701,160
RADAR MONOPULSE ANTENNAS WITH CONVERTING POLARIZATION

Daniel Edmond Beguin, Saint-Prix, France, assignor to International Standard Corporation, New York, N.Y.

Filed June 23, 1971, Ser. No. 155,940
Claims priority, application France, June 25, 1970, 7023592
Int. Cl. H01q 19/00
U.S. Cl. 343—755 8 Claims

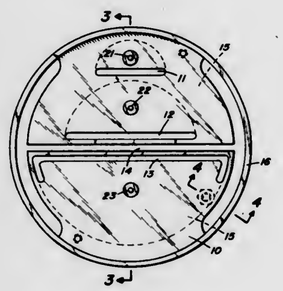


A monopulse antenna comprising an assymetrical parabolic reflector illuminated by a monopulse horn. A circular polarizing array cover adapted for selective emplacement over the horn aperture is provided. Changing from linear to circular polarization by placing the polarizer, by itself, over the horn produces an angular shift in antenna boresite (axis). A dielectric lens is provided for insertion over the polarizer to introduce a linear corrective phase shift, thereby eliminating the said axis shift.

3,701,161
FOUR BAND SLOT ANTENNA

Benjamin F. Gregory, China Lake, Calif., assignor to Trak Microwave Corporation, Tampa, Fla.

Filed May 11, 1970, Ser. No. 36,160
Int. Cl. H01q 13/10
U.S. Cl. 343—770 6 Claims

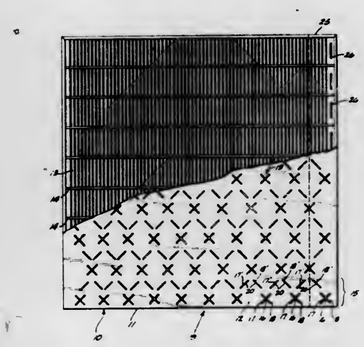


A multiple radiator microwave antenna comprising four separate discretely tuned cavity-backed slot antennas for providing a unidirectional radiated RF energy field in a narrow beam along a common axis at four discrete frequencies.

3,701,162
PLANAR ANTENNA ARRAY

Arthur F. Seaton, Palos Verdes Estates, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed March 24, 1964, Ser. No. 354,341
Int. Cl. H01q 13/10
U.S. Cl. 343—771 11 Claims

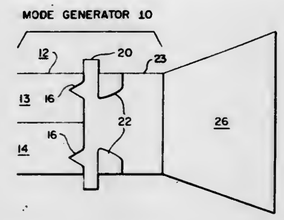


A circularly polarized planar array of slot antenna elements provide a pencil-beam pattern substantially perpendicular to the plane of the array.

3,701,163
MULTI-MODE, MONOPULSE FEED SYSTEM

Joseph P. Grabowski, Willingboro, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 9, 1971, Ser. No. 196,925
Int. Cl. H01q 13/00
U.S. Cl. 343—786 9 Claims



A wide band multi-mode feed device, capable of propagating a TE_{10} and a hybrid shaping mode is provided. A narrow ridge hybrid mode generator, disposed between a mode cavity and a mode phasor, controls a sum pattern E-plane shaping mode. The narrow ridge provides only a negligible coupling to the TE_{20} mode since the narrow ridges are placed only in the null regions of the TE_{20} mode. The mode cavity and an inverse mode launcher control unwanted cross polarization resulting from the TE_{11} and TM_{11} modes. This device is most useful for high efficiency monopulse antenna systems and especially for systems where the accurate gathering and analysis of tracking data is a prime requisite.

DESIGNS

OCTOBER 24, 1972

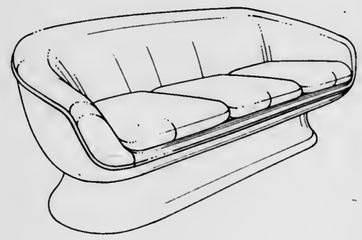
224,949
BROOM COVER
Mary J. Schildknecht, 6202 Upper Hunter Trace Road, Louisville, Ky. 40216
Filed Dec. 7, 1970, Ser. No. 26,333
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



224,950
ROCKING CHAIR
Paavo Gunnar Nuortie, 54 Kalevankatu C, Helsinki, Finland
Filed Oct. 7, 1968, Ser. No. 13,871
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—50



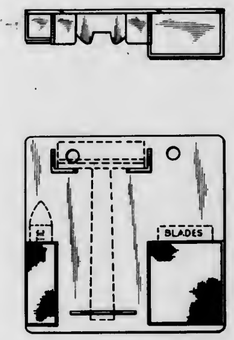
224,951
SOFA
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Mar. 25, 1971, Ser. No. 128,229
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—63



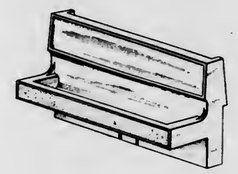
224,952
CHAIR
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Mar. 25, 1971, Ser. No. 128,228
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—75



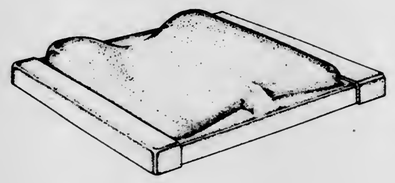
224,953
SHAVING CADDY
John C. Stephenson, 1257 Armacost Ave., Los Angeles, Calif. 90025
Filed May 25, 1971, Ser. No. 146,856
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—88



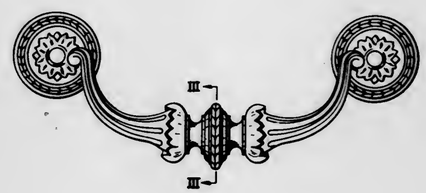
224,954
FACE PANEL FOR A CARD CATALOG DRAWER
Stephen F. McKeon, Utica, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 19, 1971, Ser. No. 107,878
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—192



224,955
STADIUM SEAT OR SIMILAR ARTICLE
Max E. Tipton, Easton, Pa., assignor to Seating Company of America Inc., Easton, Pa.
Filed Dec. 18, 1970, Ser. No. 26,556
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—197



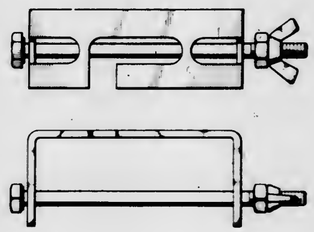
224,956
DRAWER PULL
William Doyle Watt, Jr., Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed June 25, 1971, Ser. No. 157,070
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—171



224,957
RING TRAVELER
Charles H. Dauray, Seekonk, and George F. Bliss, East Douglas, Mass., assignors to U.S. Ring Traveler Company, Cranston, R.I.
Filed Oct. 12, 1971, Ser. No. 188,659
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248



224,958
SAFETY HANGER FOR TENSION SPRINGS
Richard D. Smith, 127 16th St., Boone, Iowa 50036, and Ronald S. Du Bois, 790 Spalding, Thousand Oaks, Calif. 91360
Filed Aug. 6, 1970, Ser. No. 24,357
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—263



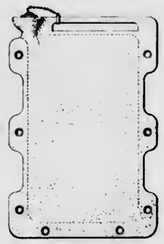
224,959
RING TRAVELER
Charles H. Dauray, Seekonk, and George F. Bliss, Worcester, Mass., assignors to U.S. Ring Traveler Company, Cranston, R.I.
Filed Oct. 12, 1971, Ser. No. 188,658
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248



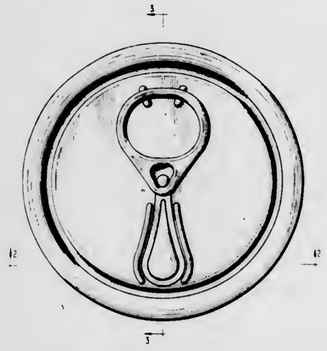
224,960
RETAINING STRAP FOR ELECTRICAL CABLES
Robert William Wilson, Northel House, Wenlock Way, England
Filed Nov. 30, 1970, Ser. No. 26,218
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252



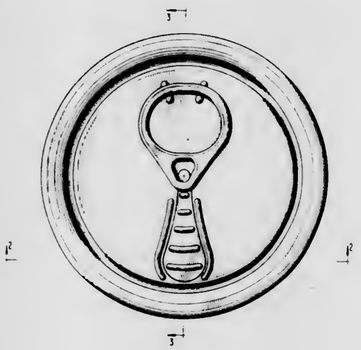
224,961
FLEXIBLE BAG FOR LIQUID STORAGE
Kenneth D. Sears, Box 225, West Yellowstone, Mont. 59758
Filed Apr. 15, 1971, Ser. No. 134,546
Term of patent 14 years
Int. Cl. D9—*02;* D24—*04*
U.S. Cl. D9—182



224,962
END CLOSURE FOR A CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed May 26, 1971, Ser. No. 147,287
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255



224,963
END CLOSURE FOR A CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed May 26, 1971, Ser. No. 147,288
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255



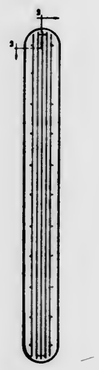
224,964
TAB OPENER FOR A CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed May 26, 1971, Ser. No. 147,289
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—256



224,965
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,351
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 29, 1986, has been disclaimed
Int. Cl. D9—*03*
U.S. Cl. D9—219



224,966
BACKUP PLATE FOR A PNEUMATIC VEHICLE IMPACT BUMPER
Wilbur L. Hiatt, 4508 Commonwealth Drive, Williamsburg Apt. N., Indianapolis, Ind. 46220
Filed May 6, 1971, Ser. No. 141,078
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



224,967
PNEUMATIC VEHICLE IMPACT BUMPER
Wilbur L. Hiatt, 4508 Commonwealth Drive, Williamsburg Apt. N., Indianapolis, Ind. 46220
Filed May 6, 1971, Ser. No. 141,079
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



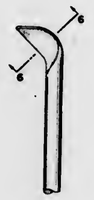
224,968
MOUNTING PLATE FOR A PNEUMATIC VEHICLE IMPACT BUMPER
Wilbur L. Hiatt, 4508 Commonwealth Drive, Williamsburg Apt. N., Indianapolis, Ind. 46220
Filed May 6, 1971, Ser. No. 141,076
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



224,969
CASING FOR A PNEUMATIC VEHICLE IMPACT BUMPER
Wilbur L. Hiatt, 4508 Commonwealth Drive, Williamsburg Apt. N., Indianapolis, Ind. 46220
Filed May 6, 1971, Ser. No. 141,077
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6

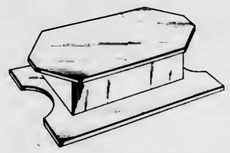


224,970
DENTAL RETAINER CLASP
Dennis M. Burnett, 6231 Hillside Drive, El Sobrante, Calif. 94803
Filed Dec. 7, 1970, Ser. No. 26,328
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1



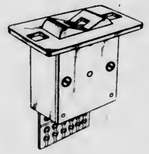


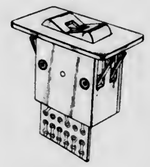
224,971
POWER SUPPLY REGULATOR
Richard Projain, Syosset, and Robert Gold, St. James, N.Y., assignors to Lamda Electronics Corporation, Huntington, N.Y.
Filed Mar. 4, 1971, Ser. No. 121,228
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



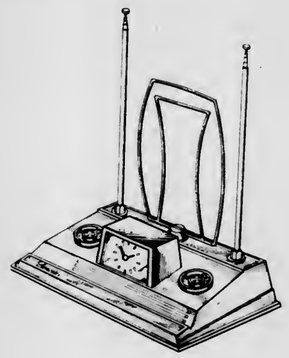


224,972
DIGITAL SWITCH
Hiroji Fujimoto, Kanagawa, Japan, assignor to Fujisoku Electric Co., Ltd., Kanagawa-ken, Japan
Filed Mar. 18, 1971, Ser. No. 125,925
Claims priority, application Japan Oct. 30, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

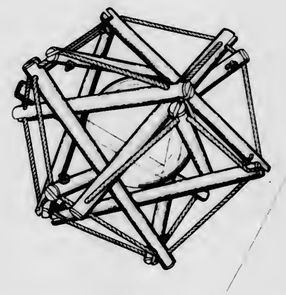




224,973
COMBINED CLOCK AND INDOOR TELEVISION ANTENNA
John Franzone, 2301 York Road, Timonium, Md. 21093
Filed June 3, 1971, Ser. No. 149,874
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



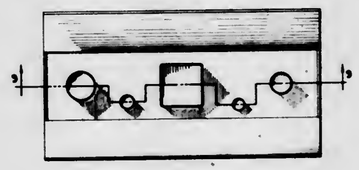
224,974
GAME PUZZLE
Geoffrey A. Mogilner, 2070 California St., San Diego, Calif. 92110, and Rodney D. Johnson, San Diego, Calif.; said Johnson assignor to said Mogilner
Filed Dec. 7, 1970, Ser. No. 26,312
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



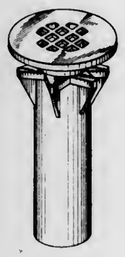
224,975
UNCOUPLING DEVICE FOR TOY RAILROAD CARS
Earl W. Harding, 220 N. Montebello Blvd., Montebello, Calif. 90640
Filed Apr. 19, 1971, Ser. No. 135,528
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



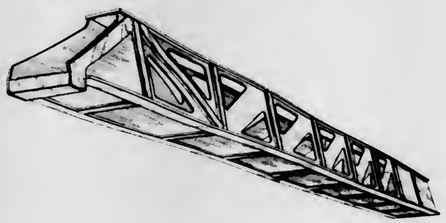
224,976
GAME TARGET BOX
Milo W. Klingerman, 2807 W. Wyoming St., Indianapolis, Ind. 46221
Filed Jan. 29, 1971, Ser. No. 111,176
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



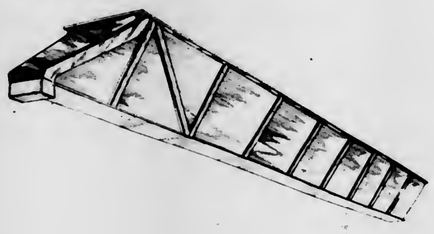
224,977
CASING FOR TOY VOICE
Joseph Lieberman, % The Fry-Lieb Co., Inc., 487 Broadway, Brooklyn, N.Y. 10013
Filed Mar. 19, 1971, Ser. No. 126,396
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



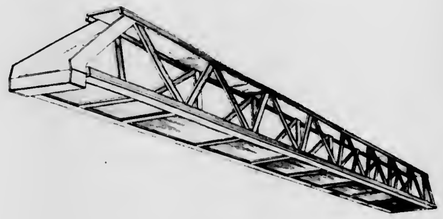
224,978
CANTILEVERED CRANE BOOM SECTION
Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed June 25, 1971, Ser. No. 157,073
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D41—1



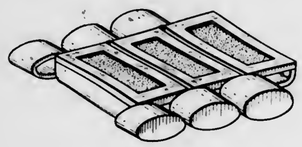
224,979
SECTION FOR A TELESCOPING CRANE BOOM
Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed June 25, 1971, Ser. No. 157,074
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D41—1



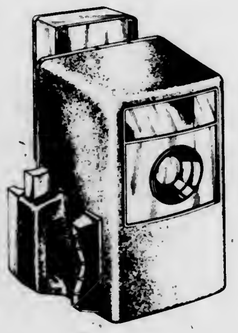
224,980
BOOM SECTION FOR A CANTILEVERED CRANE BOOM
Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed June 25, 1971, Ser. No. 157,072
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D41—1



224,981
LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, Hong Kong, assignor to Yuen Sang Hardware Co., Ltd., Hong Kong
Filed Nov. 13, 1970, Ser. No. 25,967
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



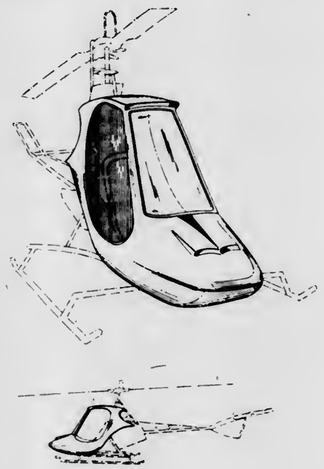
224,982
PHOTOGRAPHIC CAMERA
James M. Conner, Mamaroneck, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 17, 1971, Ser. No. 154,258
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



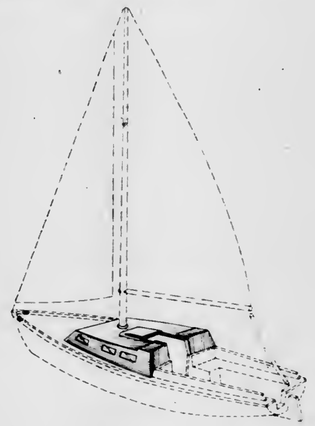
224,983
PADDLE
Hugh R. Bolen, Jr., Box 313, RFD 5, Lexington, Va. 24450
Filed Nov. 2, 1970, Ser. No. 25,790
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1



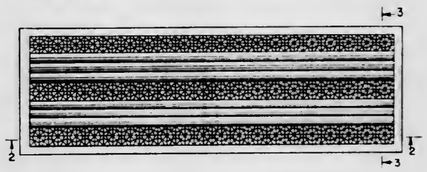
224,984
CABIN FOR A HELICOPTER
Buford J. Schramm, Tempe, Ariz., assignor to Rotoway, Inc., Tempe, Ariz.
Filed Mar. 4, 1971, Ser. No. 121,225
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



224,985
CABIN FOR SAILBOAT OR THE LIKE
Andrew T. Kostanecki, New Canaan, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.
Filed Sept. 8, 1970, Ser. No. 24,863
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



224,986
COMBINED REFLECTOR AND LENS
Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Esna Corporation, New York, N.Y.
Filed June 9, 1971, Ser. No. 151,611
Term of patent 14 years
Int. Cl. D29—*99*; D26—*99*
U.S. Cl. D72—1



224,987
OXYGEN SENSOR
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 1, 1971, Ser. No. 194,777
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D83—1



224,988
DISPOSABLE STETHOSCOPE TRANSDUCER
Sydney Hudspith, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 1, 1971, Ser. No. 194,775
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



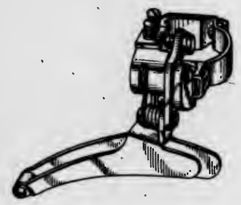
224,989
SWAB FOR COSMETIC APPLICATION
Allan A. Costa, 682 Udall Road, West Islip, N.Y., and Helmut Michel, Hillfield, Mount Park, Harrow-on-the-Hill, Middlesex, England
Filed July 16, 1969, Ser. No. 18,232
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10



224,990
FOLDED UMBRELLA
Robert Brooks, Great Neck, N.Y., assignor to The L. P. Henryson Co., Inc., New York, N.Y.
Filed Dec. 2, 1970, Ser. No. 26,259
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3



224,991
BICYCLE CHAIN WHEEL SHIFTER
Lucien Charles Hippolye Juy, 75 Rue General Fauconnet, Dijon, France
Filed Apr. 15, 1971, Ser. No. 134,544
Claims priority, application France Oct. 16, 1970
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aagaard, Einar Andreas; Greeekes, Johannes Anton; and Van Den Enden, Adrianus Wilhelmus Maria, to U.S. Philips Corporation. Hybrid circuit. 3,700,831, Cl. 179-176.0nc.

Aasen, Torulf F.; Mogil, Bernard; and Sepulveda, William, Jr., to Copystatics Manufacturing Corporation. Document turn-around device for copying machine. 3,700,231, Cl. 271-64.000.

AB Auto Industri: *See—*
Rex, Gert Ingmar, 3,700,183.

Abbott Coin Counter Co., Inc.: *See—*
Conant, Barton C.; and Thomas, James A. (said Conant assor. to), 3,699,981.

Abbott, Frank R., to United States of America, Navy. Ferroelectric ceramic stack. 3,700,939, Cl. 310-9.800.

Abe, Isao; Hirose, Tatsuo; and Ohshima, Kotaro, to Japan Monopoly Corporation, The and Tokyo Shibaura Electric Co., Ltd. Method for killing tobacco leaf bug inhabitants and their eggs. 3,699,976, Cl. 131-121.000.

Abe, Shigeo; and Takayama, Kenichiro. Process for producing L-valine. 3,700,556, Cl. 195-28.00r.

Abel, Edward Peter: *See—*
Brust, David Philip; Minsk, Louis Morton; and Abel, Edward Peter, 3,700,635.

Abex Corporation: *See—*
Adams, Cecil E., 3,700,396.

ABG-WERKE G.m.b.H.: *See—*
Leister, Gerhard, 3,699,855.

Abhyankar, Krishna D India: *See—*
Low, George M, Deputy Administrator of the; National Aeronautics andSpacadministration with; respect to an invention of; Fymat, Alain L; and Abhyankar, Krishna D India, 3,700,334.

Abkowitz, Stanley; Siergiej, John M.; and Regan, Ronald D., to Abkowitz, Stanley, mesne. Titanium-nickel alloy manufacturing methods. 3,700,434, Cl. 75-214.000.

Abkowitz, Stanley, mesne: *See—*
Abkowitz, Stanley; Siergiej, John M.; and Regan, Ronald D., 3,700,434.

A.C.I. Operations Pty., Ltd.: *See—*
Barton, Patrick William, 3,700,470.

Acker, Norbert K., to Scanner, Inc. Device for machine reading of information without manipulation of the information carrier. 3,701,098, Cl. 340-146.30h.

Acle, Luis, Jr.: *See—*
Boram, William R.; and Acle, Luis, Jr., 3,700,649.

Acme Highway Products Corporation: *See—*
Wicks, Harry O., III, 3,699,853.

Acree, Elick H.; Case, Forrest Neil; and Stephens, Nancy H., to United States of America, Atomic Energy Commission. Method for mass tagging sand with a radioactive isotope. 3,700,602, Cl. 252-301.10r.

Activated Sludge Limited: *See—*
Branton, Eric Sidney, 3,700,197.

Adachi, Toshio; Hayashi, Kiyohide; and Okura, Yukio, to Daido Seiko Kabushiki Kaisha. Ingot casting apparatus. 3,700,026, Cl. 164-256.000.

Adachi, Toshio; Funakiskp, Sayoko; Furuya, Akio; and Uchida, Masakatsu, to Dai Nippon Toryo Company, Ltd. Resinous composition. 3,700,624, Cl. 260-31.600.

Adams, Albert John. Vehicle seat support. 3,700,203, Cl. 248-419.000.

Adams, Cecil E., to Abex Corporation. Electro-hydraulic flow control circuit. 3,700,396, Cl. 91-449.000.

Adams, Henry G., to International Telephone and Telegraph Corporation. Automatic direction finder. 3,701,155, Cl. 343-117.00r.

Adams, Willi: *See—*
Schruff, Horst; Lehmann, Helmut; Siefen, Jakob; Mathner, Hermann; Adams, Willi; and Weiss, Gunter, 3,700,531.

Adamski, Maximilian: *See—*
Levin, Paul; and Adamski, Maximilian, 3,699,881.

Addor, Roger Williams; and Drabb, Thomas Walter, Jr., to American Cyanamid Company. Phenylthiovinyl phosphorothioates as insecticides and acaricides. 3,700,772, Cl. 424-216.000.

Adler, Karl-Heinz; Locher, Johannes; Lemanczyk, Rudolf; and Schonart, Edgar, to Bosch, Robert, G.m.b.H. Fail-safe fuel injection control arrangement for internal combustion engines. 3,699,935, Cl. 123-102.000.

Adler, Karl-Heinz; Domann, Helmut; and Locher , Johannes, to Bosch, Robert, GmbH. Amplitude stabilized complementary transistor oscillator. 3,701,041, Cl. 331-65.000.

Adler, Robert; and Korpel, Adrianus, to Zenith Radio Corporation. Optical detecting systems for sensing variations in the lateral motion of light rays. 3,700,903, Cl. 250-217.000.

Adler, Wilfried: *See—*
Nagel, Horstmar; Berg, Markus; Lohr, Albrecht; and Adler, Wilfried, 3,700,600.

Advanced Drainage Systems, Inc.: *See—*
Sixt, Marty E., 3,699,684.

Advanced Management Engineering & Research Company: *See—*
Glissendorf, Wilmer E., 3,700,053.

Aero-Flow Dynamics, Inc. (The Wing Company Division): *See—*
Creuz, Walter R., 3,701,139.

Aerocoat S.A.: *See—*
Wanner, Maurice Paul; and Wallis, Neil Rudolf, 3,700,389.

Aerojet-General Corporation: *See—*
Depree, David O., 3,700,592.
Eggington, Wilfred J., 3,700,065.

Aeronautics and Space Administration with respect: *See—*
Fletcher, James C., Administrator of The National; Aeronautics and Space Administration with respect; to an invention of; List, William F.; and Farnsworth, David L., 3,700,961.

Agence Nationale de Valorisation de la Recherche: *See—*
Bonnier, Etienne; Allibert, Colette; Driole, Jean; and Wicker, Alain, 3,700,428.

Ager, Johnwalter Albert: *See—*
Jennings, Brian Michael; and Ager, Johnwalter Albert, 3,700,167.

Agfa-Gevaert Aktiengesellschaft: *See—*
Schruff, Horst; Lehmann, Helmut; Siefen, Jakob; Mathner, Hermann; Adams, Willi; and Weiss, Gunter, 3,700,531.
Wagner, Karl; and Von Fischern, Bernard, 3,699,857.
Winkler, Alfred, 3,699,860.

Agnew, James Malcolm, to Coal Industry (Patents) Limited. Underframes for longwall mineral mining machines. 3,700,284, Cl. 299-45.000.

Ahlquist, Norman C.: *See—*
Charlson, Robert J.; and Ahlquist, Norman C., 3,700,333.

Ahrns, Wilbur C.; Sweeney, David F.; and Dannatt, Hugh St., to Singer Company, The. Pawl actuator and locking mechanism for impact contact keyboard. 3,700,087, Cl. 197-9.00b.

Air King Corporation: *See—*
Bobrick, Mitchell, 3,700,885.

Air Preheater Company, Inc., The: *See—*
Gach, Francis X.; Fanton, Ralph E.; and Hazzard, Noel D., 3,699,905.

Air Products and Chemical, Inc.: *See—*
Beale, John H.; and Smith, William Mayo, Jr., 3,700,632.

Air Reduction Company, Inc.: *See—*
Parks, Charles F., 3,700,606.

Ajinomoto Co., Inc.: *See—*
Shiio, Isamu; and Sato, Hiroko, 3,700,559.

Akashiba, Takeo: *See—*
Suzuki, Saburo; Isono, Kiyoshi; Nagatsu, Junsaku; Akashiba, Takeo; and Sasaki, Shigeki, 3,700,655.

Aker, Walter W.: *See—*
Naydan, Theodore T.; and Aker, Walter W., 3,700,169.

Akiyama, Hideaki, to Ricoh Co., Ltd. Automatic flash bulb triggering device for use in ever-set type electronic shutter. 3,699,859, Cl. 95-11.50r.

Aktermatt, Hans, to Ciba-Geigy AG. Process for the manufacture of aminoanthraquinones. 3,700,700, Cl. 260-371.000.

Aktiebolaget Kalle-Regulatorer: *See—*
Enarsson, Knut, 3,700,246.

Aktiebolaget Svenska Flaktfabriken: *See—*
Larkfeldt, Birger, 3,699,871.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Kuhnen, Gottfried, 3,699,641.

Alderfer, Sterling W., to Steelastic Company, The. Apparatus for producing helically formed filaments. 3,700,012, Cl. 140-149.000.

Alfa-Laval AB: *See—*
Strom, Sven O. E., 3,699,923.

Algoma Steel Corporation, The: *See—*
Nanne, Silvio Edward; and Moody, Renville O., 3,700,347.

Allam, James N., to Leesona Corporation. Chuck. 3,700,249, Cl. 279-2.000.

Allegheny Ludlum Steel Corporation: *See—*
Ramachandran, Sundaresan, 3,700,429.

Allen, William Glenn. Method for implanting natural or synthetic fibers into living tissue. 3,699,969, Cl. 128-330.000.

Allgeyer, Guy H.; and Foote, James B., to Owens-Illinois, Inc. Pallet. 3,699,902, Cl. 108-58.

Allibert, Colette: *See—*
Bonnier, Etienne; Allibert, Colette; Driole, Jean; and Wicker, Alain, 3,700,428.

Allied Chemical Corporation: *See—*
Anello, Louis G.; and Sweeney, Richard F., 3,700,646.

Kastenbein, Ernest L.; and Geltman, Gerald L., 3,700,597.
Sweeney, Richard Francis; and Yao, Charles Cheng-Yu, 3,700,733.

Allis-Chalmers Corporation: *See—*
Attia, Edward A., 3,700,842.
Boersma, Richard E., 3,700,383.
Jones, Elborn W., Jr., 3,700,256.
Scheinkoenig, Robert J.; and Haupt, Robert C., 3,700,259.

Allis-Chalmers Manufacturing Company: *See—*
Berg, David A., 3,700,044.
Garnett, Donald, 3,700,062.
Gilmore, Thomas P., 3,701,013.
Stich, Frederick A., 3,700,919.
Voth, James W., 3,699,820.

Alpha Press Electronics, Inc.: *See—*
Gruenwald, Bjorn J., 3,700,973.

Altau, Karl, to Du Pont de Nemours, E. I., and Company. Coated synthetic organic polymer fiber. 3,700,491, Cl. 117-138.8ua.

Alth, Max. Self-starting synchronous motors. 3,700,942, Cl. 310-164.000.

Alto Corporation: *See—*
Maude, Stanley Morgan, 3,700,129.

Aluminum Company of America: *See—*
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., 3,700,101.

ALZA Corporation: *See—*
Zaffaroni, Alejandro, 3,699,951.
Zaffaroni, Alejandro, 3,699,963.

Amann, Herbert; and Bader, Erich, to Asahi Glass Co., Ltd. Method for making polyoxymethylenes. 3,700,650, Cl. 260-67.0fp.

Amato, Richard A., to North American Rockwell Corporation. Electrostatos spinning head. 3,699,765, Cl. 57-58.890.

American Cyanamid Company: *See—*
Addor, Roger Williams; and Drabb, Thomas Walter, Jr., 3,700,772.
Diehl, Robert Eugene; and Magee, Richard Joseph, 3,700,674.
Haacke, Gottfried C.; and Beegle, Lindley Clair, 3,700,499.
Kunstmann, Martin Paul; and Porter, John Norman, 3,700,768.
Martin, John Henry Edward James; and Porter, John Norman, 3,700,769.
Murray, Robert William, 3,700,626.
Remers, William Alan; Gibs, Gabriel Joseph; and Weiss, Martin Joseph, 3,700,684.
Schmitt, Joseph Michael; Sherry, Jeffrey Rufus; and Robustelli, Albert George, 3,700,754.
Takacs, Edward Andrew, 3,700,746.
Takacs, Edward Andrew, 3,700,747.
Terenzi, Joseph Francis, 3,700,546.
Terenzi, Joseph Francis, 3,700,622.

American Hospital Supply Corporation: *See—*
Breitkopf, Stephen H.; and Scaduto, Michael, 3,699,591.

American Optical Corporation: *See—*
Crandon, Harry D.; and Le Boeuf, Albert R., 3,700,487.
Kantorski, Joseph W., 3,700,423.
Shoemaker, Arthur H., 3,700,311.
Smith, Luther W.; and Snitzer, Elias, 3,700,303.

American Pollution Control Corporation: *See—*
Gallo, Carl, 3,699,906.

American Radiator & Standard Sanitary Corporation: *See—*
Barkovitz, William E., 3,699,748.

American Spin-A-Batch Company: *See—*
Garrison, William H., 3,699,918.
Klotzbach, Kurt, 3,699,818.

American Standard Inc.: *See—*
Stairs, Henry Marshall, 3,699,614.

Ameron, Inc.: *See—*
Metil, Ignatius, 3,700,604.

AMF Incorporated: *See—*
Cristiani, Athos, 3,700,141.
Heckman, Donald B., 3,701,090.
Hollenton, Frank, 3,699,977.
Schulze-Berge, Karl J., 3,700,837.

AMP Domestic Inc.: *See—*
Rueger, Herman; and Keller, Joseph Richard, 3,699,651.

AMP Incorporated: *See—*
Lynch, James Edward, 3,701,078.
Shughart, Mervin Leonard, 3,699,631.
Vander Heyden, Eric Ernest, 3,700,861.
Ziegler, George William, Jr., 3,701,083.

Ampex Corporation: *See—*
Smaller, Philip; and Treves, David, 3,701,133.

Anaconda Wire and Cable Company: *See—*
Hubbard, Ronald R.; and Nalevanko, Richard N., 3,700,185.

Anderson, Alfred J.: *See—*
Hardman, Kenneth V.; and Anderson, Alfred J., 3,700,215.

Anderson, Carl M.; and Endress, James W., to Carrier Corporation. Emergency shutdown mechanism for centrifugal compressor. 3,700,355, Cl. 417-33.000.

Anderson, Howard H.; Moyer, Rudolph H.; Sibbert, Donald, J.; and Sutherland, David C., to Geomet, Incorporated. Chemiluminescence air pollutants monitoring device. 3,700,896, Cl. 250-71.00r.

Anderson, John M., to General Electric Company. Current transformers with improved coaxial feed. 3,701,003, Cl. 323-6.000.

Anderson, Paul S.: *See—*
Robinson, Franklin M.; and Anderson, Paul S., 3,700,734.

Anderson, Raymond H., Jr.; and Whiteson, Bennett V., to McDonnell Douglas Corporation. Method of increasing beryllium ductility. 3,699,798, Cl. 72-377.000.

Anderson, Robert K., to Valleylab, Inc. Electrosurgical generator. 3,699,967, Cl. 128-303.140.

Anderson, Sven; and Lombardo, Anthony, to Duplan Corporation, The, mesne. Belt looper apparatus. 3,699,907, Cl. 112-121.270.

Anderson, Willis H.: *See—*
Graddy, Willard E.; and Anderson, Willis H., 3,701,085.

Ando, Hiroyuki: *See—*
Tatematsu, Kenzo; Hosono, Hiroo; Katagiri, Toshio; Hayashi, Yoshiaki; and Ando, Hiroyuki, 3,700,818.

Andrews, Clifton B., to Protectowire Co., The. Warning system with plural identification of signalling stations. 3,701,141, Cl. 340-287.000.

Anello, Louis G.; and Sweeney, Richard F., to Allied Chemical Corporation. Polyfluoroisoalkoxy-alkyl sulfides and polysulfides. 3,700,646, Cl. 260-608.000.

Anhalt, John William, to International Telephone and Telegraph Corporation. Overriding latch mechanism. 3,699,632, Cl. 29-203.00h.

Anneberg, Vilhelm; Clemmensen, Ellen; Gudmandsen, Robert; and Scheibel, Axel, to Fonofilm Industri A/S. Magnetic stereophonic phonograph pickup. 3,700,829, Cl. 179-100.41k.

Annessa, Domenico M. Frame for a musical instrument and method of making same. 3,699,837, Cl. 84-291.000.

Anning-Johnson Company: *See—*
Craig, Robert D.; Evans, Richard O.; and Grant, Gerald F., 3,699,734.

Ansala, Vaino Toiv. Cylinder lock. 3,699,790, Cl. 70-364.00r.

Antell, Earl O.: *See—*
Lewis, J. Stephen; Sapkus, Jurgis; Antell, Earl O.; and Robson, George E., 3,699,715.

Aoki, Katashi. Method for keeping metal mold in a clamped state. 3,700,765, Cl. 264-328.000.

Aoki, Takashi: *See—*
Sato, Kazuo; and Aoki, Takashi, 3,701,151.

Aono, Shigeo; and Manaka, Nobuzi. Electrically controlled fuel injection system. 3,699,932, Cl. 123-32.0ea.

Apicella, Anthony M., Jr.; and Surprise, Jon M., to Goodyear Aerospace Corporation. Apparatus to effect improved readout of memory elements. 3,701,124, Cl. 340-174.0rc.

Applequist, James E., to Memorex Corporation. Method and circuit for driving inductive loads. 3,700,985, Cl. 317-148.50r.

Applied Power Industries, Inc.: *See—*
Sessody, Donald W., 3,700,227.

A.P.V. Company, Limited, The: *See—*
Shore, David Teignmouth; and Starkie, Granville Lewis, 3,700,468.

Aqua-Marine Mfg., Limited: *See—*
Christie, Colin McMaster, 3,700,002.

Aquila, Joseph. Towing apparatus. 3,700,125, Cl. 214-86.00a.

Archambault, Roger J., to North American Rockwell Corporation. Drafting cot assembly. 3,699,766, Cl. 57-58.910.

Ardelt, Clarence A.: *See—*
Porter, Robert B.; Ardelt, Clarence A.; and Storck, Robert C., 3,700,081.

Arents, Johannes Wilhelmus Maria, to U.S. Phillips Corporation. Method of providing a luminescent layer on a support. 3,700,479, Cl. 117-33.50l.

Aritomi, Jiro: *See—*
Kaneko, Hidehiko; Aritomi, Jiro; and Nakamura, Keiji, 3,700,680.

Arizona Chemical Company, mesne: *See—*
Wheelus, Charles Glenn, 3,700,634.

Armour & Company: *See—*
Rendek, Robert B.; and Binkerd, Evan F., 3,700,847.

Armstrong, William A.: *See—*
Titchenal, Oliver R.; and Armstrong, William A., 3,699,746.

Arnold, Loren Glenn: *See—*
Hentrich, Robert Dale; Esbeck, Howard Christian; and Arnold, Loren Glenn, 3,700,037.

Arnold, Thomas R. Modular building structure. 3,699,731, Cl. 52-64.000.

Artelt, Herbert C., Jr.: *See—*
Hutner, Mark A.; Polit, Neil A.; Watson, Donald W; and Artelt, Herbert C., Jr., 3,700,324.

Arumugham, Rangaswamy, to GTE Sylvania Incorporated. Line voltage compensating circuitry for RGB color drive system. 3,700,787, Cl. 178-5.40r.

Asahi Glass Co., Ltd.: *See—*
Amann, Herbert; and Bader, Erich, 3,700,650.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamaguchi, Koretaka; Toyomoto, Kazuo; and Sakamoto, Kuniaki, 3,700,755.

Asahi Kasei Kogyo Kabushiki Kaishi: *See—*
Hatayama, Takefumi; Hamano, Yoshihiko; and Yamamoto, Tsuyoshi, 3,700,572.

Asher, John W.; and Herczog, Andrew, to Corning Glass Works. Method for obtaining the dielectric constant of frit capacitors. 3,699,620, Cl. 29-25.42.

Ashikawa, Noboru; and Maruno, Fujiya, to Honda Giken Kogyo Kabushiki Kaisha. Synchromesh transmission apparatus. 3,700,083, Cl. 192-53.00f.

Ashizaki, Shigeya: *See—*
Egawa, Susumu; Ashizaki, Shigeya; Shimizu, Katsumi; and Miyati, Toshiko, 3,700,954.

Ashland Oil & Refining Company: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,700,666.

Ashland Oil Inc.: *See—*
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,700,745.

Ashton, Harold P.: *See—*
Swett, James B.; and Ashton, Harold P., 3,700,204.

Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Mikols, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making thiazolines-3. 3,700,683, Cl. 260-306.700.

Asmus, Rodger W.: *See—*
Swanson, William C.; Moyer, Donald W.; and Asmus, Rodger W., 3,699,678.

Asmus, Rodger W., to International Harvester Company. Anti-coast valve addition to the manual feathering control for a hydrostatic transmission. 3,699,677, Cl. 60-53.00r.

Ateliers de Constructions Electriques de Charleroi (ACEC): *See—*
De Rubinat, Jean-Marie, 3,701,053.

Atherton, John Heathcote; and Plumb, John Beckett, to Imperial Chemical Industries Limited. Nitrogen-containing compounds. 3,700,713, Cl. 260-448.20n.

Atlantic Richfield Company: *See—*
Miles, Leon H., 3,700,050.

Atlantic Richfield Company, mesne: *See—*
Hartline, Ralph E., 3,701,005.

Atlas Chemical Industries Inc.: *See—*
Kuehn, Erich, 3,700,739.

ATM Corporation, mesne: *See—*
Schurrer, Robert L., 3,700,104.

Attia, Edward A., to Allis-Chalmers Corporation. Vacuum interrupter contacts and method for making the same. 3,700,842, Cl. 200-166.00c.

Aubry, Jean, to Societe Chimique des Charbonnages tour Aurore. Process for cyclopentadiene dimerizing. 3,700,741, Cl. 260-666.00a.

Ault, Cyrus Frank, to Bell Telephone Laboratories, Incorporated. Memory access system. 3,701,130, Cl. 340-174.10j.

Australia, Commonwealth of, care of the Secretary: *See—*
Gillard, Paul O., 3,701,134.

Avallone, Samuel C., to United States Steel Corporation. Bright-finish welding wire. 3,700,494, Cl. 117-202.000.

Avco Corporation: *See—*
Kaiser, Robert, 3,700,595.

Avesta Jernverks Aktiebolag: *See—*
Bjorktroth, Jarl A., 3,700,851.

Babcock & Wilson Company, The: *See—*
Schluderberg, Donald C., 3,700,552.

Babson, Edward S., to USM Corporation. Dust removal means. 3,699,597, Cl. 12-89.000.

Bacher, Elisabeth: *See—*
Furst, Andor; Muller, Marcel; Muller, Peter; Schocher, Arne Johannes; and Bacher, Elisabeth, 3,700,702.

Bader, Erich: *See—*
Amann, Herbert; and Bader, Erich, 3,700,650.

Badger Northland, Inc.: *See—*
Janssen, Gail E.; and Wildenberg, Henry N., 3,699,732.

Badowski, Charles: *See—*
Dostal, Frank; and Badowski, Charles, 3,700,304.

Bagguley, Richard B., to Continental Can Company, Inc. Threaded safety closure. 3,700,133, Cl. 215-9.000.

Bailey, Denis M., to Sterling Drug Inc. (2,3-Dihydro-2-benzofuranylmethyl) guanidines and their preparation. 3,700,697, Cl. 260-346.20r.

Baisz, George J.; and Shonka, Francis R.; deceased (by Shonka, Louis M.; administratrix), to United States of America, Atomic Energy Commission. Miniature coaxial cable connector. 3,701,080, Cl. 339-48.000.

Baker, Alfred Dickens, to Lucas, Joseph, (Industries) Limited. Lighting systems for road vehicles. 3,700,878, Cl. 240-7.1lj.

Baker Perkins Inc.: *See—*
Mc Manus, Lynn S., 3,700,121.

Baldwin, Kenneth B.; and Sullivan, Ronald D., to Bourns, Inc. Wormagear actuated pontentiometer. 3,701,070, Cl. 338-162.000.

Ball, Billie Joe: *See—*
Knowles, James H.; Ball, Billie Joe; and Fitzgerald, Donald F., 3,701,024.

Ballantine Laboratories, Inc., mesne: *See—*
Cannara, Alexander B., 3,701,142.

Baltimore Aircoil Company, Inc.: *See—*
Engalitcheff, John, Jr., 3,700,110.

Baltz, George W. Liquid level device. 3,699,661, Cl. 33-377.000.

Balz, Helmut, GmbH, Firma: *See—*
Balz, Jurgen, 3,700,085.

Balz, Jurgen, to Balz, Helmut, GmbH, Firma. Motor driven positioning apparatus with force-controlled shutoff switches. 3,700,085, Cl. 192-141.000.

Bandelier, Edouard: *See—*
Piquerez, Ervin, 3,699,767.

Bang, Veron E.: *See—*
Brown, William R.; Bang, Veron E.; and Brown, William R., 3,700,838.

Baranauckas, Charles F.: *See—*
Carr, Russell L. K.; and Baranauckas, Charles F., 3,700,695.

Baranowski, Frank, Jr. Calibrated pressure regular. 3,699,998, Cl. 137-327.000.

Barber-Greene Company: *See—*
Dediemar, Ronald B.; and Schuman, Leroy J., 3,700,182.

Bard, C. R., Inc.: *See—*
Ericson, Richard E., 3,699,964.

Bardos, John J.; and Poplawski, Joel J., to International Harvester Company. Hydraulic brake adjustor and equalizer. 3,699,679, Cl. 60-54.50e.

Bare, Thomas M.: *See—*
Suh, John T.; and Bare, Thomas M., 3,700,692.

Barker, James F.: *See—*
Hoppin, George S., III; Yount, Reed E.; Berry, Thomas F.; and Barker, James F., 3,700,427.

Barkovitz, William E., to American Radiator & Standard Sanitary Corporation. Wet scrubber dust collector. 3,699,748, Cl. 55-223.000.

Barrett, John C.; Borden, Howard C.; and Loebner, Egon E., to Hewlett Packard Company. Hybrid integrated circuit module. 3,701,123, Cl. 340-173.01s.

Barth, Wayne E., to Pfizer, Inc. 2-Hydroxymethyl-3-hydroxy-6-(hydroxy-2-aminoethyl) Pyridines. 3,700,681, Cl. 260-296.0ae.

Bartilson, Benjamin M.; and Francis, Gerald A., to United States of America, Army. Wire tying apparatus including demountable tying mechanism. 3,700,010, Cl. 140-93.00a.

Bartlemay, James M.: *See—*
Charters, Robert L.; Bartlemay, James M.; Folline, John M.; and Donich, Thomas G., 3,701,120.

Bartlett, Joseph E. Washer replacement assembly for faucet valves. 3,700,207, Cl. 251-88.000.

Barton, Patrick William, to A.C.I. Operations Pty., Ltd. Foamed ceramic material and method of making the same. 3,700,470, Cl. 206-25.00.

Bartram, Michael J.: *See—*
Mortimer, Frank R.; Brewster, Alan R.; and Bartram, Michael J., 3,700,075.

Basche, Malcolm: *See—*
Veltri, Richard D.; Merriam, Asaph U.; and Basche, Malcolm, 3,700,486.

Basic Packaging Systems, Inc.: *See—*
Titchenal, Oliver R.; and Armstrong, William A., 3,699,746.

Basso, Eugenio; Ravaschio, Guglielmo; and Frangilli, Vittorio, to Fabbrica Italiana Magneti Marelli S.p.A. Electronic device for regulating the voltage of alternators, particularly for motor vehicles. 3,701,000, Cl. 320-64.000.

Batchelor, Gordon S.; and Nixon, Dalbro R., to Virginia Chemicals Inc. Adjustable aerosol can support. 3,700,200, Cl. 248-312.000.

Bates, Reginald A., to Pass & Seymour, Inc. Wire operated remote control system. 3,700,972, Cl. 317-137.000.

Batt, Robert S., to Torrington Company Limited, The. Rolling bearings. 3,700,299, Cl. 308-212.000.

Battaerd, Hendrik A. J.: *See—*
Tregear, Geoffrey W.; Battaerd, Hendrik A. J.; Lang, Gunter A.; Catt, Kevin; and Niall, Hugh D., 3,700,609.

Battelle Development Corporation, The, mesne: *See—*
Charlson, Robert J.; and Ahlquist, Norman C., 3,700,333.

Bauer, George J. Fisherman 's knot tying device. 3,700,272, Cl. 289-17.000.

Baumanis, Bruno, to Molex Incorporated. Electrical connector. 3,701,082, Cl. 339-61.00m.

Bautz, Fred H., to Continental Can Company, Inc. Gripping type compound applying chuck assembly. 3,700,250, Cl. 279-35.000.

Baxter, Calvin J.; and Thomas, McKinley B., to United States Steel Corporation. Pipe slitting machine. 3,700,222, Cl. 266-23.00k.

Baychem Corporation, mesne: *See—*
Persin, William J., 3,700,287.

Bayre, Willard W., to General Motors Corporation. Ultrasonic testing apparatus. 3,699,805, Cl. 73-67.600.

BDH Pharmaceuticals Limited: *See—*
Bysouth, Peter Thomas; and Wild, Anthony Musgrave, 3,700,738.

Beale, John H.; and Smith, William Mayo, Jr., to Air Products and Chemical, Inc. Readily extruded chlorinated copolymers and process of preparing same. 3,700,632, Cl. 260-87.50c.

Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, to Hoffmann-La Roche Inc. 1,2-Epoxy-3-(3-iodo-2-propynyloxy)-propane. 3,700,698, Cl. 260-348.00r.

Beans, Allen F.: *See—*
Gagliardi, Richard P.; Beans, Allen F.; Eddowes, Alfred M.; and Greenblatt, Herbert, 3,701,153.

Beasley, George A., to Itek Corporation. Grinding pad. 3,699,721, Cl. 51-209.0dl.

Beasley, Noel F.: *See—*
Handler, Elliot; Beasley, Noel F.; Garcia, Armando J.; and May, Richard L., 3,699,712.

Beaton, Joseph R. Hydraulic boom for earth excavating apparatus. 3,700,126, Cl. 214-141.000.

Beck, Eugene F. Hydraulic system. 3,699,676, Cl. 60-52.00a.

Beck, Louis. Airless spray gun extension. 3,700,174, Cl. 239-526.000.

Beck, Otto; and Spalding, Georg, to Hesser, Fr., Maschinenfabrik, A.G. Drive for a moving welding apparatus. 3,700,854, Cl. 219-243.000.

Becker, Rudolf, to Linde Aktiengesellschaft. Process of separating air into an oxygen-rich fraction suitable for blast furnace operation. 3,699,695, Cl. 62-13.000.

Beckley, Gary H.: *See—*
Davin, Donald R.; and Beckley, Gary H., 3,700,288.

Beckwith, Robert C.: *See—*
Hecker, Robert W., Jr.; and Beckwith, Robert C., 3,699,601.

Bederke, Klaus: *See—*

Gentsch, Erich; Bederke, Klaus; Seider, Walter; Fullner, Hans Jurgen; and Muhlmann, Christa, 3,700,483.

Beegle, Lindley Clair: *See—*
Haacke, Gottfried C.; and Beegle, Lindley Clair, 3,700,499.

Beehler, Larry A.; and Templin, Jackson R., to General Motors Corporation. Thumbwheel vacuum thermostat. 3,700,165, Cl. 236-13.000.

Beers, Melvin D.: *See—*
Hamilton, Stephen B.; Beers, Melvin D.; and Berger, Abe, 3,700,714.

Beguin, Daniel Edmond, to International Standard Corporation. Radar monopulse antennas with converting polarization. 3,701,160, Cl. 343-755.000.

Behme, Henning, to Kieserling, Th., & Albrecht Werkzeugmaschinenfabrik. Device for conveying fluids or electric current between a stationary source and a mobile consumer. 3,700,833, Cl. 191-12.00r.

Behrenz, Wolfgang: *See—*
Fest, Christa; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,700,686.

Behring Corporation: *See—*
Gollobitz, Gregory N., 3,699,628.

Beigel, Raymond J. Foldable container and blanks therefor. 3,700,159, Cl. 229-19.000.

Belasco, Melvin; and Borrello, Sebastian R., to Texas Instruments, Incorporated. Schottky barrier phototransistor. 3,700,980, Cl. 317-235.00r.

Belcher, Richard A., to Chase-Shawmut Company , The. Electric cartridge fuse. 3,701,069, Cl. 337-160.000.

Bell & Howell Company: *See—*
Bernhold, Edward B., 3,700,315.
Koeber, Henry J., 3,700,317.

Bell Canada: *See—*
Naylor, David C.; and Leyburn, Derek, 3,700,830.

Bell Telephone Laboratories, Inc.: *See—*
Beurrier, Henry Richard, 3,700,832.
Laane, Rein Raymond, 3,701,017.
Markevich, John Anthony, 3,701,028.
Newby, Kenneth Russ; and Turner, Dennis Robert, 3,700,569.
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,701,044.
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Bell Telephone Laboratories, Incorporated: *See—*
Ault, Cyrus Frank, 3,701,130.
Bodeck, Andrew Henry; and Levinstein, Hyman Joseph, 3,701,127.
Bonyhard, Peter Istvan; and Nelson, Terence John, 3,701,132.
Borsuk, Michael Howard; and Ritsopoulos, Sotirios Constantine, 3,700,793.
Brandes, Raymond G.; and Pleass, Charles M., 3,700,857.
Bryant, Herbert William, 3,700,938.
Butherus, Alexander Duane; and Newby, Kenneth Russ, 3,700,975.
Copeland, John Alexander, III., 3,701,128.
Copeland, John Alexander, III., 3,701,129.
Dalley, James Edwin, 3,700,926.
Dalley, James Edwin; and Tsao-Wu, Nelson Tsin, 3,700,927.
Doddington, George Rowland; Flanagan, James Loton; and Lummis, Robert Carl, 3,700,815.
Fraser, David Bruce, 3,701,121.
Fritschi, Walter William, 3,700,822.
Geusic, Joseph Edward; Nelson, Terence John; and Schinke, David Paul, 3,701,122.
Glass, Alastair Malcolm; and Peterson, George Earl, 3,700,912.
Hagelbarger, David William, 3,701,112.
Heightley, John Donnell, 3,700,874.
Hunter, Paul Douglas; and Machol, Richard Erving, Jr., 3,701,096.
Irish, Carleton D., 3,701,076.
Kahng, Dawon, 3,700,932.
Kreuzer, Lloyd Barton, 3,700,890.
Marcus, Michael Jay, 3,700,819.
North, James Clayton; and Pruniaux, Bernard Roger, 3,700,978.
Okinaka, Uutaka, 3,700,469.
Peters, Theodore Richmond, 3,701,109.
Savage, Bruce Russell, 3,700,821.
Waaben, Sigurd Gunther; and Weiss, Walter Ira, 3,701,119.

Bell, William A., Jr.; and Veach, Allen M., to United States of America, Atomic Energy Commission. Separation of mercury isotopes. 3,700,892, Cl. 250-41.90s.

Bellinger, Robert M.; and Cabbage, John T., to Phillips Petroleum Company. Biphenyl purification process by plural stage fractional distillation. 3,700,566, Cl. 203-1.000.

Bellware, James D., to General Motors Corporation. Depressed park windshield wiper. 3,699,605, Cl. 15-250.170.

Belton, John Price, Jr., to Bunker-Ramo Corporation. Digital frequency synthesizer. 3,701,027, Cl. 328-17.000.

Bendix Corporation, The: *See—*
Bode, James Daniel, 3,700,111.
Eyler, Francis R., 3,700,920.
Giardini, Dante S.; and Chhabra, Indarmohan S., 3,699,728.
Goodrich, George W.; Colson, William B.; and Matle, Calvin C., 3,700,947.
Greene, William H., 3,699,915.
Thomas, Neal C., 3,700,097.
Verge, Kenneth W.; Kachman, Robert D.; and Read, Ronald G., 3,700,362.

Benghiat, Isaac, to Universal Oil Products Company. Diesters of halo-substituted alkyloxyalkylphosphonates. 3,700,760, Cl. 260-950.000.

Bennethum, James E., to General Motors Corporation. Stirling engine control system. 3,699,770, Cl. 60-24.000.

Bennethum, James E., to General Motors Corporation. Rotary combustion engine. 3,699,929, Cl. 123-8.090.

Bennett, Leonard W.; Hutchinson, Thomas R.; and Schilling, Winston H., to Motorola, Inc. Miniature transmitter receiver housing. 3,701,016, Cl. 325-16.000.

Bentvelzen, Joseph Maria; and Millington, Alan Dennis, to Consolidated Papers, Limited. Tape reinforced laminated product. 3,700,536, Cl. 161-57.000.

Berentzen, Hardo, to Groz, Theodor, and and Sohne and Ernest Beckert Nadelfabrik Commandit-Gesellschaft. Latch needle for knitting machines. 3,699,784, Cl. 66-123.000.

Berg, David A., to Allis-Chalmers Manufacturing Company. Hydraulic system for controlling bulldozer blade. 3,700,044, Cl. 172-804.000.

Berg Electronics, Inc.: *See—*
Landman, Dirk, 3,701,071.

Berg, Markus: *See—*
Nagel, Horstmar; Berg, Markus; Lohr, Albrecht; and Adler, Wilfried, 3,700,600.

Berger, Abe: *See—*
Hamilton, Stephen B.; Beers, Melvin D.; and Berger, Abe, 3,700,714.

Berger, Abe; and Selin, Terry G., to General Electric Company. Silicone compounds containing hydrazone functional groups thereon. 3,700,711, Cl. 260-448.80r.

Berger, Abe, to General Electric Company. Polyaminoalkylthioalkyl silanes. 3,700,715, Cl. 260-448.80r.

Berger, Abe; and Selin, Terry G., to General Electric Company. Amino-functional silane compounds. 3,700,716, Cl. 260-448.20n.

Berger, Charles V.; and Broghton, Donald B., to Universal Oil Products Company. Simultaneous recovery and production of pure xylenes from AC atomic mixture. 3,700,744, Cl. 260-668.00a.

Bergeron, Robert J.; and Schlichter, Stephen L., to Procter and Gamble Company, The. Method of making coffee extract. 3,700,466, Cl. 99-71.000.

Bergin, William P., to Honeywell Inc. Analog to digital converter. 3,701,145, Cl. 340-347.0nt.

Bergomi, Joseph G., Jr., to Monsanto Company. Coated substrate. 3,700,492, Cl. 117-155.0ua.

Bergwerksverband G.m.b.H.: *See—*
Karweil, Joachim; and Degel, Josef, 3,700,563.

Berman, Elliot: *See—*
McLeod, Gerald L.; French, Hollis E.; Case, Laura K.; Berman, Elliot; and Casella, Joseph, 3,700,440.
Ravich, Leonard E.; Berman, Elliot; and Ekman, Carl F. W., 3,700,447.

Berman, Max; and Bowen, Gary W., to General Electric Company. Noise error correcting and excessive noise rejecting system. 3,701,102, Cl. 340-168.00r.

Bernard, Henri Gabriel, Electric connector device. 3,701,087, Cl. 339-198.00g.

Berndt, Hans Detlef; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for making Δ^5 (10)-estrenes or pregnenes and products obtained thereby. 3,700,670, Cl. 260-239.55r.

Bernhold, Edward B., to Bell & Howell Company. Autmatic speed control for movie projector. 3,700,315, Cl. 352-17.000.

Berry, David A.; and Gynn, Gilbert M., to Dart Industries, Inc. Filled compositions containing 3,9-divinyl spirobi. 3,700,613, Cl. 260-17.4cl.

Berry, Thomas F.: *See—*
Hoppin, George S., III; Yount, Reed E.; Berry, Thomas F.; and Barker, James F., 3,700,427.

Bertea Corporation: *See—*
Stevens, Curtis E.; and Phillips, Chandler A., 3,701,136.

Bertele, Ludwig, to Wild Heerbrugg AG, Firma. Wide-angle objective. 3,700,312, Cl. 350-215.000.

Bethlehem Steel Corporation: *See—*
Estes, John C., 3,699,688.
Roberts, Carlton E.; Rahn, Hilton N., Jr.; and Reid, Walter E., Jr., 3,700,504.
Scales, Ralph E.; and Whitley, James O., Jr., 3,700,014.

Beurrier, Henry Richard, to Bell Telephone Laboratories, Inc. N-port circulator. 3,700,832, Cl. 179-170.0nc.

Bevan, Ronald: *See—*
Clarke, Kenneth; and Bevan, Ronald, 3,699,621.

Bezemer, Cornelis; Tadema, Harco J.; and Houbolt, Jacob J.H.C., to Shell Oil Company. Apparatus and method for removing oil products floating on water. 3,700,593, Cl. 210-40.000.

Biagi, Alvaro D.; and D'Amato, Sirio S., to Republic Electronics Industries Corporation. Probe containing diode assembly for radio frequency peak power detection. 3,701,011, Cl. 324-72.500.

Bicher, Haim I., to Transidyne General Corporation. Blood cell aggregometer. 3,700,408, Cl. 23-230.00b.

Bichsel, Stanley E.; and Carpenter, Tim D., to Holly Sugar Corporation. Ion exchange treatment of sugar containing solutions and production of a liquid fertilizer. 3,700,460, Cl. 99-2.000.

Bidault, Michel; Dosdat, Jean; Lelay, Roland; and Parouty, Jran Claude, to Compagnie Francaise Thomson Houston-Hotchkiss Brandt. Method of manufacturing long length composite superconductors. 3,699,647, Cl. 29-599.000.

Biecker, Thomas C. Puppet theater. 3,699,703, Cl. 46-13.000.

Bienert, Klaus; Lang, Winfried; Nordt, Egon; and Weidner, Herbert, to Wacker-Chemitronic Gesellschaft fur Elektronik. Process for making extra-pure arsenic by sublimation in the presence of carbon or boron. 3,700,413, Cl. 23-294.000.

Bilinski, Donald J.; and Weisbord, Leon, to Singer Company, The, mesne. Flexure hinge assembly. 3,700,289, Cl. 308-2.00a.

Billon, Gerard; Henry, Jean Claude; and Vincent, Eugene, to Gerin, Merlin. Differential valve safety device for compressed gas circuit interrupters. 3,700,848, Cl. 200-148.00r.

Binek, Bedrich: *See—*
Dohnalova-Binkova, Blanka; and Binek, Bedrich, 3,700,170.

Bingham, Wallace Karl, to Minnesota Mining and Manufacturing Company. Retroreflective microspheres having a dielectric mirror on a portion of their surface and retroreflective constructions containing such microsphers. 3,700,305, Cl. 350-105.000.

Bingham, Wallace Karl, to Minnesota Mining and Manufacturing Company. Microspheres having an antireflection coating and their use. 3,700,478, Cl. 117-28.000.

Binkerd, Evan F.: *See—*
Rendek, Robert B.; and Binkerd, Evan F., 3,700,847.

Bio-Research Consultants, Inc.: *See—*
Van Dongen, Cornelis G., 3,699,925.
Van Dongen, Cornelis G., 3,699,927.

Birdsall, Bert A. Material carrier. 3,700,283, Cl. 298-7.000.

Birkin, Michael Sambrook, to British Railways Board. Communication systems between a trackway and vehicles. 3,700,886, Cl. 246-63.00a.

Bissett-Berman Corporation, The: *See—*
Plehal, Edward J., 3,700,974.

Bjorkroth, Jarl A., to Avesta Jernverks Aktiebolag. Welding electrode. 3,700,851, Cl. 219-137.000.

Bjorn, James M.; and Marx, Frederick, Jr. Mercury loaded brass ball bearing. 3,701,072, Cl. 339-5.00l.

Blanchard, Russell T. Collapsible container. 3,700,134, Cl. 217-12.000.

Blankenship, John E.: *See—*
Scheibe, Harold R.; and Blankenship, John E., 3,700,350.

Blasbalg, Herman L.; Hayase, Joshua Y.; Crutchfield, Richard C., Jr.; and Najjar, Hann F., to International Business Machines Corporation. Adaptive digital communication system. 3,700,820, Cl. 179-15.0bv.

Blaurock, Gunter; Hans, Stender; and Werner, Will, to Deutsche Star Kugelhalter GmbH. Spacer ring. 3,700,271, Cl. 287-52.040.

Blaw Knox Construction Equipment, Inc.: *See—*
Davin, Donald R.; and Beckley, Gary H., 3,700,288.

Blaw-Knox Company: *See—*
Eibe, Werner W.; and Farrell, Wilfred T., Jr., 3,699,796.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See—*
Eibe, Werner W., 3,699,791.

Blease, Wilfred J., to Pioneer Plastics, Inc. Plastic fence. 3,700,213, Cl. 256-19.000.

Bliler, Marion D.: *See—*
Brown, Charles W.; Bliler, Marion D.; and Breuel, Jerry F., 3,699,904.

Bloch, Rene A.; Furmansky, Mordechay; and Gassner, Saul, to Hydronautics-Israel Ltd. Ion-activity measuring electrode. 3,700,576, Cl. 204-195.00m.

Bloching, Helmut, to Henkel & Cie G.m.b.H. Color-stable liquid detergent containing disinfectants. 3,700,601, Cl. 252-105.000.

Block, James P., to LCOA Laminating Company of America. Laminated board and method of making same. 3,700,341, Cl. 408-1.000.

Blomqvist, Nils Verner: *See—*
Croon, Ingemar Liss-Albin; and Blomqvist, Nils Verner, 3,700,549.

Bobrick, Mitchell, to Air King Corporation. Architectural light and adjustment means therefor. 3,700,885, Cl. 240-78.00h.

Bode, Charles H., Jr., to United States Steel Corporation. Self-aligning and flexing guide-roll rack. 3,700,073, Cl. 193-35.000.

Bode, James Daniel, to Bendix Corporation, The. Laminar flow fluid filter. 3,700,111, Cl. 210-322.000.

Bodeck, Andrew Henry; and Levinstein, Hyman Joseph, to Bell Telephone Laboratories, Incorporated. Magnetic domain propagation arrangement including medium with graded magnetic properties. 3,701,127, Cl. 340-174.0tf.

Bodine, Albert G., to Hawker Siddeley Dynamics Limited. Apparatus for accomplishing sonic fusion welding and the like involving variable impedance load factors. 3,700,888, Cl. 228-1.000.

Boeck, Gunther A., to Keystone Engineering Company. Self-locking latch mechanism. 3,700,301, Cl. 312-333.000.

Boeing Company, The: *See—*
Charters, Robert L.; Bartlemay, James M.; Folline, John M.; and Donich, Thomas G., 3,701,120.

Boersma, Richard E., to Allis-Chalmers Corporation. Scraper elevator lifting and cushioning mechanism. 3,700,383, Cl. 37-8.000.

Bohannon, William D., Jr., to Western Electric Company, Incorporated. Package. 3,700,100, Cl. 206-65.00f.

Bolduc, Lee R., to Medical Plastics, Inc. Electrical connector and plate electrode. 3,699,968, Cl. 128-303.130.

Bolt, Gregory L.; and Strobel, Rudolf G. K., to Procter and Gamble Company, The. Coffee extration process. 3,700,463, Cl. 99-71.000.

Bondurant, John C. Temperature change actuated motor. 3,699,769, Cl. 60-23.000.

Bonnier, Etienne; Allibert, Colette; Driole, Jean; and Wicker, Alain, to Agence Nationale de Valorisation de la Recherche. Method of preparation of alloys of refractory metals. 3,700,428, Cl. 75-10.00r.

Bonyhard, Peter Istvan; and Nelson, Terence John, to Bell Telephone Laboratories, Incorporated. Dynamic reallocation of information on serial storage arrangements. 3,701,132, Cl. 340-174.0tf.

Boram, William R.; and Acle, Luis, Jr., to International Harvester Company. Polyimides of benzophenone tetracarboxylic acid esters and aromatic diamines having a basicity constant of less than 10-11 and method of preparation. 3,700,649, Cl. 260-65.000.

Borden, Howard C.: *See—*
Barrett, John C.; Borden, Howard C.; and Loebner, Egon E., 3,701,123.

Borrello, Sebastian R.: *See—*
Belasco, Melvin; and Borrello, Sebastian R., 3,700,980.

Borrevik, Alexander J.; and Tennes, Charles J., to Hammond Corporation. Electronic musical instrument master oscillator with provision for frequency control. 3,701,040, Cl. 331-44.000.

Borsuk, Michael Howard; and Ritsopoulos, Sotirios Constantine, to Bell Telephone Laboratories, Incorporated. Frequency interleaved video multiplex system. 3,700,793, Cl. 178-6.800.

Borysko, Emil. Process for applying a thin coating of polytetrafluoroethylene. 3,700,489, Cl. 117-106.00r.

Bosch, Jose. Hydraulic shock absorber for looms. 3,700,033, Cl. 139-161.000.

Bosch, Robert, G.m.b.H.: *See—*
Adler, Karl-Heinz; Locher, Johannes; Lemanczyk, Rudolf; and Schonart, Edgar, 3,699,935.
Adler, Karl-Heinz; Domann, Helmut; and Locher , Johannes, 3,701,041.
Eckert, Konrad; Eheim, Franz; Hofer, Gerald; and Koster, Claus, 3,699,939.

Bosch, Werner; and Kobler, Ulrich, to Siemens Aktiengesellschaft. Electromagnet assembly for relays. 3,701,066, Cl. 335-274.000.

Bosomworth, Douglas Robert, to RCA Corporation. Character generator utilizing a display with photochromic layer. 3,700,791, Cl. 178-68.000.

Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, to L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude. Heat exchanger support structure. 3,700,030, Cl. 165-145.000.

Boucher, Raymond W. Convertible sidewalk bike. 3,700,251, Cl. 280-7.110.

Bourjot, Marcel: *See—*
Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,700,030.

Bourland, Andre, to Societe Anonyme d'Explosifs Industriels-Celtite. Arrangements for anchoring supporting pins or bolts. 3,699,687, Cl. 61-45.00b.

Bourns, Inc.: *See—*
Baldwin, Kenneth B.; and Sullivan, Ronald D., 3,701,070.

Bowden, James E.; and Glick, William L. Interconnecting carrier bodies for semiconductor devices. 3,701,079, Cl. 339-36.000.

Bowen, Gary W.: *See—*
Berman, Max; and Bowen, Gary W., 3,701,102.

Boyd, Clarence L.: *See—*
Boyd, Loyce M.; and Boyd, Clarence L., 3,700,057.

Boyd, Loyce M.; and Boyd, Clarence L. Foldable transportation device. 3;700,057, Cl. 180-1.00r.

Boyse, Alan: *See—*
Hughes, Ronald William; and Boyse, Alan, 3,699,941.

BP Chemicals Limited: *See—*
Harvey, Lawrence, 3,700,140.

Bracken, Thomas W., to Eastman Kodak Company. Bimodal film cutter adapted to handle different film widths. 3,699,834, Cl. 83-446.000.

Bradford, James C.; Miller, Stephen H.; and Robertson, Jeffrey C., to Eastman Kodak Company. Flex-snubber. 3,700,188, Cl. 242-194.000.

Bradley, Edmund G.; and Whittingham, Reginald P. Internal line-up clamp for pipe lines. 3,699,635, Cl. 29-252.000.

Bradley, Raymond H., to United States of America, National Aeronautics and and Space Administration. Method of delivering a vehicle to earth orbit and returning the reusable portion thereof to earth. 3,700,193, Cl. 244-155.000.

Bradley, Ruth D.: *See—*
Keene, Carl E.; and Bradley, Ruth D., 3,700,510.

Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., to Phillips Petroleum Company. Flame-retarded olefin polymers and additive systems therefor. 3,700,625, Cl. 260-45.75r.

Brady, Donnie G., to Phillips Petroleum Company. Preparation of allylic esters with palladate an platinate catalysts. 3,700,724, Cl. 260-491.000.

Bramble, Ronald L., to Mayer, Frank, & Associates, Inc. Display device. 3,699,699, Cl. 40-125.00h.

Brandes, Raymond G.; and Pleass, Charles M., to Bell Telephone Laboratories, Incorporated. Electrical resistance heater. 3,700,857, Cl. 219-543.000.

Brandt, Wilbur. Fuel reserve device and system. 3,699,995, Cl. 137-256.000.

Branson Instruments, Incorporated: *See—*
Rissolo, Herman A., 3,700,937.

Branton, Eric Sidney, to Activated Sludge Limited. Pipe supporting means. 3,700,197, Cl. 248-71.000.

Brauser, Klaus J.; Kritikos, Athanasios; Kroy, Walter; and Mehnert, Walter E., to Messerschmitt-Bolkow-Blohm GmbH. Magneto-optic storage element. 3,701,131, Cl. 340-174.0yc.
Breitkopf, Stephen H.; and Scaduto, Michael, to American Hospital Supply Corporation. Method of making disposable garments. 3,699,591, Cl. 2-243.00r.
Bresnickello, Tony J.: *See*—
Norman, Richard R., 3,699,741.
Bretchneider, Otto: *See*—
Landt, Uwe; Seifert, Helmut; and Bretchneider, Otto, 3,700,430.
Breuel, Jerry F.: *See*—
Brown, Charles W.; Bliler, Marion D.; and Breuel, Jerry F., 3,699,904.
Breuer, Hans; Manner, Erich; and Michl, Karl-Heinz, to Wacker-Chemie G.m.b.H. Molding substances of low- and high-pressure polyethylene. 3,700,759, Cl. 260-897.000.
Brewer, Waldo L; and Laukaitis, Joseph F., to Eastman Kodak Company. Autmatic searching system. 3,700,320, Cl. 353-26.000.
Brewster, Alan R.: *See*—
Mortimer, Frank R.; Brewster, Alan R.; and Bartram, Michael J., 3,700,075.
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, to Firestone Tire & Rubber Company, The. Tire building machine having means advancing a plurality of drums through a plurality of assembly stations. 3,70,526, Cl. 156-396.000.
Brickner, Kenneth G. Ferretic stainless steels with improved stretch-forming characteristics. 3,700,432, Cl. 75-126.00c.
Bridges, John: *See*—
Riley, Ray Joe, 3,700,459.
Brinckman, Eric Maria; Van Den Heuvel, Walter August; Vanhalst, Johan Eugeen; and Heugebaert, Frans Clement, to Gevaert-Agfa N.V. Photosensitive printing-out composition containing chemically sensitized ortho-rhombic crystalline Pb(II) oxide. 3,700,452, Cl 96-88.000.
Brindley, Giles Skey; and Donaldson, Peter Eden Kirwan, to National Research Development Corporation. Striate cortex stimulator. 3,699,970, Cl. 128-419.00r.
Brint, Norman Trevor, to United Kingdom of 'Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Cocking mechanisms for guns. 3,700,394, Cl. 89-1.00k.
Brint, Norman Trevor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in her Britannic Majesty's Government of the. Loading mechanism for guns. 3,700,395, Cl. 089/045000.
Bristol-Myers Company: *See*—
Jensen, Jorgen Bent; Jensen, Borge; Krohn, Rasmus; and Keldmann, Erik, 3,700,853.
Bristow, Robert H., to General Electric Company. Ceramic-to-metal seal. 3,700,420, Cl. 29-195.000.
British Insulated Callender's Cables Limited: *See*—
Lawrenson, Thomas, 3,700,786.
British Railways Board: *See*—
Birkin, Michael Sambrook, 3,700,886.
Broeren, John E.: *See*—
Diring, James A.; Engel, John B.; and Broeren, John E., 3,700,181.
Broghton, Donald B.: *See*—
Berger, Charles V.; and Broghton, Donald B., 3,700,744.
Brokke, Mervin E.; and Williamson, Thomas B., to Stauffer Chemical Company. 2-(3,4,4-trifluoro-3-butenylthio)-4,4, 6-trimethyldihydropyrimidine. 3,700,668, Cl. 260-251.00r.
Bronfin, Barry Robert; Burwell, Wayne Gregory; and Meinzer, Richard August, to United Aircraft Corporation. Chemical mixing laser. 3,701,045, Cl. 331-94.500.
Broslaw, Edwin, to Crest-Foam Corporation. Apparatus for locating the geometric center of a workpiece. 3,700,901, Cl. 250-201.000.
Broughton, Donald B., to Universal Oil Products Company. Dual temperature fixed carbon bed heavy water concentration process. 3,700,417, Cl. 23-312.00w.
Brouwer, Charles W.; Bucheister, Henry C.; and Tata, Raymond V., to Leesona Corporation. Bobbin handling apparatus. 3,700,051, Cl. 177-59.000.
Brown & Root, Inc.: *See*—
Smith, Leif H., 3,699,692.
Brown & Williamson Tobacco Corporation: *See*—
Frische, Andrew Ferdinand, 3,699,972.
Brown Boveri-Sulzer Turbomasinen Aktiengesellschaft: *See*—
Frutschi, Hans Ulrich, 3,699,681.
Brown, Charles W.; Bliler, Marion D.; and Breuel, Jerry F. Cremator. 3,699,904, Cl. 110-8.00c.
Brown, David L.: *See*—
Satterfield, Homer E.; Stottlemyer, Keith D.; Brown, David L.; and Roberts, Leslie, 3,700,547.
Brown, Stephen V., to Sylvania Electric Products Inc. Photoflash lamp. 3,700,377, Cl. 431-93.000.
Brown, William R.: *See*—
Brown, William R.; Bang, Veron E.; and Brown, William R., 3,700,838.
Brown, William R.; Bang, Veron E.; and Brown, William R., to Mallory, P. R., & Co., Inc. Timer utilizing spring clutch. 3,700,838, Cl. 200-38.00r.
Bruene, Warren B., to Collins Radio Company. Equalizer circuit for multistage feedback amplifier. 3,701,034, Cl. 330-28.000.
Brundell och Johnson AB: *See*—
Jonsson, Karl-Erik Arnold, 3,700,845.
Brunswick Corporation: *See*—
Reineman, Richard G.; and Schaefer, George E., 3,700,279.
Roberts, John A.; Roberts, Peter R.; and Kelly, James E., 3,699,768.
Walker, Jerome F., 3,700,236.
Webber, Harold H.; and Riordan, Pauline F., 3,699,590.
Brusca, Donald R., to Enzomedic Laboratories, Inc. Nad salts and methods of preparation. 3,700,654, Cl. 260-211.50r.
Brust, David Philip; Minak, Louis Morton; and Abel, Edward Peter. Polymers of N-[tris(hydroxymethyl)methyl] acrylamide. 3,700,635, Cl. 260-80.30n.
Bryant, Herbert William, to Bell Telephone Laboratories, Incorporated. Electroacoustic transducer with magnetic transducing element clamping. 3,700,938, Cl. 310-9.100.
Buchan, William R., to Itek Corporation. Optical information processing using variable electro-optic spatial filter. 3,700,902, Cl. 250-201.000.
Bucheister, Henry C.: *See*—
Brouwer, Charles W.; Bucheister, Henry C.; and Tata, Raymond V., 3,700,051.
Bucher-Guyer AG Maschinenfabrik: *See*—
Hauser, Hans Ulrich, 3,699,755.
Buchheit, Otto Karl, to Moeller & Neumann GmbH. Universal rolling mill stand hang more than one calibre for rolling profiles beams such as I-beams. 3,699,794, Cl. 72-225.000.
Buchmann, Hans, to Mettler Instrumente A.G. Top loading precision balance having annular weights. 3,700,056, Cl. 177-237.000.
Buczek, Carl J.: *See*—
Skolnick, Michael L.; and Buczek, Carl J., 3,700,309.
Budd Company, The: *See*—
Rosiek, Frank C., 3,699,637.
Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,700,286, Cl. 303-6.00c.
Buffington, William: *See*—
Heitfield, Vernon D., 3,700,253.
Bugmann, Ernst. Antifriction bearing. 3,700,296, Cl. 308-187.200.
Bullock, Clifford Ralph: *See*—
Robbins, William Paul; and Bullock, Clifford Ralph, 3,700,019.
Bulova Watch Company, Inc.: *See*—
Dostal, Frank; and Badowski, Charles, 3,700,304.
Van Haaften, Egbert, 3,699,764.
Bunce, Earl G. Rotary internal combustion engine. 3,699,930, Cl. 123-8.410.
Bundy, Patrick L., to Michigan Carton Co. Flat foldable carton having a preformed, anchored in place, and folded bottom, with self-locking top. 3,700,161, Cl. 229-41.00c.
Bunker-Ramo Corporation: *See*—
Belton, John Price, Jr., 3,701,027.
Burdwood, Howard A. Method and apparatus for use in inflating tennis and other balls. 3,699,739, Cl. 53-7.000.
Burgarella, John P.; and Ellin, Seymour, to Polaroid Corporation. Flash synchronization circuit for sequential firing of an array of flashbulbs. 3,699,861, Cl. 95-11.500.
Burgess, Norman: *See*—
Clarke, Maurice George; and Burgess, Norman, 3,700,951.
Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,700,619, Cl. 260-336.6ao.
Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,700,620, Cl. 260-33.6ad.
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Burke, Oliver W., Jr. Silica pigment and elastomer-silica pigment masterbatches and production processes relating thereto. 3,700,690, Cl. 260-336.0ao.
Burnham, William L., to Eastman Kodak Company. Automatic rewind device for web handling apparatus. 3,700,186, Cl. 242-189.000.
Burns, Harold S., to Electro Marine Corporation. Binnacle. 3,699,658, Cl. 33-223.000.
Burroughs Corporation: *See*—
Caras, Bernard, 3,700,946.
Burton, Robert Edward. Separation of organic solids from waste liquids. 3,700,590, Cl. 210-17.000.
Burwell, Wayne Gregory: *See*—
Bronfin, Barry Robert; Burwell, Wayne Gregory; and Meinzer, Richard August, 3,701,045.
Busby, Edwin S., Jr., to Compex Corporation. Variable light transmitting filter for cameras. 3,700,314, Cl. 350-314.000.
Buser, Fritz, AG Maschinenfabrik: *See*—
Thierstein, Hans, 3,699,885.
Buteux, Richard Harold Barclay, to Imperial Chemical Industries, Limited. Biaxially oriented polyethylene-1: 2-diphenoxyethane-4:4'-dicarboxylate sheets. 3,700,540, Cl. 161-165.000.
Butherus, Alexander Duane; and Newby, Kenneth Russ, to Bell Telephone Laboratories Incorporated. Double layer capacitor with liquid electrolyte. 3,700,975, Cl. 317-230.000.
Butler, Robert G.; Carter, Don E.; and Latinen, George A.; deceased (by Latinen, May V.; Administratrix), to Monsanto Company. Flush cooling of shaft sealing screw means. 3,700,247, Cl. 277-28.000.
Butter, Stephen A., to Mobil Oil Corporation. Selective carbonylation of olefinically unsaturated hydrocarbons using palladium-phosphine catalysts promoted with tin salts. 3,700,706, Cl. 260-410.90r.
Butzow, Neil W.; and Harris, Bernard, to Rex Chainbelt Inc. Ball and socket bearing. 3,700,295, Cl. 308-72.000.

Bysouth, Peter Thomas; and Wild, Anthony Musgrave, to BDH Pharmaceuticals Limited. 3-(p-substituted phenyl) propane-1, 2-diols. 3,700,738, Cl. 260-613.00r.
Cabbage, John T.: *See*—
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Cache Valley Dairy Association: *See*—
Fowler, Dean A., 3,700,373.
Cairncross, Allan; and Sheppard, William Arthur, to Du Pont de Nemours, E. I., and Company. Fluoroorganocopper compounds, complexes and solutions thereof for copper-coating substrates. 3,700,693, Cl. 260-340.600.
Calgari, Seba: *See*—
Siclari, Francesco; Rossi, Pietro Paolo; Calgari, Seba; and Jacuone, Roberto, 3,700,631.
California Institute of Technology: *See*—
Rembaum, Alan, 3,700,603.
Callander, George C.: *See*—
Sheahan, Desmond F.; and Callander, George C., 3,699,916.
Calvert, Rodney K.; and Landrum, Charles Rabun, to Mead Corporation, The. Film heating system. 3,699,666, Cl. 34-54.000.
Cam Rotors Limited: *See*—
Prendergast, Charles Scott, 3,699,848.
Camelot Stone, Inc.: *See*—
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Cameron, Malcolm R. Therapeutic bath back brush and process of using same. 3,699,602, Cl. 15-21.00d.
Campen, Jan P.; and Kok, Riekert, to Shell Oil Company. Recovery of sulfonium salt extracting agents. 3,700,767, Cl. 423-24.000.
Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence: *See*—
Simonds, Peter, 3,701,159.
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Candor, James T.: *See*—
Candor, Robert R.; and Candor, James T., 3,699,663.
Candor, Robert R.; and Candor, James T. Method and apparatus for treating sheet-like material with fluid. 3,699,663, Cl. 34-9.000.
Cannara, Alexander B., to Ballantine Laboratories, Inc., mesne. Integrating converters with synchronous starting. 3,701,142, Cl. 340-347.0nt.
Canon Kabushiki Kaisha: *See*—
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Canon Kabushiki Kaisha, mesne: *See*—
Knecktel, Wilhelm Josef; and Schaffer, Detlef, 3,699,992.
Cantagallo, Raymond E.; and Lutz, Robert J., to Sun Shipbuilding & Dry Dock Company. Apparatus for transportation of commodites. 3,699,870, Cl. 98-10.000.
Cantarutti, Armindo: *See*—
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Caplan, Sandor; and Lamorte, Michael F., to RCA Corporation. Semiconductor laser devices utilizing light reflective metallic layers. 3,701,047, Cl. 331-94.500.
Caras, Bernard, to Burroughs Corporation. Gaseous display panel with apertured, metallic strip-like, scanning cathodes. 3,700,946, Cl. 313-188.000.
Carey Press Corporation: *See*—
Friedman, Arthur S., 3,700,264.
Carlsmith, Lawrence Allan: *See*—
Rich, John Parker; and Carlsmith, Lawrence Allan, 3,700,548.
Carlson, Eric A. Material handling device. 3,699,900, Cl. 108-53.000.
Carlson, Eugene E.: *See*—
Schuning, Kenneth W.; and Carlson, Eugene E., 3,699,773.
Carman, Alexander J., to Stevens, J. P., & Co., Inc. Apparatus for feeding filling threads to a warp knitting machine. 3,699,783, Cl. 66-84.000.
Carpenter, David W.; and Rodgers, Charley R., to United States of America, Navy. Propellant grain. 3,700,762, Cl. 264-3.000.
Carpenter, Douglas D. Lotion applicator. 3,699,980, Cl. 132-88.700.
Carpenter, Tim D.: *See*—
Bichsel, Stanley E.; and Carpenter, Tim D., 3,700,460.
Carpini, Thomas D.: *See*—
Maiden, Donald L.; Monteith, James H.; and Carpini, Thomas D., 3,699,811.
Carr, Russell L. K.; and Baranauckas, Charles F., to Hooker Chemical Corporation. Fluorinated tetrahydro-pyrans. 3,700,695, Cl. 260-345.800.
Carrier Corporation: *See*—
Anderson, Carl M.; and Endress, James W., 3,700,355.
Gutheim, August W., 3,700,198.
Carrier Craft Corporation: *See*—
Garvey, Francis J.; and Winterbottom, Bruce, 3,699,729.
Carroll, James C.: *See*—
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Carson, Don B.: *See*—
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Carter, Don E.: *See*—
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Carter, J. Warne, to Ciba-Geigy Corporation. Methods of forming a fiber reinforced pipe on an inflatable mandrel. 3,700,519, Cl. 156-156.000.
Cartmell, James V.; Churchill, Donald; and Koopman, Donald E., to National Cash Register Company, The. Electro-optic shutter having a thin glass or silicon oxide layer between the electrodes and the liquid crystal. 3,700,306, Cl. 350-150.000.
Case, Forrest Neil: *See*—
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Case,Laura K.: *See*—
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Casella, Joseph: *See*—
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Castro, Rodolfo: *See*—
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Catt, Kevin: *See*—
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Peltret, Pierre Henri, 3,699,816.
Centre Electronique Horloger SA: *See*—
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Chabot, Leo L., to North American Rockwell Corporation. Open End electrostatic spinning head. 3,699,760, Cl. 57-58.890.
Chabot, Ronald W.; Leonard, George S.; and Sheena, David, to Whittaker Corporation. Movement monitoring apparatus. 3,699,856, Cl. 95-1.100.
Chace, Donald E.; Melvin, James A., Jr.; Ricketts, Alan W., Jr.; Steinberger, Edward P.; and Symmes, David T., to Digital Equipment Corporation. Analyzer for sequencer controller. 3,701,113, Cl. 340-172.500.
Chandhok, Vijay Kumar, to Crucible, Inc. Method for making powder metallurgy shapes. 3,700,435, Cl. 75-214.000.
Chang, Hsu; and Genovese, Eugene R., to International Business Machines Corporation. Self-contained magnetic bubble domain memory chip. 3,701,125, Cl. 340-174.0tf.
Chapin, James R.: *See*—
Noble, Philip S.; and Chapin, James R., 3,700,128.
Chapuis, Robert, to Etablissements Ruby S.A. Sanitary napkin. 3,699,966, Cl. 128-290.00r.
Charlson, Robert J.; and Ahlquist, Norman C.; to Battelle Development Corporation, The, mesne. Method and apparatus for making an in-situ determination of the chemical properties of atmospheric aerosols. 3,700,333, Cl. 356-103.000.
Charters, Robert L.; Bartlemay, James M.; Folline, John M.; and Donich, Thomas G., to Boeing Company, The. Analog capacitor memory with slow write-in and fast nondestructive read-out. 3,701,120, Cl. 340-173.00r.
Chase-Shawmut Company , The: *See*—
Belcher, Richard A., 3,701,069.
Chelminski, Stephen V., 12% to Parmelee, Kendall G. Rotary wing aircraft lift and propulsion method and systems. 3,699,771, Cl. 60-39.350.
Chemcut Corporation: *See*—
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Chemed Corporation: *See*—
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Tourtellotte, John F.; Negra, John S.; Warshaw, Abe; and Villiers-Fisher, John F., 3,699,683.
Chen, Nai Yuen; Lucki, Stanley J.; and Garwood, William E., to Mobil Oil Corporation. Dewaxing of oils by shape selective cracking an hydrocracking over zeolites ZSM-5 and ZSM-8. 3,700,585, Cl. 208-111.000.
Cheney, Raymond E., to International Business Machines Corporation. Method and apparatus for fracturing metal. 3,700,150, Cl. 225-1.000.
Chevron Research Company: *See*—
Hutchison, Stanley O., 3,700,034.
Kray, Louis R., 3,700,725.
Singer, Malcolm S., 3,700,699.
Chhabra, Indarmohan S.: *See*—
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Chikuma, Toichi, to Girling Limited. High frequency amplification system. 3,701,035, Cl. 330-31.000.
Chin, James; Witt, Harry S.; and Schwartz, Eli, to Uniroyal, Inc. Electrolesaly platable polymeric blends. 3,700,481, Cl. 117-47.00a.
Christie, Colin McMaster, to Aqua-Marine Mfg., Limited. Liquid supply system with motor operated pump actuated by switch controlled by on-off valve in system. 3,700,002, Cl. 137-565.000.
Chulak, William, to Northern Electric Company, Limited. Combined alarm transmission and service call system. 3,700,823, Cl. 179-18.00b.
Churchill, Donald: *See*—
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Ciba-Geigy AG: *See*—
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Gassmann, Hans Ulrich; and Mugnier, Michel, 3,699,804.
Inman, Eric Richard; Macpherson, Ian Alexander; and Stirling, John Andrew, 3,700,709.

Nachbur, Hermann; and Maeder, Arthur, 3,700,403.
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Petite, Anthony M.; and Thornley, Clive E., 3,700,405.
Cier, Harry E., to Esso Research and Engineering Company. Manufacture of aromatic formaldehyde resins. 3,700,640, Cl. 260-67.00a.
Cincinnati, Melacron Inc.: *See—*
Fischer, Thomas R., 3,700,993.
Cincinnati Milacron Inc.: *See—*
Lenning, Ronald L., 3,699,720.
Owens, William A., 3,700,292.
Cinquegrani, Vincent J. Fuel control system using RF circuits. 3,699,931, Cl. 123-32.0ea.
Cioccio, Armand; and Goo, Gee-In, to United States of America, Navy. Coil configuration for an electromagnetic warhead influence firing system. 3,699,889, Cl. 102-18.000.
Cities Service Company: *See—*
Meldrum, David R., 3,700,475.
Meldrum, David R., 3,700,476.
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Clark Equipment Company: *See—*
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Clark, Jeri O.: *See—*
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Clark, Otto A.: *See—*
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Clarke, Charles D.; and Hartling, Donald C., to Mattel, Inc. Simulated sewing machine toy. 3,699,705, Cl. 46-39.000.
Clarke, Kenneth; and Bevan, Ronald, to Imperial Chemical Industries Limited. Rollers. 3,699,621, Cl. 29-113.00r.
Clarke, Maurice George; and Burgess, Norman, to Thorn Lighting Limited. Discharge lamps having improved thermionic cathodes. 3,700,951, Cl. 313-346.000.
Clary Corporation: *See—*
Frydenberg, Donald V., 3,699,622.
Clausse, Georges Jean Louis-Marie, to Hoover Company, The. Temperature responsive electric control device. 3,701,063, Cl. 335-146.000.
Claydon, Gyongyver: *See—*
Ryley, Derek Vernon; and Claydon, Gyongyver, 3,700,789.
Ryley, Derek Vernon; and Claydon, Gyongyver, 3,700,790.
Clegg, Robert J., to United States of America, Navy. Method for optically detecting lightning radiation. 3,700,336, Cl. 356-226.000.
Clemence, Francois; and Le Martret, Odile, to Roussel-UCLAF. Certain thiazole-5-carboxylates. 3,700,677, Cl. 260-294.80d.
Clemmensen, Ellen: *See—*
Anneberg, Vilhelm; Clemmensen, Ellen; Gudmandsen, Robert; and Scheibel, Axel, 3,700,829.
Clifton, John Stephen; and Parker, Dawood, to National Research Development Corporation. Apparatus for measuring the concentration of dissolved oxygen in an aqueous solution. 3,700,578, Cl. 204-195.00p.
Clifton, John Stephen; and Parker, Dawood, to National Research Development Corporation. Apparatus for measuring the concentration of dissolved oxygen in an aqueous solution. 3,700,579, Cl. 204-195.00p.
Clinebell, Lyle R.: *See—*
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Cluett, Ronald D., to GTE Laboratories Incorporated. Arc discharge lamp control circuit. 3,700,956, Cl. 315-101.000.
Coal Industry (Patents) Limited: *See—*
Agnew, James Malcolm, 3,700,284.
Coars Porcelain Company: *See—*
Spurck, Richard F., 3,700,788.
Coats Company, Inc., The: *See—*
Motis, Gilbert M., 3,700,021.
Cocca, Frank J., to Sylvania Electric Products, Inc. Method of dividing wafers. 3,699,644, Cl. 29-527.200.
Cocca, Theodore F., to Spacetac Incorporated. Co-firing process for making a resistor. 3,699,650, Cl. 29-620.000.
Cocke, John; Mommens, Jacques H.; and Raviv, Josef, to International Business Machine Corporation. Method of and apparatus for decoding variable-length codes having length-indicating prefixes. 3,701,111, Cl. 340-172.500.
Coffey, Charles R.; and Tesdahl, Thomas C., to Chemed Corporation. Protective coating compositions. 3,700,013, Cl. 106-2.000.
Coffey, Francis T., Sr. Tracked vehicle toy. 3,699,711, Cl. 46-216.000.
Coffinberry, George A.: *See—*
Davis, Donald Y.; and Coffinberry, George A., 3,699,774.
Coffman, Frederick E., to Chemcut Corporation. Apparatus for leveling solder in holes of printed circuit boards. 3,699,919, Cl. 118-56.000.
Cogar Corporation: *See—*
Deverse, Frank T.; Kurtz, John A.; Rendon, Daniel; Trahn, Kenneth A.; and Tuttle, James W., 3,699,917.
Cole, John Elton, Jr., to Du Pont de Nemours, E. I., and Company. Process for dyeing acid-modified nylon fibers. 3,700,398, Cl. 8-21.00b.
Colgate-Palmolive Company: *See—*
Suh, John T.; and Bare, Thomas M., 3,700,692.
Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., 3,700,607.
Collier, Frank J., to Illinois Tool Works, Inc. Hole plug. 3,700,135, Cl. 220-25.000.
Collins Radio Company: *See—*
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Colman, Robert, to General Alarm Corporation. Telephoning system. 3,700,813, Cl. 179-5.00p.
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Columbia Research Corporation: *See—*
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Computer Test Corporation: *See—*
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Conant, Barton C.; and Thomas, James A., said Conant assor. to Abbott Coin Counter Co., Inc. Coin value determining apparatus and system. 3,699,981, Cl. 133-8.000.
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Cook, James M., III, to Oakland Plastics Corporation. Pallet. 3,699,901, Cl. 108-58.000.
Cook, Michael W., to Goodyear Tire & Rubber Company, The. Push-on bridge washer for pneumatic tire tubes. 3,699,840, Cl. 85-36.000.
Cook, Richard L., to Goodyear Aircraft Corporation. Hard faced plastic armor plate. 3,700,534, Cl. 161-38.000.
Cook, Thomas L., to Giesecke, Albert S. Map folding machine. 3,700,230, Cl. 270-61.00r.
Cookson Metal Developments, Limited: *See—*
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Cookson, William, to Cookson Metal Developments, Limited. Roofing and siding sheets and fastening means therefor. 3,699,737, Cl. 52-489.000.
Cooley, Austin C., to Eastman Kodak Company. Regeneration of bleach-fix solutions used in photographic processing. 3,700,450, Cl. 96-60.0bf.

Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., to United States of America, Navy. 2,2-Bis (difluoramino)-5-fluoro-5,5 dinitro-1pentyl acrylate. 3,700,723, Cl. 260-486.00h.
Coontz, John G. Tractor-mounted post hole digger. 3,700,045, Cl. 173-26.000.
Copeland, James L.: *See—*
Mizuno, William G.; Copeland, James L.; and Scholze, Arlene E., 3,700,599.
Copeland, John Alexander, III., to Bell Telephone Laboratories, Incorporated. Detector for magnetic domain arrangement. 3,701,128, Cl. 340-174.0tf.
Copeland, John Alexander, III., to Bell Telephone Laboratories, Incorporated. Self-biasing single wall domain arrangement. 3,701,129, Cl. 340-174.0tf.
Copystatics Manufacturing Corporation: *See—*
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Corley, Gale C.Valparaiso, Ind. Portable crane. 3,700,117, Cl. 214-1.00h.
Corley, Quentin D., Jr. Power lift and gate apparatus for truck. 3,700,123, Cl. 214-77.00p.
Cornell, John H., to Monsanto Research Corporation. Herbicidal carbamate compounds. 3,700,426, Cl. 71-106.000.
Corning Glass Works: *See—*
Asher, John W.; and Herczog, Andrew, 3,699,620.
Duke, David A., 3,700,471.
Cornish, Alan H.; Helke, Robert C.; Le Donne, Alex N.; and Masters, Hugh E., to Koehler-Dayton, Inc. Microwave sewage system with distillation means. 3,700,565, Cl. 203-1.000.
Corrado, Ronald F. Cover means for navigational instruments and radio equipment mounted on panel of aircraft. 3,699,787, Cl. 70-58.000.
Corrigan, Charles E.: *See—*
Corsmeier, Robert J.; Howell, Thomas G.; Corrigan, Charles E.; and Koff, Bernard L., 3,700,348.
Corsmeier, Robert J.; Howell, Thomas G.; Corrigan, Charles E.; and Koff, Bernard L., to General Electric Company. Turbomachinery blade structure. 3,700,348, Cl. 416-90.000.
Cory Corporation: *See—*
Karlen, Harvey R., 3,699,944.
Costain Concrete Company, Limited: *See—*
Jennings, Brian Michael; and Ager, Johnwalter Albert, 3,700,167.
Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 3,700,867.
Hogg, Walter R., 3,701,029.
Pontigny, Jacques A., 3,700,991.
Pontigny, Jacques A., 3,700,992.
Counsell, Lulu B. Patient positioning apparatus for use in taking medical X-rays. 3,700,894, Cl. 250-50.000.
Cousins, Morison S.; Klawson, Rennold L.; and Watson, Roy, to General Foods Corporation. Cup with pour spout and circular finish. 3,700,146, Cl. 222-465.000.
Cowan, Frank O. Cattle spraying device. 3,699,928, Cl. 119-159.000.
Cowan, John G., to United States of America, Navy. Display for multi channel sonars. 3,701,089, Cl. 340-3.00r.
Cowans, Kenneth W., to Sub-Marine Systems Incorporated. Gas and liquid processing system. 3,699,775, Cl. 62-55.000.
Cox, Raymond W.: *See—*
Watkins, Phillip L.; and Cox, Raymond W., 3,700,931.
Craft, Jack, to RCA Corporation. Peak-to-peak detector. 3,701,022, Cl. 325-318.000.
Craig, Robert D.; Evans, Richard O.; and Grant, Gerald F., to Anning-Johnson Company. Partitioning system having removable panels. 3,699,734, Cl. 52-127.000.
Craig, William A. Orthopedic appliance. 3,699,954, Cl. 128-80.00a.
Cram, Milton E.: *See—*
Volkel, George D.; and Cram, Milton E., 3,701,006.
Crandon, Harry D.; and Le Boeuf, Albert R., to American Optical Corporation. Polycarbonate substrate with durable, abrasion and scratch-resistant, antifogging coating. 3,700,487, Cl. 117-72.000.
Cranston, Benjamin H.; and Eleftherion, Michael P., to Western Electric Company, Incorporated. Compliant bonding. 3,699,640, Cl. 29-471.100.
Creighton, Stephen M.: *See—*
Moschopedis, Speros E.; Czakert, Ernst; and Creighton, Stephen M., 3,700,728.
Crest-Foam Corporation: *See—*
Broslaw, Edwin, 3,700,901.
Creuz, Walter R., to Aero-Flow Dynamics, Inc. (The Wing Company Division). Apparatus for detecting interruption in the cyclic movement of a member. 3,701,139, Cl. 340-271.000.
Criss, William H.; and Shackelford, John R., to Stange Co. Apparatus for applying liquid surface treating materials to sausages. 3,699,877, Cl. 99-260.000.
Cristiani, Athos, to AMF Incorporated. Glue dispenser for cigarette making machine. 3,700,141, Cl. 222-1.000.
Croon, Ingemar Liss-Albin; and Blomqvist, Nils Verner, to Mo och Domsjo Aktiebolag. Process for manufacturing cross-linked paper and viscose pulp and products produced according to the process. 3,700,549, Cl. 162-157.00c.
Croson, Eddie B., to United States of America, Navy. Photoresist processing method for fabricating etched microcircuits. 3,700,445, Cl. 96-36.200.
Cross Europa-Werk GmbH: *See—*
Schubert, Paul, 3,700,345.
Cross, Henry Daniel III: *See—*
Spangler, William Gilbert; and Cross, Henry Daniel III, 3,700,401.
Crucible, Inc.: *See—*
Chandhok, Vijay Kumar, 3,700,435.
Crutchfield, Richard C., Jr.: *See—*
Blasbalg, Herman L.; Hayase, Joshua Y.; Crutchfield, Richard C., Jr.; and Najjar, Hann F., 3,700,820.
CSF-Compagnie Generale de Telegraphie Sans Fil: *See—*
Vasseur, Jean-Pierre, 3,700,806.
Cunningham, Omar Leo, Jr., to Stromberg Datagraphix, Inc. Film gate. 3,700,318, Cl. 352-225.000.
Cupler, John A., II. Tool infeeding mechanism. 3,700,342, Cl. 408-17.000.
Cushman, Paul G.; and Clark, Albert A., to General Electric Company. Co-ordinated voltage control for induction servomotors. 3,700,986, Cl. 318-227.000.
Cushman, Robert Holbrook, to Western Electric Company, Incorporated. Wire joning tool. 3,700,009, Cl. 140-111.000.
Custom Machine, Inc.: *See—*
Wloszek, Joseph T., 3,699,723.
Cuthertson, William Wilson, to Imperial Chemical Industries, Limited. Silicone-polyalkyline oxide block copolymer suppressing foam in jet dyeing. 3,700,400, Cl. 8-83.000.
Cutting, Jack R.: *See—*
Parkinson, Gerald W.; and Cutting, Jack R., 3,700,995.
Cwakoslovenska akademie ved: *See—*
Dohnalova-Binkova, Blanka; and Binek, Bedrich, 3,700,170.
Cypro-Incorporated: *See—*
Pearson, William S., 3,700,177.
Czakert, Ernst: *See—*
Moschopedis, Speros E.; Czakert, Ernst; and Creighton, Stephen M., 3,700,728.
Czubak, Albin S.: *See—*
Ellis, Nyron P.; Czubak, Albin S.; and McDonald, Keith A., 3,699,724.
Dahlinger, Rodney J.; and Farnsworth, Robert P., to Hughes Aircraft Company. Trigger transformer for pulse forming network. 3,700,913, Cl. 307-107.000.
Dai Nippon Toryo Company, Ltd.: *See—*
Adachi, Toshio; Funakiskp, Sayoko; Furuya, Akio; and Uchida, Masakatsu, 3,700,624.
Daido Seiko Kabushiki Kaisha: *See—*
Adachi, Toshio; Hayashi, Kiyohide; and Okura, Yukio, 3,700,026.
Daimler-Benz Aktiengesellschaft: *See—*
Hortnagl, Franz, 3,700,061.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Kaneko, Hidehiko; Aritomi, Jiro; and Nakamura, Keiji, 3,700,680.
D'Alelio, Gaetano F., to Monacelli, Walter J. Chelating compositions. 3,700,671, Cl. 260-248.000.
Dalley, James Edwin, to Bell Telephone Laboratories, Incorporated. Electronic bilateral beta element switch. 3,700,926, Cl. 307-257.000.
Dalley, James Edwin; and Tsao-Wu, Nelson Tsin, to Bell Telephone Laboratories, Incorporated. Electronic reversing switch. 3,700,927, Cl. 307-257.000.
D'Amato, Paul R. Shelf bracket tool. 3,699,634, Cl. 29-267.000.
D'Amato, Sirio S.: *See—*
Biagi, Alvaro D.; and D'Amato, Sirio S., 3,701,011.
Dame, John S., to Motorola Inc. RF transmission and detection system. 3,701,150, Cl. 343-6.5ss.
Damico, Ralph A., to Procter & Gamble Company, The. Process for preparing salte of pyridinethial n-oxides and 2,2'-dithiopyridine n,n-dioxides. 3,700,676, Cl. 260-294.80g.
Dandl, John E. Modular constructed rotary mower. 3,699,752, Cl. 56-13.600.
Danfoss A/S: *See—*
Jensen, Arne, 3,700,989.
Dangles, Elsie R. M.: *See—*
Dangles, Thomas C.; and Dangles, Elsie R. M., 3,700,095.
Dangles, Thomas C.; and Dangles, Elsie R. M. Pill or capsule dispenser: sure daily reminder. 3,700,095, Cl. 206-42.000.
Daniels, David A., to Grace, W. R., & Company. Flame retardant polyester plasticizer containig 2,2- dibromomethylene-1,3-propanediol. 3,700,957, Cl. 260-31.600.
Dannatt, Hugh St.: *See—*
Ahms, Wilbur C.; Sweeney, David F.; and Dannatt, Hugh St., 3,700,087.
Dart Industries, Inc.: *See—*
Berry, David A.; and Gynn, Gilbert M., 3,700,613.
Schenkerberg, William F., 3,700,614.
Swett, James B.; and Ashton, Harold P., 3,700,204.
Davidge, Ronald V.; Locklar, Henry C.; Ralston, James C.; and Ritchie, Robert T., to International Business Machines Corporation. Magnetic brush cleaning system. 3,700,328, Cl. 355-15.000.
Davidson, Jimmy L.; and Rouse, George V., to Radiation Incorporated. Precision polishing of semiconductor crystal wafers. 3,699,722, Cl. 51-283.000.
Davidson, John R., to Motorola, Inc. Tone and volume control for a multi-channel audio amplifier system. 3,700,811, Cl. 179-1.00d.
Davin, Donald R.; and Beckley, Gary H., to Blaw Knox Construction Equipment, Inc. Paving machine. 3,700,288, Cl. 305-38.000.
Davis, Charles T. Cleaning and sterilizing device. 3,699,984, Cl. 134-95.000.

Davis, Donald A.; and Galluzzo, Anthony, to Schwamb Corporation, The. Modular cabinet construction. 3,700,300, Cl. 312-240.000.
Davis, Donald Y.; and Coffinberry, George A., to General Electric Company. Fluid supply system. 3,699,774, Cl. 60-39.280.
Davis, Harry P., to PPG Industries, Inc. Safety windshield and method of making same. 3,700,542, Cl. 161-125.000.
Davis, Harry P., to PPG Industries, Inc. Safety windshield and method of making same. 3,700,543, Cl. 161-165.000.
Davis, Robert, to Combustion Equipment Associates, Inc. Gas analyzer. 3,700,411, Cl. 23-254.00e.
Davis, Roger C., to General Motors Corporation. Electro-optical vehicle exhaust particulate monitor. 3,700,330, Cl. 356-38.000.
Day, Leon E., 50% to Routon, Richard and 50% to Sellers, James B. Hitch. 3,700,263, Cl. 280-415.00a.
DCA Food Industries, Inc.: *See—*
Schiffmann, Robert F.; Stein, Ernest W.; and Kaufman, Harold B., Jr., 3,699,899.
De Gain, William J., to Koppy Corporation, mesne. Stretch method for making a tubular product. 3,699,624, Cl. 29-155.00c.
De Haan, Hermanes Johannus Maria, to U.S. Philips Corporation. Memory store with reduncancy. 3,701,116, Cl. 340-173.00r.
de Learie, Frederic C., to United States of America, Air Force. Drum-display synchronizer. 3,700,800, Cl. 178-6.6dd.
De Luca, Paul V., to Porta Systems Corporation, Cutover transition switching apparatus and method for telephone office equipment. 3,700,824, Cl. 179-98.000.
De Petris, Peter S. Solid state controlled automatic choke. 3,699,937, Cl. 123-119.00f.
De Rubinat, Jean-Marie, to Ateliers de Constructions Electriques de Charleroi (ACEC). Process and apparatus for transmission of binary messages by synchronized frequency shift keying. 3,701,053, Cl. 332-9.00t.
De Sota, Inc.: *See—*
Eaves, Randall H., 3,700,022.
De Varda, Giuseppe, 70% to Montecatini Edison S.p.A. Cryolitic vat for the production of aluminum by electrolysis. 3,700,581, Cl. 204-243.00r.
De Vito, Peter A., to United States of America, Air Force. Phase coded RF pulse generator. 3,701,020, Cl. 325-121.000.
De Winter, Jan Gerrit, to Nicolon N.V. Bottom and bank facing mattress. 3,699,686, Cl. 61-38.000.
Deasy, Raymond E., to Illinois Tool Works Inc. Container package. 3,700,275, Cl. 294-87.200.
Dediemar, Ronald B.; and Schuman, Leroy J., to Barber-Greene Company. Hydraulic adjustment means for roll crushing apparatus. 3,700,182, Cl. 241-230.000.
Deeke, Heinrich E., to National Tool & Die Corporation. Coupling assembly. 3,700,381, Cl. 4-288.000.
Deer, John A, Jr., to Comstock & Westcott, Inc. Spectral analysis using a modulating mask transmitting selected spectral lines and reference bands. 3,700,332, Cl. 356-97.000.
Deere & Company: *See—*
Essex, Duane Arnold, 3,700,038.
Essex, Duane Arnold; Haverdink, Virgil Dean; and Hill, Donald Allan, 3,700,039.
Hentrich, Robert Dale; Esbeck, Howard Christian; and Arnold, Loren Glenn, 3,700,037.
Patterson, Roger Lee; and Ventresca, Mario, 3,700,042.
Peak, Charles Benjamin, 3,699,753.
Ross, Brian Francis; and Spicer, Dalton Harold, 3,699,751.
Sullivan, James Franklin, 3,700,043.
Deering, Charles S., to E-System, Inc. Pulse modulation motor control. 3,700,987, Cl. 318-227.000.
Degel, Josef: *See—*
Karweil, Joachim; and Degel, Josef, 3,700,563.
Delair, Jean-Paul; Raisnn, Jean-Pierre; and Voisin, Eugene. Yarn feeder for a knitting machine. 3,700,153, Cl. 226-114.000.
Delorean, John Z., to General Motors Corporation. Transmission with fluid pressure released brake. 3,700,080, Cl. 192-4.00a.
Denigan, Thomas R.; and Thomas, James L., to North American Rockwell Corporation. Capture combination system. 3,699,839, Cl. 84-345.000.
Denki Kagaku Koyo Kabushiki Kaisha: *See—*
Fukuoka, Ichiro; Takahashi, Satoshi; and Yagi, Norio, 3,700,645.
Denki Onkyo Co., Ltd.: *See—*
Toba, Takao, 3,701,002.
Tsubakihara, Shuzo, 3,701,067.
Denki Onkyo Company, Limited: *See—*
Sakurai, Yasunobu, 3,700,959.
Shimizu, Masao, 3,700,936.
Depree, David O., to Aerojet-General Corporation. Process for the removal and recovery of mineral pollutants from water. 3,700,592, Cl. 210-33.000.
Deremo, Edwin J.: *See—*
Sorensen, Clarence A.; and Deremo, Edwin J., 3,700,363.
Dereng, Viggo G.: *See—*
Pleasants, James E.; and Dereng, Viggo G., 3,700,192.
Dermody, William J.; and Varker, Alan E., to ESB Inc. Body implantable encapsulant and method of preparation. 3,700,628, Cl. 260-47.0en.
Desmond, Donald James. Educational game apparatus. 3,699,671, Cl. 35-48.00r.
Desmoulins, Robert. Drilling installation for extracting products from underwater sea beds. 3,700,048, Cl. 175-6.000.
Deutsche Babcock & Wilcox Aktiengesellschaft: *See—*
Niepenberg, Horst; Oppenberg, Rolf; and Kuhn, Rudolf, 3,700,376.
Deutsche Gold- und Silber-Scheideanstalt vormals Roesaler: *See—*
Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Mikols, 3,700,683.
Schluter, Franz, 3,700,145.
Deutsche Star Kugelhalter GmbH: *See—*
Blaurock, Gunter; Hans, Stender; and Werner, Will, 3,700,271.
Deutsche Texaco Aktiengesellschaft: *See—*
Lange, Hans, 3,700,035.
Devaney, Mark J., Jr., to Eastman Kodak Company. Apparatus for placing marks on a web. 3,700,908, Cl. 250-219.0dr.
Deverman, Kenneth D.; and Struck, Charles R. Rotary hair clipper. 3,699,652, Cl. 30-29.500.
Deverse, Frank T.; Kurtz, John A.; Rendon, Daniel; Trahn, Kenneth A.; and Tuttle, James W., to Cogar Corporation. Vapor deposition apparatus. 3,699,917, Cl. 118-49.000.
Devitt, John P. Apparatus and method for chemically milling the inner wall surface of a hollow shaft. 3,700,509, Cl. 156-5.000.
Devlieg Machine Company: *See—*
Sweeny, Allen N., 3,699,843.
DeVries, James H., to Sarns, Inc. Peristaltic pump construction. 3,700,361, Cl. 417-477.000.
Di Cecco, Thomas. Mushroom puffs. 3,700,467, Cl. 99-104.000.
Diamond International Corporation: *See—*
Reifers, Richard F., 3,700,096.
Struble, Glenn E., 3,699,598.
Dicke, Robert H., to Research Corporation. Scatterhole camera and method for using same including the step of convoluting the image. 3,700,895, Cl. 250-65.00r.
Dickens, Alvin J., Jr., to Reynolds, R. J., Tobacco Company. Gas suspension agglomeration. 3,700,461, Cl. 99-26.000.
Diehl, Robert Eugene; and Magee, Richard Joseph, to American Cyanamid Company. 4-Alkylamino-3-nitroquinolines. 3,700,674, Cl. 260-288.00r.
Dietl, Hans K.; and Young, Howard S., to Eastman Kodak Company. Preparation of benzoquinones by oxidation of para-substituted phenols. 3,700,701, Cl. 260-396.00r.
Dietz, William A.: *See—*
Sparling, Raymond T.; and Dietz, William A., 3,700,007.
Diginetics Incorporated: *See—*
Snook, Richard K.; and Stout, Rodney W., 3,700,862.
Digital Equipment Corporation: *See—*
Chace, Donald E.; Melvin, James A., Jr.; Ricketts, Alan W., Jr.; Steinberger, Edward P.; and Symmes, David T., 3,701,113.
Dill, Hans G. Hughes Aircraft Company Insulated gate field effect transistor adapted for microwave applications. 3,700,976, Cl. 317-235.00r.
Dill, Raymond Joseph, to Reynolds Metals Company. Method for manipulating aluminum reduction cell anode pins. 3,700,571, Cl. 204-67.000.
Dillenburg, Helmut; Honig, Helmut; and Moser, Wilhelm. Process for the preparation of granular sodium perborate tetrahydrate of low bulk density and high abrasion resistance. 3,700,414, Cl. 23-302.000.
Diring, James A.; Engel, John B.; and Broeren, John E., to Mosinee Paper Corporation. Tissue dispensing mechanism. 3,700,181, Cl. 242-55.300.
Displaytek Corporation: *See—*
Ruggiero, Edward M., 3,700,852.
Ditges, Ernst, to Press- und Stanzwerk Paul Craemer KG. Die for molding plastic pallets. 3,700,205, Cl. 249-142.000.
Dittman, Kenneth C., to Electro Products Laboratories, Inc. Magnetic pickup with feedback circuit. 3,701,015, Cl. 324-174.000.
Ditto, Edwin D.; and Stone, William S., to General Motors Corporation. Friction welding methods. 3,699,639, Cl. 29-470.300.
Dixon, Richard W. Purse theft alarm. 3,701,140, Cl. 340-283.000.
Dobbs, Richard A.; and Holmes, Richard N., to McDonnell Douglas Corporation. Acoustic face sheet. 3,700,067, Cl. 181-33.
Doddington, George Rowland; Flanagan, James Loton; and Lummis, Robert Carl, to Bell Telephone Laboratories, Incorporated. Automatic speaker verification by non-linear time alignment of acoustic parameters. 3,700,815, Cl. 179-1.0aa.
Dodman, David,; Pearson, Kenneth William; and Woolley, John Mathers, to Imperial Chemical Industries, Limited. Catalysts. 3,700,605, Cl. 252-471.000.
Doerfel, Helmut: *See—*
Mueller, Gerhard; Doerfel, Helmut; and Schmidt-Thomee, Georg, 3,700,751.
Steinhofer, Adolf; Doerfel, Helmut; Falkenstein, Georg; and Jeserich, Wolfgang-Dieter, 3,700,658.
Doherty, Walter G. Pavement repair. 3,699,854, Cl. 94-22.000.
Dohnalova-Binkova, Blanka; and Binek, Bedrich, to Cwkoslovenska akademie ved. Generator of monodisperse aerosols. 3,700,170, Cl. 239-102.000.
Domann, Helmut: *See—*
Adler, Karl-Heinz; Domann, Helmut; and Locher , Johannes, 3,701,041.
Domba, Elemer, to Nalco Chemical Company. Quaternary fluorsilicon dispersant. 3,700,844, Cl. 260-404.500.
Donald, Harold J.: *See—*
Hearns, Harold L.; and Donald, Harold J., 3,700,370.
Donaldson, Peter Eden Kirwan: *See—*

Brindley, Giles Skey; and Donaldson, Peter Eden Kirwan, 3,699,970.
Donich, Thomas G.: *See—*
Charters, Robert L.; Bartlemay, James M.; Folline, John M.; and Donich, Thomas G., 3,701,120.
Donnels, Wayne T., to Walker Boudwin Construction Co., Inc., The. Adjustable brace for tilt-up construction. 3,700,202, Cl. 248-354.00c.
Donohue, Robert J.; and Joseph, Bernard W., to General Motors Corporation. Faceted reflector for lighting unit. 3,700,883, Cl. 240-41.360.
Dornier System GmbH: *See—*
Kubier, Manfred, 3,700,190.
Dornier Systems G.m.b.H.: *See—*
Hoff, Gunter; and Langbein, Gerhard, 3,700,488.
Doudat, Jean: *See—*
Bidault, Michel; Doudat, Jean; Lelay, Roland; and Parouty, Jran Claude, 3,699,647.
Dostal, Frank; and Badowski, Charles, to Bulova Watch Company, Inc. Optical switch mechanism. 3,700,304, Cl. 350-6.000.
Dostal, Zdenek Denny, to International Playtex Corporation. Tampon for absorbing body fluids. 3,699,965, Cl. 128-285.000.
Dougherty, Charles B., to TRW Inc. Image analysis and correlation system and method. 3,700,801, Cl. 178-6.800.
Dow Chemical Company, The: *See—*
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Pawlocki, Chester E.; and Stewart, Russell L., 3,700,735.
Sonnabend, Lawrence F., 3,700,493.
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Addor, Roger Williams; and Drabb, Thomas Walter, Jr., 3,700,772.
Drapeau, Raoul E., to Slope Incorporated. Impactless printer. 3,700,807, Cl. 178-30.
Dray, af.Annapolis, d., to UnitedStatesof America,Navy. Piston type thrustbearing. 3,700,293, Cl. 308009.000.
Dreismann, Robert: *See—*
Teske, Fritz; Teske, Lothar; and Dreismann, Robert, 3,700,248.
Driole, Jean: *See—*
Bonnier, Etienne; Allibert, Colette; Driole, Jean; and Wicker, Alain, 3,700,428.
Du Pont de Nemours, E. I., and Company: *See—*
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Cairncross, Allan; and Sheppard, William Arthur, 3,700,693.
Cole, John Elton, Jr., 3,700,398.
Mc Kusick, Blaine Chase, 3,700,689.
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Dubuque Awning & Tent Company: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,699,733.
Dufour, Raymond J.; and Grimm, James J., to Northern Illinois Gas Company. Internal pipe sealing device. 3,700,265, Cl. 285-15.000.
Duhl, David N., to United Aircraft Corporation. Enhancement of transverse properties of directionally solidified superalloys. 3,700,433, Cl. 148-32.500.
Duke, David A., to Corning Glass Works. Glass-ceramic articles. 3,700,471, Cl. 106-39.0dv.
Dukes, John N., to Hewlett-Packard Company. D. C. motor circuit for rotating a polarizer and providing a detector synchronizer signal for a laser stabilizing system. 3,701,042, Cl. 331-94.500.
Duncan, Alan W., to Sears, Roebuck and Company. Combination gate hinge and closer. 3,699,615, Cl. 16-184.000.
Duncan, John E. Adjustable hysteresis clutch and brake. 3,700,941, Cl. 310-105.000.
Dunkelis, Evald, to GPE Controls, Inc. Vertical jet breather valve. 3,699,999, Cl. 137-493.400.
Dunkley, Keith William: *See—*
Shrimpton, Ronald Horace; and Dunkley, Keith William, 3,700,541,
Dunlop Company Limited, The: *See—*
Mortimer, Frank R.; Brewster, Alan R.; and Bartram, Michael J., 3,700,075.
Dunseath, Edward. Fuel lock. 3,700,063, Cl. 180-114.000.
Duplan Corporation, The, mesne: *See—*
Anderson, Sven; and Lombardo, Anthony, 3,699,907.
Durney, George P., to ILC Industries, Inc. Spacesuit thigh restraint assembly. 3,699,589, Cl. 2-2.100.
Durst, Richard R.; and Uelzmann, Heinz, to General Tire & Rubber Company, The. Titanium trihalide-amine hydrohalide complexes. 3,700,707, Cl. 260-429.500.
Duschinsky, Robert: *See—*
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,700,698.
Dusek, Ervin F., to Reliable Manufacturing Corporation. Popcorn popper. 3,699,874, Cl. 99-238.100.
Dynamit Nobel Aktiengesellschaft: *See—*
Jung, Karl-Heinz; and Gartner, Klaus-Gunther, 3,700,641.
Dyonics Inc.: *See—*
Humphrey, William G., Jr.; and Rishton, Michael L., 3,699,950.
Dzerzhinsky Filial Nauchno-Issledovatelskogo i Konstruktorskogo Instituta Khimicheskogo Mashinostroenia: *See—*
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, 3,700,364.
E-System, Inc.: *See—*
Deering, Charles S., 3,700,987.
E-System, Inc., mesne: *See—*
Usry, Joe D., 3,700,209.
Easoz, Robert D., to North American Rockwell Corporation. Composite fountain blade construction for remote ink control system. 3,699,888, Cl. 101-365.000.
Eastler, William E., Jr., to Itek Corporation. Transparent imaging medium. 3,700,437, Cl. 96-8.000.
Eastman Kodak Comny: *See—*
Kindig, Guilford Edwin, 3,699,862.
Eastman Kodak Company: *See—*
Bracken, Thomas W., 3,699,834.
Bradford, James C.; Miller, Stephen H.; and Robertson, Jeffrey C., 3,700,188.
Brewer, Waldo L; and Laukaitis, Joseph F., 3,700,320.
Burnham, William L., 3,700,186.
Cooley, Austin C., 3,700,450.
Devaney, Mark J., Jr., 3,700,908.
Dietl, Hans K.; and Young, Howard S., 3,700,701.
Gabrielsen, Rolf S.; and Olivares, Ismael A., 3,700,442.
Guyette, Franklin L.; and Frank, Donald R., 3,700,323.
Hickey, Lionel Russell, 3,700,906.
Hillson, Peter John; and Ridgway, Michael, 3,700,448.
Jensen, Einar W., 3,699,869.
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Knechel, William F., 3,700,453.
Lsiney, Alexis D., 3,700,218.
Lindholm, Robert D., 3,700,458.
Pierson, Charles W., 3,700,532.
Seelbinder, David C., 3,700,335.
Smith, Donald A., 3,700,456.
Smith, Gerald C.; and Williams, Raymond J., 3,699,832.
Thomson, Kenneth W., 3,700,187.
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Eaton Corporation: *See—*
Keene, Derek K.; and Mc Elhare, John J., 3,700,060.
Eaton Yale & Towne, Inc.: *See—*
Pacak, Matthew, 3,700,382.
Eaves, Randall H., to De Sota, Inc. Draw means for sliding screen and the like. 3,700,022, Cl. 160-126.000.
Eck, Leonard F. Trailer. 3,700,254, Cl. 280-63.000.
Eckenbrecht, Robert Roy, to GTE Sylvania Incorporated. Flying spot scanner for continuously advanced film. 3,700,795, Cl. 178-7.200.
Eckert, Konrad; Eheim, Franz; Hofer, Gerald; and Koster, Claus, to Boech, Robert, G.m.b.H. Fuel injection pump for internal combustion engines and method of fuel control. 3,699,939, Cl. 123-140.00j.
Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Boring bar insert. 3,700,346, Cl. 408-153.000.
Economics Laboratory, Inc.: *See—*
Mizuno, William G.; Copeland, James L.; and Scholze, Arlene E., 3,700,599.
Eddowes, Alfred M.: *See—*
Gagliardi, Richard P.; Beans, Allen F.; Eddowes, Alfred M.; and Greenblatt, Herbert, 3,701,153.
Edwards, Clarence K.; and Edwards, Lawrence D. Machine for making packaging components of foam material. 3,700,371, Cl. 425-144.000.
Edwards, Clarence K.; and Edwards, Lawrence D. Model railway switch assembly. 3,700,889, Cl. 246-415.00a.
Edwards, Lawrence D.: *See—*
Edwards, Clarence K.; and Edwards, Lawrence D., 3,700,371.
Edwards, Clarence K.; and Edwards, Lawrence D., 3,700,889.
Egawa, Susumu; Ashizaki, Shigeya; Shimizu, Katsumi; and Miyati, Toshiko, to Matsushita Electric Industrial Co., Ltd. Color picture tube device. 3,700,954, Cl. 315-13.00c.
Eggington, Wilfred J., to Aerojet-General Corporation. Fluid cushion cells for fluid cushion vehicles. 3,700,065, Cl. 180-128.000.
Eggleston, Donald A.; and Samuel, Trevor N., to Sangamo Electric Company. Watthour meter indicator with improved cam and microswitch operator structure. 3,700,839, Cl. 200-56.00r.
Egli, Paul H.: *See—*
United States of America, National Aeronautics and Space Administration, 3,700,575.
Ehe, Albert L., to Multiculp Automation Company. Apparatus for assembling and gluing paper cups in tray formation. 3,700,530, Cl. 156-559.000.
Eheim, Franz: *See—*
Eckert, Konrad; Eheim, Franz; Hofer, Gerald; and Koster, Claus, 3,699,939.
Ehrlich, Richard D.: *See—*
Jacky, Germaine F.; and Ehrlich, Richard D., 3,700,482.
Eibe, Werner W., to Blaw-Knox Foundry & Mill Machinery, Inc. Work roll bearing lubrication arrangement. 3,699,791, Cl. 72-45.000.
Eibe, Werner W.; and Farrell, Wilfred T., Jr., to Blaw-Knox Company. Work roll changers. 3,699,796, Cl. 72-239.000.
Ekman, Carl F. W.: *See—*

Ravich, Leonard E.; Berman, Elliot; and Ekman, Carl F. W., 3,700,447.
Elder, Fred Grove: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,700,526.
Electro Marine Corporation: *See—*
Burns, Harold S., 3,699,658.
Electro Products Laboratories, Inc.: *See—*
Dittman, Kenneth C., 3,701,015.
Electronic Data Systems Corporation: *See—*
Spraker, Earl D., 3,700,814.
Electronic Image Systems Corporation: *See—*
Wernikoff, Robert E., 3,700,797.
Eleftherion, Michael P.: *See—*
Cranston, Benjamin H.; and Eleftherion, Michael P., 3,699,640.
Elektra-Bregenz G.m.b.H.: *See—*
Gehrmann, Hasso, 3,699,780.
Ellin, Seymour: *See—*
Burgarella, John P.; and Ellin, Seymour, 3,699,861.
Elliott, Bernard V., to Proce, H. C., Co. Self-aligning band for beleving machine. 3,700,223, Cl. 266-23.0nn.
Ellis, Clarence E. Combined charcoal grill and pit barbecue cooker. 3,699,876, Cl. 99-259.000.
Ellis, Nyron P.; Czubak, Albin S.; and McDonald, Keith A., to Micromatic Hone Corporation. Method for simultaneously machining the center bore of a gear workpiece and the end faces perpendicular to the axis of the center bore. 3,699,724, Cl. 51-287.000.
Elverum, Gerard W., Jr., to TRW Inc. Liquid propellant rocket coaxial injector. 3,699,772, Cl. 60-39.74a.
Emerson Electric Co.: *See—*
Munson, Robert D., 3,700,962.
Emery Industries, Inc.: *See—*
Sharkey, Hubert Joseph; and Sturwold, Robert J., 3,700,618.
Emhart Corporation: *See—*
Gerlach, John R.; and Morrensen, Clarence B., 3,699,788.
Enarsson, Knut, to Aktiebolaget Kalle-Regulatorer. Sealing device for introduction of a vertical rotary shaft through an upper wall of a container or pipe. 3,700,246, Cl. 277-3.000.
Endress, James W.: *See—*
Anderson, Carl M.; and Endress, James W., 3,700,355.
Engalitcheff, John, Jr., to Baltimore Aircoil Company, Inc. Fluid strainer. 3,700,110, Cl. 210-308.000.
Engel, John B.: *See—*
Diring, James A.; Engel, John B.; and Broeren, John E., 3,700,181.
Engelhard, Philippe: *See—*
Weisang, Joseph Edouard; and Engelhard, Philippe, 3,700,588.
Englund, Gosta Roland; Eriksson, Bjorn Sven Hilding; Mattsson, Mats Erik; and Lindelow, Claes-Goran, to Svenska Dataregister AB. Control apparatus. 3,700,863, Cl. 235-62.00f.
Ensinger, Willis B., to Singer Company, The, mesne. Flexure hinge assembly. 3,700,290, Cl. 308-2.00a.
Environment/One Corporation: *See—*
Naydan, Theodore T.; and Aker, Walter W., 3,700,169.
Enzomedic Laboratories, Inc.: *See—*
Brusca, Donald R., 3,700,654.
Epifano, Robert Nicholas; and Jordan, Eugene Leon, to RCA Corporation. Method of making a semiconductor device including a polyimide resist film. 3,700,497, Cl. 117-212.000.
Ericson, Richard E., to Bard, C. R., Inc. Closed urinary drainage and irrigation system. 3,699,964, Cl. 128-275.000.
Eriksson, Bjorn Sven Hilding: *See—*
Englund, Gosta Roland; Eriksson, Bjorn Sven Hilding; Mattsson, Mats Erik; and Lindelow, Claes-Goran, 3,700,863.
Erlichman, Irving, to Polaroid Corporation. Self-developing reflex camera. 3,699,865, Cl. 95-42.000.
Erste Deutsche Floatglas GmbH & Co.: *See—*
Pernet, Michel, 3,700,424.
ESB Inc.: *See—*
Dermody, William J.; and Varker, Alan E., 3,700,628.
Esbeck, Howard Christian: *See—*
Hentrich, Robert Dale; Esbeck, Howard Christian; and Arnold, Loren Glenn, 3,700,037.
E.S.E. Limited: *See—*
Lang, Gordon R., 3,701,012.
Eshelman, Philip V. Throttle return spring redundancy system. 3,699,943, Cl. 123-198.0db.
Essex, Duane Arnold, to Deere & Company. Adjustable spring trip shank assembly. 3,700,038, Cl. 172-625.000.
Essex, Duane Arnold; Haverdink, Virgil Dean; and Hill, Donald Allan, to Deere & Company. Spring trip shank assembly. 3,700,039, Cl. 172-265.000.
Esso Production Research Company: *See—*
Terry, William M.; Graham, John W.; Sinclair, Albert R.; and Kiel, Othar M., 3,700,032.
Esso Research and Engineering Company: *See—*
Cier, Harry E., 3,700,640.
Salamony, James E.; and Starnes, William H., Jr., 3,700,583.
Schulman, Bernard L., 3,700,586.
Estes, John C., to Bethlehem Steel Corporation. Apparatus and method for removing and/or adding column sections to a column of a marine structure. 3,699,688, Cl. 61-46.500.
Etablissements Ruby S.A.: *See—*
Chapuis, Robert, 3,699,966.
Ethyl Corporation: *See—*
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., 3,700,598.
European Atomic Energy Community (Euratom): *See—*
Gaggero, Giancarlo; Mongini-Tamagnini, Carla; and Settipani, Antoine, 3,700,162.
Evans, Richard O.: *See—*
Craig, Robert D.; Evans, Richard O.; and Grant, Gerald F., 3,699,734.
Evans, Robert G. Two-stage drop hammer for driving large diameter pilling. 3,700,046, Cl. 173-103.000.
Evans, Ross Hugh; Seltzer, Daniel Arron; and Young, Robert Leonard, to Gamon-Calmet Industries, Inc. Telemetering remote recording unit. 3,700,816, Cl. 179-2.0dp.
Evans, William L.: *See—*
Lunsford, Leslie E.; Simmons, Clyde A.; and Evans, William L., 3,699,664.
Everest, Charles E.; and Voznick, Henry P., to Wahl, William, Corporation. Electromechanical intervalometer, and method of using same. 3,700,971, Cl. 317-80.000.
EVG Entwicklungs- und Verwertungsgesellschaft m.b.H.: *See—*
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gerhard, 3,699,756.
Eyler, Francis R., to Bendix Corporation, The. Frequency independent peak detector. 3,700,920, Cl. 307-235.00a.
Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Basso, Eugenio; Ravaschio, Guglielmo; and Frangilli, Vittorio, 3,701,000.
Fabian, Wolfgang: *See—*
Severich, Theodor Josef; Fabian, Wolfgang; and Kuhn, Klaus, 3,700,122.
Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel Josef Roger, to Monroe Belgium N.V. Combination shock absorber and supplementary air spring unit and method of assembling same. 3,700,225, Cl. 267-35.000.
Fahlstrom, Rune: *See—*
Westberg, Bengt Karl-Axel; Odman, Tor Axel; and Fahlstrom, Rune, 3,699,878.
Falkenstein, Georg: *See—*
Steinhofer, Adolf; Doerfel, Helmut; Falkenstein, Georg; and Jeserich, Wolfgang-Dieter, 3,700,658.
Fancher, Llewellyn W., to Stauffer Chemical Company. 2-Aminobenzothiazol phosphates and phosphonates used as insecticides. 3,700,771, Cl. 424-200.000.
Fang, Yang, to International Business Machines Corporation. Phase jitter extraction method for data transmission systems. 3,701,023, Cl. 325-329.000.
Fannin, Wayne V.: *See—*
Jackson, George W.; Long, Paul J., Jr.; and Fannin, Wayne V., 3,700,273.
Fanton, Ralph E.: *See—*
Gach, Francis X.; Fanton, Ralph E.; and Hazzard, Noel D., 3,699,905.
Farbenfabriken Bayer Aktiengeselllschaft: *See—*
Fest, Christa; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,700,686.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Hoffmann, Hellmut; Hamman, Ingeborg; and Homeyer, Bernhard, 3,700,687.
Farnsworth, David L.: *See—*
Fletcher, James C., Administrator of The National; Aeronautics and Space Administration with respect; to an invention of; List, William F.; and Farnsworth, David L., 3,700,961.
Farnsworth, Robert P.: *See—*
Dahlinger, Rodney J.; and Farnsworth, Robert P., 3,700,913.
Farrell, John D., to Massillon Container Co. Basket construction. 3,700,160, Cl. 229-34.00r.
Farrell, Wilfred T., Jr.: *See—*
Eibe, Werner W.; and Farrell, Wilfred T., Jr., 3,699,796.
Fath, Joseph; and Rosen, Marvin, to Tenneco Chemicals, Inc. Aqueous surface-coating compositions containing hydroxyalkyl ethers of galactomannan gums as thickeners. 3,700,612, Cl. 260-17.4st.
Faust, Elbert R., to M & T Chemicals Inc. Continuous plating system. 3,699,985, Cl. 134-141.000.
Feldcamp, Edward George. Method of finishing an aperture. 3,699,725, Cl. 51-317.000.
Fendley, Samuel J.: *See—*
Fineran, Dennis E.; and Fendley, Samuel J., 3,701,144.
Fenton, Donald M., to Union Oil Company of California. Preparation of aromatic acids. 3,700,729, Cl. 260-515.00r.
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., to Aluminum Company of America. Container inspection apparatus. 3,700,101, Cl. 209-80.000.
Fernsteuergerate Zacharia-Oelsch-Meier: *See—*
Lieber, Hans-Wilhelm; and Kramer, Rolf, 3,701,010.
Ferrant, Wolfgang, to Ransburg Electro-Coating Corporation. Spray coating apparatus. 3,700,168, Cl. 239-3.000.
Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Helical waveguide. 3,701,060, Cl. 333-95.00a.
Ferro Corporation: *See—*
Golownia, Robert F.; and Oswitch, Stanley, 3,700,617.
Fest, Christa; Hammann, Ingeborg; and Behrenz, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. O-alkyl-O-pyrazolyl-phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters. 3,700,686, Cl. 260-310.00r.
Fiber Controls Corporation: *See—*

Lytton, Kenneth G.; Hullett, David F.; and Miller, George J., 3,700,091.
Fickenwirth, Frederick I.; and Van Wyk, Jan W., to United States of America, Federal Aviation Administration. Flexible oscillatory motion bearing seal. 3,700,297, Cl. 308-187.200.
Finch, Albert M. T., Jr., to Shell Oil Company. Diene-nitrile rubbers. 3,700,637, Cl. 260-83.300.
Fineran, Dennis E.; and Fendley, Samuel J., to United States of America, Navy. High frequency analog-to-digital converter. 3,701,144, Cl. 340-347.0ad.
Finnegan, Edward D.; Harper, Leonard Roy; Mitrofanoff, Nicholas S.; and Slutman, Allen C., to International Business Machines Corporation. Central processing unit in which all data flow passes through a single arithmetric and logic unit. 3,701,105, Cl. 340172.500.
Firestone Tire & Rubber Company, The: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,700,526.
Fischer, Thomas R., to Cincinnati, Melacron Inc. Apparatus for controlling relative motion between gage jaws on a contacting gage. 3,700,993, Cl. 318-603.000.
Fitzgerald, Donald F.: *See—*
Knowles, James H.; Ball, Billie Joe; and Fitzgerald, Donald F., 3,701,024.
Flanagan, James Loton: *See—*
Doddington, George Rowland; Flanagan, James Loton; and Lummis, Robert Carl, 3,700,815.
Flaviani, Edmond. Apparatus for recovery of floating substances. 3,700,107, Cl. 210-242.000.
Fleissner, Heinz: *See—*
Janisch, Ingo; and Fleissner, Heinz, 3,700,404.
Fletcher, James C., Administrator of The National; Aeronautics and Space Administration with respect; to an invention of; List, William F.; and Farnsworth, David L. Phototransistor imaging system. 3,700,961, Cl. 315-169.0tv.
Florida Gas Company: *See—*
Wonderly, Clifford L., 3,700,522.
Fluid Energy Processing & Equipment Company: *See—*
Stephanoff, Nicholas N., 3,699,662.
Flux, Peter John, to Westland Aircraft Limited. Tail rotor hub assembly for rotary wing aircraft. 3,700,351, Cl. 416-123.000.
FMC Corporation: *See—*
Peter, Alfred O., 3,699,895.
Price, John A.; and Stewart, Mary J., 3,700,644.
Wilson, Donald C., 3,699,875.
Foley, Nelson D., to United States of America, Navy. Selective signal tuning device. 3,701,025, Cl. 325-470.000.
Folline, John M.: *See—*
Charters, Robert L.; Bartlemay, James M.; Folline, John M.; and Donich, Thomas G., 3,701,120.
Fonofilm Industri A/S: *See—*
Anneberg, Vilhelm; Clemmensen, Ellen; Gudmandsen, Robert; and Scheibel, Axel, 3,700,829.
Foote, James B.: *See—*
Allgeyer, Guy H.; and Foote, James B., 3,699,902.
Ford, Bryce W.; Meyer, Daniel A.; and Warner, Walter C., to General Tire & Rubber, The. Dynamic testing device for visco-elastic materials. 3,699,808, Cl. 73-91.000.
Ford Motor Company: *See—*
Forsting, Bernard; Hellriegel, Edmund; and Pfadenhauer, Dieter, 3,700,076.
Francis, Reid Eugene, 3,700,184.
Gawel, Walter J., 3,699,909.
Heintz, Walter K.; and Unnewehr, Lewis E., 3,700,943.
Heintz, Walter K., 3,700,944.
Staudenmayer, Karl, 3,699,824.
Vartanian, Richard D., 3,699,936.
Fork, Werner, to Voith, J. M., G.m.b.H. Control system for a bladewheel propeller. 3,700,349, Cl. 416-111.000.
Forsting, Bernard; Hellriegel, Edmund; and Pfadenhauer, Dieter, to Ford Motor Company. Side protection device for motor vehicles. 3,700,076, Cl. 188-1.00c.
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., to Majik-Irons, Inc. Ironing apparatus. 3,699,673, Cl. 38-30.000.
Foster, Thomas E.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 3,699,673.
Foster, Wilbur A.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 3,699,673.
Foults, Jonathan Asa, to Scovill Manufacturing Company. Filling and valving assembly for radiator system. 3,700,166, Cl. 236-34.500.
Fowler, Dean A., to Cache Valley Dairy Association. Cheese mold apparatus. 3,700,373, Cl. 425-195.000.
Foxboro Company, The: *See—*
Shinskey, Francis G., 3,699,665.
Franc, Charles. Illumination device. 3,700,879, Cl. 240-10.00r.
Francis, Gerald A.: *See—*
Bartilson, Benjamin M.; and Francis, Gerald A., 3,700,010.
Francis, Reid Eugene, to Ford Motor Company. Seat belt retraction disabling device. 3,700,184, Cl. 242-107.400.
Francis, Theodore R. Noise reduction canopy device for machinery. 3,700,068, Cl. 181-33.00k.
Frangilli, Vittorio: *See—*
Basso, Eugenio; Ravaschio, Guglielmo; and Frangilli, Vittorio, 3,701,000.
Frank, Donald R.: *See—*
Guyette, Franklin L.; and Frank, Donald R., 3,700,323.
Fraser, David Bruce, to Bell Telephone Laboratories, Incorporated. Fine grain ferroelectric ceramic optical display device utilizing thermal depoling write-in. 3,701,121, Cl. 340-173.200.
Frazier, Raymond R. Gas expander. 3,699,938, Cl. 123-122.00e.
Frederiksen, Thomas M., to Motorola, Inc. Integrated bistable circuit. 3,700,929, Cl. 307-291.000.
Frederiksen, Thomas M.; and Long, Ernest L., to Motorola, Inc. Complementary power amplifier. 3,701,031, Cl. 330-17.000.
Freedman, Frank B. Parabiotic dialysis apparatus. 3,699,960, Cl. 128-214.00b.
Freeland, Edward J., to Gulf & Western Industrial Products, Company. Machine control circuit. 3,700,991, Cl. 318-447.000.
Frei, Alfred; and Schweizer, August, to Sandoz Ltd. Dye preparations containing a metallized disazo dye and monopropanolamine. 3,700,653, Cl. 260-148.000.
Frei, Armin H., to International Business Machines Corporation. Analog to digital converter. 3,701,148, Cl. 340-347.0ad.
Freijd, Ingvar: *See—*
Schullstrom, Sten Gunde; Freijd, Ingvar; Schader, Arne; and Olofsson, Nils Gunnar, 3,701,075.
French, Hollis E.: *See—*
McLeod, Gerald L.; French, Hollis E.; Case, Laura K.; Berman, Elliot; and Casella, Joseph, 3,700,440.
Fried, Norman: *See—*
Karr, Lawrence J.; and Fried, Norman, 3,700,313.
Friedman, Arthur S., to Carey Press Corporation. Book having subdivisions and means to locate the first leaf of each subdivision. 3,700,264, Cl. 283-38.000.
Friedman, Moshe; and Ury, Michael G., to United States of America, Navy. High power pulsed electron beam. 3,700,945, Cl. 313-84.000.
Friedrich Schatz; Stachewski, Harry; and Lehnert, Gunther; deceased (by Lehnert, Gerda; Administratrix). Apparatus for making thin walled metal tubing. 3,700,158, Cl. 228-15.000.
Frische, Andrew Ferdinand, to Brown & Williamson Tobacco Corporation. Cigarette. 3,699,972, Cl. 131-9.000.
Fritschi, Walter William, to Bell Telephone Laboratories, Incorporated. Arrangement for reducing glare on two-way trunk. 3,700,822, Cl. 179-18.0ah.
Froio Corporation: *See—*
Froio, Nicholas J., 3,700,078.
Froio, Nicholas J., to Froio Corporation. Speed retarding device. 3,700,078, Cl. 188-180.000.
Frommelt, Cyril P.; and Frommelt, Sylvan J., to Dubuque Awning & Tent Company. Loading dock shelters. 3,699,733, Cl. 52-204.000.
Frommelt, Sylvan J.: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,699,733.
Frossard, Jacques Jean: *See—*
Weber, Abraham; and Frossard, Jacques Jean, 3,700,663.
Frost, Charles E., & Co.: *See—*
Wasson, Burton K.; and Williams, Haydn W. R., 3,700,691.
Frutschi, Hans Ulrich, to Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft. Load control for gas turbine plant. 3,699,681, Cl. 60-59.00t.
Frydenberg, Donald V., to Clary Corporation. Method and apparatus for making wall panels. 3,699,622, Cl. 29-155.00r.
Fuhrman, Nathan, to United States of America, Atomic Energy Commission. Electrochemical carbon meter. 3,700,568, Cl. 204-1.00t.
Fuji Denki Seizo Kabushiki Kaisha: *See—*
Miyoshi, Noriomi, 3,700,970.
Fuji Photo Film Co., Ltd.: *See—*
Hiyosi, Hirosi; and Kanda, Masao, 3,700,490.
Kurechi, Taichi, 3,700,316.
Fujii, Tatsuo; and Tomomitsu, Toshio, to Nippon Kogaku K.K. Structure of exposure measuring device using two galvanometers. 3,700,337, Cl. 356-227.000.
Fujimoto, Sakae, to Ricoh Co., Ltd. Device for adjusting position of light source for projectors and the like. 3,700,884, Cl. 240-44.200.
Fujisawa, Mitsumaro: *See—*
Sato, Wasuke; Hatakeyama, Shigeyuki; Koide, Masashi; Yamamoto, Sadao; and Fujisawa, Mitsumaro, 3,700,523.
Fujitsu Limited: *See—*
Kinoshita, Ryohei; and Ishizawa, Masami, 3,701,064.
Fukuda, Masataro: *See—*
Watanabe, Nobuatsu; and Fukuda, Masataro, 3,700,502.
Fukui, Kiyoshi: *See—*
Masaki, Mitsuo; Fukui, Kiyoshi; Kuramasu, Tetsuro; and Ueda, Masahiro, 3,700,656.
Fukuoka, Ichiro; Takahashi, Satoshi; and Yagi, Norio, to Denki Kagaku Koyo Kabushiki Kaisha. Process for preparing mercapto-terminated chloroprene copolymers. 3,700,645, Cl. 260-77.5cr.
Fukushima, Kunihiko: *See—*
Yamaguchi, Yukiya; Fukushima, Kunihiko; Yasuda, Minoru; and Nagata, Shojiro, 3,701,095.
Fulkerson, David E., to Honeywell Inc. Differential snap acting switching circuit. 3,700,924, Cl. 307-255.000.
Fuller Company: *See—*
Talgo, Paul, 3,700,220.
Fuller, Melvin L., to Litton Systems, Inc. Photo-select memory switch. 3,701,117, Cl. 340-173.00r.
Fullner, Hans Jurgen: *See—*
Gentsch, Erich; Bederke, Klaus; Seider, Walter; Fullner, Hans Jurgen; and Muhlmann, Christa, 3,700,483.
Funakiakp, Sayoko: *See—*

Adachi, Toshio; Funakiskp, Sayoko; Furuya, Akio; and Uchida, Masakatsu, 3,700,624.
Furman, Anatol, to International Business Machines Corporation. Fast acting turn-off circuit. 3,700,922, Cl. 307-246.000.
Furmansky, Mordechay: *See—*
Bloch, Rene A.; Furmansky, Mordechay; and Gassner, Saul, 3,700,576.
Furnival, Thomas J., to General Motors Corporation. Repairable semiconductor assembly. 3,700,969, Cl. 317-40.00r.
Furst, Andor; Muller, Marcel; Muller, Peter; Schocher, Arne Johannes; and Bacher, Elisabeth, to Hoffmann-La Roche, Inc. 15,16-Methylene steroids. 3,700,702, Cl. 260-397.450.
Furuya, Akio: *See—*
Adachi, Toshio; Funakiskp, Sayoko; Furuya, Akio; and Uchida, Masakatsu, 3,700,624.
Fymat, Alain L: *See—*
Low, George M, Deputy Administrator of the; National Aeronautics andSpecadnistration with; respect to an invention of; Fymat, Alain L; and Abhyankar, Krishna D India, 3,700,334.
Gabrielsen, Rolf S.; and Olivares, Ismael A., to Eastman Kodak Company. Developing agent precursors. 3,700,442, Cl. 96-29.000.
Gach, Francis X.; Fanton, Ralph E.; and Hazzard, Noel D., to Air Preheater Company, Inc., The. Burner for incinerator. 3,699,905, Cl. 110-8.00a.
Gacs, Peter T.; and Shirzad, Paul P., to General Steel Industries, Inc. Loading bridge structure. 3,699,600, Cl. 14-71.000.
Gaffney, Bernard J., to Conwed Corporation. Method for the extrusion of plastic net and net like structures. 3,700,521, Cl. 156-167.000.
Gasparo, Giancarlo; Mongini-Tamagnini, Carla; and Settipani, Antoine, to European Atomic Energy Community (Euratom). Circular calculator for the solution of problems connected with electro-magnetic radiation penetration. 3,700,162, Cl. 235-78.000.
Gagliardi, Richard P.; Beans, Allen F.; Eddowes, Alfred M.; and Greenblatt, Herbert, to United States of America, Navy. Radar testing in a clutter environment. 3,701,153, Cl. 343-17.700.
Gaipo, Eugene T.; and Mattingly, James E. Extensible lubricant return tube for internal combustion engines. 3,699,934, Cl. 123-90.380.
Galle, Edward N., to Hughes Tool Company. Hydraulic impactor methods and apparatus. 3,699,675, Cl. 60-52.0hf.
Gallegos, James F. Sr. Reaction powered toy flying craft. 3,700,172, Cl. 239-188.000.
Gallina, Harold, to Optisonics Corporation. Control circuit for single frame film advance audio projector. 3,700,319, Cl. 353-15.000.
Gallo, Carl, to American Pollution Control Corporation. Pollution control system. 3,699,906, Cl. 110-8.00a.
Galluzzo, Anthony: *See—*
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Gamon-Calmet Industries, Inc.: *See—*
Evans, Ross Hugh; Seltzer, Daniel Arron; and Young, Robert Leonard, 3,700,816.
Garcia, Armando J.: *See—*
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Garcia, Julian; and Carroll, James C., to International Telephone and Telegraph Corporation. Single channel carrier telephone system. 3,700,817, Cl. 179-2.50r.
Gardel, Robert; and Gorsky, Egon, to Mattel, Inc. Ballerina doll. 3,700,384, Cl. 46-136.000.
Gardner-Denver Company: *See—*
Sorensen, Clarence A.; and Deremo, Edwin J., 3,700,363.
Garnett, Donald, to Allis-Chalmers Manufacturing Company. Neutral device for internal combustion engine powered trucks. 3,700,062, Cl. 180-101.000.
Garrahan, William F.; Madden, Edwin J.; and Picard, Clarence J. Bandage construction. 3,699,959, Cl. 128-166.000.
Garrett, Howard R.: *See—*
King, Percy; and Garrett, Howard R., 3,699,743.
Garrison, William H., to American Spin-A-Batch Company. Galvanizing apparatus. 3,699,918, Cl. 118-61.000.
Gartner, Klaus-Gunther: *See—*
Jung, Karl-Heinz; and Gartner, Klaus-Gunther, 3,700,641.
Gartner, Michael A. Fence post driver. 3,700,047, Cl. 173-124.000.
Garvey, Francis J.; and Winterbottom, Bruce, to Carrier Craft Corporation. Sanding hand tool. 3,699,729, Cl. 51-391.000.
Garwood, William E.: *See—*
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Gasche, Urs; Lindlar, Herbert; Rutishauser, Max; and Steiner, Riedholz Kurt, to Hoffmann-La Roche Inc. Process for producing xylose. 3,700,501, Cl. 127-43.000.
Gesellschaft fur Kernforschung m.b.H.: *See—*
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Gassmann, Hans Ulrich; and Mugnier, Michel, to Ciba-Geigy AG. Capillary viscometer. 3,699,804, Cl. 73-55.000.
Gassner, Saul: *See—*
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Gaulier, Jean-Claude, to Compteurs-Schlumberger Montrouge. Threshold responsive scale. 3,700,055, Cl. 177-204.000.
Gaum Myron G.: *See—*
Wald, Milton M.; and Gaum Myron G., 3,700,633.
Gawel, Walter J., to Ford Motor Company. Welt tension apparatus. 3,699,909, Cl. 112-152.000.
Gay, Michael J., to Motorola, Inc. Controlled hysteresis trigger circuit. 3,700,921, Cl. 307-235.000.
Gehrmann, Hasso, to Elektra-Bregenz G.m.b.H. Top opening refrigerator device. 3,699,780, Cl. 62-378.000.
Gelfman, Ephrem J. Method and apparatus for cutting glass bottles and the like. 3,699,829, Cl. 82-92.000.
Geltman, Gerald L.: *See—*
Kastenbein, Ernest L.; and Geltman, Gerald L., 3,700,597.
Gem Products, Inc.: *See—*
Johnsen, Eric C., 3,701,068.
General Alarm Corporation: *See—*
Colman, Robert, 3,700,813.
General American Transportation Corporation: *See—*
Levin, Paul; and Adamaki, Maximilian, 3,699,881.
General Electric Company: *See—*
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Berger, Abe; and Selin, Terry G., 3,700,711.
Berger, Abe, 3,700,715.
Berger, Abe; and Selin, Terry G., 3,700,716.
Berman, Max; and Bowen, Gary W., 3,701,102.
Bristow, Robert H., 3,700,420.
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Cushman, Paul G.; and Clark, Albert A., 3,700,986.
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Lake, William H., 3,700,960.
Noble, Philip S.; and Chapin, James R., 3,700,128.
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Rodbell, Donald Stanley; and Lommel, James M., 3,700,500.
Schuning, Kenneth W.; and Carlson, Eugene E., 3,699,773.
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Keen, Ralph S., Jr., 3,700,508.
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General Motors Corporation: *See—*
Bayre, Willard W., 3,699,805.
Beehler, Larry A.; and Templin, Jackson R., 3,700,165.
Bellware, James D., 3,699,605.
Bennethum, James E., 3,699,770.
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Davis, Roger C., 3,700,330.
Delorean, John Z., 3,700,080.
Ditto, Edwin D.; and Stone, William S., 3,699,639.
Donohue, Robert J.; and Joseph, Bernard W., 3,700,883.
Furnival, Thomas J., 3,700,969.
Graddy, Willard E.; and Anderson, Willis H., 3,701,085.
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Jackson, George W.; Long, Paul J., Jr.; and Fannin, Wayne V., 3,700,273.
Pryjmak, Bohdan I., 3,700,988.
Rausch, John T.; and Parker, William J., 3,700,069.
Riess, Joseph A.; and Vespie, Conrad P., 3,701,001.
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Wanlass, Bert R., 3,699,716.
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Gentsch, Erich; Bederke, Klaus; Seider, Walter; Fullner, Hans Jurgen; and Muhlmann, Christa, to Herberts, Kurt, Dr., & Co. Process for the production of sheet-form backing materials coated with fused synthetic resins. 3,700,483, Cl. 117-65.200.
Geomet, Incorporated: *See—*
Anderson, Howard H.; Moyer, Rudolph H.; Sibbert, Donald, J.; and Sutherland, David C., 3,700,896.
Gerdts, Gustav F., KG: *See—*
Rudel, Kurt, 3,700,001.
Gerecke, Max; and Zimmermann, Jean Pierre, to Hoffmann-La Roche Inc. ( )-Cis-1,3-dibenzyl-hexahydro-1H-furo[3,4-] imidazole-2,4-dione, processes and intermediates. 3,700,659, Cl. 260-239.500.
Gerin, Merlin: *See—*
Billon, Gerard; Henry, Jean Claude; and Vincent, Eugene, 3,700,848.

Gerlach, John R.; and Morrensen, Clarence B., to Emhart Corporation. Latch construction including assembly, anti-violation and dead bolt features. 3,699,788, Cl. 70-134.000.
Gerling, Ernst Joachim. Pocketknife. 3,699,654, Cl. 30-155.000.
Germer, John H., to United States of America, Atomic Energy Commission. Device to prevent sodium freezing around shaft penetration. 3,700,551, Cl. 176-40.000.
Germer, Walter F., Jr.; Stringer, Carl W.; and Harrison, William H., to Germer-Stringer Corporation. Secondary recovery and well stimulation, solutions, and methods of use. 3,700,031, Cl. 166-270.000.
Germer-Stringer Corporation: *See—*
Germer, Walter F., Jr.; Stringer, Carl W.; and Harrison, William H., 3,700,031.
Geusic, Joseph Edward; Nelson, Terence John; and Schinke, David Paul, to Bell Telephone Laboratories, Incorporated. Ferroelectric domain shifting devices. 3,701,122, Cl. 340-173.200.
Gevaert-Agfa N.V.: *See—*
Brinckman, Eric Maria; Van Den Heuvel, Walter August; Vanhaist, Johan Eugeen; and Heugebaert, Frans Clement, 3,700,452.
Ghyczy, Mikols: *See—*
Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Mikols, 3,700,683.
Giacopelli, Umberto. Electrolytic cell. 3,700,582, Cl. 204-275.000.
Giamei, Anthony F.; and Terkelsen, Bruce E., to United Aircraft Corporation. Casting of directionally solidified articles. 3,700,023, Cl. 164-60.000.
Giardini, Dante S.; and Chhabra, Indarmohan S., to Bendix Corporation, The. Method and apparatus for internal plunge grinding. 3,699,728, Cl. 51-356.000.
Gibs, Gabriel Joseph: *See—*
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Giebel, Walter C. Recovery of minerals. 3,700,103, Cl. 209-169.000.
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Gillard, Paul O., to Australia, Commonwealth of, care of the Secretary. High density and high frequency digital recording using elongated bits to overcome the effects of tape droupouts. 3,701,134, Cl. 340-174.10g.
Gilmore, Thomas P., to Allis-Chalmers Manufacturing Company. Power factor relay. 3,701,013, Cl. 324-.
Giraud, Francois L., to LTV Aerospace Corporation, mesne. Transporation installation with a plurality stations. 3,699,896, Cl. 104-88.000.
Giraudi, Giorgio, to Grace, W. R., & Co. Apparatus for vacuum welding of plastics envelopes. 3,699,742, Cl. 53-86.000.
Girgis, Mikhail M., to Uniroyal, Ltd. Preparation of thionamides. 3,700,664, Cl. 260-247.100.
Girling Limited: *See—*
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Givaudan Corporation: *See—*
Kappeler, Heinrich; and Wild, Jost, 3,700,717.
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Saraber, Petrus Gerardus, 3,699,975.
Glass, Alastair Malcolm; and Peterson, George Earl, to Bell Telephone Laboratories, Incorporated. Radiation-resistant $LiNbO_3$ and optical devices utilizing same. 3,700,912, Cl. 307-88.300.
Glass, Marvin, & Associates: *See—*
Glass, Marvin I.; and Terzian, Rouben T., 3,699,710.
Glass, Marvin I.; and Terzian, Rouben T., to Glass, Marvin, & Associates. Doll joint. 3,699,710, Cl. 46-162.000.
Glasser, Leon. Stringed musical instrument. 3,699,836, Cl. 84-291.000.
Glaverbel S.A.: *See—*
Plumat, Emile, 3,700,496.
Glehn, Karl. Devices for connecting pipes together. 3,700,266, Cl. 285-24.000.
Glenn, William H., to United Aircraft Corporation. Adjustable nonlinearly transmissive optical device. 3,700,307, Cl. 350-157.000.
Glick, William L.: *See—*
Bowden, James E.; and Glick, William L., 3,701,079.
Glissendorf, Wilmer E., to Advanced Management Engineering & Research Company. Weight-indicating trailer coupler. 3,700,053, Cl. 177-136.000.
Gocho, Yukisato; and Inokuchi, Takahiro, to Toko Kabushiki Kaisha. FM demodulator circuit using phase-shifting multiplier. 3,701,030, Cl. 329-134.000.
Goetzl, Manlio, to International Telephone and Telegraph Corporation, mesne. Variable capacitor having a solid dielectric between its electrodes. 3,700,983, Cl. 317-245.000.
Goglio, Luigi. Semirigid container. 3,700,018, Cl. 150-.500.
Goliobitz, Gregory N., to Behring Corporation. Vertical assembly apparatus. 3,699,628, Cl. 29-200.00a.
Golownia, Robert F.; and Oswitch, Stanley, to Ferro Corporation. Epoxy-terminated polyimides. 3,700,617, Cl. 260-326.00c.
Gomel, Lorenzo Martinez, to International Standard Electric Corporation. Multipolar connector for telephone sets. 3,701,084, Cl. 339-66.00m.
Gomez, Peter Devera. Arithmetic teaching apparatus. 3,699,667, Cl. 35-9.00b.
Gonzalez, Xavier F., to United States of America, Army. Radiation hardened R-L flip-flop circuit. 3,700,930, Cl. 307-292.000.
Goo, Gee-In: *See—*
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Goodrich, B. F., Company, The: *See—*
Niemann, Theodore F., 3,700,756.
Spicer, Alvin W.; and Talalay, Anselm, 3,700,365.
Stark, Amos J.; and McGinnis, Herbert E., 3,700,092.
Goodrich, George W.; Colson, William B.; and Matle, Calvin C., to Bendix Corporation, The. Increased sensitivity photocathode structure. 3,700,947, Cl. 313-103.000.
Goodyear Aerospace Corporation: *See—*
Apicella, Anthony M., Jr.; and Surprise, Jon M., 3,701,124.
Goodyear Aircraft Corporation: *See—*
Cook, Richard L., 3,700,534.
Goodyear Tire & Rubber Company, The: *See—*
Cook, Michael W., 3,699,840.
Gopert,Max, to Krauss-Maffei Aktiengesellschaft. Machine-control system. 3,700,994, Cl. 318-579.000.
Gordon, David A.: *See—*
Seltzer, Raymond; and Gordon, David A., 3,700,665.
Gorndt, John H., to Lord Corporation. Rotor system. 3,700,352, Cl. 416-134.000.
Gorsky, Egon: *See—*
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Gott, Hans: *See—*
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Gourse, Stanley J., to United States of America, Army, mesne. Automatic battery polarizing circuit. 3,700,999, Cl. 320-26.000.
GPE Controls, Inc.: *See—*
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Grabowski, Joseph P., to United States of America, Navy, mesne. Multi-mode, monopulse feed s-stem. 3,701,163, Cl. 343-786.000.
Grace, W. R., & Co.: *See—*
Giraudi, Giorgio, 3,699,742.
Kehr, Clifton L.; and Wszolek, Walter R., 3,700,574.
Reid, Philip L., 3,699,745.
Grace, W. R., & Company: *See—*
Daniels, David A., 3,700,957.
Graddy, Willard E.; and Anderson, Willis H., to General Motors Corporation. Electrical connector assembly. 3,701,085, Cl. 339-92.00m.
Graham, John W.: *See—*
Terry, William M.; Graham, John W.; Sinclair, Albert R.; and Kiel, Othar M., 3,700,032.
Granieri, George John; and Lefkowitz, Edward Herbert, to Tappan Company, The, mesne. Control apparatus for air conditioning and like systems. 3,700,914, Cl. 307-141.000.
Grant, Gerald F.: *See—*
Craig, Robert D.; Evans, Richard O.; and Grant, Gerald F., 3,699,734.
Grauer, Oscar H. pH Sensing apparatus. 3,700,577, Cl. 204-195.00g.
Graulus, Marcel Josef Roger: *See—*
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Gravicast Patentverwertungsgesellschaft m.b.H.: *See—*
Tenner, Oskar, 3,700,025.
Gray, Lawrence S., to United States of America, Navy. Reduced time delay auto-correlation signal processor. 3,700,876, Cl. 235-181.000.
Gray, Roy A.: *See—*
Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., 3,700,625.
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Greenbert, Burton: *See—*
Murgas, Karl M.; and Greenbert, Burton, 3,700,327.
Greenblatt, Herbert: *See—*
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Greene, William H., to Bendix Corporation, The. Uniformly illuminated meter indicator. 3,699,915, Cl. 116-129.00l.
Grega, Albert: *See—*
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., 3,700,101.
Gregory, Benjamin F., to Trak Microwave Corporation. Four band slot antenna. 3,701,161, Cl. 343-770.000.
Grewing, Klaus; and Hacker, Fritz, to Porsche, Dr.-Ing., H.c.F., K.G., Firma. Profile elements for joining armor plates. 3,699,842, Cl. 89-36.00h.
Grey, Donald M.; and Welker, Jerry W., to Sperry Rand Corporation. Table extension for a bale wagon. 3,700,119, Cl. 214-6.00b.
Grier, John D., to Owens-Illinois, Inc. Electrode configuration for electrophotography. 3,700,436, Cl. 96-1.00r.
Griffey, Donald E., to Motorola, Inc. D-C coupled sync clipping video amplifier. 3,700,796, Cl. 178-7.30r.
Griffin Laboratories Incorporated: *See—*

O'Driscoll, Kenneth F.; and Isen, Allan A., 3,700,761.
Grimm, James J.: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,700,265.
Grogan, Michael. Umbrella holder. 3,700,149, Cl. 224-5.100.
Grosh, James L., to United Aircraft Corporation. Transverse filament reinforcing tape and methods and apparatus for the production thereof. 3,700,527, Cl. 156-426.000.
Gross, Chris: *See—*
United States of America, National Aeronautics & Space Administration, 3,700,897.
Groth, Edward John, Jr., to Motorola, Inc. Acquisition method for multi-transmission position locating or navigating systems. 3,701,018, Cl. 325-58.000.
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Berentzen, Hardo, 3,699,784.
Gruenwald, Bjorn J., to Alpha Press Electronics, Inc. Relay counting circuit. 3,700,973, Cl. 317-140.000.
Grumbach, Alfred T. Mortising device. 3,700,344, Cl. 408-108.000.
Gruppo Lepetit S.p.A.: *See—*
Thiemann, Josef Ernst; and Pagani, Hermes, 3,700,558.
GTE Automatic Electric Laboratories Incorporate: *See—*
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GTE Laboratories Incorporated: *See—*
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GTE Sylvania Incorporated: *See—*
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Eckenbrecht, Robert Roy, 3,700,795.
Rhee, Dong Woo, 3,700,803.
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Gudmandsen, Robert: *See—*
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Gulba, Francis S. Portable seating apparatus. 3,700,278, Cl. 297-191.000.
Gulf & Western Industrial Products, Company: *See—*
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Keithley, Harry E.; and Helrigel, Robert A., 3,699,882.
Gutheim, August W., to Carrier Corporation. Mounting bracket assembly for air conditioning systems. 3,700,198, Cl. 248-214.000.
Gutleber, Frank S., to United States of America, Army. Median frequency generator. 3,701,026, Cl. 328-15.000.
Gutting, James I., to General Motors Corporation. Remote throttle control via step motor movement and responsive to vehicle or engine condition. 3,700,996, Cl. 318-696.000.
Guyette, Franklin L.; and Frank, Donald R., to Eastman Kodak Company. Control circuitry for assisting electrostatographic compensation. 3,700,323, Cl. 355-3.000.
Gwillim, David Thomas; and Whiting, Robin Joseph, to Plessey Handel und Investments AG. Incremental drive mechanisms. 3,700,154, Cl. 226-156.000.
Gynn, Gilbert M.: *See—*
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Haak, Frederik A.: *See—*
Stafsudd, Oscar M.; and Haak, Frederik A., 3,701,046.
Haase, Richard J.; and Roever, William L., to Shell Oil Company. Demand sonobuoy. 3,701,088, Cl. 340-2.000.
Haber Instruments, Inc.: *See—*
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Haber, Norman, to Haber Instruments, Inc. Tiltable grinder-blender. 3,700,176, Cl. 241-27.000.
Haberhauer, Karl; Jutzi, Manfred; and Kiess, Reinhold, to Spiess, C. F., & Sohn. Method of making tube. 3,700,513, Cl. 156-69.000.
Hacker, Fritz: *See—*
Grewing, Klaus; and Hacker, Fritz, 3,699,842.
Hackman, Frank C., to Mueller Co. Pipe clamp with improved gap bridge. 3,700,008, Cl. 138-99.000.
Hadam, Wilhelm, to Stoll, H., and Company. Knitting machines, especially flat machines. 3,699,782, Cl. 66-75.000.
Hadland, Wayne O., to United States of America, National Aeronautics and Space Administration. Two degree inverted flexure. 3,700,291, Cl. 308-2.00a.
Haferl, Peter Eduard, to RCA Corporation. Deflection and pincushion correction circuit. 3,700,958, Cl. 315-24.000.
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Jakobi, Wilhelm, 3,700,219.
Haga, Ichiro; and Tamada, Sieechi, to Iwasaki Tsushinki Kabushiki Kaisha a/k/a Iwatsu Electric Co., Ltd. Analogue-digital converter using an integrator. 3,701,146, Cl. 340-347.0nt.
Hagelbarger, David William, to Bell Telephone Laboratories, Incorporated. Balanced, incomplete, block designs for circuit links interconnecting switching network stages. 3,701,112, Cl. 340-172.500.
Hager, Clarence H., to Modern Caster Co., Inc. Tire storage rack. 3,700,113, Cl. 211-23.000.
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Nakayama, Kiyoshi; Tanaka, Haruo; and Hagino, Hiroshi, 3,700,557.
Hagler, Thomas A.; and Heithaus, William C., to United States of America, Army. Impedance matching structure having reduced portions of transmission lines connected to offset stripline center conductors with strip guides connecting said center conductors.3,701,054, Cl. 333-1.100.
Hahn, William C., to Phillips Petroleum Company. Determination of voids to solids ratio in porous materials. 3,699,821, Cl. 73-432.00r.
Haiss, Hermann S.; and Lowe, James U., Jr., to United States of America, Navy. 2-Methyl-5-vinyltetrazole: acrylic ester: acrylic acid polymers. 3,700,636, Cl. 260-80.720.
Hakim, Albert S. Amusement and exercise device. 3,699,704, Cl. 46-32.000.
Halbartschlager, Ingomar; and Heim, Alfred, to Hoffmann-La Roche Inc. Analyzer apparatus. 3,700,089, Cl. 198-1.000.
Hale, Kenneth Calvert; and Scrine, Gerald Robin, to Shipowners Refrigerated Cargo Research Association. Liquid nitrogen refrigeration system. 3,699,694, Cl. 62-158.000.
Hall, Arthur E. Flagg staff anchor. 3,700,196, Cl. 248-44.000.
Hall, Richard E.; and Segar, Lawrence P., to International Business Machines Corporation. Dynamic discrimination reference level generator for a parallel channel optical document scanner. 3,701,099, Cl. 340-146.3ag.
Hamada, Takaki; Nakashio, Seizo; Maruta, Isao; Hayatsu, Kazuo; Seto, Tetsuki; and Kono, Yoichi, to Sumitomo Chemical Company, Limited. Modified polyphenylene oxide and method for production thereof. 3,700,630, Cl. 260-17.250.
Hamamatsu TV Company, Limited: *See—*
Suzuki, Yoshiji; Hayashi, Ikuo; Karasawa, Kazuo; and Shimada, Mitsuhiro, 3,700,953.
Haman Factors Research Incorporated: *See—*
O'Hanlon, James F., Jr.; and Sanderson, Glenn A., 3,699,949.
Hamano, Yoshihiko: *See—*
Hatayama, Takefumi; Hamano, Yoshihiko; and Yamamoto, Tsuyoshi, 3,700,572.
Hamilton Digital Controls, Inc.: *See—*
Zacaroli, Edward C., 3,700,828.
Hamilton, Stephen B.; Beers, Melvin D.; and Berger, Abe, to Selin, Terry G. Curable compositions. 3,700,714, Cl. 260-448.20b.
Hamman, Ingeborg: *See—*
Hoffmann, Hellmut; Hamman, Ingeborg; and Homeyer, Bernhard, 3,700,687.
Hammann, Ingeborg: *See—*
Fest, Christa; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,700,686.
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Borrevik, Alexander J.; and Tennes, Charles J., 3,701,040.
Hampel, Viktor E.; Lee, Joseph D., III; and Walter, Carl E., to United States of America, Atomic Energy Commission. Space reactor ground safety and control system. 3,700,554, Cl. 176-86.00m.
Hanafin, Paul M. Blood pressure cuff with calibrated holding means. 3,699,945, Cl. 128-2.05c.
Hanan, John. Air valve safety lock. 3,700,208, Cl. 251-90.000.
Handler, Elliot; Beasley, Noel F.; Garcia, Armando J.; and May, Richard L., to Mattel, Inc. Doll Posing stand. 3,699,712, Cl. 46-116.000.
Hanke, David E., to Kimberly-Clark Corporation. Tubular plastic inserter for tampons. 3,699,962, Cl. 128-263.000.
Hanley, Harold G.; and Williamson, Edward E., to Motorola, Inc. Handle fastening assembly. 3,699,612, Cl. 16-115.000.
Hanlon, Thomas F. Black-and-white image control by ultrasonic modulation of nematic liquid crystals. 3,700,805, Cl. 178-7.30d.
Hans, Stender: *See—*
Blaurock, Gunter; Hans, Stender; and Werner, Will, 3,700,271.
Hanzawa, Teruo: *See—*
Sakamoto, Kenro; Tanaka, Motoaki; Hanzawa, Teruo; and Kasai, Keiji, 3,700,454.
Harby, Bernard, Limited: *See—*
Harby, Bernard M., 3,699,610.
Harby, Bernard M., to Harby, Bernard, Limited. Drapery track assembly. 3,699,610, Cl. 16-94.000.
Harder, Abraham. Chock for a tandem wheeled trailer. 3,700,077, Cl. 188-32.000.
Hardman Incorporated: *See—*
Hardman, Kenneth V.; and Anderson, Alfred J., 3,700,215.
Hardman, Kenneth V.; and Anderson, Alfred J., to Hardman Incorporated. Mixing and dispensing device. 3,700,215, Cl. 259-98.000.
Harkenrider, Robert J.; and Moe, John L., to Way-co, Incorporated. Control circuit. 3,700,933, Cl. 307-310.000.
Harper, David C. Scanning optical system for photocopying apparatus. 3,700,325, Cl. 355-8.000.
Harper, Leonard Roy: *See—*
Finnegan, Edward D.; Harper, Leonard Roy; Mitrofanoff, Nicholas S.; and Slutman, Allen C., 3,701,105.
Harris, Bernard: *See—*
Butzow, Neil W.; and Harris, Bernard, 3,700,295.
Harris, James J.: *See—*
Hulse, George E.; and Harris, James J., 3,700,639.
Harris-Intertype Corporation: *See—*
Henkel, Norman K., 3,699,886.
Southam, Donald L.; and Kacmarcik, Thomas J., 3,699,887.
Harrison, Lee, III; Honey, Francis J.; and Tajchman, Edwin J., to Computer Image Corporation. Computer animation generating system. 3,700,792, Cl. 178-6.800.
Harrison, William H.: *See—*
Germer, Walter F., Jr.; Stringer, Carl W.; and Harrison, William H., 3,700,031.
Hartenstein, Josef, to Henkel & Cie G.m.b.H. Zinc acid bath electroplating. 3,700,570, Cl. 204-55.00r.
Hartline, Ralph E., to Atlantic Richfield Company, mesne. Apparatus. 3,701,005, Cl. 324-.50r.

Hartling, Donald C.: *See—*
Clarke, Charles D.; and Hartling, Donald C., 3,699,705.
Harvey, Lawrence, to BP Chemicals Limited. Method and apparatus for feeding pelleted materials. 3,700,140, Cl. 222-1.000.
Hasbrook, Albert Howard, 50% to Wilcox, Stanley W. Vehicular attitude-control display. 3,701,092, Cl. 340-27.0at.
Haskon Incorporated: *See—*
King, Percy; and Garrett, Howard R., 3,699,743.
Hatakeyama, Shigeyuki: *See—*
Sato, Wasuke; Hatakeyama, Shigeyuki; Koide, Masashi; Yamamoto, Sadao; and Fujisawa, Mitsumaro, 3,700,523.
Hatayama, Takefumi; Hamano, Yoshihiko; and Yamamoto, Tsuyoshi, to Asahi Kasei Kogyo Kabushiki Kaishi. Method of electrolytically reducing aromatic hydrocarbons. 3,700,572, Cl. 204-73.00r.
Haupt, Robert C.: *See—*
Scheinkoenig, Robert J.; and Haupt, Robert C., 3,700,259.
Hauser, Hans Ulrich, to Bucher-Guyer AG Maschinenfabrik. Conditioning machines for agricultural straw or blade material or the like. 3,699,755, Cl. 56-16.400.
Haverdink, Virgil Dean: *See—*
Essex, Duane Arnold; Haverdink, Virgil Dean; and Hill, Donald Allan, 3,700,039.
Hawker Siddeley Dynamics Limited: *See—*
Bodine, Albert G., 3,700,888.
Hay, Charles N., to General Motors Corpration. Adjustable self-aligning bearing mount. 3,700,298, Cl. 308-194.000.
Hayase, Joshua Y.: *See—*
Blasbalg, Herman L.; Hayase, Joshua Y.; Crutchfield, Richard C., Jr.; and Najjar, Hann F., 3,700,820.
Hayashi, Ikuo: *See—*
Suzuki, Yoshiji; Hayashi, Ikuo; Karasawa, Kazuo; and Shimada, Mitsuhiro, 3,700,953.
Hayashi, Kiyohide: *See—*
Adachi, Toshio; Hayashi, Kiyohide; and Okura, Yukio, 3,700,026.
Hayashi, Yoshiaki: *See—*
Tatematsu, Kenzo; Hosono, Hiroo; Katagiri, Toshio; Hayashi, Yoshiaki; and Ando, Hiroyuki, 3,700,818.
Hayatsu, Kazuo: *See—*
Hamada, Takaki; Nakashio, Seizo; Maruta, Isao; Hayatsu, Kazuo; Seto, Tetsuki; and Kono, Yoichi, 3,700,630.
Hayes, John C., to Universal Oil Products Company. Aromatic hydrogenation process. 3,700,742, Cl. 260-667.00r.
Haynes, Harvey H., to United States of America, Navy. Underwater shock-absorbing and deceleration device. 3,699,689, Cl. 61-69.000.
Hazzard, Noel D.: *See—*
Gach, Francis X.; Fanton, Ralph E.; and Hazzard, Noel D., 3,699,905.
Hearns, Harold L.; and Donald, Harold J., to Dow Chemical Company, The. Film size control apparatus. 3,700,370, Cl. 425-140.000.
Heath, Neill Mck. Headband device for sinus relief. 3,699,955, Cl. 128-97.000.
Heck, Richard F., to Hercules Incorporated. Introduction of organic groups into ethylenically unsaturated esters using a group VIII metal salt. 3,700,727, Cl. 260-476.00r.
Hecker, Robert W., Jr.; and Beckwith, Robert C., to Loomis Machine Company. Dockboard assembly. 3,699,601, Cl. 14-71.000.
Heckman, Donald B., to AMF Incorporated. Shipboard acoustic receiver. 3,701,090, Cl. 340-3.00r.
Hedrick, Lloyd C. Air door operator. 3,699,717, Cl. 49-264.000.
Heightley, John Donnell, to Bell Telephone Laboratories, Incorporated. Threshold logic overflow detector. 3,700,874, Cl. 235-164.000.
Heim, Alfred: *See—*
Halbartschlager, Ingomar; and Heim, Alfred, 3,700,089.
Heinrich Koppers Gesellschaft mit beschrankter: *See—*
Jakobi, Wilhelm, 3,700,219.
Heintz, Walter K.; and Unnewehr, Lewis E., to Ford Motor Company. Disc-type variable reluctance rotating machine. 3,700,943, Cl. 310-168.000.
Heintz, Walter K., to Ford Motor Company. Disc-type variable reluctance rotating machine. 3,700,944, Cl. 310-168.000.
Heitfield, Vernon D., to Buffington, William. Toe stop roller skates. 3,700,253, Cl. 280-11.200.
Heithaus, William C.: *See—*
Hagler, Thomas A.; and Heithaus, William C., 3,701,054.
Heiz, Max; and Kalocay, Rudolf, to Sprecher & Schuh A.G. Modular remote control and supervisory system switchgear. 3,701,101, Cl. 340-163.000.
Helke, Robert C.: *See—*
Cornish, Alan H.; Helke, Robert C.; Le Dorne, Alex N.; and Masters, Hugh E., 3,700,565.
Hellriegel, Edmund: *See—*
Forsting, Bernard; Hellriegel, Edmund; and Pfadenhauer, Dieter, 3,700,076.
Helm Tractor & Equipment Company: *See—*
Holm, William Z., 3,699,922.
Helmerich & Payne, Inc.: *See—*
Smith, Marvin Glenn, 3,699,735.
Helms, Clifford J.; McMillan, Norman; and Papadopoulos, Stelios B., to Sperry Rand Corporation, mesne. Magnetic disc assembly. 3,700,855, Cl. 219-388.000.
Helrigel, Robert A.: *See—*
Keithley, Harry E.; and Helrigel, Robert A., 3,699,882.
Hempel, Gerhard; Wieske, Reinhold; Krieger, Bernhard; and Kaspar, Emanuel, to Schering A.G. Catalytic preparation of 17α-acyloxy-20-keto-steroids. 3,700,660, Cl. 260-239.550.
Henkel & Cie G.m.b.H.: *See—*
Bloching, Helmut, 3,700,601.
Hartenstein, Josef, 3,700,570.
Nagel, Horstmar; Berg, Markus; Lohr, Albrecht; and Adler, Wilfried, 3,700,600.
Henkel, Norman K., to Harris-Intertype Corporation. Disconnect arrangement for multi-unit printing press. 3,699,886, Cl. 101-183.000.
Henry, Jean Claude: *See—*
Billon, Gerard; Henry, Jean Claude; and Vincent, Eugene, 3,700,848.
Henry Valve Company: *See—*
Jones, Evan, 3,700,206.
Hentrich, Robert Dale; Esbeck, Howard Christian; and Arnold, Loren Glenn, to Deere & Company. Plow colter with yieldable force-applying means and adjustable overload mount for colter carrying arm. 3,700,037, Cl. 172-265.000.
Herbert, Daniel H. Pivotable axle. 3,700,255, Cl. 280-81.00a.
Herberts, Kurt, Dr., & Co.: *See—*
Gentsch, Erich; Bederke, Klaus; Seider, Walter; Fullner, Hans Jurgen; and Muhlmann, Christa, 3,700,483.
Hercules Incorporated: *See—*
Heck, Richard F., 3,700,727.
Keim, Gerald I., 3,700,623.
Herczog, Andrew: *See—*
Asher, John W.; and Herczog, Andrew, 3,699,620.
Herion, Erich; and Ruchser, Erich, to Technomatic AG. Control valve for the flow to and from a variable pressure. 3,699,993, Cl. 137-102.000.
Herleikson, Arne J. Dual purpose transmission line. 3,700,900, Cl. 250-199.000.
Hermanns, Leonard S., to Mech-El Industries, Inc. Apparatus for improving alignment of beam leaded bonding tools. 3,700,155, Cl. 228-3.000.
Hermanns, Leonard S., to Mech-El Industries, Inc. Bonding head for bonding beam leaded devices to a substrate. 3,700,156, Cl. 228-4.000.
Hero, Richard A., to Port-A-Stall. Horse stall construction. 3,699,924, Cl. 119-16.000.
Heroux, J. Omer. End roll protector. 3,700,099, Cl. 206-59.00f.
Hersey-Sparling Meter Company: *See—*
Sparling, Raymond T.; and Dietz, William A., 3,700,007.
Hesphide, William H.: *See—*
United States of America, National Aeronautics and Space Administration, 3,699,799.
Hesse, Holger; deceased (by Hesse, Ruth Lea; heiress and executrix); and Ruben, Henning M. Valve arrangement, especially for use in anaesthetic gas supply systems. 3,700,000, Cl. 137-494.000.
Hesse, Ruth Lea: *See—*
Hesse, Holger; and Ruben, Henning M., 3,700,000.
Hesser, Fr., Maschinenfabrik, A.G.: *See—*
Beck, Otto; and Spalding, Georg, 3,700,854.
Heugebaert, Frans Clement: *See—*
Brinckman, Eric Maria; Van Den Heuvel, Walter August; Vanhalst, Johan Eugeen; and Heugebaert, Frans Clement, 3,700,452.
Hewlett Packard Company: *See—*
Barrett, John C.; Borden, Howard C.; and Loebner, Egon E., 3,701,123.
Hewlett-Packard Company: *See—*
Dukes, John N., 3,701,042.
Kruger, William P., 3,699,997.
Heyman, Philip Michael, to RCA Corporation. Method of improving cathodochromic sensitivity. 3,700,804, Cl. 178-7.50d.
Hickey, Lionel Russell, to Eastman Kodak Company. Magnetically controlled machine programmer. 3,700,906, Cl. 250-208.000.
Hielema, Ralph, to Kendall Company, The. Method of applying corrosion and mechanical protective coatings in form of tapes to a metal pipe. 3,700,520, Cl. 156-162.000.
Higashi, Seiya; and Kobayashi, Kenro, to Kokusai Denki Kabushiki Kaisha. Crystal pulling apparatus having means for maintaining liquid-solid crystal interface at a constant temperature. 3,700,412, Cl. 23-273.0sp.
Higashinakagawa, Iwao: *See—*
Yasuda, Nobuaki; Ogawa, Takenobu; Murakami, Yoshio; Higashinakagawa, Iwao; Takeno, Syozo; and Tanaka, Norio, 3,699,619.
Higgins, Lawrence M. Automatic dump system for contaminants collected in a slurry processing sump. 3,700,102, Cl. 209-158.000.
Higley, Willard S., to United States of America, Interior. Cleaning of used membrane withoxalic acid. 3,700,591, Cl. 210-23.000.
Hill, Donald Allan: *See—*
Essex, Duane Arnold; Haverdink, Virgil Dean; and Hill, Donald Allan, 3,700,039.
Hill, Marion E.: *See—*
Coon, Clifford L.; Hill, Marion E.; and Ross, Donald L., 3,700,723.
Hillson, Peter John; and Ridgway, Michael, to Eastman Kodak Company. Disproportionating imagewise distribution of metallic nuclei to form visible metallic image. 3,700,448, Cl. 96-48.00r.
Hinds, Walter E.: *See—*

Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, 3,699,630.

Hinkley, David F., to Merck & Co., Inc. 2-Carboxy or 2-carboxylower alkyl derivatives of 5-fluoro-1-(p-methylsulfinyl-benzylidene)-indenyl -3-acetic acid. 3,700,730, Cl. 260-515.00a.

Hirooka, Masaaki: *See*—
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; and Yabuuchi, Hiroshi, 3,700,647.

Hirooka, Masaaki; Yasui, Seimei; Mashita, Kentaro; and Kimura, Fumiyuki, to Sumitomo Chemical Company, Ltd. Method for producing alternating copolymers. 3,700,648, Cl. 260-63.00r.

Hirose, Tatsuo: *See*—
Abe, Isao; Hirose, Tatsuo; and Ohshima, Kotaro, 3,699,976.

Hiruta, Shiro: *See*—
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Tetsuhiro, Kusunose; Isumaki, Tatsuichi; and Ota, Masami, 3,700,662.

Hitachi, Ltd.: *See*—
Masuhara, Toshiaki; Nagata, Minoru; and Kubo, Masaharu, 3,700,981.

Hittel, William C.; and Sachs, Charles M., to International Playtex Corporation. Foundation garment. 3,699,971, Cl. 128-491.000.

Hiyosi, Hiroi; and Kanda, Masao, to Fuji Photo Film Co., Ltd. Method of coating by delaying the control signal for operating the coating apparatus. 3,700,490, Cl. 117-120.000.

Hobbs, Alfred J.: *See*—
Seidenberg, Benjamin; and Hobbs, Alfred J., 3,700,893.

Hodges Chemicals Company: *See*—
Schmitz, Robert D., 3,700,533.

Hoelscher, Max W.: *See*—
Novajovsky, William A.; and Hoelscher, Max W., 3,701,061.

Hoer, Cletus A., to United States of America, Navy. Broad-band lumped-element directional coupler. 3,701,057, Cl. 333-10.000.

Hofer, Gerald: *See*—
Eckert, Konrad; Eheim, Franz; Hofer, Gerald; and Koster, Claus, 3,699,939.

Hoff, Dale R.; and Rooney, Clarence S., to Merck & Co., Inc. Nitroimidazole derivatives. 3,700,685, Cl. 260-309.000.

Hoff, Gunter; and Langbein, Gerhard, to Dornier Systems G.m.b.H. Satellite. 3,700,488, Cl. 117-94.000.

Hoffee, Joseph M. Fluid sensing cutter control. 3,699,908, Cl. 112-130.000.

Hoffmann, Hellmut; Hamman, Ingeborg; and Homeyer, Bernhard, to Farbenfabriken Bayer Aktiengesellschaft. (Thiono) phosphoric (phosphonic)-acid esters. 3,700,687, Cl. 260-310.00r.

Hoffmann-La Roche Inc.: *See*—
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,700,698.
Furst, Andor; Muller, Marcel; Muller, Peter; Schocher, Arne Johannes; and Bacher, Elisabeth, 3,700,702.
Gasche, Urs; Lindlar, Herbert; Rutishauser, Max; and Steiner, Riedholz Kurt, 3,700,501.
Gerecke, Max; and Zimmermann, Jean Pierre, 3,700,659.
Halbartschlager, Ingomar; and Heim, Alfred, 3,700,089.
Leimgruber, Willy; and Weigele, Manfred, 3,700,679.
Lerner, Irwin; and McGrath, Robert Paul, 3,700,774.
Saucy, Gabriel; and Scott, John William, 3,700,661.

Hofmeister, John M. Connecting device for articles of clothing. 3,699,617, Cl. 24-81.0gs.

Hogg, Walter R., to Coulter Electronics, Inc. Axial trajectory sensor for electronic particle study apparatus and method. 3,700,867, Cl. 235-151.300.

Hogg, Walter R., to Coulter Electronics, Inc. Axial trajectory sensor having grating means controlled by pulse duration measuring. 3,701,029, Cl. 328-91.000.

Holbrook, Legrand K., to Medical Development Corporation. Body fluid collection bottle. 3,699,815, Cl. 73-427.000.

Holdread, Robert N. Spare wheel carrier. 3,700,130, Cl. 214-454.000.

Hollenton, Frank, to AMF Incorporated. Tobacco leaf conditioner. 3,699,977, Cl. 131-147.00r.

Holly, James A., to Permalok International, Inc. Wig. 3,699,978, Cl. 132-53.000.

Holly Sugar Corporation: *See*—
Bichsel, Stanley E.; and Carpenter, Tim D., 3,700,460.

Holm, William Z., to Helm Tractor & Equipment Company. Automatic milking barn. 3,699,922, Cl. 119-14.030.

Holmes, Ervine Stout: *See*—
Symoniak, Martin Francis; Torke, David Allen; and Holmes, Ervine Stout, 3,700,589.

Holmes, Richard N.: *See*—
Dobbs, Richard A.; and Holmes, Richard N., 3,700,067.

Holsinger, Jerry L., to Intertel, Inc. Active filter. 3,701,037, Cl. 330-107.000.

Holstein & Kappert Maschinenfabrik Phonix GmbH: *See*—
Knabe, Uwe, 3,699,740.

Holy, Vladislav, to Vyzkumny ustav Kovu. Cyclone kiln system. 3,700,221, Cl. 266-9.000.

Homeyer, Bernhard: *See*—
Hoffmann, Hellmut; Hamman, Ingeborg; and Homeyer, Bernhard, 3,700,687.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ashikawa, Noboru; and Maruno, Fujiya, 3,700,083.

Honda, Masaaki: *See*—
Ota, Tomiyoshi; Takigawa, Katunobu; and Honda, Masaaki, 3,699,948.

Honey, Francis J.: *See*—
Harrison, Lee, III; Honey, Francis J.; and Tajchman, Edwin J., 3,700,792.

Honeywell Inc.: *See*—
Bergin, William P., 3,701,145.
Fulkerson, David E., 3,700,924.
Lowe, Peter R., 3,700,955.
Resh, John S., 3,700,843.

Honeywell Information Systems Inc.: *See*—
Howell, Thomas H., 3,700,870.
Howell, Thomas H., 3,701,094.
Reichhard, Robert W., 3,701,126.

Honig, Helmut: *See*—
Dillenburg, Helmut; Honig, Helmut; and Moser, Wilhelm, 3,700,414.

Honshu Paper Company: *See*—
Ohmori, Koichiro, 3,700,518.

Hood, Jesse C., Jr.; and Palmer, Harold D. Electrical component insertion-removal tool. 3,699,629, Cl. 29-203.00h.

Hooker Chemical Corporation: *See*—
Carr, Russell L. K.; and Baransauckas, Charles F., 3,700,695.

Hoover Company, The: *See*—
Clausse, Georges Jean Louis-Marie, 3,701,063.

Hoppin, George S., III; Yount, Reed E.; Berry, Thomas F.; and Barker, James F., to General Electric Company. Powder for diffusion bonding of superalloy members. 3,700,427, Cl. 75-.50r.

Horizons Inc.: *See*—
Reynard, Kennard A.; and Rose, Swiwyn H., 3,700,629.

Horr, William A.: *See*—
Piatek, Edward Walter; and Horr, William A., 3,699,828.

Hortnagl, Franz, to Daimler-Benz Aktiengesellschaft. Elastic mounting of a radiator of motor vehicle. 3,700,061, Cl. 180-68.00r.

Horvitz, Leo. Method of geochemical prospecting. 3,700,407, Cl. 23-230.0ep.

Hosono, Hiroo: *See*—
Tatematsu, Kenzo; Hosono, Hiroo; Katagiri, Toshio; Hayashi, Yoshiaki; and Ando, Hiroyuki, 3,700,818.

Hoss, Robert J., to Zinsco Electrical Products. Ground fault detector circuit. 3,700,967, Cl. 317-18.00d.

Hostetler, William: *See*—
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,700,526.

Hotta, Takeshi; and Ishikawa, Hisashige. Condenser leakage monitoring system. 3,699,802, Cl. 73-40.50r.

Houbolt, Jacob J.H.C.: *See*—
Bezemer, Cornelis; Tadema, Harco J.; and Houbolt, Jacob J.H.C., 3,700,593.

Hovermarine (Canada) Limited: *See*—
Richardson, Harold; and Newman, Bruce D., 3,700,064.

Howard, David Campbell, to Gas Council, The. Leak clamp assemblies. 3,700,270, Cl. 285-337.000.

Howard, Harold K., to United States of America, Navy. Bipolar sample and hold circuit. 3,701,152, Cl. 343-16.00m.

Howe, Hans-Ulrich, to Klockner-Humboldt-Deutz Aktiengesellschaft. Cylinder head connection for reciprocable piston internal. 3,699,852, Cl. 92-169.000.

Howell, Thomas G.: *See*—
Cornmeier, Robert J.; Howell, Thomas G.; Corrigan, Charles E.; and Koff, Bernard L., 3,700,348.

Howell, Thomas H., to Honeywell Information Systems Inc. Error control arrangement for associative information storage and retrieval. 3,700,870, Cl. 235-153.000.

Howell, Thomas H., to Honeywell Information Systems Inc. Error control arrangement for information comparison. 3,701,094, Cl. 340-146.1al.

Hubbard, Ronald R.; and Nalevanko, Richard N., to Anaconda Wire and Cable Company. Dispensable coil package. 3,700,185, Cl. 242-159.000.

Huddle, Carl F., to Tension Structures Co. Housing with cable suspended panels. 3,699,987, Cl. 135-4.00r.

Huff, Ronald G., to United States of America, National Aeronautics and Space Administration. Method of making apparatus for sensing temperature. 3,699,645, Cl. 29-573.000.

Hughes Aircraft Company: *See*—
Dahlinger, Rodney J.; and Farnsworth, Robert P., 3,700,913.
Myer, Jon H.; O'Mera, Thomas R.; and Richardson, John M., 3,700,907.
Seaton, Arthur F., 3,701,162.
Stafsudd, Oscar M.; and Haak, Frederik A., 3,701,046.
Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, 3,699,630.

Hughes, Ronald William; and Boyse, Alan, to Lucas, Joseph, (Industries) Limited. Fuel control apparatus. 3,699,941, Cl. 123-179.00g.

Hughes Tool Company: *See*—
Galle, Edward N., 3,699,675.

Hullett, David F.: *See*—
Lytton, Kenneth G.; Hullett, David F.; and Miller, George J., 3,700,091.

Hulse, George E.; and Harris, James J., to Sinclair-Koppers Company. Crystalline polystyrene products. 3,700,639, Cl. 260-88.20c.

Hulsman, William H., to Control Design, Inc. Transistorized thermocouple flame detector. 3,701,137, Cl. 340-228.00r.

Humphrey, Burnice Lee. Sump pump cover. 3,699,730, Cl. 52-19.000.

Humphrey, William G., Jr.; and Rishton, Michael L., to Dyonics Inc. Flexible optical light pipes used for surgery. 3,699,950, Cl. 128-23.000.

Hunt, Charles J., to Vulcan Corporation. Butchers' bone dust scraper. 3,699,604, Cl. 15-236.00r.

Hunter, Paul Douglas; and Machol, Richard Erving, Jr., to Bell Telephone Laboratories, Incorporated. Detection of errors in shift register sequences. 3,701,096, Cl. 340-146.10d.

Hurlburt, Joseph C., to Sperry Rand Corporation. Belt carried cutters and mounting means therefor. 3,699,757, Cl. 56-291.000.

Hurlburt, Joseph C., to Sperry Rand Corporation. Tiltable steering system. 3,700,257, Cl. 280-87.00a.

Husky Manufacturing and Tool Works Ltd.: *See*—
Rees, Herbert, 3,700,375.

Hutchinson, Francis Gowland, to Imperial Chemical Industries Limited. Gel polymerized polyurethane precursors and vinyl monomers. 3,700,752, Cl. 260-859.00r.

Hutchinson, Thomas R.: *See*—
Bennett, Leonard W.; Hutchinson, Thomas R.; and Schilling, Winston H., 3,701,016.

Hutchison, Stanley O., to Chevron Research Company. Method for well cleanout. 3,700,034, Cl. 166-312.000.

Hutner, Mark A.; Polit, Neil A.; Watson, Donald W; and Artelt, Herbert C., Jr., to Xerox Corporation. Electrophotographic printing systems. 3,700,324, Cl. 355-6.000.

Hy-Torq Corporation: *See*—
Schwab, Delmar G., 3,700,082.

Hyde, James A., to Nalco Chemical Company. Silicone oil antifoam. 3,700,587, Cl. 208-131.000.

Hydrocarbon Research, Inc.: *See*—
Johanson, Edwin S.; Wolk, Ronald H.; and Johnson, Clarence A., 3,700,584.

Hydronautics-Israel Ltd.: *See*—
Bloch, Rene A.; Furmansky, Mordechay; and Gasner, Saul, 3,700,576.

Hyndman, Harry L., to Monsanto Company. Insecticidal composition containing trifluoromethyl substituted benzanilides and method of using the same. 3,700,778, Cl. 424-324.000.

ICP, Inc.: *See*—
Murgas, Karl M.; Greenberg, Burton; and Clark, Otto A., 3,700,326.
Murgas, Karl M.; and Greenbert, Burton, 3,700,327.

Identicon Corporation: *See*—
Wolff, Gerald, 3,701,097.

Ifield, Richard Joseph, to Lucas, Joseph, (Industries) Limited. Rotary hydraulic pumps and motors. 3,699,845, Cl. 91-6.500.

Igi, Keishiro: *See*—
Mizuno, Masao; and Igi, Keishiro, 3,700,642.

ILC Industries, Inc.: *See*—
Durney, George P., 3,699,589.

Illinois Tool Works, Inc.: *See*—
Collier, Frank J., 3,700,135.
Deasy, Raymond E., 3,700,275.
Klygis, Mindaugas Julius, 3,700,276.
Lanius, James Curtis, Jr., 3,699,841.

Imperial Chemical Industrial: *See*—
Tregear, Geoffrey W.; Battaerd, Hendrik A. J.; Lang, Gunter A.; Catt, Kevin; and Niall, Hugh D., 3,700,609.

Imperial Chemical Industries Limited: *See*—
Atherton, John Heathcote; and Plumb, John Beckett, 3,700,713.
Buteux, Richard Harold Barclay, 3,700,540.
Clarke, Kenneth; and Bevan, Ronald, 3,699,621.
Cuthertson, William Wilson, 3,700,400.
Dodman, David,; Pearson, Kenneth William; and Woolley, John Mathers, 3,700,605.
Hutchinson, Francis Gowland, 3,700,752.
Richardson, Dora Nellie; Walpole, Arthur Leonard; and Paget, George Edward, 3,700,777.

Improved Machinery, Inc.: *See*—
Rich, John Parker; and Carlsmith, Lawrence Allan, 3,700,548.

Inamoto, Yoshihiko: *See*—
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Tetsuhiro, Kusunose; Isumaki, Tatsuichi; and Ota, Masami, 3,700,662.

Indiana University Foundation: *See*—
Muhler, Joseph C.; and Stookey, George K., 3,699,979.

Industrial Science & Technology, Agency of: *See*—
Kuwahara, Ayako, 3,700,058.

Industrie Pirelli Societa per Azioni: *See*—
Ferrentino, Antonio, 3,701,060.

Ingenious Devices Limited: *See*—
Parry, John, 3,700,343.

Ingrey, Sidney Ivor Joseph, to Northern Electric Company Limited. Information on a layer of orthoferrite with an electron beam. 3,701,115, Cl. 340-173.0cr.

Inman, Eric Richard; Macpherson, Ian Alexander; and Stirling, John Andrew, to Ciba-Geigy AG. Azomethine pigments. 3,700,709, Cl. 260-438.100.

Inokuchi, Takahiro: *See*—
Gocho, Yukisato; and Inokuchi, Takahiro, 3,701,030.

Institut Francais du Petrole, des Carburants et Lubrifiants: *See*—
Tirsapolsky, Wladimir; Rouviere, Roger; and Willm, Yves, 3,700,049.

Intel Corporation: *See*—
Vadasz, Leslie L., 3,699,646.

Intercole Automation, Inc.: *See*—
Matsuoka, James T.; and Cantarutti, Armindo, 3,700,374.

International Business Machine Corporation: *See*—
Cocke, John; Mommens, Jacques H.; and Raviv, Josef, 3,701,111.

International Business Machines Corporation: *See*—
Blasbalg, Herman L.; Hayase, Joshua Y.; Crutchfield, Richard C., Jr.; and Najjar, Hann F., 3,700,820.
Chang, Hsu; and Genovese, Eugene R., 3,701,125.
Chaney, Raymond E., 3,700,150.
Davidge, Ronald V.; Lockler, Henry C.; Ralston, James C.; and Ritchie, Robert T., 3,700,328.
Fang, Yang, 3,701,023.
Finnegan, Edward D.; Harper, Leonard Roy; Mitrofanoff, Nicholas S.; and Slutman, Allen C., 3,701,105.
Frei, Armin H., 3,701,148.
Furman, Anatol, 3,700,922.
Hall, Richard E.; and Segar, Lawrence P., 3,701,099.
Kanazawa, Kay Keiji; Seiki, Hajime; and Street, George Bryan, 3,700,498.
Lang, Paul C.; La Pine, Anthony N.; and Vaughn, Julian E., 3,701,039.
Laurer, George J.; and Skatrud, Ralph O., 3,700,859.
Loh, Louis S.; Monnens, Jacques H.; and Raviv, Josef, 3,701,108.
May, Frederick T., 3,700,872.
Yhap, Ernesto F., 3,700,873.

International Computer Limited: *See*—
Taplin, Stanley Donovan; and Pettitt, Malcolm Jack, 3,700,825.

International Harvester Company: *See*—
Aamus, Rodger W., 3,699,677.
Bardos, John J.; and Poplawski, Joel J., 3,699,679.
Boram, William R.; and Acle, Luis, Jr., 3,700,649.
Porter, Robert B.; Ardelt, Clarence A.; and Storck, Robert C., 3,700,081.
Scarnato, Thomas J.; Peacock, Peter J.; and Kowalik, John J., 3,699,758.
Swanson, William C.; Moyer, Donald W.; and Aamus, Rodger W., 3,699,678.

International Machinery Corporation, S.A.: *See*—
Mencacci, Samuel A., 3,700,386.

International Minerals and Chemical Corporations: *See*—
Lang, William J., 3,700,474.

International Paper Company: *See*—
Violette, Glenn M.; Paquin, Leon J.; and Lock, James A., 3,700,525.

International Playtex Corporation: *See*—
Dostal, Zdenek Denny, 3,699,965.
Hittel, William C.; and Sachs, Charles M., 3,699,971.

International Rectifier Corporation: *See*—
Weinstein, Harold, 3,700,982.

International Standard Corporation: *See*—
Beguin, Daniel Edmond, 3,701,160.

International Standard Electric Corporation: *See*—
Gomel, Lorenzo Martinez, 3,701,084.

International Telephone and Telegraph Corporation: *See*—
Adams, Henry G., 3,701,155.
Anhalt, John William, 3,699,632.
Garcia, Julian; and Carroll, James C., 3,700,817.
Somerset, Sherman J., 3,701,086.

International Telephone and Telegraph Corporation, mesne: *See*—
Goetzl, Manlio, 3,700,983.

Intertel, Inc.: *See*—
Holsinger, Jerry L., 3,701,037.

Inukai, Noriyoshi: *See*—
Murakami, Masuo; Inukai, Noriyoshi; Koda, Akio; and Nakano, Koji, 3,700,719.

Ionics, Incorporated: *See*—
Swain, Charles Gardner, 3,700,934.

Iota Engineering, Inc.: *See*—
Pulliam, Joseph H.; and McCurnin, Thomas W., 3,701,138.

Irish, Carleton D., to Bell Telephone Laboratories, Incorporated. Intercept connector having two diode mounting holes separated by a diode supporting recess. 3,701,076, Cl. 339-17.00c.

Irvin, Albert H., to Philco-Ford Corporation. Air flow control apparatus. 3,699,873, Cl. 98-116.000.

Isaac, George L.; Kingsbury, Richard F.; and Surak, John G., to Signetics Corporation. Apparatus for testing circuit packages. 3,701,021, Cl. 324-158.00f.

Isen, Allan A.: *See*—
O'Driscoll, Kenneth F.; and Isen, Allan A., 3,700,761.

Ishikawa, Hidehiko: *See*—
Soma, Nobuo; Watatani, Mitsuo; Nakazawa, Junichi; Sato, Yoshio; Kuwabara, Yoshimi; and Ishikawa, Hidehiko, 3,700,682.

Ishikawa, Hidehiko; Sato, Mikio; and Takada, Syun, to Konishiroku Photo Industry Co., Ltd. Color photograph containing fade-preventing agents. 3,700,455, Cl. 96-100.000.

Ishikawa, Hisashige: *See*—
Hotta, Takeshi; and Ishikawa, Hisashige, 3,699,802.

Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Tetsuhiro, Kusunose; Isumaki, Tatsuichi; and Ota, Masami. Triazine derivatives and compositions thereof. 3,700,662, Cl. 260-242.

Ishikawa, Teruo; Kawashima, Koji; and Togashi, Tetuo, to Tokyo Shibaura Electric Co., Ltd. High frequency heating apparatus. 3,700,846, Cl. 219-10.550.

Ishizawa, Masami: *See*—
Kinoshita, Ryohei; and Ishizawa, Masami, 3,701,064.

Isono, Kiyoshi: *See*—
Suzuki, Saburo; Isono, Kiyoshi; Nagatsu, Junsaku; Akashiba, Takeo; and Sasaki, Shigeki, 3,700,655.

Isumaki, Tatsuichi: *See*—
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Tetsuhiro, Kusunose; Isumaki, Tatsuichi; and Ota, Masami, 3,700,662.

Isumi, Ichizo. Method for manufacturing gill faller of a constant thickness faller body type. 3,699,643, Cl. 29-527.100.

Itek Corporation: *See*—
Beasley, George A., 3,699,721.
Buchan, William R., 3,700,902.
Eastler, William E., Jr., 3,700,437.
Kruse, Jurgen M.; and Wyman, John E., 3,700,495.
Lerner, Harry, 3,700,449.
McLeod, Gerald L.; French, Hollis E.; Case,Laura K.; Berman, Elliot; and Casella, Joseph, 3,700,440.
Ravich, Leonard E.; Berman, Elliot; and Ekman, Carl F. W. (said Ravich and said Ekman assor. to), 3,700,447.
Sullivan, John P., Jr., 3,700,451.

ITT Industries, Inc.: *See*—
Keller, Hans, 3,701,052.

Ivanov, Mark Efremovich: *See*—
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, 3,700,364.

Iwabuchi, Osamu: *See*—
Shimauchi, Shiro; Kitamura, Yuko; Iwabuchi, Osamu; and Matsui, Takeshi, 3,700,399.

Iwai, Isaei; Kishida, Yukichi; and Iwashige, Tadahiro, to Sankyo Company, Limited. Arylsulfonylpyrazole compounds. 3,700,688, Cl. 260-310.00r.

Iwasaki Tsushinki Kabushiki Kaisha (a/k/a Iwatsu Electric Co., Ltd.): *See*—
Ozawa, Syuichi; and Tomimura, Noboru, 3,701,056.

Iwasaki Tsushinki Kabushiki Kaisha a/k/a Iwatsu Electric Co., Ltd.: *See*—
Haga, Ichiro; and Tamada, Sieechi, 3,701,146.
Suzuki, Koji, 3,700,917.

Iwashige, Tadahiro: *See*—
Iwai, Isaei; Kishida, Yukichi; and Iwashige, Tadahiro, 3,700,688.

Jackson, Charles L., to Signatron, Inc. Alarm system using coded signalling. 3,701,019, Cl. 325-64.000.

Jackson, George W.; Long, Paul J., Jr.; and Fannin, Wayne V., to General Motors Corporation. Energy absorbing bumper system. 3,700,273, Cl. 293-70.000.

Jackson, Jesse, Jr.: *See*—
MacMillan, Robert T; and Jackson, Jesse, Jr., 3,700,766.

Jacky, Germaine F.; and Ehrlich, Richard D., to United States of America, Atomic Energy Commission. Uranium surface preparation for electroless nickel plating. 3,700,482, Cl. 117-50.000.

Jacobs, Louis L. Fish hook setters. 3,699,701, Cl. 43-15.000.

Jacuone, Roberto: *See*—
Siciari, Francesco; Rossi, Pietro Paolo; Calgari, Seba; and Jacuone, Roberto, 3,700,631.

Jakob, Horst, to Societe Financiere Franciase de Licences et Breveta. Row of fastener elements for a slide. 3,699,618, Cl. 24-205.10c.

Jakobi, Wilhelm, to Heinrich Koppers Gesellschaft mit beschrankter and Haftung. Apparatus for controlling the flow of gas between flues in the heating chambers of a regenerative coke oven. 3,700,219, Cl. 263-15.00r.

Janicek, Mark A. Aquarium platform. 3,699,921, Cl. 119-5.

Janisch, Ingo; and Fleissner, Heinz, to Vepa A.G. Process and apparatus for the wet treatment of expanded textile material lengths. 3,700,404, Cl. 88-158.000.

Janssen, Gail E.; and Wildenberg, Henry N., to Badger Northland, Inc. Collapsible liner for silo chute. 3,699,732, Cl. 52-195.000.

Japan Aircraft Manufacturing Company Limited: *See*—
Takahashi, Senji, 3,699,810.

Japan Monopoly Corporation, The: *See*—
Abe, Isao; Hiroae, Tatsuo; and Ohshima, Kotaro, 3,699,976.

Jarnagin, Max L.: *See*—
Sosalla, Harry; Meusburger, Lyle M.; and Jarnagin, Max L., 3,700,040.

Jayne, Max L.; and Williams, Charles A., to Sylvania Electric Products Inc. Fluorescent lamp holder assembly. 3,701,081, Cl. 339-53.000.

Jennings, Brian Michael; and Ager, Johnwalter Albert, to Costain Concrete Company, Limited. Rail fastening assemblies for railroad tracks. 3,700,167, Cl. 238-349.000.

Jennings, Walter B., Jr., to United States of America, Army. Multi-rod single pump source laser. 3,701,048, Cl. 331-94.500.

Jensen, Arne, to Danfoss A/S. Control system for an alternating current motor. 3,700,989, Cl. 318-227.000.

Jensen, Borge: *See*—
Jensen, Jorgen Bent; Jensen, Borge; Krohn, Rasmus; and Keldmann, Erik, 3,700,853.

Jensen, Einar W., to Eastman Kodak Company. Film processing apparatus for processing films of different type. 3,699,869, Cl. 95-94.00r.

Jensen, Jorgen Bent; Jensen, Borge; Krohn, Rasmus; and Keldmann, Erik, to Bristol-Myers Company. Apparatus for heating of hairwinders. 3,700,853, Cl. 219-222.000.

Jeserich, Wolfgang-Dieter: *See*—
Steinhofer, Adolf; Doerfel, Helmut; Falkenstein, Georg; and Jeserich, Wolfgang-Dieter, 3,700,658.

Johannsmeier, Karl-Heinz. Wafer loading apparatus. 3,700,567, Cl. 29-203.00r.

Johanson, Edwin S.; Wolk, Ronald H.; and Johnson, Clarence A., to Hydrocarbon Research, Inc. Hydrogenation of low rank coal. 3,700,584, Cl. 208-10.000.

John, Willibald; Schmalfeld, Paul; Lange, Paul; and Rammler, Roland, to Metallgesellschaft Aktiengesellschaft. Continuous process of producing shaped metallurgical coke. 3,700,564, Cl. 201-6.000.

Johnsen, Eric C., to Gem Products, Inc. Motor protector. 3,701,068, Cl. 337-102.000.

Johnson, Bennie R. Casket handle retained by spreadable webs. 3,699,611, Cl. 16-114.000.

Johnson, Clarence A.: *See*—
Johanson, Edwin S.; Wolk, Ronald H.; and Johnson, Clarence A., 3,700,584.

Johnson, James L.; Schora, Frank C., Jr.; and Tarm, Paul B., to Consolidation Coal Company. Apparatus for conducting a continuous steam-iron process. 3,700,421, Cl. 48-73.000.

Johnson, James L.; Schora, Frank C., Jr.; and Tarman, Paul B., to Consolidation Coal Company. Continuous steam-iron process for making fuel gas. 3,700,422, Cl. 48-197.00r.

Johnson, Joseph A., to Jomar Industries, Inc. Stripper for blow molding machine. 3,700,369, Cl. 425-139.000.

Johnson, Kenneth; and Lense, Robert F., to Rexham Corporation, mesne. Packaging machine for forming and filling bags of different lengths and widths. 3,700,388, Cl. 53-183.000.

Johnson, Kenneth V.; and Miller, David A., to Koehring Company. Vehicle with variable width ground supports. 3,700,115, Cl. 212-38.000.

Johnson, Richard Bruce; and Winn, George, to Rosen, Jacob J. Doll having a substantially seamless foamed integral torso and neck portion. 3,699,714, Cl. 46-156.000.

Johnson, Robert Henry, to Motorola, Inc. Dual mode wave energy transducer device. 3,701,158, Cl. 343-725.000.

Johnson, Sam H., Jr.; and Wright, Howard N., Jr., to Eastman Kodak Company. Process for the manufacture of glycol ether acetates. 3,700,726, Cl. 260-491.000.

Johnson, Sam H., Jr.; Mears, Robert A.; and Park, Vernon K., to Eastman Kodak Company. Hot melt adjesive compositions comprising polyolefin and DAC-B resin. 3,700,758, Cl. 260-897.00r.

Johnson Service Company: *See*—
Munch, Otto R., 3,699,991.

Jomar Industries, Inc.: *See*—
Johnson, Joseph A., 3,700,369.

Jones and Laughlin Steel Corporation: *See*—
Rubin, Robert G., 3,700,485.

Jones, David P. Typewriter for use with a drafting straight edge. 3,700,086, Cl. 197-2.000.

Jones, Elborn W., Jr., to Allis-Chalmers Corporation. Front end suspension. 3,700,256, Cl. 280-87.00r.

Jones, Evan, to Henry Valve Company. Valve assembly. 3,700,206, Cl. 251-84.000.

Jones, John Ivor Parry, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in her Britannic Majesty's Government of the. Anemometer rotors. 3,699,801, Cl. 73-189.000.

Jonsson, Karl-Erik Arnold, to Brundell och Johsson AB. Wire race ball bearing. 3,700,845, Cl. 308-216.000.

Jordan, Eugene Leon: *See*—
Epifano, Robert Nicholas; and Jordan, Eugene Leon, 3,700,497.

Joseph, Bernard W.: *See*—
Donohue, Robert J.; and Joseph, Bernard W., 3,700,883.

Jouin, Alfred, to Societe a Responsabilite Limitee: Forges & Trefileries de Conflandey. Processing machine for the production of small coils of metal or otherwise. 3,699,627, Cl. 29-200.00b.

Jung, Karl-Heinz; and Gartner, Klaus-Gunther, to Dynamit Nobel Aktiengesellschaft. Production of stable urea, formaldehyde, polyamine condensation products. 3,700,641, Cl. 260-70.00r.

Jutzi, Manfred: *See*—
Haberhauer, Karl; Jutzi, Manfred; and Kiess, Reinhold, 3,700,513.

JWI Ltd.: *See*—
MacBean, Donald George, 3,700,194.

K-Tech, Inc.: *See*—
Kelly, Cornelius J., Jr., 3,701,077.

Kabushiki Kaisha Hattori Tokeiten: *See*—
Kitai, Kiyoshi, 3,699,866.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Obayashi, Nobuharu, 3,700,781.

Kabushiki Kaisha Ricoh: *See*—
von Grabe, Walther, 3,699,920.

Kabushikikaisha Tokyo Keiki Seizosho Tokyo Keiki Seizosho Co., Ltd.: *See*—
Kawada, Shin-Ichi, 3,699,657.

Kachman, Robert D.: *See*—
Verge, Kenneth W.; Kachman, Robert D.; and Read, Ronald G., 3,700,362.

Kacmarcik, Thomas J.: *See*—
Southam, Donald L.; and Kacmarcik, Thomas J., 3,699,887.

Kahng, Dawon, to Bell Telephone Laboratories, Incorporated. Charge coupled devices. 3,700,932, Cl. 307-304.000.

Kaiser, Robert, to Avco Corporation. Ferrofluid composition. 3,700,595, Cl. 252-62.560.

Kajita, Hiroyuki: *See*—
Noda, Masajiro; Kajita, Hiroyuki; and Kuwayama, Koji, 3,700,402.

Kalinsky, Harry. Wrist band and buckle therefor. 3,699,616, Cl. 24-71.00j.

Kalium Chemicals Limited: *See*—
Schad, Charles A., 3,701,007.

Kalocay, Rudolf: *See*—
Heiz, Max; and Kalocay, Rudolf, 3,701,101.

Kaminsky, Manfred S., to United States of America, Atomic Energy Commission. Method for producing a beam of polarized atoms. 3,700,899, Cl. 250-84.000.

Kanazawa, Kay Keiji; Seiki, Hajime; and Street, George Bryan, to International Business Machines Corporation. Process for making electrophotographic plates. 3,700,498, Cl. 117-230.000.

Kanda, Masao: *See*—
Hiyosi, Hirosi; and Kanda, Masao, 3,700,490.

Kanegafuchei Boaki Kaisha: *See*—
Matsui, Masao, 3,700,544.

Kanegafuchi Boseki Kabushiki Kaisha: *See*—
Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, 3,700,545.

Kaneko, Hidehiko; Aritomi, Jiro; and Nakamura, Keiji, to Dainippon Pharmaceutical Co., Ltd. Aminoalkanol esters and their pharmaceutically acceptable acid-addition salt. 3,700,680, Cl. 260-295.50r.

Kanter, Jerome J. Coating ferrous base metal articles. 3,700,505, Cl. 148-6.350.

Kantorski, Joseph W., to American Optical Corporation. Method of making a lens balanced laser rod and rod produced thereby. 3,700,423, Cl. 65-30.000.

Kappeler, Heinrich; and Wild, Jost, to Givaudan Corporation. Process for the manufacture of lavandulic acid and derivatives. 3,700,717, Cl. 260-465.200.

Karasawa, Kazuo: *See*—
Suzuki, Yoshiji; Hayashi, Ikuo; Karasawa, Kazuo; and Shimada, Mitsuhiro, 3,700,953.

Karlen, Harvey R., to Cory Corporation. Anti-siphon and vent means for use with an open-to-atmosphere hot water supply tank. 3,699,944, Cl. 126-362.000.

Karr, Lawrence J.; and Fried, Norman, to TRW Inc. Coaxially adjusted optical mount. 3,700,313, Cl. 350-288.000.

Kartridg Pak Co., The: *See*—
Moore, Lowell B.; Keating, Raymond J.; and Underwood, Warren, 3,700,387.

Karweil, Joachim; and Degel, Josef, to Bergwerksverband G.m.b.H. Method of reactivating spent activated coal. 3,700,563, Cl. 201-1.000.

Kasai, Keiji: *See*—
Sakamoto, Kenro; Tanaka, Motoaki; Hanzawa, Teruo; and Kasai, Keiji, 3,700,454.

Kaspar, Emanuel: *See*—
Hempel, Gerhard; Wieske, Reinhold; Krieger, Bernhard; and Kaspar, Emanuel, 3,700,660.

Kastenbein, Ernest L.; and Geltman, Gerald L., to Allied Chemical Corporation. Dielectric compositions. 3,700,597, Cl. 252-63.200.

Katagiri, Toshio: *See*—
Tatematsu, Kenzo; Hosono, Hiroo; Katagiri, Toshio; Hayashi, Yoshiaki; and Ando, Hiroyuki, 3,700,818.

Katchalski, Ephraim: *See*—
Zabicky-Zissman, Jacobo Zelik; Oren, Ida; and Katchalski, Ephraim, 3,700,610.

Kaufman, Harold B., Jr.: *See*—
Schiffmann, Robert F.; Stein, Ernest W.; and Kaufman, Harold B., Jr., 3,699,899.

Kaufman, Warren F., to Philco-Ford Corporation. Gas sampler. 3,699,814, Cl. 73-421.500.

Kawada, Shin-Ichi, to Kabushikikaisha Tokyo Keiki Seizosho Tokyo Keiki Seizosho Co., Ltd. Cyroscopic instrument. 3,699,657, Cl. 33-324.000.

Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing alternating copolymer of butadiene and olefine. 3,700,638, Cl. 260-84.100.

Kawashima, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Logarithmic amplifier. 3,700,918, Cl. 307-230.000.

Kawashima, Koji: *See*—
Ishikawa, Teruo; Kawashima, Koji; and Togashi, Tetuo, 3,700,846.

Kawasumi, Shohachi: *See*—
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; and Yabuuchi, Hiroshi, 3,700,647.

Keating, Raymond J.: *See*—
Moore, Lowell B.; Keating, Raymond J.; and Underwood, Warren, 3,700,387.

Keen, Ralph S., Jr., to General Instrument Corporation. Fabrication of integrated microcircuit devices. 3,700,508, Cl. 156-3.000.

Keene, Carl E.; and Bradley, Ruth D. Masking techniques for use in fabricating microelectronic components. 3,700,510, Cl. 156-11.000.

Keene Corporation: *See*—
Kruger, Michael H., 3,699,872.

Keene, Derek K.; and Mc Elhare, John J., to Eaton Corporation. Traction mechanism actuated pressure source. 3,700,060, Cl. 180-53.0ff.

Kehr, Clifton L.; and Wazolek, Walter R., to Grace, W. R., & Co. Photocurable liquid polyene-polythiol polymer composition. 3,700,574, Cl. 204-159.140.

Keijzer, Johan H.: *See*—
Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel Josef Roger, 3,700,225.

Keim, Gerald I., to Hercules Incorporated. Reaction products of epihalohydrin and polymers of diallylamine and their use in paper. 3,700,623, Cl. 260-80.30r.

Keithley, Harry E.; and Helrigel, Robert A., to Gulf & Western Industrial Products Company. Knockout bar assembly for presses. 3,699,882, Cl. 100-218.000.

Keldmann, Erik: *See*—
Jensen, Jorgen Bent; Jensen, Borge; Krohn, Rasmus; and Keldmann, Erik, 3,700,853.

Keller, Hans, to ITT Industries, Inc. Method of amplitude control of electromechanical oscillators. 3,701,052, Cl. 331-116.00m.

Keller, Joseph Richard: *See*—
Rueger, Herman; and Keller, Joseph Richard, 3,699,651.

Kelly, Cornelius J., Jr., to K-Tech, Inc. Electronic components. 3,701,077, Cl. 339-17.0cf.

Kelly, Earl K., to McDonnell Douglas Corporatn. Rivet slug injector. 3,700,139, Cl. 221-241.000.

Kelly, James E.: *See*—
Roberts, John A.; Roberts, Peter R.; and Kelly, James E., 3,699,768.

Kendall Company, The: *See*—
Hielema, Ralph, 3,700,520.

Kennedy, Bobby W., to United States of America, National Aeronautics and Space Administration. Polyimide resin-fiberglass cloth laminates for printed circuit boards. 3,700,538, Cl. 161-93.000.

Kennedy, Ray L., to Tel-E-Lect, Inc. Dielectrically extensible boom structure. 3,699,851, Cl. 92-119.000.

Kenney, Edward J.: *See*—
Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., 3,700,607.

Kenney, Jerald R. Putting cup arrangement for golf practice. 3,700,243, Cl. 273-178.00r.

Kerley, James J., Jr.; and Schaller, Norman C., to United States of America, National Aeronautics and Space Administration. Apparatus for vibrational testing of articles. 3,699,807, Cl. 73-71.600.

Kerr-McGee Corporation: *See*—
Koerner, Ernest L., Jr.; and Lucid, Michael F., 3,700,415.
Lucid, Michael F., 3,700,416.

Ketchum, Elmer, Jr., to Combustion Engineering, Inc. Diffuser. 3,700,173, Cl. 239-405.000.

Ketterer, Stanley J., to Singer Company, The. Self-threading needle. 3,699,911, Cl. 112-224.000.

Keystone Engineering Company: *See*—
Boeck, Gunther A., 3,700,301.

Kidd, Arthur H., to Condes Corporation. Machine for making hanging file folders. 3,699,633, Cl. 29-211.00d.

Kidd, Arthur H., to Condes Corporation. Machine for making hanging file folders. 3,700,528, Cl. 156-475.000.

Kiel, Othar M.: *See*—
Terry, William M.; Graham, John W.; Sinclair, Albert R.; and Kiel, Othar M., 3,700,032.

Kieserling, Th., & Albrecht Werkzeugmaschinenfabrik: *See*—
Behme, Henning, 3,700,833.

Kiess, Reinhold: *See*—
Haberhauer, Karl; Jutzi, Manfred; and Kiess, Reinhold, 3,700,513.

Kihara, Mitsuji: *See*—
Kokubo, Ryo; Takakuwa, Yasuo; Shiroishi, Akihiro; and Kihara, Mitsuji, 3,700,672.

Kikuchi, Reizo. Method of erecting suspended scaffolding at construction field and scaffolding erected thereby. 3,700,071, Cl. 182-150.000.

Kilbride, Robert S.: *See*—
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Killion, Derling G., to Ryan Aeronautical Company. Antenna array beam scanning system. 3,701,156, Cl. 343-117.00a.

Kimberly-Clark Corporation: *See*—
Hanke, David E., 3,699,962.
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Kimura, Fumiyuki: *See*—
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Kimura, Yoh, to Nishikawa Rubber Co., Ltd. Packing strip structure. 3,699,718, Cl. 49-491.000.

Kindig, Guilford Edwin, to Eastman Kodak Comny. Positively operated stripping device for cameras. 3,699,862, Cl. 95-13.000.

King, John Calaby, to Concrete Formwork Engineers Pty., Ltd. Scissors-type linkage. 3,700,070, Cl. 182-16.000.

King Nutronics Corporation: *See*—
Waldron, Bradley C., 3,699,800.

King, Oliver F. Method for improving fuel combustion in a furnace and for reducing pollutant emissions therefrom. 3,699,903, Cl. 110-1.00j.

King, Percy; and Garrett, Howard R., to Haskon Incorporated. Container fabricating machine. 3,699,743, Cl. 53-186.000.

Kingsbury, Richard F.: *See*—
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Kinoshita, Ryohei; and Ishizawa, Masami, to Fujitsu Limited. Push-button switch. 3,701,064, Cl. 335-205.000.
Kinsell, Earl G. Minnow seine poles. 3,699,700, Cl. 43-14.000.
Kirkham, Arthur J. Modular shelter system. 3,699,986, Cl. 135-1.00r.
Kirsch, Maurice: *See—*
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Kishida, Yukichi: *See—*
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Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Camera shutter operating mechanism. 3,699,866, Cl. 95-63.000.
Kitamura, Yuko: *See—*
Shimauchi, Shiro; Kitamura, Yuko; Iwabuchi, Osamu; and Matsui, Takeshi, 3,700,399.
Kitano, Hisao; and Tanimoto, Fumio. Method for manufacturing purified isocyanurates. 3,700,667, Cl. 260-248.0ns.
Kitrilakis, Sotiris; and Robinson, Thomas C., to Tecna Corporation. Percutaneous lead device. 3,699,956, Cl. 128-348.000.
Kitrilakis, Sotiris, to Tecna Corporation. Surface or lining compatible with blood or other tissue. 3,700,380, Cl. 3-1.000.
Klawson, Rennold L.: *See—*
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Kleckner, Harold F., to McDonnell Douglas Corporation. Turbofan engine thrust reverser. 3,699,682, Cl. 60-226.00a.
Kleman, Jerry L.: *See—*
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Howe, Hans-Ulrich, 3,699,852.
Klotzbach, Kurt, to American Spin-A-Batch Company. Apparatus for conveying glass panes through a processing plant. 3,699,818, Cl. 74-37.000.
Klygis, Mindaugas Julius, to Illinois Tool Works Inc. Multiple container carrier. 3,700,276, Cl. 294-87.200.
Kmecak, Ronald A.: *See—*
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,700,745.
Knabe, Uwe, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Method and apparatus for filling bottles or can with beer or the like. 3,699,740, Cl. 53-22.00r.
Knapp, Richard V.: *See—*
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Knechel, William F., to Eastman Kodak Company. Antistain agents comprising mixtures of secondary-alkylhydroquinones. 3,700,453, Cl. 96-74.000.
Knecktel, Wilhelm Josef; and Schaffer, Detlef, to Canon Kabushiki Kaisha, means. Electrophotographic apparatus. 3,699,992, Cl. 137-93.000.
Knell, Bernhard, to Concast AG. Method of continuously casting steel billets. 3,700,024, Cl. 164-83.000.
Knight, John H., to Simmonds Precision Products, Inc. High speed electrical counter. 3,700,864, Cl. 235-92.00f.
Knight, Paul A.; Saunders, James R.; and Stapleton, Fred E., to Mandrel Industries, Inc. Gas operated seismic cource employing and inflatable member. 3,700,066, Cl. 181-.5nc.
Knowles, James H.; Ball, Billie Joe; and Fitzgerald, Donald F. Local and national warning alarm system. 3,701,024, Cl. 325-364.000.
Kobayashi, Kenro: *See—*
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Kobayashi, Torao; and Sato, Masatoshi, to Kyoritsu Noki Co., Ltd. Vibration absorbing device for portable machine. 3,700,015, Cl. 143-32.00r.
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Koch, Earl E.; and Shriver, Joe E., to Sperry Rand Corporation. Conditioner mounting for a windrower. 3,699,754, Cl. 56-15.800.
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Koda, Akio: *See—*
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Koening, A. G., means: *See—*
Nepereny, Harold A.; and Reich, John P., 3,699,750.
Koerner, Ernest L., Jr.; and Lucid, Michael F., to Kerr-McGee Corporation. Vanadium recovery from wet process phosphoric acid using neutral organo-phosphorus extractants. 3,700,415, Cl. 23-312.0me.
Koff, Bernard L.: *See—*
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Koga, Hirohumi; and Sato, Ryuichi, to Omron Tateisi Electronics Co. Electromagnetic relay. 3,701,062, Cl. 335-135.000.
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Kokubo, Ryo; Takakuwa, Yasuo; Shiroishi, Akihiro; and Kihara, Mitsuji, to Nissan Kagaku Kogyo Kabushiki Kaisha. Process for recovering by-product gases at high pressure in melamine production. 3,700,672, Cl. 260-249.70p.
Kokubu, Tatsuo: *See—*
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Kokusai Denki Kabushiki Kaisha: *See—*
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Komatsu, Tokuji, to Tsudakoma Industrial Co., Ltd. Apparatus for detecting the tension of yarns delivered from a rotary yarn beam. 3,699,809, Cl. 73-143.000.
Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See—*
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Koopman, Donald E.: *See—*
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Kopec, John C.; Schmitt, Henry O., Jr.; and Tenney, Frederick H., to United States of America, Navy, means. Controlled variable time radio proximity fuze. 3,699,892, Cl. 102-70.200.
Kopp, Harold W. Two-piece football dummy. 3,700,237, Cl. 273-55.00a.
Koppy Corporation, means: *See—*
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Korpel, Adrianus: *See—*
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Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., to Ashland Oil Inc. Hydrodealkylation process with promoted group VIII metals. 3,700,745, Cl. 260-672.00r.
Kowalik, John J.: *See—*
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Kramer, Rolf: *See—*
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Krauss-Maffei Aktiengesellschaft: *See—*
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Kray, Louis R., to Chevron Research Company. Dialkyl phthalate process. 3,700,725, Cl. 260-475.00r.
Kreider, Kenneth G., to United Aircraft Company. Method for fabricating corrosion resistant composites. 3,699,623, Cl. 29-156.80b.
Kreuzer, John A.; and Thompson, David E., to Susquehanna Corporation, The. Rocket vehicle and method of manufacturing same. 3,699,891, Cl. 102-49.300.
Kreuzer, Lloyd Barton, to Bell Telephone Laboratories, Incorporated. Measurement of gas impurity concentration by infrared absorption spectroscopy. 3,700,890, Cl. 250-43.50r.
Krieger, Bernhard: *See—*
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Kritikos, Athanasios: *See—*
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Krohn, Rasmus: *See—*
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Kroll, Gert. Process for cleaning filter elements of fabric filter equipment. 3,699,747, Cl. 55-96.000.
Kroy, Walter: *See—*

Brauser, Klaus J.; Kritikos, Athanasios; Kroy, Walter; and Mehnert, Walter E., 3,701,131.
Kruger, Michael H., to Keene Corporation. Air distribution apparatus. 3,699,872, Cl. 98-40.00d.
Kruger, William P., to Hewlett-Packard Company. Automated vacuum port. 3,699,997, Cl. 137-32.00d.
Kruse, Jurgen M.; and Wyman, John E., to Itek Corporation. Process for coating substrates with polyethylene and products produced thereby. 3,700,495, Cl. 117-104.00r.
Kubik, Phillip A. Fluid system. 3,700,356, Cl. 417-222.000.
Kubler, Manfred, to Dornier System GmbH. Damping device for satellites. 3,700,190, Cl. 244-1.0sa.
Kubo, Masaharu: *See—*
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Kubosaki, Masanobu: *See—*
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Kudo, Toshiyuki: *See—*
Naito, Fumio; Kudo, Toshiyuki; and Kubosaki, Masanobu, 3,700,596.
Kuehn, Erich, to Atlas Chemical Industries Inc. Flame retardant compositions. 3,700,739, Cl. 260-613.00r.
Kuhn, Klaus: *See—*
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Kuhn, Rudolf: *See—*
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Kuhnen, Gottfried, to Aktiengesellschaft Brown, Boveri & Cie. Method for manufacturing liner body for combustion chambers and liner produced by the method. 3,699,641, Cl. 29-493.000.
Kuijper, Josephus Theodorus Maria, to U. S. Philip Corporation. Capacitive symmetrization of a storage. 3,701,114, Cl. 340-173.0ap.
Kullman, William G., to General Electric Company. Hinged surface heating unit system. 3,700,656, Cl. 219-451.000.
Kunio, Tone, to Tokyo Keidenki Kabushiki Kaisha. Transformer shorting device. 3,700,965, Cl. 317-15.000.
Kunst, Detlef, to Olympia Werke AG. Blocking device for the carriage of typewriters and similar machines. 3,700,088, Cl. 197-120.000.
Kunstmann, Martin Paul; and Porter, John Norman, to American Cyanamid Company. Antibiotic AM374 and method of production using streptomyces eburosporeus. 3,700,768, Cl. 424-118.000.
Kuramasu, Tetsuro: *See—*
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Kuraray Co., Ltd.: *See—*
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Kurechi, Taichi, to Fuji Photo Film Co., Ltd. Cinematograph film magazine. 3,700,316, Cl. 352-78.00c.
Kurk, Kenneth G.; and Kilbride, Robert S., to Moorman Manufacturing Company. Method for assembling layers of packages on a pallet. 3,700,127, Cl. 214-152.000.
Kurokawa, Toshio; Nishiyama, Shoji; Nagai, Katsumi; and Mochizuki, Yuu, to Toshio Kurokawa, Shoji Nishiyama and Tokyo Shibaura Electric Co., Ltd. Examinee fastening device for use in an X-ray photographing apparatus. 3,700,229, Cl. 269-328.000.
Kurtz, John A.: *See—*
Deverse, Frank T.; Kurtz, John A.; Rendon, Daniel; Trahn, Kenneth A.; and Tuttle, James W., 3,699,917.
Kusters, Norbert L.; and Moore, William J. M., to Canadian Patents and Development Limited. Phantom burden arrangement for current transformer calibration. 3,701,008, Cl. 324-55.000.
Kutino, Tuyoshi: *See—*
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Kuwabara, Yoshimi: *See—*
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Kuwahara, Ayako, to Industrial Science & Technology, Agency of. Motorized amusement car. 3,700,058, Cl. 180-21.000.
Kuwayama, Koji: *See—*
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Kyoritsu Noki Co., Ltd.: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakayama, Kiyoshi; Tanaka, Haruo; and Hagino, Hiroshi, 3,700,557.
La Heij, Gerardus E.; and Van Amerongen, Gerrit J., to Shell Oil Company. Process for the preparation of gel-containing synthetic conjugated diene solution polymers. 3,700,757, Cl. 260-894.000.
La Pine, Anthony N.: *See—*
Lang, Paul C.; La Pine, Anthony N.; and Vaughn, Julian E., 3,701,039.
La Russa, Julius, to Moody Aquamatic Systems, Inc. Ozone purifier for pressurized water cooler. 3,699,776, Cl. 62-157.000.
Laane, Rein Raymond, to Bell Telephone Laboratories, Inc. Delta-modulation terminal circuit. 3,701,017, Cl. 325-38.00b.
L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude: *See—*
Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,700,030.
Lainey, Alexis D., to Eastman Kodak Company. Electrophotographic fusing apparatus. 3,700,218, Cl. 263-6.00e.
Laizier, Jacques; and Waja, Georges. Method of preparation of hydrophilic silicones by radiochemical grafting. 3,700,573, Cl. 204-159.130.
Lake, William H., to General Electric Company. Metal halide lamp system. 3,700,960, Cl. 315-151.000.
Lala, Walter G. Articulased TV platform. 3,701,073, Cl. 339-5.00p.
Lalley, Donald P., to March Manufacturing Company, means. Pump impeller molding apparatus. 3,700,372, Cl. 425-159.000.
Lamb, Anthony H. Medical thermographic diagnostic means. 3,699,813, Cl. 73-342.000.
Lamorte, Michael F.: *See—*
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Landman, Dirk, to Berg Electronics, Inc. Hinge type circuit board connector block. 3,701,071, Cl. 339-4.000.
Landrum, Charles Rabun: *See—*
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Landry, Alfred. Sterilizer unit for fluid media. 3,700,406, Cl. 21-54.00r.
Landt, Uwe; Seifert, Helmut; and Bretchneider, Otto, to Knapsack Aktiengesellschaft. Process for the manufacture of potassium. 3,700,430, Cl. 75-66.000.
Lang, Gordon R., to E.S.E. Limited. Circuit and method for developing signal indicative of unknown frequency. 3,701,012, Cl. 324-79.00r.
Lang, Gunter A.: *See—*
Tregear, Geoffrey W.; Battaard, Hendrik A. J.; Lang, Gunter A.; Catt, Kevin; and Niall, Hugh D., 3,700,609.
Lang, Paul C.; La Pine, Anthony N.; and Vaughn, Julian E., to International Business Machines Corporation. Random binary data signal frequency and phase compensation circuit. 3,701,039, Cl. 331-1.00a.
Lang, William J., to International Minerals and Chemical Corporations. Increase in clay responsiveness to wetting. 3,700,474, Cl. 106-288.00b.
Lang, Winfried: *See—*
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Langbein, Gerhard: *See—*
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Lange, Frederick F., to Westinghouse Electric Corporation. Method for bonding sheet metal cladding to a body. 3,699,642, Cl. 29-497.500.
Lange, Hans, to Deutsche Texaco Aktiengesellschaft. Method for controllable in-situ combustion. 3,700,035, Cl. 166-261.000.
Lange, Paul: *See—*
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Langner, Carl G.; and Visser, Robert C., to Shell Oil Company. Method for connecting flowlines to a platform. 3,699,691, Cl. 61-72.300.
Lanius, James Curtis, Jr., to Illinois Tool Works Inc. Drilling and reaming screw. 3,699,841, Cl. 85-41.000.
Lankenau, Richard F. Bottom opening shellfish trap. 3,699,702, Cl. 43-100.000.
Lanvin, Jeanne: *See—*
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Lanvin, Lucie, to Lanvin, Jeanne. Wrist watch bracelet. 3,700,148, Cl. 224-4.00j.
Lapham, Sidney D. Drop platform structure for a loading dock. 3,699,599, Cl. 14-71.000.
Larkfeldt, Birger, to Aktiebolaget Svenska Flaktfabriken. Supply air device for injection of preferably cold ventilation air. 3,699,871, Cl. 98-40.00d.
Lasko, Charles J. Apparatus for removing floating liquids from the surface of a body of water. 3,700,109, Cl. 210-242.000.
Latinen, George A.: *See—*
Butler, Robert G.; Carter, Don E.; and Latinen, George A., 3,700,247.
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Laukaitis, Joseph F.: *See—*
Brewer, Waldo L; and Laukaitis, Joseph F., 3,700,320.
Laurer, George J.; and Skatrud, Ralph O., to International Business Machines Corporation. Programmable key and lock. 3,700,859, Cl. 235-61.70r.
Lawrence, Benjamin: *See—*
Patel, Jayantilal M.; Wolfson, Alan B.; and Lawrence, Benjamin, 3,700,464.
Lawrence, Benjamin; Wolfson, Alan B.; and Patel, Jayantilal M., to Procter and Gamble Company, The. Non-vacuum drying of decaffeinated green coffee beans. 3,700,465, Cl. 99-70.000.
Lawrence, Richard A. Trailer loading and unloading equipment. 3,700,124, Cl. 214-85.000.
Lawrenson, Thomas, to British Insulated Callender's Cables Limited. Multi-conductor electric cables. 3,700,786, Cl. 174-71.00a.
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Le Martret, Odile: *See—*
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Leadbeater, Douglas Albert, to Salter, George, & Co., Ltd. Electromechanical transducer. 3,701,009, Cl. 324-61.00p.

Lee, Don N.; and McMennamin, Roy B., to Computer Test Corporation. Sample and hold circuit with switching isolation. 3,700,998, Cl. 320-1.000.

Lee, Joseph D., III: *See—*
Hampel, Viktor E.; Lee, Joseph D., III; and Walter, Carl E., 3,700,554.

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Brouwer, Charles W.; Bucheister, Henry C.; and Tata, Raymond V., 3,700,051.
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Lefebvre, Michel S. M. Apparatus for converting textile threads. 3,699,759, Cl. 57-34.00b.

Lefkowitz, Edward Herbert: *See—*
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Lehmann, Helmut: *See—*
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Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Nuclear substituted derivatives of 1-hydroxy-6-methoxyphenazine 5, 10-dioxide. 3,700,679, Cl. 260-267.000.

Leister, Gerhard, to ABG-WERKE G.m.b.H. Road surfacing machines. 3,699,855, Cl. 94-46.000.

Lelay, Roland: *See—*
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Lemanczyk, Rudolf: *See—*
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Lenihan, Jeremiah P., to Mobil Oil Corporation. Process of forming time-variant filters for filtering seismic data. 3,701,091, Cl. 340-15.5af.

Lenning, Ronald L., to Cincinnati Milacron Inc. Adaptive control for a grinding machine. 3,699,720, Cl. 51-59.0as.

Lennon, ohnJ. Winchester, ass., to Nttco Corporation. Shaft support andseal. 3,700,294, Cl. 308-36.100.

Lense, Robert F.: *See—*
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Leonard, George S.: *See—*
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Leonard, Verna M. Means for simplified rewriting of music. 3,700,785, Cl. 84-470.000.

Lerner, Harry, to Itek Corporation. Physical development of a thin reversibly activatable photoconductor element having a resinous barrier layer. 3,700,449, Cl. 96-48.0pd.

Lerner, Irwin; and McGrath, Robert Paul, to Hoffmann-La Roche Inc. Diazepam and propantheline composition. 3,700,774, Cl. 424-244.000.

Levin, Paul; and Adamski, Maximilian, to General American Transportation Corporation. Sludge dewatering apparatus. 3,699,881, Cl. 100-118.000.

Levinstein, Hyman Joseph: *See—*
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Lewis, J. Stephen: *See—*
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Lewis, J. Stephen; Sapkus, Jurgis; Antell, Earl O.; and Robson, George E., to Mattel, Inc. Floppy foam doll. 3,699,715, Cl. 46-163.000.

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Mason, Virginia S. Self-operating traction system. 3,699,953, Cl. 128-75.000.

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Michigan Carton Co.: *See—*
Bundy, Patrick L., 3,700,161.
Michl, Karl-Heinz: *See—*
Breuer, Hans; Manner, Erich; and Michl, Karl-Heinz, 3,700,759.
Micro 8 Company, mesne: *See—*
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Micromatic Hone Corporation: *See—*
Ellis, Nyron P.; Czubak, Albin S.; and McDonald, Keith A., 3,699,724.
Mihailovski, Alexander, to Stauffer Chemical Company. 1-picolyl-3-phenyl ureas. 3,700,678, Cl. 260-295.00e.
Milberger, Walter E.; and Weigle, Wayne L., to Westinghouse Electric Corporation. Fast pulldown transmission line pulser. 3,700,928, Cl. 307-268.000.
Miles, Leon H., to Atlantic Richfield Company. Method for drilling and completing a well and a packer fluid therefor. 3,700,050, Cl. 175-65.000.
Miller, David A.: *See—*
Johnson, Kenneth V.; and Miller, David A., 3,700,115.
Miller, George J.: *See—*
Lytton, Kenneth G.; Hullett, David F.; and Miller, George J., 3,700,091.
Miller, Henry C., to Pennwalt Corporation. Decolorized polytetrafluoroethylene. 3,700,627, Cl. 260-45.850.
Miller, James A.: *See—*
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., 3,700,101.
Miller, John J.; and Rychlewski, Thaddeus V., to Sylvania Electric Products, Inc. Method of forming a cathode ray tube screen. 3,700,444, Cl. 96-36.100.
Miller, Joseph W., Jr.: *See—*
Tuccinardi, Thomas E.; and Miller, Joseph W., Jr., 3,701,004.
Miller, Oscar. Hair trimmer. 3,699,653, Cl. 30-30.000.
Miller Printing Machinery Co.: *See—*
Mowry, Harry E., 3,699,831.
Miller, Stephen H.: *See—*
Bradford, James C.; Miller, Stephen H.; and Robertson, Jeffrey C., 3,700,188.
Millington, Alan Dennis: *See—*
Bentvelzen, Joseph Maria; and Millington, Alan Dennis, 3,700,536.
Minchak, Edward F., to Preformed Line Products Company. Marine toilet assembly. 3,699,592, Cl. 4-90.000.
Minnesota Mining and Manufacturing Co.: *See—*
Sorgenfrei, Frederick J., 3,700,419.
Minnesota Mining and Manufacturing Company: *See—*
Bingham, Wallace Karl, 3,700,305.
Bingham, Wallace Karl, 3,700,478.
McDonald, William J., 3,699,727.
Mitsch, Ronald A.; and Koshar, Robert J., 3,700,737.
Minsk, Louis Morton: *See—*
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Minsky opytny zavod Spetsialnogo Konstruktoskogo Bjuro No. 3: *See—*
Perminov, Evgeny Mikhailovich, 3,699,844.
Mirsch, John Walter, to RCA Corporation. Color picture tube beam convergence apparatus. 3,701,065, Cl. 335-212.000.
Misuraca, Louis J. Integrated and functionally improved electric erasing machine and accessory tool. 3,699,825, Cl. 74-527.000.
Mitrofanoff, Nicholas S.: *See—*
Finnegan, Edward D.; Harper, Leonard Roy; Mitrofanoff, Nicholas S.; and Slutman, Allen C., 3,701,105.
Mitsch, Ronald A.; and Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Perfluoroalkyl vinyl sulfones. 3,700,737, Cl. 260-60.00a.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kawashima, Katsuhiko, 3,700,918.
Mitsubushi Petrochemical Co., Ltd.: *See—*
Tago, Satoshi, 3,700,764.
Miyai, Yukio: *See—*
Mizuno, Hiroyuki; Nakashima, Shinichi; and Miyai, Yukio, 3,701,050.
Miyati, Toshiko: *See—*
Egawa, Susumu; Ashizaki, Shigeya; Shimizu, Katsumi; and Miyati, Toshiko, 3,700,954.
Miyoshi, Noriomi, to Fuji Denki Seizo Kabushiki Kaisha. Current circuit breaker. 3,700,970, Cl. 317-58.000.
Mizoguchi, Tomishige: *See—*
Yamamura, Yuichi; Kokubu, Tatsuo; Shigezane, Keisuke; and Mizoguchi, Tomishige, 3,700,651.
Mizuno, Hiroyuki; Nakashima, Shinichi; and Miyai, Yukio, to Matsushita Electronics Corporation. Solid state microwave oscillating device. 3,701,050, Cl. 331-107.00r.
Mizuno, Masao; and Igi, Keishiro, to Kuraray Co., Ltd. Polyester-polyoxyalkylene sufonate compositions. 3,700,642, Cl. 260-755.000.
Mizuno, William G.; Copeland, James L.; and Scholze, Arlene E., to Economics Laboratory, Inc. Composition for mechanically cleaning hard surfaces. 3,700,599, Cl. 252-99.000.
Mo och Domsjo Aktiebolag: *See—*
Croon, Ingemar Liss-Albin; and Blomqvist, Nils Verner, 3,700,549.
Mobil Oil Corporation: *See—*
Butter, Stephen A., 3,700,706.
Chen, Nai Yuen; Lucki, Stanley J.; and Garwood, William E., 3,700,585.
Lenihan, Jeremiah P., 3,701,091.
Mochizuki, Yuu: *See—*
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Moeller & Neumann GmbH: *See—*
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Mogil, Bernard: *See—*
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Mohawk Data Sciences Corporation: *See—*
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Mohon, Windell N.; and Rodemann, Alfred H., to United States of America, Navy. Vacuum film holder for holograms. 3,700,302, Cl. 350-3.500.
Mohri, Yohichi, to Nissan Motor Company, Limited. Line pressure regulator valve. 3,699,994, Cl. 137-115.000.
Molex Incorporated: *See—*
Baumanis, Bruno, 3,701,082.
Molins Machines Company Limited: *See—*
Powell, Gordon Francis Wellington; and Preston, Edward George, 3,699,974.
Molnar, Laszlo A., to North American Rockwell Corporation. Capture combination system. 3,700,784, Cl. 84-345.000.
Mommens, Jacques H.: *See—*
Cocke, John; Mommens, Jacques H.; and Raviv, Josef, 3,701,111.
Monacelli, Walter J.: *See—*
D'Alelio, Gaetano F., 3,700,671.
Monaghan, Frank, to M & H Plastics, Inc. Method and apparatus for tubular articles. 3,700,529, Cl. 156-501.000.
Mongini-Tamagnini, Carla: *See—*
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Monnens, Jacques H.: *See—*
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Butler, Robert G.; Carter, Don E.; and Latinen, George A., 3,700,247.
Hyndman, Harry L., 3,700,778.
Mottus, Edward H.; and Ort, Morris R., 3,700,710.
Nickerson, Ralph F.; and Weymouth, Harold D., 3,700,611.
Monsanto Research Corporation: *See—*
Cornell, John H., 3,700,426.
Montean, John, Jr., to Ohio Moulding Corporation, The. Roof bow device. 3,700,277, Cl. 296-104.000.
Montecatini Edison S.p.A.: *See—*
De Varda, Giuseppe, 3,700,581.
Monteith, James H.: *See—*
Maiden, Donald L.; Monteith, James H.; and Carpini, Thomas D., 3,699,811.
Montgomery, Edgar L. Guitar pick. 3,699,838, Cl. 84-322.000.
Montgomery, William C., Jr.; and Vogel, Charles B., to Shell Oil Company. Multiple multiplexer gain-ranging amplifier. 3,700,871, Cl. 235-154.000.
Moody Aquamatic Systems, Inc.: *See—*
La Russ, Julius, 3,699,776.
Moody, Renville O.: *See—*
Nanne, Silvio Edward; and Moody, Renville O., 3,700,347.
Moore, Lowell B.; Keating, Raymond J.; and Underwood, Warren, to Kartridg Pak Co., The. Vacuum bagging machine. 3,700,387, Cl. 53-77.000.
Moore, Peter N.; and Pierce, Leo F. Mud flap and mounting means. 3,700,260, Cl. 280-154.50r.
Moore, Thomas. Motor overload protector and voltage cut-out device. 3,700,964, Cl. 317-13.
Moore, William J. M.: *See—*
Kusters, Norbert L.; and Moore, William J. M., 3,701,008.
Moorman Manufacturing Company: *See—*
Kurk, Kenneth G.; and Kilbride, Robert S., 3,700,127.
Moray, Forest J. Adjustable valve stem oil seals for old and new internal combustion engines. 3,699,942, Cl. 123-188.00p.
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Morgenstern, Stanley W. Method and apparatus for sample analysis on a continuous flow basis. 3,700,562, Cl. 195-103.50r.
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Morley, Cyril William James. Wet processing installation. 3,699,983, Cl. 134-76.000.
Morrensen, Clarence B.: *See—*
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Morris, Philip, Incorporation: *See—*
Tamol, Ronald A.; and Meyer, Leo F., 3,699,973.
Morrow, Paul. Monitoring circuit for detecting leakage currents. 3,700,966, Cl. 317-18.00d.
Mortimer, Frank R.; Brewster, Alan R.; and Bartram, Michael J., to Dunlop Company Limited, The. Braking systems. 3,700,075, Cl. 188-346.000.
Morton-Norwich Products, Inc., mesne: *See—*
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Moschopedis, Speros E.; Czakert, Ernst; and Creighton, Stephen M., to Canadian Patents and Development Limited. Solubilization of humic acids, lignites and coals. 3,700,728, Cl. 260-507.00r.
Moser, Wilhelm: *See—*
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Mosinee Paper Corporation: *See—*
Diring, James A.; Engel, John B.; and Broeren, John E., 3,700,181.
Mosler Safe Company, The: *See—*
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Motis, Gilbert M., to Coats Company, Inc., The. Tire servicing and inflating apparatus. 3,700,021, Cl. 157-1.100.
Motorola, Inc.: *See—*
Bennett, Leonard W.; Hutchinson, Thomas R.; and Schilling, Winston H., 3,701,016.
Dame, John S., 3,701,150.
Davidson, John R., 3,700,811.
Frederiksen, Thomas M., 3,700,929.
Frederiksen, Thomas M.; and Long, Ernest L., 3,701,031.
Gay, Michael J., 3,700,921.
Griffey, Donald E., 3,700,796.
Groth, Edward John, Jr., 3,701,018.
Hanley, Harold G.; and Williamson, Edward E., 3,699,612.
Johnson, Robert Henry, 3,701,158.
Lunn, Gerald K., 3,700,977.
Marley, Robert R., 3,700,915.
Nilsen, Ole K., 3,699,817.
Palac, Kazimir, 3,700,948.
Stiles, Charles W., 3,701,055.
Vargas, Robert J., 3,699,940.
Mottus, Edward H.; and Ort, Morris R., to Monsanto Company. Methylene bis (aluminum dihalides) useful as polymerization catalyst components. 3,700,710, Cl. 260-448.00a.
Mourier, Emile. Process for producing acetylenic alcohols. 3,700,740, Cl. 260-631.500.
Mowry, Harry E., to Miller Printing Machinery Co. Cutter and creaser. 3,699,831, Cl. 83-94.000.
Moyer, Donald W.: *See—*
Swanson, William C.; Moyer, Donald W.; and Asmus, Rodger W., 3,699,678.
Moyer, Rudolph H.: *See—*
Anderson, Howard H.; Moyer, Rudolph H.; Sibbert, Donald, J.; and Sutherland, David C., 3,700,896.
Mrugala, Joseph V., to Sylvania Electric Products Inc. Pressurized universal holding device. 3,700,226, Cl. 269-22.000.
Mueller Co.: *See—*
Hackman, Frank C., 3,700,008.
Mueller, Gerhard; Doerfel, Helmut; and Schmidt-Thomee, Georg. Molding material from polyamide and acrylic ester of a t-aliphatic alcohol. 3,700,751, Cl. 260-857.
Mueller, Kurt F., to United States of America, Navy. Liquid bipropellant system using aqueous hydroxylammonium perchlorate oxidizer. 3,700,393, Cl. 60-214.000.
Mugnier, Michel: *See—*
Gassmann, Hans Ulrich; and Mugnier, Michel, 3,699,804.
Muhler, Joseph C.; and Stookey, George K., to Indiana University Foundation. Impregnated article for cleaning the interproximal surfaces of the teeth. 3,699,979, Cl. 132-89.000.
Muhlmann, Christa: *See—*
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Muller, Marcel: *See—*
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Muller, Peter: *See—*
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Ehe, Albert L., 3,700,530.
Munch, Otto R., to Johnson Service Company. Supply connection means for bleed type sensing apparatus. 3,699,991, Cl. 137-82.000.
Munson, Robert D., to Emerson Electric Co. Control circuit for mercury arc lamps. 3,700,962, Cl. 315-241.000.
Murakami, Masuo; Inukai, Noriyoshi; Koda, Akio; and Nakano, Koji, to Yamanouchi Pharmaceutical Co., Ltd. Processes for the preparation of N-(diethylaminoethyl) -4-amino-5-chloro-2-methoxybenzamide. 3,700,719, Cl. 260-471.00r.
Murakami, Yoshio: *See—*
Yasuda, Nobuaki; Ogawa, Takenobu; Murakami, Yoshio; Higashinakagawa, Iwao; Takeno, Syozo; and Tanaka, Norio, 3,699,619.
Murashige, Robert H., to Memorex Corporation. Vesicular film. 3,700,480, Cl. 117-34.000.
Murgas, Karl M.; Greenberg, Burton; and Clark, Otto A., to ICP, Inc. Switch control means for a photocopy machine. 3,700,326, Cl. 355-14.000.
Murgas, Karl M.; and Greenbert, Burton, to ICP, Inc. Switch control means for an electrostatic book copier machine. 3,700,327, Cl. 355-14.000.
Murray, Lawrence Aloysius, to RCA Corporation. Method of making complementary insulated gate field effect transistors. 3,700,507, Cl. 148-187.000.
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Murray, Russell; and Gignoux, Dominique, to Columbia Research Corporation. Method for detecting pinhole defects in foil material. 3,700,909, Cl. 250-219.0df.
Murthy, Nanjundiah N., to Pitney Bowes-Alpex, Inc. Data processing system employing particular bar code configuration. 3,700,858, Cl. 235-61.11e.
Myer, Jon H.; O'Mera, Thomas R.; and Richardson, John M., to Hughes Aircraft Company. Code reading system for identification of moving and stationary objects utilizing noncoherent optics. 3,700,907, Cl. 250-219.00d.
Myers, James E., to Clark Equipment Company. Adjustable shelf support bracket. 3,700,114, Cl. 211-150.000.
Myers-Sherman Company: *See—*
Shaddock, Roland E., 3,700,360.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy A.G. Process for flameproofing cellulose-containing fibrous materials. 3,700,403, Cl. 8-115.600.
Nacht, George G., to United States of America, Navy. Walsh function generator. 3,701,143, Cl. 340-347.0dd.
Nadon, Donald J. Inductively coupled grid cursor. 3,700,809, Cl. 178-87.000.
Nagai, Katsumi: *See—*
Kurokawa, Toshio; Nishiyama, Shoji; Nagai, Katsumi; and Mochizuki, Yuu, 3,700,229.
Nagao, Morimasa, to Nippon Electric Company, Limited. Magnetic head including thin magnetic film separated by a gap spacer. 3,700,827, Cl. 179-100.20c.
Nagata, Minoru: *See—*
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Nagel, Horstmar; Berg, Markus; Lohr, Albrecht; and Adler, Wilfried, to Henkel & Cie G.m.b.H. Process of preparing pulverulent to granular perborate containing washing composition. 3,700,600, Cl. 252-99.000.
Naito, Fumio; Kudo, Toshiyuki; and Kubosaki, Masanobu, to Sanyo Electric Co., Ltd. Piezoelectric ceramic compositions. 3,700,596, Cl. 252-62.900.
Najjar, Hann F.: *See—*
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Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; and Yabuuchi, Hiroshi. Alternating copolymers of alpha-olefins and acrylic compounds. 3,700,647, Cl. 260-63.00r.
Nakamura, Keiji: *See—*
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Nakano, Koji: *See—*
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Nakayama, Kiyoshi; Tanaka, Haruo; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-lysine by fermentation. 3,700,557, Cl. 195-29.000.
Nakazawa, Junichi: *See—*
Soma, Nobuo; Watatani, Mitsuo; Nakazawa, Junichi; Sato, Yoshio; Kuwabara, Yoshimi; and Ishikawa, Hidehiko, 3,700,682.
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Nalevanko, Richard N.: *See—*

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Nanne, Silvio Edward; and Moody, Renville O., to Algoma Steel Corporation, The. Universal tap jack. 3,700,347, Cl. 408-236.000.
Nannini, Norando. Golfer's wrist attachment. 3,700,245, Cl. 273-189.00a.
Nasu, Jiro; Ogawa, Tokuo; and Sekine, Yoshio, to Toyota Jidosha Hanbai Kabushiki Kaisha. Friction disc clutch for vehicles. 3,700,084, Cl. 192-70.280.
Nation, John A., to United States of America, Navy. High power pulsed microwave source. 3,700,952, Cl. 315-3.500.
National Aeronautics andSpacadnistration with: *See—*
Low, George M, Deputy Administrator of the; National Aeronautics andSpacadnistration with; respect to an invention of; Fymat, Alain L.; and Abhyankar, Krishna D India, 3,700,334.
National Cash Register Company, The: *See—*
Cartmell, James V.; Churchill, Donald; and Koopman, Donald E., 3,700,306.
O'Connor, James E., 3,701,118.
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Brindley, Giles Skey; and Donaldson, Peter Eden Kirwan, 3,699,970.
Clifton, John Stephen; and Parker, Dawood, 3,700,578.
Clifton, John Stephen; and Parker, Dawood, 3,700,579.
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Maynard, Douglas Edward, 3,699,947.
National Tool & Die Corporation: *See—*
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Naydan, Theodore T.; and Aker, Walter W., to Environment/One Corporation. Process and apparatus for the production of hydroelectric pulsed liquids jets. 3,700,169, Cl. 239-4.000.
Naylor, David C.; and Leyburn, Derek, to Bell Canada. Automatic call through test set. 3,700,830, Cl. 179-175.20r.
Negra, John S.: *See—*
Tourtellotte, John F.; Negra, John S.; Warshaw, Abe; and Villiers-Fisher, John F., 3,699,683.
Nelkin, Arthur; and Whittaker, Robert H., to Westinghouse Electric Corporation. Apparatus for laying underground cable. 3,699,693, Cl. 61-72.600.
Nelson, Howard N., to Kimberly-Clark Corporation. Method of dispensing interfolded sheet material and package therefor. 3,700,138, Cl. 221-51.000.
Nelson, Terence John: *See—*
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Geusic, Joseph Edward; Nelson, Terence John; and Schinke, David Paul, 3,701,122.
Nepereny, Harold A.; and Reich, John P., to Koening, A. G., mesne. Air pollution control apparatus. 3,699,750, Cl. 55-288.000.
Newby, Kenneth Russ: *See—*
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Newby, Kenneth Russ; and Turner, Dennis Robert, to Bell Telephone Laboratories, Inc. Method of metallizing devices. 3,700,569, Cl. 204-15.000.
Newman, Bruce D.: *See—*
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Niall, Hugh D.: *See—*
Tregear, Geoffrey W.; Battaerd, Hendrik A. J.; Lang, Gunter A.; Catt, Kevin; and Niall, Hugh D., 3,700,609.
Nichols, Charles M. Valve apparatus including self-installing mechanism. 3,699,996, Cl. 137-318.000.
Nickerson, Ralph F.; and Weymouth, Harold D., to Monsanto Company. Polyvinyl alcohol-glyoxal-polyol adhesive composition. 3,700,611, Cl. 260-17.00r.
Nicolai, Van O. Light polarizing prism of zircon. 3,700,308, Cl. 350-157.000.
Nicolaides, Ernest D., to Parke, Davis & Company. Phenylalanine derivatives for treatment of measles infections. 3,700,770, Cl. 424-177.000.
Nicolon N.V.: *See—*
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Nielsen, Anker J., Jr. Positive locking terminal bushings for flexible pipe. 3,700,268, Cl. 285-55.000.
Niemann, Theodore F., to Goodrich, B. F., Company, The. Catalytic block copolymerization of polar monomers. 3,700,756, Cl. 260-881.000.
Niemoller, Arthur B.: *See—*
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Niepenberg, Horst; Oppenberg, Rolf; and Kuhn, Rudolf, to Deutsche Babcock & Wilcox Aktiengesellschaft. Oil burner. 3,700,376, Cl. 431-13.000.
Nihon Denshi Kabushiki Kaisha: *See—*
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Nikko Pen Kabushiki Kaisha: *See—*
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Nilsen Mfg. Co.: *See—*
Stobbe, Richard P.; and Knapp, Richard V., 3,700,904.
Nilssen, Ole K., to Motorola, Inc. Isolator washer means for pushbutton tuner memory mechanism. 3,699,817, Cl. 74-10.370.
Nilsson, Sven Walter, to SKF Industrial Trading and Development Company N.V. Device for re-circulating the balls of a ball screw mechanism. 3,699,823, Cl. 74-459.000.
Nippon Denso Kabushiki Kaisha, and: *See—*
Shirai, Takeaki; Sakakibara, Shigeru; Noguchi, Masaaki; and Sumiyoshi, Masharu, 3,700,079.
Nippon Electric Co., Ltd.: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Hoso Kyokai: *See—*
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Nishiyama, Shoji: *See—*
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Nissan Kagaku Kogyo Kabushiki Kaisha: *See—*
Kokubo, Ryo; Takakuwa, Yasuo; Shiroishi, Akihiro; and Kihara, Mitsuji, 3,700,672.
Nissan Motor Company, Limited: *See—*
Mohri, Yohichi, 3,699,994.
Nixon, Dalbro R.: *See—*
Batchelor, Gordon S.; and Nixon, Dalbro R., 3,700,200.
Noble Manufacturing Company: *See—*
Sosalla, Harry; Meusburger, Lyle M.; and Jarnagin, Max L., 3,700,040.
Noble, Philip S.; and Chapin, James R., to General Electric Company. Intermodal transfer system. 3,700,128, Cl. 214-40.000.
Noda, Hideyo: *See—*
Noda, Masajiro; Kajita, Hiroyuki; and Kuwayama, Koji, 3,700,402.
Noda, Masajiro; deceased (by Noda, Hideyo; heir); Kajita, Hiroyuki; and Kuwayama, Koji, to Meisei Chemical Works, Ltd. Resist printing under reactive dye with alkali hydroxy methane sulfonate or amino and amido methane sulfonate. 3,700,402, Cl. 8-65.000.
Noguchi, Masaaki: *See—*
Shirai, Takeaki; Sakakibara, Shigeru; Noguchi, Masaaki; and Sumiyoshi, Masharu, 3,700,079.
Nolan, Matthew P. Cargo bulkhead. 3,699,898, Cl. 105-376.000.
Nolting, Peter, to Vereinigte Aluminium-Werke Aktiengesellschaft. Melting furnace. 3,700,224, Cl. 266-33.000.
Noranda Mines Limited: *See—*
Themelis, Nickolas J.; and Tarassoff, Peter, 3,700,431.
Nordin, Ivan C. Tetrahydropyrazolodiazepinone compounds and methods for their production. 3,700,657, Cl. 260-239.30b.
Nordt, Egon: *See—*
Bienert, Klaus; Lang, Winfried; Nordt, Egon; and Weidner, Herbert, 3,700,413.
Noren, Don W., to Noren Products, Inc. Heat pipes. 3,700,028, Cl. 165-32.000.
Noren Products, Inc.: *See—*
Noren, Don W., 3,700,028.
Norian, Roger F.: *See—*
Shuey, David R.; and Norian, Roger F., 3,700,990.
Norman, Richard R., 50% to Bressickello, Tony J. Atomatic bag packing apparatus for check-out. 3,699,741, Cl. 53-29.000.
North American Rockwell Corporation: *See—*
Amato, Richard A., 3,699,765.
Archambault, Roger J., 3,699,766.
Chabot, Leo L., 3,699,760.
Denigan, Thomas R.; and Thomas, James L., 3,699,839.
Easoz, Robert D., 3,699,888.
Molnar, Laszlo A., 3,700,784.
Rouse, William H., 3,700,984.
North, James Clayton; and Pruniaux, Bernard Roger, to Bell Telephone Laboratories, Incorporated. Field effect transistors and methods for making field effect transistors. 3,700,978, Cl. 317-235.00r.
Northern Electric Company, Limited: *See—*
Chulak, William, 3,700,823.
Ingrey, Sidney Ivor Joseph, 3,701,115.
Northern Illinois Gas Company: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,700,265.
Novajovsky, William A.; and Hoelscher, Max W., to United States of America, Atomic Energy Commission. Radio-frequency window assembly having shielded solder joints and reweldable replacement flanges. 3,701,061, Cl. 333-98.00p.
Novakovsky, Vladimir Efimovich: *See—*
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, 3,700,364.

Nowick, Raymond M. Automobile carburator air intake filters. 3,699,749, Cl. 55-274.000.
Ntico Corporation: *See—*
Lennon, ohnJ. Winchester, ass., 3,700,294.
Nu-Lite Fluorescent Mfg. Co., Inc.: *See—*
Marx, George M., 3,700,887.
Nuckel, Norbert, to Kocks, Friedrich. Wire and rod handling apparatus. 3,699,880, Cl. 100-7.000.
N.V. Bekaert S.A.: *See—*
Tournoy, Willy, 3,699,797.
Nyswander, Reuben E., to United States of America, Navy. Remote controlled, adjustable bandwidth low pass filter. 3,701,059, Cl. 333-70.00a.
Oakland Plastics Corporation: *See—*
Cook, James M., III, 3,699,901.
Obayashi, Nobuharu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 3,700,781, Cl. 84-1.010.
O'Connor, James E., to National Cash Register Company, The. Optical storage medium and method of making and using. 3,701,118, Cl. 340-173.0ls.
O'Connor, Ward F.; and Van Vliet, William George, to Lummus Company, The. Feedback control apparatus. 3,699,989, Cl. 137-487.500.
Odman, Tor Axel: *See—*
Westberg, Bengt Karl-Axel; Odman, Tor Axel; and Fahlstrom, Rune, 3,699,878.
O'Donnell, Thomas P. Floor mat portionally with a fenced in top surface and an opening therethrough. 3,700,201, Cl. 248-346.000.
O'Driscoll, Kenneth F.; and Isen, Allan A., to Griffin Laboratories Incorporated. Fabrication of soft plastic contact lens blank. 3,700,761, Cl. 264-1.000.
Oetiker, Hans. Foldable bed structure. 3,699,593, Cl. 5-66.000.
of: *See—*
Fletcher, James C., Administrator of The National; Aeronautics and Space Administration with respect; to an invention of; List, William F.; and Farnsworth, David L., 3,700,961.
Low, George M, Deputy Administrator of the; National Aeronautics andSpecadnistration with; respect to an invention of; Fymat, Alain L; and Abhyankar, Krishna D India, 3,700,334.
Offermanns, Heribert: *See—*
Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Mikols, 3,700,683.
Ogawa, Takenobu: *See—*
Yasuda, Nobuaki; Ogawa, Takenobu; Murakami, Yoshio; Higashinakagawa, Iwao; Takeno, Syozo; and Tanaka, Norio, 3,699,619.
Ogawa, Tokuo: *See—*
Nasu, Jiro; Ogawa, Tokuo; and Sekine, Yoshio, 3,700,084.
Ogiso, Mitsutoshi; and Ohtaki, Shohei, to Canon Kabushiki Kaisha. Camera equipped with auto-flash device. 3,699,858, Cl. 95-10.0cd.
Ogura, Isamu: *See—*
Sato, Kiichi; and Ogura, Isamu, 3,699,648.
O'Hanlon, James F., Jr.; and Sanderson, Glenn A., to Haman Factors Research Incorporated. Pulse jitter measurement especially for agart beat measurement. 3,699,949, Cl. 128-2.60a.
O'Hara, Genevieve M.: *See—*
Tobias, John D., 3,700,004.
O'Hara, John P., Jr.: *See—*
Tobias, John D., 3,700,004.
Ohio Medical College, The: *See—*
Manning, Maurice, 3,700,652.
Ohio Moulding Corporation, The: *See—*
Montean, John, Jr., 3,700,277.
Ohmori, Koichiro, to Honshu Paper Company. Method for manufacturing a composite corrugated paper board. 3,700,518, Cl. 156-152.000.
Ohshima, Kotaro: *See—*
Abe, Isao; Hirose, Tatsuo; and Ohshima, Kotaro, 3,699,976.
Ohtaki, Shohei: *See—*
Ogiso, Mitsutoshi; and Ohtaki, Shohei, 3,699,858.
Oki Electric Industry Company Limited: *See—*
Sato, Kiichi; and Ogura, Isamu (said Ogura assor. to), 3,699,648.
Okinaka, Uutaka, to Bell Telephone Laboratories, Incorporated. Electroless gold plating baths. 3,700,469, Cl. 106-1.000.
Okumura, Takuzo: *See—*
Yamanouchi, Saburo; Yasuno, Kiyoshi; Yamatokohriyama, Kou Sota; and Okumura, Takuzo, 3,700,750.
Okura, Yukio: *See—*
Adachi, Toshio; Hayashi, Kiyohide; and Okura, Yukio, 3,700,026.
Olin Corporation: *See—*
Schultes, Hermann, 3,700,252.
Olivares, Ismael A.: *See—*
Gabrielsen, Rolf S.; and Olivares, Ismael A., 3,700,442.
Olofsson, Nils Gunnar: *See—*
Schullstrom, Sten Gunde; Freijd, Ingvar; Schader, Arne; and Olofsson, Nils Gunnar, 3,701,075.
Olympia Werke AG: *See—*
Kunst, Detlef, 3,700,088.
O'Mera, Thomas R.: *See—*
Myer, Jon H.; O'Mera, Thomas R.; and Richardson, John M., 3,700,907.
Omron Tateisi Electronics Co.: *See—*
Koga, Hirohumi; and Sato, Ryuichi, 3,701,062.
O'Neal, Donald V. Multi-track adapter cartridge adapter unit for multi-track cartridge type magnetic tape player. 3,700,826, Cl. 179-100.20z.
O'Neil, Paul F.: *See—*
Zawadzki, Thomas, 3,700,616.
Onstott, Edward D. Sextant clock. 3,699,761, Cl. 58-2.000.
Oppenberg, Rolf: *See—*
Niepenberg, Horst; Oppenberg, Rolf; and Kuhn, Rudolf, 3,700,376.
Oppermann, Robert A. Enzymatic production of catechol from phenol. 3,700,560, Cl. 195-49.000.
Optisonics Corporation: *See—*
Gallina, Harold, 3,700,319.
Oren, Ida: *See—*
Zabicky-Zissman, Jacobo Zelik; Oren, Ida; and Katchalski, Ephraim, 3,700,610.
Ort, Morris R.: *See—*
Mottus, Edward H.; and Ort, Morris R., 3,700,710.
Orth, Charles D., to Controls Company of America. Thermal expansion valve with rapid pressure equalizer. 3,699,778, Cl. 62-225.900.
Ortolano, Ralph J., to Westinghouse Electric Corporation. Rotor structure and method of broaching the same. 3,700,353, Cl. 416-199.000.
Oshima, Takao: *See—*
Ueno, Katsuji; and Oshima, Takao, 3,700,608.
Oster, Claude. Grounding receptacle. 3,701,074, Cl. 339-14.00r.
Ostrozynski, Robert Leopold, to Union Carbide Corporation. Process for preparing silicon peroxide compounds. 3,700,712, Cl. 260-448.20e.
Oswitch, Stanley: *See—*
Golownia, Robert F.; and Oswitch, Stanley, 3,700,617.
Ota, Masami: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Tetsuhiro, Kusunose; Isumaki, Tatsuichi; and Ota, Masami, 3,700,662.
Ota, Tomiyoshi; Takigawa, Katunobu; and Honda, Masasada, to Nihon Denshi Kabushiki Kaisha. Recording device with automatic gain range changer and DC correction means. 3,699,948, Cl. 128-2.06g.
Owens, William A., to Cincinnati Milacron Inc. Apparatus for securing and aligning two elements with respect to each other in orthogonal planes. 3,700,292, Cl. 308-3.00a.
Owens-Corning Fiberglas Corporation: *See—*
Pearson, Lee E.; and Clark, Jeri O., 3,700,512.
Owens-Illinois, Inc.: *See—*
Allgeyer, Guy H.; and Foote, James B., 3,699,902.
Grier, John D., 3,700,436.
Ozawa, Syuichi; and Tomimura, Noboru, to Iwasaki Tsushinki Kabushiki Kaisha (a/k/a Iwatsu Electric Co., Ltd.). Resistive film bleeder resistor for use in a branch circuit. 3,701,056, Cl. 333-8.000.
Pabst Brewing Company: *See—*
Ziffer, Jack, 3,700,561.
Pacak, Matthew, to Eaton Yale & Towne, Inc. Method and apparatus for making grooved wheels. 3,700,382, Cl. 29-159.00r.
Padawer, Jacques: *See—*
Widmark, Rudolph M.; Lichtenstein, Bernard; Paseltiner, Lynn; and Padawer, Jacques, 3,700,555.
Padgett, William J.; and Wison, Donald A., to Warwick Electronics, Inc. Remote control receiver using a phase locked loop. 3,701,103, Cl. 340-170.000.
Pagani, Hermes: *See—*
Thiemann, Josef Ernst; and Pagani, Hermes, 3,700,558.
Page, Patrick E. Parasail, glider type aerial device. 3,700,191, Cl. 244-16.000.
Paget, George Edward: *See—*
Richardson, Dora Nellie; Walpole, Arthur Leonard; and Paget, George Edward, 3,700,777.
Pahlow, Lothar, to Wilhelmsburger Maschinenfabrik, Firma. Adjustable supporting structure for power tools or the like. 3,700,195, Cl. 248-16.000.
Painton, Claude Arthur, to United Gas Industries Limited, mesne. Illuminating display for simulating a fire. 3,699,697, Cl. 40-106.530.
Palac, Kazimir, to Motorola, Inc. Edge-bonded bi-metallic strip extending from metal plate on shadow mask to stud via spring of substantially smaller cross-sectional area. 3,700,948, Cl. 313-85.00s.
Palmer, Harold D.: *See—*
Hood, Jesse C., Jr.; and Palmer, Harold D., 3,699,629.
Paoli, Thomas Lee; and Ripper, Jose Ellis, to Bell Telephone Laboratories, Inc. Optical coupling of adjacent stripe contact geometry semiconductor lasers. 3,701,044, Cl. 331-94.500.
Papadopoulos, Stelios B.: *See—*
Helms, Clifford J.; McMillan, Norman; and Papadopoulos, Stelios B., 3,700,855.
Papadopoulos, Michael N.; and Ueber, Russell C., to Shell Oil Company. Method of producing oil from an oil shalf formation containing nahcolite and dawsonite. 3,700,280, Cl. 299-5.000.
Papst, Georg F.; Gierschek, Emil; and Papst, Hans-Dieter, to Papst-Motoren KG. Fan assembly for a ventilator. 3,700,358, Cl. 417-354.000.
Papst, Hans-Dieter: *See—*
Papst, Georg F.; Gierschek, Emil; and Papst, Hans-Dieter, 3,700,358.
Papst-Motoren KG: *See—*
Papst, Georg F.; Gierschek, Emil; and Papst, Hans-Dieter, 3,700,358.
Paquin, Leon J.: *See—*

Violette, Glenn M.; Paquin, Leon J.; and Lock, James A., 3,700,525.
Parilla, Arthur R. Cooling techniques for high temperature engines and other components. 3,700,171, Cl. 239-127.300.
Park, Vernon K.: *See—*
Johnson, Sam H., Jr.; Mears, Robert A.; and Park, Vernon K., 3,700,758.
Parke, Davis & Company: *See—*
Nicolaides, Ernest D., 3,700,770.
Parker, Dawood: *See—*
Clifton, John Stephen; and Parker, Dawood, 3,700,578.
Clifton, John Stephen; and Parker, Dawood, 3,700,579.
Parker, William J.: *See—*
Rausch, John T.; and Parker, William J., 3,700,069.
Parkin, William J.; and Wilson, Joe C., Jr., to Sanders Associates, Inc., mesne. Multiple element sensing apparatus. 3,700,905, Cl. 250-203.00r.
Parkinson, Gerald W.; and Cutting, Jaok R., to United Aircraft Corporation. Trim reference for helicopter feel augmentation system. 3,700,995, Cl. 318-628.000.
Parks, Charles F., to Air Reduction Company, Inc. Electroconductive glaze and method for preparation. 3,700,606, Cl. 252-518.000.
Parmelee, Kendall G.: *See—*
Chelminski, Stephen V., 3,699,771.
Parouty, Jran Claude: *See—*
Bidault, Michel; Dosdat, Jean; Lelay, Roland; and Parouty, Jran Claude, 3,699,647.
Parr, Michael K. Vibratory feeder bowl drive apparatus. 3,700,094, Cl. 198-220.0bc.
Parry, John, to Ingenious Devices Limited. Apparatus for providing oil grooves in valve guides. 3,700,343, Cl. 408-81.000.
Parson, Howard Grubb, Sir, & Company Limited: *See—*
Macleod, Hugh Angus McIntosh, 3,700,898.
Pascal, Forrest A., II.: *See—*
Paschal, Forrest A.; Stuart, Gerald L.; and Pascal, Forrest A., II., 3,700,274.
Paschal, Forrest A.; Stuart, Gerald L.; and Pascal, Forrest A., II., to Paschal, Forrest Machinery Company. Apparatus for stacking uncured brick. 3,700,274, Cl. 294-63.00r.
Paschal, Forrest Machinery Company: *See—*
Paschal, Forrest A.; Stuart, Gerald L.; and Pascal, Forrest A., II., 3,700,274.
Paseltiner, Lynn: *See—*
Widmark, Rudolph M.; Lichtenstein, Bernard; Paseltiner, Lynn; and Padawer, Jacques, 3,700,555.
Pass & Seymour, Inc.: *See—*
Bates, Reginald A., 3,700,972.
Patel, Jayantilal M.: *See—*
Lawrence, Benjamin; Wolfson, Alan B.; and Patel, Jayantilal M., 3,700,465.
Patel, Jayantilal M.; Wolfson, Alan B.; and Lawrence, Benjamin, to Procter and Gamble Company, The. Decaffeination process. 3,700,464, Cl. 99-70.000.
Paterick, Robert J.; Llana, Eugenio R.; and Kleman, Jerry L. Toy football. 3,700,239, Cl. 273-65.00r.
Patrick, Ralph E.: *See—*
Kovach, Stephen M.; Patrick, Ralph E.; and Kmecak, Ronald A., 3,700,745.
Patterson, Roger Lee; and Ventresca, Mario, to Deere & Company. Rear furrow wheel control structure for disc tillers and the like. 3,700,042, Cl. 172-385.000.
Patton, Terence R.; and Ringel, Melvin B., to United States of America, Navy. Frequency averaging controlled false alarm rate (CFAR) circuit. 3,701,149, Cl. 343-5.0dp.
Pawloski, Chester E.; and Stewart, Russell L., to Dow Chemical Company, The. Methylacetylene chlorination. 3,700,735, Cl. 260-597.00r.
Peacock, Peter J.: *See—*
Scarnato, Thomas J.; Peacock, Peter J.; and Kowalik, John J., 3,699,758.
Peak, Charles Benjamin, to Deere & Company. Quick-adjustable lower stop for feeder house drum. 3,699,753, Cl. 56-14.500.
Peale, Robert E. Adjustable axis work support. 3,700,228, Cl. 269-61.000.
Pearson, Alma: *See—*
Pearson, Reinhold A., 3,700,090.
Pearson, Kenneth William: *See—*
Dodman, David.; Pearson, Kenneth William; and Woolley, John Mathers, 3,700,605.
Pearson, Lee E.; and Clark, Jeri O., to Owens-Corning Fiberglas Corporation. Method of forming a fluid retaining wall. 3,700,512, Cl. 156-62.400.
Pearson, R. A., Company: *See—*
Pearson, Reinhold A., 3,700,090.
Pearson, Reinhold A.; deceased (by Pearson, Alma; executrix), to Pearson, R. A., Company. Conveyor and article handling apparatus. 3,700,090, Cl. 198-34.000.
Pearson, William S., to Cypro-Incorporated. Comminuting apparatus. 3,700,177, Cl. 241-36.000.
Peltret, Pierre Henri, to C.A.V. Limited. Governor mechanisms. 3,699,816, Cl. 73-526.000.
Pennwalt Corporation: *See—*
Miller, Henry C., 3,700,627.
Taylor, Larry Christopher, 3,699,781.
Zambone, Albert S., 3,700,704.
Zambone, Albert S., 3,700,705.
Perilstein, Warren L.: *See—*
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., 3,700,598.
Perkins-Elmer Corporation: *See—*
Rayces, Juan L., 3,700,310.
Perlman, Marvin: *See—*
United States of America, National Aeronautics and Space Administration, 3,700,869.
Permalok International, Inc.: *See—*
Holly, James A., 3,699,978.
Perminov, Evgeny Mikhailovich, to Minsky opytny zavod Spetsialnogo Konstruktoskogo Bjuro No. 3. Dividing attachment. 3,699,844, Cl. 90-57.000.
Pernet, Michel, to Erste Deutsche Floatglas GmbH & Co. Weir-like body extending from below into a body of moving molten glass. 3,700,424, Cl. 65-333.000.
Persin, William J., to Baychem Corporation, mesne. Tread member and endless tracks made therefrom. 3,700,287, Cl. 305-38.000.
Peter, Alfred O., to FMC Corporation. Truck tow conveyor switching apparatus. 3,699,895, Cl. 104-88.000.
Peters, Arnis E., to Micro 8 Company, mesne. Microfilm viewer. 3,700,321, Cl. 353-26.000.
Peters, Theodore Richmond, to Bell Telephone Laboratories, Incorporated. Priority access system. 3,701,109, Cl. 340-172.500.
Petersen, Ulrich, to Mannesmann Aktiengesellschaft. Continuous casting machine. 3,700,027, Cl. 164-282.000.
Peterson, George Earl: *See—*
Glass, Alastair Malcolm; and Peterson, George Earl, 3,700,912.
Petite, Anthony M.; and Thornley, Clive E., to Ciba-Geigy Corporation. Dyeing of polycarbonamides of bis (paraamino-cyclohexyl) methane and dodecanedioic acid with anionic dyes. 3,700,405, Cl. 8-173.000.
Petrolite Corporation: *See—*
Lissant, Kenneth J., 3,700,594.
Petry, Robert C., to Rohm & Haas Company. Bis(difluoramino)alkyl substituted compounds an method of preparation. 3,700,708, Cl. 260-453.0al.
Pettazzi, Paolo, to RIV-SKF Officine de Villar Petosa S.p.. Process and apparatus for correcting irregularities in the circularity of rings. 3,699,792, Cl. 72-110.000.
Pettitt, Malcolm Jack: *See—*
Taplin, Stanley Donovan; and Pettitt, Malcolm Jack, 3,700,825.
Peursem, Marvin Van, to Koehring Company. Resiliently mounted auger mechanism. 3,700,179, Cl. 241-301.000.
Pfadenhauer, Dieter: *See—*
Forsting, Bernard; Hellriegel, Edmund; and Pfadenhauer, Dieter, 3,700,076.
Pfizer, Inc.: *See—*
Barth, Wayne E., 3,700,681.
Philco-Ford Corporation: *See—*
Irvin, Albert H., 3,699,873.
Kaufman, Warren F., 3,699,814.
Philippi, Charles W. Balancing skill game. 3,700,234, Cl. 273-1.00m.
Phillips, Chandler A.: *See—*
Stevens, Curtis E.; and Phillips, Chandler A., 3,701,136.
Phillips, Paul S., Jr., to National Cash Register Company, The. Photocopy process utilizing a transfer sheet coated with microcapsules containing photosensitive Michler's ketone dye-precursors. 3,700,439, Cl. 96-27.0tr.
Phillips Petroleum Company: *See—*
Bellinger, Robert M.; and Cabbage, John T., 3,700,566.
Brady, Donnie G.; Zuech, Ernest A.; and Gray, Roy A., 3,700,625.
Brady, Donnie G., 3,700,724.
Hahn, William C., 3,699,821.
Piatek, Edward Walter; and Horr, William A., to Victaulic Company of America. Pipe groover. 3,699,828, Cl. 82-4.00c.
Picard, Clarence J.: *See—*
Garrahan, William F.; Madden, Edwin J.; and Picard, Clarence J., 3,699,959.
Pick, Steve J. Vehicle tilt indication apparatus. 3,701,093, Cl. 340-52.00h.
Pickett, John E. P. Method utilizing a disposable blade in microtome cutting. 3,699,830, Cl. 83-13.000.
Piegza, Henry John, to Welding and Steel Fabrication Co., Inc. Pivotal quick disconnect fluid flow coupling. 3,700,267, Cl. 285-24.000.
Pierce, Leo F.: *See—*
Moore, Peter N.; and Pierce, Leo F., 3,700,260.
Pierson, Charles W., to Eastman Kodak Company. Ultrasonic splicing. 3,700,532, Cl. 156-580.000.
Pike, Herbert J., to Stevens, J. P., & Co. Air yarn texturizer. 3,700,391, Cl. 57-77.300.
Pilling, Arthur F., to United States Steel Corporation. Work twister for rolling mill. 3,699,795, Cl. 72-231.000.
Pioneer Plastics, Inc.: *See—*
Blease, Wilfred J., 3,700,213.
Piper, Delbert A. Vibrating screen, earth-classifying motorcycle attachment. 3,700,105, Cl. 209-421.000.
Piplcins, David D., to Valspar Corporation, The. Method for keeping paint tanks clean. 3,699,982, Cl. 134-22.00r.
Piquerez, Ervin; deceased (by Scholler, Arni; and Bandelier, Edouard; executors). Tight control member for watch movement. 3,699,767, Cl. 58-90.00b.
Pitney Bowes-Alpex, Inc.: *See—*
Murthy, Nanjundiah N., 3,700,858.

Placente, Anthony N., to Congoleum Industries, Inc. Apparatus for producing resinous sheetlike products. 3,700,366, Cl. 425-71.000.
Planchon, Jean. Faceted reflector. 3,700,882, Cl. 240-41.360.
Plasser, Franz; and Theurer, Josef. Movable apparatus for replacing an old track by a new track. 3,699,894, Cl. 104-2.000.
Platzer, George E., Jr. Solid state relay arrangement. 3,700,923, Cl. 307-252.00b.
Pleasants, James E.; and Dereng, Viggo G., to United States of America, National Aeronautics and and Space Administration. Vortex breech high pressure gas generator. 3,700,192, Cl. 244-139.000.
Pleass, Charles M.: *See*—
Brandes, Raymond G.; and Pleass, Charles M., 3,700,857.
Plehal, Edward J., to Bissett-Berman Corporation, The. Electrolytic cell with inner electrode having non-reactive surface. 3,700,974, Cl. 317-230.000.
Plessey Handel und Investments AG: *See*—
Gwillim, David Thomas; and Whiting, Robin Joseph, 3,700,154.
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., to Ethyl Corporation. Fuel and lubricating oil compositions. 3,700,598, Cl. 252-50.000.
Plumat, Emile, to Glaverbel S.A. Application of metal coatings by the seizure method. 3,700,496, Cl. 117-211.000.
Plumb, John Beckett: *See*—
Atherton, John Heathcote; and Plumb, John Beckett, 3,700,713.
Polaroid Corporation: *See*—
Burgarella, John P.; and Ellin, Seymour, 3,699,861.
Erlichman, Irving, 3,699,865.
Weed, Lucretia J., 3,700,441.
Wolbarst, John, 3,699,867.
Polit, Neil A.: *See*—
Hutner, Mark A.; Polit, Neil A.; Watson, Donald W; and Artelt, Herbert C., Jr., 3,700,324.
Polygon Concepts: *See*—
Souza, Augustine A., 3,700,137.
Pomey, Jacques, to Societe des Aciers Fins de l'Est. Method of treatment of liquid steel under vacuum. 3,700,779, Cl. 13-26.000.
Pontigny, Jacques A., to Coulter Electronics, Inc. Curve tracer. 3,700,991, Cl. 318-568.000.
Pontigny, Jacques A., to Coulter Electronics, Inc. Curve tracer. 3,700,992, Cl. 318-568.000.
Popeil Brothers, Inc.: *See*—
Popeil, Samuel J., 3,699,603.
Popeil, Samuel J., to Popeil Brothers, Inc. Wringer mop. 3,699,603, Cl. 15-120.00r.
Poplawski, Joel J.: *See*—
Bardos, John J.; and Poplawski, Joel J., 3,699,679.
Porsche, Dr.-Ing., H.c.F., K.G., Firma: *See*—
Grewing, Klaus; and Hacker, Fritz, 3,699,842.
Port-A-Stall: *See*—
Hero, Richard A., 3,699,924.
Porta Systems Corporation: *See*—
De Luca, Paul V., 3,700,824.
Porter, John Norman: *See*—
Kunstmann, Martin Paul; and Porter, John Norman, 3,700,768.
Martin, John Henry Edward James; and Porter, John Norman, 3,700,769.
Porter, Robert B.; Ardelt, Clarence A.; and Storck, Robert C., to International Harvester Company. Tractor inching control utilizing a decelerator. 3,700,081, Cl. 192-.070.
Posso, Pierre A. Boxes for packaging a reel. 3,700,098, Cl. 206-52.00f.
Potzick, Anthony J., to Moaler Safe Company, The. Dial structure for mechanism requiring both lineal and rotary input operating movements. 3,699,789, Cl. 70-329.000.
Powell, Gordon Francis Wellington; and Preston, Edward George, to Molins Machines Company Limited. Cigarette manufacture. 3,699,974, Cl. 131-21.00r.
PPG Industries, Inc.: *See*—
Davis, Harry P., 3,700,542.
Davis, Harry P., 3,700,543.
Preformed Line Products Company: *See*—
Minchak, Edward F., 3,699,592.
Prendergast, Charles Scott, to Cam Rotors Limited. Radial piston fluid pressure motor. 3,699,848, Cl. 91-487.000.
Press- und Stanzwerk Paul Craemer KG: *See*—
Ditges, Ernst, 3,700,205.
Preston, Edward George: *See*—
Powell, Gordon Francis Wellington; and Preston, Edward George, 3,699,974.
Price, John A.; and Stewart, Mary J., to FMC Corporation. Deep dyeable copolyester resins. 3,700,644, Cl. 260-75.00n.
Price, Robert H., to Control Data Corporation. Foil bearing control apparatus. 3,701,135, Cl. 340-174.10e.
Proce, H. C., Co.: *See*—
Elliott, Bernard V., 3,700,223.
Procter & Gamble Company, The: *See*—
Damico, Ralph A., 3,700,676.
Procter and Gamble Company, The: *See*—
Bergeron, Robert J.; and Schlichter, Stephen L., 3,700,466.
Bolt, Gregory L.; and Strobel, Rudolf G. K., 3,700,463.
Lawrence, Benjamin; Wolfson, Alan B.; and Patel, Jayantilal M., 3,700,465.
Patel, Jayantilal M.; Wolfson, Alan B.; and Lawrence, Benjamin, 3,700,464.
Proctor, David: *See*—
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Protectowire Co., The: *See*—
Andrews, Clifton B., 3,701,141.
Pruniaux, Bernard Roger: *See*—
North, James Clayton; and Pruniaux, Bernard Roger, 3,700,978.
Pryjmak, Bohdan I., to General Motors Corporation. Speed Control system for alternating current induction motors. 3,700,988, Cl. 318-227.000.
Pufahl, Joseph. Laminated sheet material having a contoured surface. 3,700,539, Cl. 161-120.000.
Pulliam, Joseph H.; and McCurnin, Thomas W., to Iota Engineering, Inc. Fluid level sensor and system. 3,701,138, Cl. 340-244.00r.
Pullman Incorporated: *See*—
Shaver, William R.; and Schuller, James J., 3,700,143.
Putt, Frank E., to Town & Country Cleaners Franchises, Inc. Carpet cleaning apparatus. 3,699,607, Cl. 15-320.000.
Quackenbush, John J., to National Distillers and Chemical Corporation. Plastic bag flaring apparatus. 3,700,367, Cl. 425-112.000.
Rackson, Chester B. Hand held, finger controlled switch device. 3,700,835, Cl. 200-52.00r.
Rackson, Chester B. Hand held, finger controlled switch device with flexible wrist strap mount. 3,700,836, Cl. 200-52.00r.
Radiation Incorporated: *See*—
Davidson, Jimmy L.; and Rouse, George V., 3,699,722.
Raffali, Andre. Musical instruments, especially of the percussion type. 3,699,835, Cl. 84-236.000.
Rahn, Hilton N., Jr.: *See*—
Roberts, Carlton E.; Rahn, Hilton N., Jr.; and Reid, Walter E., Jr., 3,700,504.
Raisnn, Jean-Pierre: *See*—
Delair, Jean-Paul; Raisnn, Jean-Pierre; and Voisin, Eugene, 3,700,153.
Ralston, James C.: *See*—
Davidge, Ronald V.; Locklar, Henry C.; Ralston, James C.; and Ritchie, Robert T., 3,700,328.
Ramachandran, Sundaresan, to Allegheny Ludlum Steel Corporation. Method of controlling vacuum decarburization. 3,700,429, Cl. 75-49.000.
Rammler, Roland: *See*—
John, Willibald; Schmalfeld, Paul; Lange, Paul; and Rammler, Roland, 3,700,564.
Ramsley, Alvin O.; and Walwood, John T., to United States of America, Army. Camouflaged article and method of producing same. 3,700,397, Cl. 8-4.000.
Rannenberg, George C., to United Aircraft Corporation. Capacity control for gas turbine powered air cycle refrigeration system. 3,699,777, Cl. 62-172.000.
Ranon, Uri: *See*—
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Ransburg Electro-Coating Corporation: *See*—
Ferrant, Wolfgang, 3,700,168.
Rausch, John T.; and Parker, William J., to General Motors Corporation. Wave interference silencer. 3,700,069, Cl. 181-36.00b.
Rauskolb, Fred W., to Standard International Corporation. Cooling system for heated calender rolls. 3,700,217, Cl. 263-6.00c.
Ravaschio, Guglielmo: *See*—
Basso, Eugenio; Ravaschio, Guglielmo; and Frangilli, Vittorio, 3,701,000.
Ravich, Leonard E.; Berman, Elliot; and Ekman, Carl F. W., said Ravich and said Ekman assor. to Itek Corporation. Production of positive image by developing an imagewise exposed semiconductor element with oxidizing and reducing agents. 3,700,447, Cl. 96-48000.
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Loh, Louis S.; Monnens, Jacques H.; and Raviv, Josef, 3,701,108.
Rayces, Juan L., to Perkins-Elmer Corporation. Compact catadioptric apochromat system. 3,700,310, Cl. 350-201.000.
Raymond Lee Organization, Inc., The: *See*—
San Emetherio, Juan J., 3,700,240.
Raytheon Company: *See*—
Scheid, William J., 3,700,378.
Razzano, John S.; and Smith, Alfred H., to General Electric Company. Process for treating reinforcing silica filler. 3,700,473, Cl. 106-288.00q.
RCA Corporation: *See*—
Boaornworth, Douglas Robert, 3,700,791.
Caplan, Sandor; and Lamorte, Michael F., 3,701,047.
Craft, Jack, 3,701,022.
Epifano, Robert Nicholas; and Jordan, Eugene Leon, 3,700,497.
Haferl, Peter Eduard, 3,700,958.
Heyman, Philip Michael, 3,700,804.
Mirsch, John Walter, 3,701,065.
Murray, Lawrence Aloysius, 3,700,507.
Saxena, Arjun Nath, 3,700,979.
Steckler, Steven Alan, 3,701,032.
Warren, Henry Ray, 3,700,152.
Williams, John Garland, 3,701,107.
Read, Ronald G.: *See*—
Verge, Kenneth W.; Kachman, Robert D.; and Read, Ronald G., 3,700,362.
Reed, Howard D. Seam locator for sizing draperies. 3,699,674, Cl. 38-102.500.
Rees, Herbert, to Husky Manufacturing and Tool Works Ltd. Injection-molding machine with alarm device. 3,700,375, Cl. 425-422.000.

Regan, Ronald D.: *See*—
Abkowitz, Stanley; Siergiej, John M.; and Regan, Ronald D., 3,700,434.
Reich, John P.: *See*—
Nepereny, Harold A.; and Reich, John P., 3,699,750.
Reichhard, Robert W., to Honeywell Information Systems Inc. Static non-destructive single wall domain memory with hall voltage readout. 3,701,126, Cl. 235-174.0ha.
Reid, Philip L., to Grace, W. R., & Co. Package locator. 3,699,745, Cl. 53-393.000.
Reid, Walter E., Jr.: *See*—
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Reifers, Richard F., to Diamond International Corporation. Food packaging tray. 3,700,096, Cl. 206-45.330.
Reimann, William George, to Litton Systems, Inc. Flatpack lead positioning device. 3,700,443, Cl. 96-36.200.
Reineman, Richard G.; and Schaefer, George E., to Brunswick Corporation. Two place seating unit. 3,700,279, Cl. 297-232.000.
Reliable Manufacturing Corporation: *See*—
Dusek, Ervin F., 3,699,874.
Reliance Electric Company: *See*—
Loehbough, Richard C., 3,701,106.
Relles, Howard M., to General Electric Company. Conversion of diacetylbenzenes to unsaturated derivatives. 3,700,743, Cl. 260-668.00r.
Rembaum, Alan, to California Institute of Technology. Heat detection and compositions and devices therefor. 3,700,603, Cl. 252-408.000.
Remers, William Alan; Gibs, Gabriel Joseph; and Weiss, Martin Joseph, to American Cyanamid Company. Certain 2-amino-1,3,4-thiadiazoles. 3,700,684, Cl. 260-306.80d.
Rencher, Joseph Lynn. Hand operated washing machine. 3,699,786, Cl. 68-144.000.
Rendek, Robert B.; and Binkerd, Evan F., to Armour & Company. System for continuous processing of vienna sausage using microwave energy. 3,700,847, Cl. 219-10.550.
Rendon, Daniel: *See*—
Deverse, Frank T.; Kurtz, John A.; Rendon, Daniel; Trahn, Kenneth A.; and Tuttle, James W., 3,699,917.
Republic Electronics Industries Corporation: *See*—
Biagi, Alvaro D.; and D'Amato, Sirio S., 3,701,011.
Research Corporation: *See*—
Dicke, Robert H., 3,700,895.
Resh, John S., to Honeywell Inc. Snap-in rigid lever actuating arrangement. 3,700,843, Cl. 200-172.00a.
Reuber, August. Ground wheel driven oscillating harrow. 3,700,036, Cl. 172-105.000.
Rex Chainbelt Inc.: *See*—
Butzow, Neil W.; and Harris, Bernard, 3,700,295.
Rex, Gert Ingmar, to AB Auto Industri. Novel automatic locking device for safety belts. 3,700,183, Cl. 242-107.400.
Rexham Corporation, mesne: *See*—
Johnson, Kenneth; and Lense, Robert F., 3,700,388.
Reynard, Kennard A.; and Rose, Swiwyn H., to Horizons Inc. Phosphonitrile elastomers. 3,700,629, Cl. 260-47.00p.
Reynolds, Christopher C., to Servo Corporation of America, mesne. Data storage and transfer apparatus for plural-vehicle identification system. 3,700,860, Cl. 235-61.11e.
Reynolds Metals Company: *See*—
Dill, Raymond Joseph, 3,700,571.
Reynolds, R. J., Tobacco Company: *See*—
Dickens, Alvin J., Jr., 3,700,461.
Rhee, Dong Woo, to GTE Sylvania Incorporated. Self-tracking noise suppressing circuit. 3,700,803, Cl. 178-7.30r.
Rhoton, Ronald L., to McDonnell Douglas Corporation. Cryogenic storage and expulsion means. 3,699,696, Cl. 62-45.000.
Ribas, Carlos Rodriguez. Mop wringer. 3,699,606, Cl. 15-261.000.
Rice, John A.; and Stewart, Mary J. Sulfophenoxy malonate compounds. 3,700,721, Cl. 260-470.000.
Rich, John Parker; and Carlsmith, Lawrence Allan, to Improved Machinery, Inc. Apparatus and methods of continuous digesting. 3,700,548, Cl. 162-17.000.
Richards, Frank A. Oil skimmer. 3,700,108, Cl. 210-242.000.
Richardson, Dora Nellie; Walpole, Arthur Leonard; and Paget, George Edward, to Imperial Chemical Industries Limited. Modification of endocrine status with hydrazine derivatives. 3,700,777, Cl. 424-323.000.
Richardson, Harold; and Newman, Bruce D., to Hovermarine (Canada) Limited. Gas-cushion vehicle. 3,700,064, Cl. 180-119.000.
Richardson, John M.: *See*—
Myer, Jon H.; O'Mera, Thomas R.; and Richardson, John M., 3,700,907.
Richeson, William E., Jr.; and Roach, Joel K., to Magnavox Company, The. Facsimile reverse signaling system. 3,700,810, Cl. 179-4.000.
Ricketts, Alan W., Jr.: *See*—
Chace, Donald E.; Melvin, James A., Jr.; Ricketts, Alan W., Jr.; Steinberger, Edward P.; and Symmes, David T., 3,701,113.
Ricoh Co., Ltd.: *See*—
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Ridgway, Michael: *See*—
Hillson, Peter John; and Ridgway, Michael, 3,700,448.
Riess, Joseph A.; and Vespie, Conrad P., to General Motors Corporation. Three-phase inverter control circuit. 3,701,001, Cl. 321-5.000.
Riley, Ray Joe, 1/4 each to Bridges, John, Gilbreath, John and Thurman, Lewis. Shelled corn-cottonseed animalfeed. 3,700,459, Cl. 99-2.00r.
Ringel, Melvin B.: *See*—
Patton, Terence R.; and Ringel, Melvin B., 3,701,149.
Riordan, Pauline F.: *See*—
Webber, Harold H.; and Riordan, Pauline F., 3,699,590.
Ripper, Jose Ellis: *See*—
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,701,044.
Rishton, Michael L.: *See*—
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Rissolo, Herman A., to Branson Instruments, Incorporated. Submersible ultrasonic transducer assembly. 3,700,937, Cl. 310-8.900.
Ritchie, Robert T.: *See*—
Davidge, Ronald V.; Locklar, Henry C.; Ralston, James C.; and Ritchie, Robert T., 3,700,328.
Ritsopoulos, Sotirios Constantine: *See*—
Borsuk, Michael Howard; and Ritsopoulos, Sotirios Constantine, 3,700,793.
Ritter, Gerhard: *See*—
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gerhard, 3,699,756.
Ritter, Josef: *See*—
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gerhard, 3,699,756.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gerhard, to EVG Entwicklungs- und Verwertungsgesellschaft m.b.H. Machine for manufacturing steel structural part. 3,699,756, Cl. 219-56.000.
Ritzer, Ulrich. Device for furnishing vital and costly food with ornaments and writing. 3,699,879, Cl. 99-450.100.
RIV-SKF Officine de Villar Petosa S.p..: *See*—
Pettazzi, Paolo, 3,699,792.
Roach, Charles D., to United States of America, Army. Method for arresting propagating fractures in stressed-skin monocoque type of construction. 3,700,517, Cl. 156-94.000.
Roach, Joel K.: *See*—
Richeson, William E., Jr.; and Roach, Joel K., 3,700,810.
Robbins, William Paul; and Bullock, Clifford Ralph. Closure for flexible container. 3,700,019, Cl. 150-3.000.
Roberts, Carlton E.; Rahn, Hilton N., Jr.; and Reid, Walter E., Jr., to Bethlehem Steel Corporation. Method for producing double-reduced container stock having good resistance to corrosion and product produced thereby. 3,700,504, Cl. 148-2.000.
Roberts, George C.: *See*—
Vincent, Daniel B.; Vincent, Daniel A.; and Roberts, George C., 3,700,017.
Roberts, John A.; Roberts, Peter R.; and Kelly, James E., to Brunswick Corporation. Elastic metal filament yarn. 3,699,768, Cl. 57-144.000.
Roberts, Leslie: *See*—
Satterfield, Homer E.; Stottlemyer, Keith D.; Brown, David L.; and Roberts, Leslie, 3,700,547.
Roberts, Peter R.: *See*—
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Robertson, James D., to Westinghouse Electric Corporation. Motor drive position movement profile calibration. 3,700,379, Cl. 444-1.000.
Robertson, Jeffrey C.: *See*—
Bradford, James C.; Miller, Stephen H.; and Robertson, Jeffrey C., 3,700,188.
Robin, Michael; and Schulte, Sheldon R., to Ashland Oil & Refining Company. Triazine derivatives of thiobisphenols and process of preparation. 3,700,666, Cl. 260-248.0cs.
Robinson, Franklin M.; and Anderson, Paul S., to Merck & Co., Inc. 2'-Hydroxy-2,3,5-trimethyl-6,7-benzomorphan. 3,700,734, Cl. 260-293.540.
Robinson, John K.; and Voge, Hervey H., to Shell Oil Company. Dehydrogenation process over platinum on lithiated mordenite. 3,700,749, Cl. 260-683.30r.
Robinson, Thomas C.: *See*—
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Robinson, Thomas C., to Tecna Corporation. Vas prosthesis for reversible sterilization. 3,699,957, Cl. 128-1.00r.
Robson, George E.: *See*—
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Rockwell Manufacturing Company: *See*—
Taylor, Robert W.; and Sellers, Jerry W., 3,699,655.
Rodbell, Donald Stanley; and Lommel, James M., to General Electric Company. Magnetic films having a predetermined coercivity. 3,700,500, Cl. 117-239.000.
Rodemann, Alfred H.: *See*—
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Rodgers, Charley R.: *See*—
Carpenter, David W.; and Rodgers, Charley R., 3,700,762.
Roeller, Erhart P. Multi-indicator setup gauge. 3,699,659, Cl. 33-172.00r.
Roeschlein, Eugene R., to United States of America, Navy. Dual delayed sequence generator with read only memory control for 256 output triples for plane and spherical wave-front simulations. 3,700,780, Cl. 35-10.400.
Roever, William L.: *See*—

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Switchenbank, Colin; and Viste, Kenneth L., 3,700,732.
Rollins, Lester G. Cutter chain support means. 3,700,285, Cl. 299-83.000.
Romick, Roscoe B.; and Strauss, John G., to U.S. Natural Resources, Inc. Apparatus for collecting and discharging lumber. 3,700,120, Cl. 214-16.00b.
Rooney, Clarence S.: *See—*
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Rose, Swiwyn H.: *See—*
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Rosen, Marvin: *See—*
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Rosiek, Frank C., to Budd Company, The. Method of locking a bolt in an assembly by external staking. 3,699,637, Cl. 29-432.100.
Ross, Brian Francis; and Spicer, Dalton Harold, to Deere & Company. Windrower drive means. 3,699,751, Cl. 56-10.300.
Ross, Donald L.: *See—*
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Rossi, Pietro Paolo: *See—*
Siclari, Francesco; Rossi, Pietro Paolo; Calgari, Seba; and Jacuone, Roberto, 3,700,631.
Roth, Eric Michael. Fabric applying apparatus. 3,699,626, Cl. 29-200.00b.
Rouse, George V.: *See—*
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Rouse, William H., to North American Rockwell Corporation. Dampener control system for lighographic printing press. 3,700,984, Cl. 318-77.000.
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Rozdilsky, Nicholas; and Wilkens, Hans J. Ultrasonic machining. 3,699,719, Cl. 51-59.0as.
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Rubin, Robert G., to Jones and Laughlin Steel Corporation. Vacuum vapor deposited zinc coatings. 3,700,485, Cl. 117-71.00m.
Ruchser, Erich: *See—*
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Rudel, Kurt, to Gerdts, Gustav F., KG. Check valve. 3,700,001, Cl. 137-543.210.
Rueger, Herman; and Keller, Joseph Richard, to AMP Domestic Inc. Termination method for optic means. 3,699,651, Cl. 29-630.00a.
Ruekberg, Herbert S., to Continental Can Company, Inc. End unit and liner for aerosol containers. 3,700,136, Cl. 220-63.00r.
Ruggiero, Edward M., to Displaytek Corporation. Thermal display module. 3,700,852, Cl. 219-216.000.
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Ryan, Edward Clyde. Position control for parallel hydraulic systems on an agricultural implement. 3,700,041, Cl. 172-316.000.
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Ryley, Derek Vernon; and Claydon, Gyongyver, to Marconi Company Limited, The. Misregistration correction for color television cameras. 3,700,789, Cl. 178-5.40m.
Ryley, Derek Vernon; and Claydon, Gyongyver, to Marconi Company Limited, The. Colour television cameras. 3,700,790, Cl. 178-5.40m.
Rysti, Ilkka Arimo. Dosing device for use in log handling installations. 3,700,116, Cl. 214-1.0pb.
Saab-Scania Aktiebolag: *See—*
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Sachs, Charles M.: *See—*
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Saenger, Franz; and Straub, Dieter, to Licentia Patent-Verwaltungs-G.m.b.H. Parallel binary carry look-ahead adder system. 3,700,875, Cl. 235-175.000.
Safonov, George M. Fission-electric converter. 3,700,935, Cl. 310-3.00r.
Sahlstrom AB: *See—*
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Saito, Hisatuna. Gap controlling device for a cone crusher. 3,700,175, Cl. 241-37.000.
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Sakamoto, Kenro; Tanaka, Motoaki; Hanzawa, Teruo; and Kasai, Keiji. Light-sensitive silver halide color photographic material containing couplers and couplers solvents. 3,700,454, Cl. 96-100.000.
Sakamoto, Kuniaki: *See—*
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Sakurai, Yasunobu, to Denki Onkyo Company, Limited. Horizontal deflection circuits for television receivers. 3,700,959, Cl. 315-29.000.
Salamony, James E.; and Starnes, William H., Jr., to Esso Research and Engineering Company. Coal liquefaction using carbon radical scavengers. 3,700,583, Cl. 208-8.000.
Salata, Eugene A., to United States of America, Navy. Sexless hose coupling. 3,700,269, Cl. 285-78.000.
Salter, George, & Co., Ltd.: *See—*
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Samuel, Trevor N.: *See—*
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San Emetherio, Juan J., to Raymond Lee Organization, Inc., The. Missile throwing apparatus having connectors holding targets in a given spaced relationship. 3,700,240, Cl. 273-95.00r.
Sanders Associates, Inc., mesne: *See—*
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Sankyo Company, Limited: *See—*
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Sanyo Electric Co., Ltd.: *See—*
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Sapkus, Jurgis, to Mattel, Inc. Doll with blunking eyelids moved by a pendulum. 3,699,707, Cl. 46-166.000.
Sapkus, Jurgis; Lewis, J. Stephen; and Sporrong, Robert N., to Mattel, Inc. Appendage animating means for figure toys. 3,699,713, Cl. 46-119.000.
Saraber, Petrus Gerardus, to Gizeh-Werk G.m.b.H. Cigarette-making appliance. 3,699,975, Cl. 131-70.000.
Sarns, Inc.: *See—*
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Sato, Hiroko: *See—*
Shiio, Isamu; and Sato, Hiroko, 3,700,559.
Sato, Kazuo; and Aoki, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for measuring the distance of travel and the speed of a moving object. 3,701,151, Cl. 343-9.000.
Sato, Kiichi; and Ogura, Isamu, said Ogura assor. to Oki Electric Industry Company Limited. Memory device and method of making the same. 3,699,648, Cl. 29-604.000.
Sato, Masatoshi: *See—*
Kobayashi, Torao; and Sato, Masatoshi, 3,700,015.
Sato, Mikio: *See—*
Ishikawa, Hidehiko; Sato, Mikio; and Takada, Syun, 3,700,455.
Sato, Ryuichi: *See—*
Koga, Hirohumi; and Sato, Ryuichi, 3,701,062.
Sato, Wasuke; Hatakeyama, Shigeyuki; Koide, Masashi; Yamamoto, Sadao; and Fujisawa, Mitsumaro, to Showa Denko Kabushiki Kaisha. Method for manufacturing plastic cushioning material. 3,700,523, Cl. 156-210.000.
Sato, Yoshikatsu, to Toyo Seikan Kabushiki Kaisha. Method of sealing the seaming portions of a can. 3,700,524, Cl. 156-218.000.
Sato, Yoshio: *See—*
Soma, Nobuo; Watatani, Mitsuo; Nakazawa, Junichi; Sato, Yoshio; Kuwabara, Yoshimi; and Ishikawa, Hidehiko, 3,700,682.
Satterfield, Homer E.; Stottlemyer, Keith D.; Brown, David L.; and Roberts, Leslie, to United States of America, Army. Bonding process for polyphenylene oxidedielectric microwave circuits and bonded assembly. 3,700,547, Cl. 161-213.000.
Saucy, Gabriel; and Scott, John William, to Hoffmann-La Roche Inc. Total steroid synthesis employing substituted isoxazole derivatives. 3,700,661, Cl. 260-240.00e.
Saunders, James R.: *See—*
Knight, Paul A.; Saunders, James R.; and Stapleton, Fred E., 3,700,066.
Sautbine, Willis T. Self-righting marker. 3,699,913, Cl. 116-63.00p.
Savage, Bruce Russell, to Bell Telephone Laboratories, Incorporated. Digital constant-percent-break pulse correcting signal timer. 3,700,821, Cl. 179-16.00e.
Saxena, Arjun Nath, to RCA Corporation. Schottky barrier diode and method of making the same. 3,700,979, Cl. 317-235.00r.
Scaduto, Michael: *See—*

Breitkopf, Stephen H.; and Scaduto, Michael, 3,699,591.
Scales, Ralph E.; and Whitley, James O., Jr., to Bethlehem Steel Corporation. Apparatus for transferring fluid from an underwater storage unit to a floating vessel. 3,700,014, Cl. 141-388.000.
Scanner, Inc.: *See—*
Acker, Norbert K., 3,701,098.
Scarnato, Thomas J.; Peacock, Peter J.; and Kowalik, John J., to International Harvester Company. Pre-stressed tie guard with section retainer. 3,699,758, Cl. 56-307.000.
Schad, Charles A., to Kalium Chemicals Limited. Magnetometer consisting of two sensors with means for unbalancing each sensor at null condition. 3,701,007, Cl. 324-43.00r.
Schader, Arne: *See—*
Schullstrom, Sten Gunde; Freijd, Ingvar; Schader, Arne; and Olofsson, Nils Gunnar, 3,701,075.
Schaefer, George E.: *See—*
Reineman, Richard G.; and Schaefer, George E., 3,700,279.
Schaffer, Cyril L. Electrical cable apparatus. 3,700,834, Cl. 191-12.20r.
Schaffer, Detlef: *See—*
Knecktel, Wilhelm Josef; and Schaffer, Detlef, 3,699,992.
Schaller, Norman C.: *See—*
Kerley, James J., Jr.; and Schaller, Norman C., 3,699,807.
Scheibe, Harold R.; and Blankenship, John E., to United States of America, Navy. Helicopter cyclic and collective pitch mechanism. 3,700,350, Cl. 416-114.000.
Scheibel, Axel: *See—*
Anneberg, Vilhelm; Clemmensen, Ellen; Gudmandsen, Robert; and Scheibel, Axel, 3,700,829.
Scheid, William J., to Raytheon Company. Odor control appliance. 3,700,378, Cl. 431-253.000.
Scheinkoenig, Robert J.; and Haupt, Robert C., to Allis-Chalmers Corporation. Fender louver. 3,700,259, Cl. 280-152.00r.
Schenkerberg, William F., to Dart Industries, Inc. High impact polypropylene blends. 3,700,614, Cl. 260-23.00h.
Scher, Herbert I. High pressure laminates with deeply embossed surface. 3,700,537, Cl. 161-89.000.
Schering A.G.: *See—*
Hempel, Gerhard; Wieske, Reinhold; Krieger, Bernhard; and Kasper, Emanuel, 3,700,660.
Schering Aktiengesellschaft: *See—*
Berndt, Hans Detlef; and Wiechert, Rudolf, 3,700,670.
Scheu, Rudol. Teeth regulating device having a U-shape rigid bracket anchored in the posterion portions of a plate. 3,699,656, Cl. 32-14.00e.
Schiffmann, Robert F.; Stein, Ernest W.; and Kaufman, Harold B., Jr., to DCA Food Industries, Inc. Dough proofing apparatus. 3,699,899, Cl. 107-57.00c.
Schilling, Winston H.: *See—*
Bennett, Leonard W.; Hutchinson, Thomas R.; and Schilling, Winston H., 3,701,016.
Schinke, David Paul: *See—*
Geusic, Joseph Edward; Nelson, Terence John; and Schinke, David Paul, 3,701,122.
Schlichter, Stephen L.: *See—*
Bergeron, Robert J.; and Schlichter, Stephen L., 3,700,466.
Schlichtig, Ralph C. Thermally powered diaphragm pump system for heat transfer. 3,699,779, Cl. 62-324.000.
Schluderberg, Donald C., to Babcock & Wilcox Company, The. Nuclear reactor with means for adjusting coolant temperature. 3,700,552, Cl. 176-50.000.
Schlumberger Technology Corporation: *See—*
Volkel, George D.; and Cram, Milton E., 3,701,006.
Schluter, Franz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Container for loose material. 3,700,145, Cl. 222-202.000.
Schmalfeld, Paul: *See—*
John, Willibald; Schmalfeld, Paul; Lange, Paul; and Rammler, Roland, 3,700,564.
Schmidt, Otto. Rods having means for direct cross-connecting combined with separate elements for connecting same. 3,699,709, Cl. 46-29.000.
Schmidt-Thomee, Georg: *See—*
Mueller, Gerhard; Doerfel, Helmut; and Schmidt-Thomee, Georg, 3,700,751.
Schmitt, Henry O., Jr.: *See—*
Kopac, John C.; Schmitt, Henry O., Jr.; and Tenney, Frederick H., 3,699,892.
Schmitt, Joseph Michael; Sherry, Jeffrey Rufus; and Robustelli, Albert George, to American Cyanamid Company. Compositions of polymers of methyl methacrylate and polymers of ethylene. 3,700,754, Cl. 260-878.00r.
Schmitz, Robert D., to Hodges Chemicals Company. Decorative panel. 3,700,533, Cl. 161-5.000.
Schneiderhan, Edward M.: *See—*
Marsh, Lyna W.; and Schneiderhan, Edward M., 3,699,884.
Schocher, Arne Johannes: *See—*
Furst, Andor; Muller, Marcel; Muller, Peter; Schocher, Arne Johannes; and Bacher, Elisabeth, 3,700,702.
Scholler, Ami: *See—*
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Scholze, Arlene E.: *See—*
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Schonert, Edgar: *See—*
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Schoonmaker, Edward Balmor: *See—*
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Schora, Frank C., Jr.: *See—*
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Johnson, James L.; Schora, Frank C., Jr.; and Tarman, Paul B., 3,700,422.
Schruff, Horst; Lehmann, Helmut; Siefen, Jakob; Mathner, Hermann; Adams, Willi; and Weiss, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for closing a film cassette made of synthetic plastics. 3,700,531, Cl. 156-575.000.
Schubert, Paul, to Cross Europa-Werk GmbH. Eccentric boring spindle. 3,700,345, Cl. 408-150.000.
Schuller, James J.: *See—*
Shaver, William R.; and Schuller, James J., 3,700,143.
Schullstrom, Sten Gunde; Freijd, Ingvar; Schader, Arne; and Olofsson, Nils Gunnar, to Saab-Scania Aktiebolag. Electronic microelement assembly. 3,701,075, Cl. 339-17.0cf.
Schulman, Bernard L., to Esso Research and Engineering Company. Production of high octane gasoline from coal liquids. 3,700,586, Cl. 208-89.000.
Schulte, Sheldon R.: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,700,666.
Schultes, Hermann, to Olin Corporation. Metal edge members for skis having varied lengthwise stress-strain ratio and skis including such members. 3,700,252, Cl. 280-11.13n.
Schulze-Berge, Karl J., to AMF Incorporated. Adjustable timer cam assembly spring biased by contacts for normal engagement with synchronous motor driven gear. 3,700,837, Cl. 200-38.00r.
Schuman, Leroy J.: *See—*
Dedieme, Ronald B.; and Schuman, Leroy J., 3,700,182.
Schuning, Kenneth W.; and Carlson, Eugene E., to General Electric Company. Fuel cooled fuel injectors. 3,699,773, Cl. 60-39.740.
Schurrer, Robert L., to ATM Corporation, mesne. Transverse tapper assembly for sifter sieve stack. 3,700,104, Cl. 209-237.000.
Schwab, Delmer G., to Hy-Torq Corporation. Differential drive mechanism. 3,700,082, Cl. 192-50.000.
Schwamb Corporation, The: *See—*
Davis, Donald A.; and Galluzzo, Anthony, 3,700,300.
Schwartz, Eli: *See—*
Chin, James; Witt, Harry S.; and Schwartz, Eli, 3,700,481.
Schwarz, Charles A., to Sooner Door Hardware Manufacturing Company. Automatic door closer. 3,699,608, Cl. 16-79.000.
Schweizer, August: *See—*
Frei, Alfred; and Schweizer, August, 3,700,653.
Scienco, Inc.: *See—*
Vanderjagt, John A., 3,700,359.
Scott, Charles E., to Cities Service Company. Waste rubber disposal. 3,700,615, Cl. 260-2.300.
Scott, J. O., to Cities Service Oil Company. Permafrost stabilization for bearing heavy structures. 3,699,685, Cl. 61-36.00a.
Scott, John William: *See—*
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Scovill Manufacturing Company: *See—*
Foults, Jonathan Asa, 3,700,166.
Scrine, Gerald Robin: *See—*
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Sears, Roebuck and Company: *See—*
Duncan, Alan W., 3,699,615.
Seaton, Arthur F., to Hughes Aircraft Company. Planar antenna array. 3,701,162, Cl. 343-771.000.
Sebon Corporation, The: *See—*
Szpur, Roman, 3,699,961.
Seelbinder, David C., to Eastman Kodak Company. Process and apparatus for sensitometrically testing a liquid photosensitive emulsion. 3,700,335, Cl. 356-201.000.
Segar, Lawrence P.: *See—*
Hall, Richard E.; and Segar, Lawrence P., 3,701,099.
Seidenberg, Benjamin; and Hobbs, Alfred J., to United States of America, National Aeronautics and Space Administration. Method and apparatus for determining the contents of contained gas samples. 3,700,893, Cl. 250-41.950.
Seider, Walter: *See—*
Gentsch, Erich; Bederke, Klaus; Seider, Walter; Pullner, Hans Jurgen; and Muhlmann, Christa, 3,700,483.
Seifert, Helmut: *See—*
Landt, Uwe; Seifert, Helmut; and Bretschneider, Otto, 3,700,430.
Seiki, Hajime: *See—*
Kanazawa, Kay Keiji; Seiki, Hajime; and Street, George Bryan, 3,700,498.
Sekine, Yoshio: *See—*
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Selin, Terry G.: *See—*
Berger, Abe; and Selin, Terry G., 3,700,711.
Berger, Abe; and Selin, Terry G., 3,700,716.
Hamilton, Stephen B.; Beers, Melvin D.; and Berger, Abe, 3,700,714.
Sellers, James B.: *See—*
Day, Leon E., 3,700,263.
Sellers, Jerry W.: *See—*
Taylor, Robert W.; and Sellers, Jerry W., 3,699,655.

Seltzer, Daniel Arron: *See*—
Evans, Ross Hugh; Seltzer, Daniel Arron; and Young, Robert Leonard, 3,700,816.
Seltzer, Raymond; and Gordon, David A. Diamino-s-triazines. 3,700,665, Cl. 260-248.0cs.
Sepulveda, William, Jr.: *See*—
Aasen, Torulf F.; Mogil, Bernard; and Sepulveda, William, Jr., 3,700,231.
Servadio, Robert. Automatic safety seat clamp. 3,700,281, Cl. 297-390.000.
Servo Corporation of America, mesne: *See*—
Reynolds, Christopher C., 3,700,860.
Sesody, Donald W., to Applied Power Industries, Inc. Traversing workholding clamp. 3,700,227, Cl. 269-24.000.
Seto, Tetsuki: *See*—
Hamada, Takaki; Nakashio, Seizo; Maruta, Isao; Hayatsu, Kazuo; Seto, Tetsuki; and Kono, Yoichi, 3,700,630.
Settipani, Antoine: *See*—
Gaggero, Giancarlo; Mongini-Tamagnini, Carla; and Settipani, Antoine, 3,700,162.
Sevenich, Theodor Josef; Fabian, Wolfgang; and Kuhn, Klaus, to Maschinen- und Werkzeugbau GmbH. Pusher-type furnace. 3,700,122, Cl. 214-24.000.
Seymour Foods, Inc.: *See*—
Willsey, Charles H., 3,699,744.
Shackelford, John R.: *See*—
Criss, William H.; and Shackelford, John R., 3,699,877.
Shaddock, Roland E., to Myers-Sherman Company. Double-acting tandem Piston pump. 3,700,360, Cl. 417-404.000.
Sharkey, Hubert Joseph; and Sturwold, Robert J., to Emery Industries, Inc. Polyamides exhibiting improved freeze-thaw characteristics in printing ink compositions. 3,700,618, Cl. 260-33.40r.
Sharov, Nikolai Grigorievich: *See*—
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, 3,700,364.
Shaver, William R.; and Schuller, James J., to Pullman Incorporated. Pneumatic discharge arrangement for railway car hoppers. 3,700,143, Cl. 222-148.000.
Sheahan, Desmond F.; and Callander, George C., to GTE Automatic Electric Laboratories Incorporate. Apparatus for monitoring of the deposition of metallic films. 3,699,916, Cl. 118-9.000.
Shears, Stuart T., to TRW Inc., mesne. Unitary sheet metal key loop retainer. 3,700,392, Cl. 70-45.0cb.
Sheena, David: *See*—
Chabot, Ronald W.; Leonard, George S.; and Sheena, David, 3,699,856.
Shell Oil Company: *See*—
Bezemer, Cornelis; Tadema, Harco J.; and Houbolt, Jacob J.H.C., 3,700,593.
Campen, Jan P.; and Kok, Riekert, 3,700,767.
Finch, Albert M. T., Jr., 3,700,637.
Hasse, Richard J.; and Roever, William L., 3,701,088.
La Heij, Gerardus E.; and Van Amerongen, Gerrit J., 3,700,757.
Langner, Carl G.; and Visser, Robert C., 3,699,691.
Montgomery, William C., Jr.; and Vogel, Charles B., 3,700,871.
Papadopoulos, Michael N.; and Ueber, Russell C., 3,700,280.
Robinson, John K.; and Voge, Hervey H., 3,700,749.
Van Kralingen, Peter H., 3,700,763.
Wald, Milton M.; and Gaum Myron G. (said Wald assor. to), 3,700,633.
Winkler, De Loss E., 3,700,748.
Shellhause, Ronald L. Hydraulic power brake booster and open center control valve therefor. 3,699,680, Cl. 60-54.60f.
Shen, Tsung-Ying; Witsel, Bruce E.; and Walford, Gordon L., to Merck and Co., Inc. Substituted phenylsulfamyl salicyclic acids and derivatives thereof in the treatment of inflammation. 3,700,773, Cl. 424-230.000.
Shen, Tsung-Ying, to Merck & Co., Inc. Use of p, p'-bis-ureidodiphenyl sulfone in treating Marek's disease. 3,700,776, Cl. 424-322.000.
Sheppard, William Arthur: *See*—
Cairncross, Allan; and Sheppard, William Arthur, 3,700,693.
Sher Walls Inc.: *See*—
Sherwood, John C., 3,700,385.
Sherrick, James W., to Lord Corporation. Resilient bearing adapter for railway trucks. 3,699,897, Cl. 105-218.00r.
Sherry, Jeffrey Rufus: *See*—
Schmitt, Joseph Michael; Sherry, Jeffrey Rufus; and Robustelli, Albert George, 3,700,754.
Sherwood, John C., to Sher Walls Inc. Panel and stile construction. 3,700,385, Cl. 52-36.000.
Shiborin, Viktor Ivanovich: *See*—
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, 3,700,364.
Shiells, Daniel A. Process for purifying water utilized in a boiling water reactor. 3,700,550, Cl. 176-37.000.
Shigezane, Keisuke: *See*—
Yamamura, Yuichi; Kokubu, Tatsuo; Shigezane, Keisuke; and Mizoguchi, Tomishige, 3,700,651.
Shilo, Isamu; and Sato, Hiroko, to Ajinomoto Co., Inc. Method of producing tryptophan by fermentation. 3,700,559, Cl. 195-29.000.
Shimada, Mitsuhiro: *See*—
Suzuki, Yoshiji; Hayashi, Ikuo; Karasawa, Kazuo; and Shimada, Mitsuhiro, 3,700,953.
Shimada, Takashi, to Tokyo Shibaura Electric, Ltd. Microwave tube assembly. 3,700,963, Cl. 315-5.380.
Shimago, Kozo: *See*—
Yamamoto, Michihiro; and Shimago, Kozo, 3,700,736.
Shimauchi, Shiro; Kitamura, Yuko; Iwabuchi, Osamu; and Matsui, Takeshi, to Teijin Limited. Method of dyeing textile fibers with an anionic dyestuff in the presence of quaternary ammonium salt. 3,700,399, Cl. 8-30.000.
Shimizu, Katsumi: *See*—
Egawa, Susumu; Ashizaki, Shigeya; Shimizu, Katsumi; and Miyati, Toshiko, 3,700,954.
Shimizu, Masao, to Denki Onkyo Company, Limited. High voltage generating apparatus. 3,700,936, Cl. 310-8.100.
Shimomura, Jun, to Nippon Kogaku K.K. Device for driving reflecting mirror of single-lens reflex camera. 3,699,864, Cl. 95-42.000.
Shimomura, Jun, to Nippon Kogaku K.K. Coupling device for exposure meter to aperture of interchangeable lens in single-lens reflex camera. 3,699,868, Cl. 95-64.00r.
Shiney Co.: *See*—
Sumi, Kiyoshi; and Sunano, Naomasa, 3,699,803.
Shinomiya, Masayasu: *See*—
Wakamatsu, Shigeru; Kondo, Ryozo; and Shinomiya, Masayasu, 3,700,669.
Shinskey, Francis G., to Foxboro Company, The. Batch dryer control apparatus. 3,699,665, Cl. 34-48.000.
Shipowners Refrigerated Cargo Research Association: *See*—
Hale, Kenneth Calvert; and Scrine, Gerald Robin, 3,699,694.
Shirai, Takeaki; Sakakibara, Shigeru; Noguchi, Masaaki; and Sumiyoshi, Masharu, to Nippon Denso Kabushiki Kaisha, and and Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission effective for changing speed by brake pressure. 3,700,079, Cl. 192-4.00a
Shirayama, Kenzo: *See*—
Terada, Hiroshi; and Shirayama, Kenzo, 3,700,753.
Shiroishi, Akihiro: *See*—
Kokubo, Ryo; Takakuwa, Yasuo; Shiroishi, Akihiro; and Kihara, Mitsuji, 3,700,672.
Shirzad, Paul P.: *See*—
Gacs, Peter T.; and Shirzad, Paul P., 3,699,600.
Shiu, Peter D. Animated display device and method. 3,699,698, Cl. 40-106.350.
Shoemaker, Arthur H., to American Optical Corporation. Eight component 100X microscope objective. 3,700,311, Cl. 350-214.000.
Shoffner, Willie M. Check out system. 3,700,074, Cl. 186-1.0ac.
Shonka, Francis R.: *See*—
Baisz, George J.; and Shonka, Francis R., 3,701,080.
Shonka, Louis M.: *See*—
Baisz, George J.; and Shonka, Francis R., 3,701,080.
Shore, David Teignmouth; and Starkie, Granville Lewis, to A.P.V. Company, Limited, The. Sterilizing separate compartments of particulate material. 3,700,468, Cl. 99-216.000.
Short, James E., Jr., to United States of America, Navy. Fire resistnat photoflash cartridge. 3,699,890, Cl. 102-37.800.
Showa Denko Kabushiki Kaisha: *See*—
Sato, Wasuke; Hatakeyama, Shigeyuki; Koide, Masashi; Yamamoto, Sadao; and Fujisawa, Mitsumaro, 3,700,523.
Shrimpton, Ronald Horace; and Dunkley, Keith William. Printers blankets. 3,700,541, Cl. 161-160.000.
Shriver, Joe E.: *See*—
Koch, Earl E.; and Shriver, Joe E., 3,699,754.
Shuey, David R.; and Norian, Roger F., to Xerox Coroporation. Braking methods and apparatus. 3,700,990, Cl. 318-375.000.
Shughart, Mervin Leonard, to AMP Incorporated. Apparatus for assembling articles in strip form to workpieces. 3,699,631, Cl. 29-203.00b.
Shumaker, Charles Storer, to United Engineering and Foundry Company. Apparatus for feeding strip-like material to a processing apparatus. 3,700,157, Cl. 228-5.000.
Sibbert, Donald, J.: *See*—
Anderson, Howard H.; Moyer, Rudolph H.; Sibbert, Donald, J.; and Sutherland, David C., 3,700,896.
Siciari, Francesco; Rossi, Pietro Paolo; Calgari, Seba; and Jacuone, Roberto, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Method for the production of acrylonitrile polymers and copolymers. 3,700,631, Cl. 260-85.500.
Siddall, John B., to Zoecon Corporation. Insect control. 3,700,694, Cl. 260-343.600.
Siddall, John B., to Zoecon Corporation. Boll weevil sex attractant. 3,700,696, Cl. 260-343.500.
Siefen, Jakob: *See*—
Schruff, Horst; Lehmann, Helmut; Siefen, Jakob; Mathner, Hermann; Adams, Willi; and Weiss, Gunter, 3,700,531.
Siegel, Herman M., to Lowe, E. S., Company, Inc. Drawing device. 3,699,660, Cl. 33-174.00b.
Siemens Aktiengesellschaft: *See*—
Bosch, Werner; and Kobler, Ulrich, 3,701,066.
Siemssen, Ernst A.: *See*—

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Siergiej, John M.: *See*—
Abkowitz, Stanley; Siergiej, John M.; and Regan, Ronald D., 3,700,434.
Sievers, Robert E. Rare earth complexes as nuclear magnetic resonance shift reagents. 3,700,410, Cl. 23-230.00r.
Sigagoose, Glen. Model airplane and method of assembling same. 3,699,706, Cl. 46-78.000.
Sigl, Jon D. Portable arrow checking device. 3,700,940, Cl. 310-66.000.
Signatron, Inc.: *See*—
Jackson, Charles L., 3,701,019.
Signetics Corporation: *See*—
Isaac, George L.; Kingsbury, Richard F.; and Surak, John G., 3,701,021.
Simmonds Precision Products, Inc.: *See*—
Knight, John H., 3,700,864.
Simmons, Clyde A.: *See*—
Lunsford, Leslie E.; Simmons, Clyde A.; and Evans, William L., 3,699,664.
Simms, Dudley V. Stable oscillator. 3,701,051, Cl. 331-107.00t.
Simonds, Peter, to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Discone antenna. 3,701,159, Cl. 343-745.000.
Sims, Clarence R. Floor cleaning device adapted for securement to a shoe. 3,699,672, Cl. 36-7.700.
Simshauser, Anthony J.: *See*—
Meraz, Daniel, Jr.; and Simshauser, Anthony J., 3,699,893.
Sinclair, Albert R.: *See*—
Terry, William M.; Graham, John W.; Sinclair, Albert R.; and Kiel, Othar M., 3,700,032.
Sinclair-Koppers Company: *See*—
Hulse, George E.; and Harris, James J., 3,700,639.
Singer Company, The: *See*—
Ahrns, Wilbur C.; Sweeney, David F.; and Dannatt, Hugh St., 3,700,087.
Ketterer, Stanley J., 3,699,911.
Urciola, John A.; and Marsh, Walter H. W., 3,699,910.
Waibel, Helmut K., 3,700,142.
Wiseman, Neil L., 3,701,104.
Singer Company, The, mesne: *See*—
Bilinski, Donald J.; and Weisbord, Leon, 3,700,289.
Ensinger, Willis B., 3,700,290.
Singer, Malcolm S., to Chevron Research Company. N-(1-azido-2, 2,2-trihaloethyl) sulfonamides. 3,700,699, Cl. 260-349.000.
Sitz, Tilbert C., to Collins Radio Company. Cable winding apparatus. 3,700,180, Cl. 242-54.00a.
Sivertson, Wilford E., Jr., to United States of America, National Aeronautics and Space Administration. Logical function generator. 3,700,868, Cl. 235-152.000.
Sixt, Marty E., to Advanced Drainage Systems, Inc. Corrugated drainage tubes and fittings. 3,699,684, Cl. 61-11.000.
Skatrud, Ralph O.: *See*—
Laurer, George J.; and Skatrud, Ralph O., 3,700,859.
SKF Industrial Trading and Development Company N.V.: *See*—
Nilsson, Sven Walter, 3,699,823.
Skinner, Harvey G., to Vulcan, Inc. Hollow knob constructions. 3,699,613, Cl. 16-121.000.
Skolnick, Michael L.; and Buczek, Carl J., to United Aircraft Corporation. Nonresonant interferometric optical isolator. 3,700,309, Cl. 350-163.000.
Slagle, Rufus L. Odometer. 3,700,164, Cl. 235-95.00r.
Slomski, Stanley L., to General Electric Company. Lamp and reflector assembly. 3,700,881, Cl. 240-41.35r.
Slope Incorporated: *See*—
Drapeau, Raoul E., 3,700,807.
Slutman, Allen C.: *See*—
Finnegan, Edward D.; Harper, Leonard Roy; Mitrofanoff, Nicholas S.; and Slutman, Allen C., 3,701,105.
Sluys, Robert Nestor Joseph; Wessels, Johannes Hendrik; and Van Den Bussche, Willem, to U.S. Philips Corporation. Method of recording and/or reproducing video signals. 3,700,798, Cl. 178-6.6af.
Smaller, Philip; and Treves, David, to Ampex Corporation. Modulated magnetooptic readout system. 3,701,133, Cl. 340-174.10m.
Smith, Alfred H.: *See*—
Razzano, John S.; and Smith, Alfred H., 3,700,473.
Smith, Bob L. Fluidic phase shifter. 3,701,058, Cl. 333-31.00a.
Smith, Donald A., to Eastman Kodak Company. Synthetic polymeric photographic emulsion vehicles. 3,700,456, Cl. 96-114.000.
Smith, Gerald C.; and Williams, Raymond J., to Eastman Kodak Company. Control circuit for automating the operation of a film cutter or like apparatus. 3,699,832, Cl. 83-210.000.
Smith Industries Limited: *See*—
Smith, Terry Reginald, 3,699,914.
Smith, Leif H., to Brown & Root, Inc. Method and apparatus for laying pipelines grouped in a bundle. 3,699,692, Cl. 61-72.300.
Smith, Luther W.; and Snitzer, Elias, to American Optical Corporation. Efficient illumination of the cores only of a fiber optic bundle using holography. 3,700,303, Cl. 340-3.500.
Smith, Marvin Glenn, to Helmerich & Payne, Inc. Sealing gasket. 3,699,735, Cl. 52-400.000.
Smith, Oliver Wendell; Weigel, James Edward; and Trecker, David John, to Union Carbide Corporation. Radiation-curable acrylate-capped polycaprolactone compositions. 3,700,643, Cl. 260-77.5an.
Smith, Richard M., to United States of America, Navy. Bragg angle optical matched filter system with coded glass transmission plate. 3,700,910, Cl. 250-225.000.
Smith, Russell G. Valve with flow regulating means. 3,700,003, Cl. 137-614.170.
Smith, Stephen Hagar, to McCulloch Corporation. Rapid charging of batteries. 3,700,997, Cl. 320-20.000.
Smith, Terry Reginald, to Smith Industries Limited. Liquid level indicators. 3,699,914, Cl. 116-118.000.
Smith, Victor S. Display system. 3,700,880, Cl. 240-10.00r.
Smith, William C. End shift indicator for platform scales. 3,700,052, Cl. 177-134.000.
Smith, William Mayo, Jr.: *See*—
Beale, John H.; and Smith, William Mayo, Jr., 3,700,632.
Smrt, Thomas J. Spraying apparatus. 3,700,144, Cl. 222-176.000.
Snethen, Thomas H., to United Business Equipment Corporation. Check separator system. 3,700,118, Cl. 214-1.00r.
Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Siclari, Francesco; Rossi, Pietro Paolo; Calgari, Seba; and Jacuone, Roberto, 3,700,631.
Snitzer, Elias: *See*—
Smith, Luther W.; and Snitzer, Elias, 3,700,303.
Snook, Richard K.; and Stout, Rodney W., to Diginetics Incorporated. Indicia system for credit cards and the like. 3,700,862, Cl. 235-61.12m.
Sobel, Alan: *See*—
Markin, Joseph; and Sobel, Alan, 3,700,802.
Societe a Responsabilite Limitee: Forges & Trefileries de Conflandey: *See*—
Jouin, Alfred, 3,699,627.
Societe Anonyme d'Explosifs Industriels-Celtite: *See*—
Bouriand, Andre, 3,699,687.
Societe Belge pour l'Industrie Nucleaire S.A.: *See*—
Van Dievoet, Jean-Paul Laurent, 3,699,638.
Societe Chimique des Charbonnages tour Aurore: *See*—
Aubry, Jean, 3,700,741.
Societe des Aciers Fins de l'Est: *See*—
Pomey, Jacques, 3,700,779.
Societe Financiere Franciase de Licences et Breveta: *See*—
Jakob, Horst, 3,699,618.
Soden, George B. Star wheel operating mechanism. 3,700,163, Cl. 235-91.00m.
Sohne and Ernest Beckert Nadelfabrik Commandit-Gesellschaft: *See*—
Berentzen, Hardo, 3,699,784.
Solartron Electronic Group: *See*—
Ley, Anthony John, 3,700,865.
Soma, Nobuo; Watatani, Mitsuo; Nakazawa, Junichi; Sato, Yoshio; Kuwabara, Yoshimi; and Ishikawa, Hidehiko. Certain pyridinium derivatives of cycloheptyl-imidazoles. 3,700,682, Cl. 260-295.5.
Somerset, Sherman J., to International Telephone and Telegraph Corporation. Coaxial connector. 3,701,086, Cl. 339-177.00r.
Sonnabend, Lawrence F., to Dow Chemical Company, The. Cellulosic products treated with improved quaternary ammonium electroconductive additives from vinylaromatic polymers. 3,700,493, Cl. 117-201.000.
Sooner Door Hardware Manufacturing Company: *See*—
Schwarz, Charles A., 3,699,608.
Sorensen, Clarence A.; and Deremo, Edwin J., to Gardner-Denver Company. Low inertia motor for fluid operated tool. 3,700,363, Cl. 418-270.000.
Sorgenfrei, Frederick J., to Minnesota Mining and Manufacturing Co. Smooth high tolerance porous tube and process for making. 3,700,419, Cl. 29-182.200.
Sosalla, Harry; Meusburger, Lyle M.; and Jarnagin, Max L., to Noble Manufacturing Company. Foldable implement cart with forwardly tacking means for the cable arm retaining means. 3,700,040, Cl. 172-311.000.
Sosin, Boleslaw Marian, to Marconi Company, Limited, The. Parallel amplifiers with input and output sequences of hybrids. 3,701,038, Cl. 330-124.00r.
Southam, Donald L.; and Kacmarcik, Thomas J., to Harris-Intertype Corporation. Disconnect arrangement for multi-unit printing press. 3,699,887, Cl. 101-183.000.
Souza, Augustine A., to Polygon Concepts. Produce shipping container. 3,700,137, Cl. 220-97.00e.
Space Administration: *See*—
Bradley, Raymond H., 3,700,193.
Pleasants, James E.; and Dereng, Viggo G., 3,700,192.
Spacetac Incorporated: *See*—
Cocca, Theodore F., 3,699,650.
Spalding, Georg: *See*—
Beck, Otto; and Spalding, Georg, 3,700,854.
Spangler, William Gilbert; and Cross, Henry Daniel III. Detergent compositions. 3,700,401, Cl. 8-108.000.
Sparling, Raymond T.; and Dietz, William A., to Hersey-Sparling Meter Company. Cycling valve and valving assembly for water softeners. 3,700,007, Cl. 137-625.290.
Spatz, William L. Spring loaded caster for shop stools bar stools and the like. 3,699,609, Cl. 16-44.000.
Spectral Data Corporation: *See*—
Yost, Edward F., Jr., 3,700,438.

Spencer, Blaine G.; and Clinebell, Lyle R., to Caterpillar Tractor Company. Method of making mechanical jointed hose coupling of extruded components. 3,699,625, Cl. 29-157.000.

Sperry Rand Corporation: *See—*
Grey, Donald M.; and Welker, Jerry W., 3,700,119.
Hurlburt, Joseph C., 3,699,757.
Hurlburt, Joseph C., 3,700,257.
Koch, Earl E.; and Shriver, Joe E., 3,699,754.

Sperry Rand Corporation, assne: *See—*
Helms, Clifford J.; McMillan, Norman; and Papadopoulos, Stelios B., 3,700,855.

Spicer, Alvin W.; and Talalay, Anselm, to Goodrich, B. F., Company, The. Apparatus for continuously vulcanizing endless belts. 3,700,365, Cl. 425-28.000.

Spicer, Dalton Harold: *See—*
Ross, Brian Francis; and Spicer, Dalton Harold, 3,699,751.

Spies, Hohann, to Messerschmilt-Bolkow-Blohm Gesellschaft mit. Electric fuse circuit. 3,700,968, Cl. 317-31.000.

Spiess, C. F., & Sohn: *See—*
Haberhauer, Karl; Jutzi, Manfred; and Kiess, Reinhold, 3,700,513.

Spohr, Albert S.: *See—*
Waters, Robert S.; and Spohr, Albert S., 3,699,952.

Sporrong, Robert N.: *See—*
Sapkus, Jurgis; Lewis, J. Stephen; and Sporrong, Robert N., 3,699,713.

Spraker, Earl D., to Electronic Data Systems Corporation. Portable input-output terminal. 3,700,814, Cl. 179-2.

Sprecher & Schuh A.G.: *See—*
Heiz, Max; and Kalocsy, Rudolf, 3,701,101.

Springett, James C., to United States of America, National Aeronautics and Space Administration. Audio system with means for reducing noise effects. 3,700,812, Cl. 179-1.00p.

Sprinzak, Yair, to Yeda Research and Development Co., Ltd. Process for the production of halogenated benzilic acid alkyl esters. 3,700,720, Cl. 260-473.00a.

Spurck, Richard F., to Coors Porcelain Company. Electrical component package. 3,700,788, Cl. 174-525.000.

Stachewski, Harry: *See—*
Friedrich Schatz; Stachewski, Harry; and Lehnert, Gunther, 3,700,158.

Stafsudd, Oscar M.; and Haak, Frederik A., to Hughes Aircraft Company. Gas laser materials and system therefor. 3,701,046, Cl. 331-94.500.

Stairs, Henry Marshall, to American Standard Inc. Toilet seat cover mounting. 3,699,614, Cl. 16-128.000.

Standard International Corporation: *See—*
Rauskolb, Fred W., 3,700,217.

Stange Co.: *See—*
Criss, William H.; and Shackelford, John R., 3,699,877.

Stapleton, Fred E.: *See—*
Knight, Paul A.; Saunders, James R.; and Stapleton, Fred E., 3,700,066.

Stark, Amos J.; and McGinnis, Herbert E., to Goodrich, B. F. Company, The. Catenary roll support for a conveyor belt. 3,700,092, Cl. 198-192.00r.

Starkie, Granville Lewis: *See—*
Shore, David Teignmouth; and Starkie, Granville Lewis, 3,700,468.

Starnes, William H., Jr.: *See—*
Salamony, James E.; and Starnes, William H., Jr., 3,700,583.

Staudenmayer, Karl, to Ford Motor Company. Energy absorbing steering column for a motor vehicle. 3,699,824, Cl. 74-492.000.

Stauffer Chemical Company: *See—*
Brokke, Mervin E.; and Williamson, Thomas B., 3,700,668.
Fancher, Llewellyn W., 3,700,771.
Mihailovski, Alexander, 3,700,678.

Steck, William F., III, to Weaver, W. R., Company. Gun sight. 3,700,339, Cl. 356-247.000.

Steckler, Steven Alan, to RCA Corporation. Electronic signal amplifier. 3,701,032, Cl. 330-18.000.

Stedman, Robert J., to United States of America, Navy. Video gate. 3,700,799, Cl. 178-6.000.

Steelastic Company, The: *See—*
Alderfer, Sterling W., 3,700,012.

Steele, James W.: *See—*
McCoy, J. C.; and Steele, James W., 3,700,535.

Stefanucci, Arthur; and Yadlowsky, Slawko. Balanced coffee flavors. 3,700,462, Cl. 99-68.000.

Stefenel, Rudy S., to Wiltron Company. Variable gain amplifier system. 3,701,036, Cl. 330-85.000.

Stein, Ernest W.: *See—*
Schiffmann, Robert F.; Stein, Ernest W.; and Kaufman, Harold B., Jr., 3,699,899.

Steinberger, Edward P.: *See—*
Chace, Donald E.; Melvin, James A., Jr.; Ricketts, Alan W., Jr.; Steinberger, Edward P.; and Symmes, David T., 3,701,113.

Steiner, Riedholz Kurt: *See—*
Gasche, Urs; Lindlar, Herbert; Rutishauser, Max; and Steiner, Riedholz Kurt, 3,700,501.

Steinhofer, Adolf; Doerfel, Helmut; Falkenstein, Georg; and Jeserich, Wolfgang-Dieter. N-Alkyl-N-arylcarbamoyl lactams. 3,700,658, Cl. 260-239.30r.

Stephanoff, Nicholas N., to Fluid Energy Processing & Equipment Company. Drying process for pulverulent material. 3,699,662, Cl. 34-10.000.

Stephens, Nancy H.: *See—*
Acree, Elick H.; Case, Forrest Neil; and Stephens, Nancy H., 3,700,602.

Sterler, Bernard. Chess game apparatus. 3,700,242, Cl. 273-131.0kp.

Sterling Drug Inc.: *See—*
Bailey, Denis M., 3,700,697.

Stevens, Curtis E.; and Phillips, Chandler A., to Bertea Corporation. System for detecting the position of a movable element. 3,701,136, Cl. 340-199.000.

Stevens, J. P., & Co.: *See—*
Pike, Herbert J., 3,700,391.

Stevens, J. P., & Co., Inc.: *See—*
Carman, Alexander J., 3,699,783.

Stewart, Mary J.: *See—*
Price, John A.; and Stewart, Mary J., 3,700,644.
Rice, John A.; and Stewart, Mary J., 3,700,721.

Stewart, Ray T.: *See—*
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., 3,700,101.

Stewart, Russell L.: *See—*
Pawloski, Chester E.; and Stewart, Russell L., 3,700,735.

Stewart-Warner Corporation: *See—*
Stomper, Joseph M., 3,699,846.

Stich, Frederick A., to Allis-Chalmers Manufacturing Company. Phase shift detector. 3,700,919, Cl. 307-232.000.

Stiles, Charles W., to Motorola, Inc. Ka-band solid-state switching circuit. 3,701,055, Cl. 333-7.000.

Stirling, John Andrew: *See—*
Inman, Eric Richard; Macpherson, Ian Alexander; and Stirling, John Andrew, 3,700,709.

Stobbe, Richard P.; and Knapp, Richard V., to Nilsen Mfg. Co. Liquid flow control arrangement. 3,700,904, Cl. 250-218.000.

Stockl, Vilem, to Rubberindustrie Vasto N.V. Floor mat for animals. 3,699,926, Cl. 119-28.000.

Stoll, H., and Company: *See—*
Hadam, Wilhelm, 3,699,782.

Stomper, Joseph M., to Stewart-Warner Corporation. Air motor. 3,699,846, Cl. 91-346.000.

Stone, William S.: *See—*
Ditto, Edwin D.; and Stone, William S., 3,699,639.

Stookey, George K.: *See—*
Muhler, Joseph C.; and Stookey, George K., 3,699,979.

Stoppard, William E., to Leesona Corporation. Bobbin handling apparatus. 3,699,833, Cl. 83-410.000.

Storck, Robert C.: *See—*
Porter, Robert B.; Ardelt, Clarence A.; and Storck, Robert C., 3,700,081.

Stottlemyer, Keith D.: *See—*
Satterfield, Homer E.; Stottlemyer, Keith D.; Brown, David L.; and Roberts, Leslie, 3,700,547.

Stout, Rodney W.: *See—*
Snook, Richard K.; and Stout, Rodney W., 3,700,862.

Straub, Dieter: *See—*
Saenger, Franz; and Straub, Dieter, 3,700,875.

Strauss, John G.: *See—*
Romick, Roscoe B.; and Strauss, John G., 3,700,120.

Street, George Bryan: *See—*
Kanazawa, Kay Keiji; Seiki, Hajime; and Street, George Bryan, 3,700,498.

Stricker, David M.: *See—*
Ference, Richard N.; Grega, Albert; Miller, James A.; Stewart, Ray T.; and Stricker, David M., 3,700,101.

Stringer, Carl W.: *See—*
Germer, Walter F., Jr.; Stringer, Carl W.; and Harrison, William H., 3,700,031.

Strobel, Keene S., to Weyerhaeuser Company. Double slotted saw. 3,700,016, Cl. 143-140.00r.

Strobel, Rudolf G. K.: *See—*
Bolt, Gregory L.; and Strobel, Rudolf G. K., 3,700,463.

Strom, Sven O. E., to Alfa-Laval AB. Milking system. 3,699,923, Cl. 119-14.040.

Stromberg Datagraphix, Inc.: *See—*
Cunningham, Omar Leo, Jr., 3,700,318.

Struble, Glenn E., to Diamond International Corporation. Boot support and separator. 3,699,598, Cl. 12-114.600.

Struck, Charles R.: *See—*
Deverman, Kenneth D.; and Struck, Charles R., 3,699,652.

Stuart, Gerald L.: *See—*
Paschal, Forrest A.; Stuart, Gerald L.; and Pascal, Forrest A., II., 3,700,274.

Sturwold, Robert J.: *See—*
Sharkey, Hubert Joseph; and Sturwold, Robert J., 3,700,618.

Sub-Marine Systems Incorporated: *See—*
Cowans, Kenneth W., 3,699,775.

Suckow, Theodore K. Spring bar assembly for trailer hitches. 3,700,261, Cl. 280-406.00a.

Suckow, Theodore K. Spring bar trailer hitch assembly. 3,700,262, Cl. 280-406.00a.

Suh, John T.; and Bare, Thomas M., to Colgate-Palmolive Company. 1-(4-Hydroxy-3-(hydroxymethyl)-phenyl) -1-hydroxy-2-aralkylaminoethanes. 3,700,692, Cl. 260-340.500.

Sullivan, James Franklin, to Deere & Company. Depth control means for a moldboard plow. 3,700,043, Cl. 172-400.000.

Sullivan, John P., Jr., to Itek Corporation. Gelable and gelled compositions. 3,700,451, Cl. 96-66.000.

Sullivan, Robert H., to Du Pont de Nemours, E. I., and Company. Process for oxidizing xylenes to phthalic acids. 3,700,731, Cl. 260-524.00r.

Sullivan, Ronald D.: *See—*
Baldwin, Kenneth B.; and Sullivan, Ronald D., 3,701,070.

Sullivan, Wayne S., to Camelot Stone, Inc. Method of making cellular plastic building panel. 3,700,516, Cl. 156-79.000.

Sumi, Kiyoshi; and Sunano, Naomasa, to Shiney Co. Semiconductor element for detecting gases and meter for measuring component concentration of a gas mixture. 3,699,803, Cl. 73-27.00r.

Sumitomo Chemical Co., Ltd.: *See—*
Ueno, Katsuji; and Oshima, Takao, 3,700,608.

Sumitomo Chemical Company: *See—*
Yamamoto, Michihiro; and Shimago, Kozo, 3,700,736.

Sumitomo Chemical Company, Limited: *See—*
Hamada, Takaki; Nakashio, Seizo; Maruta, Isao; Hayatsu, Kazuo; Seto, Tetsuki; and Kono, Yoichi, 3,700,630.
Yamanouchi, Saburo; Yasuno, Kiyoshi; Yamatokohriyama, Kou Sota; and Okumura, Takuzo, 3,700,750.

Sumitomo Chemical Company, Ltd.: *See—*
Hirooka, Masaaki; Yasui, Seimei; Mashita, Kentaro; and Kimura, Fumiyuki, 3,700,648.
Terada, Hiroshi; and Shirayama, Kenzo, 3,700,753.
Yamagishi, Akio; Kondo, Hisashi; Matsumoto, Genya; and Kondo, Shigekatsu, 3,700,718.

Sumiyoshi, Masharu: *See—*
Shirai, Takeaki; Sakakibara, Shigeru; Noguchi, Masaaki; and Sumiyoshi, Masharu, 3,700,079.

Summers, Daniel J., Jr.: *See—*
Lowery, Ronald M.; and Summers, Daniel J., Jr., 3,700,808.

Sun Shipbuilding & Dry Dock Company: *See—*
Cantagallo, Raymond E.; and Lutz, Robert J., 3,699,870.

Sunano, Naomasa: *See—*
Sumi, Kiyoshi; and Sunano, Naomasa, 3,699,803.

Sunbeam Corporation: *See—*
Waters, Robert S.; and Spohr, Albert S., 3,699,952.

Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., to Colgate-Palmolive Company. Detergent compositions containing N-oxideaminocarboxylates. 3,700,607, Cl. 252-527.000.

Surak, John G.: *See—*
Isaac, George L.; Kingsbury, Richard F.; and Surak, John G., 3,701,021.

Surprise, Jon M.: *See—*
Apicella, Anthony M., Jr.; and Surprise, Jon M., 3,701,124.

Susquehanna Corporation, The: *See—*
Kreuzer, John A.; and Thompson, David E., 3,699,891.

Sutherland, David C.: *See—*
Anderson, Howard H.; Moyer, Rudolph H.; Sibbert, Donald, J.; and Sutherland, David C., 3,700,896.

Sutton, Denver. Tandem wheeled vehicle with stabilizing apparatus. 3,700,059, Cl. 180-30.000.

Suzuki, Koji, to Iwasaki Tsushinki Kabushiki Kaisha a/k/a Iwatsu Electric Co., Ltd. Count-down circuit using a tunnel diode. 3,700,917, Cl. 307-225.00b.

Suzuki, Saburo; Isono, Kiyoshi; Nagatsu, Junsaku; Akashiba, Takeo; and Sasaki, Shigeki. Antibiotics of agricultural fungicides, polyoxins A and B; and process for preparing. 3,700,655, Cl. 260-211.500.

Suzuki, Yoshiji; Hayashi, Ikuo; Karasawa, Kazuo; and Shimada, Mitsuhiro, to Hamamatsu TV Company, Limited. Image dissector tube. 3,700,953, Cl. 315-11.000.

Svenska Dataregister AB: *See—*
Englund, Gosta Roland; Eriksson, Bjorn Sven Hilding; Mattsson, Mats Erik; and Lindelow, Claes-Goran, 3,700,863.

Swain, Charles Gardner, to Ionics, Incorporated. Temperature-compensated current reference. 3,700,934, Cl. 307-310.000.

Swanson, William C.; Moyer, Donald W.; and Asmus, Rodger W., to International Harvester Company. Manual disconnect and feathering control for a hydrostatic transmission. 3,699,678, Cl. 60-53.00r.

Sweeney, David F.: *See—*
Ahrns, Wilbur C.; Sweeney, David F.; and Dannatt, Hugh St., 3,700,087.

Sweeney, Richard F.: *See—*
Anello, Louis G.; and Sweeney, Richard F., 3,700,646.

Sweeney, Richard Francis; and Yao, Charles Cheng-Yu, to Allied Chemical Corporation. Preparation of polyhalcioalkoxyalkanoic acids and derivatives thereof. 3,700,733, Cl. 260-544.00f.

Sweeny, Allen N., to Devlieg Machine Company. Tool having resilient bumper. 3,699,843, Cl. 90-11.00a.

Swett, James B.; and Ashton, Harold P., to Dart Industries, Inc. Mold for ingestible substances. 3,700,204, Cl. 249-104.000.

Switchenbank, Colin; and Viste, Kenneth L., to Rohm and Haas Company. N-(1,1-dimethyl-2-but-n-1)3,5-dichlorobenzamide. 3,700,732, Cl. 260-558.00d.

Syivania Electric Products Inc.: *See—*
Brown, Stephen V., 3,700,377.
Cocca, Frank J., 3,699,644.
Jayne, Max L.; and Williams, Charles A., 3,701,081.
Miller, John J.; and Rychlewski, Thaddeus V., 3,700,444.
Mrugala, Joseph V., 3,700,226.

Symmes, David T.: *See—*
Chace, Donald E.; Melvin, James A., Jr.; Ricketts, Alan W., Jr.; Steinberger, Edward P.; and Symmes, David T., 3,701,113.

Symoniak, Martin Francis; Torke, David Allen; and Holmes, Ervine Stout, to Union Carbide Corporation. Isoparaffin-n-paraffin separation process. 3,700,589, Cl. 208-310.000.

Szpur, Roman, to Sebon Corporation, The. Syringe and method. 3,699,961, Cl. 128-218.00m.

Szuca, Laszlo G. Antimicrobial woven or knitted fabric. 3,699,958, Cl. 128-146.200.

Tadema, Harco J.: *See—*
Bezemer, Cornelis; Tadema, Harco J.; and Houbolt, Jacob J.H.C., 3,700,593.

Tago, Satoshi, to Mitsubushi Petrochemical Co., Ltd. Process for the production of synthetic resin pipes. 3,700,764, Cl. 264-273.000.

Tajchman, Edwin J.: *See—*
Harrison, Lee, III; Honey, Francis J.; and Tajchman, Edwin J., 3,700,792.

Takacs, Edward Andrew, to American Cyanamid Company. Isomerization of alpha-pinene. 3,700,746, Cl. 260-675.500.

Takacs, Edward Andrew, to American Cyanamid Company. Isomerization of terpenes. 3,700,747, Cl. 260-675.500.

Takada, Syun: *See—*
Ishikawa, Hidehiko; Sato, Mikio; and Takada, Syun, 3,700,455.

Takahashi, Satoshi: *See—*
Fukuoka, Ichiro; Takahashi, Satoshi; and Yagi, Norio, 3,700,645.

Takahashi, Senji, to Japan Aircraft Manufacturing Company Limited. Device for monitoring a fluid pressure system. 3,699,810, Cl. 73-168.000.

Takakuwa, Yasuo: *See—*
Kokubo, Ryo; Takakuwa, Yasuo; Shiroishi, Akihiro; and Kihara, Mitsuji, 3,700,672.

Takayama, Kenichiro: *See—*
Abe, Shigeo; and Takayama, Kenichiro, 3,700,556.

Takeda, Yukio, to Matsushita Electric Industrial Co., Ltd. Reproducing device. 3,699,670, Cl. 35-35.00c.

Takeno, Syozo: *See—*
Yasuda, Nobuaki; Ogawa, Takenobu; Murakami, Yoshio; Higashinakagawa, Iwao; Takeno, Syozo; and Tanaka, Norio, 3,699,619.

Takigawa, Katunobu: *See—*
Ota, Tomiyoshi; Takigawa, Katunobu; and Honda, Masasada, 3,699,948.

Talalay, Anselm: *See—*
Spicer, Alvin W.; and Talalay, Anselm, 3,700,365.

Talgo, Paul, to Fuller Company. Klin seal. 3,700,220, Cl. 263-32.00r.

Tamada, Sieechi: *See—*
Haga, Ichiro; and Tamada, Sieechi, 3,701,146.

Tamol, Ronald A.; and Meyer, Leo F., to Morris, Philip, Incorporation. Film covering for apertured smoking product wrapper. 3,699,973, Cl. 131-15.00b.

Tanaka, Haruo: *See—*
Nakayama, Kiyoshi; Tanaka, Haruo; and Hagino, Hiroshi, 3,700,557.

Tanaka, Motoaki: *See—*
Sakamoto, Kenro; Tanaka, Motoaki; Hanzawa, Teruo; and Kasai, Keiji, 3,700,454.

Tanaka, Norio: *See—*
Yasuda, Nobuaki; Ogawa, Takenobu; Murakami, Yoshio; Higashinakagawa, Iwao; Takeno, Syozo; and Tanaka, Norio, 3,699,619.

Tanaka, Osamu; and Matsumoto, Fumio, to Nippon Steel Corporation. Method for reducing an iron loss of an oriented magnetic steel sheet having a high magnetic inductor. 3,700,506, Cl. 148-111.000.

Tanimoto, Fumio: *See—*
Kitano, Hisao; and Tanimoto, Fumio, 3,700,667.

Taplin, Stanley Donovan; and Pettitt, Malcolm Jack, to International Computer Limited. Circuit interconnecting cables and methods of making such cables. 3,700,825, Cl. 174-36.000.

Tappan Company, The, assne: *See—*
Granieri, George John; and Lefkowitz, Edward Herbert, 3,700,914.

Tarasoff, Peter: *See—*
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Tarassov, Victor John: *See—*
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Tarbox, John W.; Hinds, Walter E.; and Castro, Rodolfo, to Hughes Aircraft Company. System for ordered dispensing of wire and the like. 3,699,630, Cl. 29-203.0mw.

Tarm, Paul B.: *See—*
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Tarman, Paul B.: *See—*
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Tatematsu, Kenzo; Hosono, Hiroo; Katagiri, Toshio; Hayashi, Yoshiaki; and Ando, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Automatic answering telephone set. 3,700,818, Cl. 179-6.00r.

Tauber, Elisha, to Commonwealth Scientific and Industrial Research Organization. Acid resistant basalt-clay product and slip casting process. 3,700,472, Cl. 106-39.00r.

Tautz, William Paul: *See—*

Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,700,698.
Taylor, Fredrick J., to Texas Instruments, Incorporated. Synthesized cascaded processor system. 3,700,866, Cl. 235-150.100.
Taylor, Larry Christopher, to Pennwalt Corporation. Refrigerant recovery system. 3,699,781, Cl. 62-474.000.
Taylor, Robert W.; and Sellers, Jerry W., to Rockwell Manufacturing Company. Power driven hand tool. 3,699,655, Cl. 30-216.000.
Technicon Instruments Corporation: *See*—
Widmark, Rudolph M.; Lichtenstein, Bernard; Paseltiner, Lynn; and Padawer, Jacques, 3,700,555.
Technomatic AG: *See*—
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Tenneco Chemicals, Inc.: *See*—
Fath, Joseph; and Rosen, Marvin, 3,700,612.
Tenner, Oskar, to Gravicast Patentverwertungsgesellschaft m.b.H. Method of casting turet melts. 3,700,025, Cl. 164-120.000.
Tennes, Charles J.: *See*—
Borrevik, Alexander J.; and Tennes, Charles J., 3,701,040.
Tenney, Frederick H.: *See*—
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Terada, Hiroshi; and Shirayama, Kenzo, to Sumitomo Chemical Company, Ltd. Polymer compositions comprising polyethylene and ethylene/propylene copolymer. 3,700,753, Cl. 260-876.00b.
Terasaki, Shingan, to Nikko Pen Kabushiki Kaisha. Multicolor ballpoint pen. 3,700,340, Cl. 401-33.000.
Terasawa, Michitaka, to Tokyo Shibaura Electric Co., Ltd. X-ray tube. 3,700,950, Cl. 313-55.000.
Terenzi, Joseph Francis, to American Cyanamid Company. High impact weatherable rigidefied structures. 3,700,546, Cl. 161-195.000.
Terenzi, Joseph Francis, to American Cyanamid Company. Process for preparation of rubber modified styrene-acrylonitrile polymers. 3,700,622, Cl. 260-33.6ao.
Terkelsen, Bruce E.: *See*—
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Terry, Claude Edward, to Textile Rubber & Chemicals Company. Method of applying a backing to a carpet and product. 3,700,515, Cl. 156-72.000.
Terry, William M.; Graham, John W.; Sinclair, Albert R.; and Kiel, Othar M., to Esso Production Research Company. Method for fracturing subterranean formations. 3,700,032, Cl. 166-283.000.
Terzian, Rouben T.: *See*—
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Tesar, Ian A. Instructional device with interchangeable indicia cards. 3,699,668, Cl. 35-9.00d.
Teadahl, Thomas C.: *See*—
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Themelis, Nickolas J.; and Tarassoff, Peter, to Noranda Mines Limited. Preparation and method of feeding copper concentrates and method of tapping copper in the continuous smelting and converting process. 3,700,431, Cl. 75-73.000.
Theurer, Josef: *See*—
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Thiemann, Josef Ernst; and Pagani, Hermes, to Gruppo Lepetit S.p.A. Production of L-tryptophan by fermentation. 3,700,558, Cl. 195-29.000.
Thierstein, Hans, to Buser, Fritz, AG Maschinenfabrik. Screen printing machine with transport band for temporarily adhesively securing web during printing. 3,699,885, Cl. 101-118.000.
Thomas, James A.: *See*—
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Thomas, Neal C., to Bendix Corporation, The. Shipping container for fragile articles. 3,700,097, Cl. 206-46.0fr.
Thompson, David E.: *See*—
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Thrun, Paul H. Vehicle pollution control unit. 3,700,029, Cl. 165-51.000.
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Timperman, Eugene L., to General Electric Company. VTOL propulsion system. 3,700,189, Cl. 244-12.000.
Tiraspolsky, Wladimir; Rouviere, Roger; and Willm, Yves, to Institut Francais du Petrole, des Carburants et Lubrifiants. Device for connecting a drill bit to a drill string provided with a penetrometer. 3,700,049, Cl. 175-50.000.
Titchenal, Oliver R.; and Armstrong, William A., to Basic Packaging Systems, Inc. Apparatus for filling a chain of connected bag elements. 3,699,746, Cl. 53-187.000.
Tjassens, Hindrik: *See*—
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Toba, Takao, to Denki Onkyo Co., Ltd. Voltage-multiplying rectifier apparatus. 3,701,002, Cl. 321-15.000.
Tobias, John D., 4% to O'Hara, John P., Jr. and 4% to O'Hara, Genevieve M. Valve structure and boost control system. 3,700,004, Cl. 137-625.230.
Tofflemire, Benjamin F. Combination closing and opening pliers for reversible matrix band clamp. 3,699,595, Cl. 7-3.000.
Togashi, Tetuo: *See*—
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Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Vibrato effect producing apparatus using a plurality of reproducing heads which are individually reciprocally displaced relative to each other. 3,700,783, Cl. 84-1.250.
Tomomitsu, Toshio: *See*—
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Tournoy, Willy, to N.V. Bekaert S.A. Hot worked steel method and product. 3,699,797, Cl. 72-286.000.
Tourtellotte, John F.; Negra, John S.; Warshaw, Abe; and Villiers-Fisher, John F., to Chemical Construction Corporation. Engine exhaust emission control system. 3,699,683, Cl. 60-274.000.
Town & Country Cleaners Franchises, Inc.: *See*—
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Toyo Seikan Kabushiki Kaisha: *See*—
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Shirai, Takeaki; Sakakibara, Shigeru; Noguchi, Masaaki; and Sumiyoshi, Masharu, 3,700,079.
Tracy, Charles H. Apparatus for passing a ball through a series of concentric containers. 3,700,241, Cl. 273-95.00r.
Trahn, Kenneth A.: *See*—
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Tregear, Geoffrey W.; Battaerd, Hendrik A. J.; Lang, Gunter A.; Catt, Kevin; and Niall, Hugh D., to Imperial Chemical Industrial. Graft copolymers. 3,700,609, Cl. 260-2.50r.
Treiber, Otis D. Valve operating arrangement for internal combustion reciprocating engines. 3,699,933, Cl. 123-90.270.
Treves, David: *See*—
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Trundle, Albert S., to United States of America, Army. Light scattering cell. 3,700,338, Cl. 356-246.000.
TRW Inc.: *See*—
Dougherty, Charles B., 3,700,801.
Elverum, Gerard W., Jr., 3,699,772.
Karr, Lawrence J.; and Fried, Norman, 3,700,313.
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Tsao-Wu, Nelson Tsin: *See*—
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Tsudakoma Industrial Co., Ltd.: *See*—
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Tsugami, Taishke. Apparatus for producing a punched tape record for recording working conditions of machine tools. 3,701,110, Cl. 340-172.500.
Tuccinardi, Thomas E.; and Miller, Joseph W., Jr., to United States of America, Army. Circuit for generating a repeatable voltage as a function of temperature. 3,701,004, Cl. 323-69.000.
Turbanti, Luigi. Esters of 2-hydroxy-cyclohexane-2-substituted carboxylic acids. 3,700,675, Cl. 260-293.820.
Turbanti, Luigi. Choleretic activity. 3,700,775, Cl. 424-317.000.
Turner, Charles A.; and Siemssen, Ernst A. Method of descaling. 3,699,726, Cl. 51-319.000.
Turner, Dennis Robert: *See*—
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Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic tremolo effect producing device. 3,700,782, Cl. 84-1.240.
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Ueno, Katsuji; and Oshima, Takao, to Sumitomo Chemical Co., Ltd. Process for preparing alkylene oxide polymer. 3,700,608, Cl. 260-2.00a.
Uhrig, Jerome W., to United States of America, Air Force. Helicopter UHF antenna system for satellite communications. 3,701,157, Cl. 343-708.000.
Uitti, Kenneth D.; and Carson, Don B., to Universal Oil Products Company. Vapor-liquid contacting device. 3,700,216, Cl. 261-114.00r.
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National Aeronautics & Space Administration; Acting Administrator; with respect to an invention of:
Gross, Chris; and Mattauch, Robert J. Infrared detectors. 3,700,897, Cl. 250-83.00r.
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National Aeronautics and Space Administration; Acting Administrator; with respect to an invention of:
Egli, Paul H. Method of forming transparent films of Z_nO. 3,700,575, Cl. 204-192.000.
Heaphide, William H. Variable direction force coupler. 3,699,799, Cl. 72-447.000.
Laue, Eric G. Irradiance measuring device. 3,700,503, Cl. 136-224.000.

Perlman, Marvin. Pseudnoise sequence generators with three-tap linear feedback shift registers. 3,700,869, Cl. 235-152.000.
Wellman, John B. Gas flow control device. 3,700,005, Cl. 137-608.000.
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Babson, Edward S., 3,699,597.
Uary, Joe D., to E-System, Inc., mesne. Balanced pintle valve. 3,700,209, Cl. 251-282.000.
Vadasz, Leslie L., to Intel Corporation. Integrated circuit structure and method for making integrated circuit structure. 3,699,646, Cl. 29—571.000.
Vagin, Alexei Alexeevich; Yablonsky, Stanislav Valerievich; Voloshin, Petr Stepanovich; Sharov, Nikolai Grigorievich; Shiborin, Viktor Ivanovich; Novakovsky, Vladimir Efimovich; Kolpakov, Grigory Vasilievich; Ivanov, Mark Efremovich; Lindin, Viktor Mikhailvich; and Lipsky, Daniil Yakovlevich, to Dzerzhinsky Filial Nauchno-Issledovatelskogo i Konstruktorskogo Instituta Khimicheskogo Mashinostroenia. Apparatus for granulating melts. 3,700,364, Cl. 18-2.500.
Valleylab, Inc.: *See*—
Anderson, Robert K., 3,699,967.
Valspar Corporation, The: *See*—
Pipkins, David D., 3,699,982.
Van Amerongen, Gerrit J.: *See*—
La Heij, Gerardus E.; and Van Amerongen, Gerrit J., 3,700,757.
Van Den Bussche, Willem: *See*—
Sluys, Robert Nestor Joseph; Weesels, Johannes Hendrik; and Van Den Bussche, Willem, 3,700,798.
Van Den Enden, Adrianus Wilhelmus Maria: *See*—
Aagaard, Einar Andreas; Greeekes, Johannes Anton; and Van Den Enden, Adrianus Wilhelmus Maria, 3,700,831.
Van Den Heuvel, Walter August: *See*—
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Van Dievoet, Jean-Paul Laurent, to Societe Belge pour l'Industrie Nucleaire S.A. Method of fabricating a fuel rod having a porous plug. 3,699,638, Cl. 29-458.000.
Van Dongen, Cornelis G., to Bio-Research Consultants, Inc. Combination cage and feeder for rodents. 3,699,925, Cl. 119-18.000.
Van Dongen, Cornelis G., to Bio-Research Consultants, Inc. Feeder for rodents. 3,699,927, Cl. 119-61.000.
Van Haaften, Egbert, to Bulova Watch Company, Inc. Tuning-fork type electronic clock having push-pull indexing mechanism. 3,699,764, Cl. 58-23.0tf.
Van Houtenlaan, Weesp: *See*—
Van Mooreslaar, Rudolf; and Van Houtenlaan, Weesp, 3,700,703.
Van Huis, Robert L., to U.S. Industries, Inc. Trough coupler with chain guide for chain conveyor type animal feeder. 3,700,093, Cl. 198-204.000.
Van Iperen, Bernardus Bastiaan; and Tjassens, Hindrik, to U. S. Philips Corporation. Microwave oscillator employing a cavity resonator having dielectric walls used as a quarter wave impedance transformer. 3,701,049, Cl. 331-107.00r.
Van Kralingen, Peter H., to Shell Oil Company. Tubular water quench process with water film cooling. 3,700,763, Cl. 264-95.000.
Van Mooreslaar, Rudolf; and Van Houtenlaan, Weesp, to U.S. Philips Corporation. Steroids of the androstane series, methods of producing the same, pharamceutial preparations containing said compounds as active ingredients and methods of producing the said peparations. 3,700,703, Cl. 260-397.400.
Van Vliet, William George: *See*—
O'Connor, Ward F.; and Van Vliet, William George, 3,699,989.
Van Wyk, Jan W.: *See*—
Fickenwirth, Frederick I.; and Van Wyk, Jan W., 3,700,297.
Vander Heyden, Eric Ernest, to AMP Incorporated. Data card terminal. 3,700,861, Cl. 235-61.11b.
Vanderjagt, John A., to Scienco, Inc. Explosion-proof liquid fuel pump. 3,700,359, Cl. 417-404.000.
Vanhalst, Johan Eugeen: *See*—
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Vargas, Robert J., to Motorola, Inc. Initiation circuit for a capacitor discharge ignition system. 3,699,940, Cl. 123-148.00e.
Varker, Alan E.: *See*—
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Vartanian, Richard D., to Ford Motor Company. Accelerator pump controlled engine spark timing. 3,699,936, Cl. 123-117.00a.
Vasseur, Jean-Pierre, to CSF-Compagnie Generale de Telegraphie Sans Fil. Key generators for cryptographic devices. 3,700,806, Cl. 178-22.000.
Vaughn, Damon A. Weapon carrier. 3,700,147, Cl. 224-2.00a.
Vaughn, Julian E.: *See*—
Lang, Paul C.; La Pine, Anthony N.; and Vaughn, Julian E., 3,701,039.
Veach, Allen M.: *See*—
Bell, William A., Jr.; and Veach, Allen M., 3,700,892.
Veltri, Richard D.; Merriam, Asaph U.; and Basche, Malcolm, to United Aircraft Corporation. Method for coating filaments. 3,700,486, Cl. 117-71.00r.
Ventresca, Mario: *See*—
Patterson, Roger Lee; and Ventresca, Mario, 3,700,042.
Vepa A.G.: *See*—
Janisch, Ingo; and Fleissner, Heinz, 3,700,404.
Vereinigte Aluminium-Werke Aktiengesellschaft: *See*—
Nolting, Peter, 3,700,224.
Verge, Kenneth W.; Kachman, Robert D.; and Read, Ronald G., to Bendix Corporation, The. Ring gear drive with internal rotary clutch. 3,700,362, Cl. 418-60.000.
Verley, Donald J. Hydraulically powered waste disposal device. 3,700,178, Cl. 241-46.00b.
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Victaulic Company of America: *See*—
Piatek, Edward Walter; and Horr, William A., 3,699,828.
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Vincent, Daniel B.; Vincent, Daniel A.; and Roberts, George C., to Consolidated Machines, Inc. Citrus fruit peeling machine. 3,700,017, Cl. 146-3.00m.
Vincent, Eugene: *See*—
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Violette, Glenn M.; Paquin, Leon J.; and Lock, James A., to International Paper Company. Method of making a liminate having varying thickness. 3,700,525, Cl. 156-244.000.
Virginia Chemicals Inc.: *See*—
Batchelor, Gordon S.; and Nixon, Dalbro R., 3,700,200.
Visser, Robert C.: *See*—
Langner, Carl G.; and Visser, Robert C., 3,699,691.
Viste, Kenneth L.: *See*—
Switchenbank, Colin; and Viste, Kenneth L., 3,700,732.
Vittoz, Eric Andre, to Centre Electronique Horloger SA. Logical frequency divider. 3,700,916, Cl. 307-215.000.
Voge, Hervey H.: *See*—
Robinson, John K.; and Voge, Hervey H., 3,700,749.
Vogel, Charles B.: *See*—
Montgomery, William C., Jr.; and Vogel, Charles B., 3,700,871.
Vogel, Hilmar. Axial actuator and force control for rotary members, especially variable speed drives. 3,699,827, Cl. 74-230.17c.
Voisin, Eugene: *See*—
Delair, Jean-Paul; Raisnn, Jean-Pierre; and Voisin, Eugene, 3,700,153.
Voith, J. M., G.m.b.H.: *See*—
Fork, Werner, 3,700,349.
Volkel, George D.; and Cram, Milton E., to Schlumberger Technology Corporation. Methods and apparatus for measuring the electrical resistivity of flowing drilling muds. 3,701,006, Cl. 324-30.00r.
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von Grabe, Walther, to Kabushiki Kaisha Ricoh. Electronographic copying machine. 3,699,920, Cl. 118-637.
Voth, James W., to Allis-Chalmers Manufacturing Company. Chain adjuster or elevating scraper. 3,699,820, Cl. 74-242.14r.
Voznick, Henry P.: *See*—
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Vulcan Corporation: *See*—
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Vulcan, Inc.: *See*—
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Vyzkumny ustav Kovu: *See*—
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Waaben, Sigurd Gunther; and Weiss, Walter Ira, to Bell Telephone Laboratories, Incorporated. Control circuitry and voltage source for use with charge storage diode. 3,701,119, Cl. 340-173.00r.
Wacker-Chemie G.m.b.H.: *See*—
Breuer, Hans; Manner, Erich; and Michl, Karl-Heinz, 3,700,759.
Wacker-Chemitronic Gesellschaft fur Elektronik: *See*—
Bienert, Klaus; Lang, Winfried; Nordt, Egon; and Weidner, Herbert, 3,700,413.
Wagner, Douglas A., to General Motors Corporation. Fluid actuator with lock and cushion. 3,699,850, Cl. 92-24.000.
Wagner Electric Corporation: *See*—
Bueler, Richard C., 3,700,286.
Wagner, Karl; and Von Fischern, Bernard, to Agfa-Gevaert Aktiengesellschaft. Combined battery test and light meter for a photographic camera. 3,699,857, Cl. 95-10.0ce.
Wagner, William S. Apparatus for forming roller bearing cages. 3,699,793, Cl. 72-134.000.
Wahl, William, Corporation: *See*—
Everest, Charles E.; and Voznick, Henry P., 3,700,971.
Waibel, Helmut K., to Singer Company, The. Powder dispensing unit. 3,700,142, Cl. 222-109.000.
Waja, Georges: *See*—
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Wakabayashi, Teruomi: *See*—
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Wakamatsu, Shigeru; Kondo, Ryozo; and Shinomiya, Masayasu, to Toray Industries, Inc. Separation and purification process for lactams. 3,700,669, Cl. 260-293.300.
Wald, Milton M.; and Gaum Myron G.; deceased, said Wald assor. to Shell Oil Company. Selectively hydrogenated block copolymers. 3,700,633, Cl. 260-880.00b.
Waldron, Bradley C., to King Nutronics Corporation. Temperature calibration system. 3,699,800, Cl. 73-1.00f.
Walford, Gordon L.: *See*—
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Walker, Gerard F., to Whittaker Corporation. Metal bonding process. 3,699,636, Cl. 29-432.000.
Walker, Jerome F., to Brunswick Corporation. Electronic scorer for bowling games. 3,700,236, Cl. 273-54.00c.
Wallace, Howard O. Building component and system. 3,699,736, Cl. 52-436.000.
Wallace, Richard M. Bolt anchor assembly. 3,700,020, Cl. 151-41.700.
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Wang, Chien San. Measuring system employing a sensing loop and a reference loop in bucking relationship to provide current-to-voltage conversion. 3,701,014, Cl. 324-98.000.
Wanlass, Bert R., to General Motors Corporation. Closure mounting means. 3,699,716, Cl. 49-40.000.
Wanner, Maurice Paul; and Wallis, Neil Rudolf, to Aerocoat S.A. Spraying booth. 3,700,389, Cl. 55-413.000.
Warner, Walter C.: *See*—
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Watanabe, Nobuatsu; and Fukuda, Masataro, to Matsushita Electric Industrial Co., Ltd. High energy density battery. 3,700,502, Cl. 136-6.000.
Watanabe, Takeshi; and Saito, Yuzi, to Nippon Electric Co., Ltd. Color television picture tube. 3,700,949, Cl. 313-85.000.
Watatani, Mitsuo: *See*—
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Waters, James R. Floor hoist. 3,700,132, Cl. 214-768.000.
Waters, Robert S.; and Spohr, Albert S., to Sunbeam Corporation. Skin treating appliance. 3,699,952, Cl. 128-24.200.
Watkins, Phillip L.; and Cox, Raymond W., to United States of America, Navy. Shift register clocking at high speeds where parallel operation is needed. 3,700,931, Cl. 328-63.000.
Watson, Donald W: *See*—
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Watson, Edward John, Jr., to Morton-Norwich Products, Inc., mesne. 3,4-Dihydrobenzo (B) (1,7) naphthyridin-1(2H)-ones. 3,700,673, Cl. 260-287.00r.
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Webber, Harold H.; and Riordan, Pauline F., to Brunswick Corporation. Antistatic garment. 3,699,590, Cl. 2-73.000.
Weber, Abraham; and Frossard, Jacques Jean, to Mead Johnson & Company. Dibenzothiazephine ethers. 3,700,663, Cl. 260-243.00b.
Weber, Heinz, to Telesco Brophey Limited. Collapsible umberella. 3,699,988, Cl. 135-20.000.
Weed, Lucretia J., to Polaroid Corporation. Novel photograic products and processes. 3,700,441, Cl. 96-29.00r.
Weichbrodt, Bjorn. Early detection of damage to machine elements in rolling engagement. 3,699,806, Cl. 73-71.400.
Weidner, Herbert: *See*—
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Weinstein, Harold, to International Rectifier Corporation. Controlled rectifier having gate electrode which extends across the gate and cathode layers. 3,700,982, Cl. 317-235.000.
Weisang, Joseph Edouard; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Hydroreforming catalysts and a method for preparing the same. 3,700,588, Cl. 208-139.000.
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Westberg, Bengt Karl-Axel; Odman, Tor Axel; and Fahlstrom, Rune, to Sahlstrom AB. Washing means for a sandwich spreading machine. 3,699,878, Cl. 99-450.400.
Westendorf, Walter J. Grab fork attachment for a loader bucket. 3,700,131, Cl. 214-767.000.
Western Electric Company, Incorporated: *See*—
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Cranston, Benjamin H.; and Eleftherion, Michael P., 3,699,640.
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Whitney, Ian; White, Edward Bailey; and Rowland, Michael Roger, 3,700,511.
White, Gerard, to Bell Telephone Laboratories, Inc. Broadband amplifier having improved gain characteristics. 3,701,033, Cl. 330-21.000.
White, Peter G., to TRW Inc. Spectrometer with rotary scanning disc and method of spectroscopic analysis. 3,700,331, Cl. 356-83.000.
Whitehouse, Harper John, to United States of America, Navy. Surface wave devices for signal processing. 3,701,147, Cl. 340-347.0da.
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Widmark, Rudolph M.; Lichtenstein, Bernard; Passltiner, Lynn; and Padawer, Jacques, to Technicon Instruments Corporation. Method and apparatus for lymphocyte separation from blood. 3,700,555, Cl. 195-1.800.
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Wildhaber, Ernest. Optical scanner with straight scanning line. 3,700,911, Cl. 250-236.000.
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Wilson, Arthur K. Lighting structure. 3,700,877, Cl. 240-3.000.
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Wilson, Thomas B., Jr. Bulk cargo safety barrier apparatus. 3,699,912, Cl. 114-74.00r.
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Winkler, Alfred, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with impeller-operated source of artificial light. 3,699,860, Cl. 95-11.50r.
Winkler, De Loss E., to Shell Oil Company. Selectively hydrogenated block copolymers. 3,700,748, Cl. 260-879.000.
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Wolberst, John, to Polaroid Corporation. Distance establishing arrangement for photographic camera. 3,699,867, Cl. 95-44.000.
Wolff, Gerald, to Identicon Corporation. Decoding bar patterns. 3,701,097, Cl. 340-146.30z.
Wolff, Hans H., to United States of America, Navy. Radar landmass simulator. 3,699,669, Cl. 35-10.40.
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Wonderly, Clifford L., to Florida Gas Company. Process of making honeycomb panels. 3,700,522, Cl. 156-197.000.
Wood, Peter, to Westinghouse Electric Corporation. Thyristor tap changer for electrical inductive apparatus. 3,700,925, Cl. 307-252.00q.
Woolley, John Mathers: *See*—
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Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tuyoshi. Method of coating steel electrostatically with aluminum powder coated with a higher fatty-acid salt. 3,700,477, Cl. 117-17.000.
Yamaguchi, Koretaka; Toyomoto, Kazuo; and Sakamoto, Kuniaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing rubbery polymers. 3,700,755, Cl. 260-879.000.
Yamaguchi, Yukiya; Fukushima, Kunihiko; Yasuda, Minoru; and Nagata, Shojiro, to Nippon Hoso Kyokai. Visual feature extraction system for characters and patterns. 3,701,095, Cl. 340-146.3ma.
Yamamoto, Hideaki, to Zenga Bronica Kogyo Kabushiki Kaisha. Combined mechanism of shutter and film in a camera. 3,699,863, Cl. 95-31.0ac.
Yamamoto, Michihiro; and Shimago, Kozo, to Sumitomo Chemical Company. Preparation of p-methylsulfonyl-benzaldehyde. 3,700,736, Cl. 260-607.00a.
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Yhap, Ernesto F., to International Business Machines Corporation. Structured computer notation and system architecture utilizing same. 3,700,873, Cl. 235-156.000.
Yokoi, Fumitoshi: *See*—
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tuyoshi, 3,700,477.
Yost, Edward F., Jr., to Spectral Data Corporation. Multispectral photography. 3,700,438, Cl. 96-2.000.
Young, Howard S.: *See*—
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Youngquist, Mary J., to Eastman Kodak Company. Use of Development inhibitor releasing compounds in photothermographic elements. 3,700,457, Cl. 96-114.100.
Youngstrom, Clifford L. Cellophane tape dispenser. 3,700,151, Cl. 225-26.000.
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Zabicky-Zissman, Jacobo Zelik; Oren, Ida; and Katchalski, Ephraim, to Yeda Research and Development Co., Ltd. Copolymers of vinylpyridines with 1,3,5-triacryloylhexahydro-1,3,5-triazine. 3,700,610, Cl. 260-2.10e.
Zacaroli, Edward C., to Hamilton Digital Controls, Inc. Magnetic head assembly with low read to write crosstalk. 3,700,828, Cl. 179-100.20c.
Zaffaroni, Alejandro, to ALZA Corporation. Device for suppressing fertility. 3,699,951, Cl. 128-130.000.
Zaffaroni, Alejandro, to ALZA Corporation. Therapeutic adhesive patch. 3,699,963, Cl. 128-268.000.
Zall, David M., to United States of America, Navy. Spot test for identification of oil contaminants in water. 3,700,409, Cl. 23-230.00r.
Zambone, Albert S., to Pennwalt Corporation. Triglyceride refining. 3,700,704, Cl. 260-425.000.
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Zatsky, Norman Charles, to Timex Corporation. Synchronized contact watch. 3,699,762, Cl. 58-23.0ac.
Zawadzki, Raymond J., to United States of America, Interior. Hydraulic cell for calibrating a pressure transducer. 3,699,849, Cl. 92-61.000.
Zawadzki, Thomas, to O'Neil, Paul F. Sculpturable molding compositions. 3,700,616, Cl. 260-31.60r.
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Ziegler, George William, Jr., to AMP Incorporated. Coaxial connector mounting means. 3,701,083, Cl. 339-64.00m.
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Ziffer, Jack, to Pabst Brewing Company. Recovery of enzymes. 3,700,561, Cl. 195-66.00r.
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Zuleeg, Rainer; and Ranon, Uri, to McDonnell Douglas Corporation. Negative resistance light emitting diode device. 3,701,043, Cl. 331-94.500.

Zuzelo, Edward A. Multiple grooving of pavement. 3,700,849, Cl. 299-18.000.

LIST OF REISSUE PATENTEES

TO WHOM

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Baxter Lab. Inc.: *See*—
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Billeter, Henry R., to Sloan Valve Co. Retainer valve. Re. 27,514, 10–24–72, Cl. 137—599.2.

Bredeson, Dean K. Mechanical screw press. Re. 27,515, 10–24–72, Cl. 100—117.

Dow Chemical Co.: *See*—
Layne, Gilbert S., and Huml. Re. 27,509.

Giletta, Dario: *See*—
Pacciarini, Antonio, and Giletta. Re. 27,513.

Hoeltzenbein, Josef, to Baxter Lab. Inc. Artificial kidney. Re. 27,510, 10–24–72, Cl. 210—321.

Huml, James O: *See*—
Layne, Gilbert S., and Huml. Re. 27,509.

Industrie Pirelli S.p.A.: *See*—
Pacciarini, Antonio, and Giletta. Re. 27,513.

Layne, Gilbert S., and J. O. Huml, to Dow Chemical Co. Separation of aluminum from impure aluminum sources. Re. 27,509, 10–24–72, Cl. 75—68.

Locati, Norman C., to Omark Industries Inc. Impact mowing apparatus and system. Re. 27,511, 10–24–72, Cl. 56—245.

Omark Industries Inc.: *See*—
Locati, Norman C. Re. 27,511.

Onitsuka, Kihachiro, Athletic shoes. Re. 27,512, 10–24–72, Cl. 36—2.5.

Pacciarini, Antonio, and D. Giletta, to Industrie Pirelli S.p.A. Apparatus to print an embossed pattern along the peripheral band of a toroidal article. Re. 27,513, 10–24–72, Cl. 425—39.

Sloan Valve Co.: *See*—
Billeter, Henry R. Re. 27,514.

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Dauray, Charles H., and Bliss. 224,957.
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Bolen, Hugh R., Jr. Paddle. 224,983, 10–24–72. Cl. D71—1.

Brooks, Robert, to The L. P. Henryson Co., Inc. Folded umbrella. 224,990, 10–24–72, Cl. D86—3.

Burnett, Dennis M. Dental retainer clasp. 224,970, 10–24–72, Cl. D24—1.

Chromcraft Corp.: *See*—
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Conner, James M., to Polaroid Corp. Photographic camera. 224,982, 10–24–72, Cl. D61—1.

Costa, Allan A., and H. Michel. Swab for cosmetic application. 224,989, 10–24–72, Cl. D86—10.

Dauray, Charles H., and G. F. Bliss, to U.S. Ring Traveler Co. Ring traveler. 224,957, 10–24–72, Cl. D8—248.

Dauray, Charles H., and G. F. Bliss, to U.S. Ring Traveler Co. Ring traveler. 224,959, 10–24–72, Cl. D8—248.

Diamond International Corp.: *See*—
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Du Bois, Ronald S.: *See*—
Smith, Richard D., and Du Bois. 224,958.

Franzone, John. Combined clock and indoor television antenna. 224,973, 10–24–72, Cl. D26—14.

Fujimoto, Hiroji, to Fujisoku Electric Co., Ltd. Digital switch. 224,972, 10–24–72, Cl. D26—13.

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Heenan, Sidney A., to Amerace Esna Corp. Combined reflector and lens. 224,986, 10–24–72, Cl. D72—1.

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Hiatt, Wilbur L. Backup plate for a pneumatic vehicle impact bumper. 224,966, 10–24–72, Cl. D14—6.

Hiatt, Wilbur L. Pneumatic vehicle impact bumper. 224,967, 10–24–72, Cl. D14—6.

Hiatt, Wilbur L. Mounting plate for a pneumatic vehicle impact bumper. 224,968, 10–24–72, Cl. D14—6.

Hiatt, Wilbur L. Casting for a pneumatic vehicle impact bumper. 224,969, 10–24–72, Cl. D14—6.

Hudspith, Sydney, to Ivac Corp. Disposable stethoscope transducer. 224,988, 10–24–72, Cl. R88—12.

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Johnson, Rodney D.: *See*—
Mogilner, Geoffred A., and Johnson. 224,974.

Juy, Lucien C. H. Bicycle chain wheel shifter. 224,991, 10–14–72, Cl. 90—1.

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Klingerman, Milo W. Game target box. 224,976.

Kostanecki, Andrew T., to Bangor Punta Operations, Inc. Cabin for sailboat or the like. 224,985, 10–24–72, Cl. D71—1.

Lamda Electronics Corp.: *See*—
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Lieberman, Joseph. Casing for toy voice. 224,977, 10–24–72, Cl. D34—15.

McKeon, Stephen F., to Sperry Rand Corp. Face panel for a card catalog drawer. 224,954, 10–24–72, Cl. D6—192.

Michel, Helmut: *See*—
Costa, Allan A., and Michel. 224,989.

Mogilner, Geoffred A., and R. D. Johnson; said Johnson assignor to said Mogilner. Game. 224,974, 10–24–72, Cl. D34—15.

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Nuortie, Paavo C. Rocking chair. 224,950, 10–24–72. Cl. D6—50.

Polaroid Corp.: *See*—
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Projain, Richard, and R. Gold, to Lamda Electronics Corp. Power supply regulator. 224,971, 10–24–72, Cl. D26—15.

Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 224,965, 10–24–72, Cl. D9—219.

Rotoway, Inc.: *See*—
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Sato, Stephens N. to Ivac Corp. Oxygen sensor. 224,987. 10–24–72, Cl. D83—1.

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Saunders, William T., to National Steel Corp. Tab opener for a container. 224,964, 10–24–72, Cl. D9—256.

Schlidknecht, Mary J. Broom cover. 224,949, 10–24–72, Cl. D4—4.

Schramm, Buford J., to Rotoway, Inc. Cabin for a helicopter. 224,984, 10–24–72, Cl. D71—1.

Sears, Kenneth D. Flexible bag for liquid storage. 224,961, 10–24–72, Cl. D9—182.

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Stephenson, John C. Shaving caddy. 224,953, 10–24–72, Cl. D6—88.

Sterner, Russell L., to Walter Kiddle & Co., Inc. Cantilevered crane boom section. 224,978, 10–24–72, Cl. D41—1.

Sterner, Russell L., to Walter Kiddle & Co., Inc. Section for a telescoping crane boom. 224,979, 10–24–72, Cl. D41—1.

Sterner, Russell L., to Walter Kiddle & Co., Inc. Boom section for a cantilevered crane boom. 224,980, 10–24–72, Cl. D41—1.

Tipton, Max E., to Seating Co. of America, Inc. Stadium seat or similar article. 224,955, 10–24–72, Cl. D15—8.

U.S. Ring Traveler Co.: *See*—
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Dauray, Charles H., and Bliss. 224,959.

Watt, William D., Jr., to Keeler Brass Co. Drawer pull. 224,956, 10–24–72, Cl. D8—171.

Wilson, Robert L., to Chromcraft Corp. Sofa. 224,951, 10–24–72, Cl. D6—63.

Wilson, Robert L., to Chromcraft Corp. Chair. 224,952, 10–24–72, Cl. D6—75.

Wilson, Robert W. Retaining strap for electrical cables. 224,960, 10–24–72, Cl. D9—252.

Yuen Sang Hardware Co., Ltd.: *See*—
Poon, Yuen S. 224,981.

CLASSIFICATION OF PATENTS

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226A 3,699,682
274 3,699,683

CLASS 61
11 3,699,684
36A 3,699,685
38 3,699,686
45B 3,699,687
46.5 3,699,688
69 3,699,689
72.1 3,699,690
72.3 3,699,691
3,699,692
72.6 3,699,693

CLASS 62
13 3,699,695
45 3,699,696
55 3,699,775
157 3,699,776
158 3,699,694
172 3,699,777
225.9 3,699,778
324 3,699,779
378 3,699,780
474 3,699,781

CLASS 65
30 3,700,423
333 3,700,424
348 3,700,425

CLASS 66
75 3,699,782
84 3,699,783
123 3,699,784

CLASS 68
17A 3,699,785
144 3,699,786

CLASS 70
58 3,699,787
134 3,699,788
329 3,699,789
364R 3,699,790
456B 3,700,392

CLASS 71
106 3,700,426

CLASS 72
45 3,699,791
110 3,699,792
134 3,699,793
225 3,699,794
231 3,699,795
239 3,699,796
286 3,699,797
377 3,699,798
447 3,699,799

CLASS 73
1F 3,699,800
27R 3,699,803
40.5R 3,699,802
55 3,699,804
67.6 3,699,805
71.4 3,699,806
71.6 3,699,807
91 3,699,808
143 3,699,809
168 3,699,810
189 3,699,801
3,699,811
205D 3,699,812
342 3,699,813
421.5 3,699,814
427 3,699,815
432R 3,699,821
526 3,699,816

CLASS 74
10.37 3,699,817
25 3,699,819
37 3,699,818
230.17C 3,699,827
242.14R 3,699,820
437 3,699,822
459 3,699,823
492 3,699,824
527 3,699,825
752E 3,699,826

CLASS 75
.5R 3,700,427
10R 3,700,428
49 3,700,429
66 3,700,430
68 Re.27,509
73 3,700,431
126C 3,700,432
214 3,700,434
3,700,435

CLASS 82
4C 3,699,828
92 3,699,829

CLASS 83
13 3,699,830
94 3,699,831
210 3,699,832
410 3,699,833
446 3,699,834

CLASS 84
1.01 3,700,781
1.24 3,700,782
1.25 3,700,783
236 3,699,835
291 3,699,836
3,699,837
322 3,699,838
345 3,699,839
3,700,784
470 3,700,785

CLASS 85
36 3,699,840
41 3,699,841

CLASS 89
1K 3,700,394
36H 3,699,842
45 3,700,395

CLASS 90
11A 3,699,843
57 3,699,844

CLASS 91
6.5 3,699,845
346 3,699,846
411R 3,699,847
449 3,700,396
487 3,699,848

CLASS 92
24 3,699,850
61 3,699,849
119 3,699,851
169 3,699,852

CLASS 94
18 3,699,853
22 3,699,854
46 3,699,855

CLASS 95
1.1 3,699,856
10CD 3,699,858
10CE 3,699,857
11.5R 3,699,859
3,699,860
11.5 3,699,861
13 3,699,862
31AC 3,699,863
42 3,699,864
3,699,865
44 3,699,867
63 3,699,866
64R 3,699,868
94R 3,699,869

CLASS 96
1R 3,700,436
1.8 3,700,437
2 3,700,438
27R 3,700,439
3,700,440
29R 3,700,441
29 3,700,442
36.1 3,700,444
36.2 3,700,443
3,700,445
48PD 3,700,449
48R 3,700,447
3,700,448
60BF 3,700,450
66 3,700,451
74 3,700,453
88 3,700,452
100 3,700,454
3,700,455
114 3,700,456
114.1 3,700,457
3,700,458
362 3,700,446

CLASS 98
10 3,699,870
40D 3,699,872
116 3,699,873
400 3,699,871

CLASS 99
2R 3,700,459
2 3,700,460
26 3,700,461
68 3,700,462
70 3,700,464
3,700,465
71 3,700,463
3,700,466
104 3,700,467
216 3,700,468
238.1 3,699,874
249 3,699,875
259 3,699,876
260 3,699,877
450.1 3,699,879
450.4 3,699,878

CLASS 100
7 3,699,880
117 Re.27,515
118 3,699,881
218 3,699,882
227 3,699,883

CLASS 101
93C 3,699,884
118 3,699,885
183 3,699,886
3,699,887
365 3,699,888

CLASS 102
18 3,699,889
37.8 3,699,890
49.3 3,699,891
70.2P 3,699,892
70.2 3,699,893

CLASS 104
2 3,699,894
88 3,699,895
3,699,896

CLASS 105
218R 3,699,897
376 3,699,898

CLASS 106
1 3,700,469
2 3,700,013
39DV 3,700,471
39R 3,700,472
288B 3,700,474
288Q 3,700,473
291 3,700,475
3,700,476

CLASS 107
57C 3,699,899

CLASS 108
53 3,699,900
58 3,699,901
3,699,902

CLASS 110
1J 3,699,903
8A 3,699,905
8C 3,699,904
8E 3,699,906

CLASS 112
121.27 3,699,907
130 3,699,908
152 3,699,909
158A 3,699,910
224 3,699,911

CLASS 114
74R 3,699,912

CLASS 116
63P 3,699,913
118 3,699,914
129L 3,699,915

CLASS 117
17 3,700,477
28 3,700,478
33.5L 3,700,479
34 3,700,480

47A 3,700,481
50 3,700,482
65.2 3,700,483
70A 3,700,484
71M 3,700,485
71R 3,700,486
72 3,700,487
94 3,700,488
104R 3,700,495
106R 3,700,489
120 3,700,490
138.8VA 3,700,491
155VA 3,700,492
201 3,700,493
202 3,700,494
211 3,700,496
212 3,700,497
230 3,700,498
235 3,700,499
239 3,700,500

CLASS 118

9 3,699,916
49 3,699,917
54 3,699,918
56 3,699,919
637 3,699,920

CLASS 119

5 3,699,921
14.03 3,699,922
14.04 3,699,923
16 3,699,924
18 3,699,925
28 3,699,926
61 3,699,927
159 3,699,928

CLASS 123

8.09 3,699,929
8.41 3,699,930
32EA 3,699,931
3,699,932
90.27 3,699,933
90.38 3,699,934
102 3,699,935
117A 3,699,936
119F 3,699,937
122E 3,699,938
140J 3,699,939
148E 3,699,940
179Q 3,699,941
188P 3,699,942
198DB 3,699,943

CLASS 126

362 3,699,944

CLASS 127

43 3,700,501

CLASS 128

1R 3,699,957
2.05C 3,699,945
2.06A 3,699,946
3,699,949
2.06G 3,699,948
2.1B 3,699,947
23 3,699,950
24.2 3,699,952
75 3,699,953
80A 3,699,954
97 3,699,955
130 3,699,951
146.2 3,699,958
166 3,699,959
214B 3,699,960
218M 3,699,961
263 3,699,962
268 3,699,963
275 3,699,964
285 3,699,965
290R 3,699,966
303.13 3,699,968
303.14 3,699,967
330 3,699,969
348 3,699,956
419R 3,699,970
491 3,699,971

CLASS 131

9 3,699,972
15B 3,699,973
21R 3,699,974
70 3,699,975
121 3,699,976
147R 3,699,977

CLASS 132

53 3,699,978
88.7 3,699,980
89 3,699,979

CLASS 133

8 3,699,981

CLASS 134

22R 3,699,982
76 3,699,983
95 3,699,984
141 3,699,985

CLASS 135

1R 3,699,986
4R 3,699,987
20R 3,699,988

CLASS 136

6 3,700,502

CLASS 137

32D 3,699,997
81.5 3,699,990
82 3,699,991
93 3,699,992
102 3,699,993
115 3,699,994
256 3,699,995
318 3,699,996
327 3,699,998
487.5 3,699,989
493.4 3,699,999
494 3,700,000
543.21 3,700,001
565 3,700,002
599.2 Re.27,514
608 3,700,005
614.17 3,700,003
625.21 3,700,006
625.23 3,700,004
625.29 3,700,007

CLASS 138

99 3,700,008

CLASS 139

161 3,700,033

CLASS 140

93A 3,700,010
111 3,700,009
147 3,700,011
149 3,700,012

CLASS 141

388 3,700,014

CLASS 143

32R 3,700,015
140R 3,700,016

CLASS 146

3M 3,700,017

CLASS 148

2 3,700,504
6.3S 3,700,505
32.5 3,700,433
111 3,700,506
187 3,700,507

CLASS 150

.5 3,700,018
3 3,700,019

CLASS 151

41.7 3,700,020

CLASS 156

3 3,700,508
5 3,700,509
11 3,700,510
60 3,700,511
62.4 3,700,512
69 3,700,513
72 3,700,515
79 3,700,516
94 3,700,517
152 3,700,518
156 3,700,519
162 3,700,520
167 3,700,521
197 3,700,522
210 3,700,523
218 3,700,524
244 3,700,525
280 3,700,514
396 3,700,526
426 3,700,527
475 3,700,528
510 3,700,529
559 3,700,530
575 3,700,531
580 3,700,532

CLASS 157

1.1 3,700,021

CLASS 160

126 3,700,022

CLASS 161

5 3,700,533
16D 3,700,541
38 3,700,534
47 3,700,535
57 3,700,536
89 3,700,537
93 3,700,538
120 3,700,539
125 3,700,542
165 3,700,540
3,700,543
175 3,700,544
3,700,545
195 3,700,546
213 3,700,547

CLASS 162

17 3,700,548
157C 3,700,549

CLASS 164

60 3,700,023
83 3,700,024
120 3,700,025
256 3,700,026
282 3,700,027

CLASS 165

32 3,700,028
51 3,700,029
145 3,700,030

CLASS 166

261 3,700,035
270 3,700,031
283 3,700,032
312 3,700,034

CLASS 172

105 3,700,036
265 3,700,037
3,700,039
311 3,700,040
316 3,700,041
385 3,700,042
400 3,700,043
625 3,700,038
804 3,700,044

CLASS 173

26 3,700,045
103 3,700,046
124 3,700,047

CLASS 174

36 3,700,825
52S 3,700,788
72A 3,700,786

CLASS 175

6 3,700,048
50 3,700,049
65 3,700,050

CLASS 176

37 3,700,550
40 3,700,551
50 3,700,552
72 3,700,553
86M 3,700,554
224 3,700,503

CLASS 177

59 3,700,051
134 3,700,052
136 3,700,053
184 3,700,054
204 3,700,055
237 3,700,056

CLASS 178

5.4M 3,700,789
3,700,790
5.4R 3,700,787
6 3,700,797
3,700,799
6.6DD 3,700,800
6.6SF 3,700,798
6.8 3,700,791
3,700,792
3,700,793
3,700,801
7.1 3,700,794
7.2 3,700,795
7.3D 3,700,802
3,700,805
7.3R 3,700,796
3,700,803
7.5D 3,700,804
22 3,700,806
30 3,700,807
69A 3,700,808
87 3,700,809

CLASS 179

1SA 3,700,815
1D 3,700,811
1P 3,700,812
2DP 3,700,816
2 3,700,814
2.5R 3,700,817
4 3,700,810
5P 3,700,813
6R 3,700,818
15AQ 3,700,819
15BV 3,700,820
16E 3,700,821
18AH 3,700,822
18B 3,700,823
98 3,700,824
100.2C 3,700,827
3,700,828
100.2Z 3,700,826
100.41K 3,700,829
170NC 3,700,831
3,700,832
175.2R 3,700,830

CLASS 180

1R 3,700,057
21 3,700,058
30 3,700,059
53FE 3,700,060
68R 3,700,061
101 3,700,062
114 3,700,063
119 3,700,064
128 3,700,065

CLASS 181

.5NC 3,700,066
33G 3,700,067
33K 3,700,068
36B 3,700,069

CLASS 182

16 3,700,070
150 3,700,071
155 3,700,072

CLASS 186

1AC 3,700,074

CLASS 188

1C 3,700,076
32 3,700,077
180 3,700,078
346 3,700,075

CLASS 191

12R 3,700,833
12.2R 3,700,834

CLASS 192

.07 3,700,081
4A 3,700,079
3,700,080
50 3,700,082
53F 3,700,083
70.28 3,700,084
141 3,700,085

CLASS 193

35 3,700,073

CLASS 195

1.8 3,700,555
28R 3,700,556
29 3,700,557
3,700,558
3,700,559
49 3,700,560
66R 3,700,561
103.5R 3,700,562

CLASS 197

2 3,700,086
98 3,700,087
120 3,700,088

CLASS 198

1 3,700,089
34 3,700,090
103 3,700,091
192R 3,700,092
204 3,700,093
220BC 3,700,094

CLASS 200

38R 3,700,837
3,700,838
48R 3,700,840
52R 3,700,835
3,700,836
56R 3,700,839
61.44 3,700,841
148R 3,700,848
166C 3,700,842
172A 3,700,843

CLASS 201

1 3,700,563
6 3,700,564

CLASS 203

1 3,700,565
3,700,566

CLASS 204

1T 3,700,568
15 3,700,569
55R 3,700,570
67 3,700,571
73R 3,700,572
159.13 3,700,573
159.14 3,700,574
192 3,700,575
195Q 3,700,577
195M 3,700,576
195P 3,700,578
3,700,579
3,700,580
243R 3,700,581
275 3,700,582

CLASS 206

25 3,700,470
42 3,700,095
45.33 3,700,096
46FR 3,700,097
52F 3,700,098
59F 3,700,099
65F 3,700,100

CLASS 208

8 3,700,583
10 3,700,584
89 3,700,586
111 3,700,585
131 3,700,587
139 3,700,588
310 3,700,589

CLASS 209

80 3,700,101
158 3,700,102
169 3,700,103
237 3,700,104
421 3,700,105

CLASS 210

17 3,700,590
23 3,700,591
33 3,700,592
40 3,700,593
174 3,700,106
242 3,700,107
3,700,108
3,700,109
308 3,700,110
321 Re.27,510
322 3,700,111
445 3,700,112

CLASS 211

23 3,700,113
150 3,700,114

CLASS 212

38 3,700,115

CLASS 214

1PB 3,700,116
1H 3,700,117
1R 3,700,118
6B 3,700,119
16B 3,700,120
16.4C 3,700,121
24 3,700,122
40 3,700,128
77P 3,700,123
85 3,700,124
86A 3,700,125
141 3,700,126
152 3,700,127
309 3,700,129
454 3,700,130
767 3,700,131
768 3,700,132

CLASS 215

9 3,700,133

CLASS 217

12 3,700,134

CLASS 219

10.55 3,700,846
3,700,847
56 3,699,756
121LM 3,700,850
137 3,700,851
216 3,700,852
222 3,700,853
243 3,700,854
388 3,700,855
451 3,700,856
543 3,700,857

CLASS 220

25 3,700,135
63R 3,700,136
97E 3,700,137

CLASS 221

51 3,700,138
241 3,700,139

CLASS 222

1 3,700,140
3,700,141
109 3,700,142
148 3,700,143
176 3,700,144
202 3,700,145
465 3,700,146

CLASS 224

2A 3,700,147
4J 3,700,148
5.1 3,700,149

CLASS 225

1 3,700,150
26 3,700,151

CLASS 226

108 3,700,152
114 3,700,153
156 3,700,154

CLASS 228

3 3,700,155
4 3,700,156
5 3,700,157
15 3,700,158

CLASS 229

19 3,700,159
34R 3,700,160
41C 3,700,161

CLASS 235

61.11B 3,700,861
61.11E 3,700,858
3,700,860
61.12M 3,700,862
61.7R 3,700,859
62F 3,700,863
78 3,700,162
91M 3,700,163
92F 3,700,864
95R 3,700,164
150.1 3,700,866
150.53 3,700,865
151.3 3,700,867
152 3,700,868
3,700,869
153 3,700,870
154 3,700,871
155 3,700,872
156 3,700,873
164 3,700,874
175 3,700,875
181 3,700,876

CLASS 236

13 3,700,165
34.5 3,700,166

CLASS 238

349 3,700,167

CLASS 239

3 3,700,168
4 3,700,169
102 3,700,170
127.3 3,700,171
188 3,700,172
405 3,700,173
526 3,700,174

CLASS 240

3 3,700,877
7.1LJ 3,700,878
10R 3,700,879
3,700,880
41.35R 3,700,881
41.36 3,700,882
3,700,883
44.2 3,700,884
78H 3,700,885
147 3,700,887

CLASS 241

27 3,700,176
36 3,700,177
37 3,700,175
46B 3,700,178
230 3,700,182
301 3,700,179

CLASS 242

54A 3,700,180
55.3 3,700,181
107.4 3,700,183
3,700,184
159 3,700,185
189 3,700,186
190 3,700,187
194 3,700,188

CLASS 244

1SA 3,700,190
1SS 3,700,193
12 3,700,189
16 3,700,191
139 3,700,192

CLASS 245

10 3,700,194

CLASS 246

63A 3,700,886
169D 3,700,888
415A 3,700,889

CLASS 248

16 3,700,195
44 3,700,196
71 3,700,197
214 3,700,198
292 3,700,199
312 3,700,200
346 3,700,201
354C 3,700,202
419 3,700,203

CLASS 249

104 3,700,204
142 3,700,205

CLASS 250

41.9S 3,700,892
3,700,893
43.5R 3,700,890
3,700,891
50 3,700,894
65R 3,700,895
71R 3,700,896
83R 3,700,897
83.3H 3,700,898
84 3,700,899
199 3,700,900
201 3,700,901
3,700,902
203R 3,700,905
208 3,700,906
217 3,700,903
218 3,700,904
219DF 3,700,909
219DR 3,700,908
219D 3,700,907

225 3,700,910
236 3,700,911

CLASS 251

84 3,700,206
88 3,700,207
90 3,700,208
282 3,700,209
304 3,700,210
3,700,211

CLASS 252

8.55B 3,700,594
50 3,700,598
62.56 3,700,595
62.9 3,700,596
63.2 3,700,597
99 3,700,599
3,700,600
105 3,700,601
301.1R 3,700,602
408 3,700,603
428 3,700,604
471 3,700,605
518 3,700,606
527 3,700,607

CLASS 254

131 3,700,212

CLASS 256

19 3,700,213

CLASS 259

4 3,700,214
98 3,700,215

CLASS 260

2A 3,700,608
2.1E 3,700,610
2.3 3,700,615
2.5R 3,700,609
3,700,609
17R 3,700,611
17.2S 3,700,630
17.4CL 3,700,613
17.4ST 3,700,612
23H 3,700,614
31.6R 3,700,616
31.6 3,700,624
3,700,957
33.4R 3,700,618
33.6AO 3,700,619
3,700,620
3,700,621
3,700,622
3,700,690
37SB 3,700,623
45.75R 3,700,625
45.8R 3,700,626
45.85 3,700,627
47EN 3,700,628
47P 3,700,629
63R 3,700,647
3,700,648
65 3,700,649
67A 3,700,640
70R 3,700,641
75N 3,700,644
75S 3,700,642
77.5AN 3,700,643
77.5CR 3,700,645
79 3,700,650
80.3N 3,700,635
80.72 3,700,636
83.3 3,700,637
84.1 3,700,638
85.5R 3,700,631
87.5C 3,700,632
88.2C 3,700,639
97.5 3,700,634
112.5 3,700,651
3,700,652
148 3,700,653
211.5R 3,700,654
211.5 3,700,655
239.3A 3,700,656
3,700,669
239.3B 3,700,657
239.3R 3,700,658
239.5 3,700,659
239.55R 3,700,670
239.5S 3,700,660
240E 3,700,661
242 3,700,662
243B 3,700,663
247.1 3,700,664
248CS 3,700,665
3,700,666
248NS 3,700,667
248 3,700,671
249.7P 3,700,672
251R 3,700,668
267 3,700,679
287R 3,700,673
288R 3,700,674
293.5A 3,700,734
293.8Z 3,700,675
294.8D 3,700,677
294.8G 3,700,676
295E 3,700,678
295.5R 3,700,680
295.5 3,700,682
296AE 3,700,681
306.7 3,700,683
306.8D 3,700,684
309 3,700,685
310R 3,700,686
3,700,687
3,700,688
3,700,689
326C 3,700,617
340.3 3,700,691
340.5 3,700,692
340.6 3,700,693
343.5 3,700,696
343.6 3,700,694
345.8 3,700,695
346.2R 3,700,697
348R 3,700,698
349 3,700,699
371 3,700,700
396R 3,700,701
397.4 3,700,703
397.4S 3,700,702
404.5 3,700,844
410.9R 3,700,706
425 3,700,704
3,700,705
429.5 3,700,707
438.1 3,700,709
448A 3,700,710
448.2B 3,700,714
448.2E 3,700,712
448.2N 3,700,713
3,700,716
448.8R 3,700,711
3,700,715
3,700,708
453AL 3,700,726
465.2 3,700,717
465.6 3,700,718
470 3,700,721
471R 3,700,719
473A 3,700,720
475R 3,700,725
476R 3,700,727
486H 3,700,723
486R 3,700,722
491 3,700,724
3,700,728
507R 3,700,728
515A 3,700,730
515R 3,700,729
524R 3,700,731
544F 3,700,733
558D 3,700,732
597R 3,700,735
607A 3,700,736
3,700,737
608 3,700,646
613R 3,700,738
3,700,739
631.5 3,700,740
666A 3,700,741
667R 3,700,742
668A 3,700,744
668B 3,700,743
672R 3,700,745
675.5 3,700,746
3,700,747
683.3R 3,700,749
857L 3,700,751
859R 3,700,752
874 3,700,750
876B 3,700,753
878R 3,700,754
879 3,700,748
3,700,755
880B 3,700,633
881 3,700,756
894 3,700,757
897A 3,700,759
897R 3,700,758
950 3,700,760

CLASS 261

114R 3,700,216

CLASS 263

6C 3,700,217
6E 3,700,218
15R 3,700,219
32R 3,700,220

CLASS 264

1 3,700,761
3 3,700,762
9S 3,700,763
273- 3,700,764
328 3,700,765

CLASS 266

9 3,700,221
23NN 3,700,223
23K 3,700,222
33 3,700,224

CLASS 267

35 3,700,225

CLASS 269

22 3,700,226
24 3,700,227
61 3,700,228
328 3,700,229

CLASS 270

61R 3,700,230

CLASS 271

64 3,700,231
75 3,700,232

CLASS 272

79A 3,700,233

CLASS 273

1M 3,700,234
9 3,700,235
54C 3,700,236
55A 3,700,237
55R 3,700,238
65R 3,700,239
95R 3,700,240
3,700,241
131KP 3,700,242
178R 3,700,243
183D 3,700,244
189A 3,700,245

CLASS 277

3 3,700,246
28 3,700,247
80 3,700,248

CLASS 279

2 3,700,249
35 3,700,250

CLASS 280

7.11 3,700,251
11.13N 3,700,252
11.2 3,700,253
63 3,700,254
81A 3,700,255
87A 3,700,257
87R 3,700,256
150SB 3,700,258
152R 3,700,259
154.5R 3,700,260
406A 3,700,261
3,700,262
415A 3,700,263

CLASS 283

38 3,700,264

CLASS 285

15 3,700,265
24 3,700,266
3,700,267
55 3,700,268
78 3,700,269
337 3,700,270

CLASS 287

52.04 3,700,271

CLASS 289

17 3,700,272

CLASS 293

70 3,700,273

CLASS 294

63R 3,700,274
87.2 3,700,275
3,700,276

CLASS 296

104 3,700,277

CLASS 297

191 3,700,278
232 3,700,279
390 3,700,281
440 3,700,282

CLASS 298

7 3,700,283

CLASS 299

5 3,700,280
18 3,700,849
46 3,700,284
83 3,700,285

CLASS 303

6C 3,700,286

CLASS 305

38 3,700,287
3,700,288

CLASS 307

88.3 3,700,912
107 3,700,913
141 3,700,914
215 3,700,915
3,700,916
225B 3,700,917
230 3,700,918
232 3,700,919
235A 3,700,920
235 3,700,921
246 3,700,922
252B 3,700,923
252Q 3,700,925
255 3,700,924
257 3,700,926
268 3,700,928
291 3,700,929
292 3,700,930
304 3,700,932
310 3,700,933
3,700,934

CLASS 308

2A 3,700,289
3,700,290
3,700,291
3A 3,700,292
9 3,700,293
36.1 3,700,294
72 3,700,295
187.2 3,700,296
3,700,297
194 3,700,298
212 3,700,299
216 3,700,845

CLASS 310

3R 3,700,935
8.1 3,700,936
8.9 3,700,937
9.1 3,700,938
9.8 3,700,939
66 3,700,940
105 3,700,941
164 3,700,942
168 3,700,943
3,700,944

CLASS 312

240 3,700,300
333 3,700,301

CLASS 313

55 3,700,950
84 3,700,945
85S 3,700,948
3,700,949
103 3,700,947
188 3,700,946
346R 3,700,951

CLASS 315

3.5 3,700,952
5.3B 3,700,963
11 3,700,953
13C 3,700,954
20 3,700,955
24 3,700,958
29 3,700,959
101 3,700,956
151 3,700,960
169TV 3,700,961
241 3,700,962

CLASS 317

13C 3,700,964
15 3,700,965
18D 3,700,966
3,700,967
31 3,700,968
40R 3,700,969
58 3,700,970
80 3,700,971
137 3,700,972
140 3,700,973
148.5R 3,700,985
230 3,700,974
3,700,975
235R 3,700,976
3,700,977
3,700,978
3,700,979
3,700,980
3,700,981
3,700,982
245 3,700,983

CLASS 318

77 3,700,984
227 3,700,986
3,700,987
3,700,988
3,700,989
375 3,700,990
447 3,700,991
568 3,700,992
579 3,700,994
603 3,700,993
628 3,700,995
696 3,700,996

CLASS 320

1 3,700,998
20 3,700,997
26 3,700,999
64 3,701,000

CLASS 321

5 3,701,001
15 3,701,002

CLASS 323

6 3,701,003
69 3,701,004

CLASS 324

.5R 3,701,005
30R 3,701,006
43R 3,701,007
55 3,701,008
61P 3,701,009
71R 3,701,010
72.5 3,701,011
79R 3,701,012
83D 3,701,013
98 3,701,014
158F 3,701,021
174 3,701,015

CLASS 325

16 3,701,016
38B 3,701,017
58 3,701,018
64 3,701,019
121 3,701,020
318 3,701,022
329 3,701,023
364 3,701,024
470 3,701,025

CLASS 328

15 3,701,026
17 3,701,027
63 3,700,931
91 3,701,029
167 3,701,028

CLASS 329

134 3,701,030
173.2 3,701,031

CLASS 330

17 3,701,031
18 3,701,032
21 3,701,033
28 3,701,034
31 3,701,035
85 3,701,036
107 3,701,037
124R 3,701,038

CLASS 331

1A 3,701,039
44 3,701,040
65 3,701,041
94.5 3,701,042
3,701,043
3,701,044
3,701,045
3,701,046
3,701,047
3,701,048
107R 3,701,049
3,701,050
107T 3,701,051
116M 3,701,052

CLASS 332

9T 3,701,053

CLASS 333

1.1 3,701,054
7 3,701,055
8 3,701,056
10 3,701,057
31A 3,701,058
70A 3,701,059
95A 3,701,060
98P 3,701,061

CLASS 335

135 3,701,062
146 3,701,063
205 3,701,064
212 3,701,065
274 3,701,066

CLASS 336

90 3,701,067

CLASS 337

102 3,701,068
160 3,701,069

CLASS 338

162 3,701,070

CLASS 339

4 3,701,071
5L 3,701,072
5P 3,701,073
14R 3,701,074
17CF 3,701,075
3,701,077
17C 3,701,076
19 3,701,078
36 3,701,079
48 3,701,080
53 3,701,081
61M 3,701,082
64M 3,701,083
66M 3,701,084
92M 3,701,085
177R 3,701,086
198G 3,701,087

CLASS 340

2 3,701,088
3R 3,701,089
3,701,090
3.5 3,700,303
15.5AF 3,701,091
27AT 3,701,092
52H 3,701,093
146.1AL 3,701,094
146.1D 3,701,096
146.3AG 3,701,099
146.3MA 3,701,095
146.3H 3,701,098
146.3Z 3,701,097
149A 3,701,100
163 3,701,101
168R 3,701,102
170 3,701,103
172.5 3,701,104
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3,701,113
173CR 3,701,115
173LS 3,701,118
3,701,123
173SP 3,701,114
173R 3,701,116
3,701,117
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3,701,120
3,701,121
3,701,122
174HA 3,701,126
174RC 3,701,124
174TF 3,701,125
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3,701,129
3,701,132
174YC 3,701,131
174.1E 3,701,135
174.1G 3,701,134
174.1J 3,701,130
174.1M 3,701,133
199 3,701,136
228R 3,701,137
244R 3,701,138
271 3,701,139
283 3,701,140
287 3,701,141
347AD 3,701,144
3,701,148
347DA 3,701,147
347DD 3,701,143
347NT 3,701,142
3,701,145
3,701,146

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5DP 3,701,149
6.5SS 3,701,150
9 3,701,151
16M 3,701,152
17.7 3,701,153
18E 3,701,154
117A 3,701,156
117R 3,701,155
708 3,701,157
725 3,701,158
745 3,701,159
755 3,701,160
770 3,701,161
771 3,701,162
786 3,701,163

CLASS 350

3.5 3,700,302
6 3,700,304
105 3,700,305
150 3,700,306
157 3,700,307
3,700,308
163 3,700,309
201 3,700,310
214 3,700,311
215 3,700,312
288 3,700,313
314 3,700,314

CLASS 352

17 3,700,315
78C 3,700,316
91 3,700,317
225 3,700,318

CLASS 353

15 3,700,319
26 3,700,320
3,700,321

CLASS 355

1 3,700,322
3 3,700,323
6 3,700,324
8 3,700,325
14 3,700,326
3,700,327
15 3,700,328
81 3,700,329

CLASS 356

38 3,700,330

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97	3,700,332	17	3,700,342	219	3,700,354	CLASS 423		317	3,700,775	144	3,700,371
103	3,700,333	81	3,700,343	CLASS 417		24	3,700,767	322	3,700,776	159	3,700,372
106	3,700,334	108	3,700,344	33	3,700,355	119	3,700,766	323	3,700,777	195	3,700,373
201	3,700,335	150	3,700,345	222	3,700,356	CLASS 424		324	3,700,778	208	3,700,374
226	3,700,336	153	3,700,346	354	3,700,358	118	3,700,768	CLASS 428		422	3,700,375
227	3,700,337	236	3,700,347	404	3,700,359	119	3,700,769	7	3,700,364	CLASS 431	
246	3,700,338	CLASS 416			3,700,360	177	3,700,770	28	3,700,365	13	3,700,376
247	3,700,339	90	3,700,348	477	3,700,361	200	3,700,771	39	Re.27,513	93	3,700,377
CLASS 401		111	3,700,349	CLASS 418		216	3,700,772	71	3,700,366	253	3,700,378
33	3,700,340	114	3,700,350	60	3,700,362	230	3,700,773	112	3,700,367	CLASS 444	
CLASS 408		123	3,700,351	239	3,700,357			115	3,700,368	1	3,700,379
		134	3,700,352					139	3,700,369		

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D 6—	50	224,950		224,959	256	224,964		14	224,973			224,979	D72—	224,986
	63	224,951	263	224,958	D14— 6	224,966		15	224,971			224,980	D83—	224,987
	75	224,952	D 9— 182	224,961		224,967	D34—	5	224,976	D45—	4	224,981	12	224,988
	88	224,953	219	224,965		224,968		15	224,974	D61—	1	224,982	D86—	10	224,989
	192	224,954	252	224,960		224,969			224,975	D71—		224,983	D88—	3	224,990
	197	224,955	255	224,962	D24— 1	224,970			224,977			224,984	D90—	1	224,991
D 8—	171	224,956													

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PATENTS

1 :	3,699,609	3,699,738	3,700,233	3,700,771	8 :	3,699,701	10 :	3,699,589			
	3,699,930	3,699,741	3,700,235	3,700,784		3,699,786		3,700,398			
	3,699,996	3,699,752	3,700,243	3,700,785		3,699,829		3,700,689			
	3,700,238	3,699,772	3,700,272	3,700,799		3,699,967		3,700,693			
	3,700,251	3,699,775	3,700,280	3,700,801		3,700,150		3,700,727			
	3,700,538	3,699,787	3,700,291	3,700,812		3,700,460		3,700,739			
	3,700,571	3,699,788	3,700,301	3,700,855		3,700,788		3,700,966			
	3,700,708	3,699,795	3,700,310	3,700,869		3,700,792	11 :	3,699,799			
	3,701,048	3,699,798	3,700,313	3,700,885		3,700,821		3,700,393			
	3,701,058	3,699,800	3,700,314	3,700,887		3,700,822		3,700,575			
4 :	3,699,924	3,699,814	3,700,318	3,700,896		3,700,926		3,700,945			
	3,699,931	3,699,825	3,700,331	3,700,900		3,700,927	12 :	3,699,628			
	3,699,984	3,699,838	3,700,338	3,700,907		3,700,955		3,699,669			
	3,700,053	3,699,839	3,700,341	3,700,910		3,701,014		3,699,691			
	3,700,102	3,699,847	3,700,344	3,700,913		3,701,057		3,699,721			
	3,700,534	3,699,875	3,700,353	3,700,915	9 :	Re.27,512		3,699,722			
	3,700,870	3,699,883	3,700,380	3,700,931		3,699,623		3,699,761			
	3,700,921	3,699,891	3,700,381	3,700,935		3,699,660		3,699,826			
	3,700,929	3,699,893	3,700,385	3,700,939		3,699,668		3,699,907			
	3,700,977	3,699,912	3,700,386	3,700,964		3,699,719		3,699,915			
	3,701,018	3,699,916	3,700,406	3,700,971		3,699,771		3,699,955			
	3,701,031	3,699,922	3,700,443	3,700,974		3,699,777		3,700,017			
	3,701,055	3,699,933	3,700,445	3,700,976		3,699,981		3,700,072			
	3,701,094	3,699,934	3,700,446	3,700,982		3,699,985		3,700,149			
	3,701,138	3,699,949	3,700,480	3,700,985		3,699,990		3,700,231			
	3,701,158	3,699,951	3,700,498	3,700,997		3,700,023		3,700,302			
5 :	3,699,596	3,699,954	3,700,503	3,701,021		3,700,096		3,700,522			
	3,699,661	3,699,956	3,700,510	3,701,036		3,700,163		3,700,619			
	3,701,025	3,699,957	3,700,527	3,701,039		3,700,166		3,700,620			
6 :	3,699,595	3,699,963	3,700,529	3,701,042		3,700,307		3,700,621			
	3,699,599	3,699,997	3,700,533	3,701,043		3,700,309		3,700,634			
	3,699,600	3,700,005	3,700,550	3,701,046		3,700,354		3,700,690			
	3,699,602	3,700,007	3,700,551	3,701,059		3,700,367		3,700,867			
	3,699,629	3,700,021	3,700,554	3,701,068		3,700,433		3,700,904			
	3,699,630	3,700,028	3,700,567	3,701,070		3,700,481		3,701,029			
	3,699,632	3,700,034	3,700,590	3,701,073		3,700,486		3,701,054			
	3,699,646	3,700,054	3,700,591	3,701,079		3,700,487		3,701,072			
	3,699,649	3,700,065	3,700,592	3,701,093		3,700,499	13 :	3,699,666			
	3,699,652	3,700,067	3,700,603	3,701,104		3,700,509		3,699,783			
	3,699,667	3,700,077	3,700,633	3,701,105		3,700,546		3,700,515			
	3,699,676	3,700,107	3,700,649	3,701,117		3,700,622	15 :	3,699,736			
	3,699,682	3,700,119	3,700,668	3,701,123		3,700,681	16 :	3,699,938			
	3,699,689	3,700,132	3,700,678	3,701,133		3,700,746	17 :	Re.27,514			
	3,699,698	3,700,137	3,700,694	3,701,136		3,700,747		3,699,603			
	3,699,702	3,700,139	3,700,696	3,701,144		3,700,754		3,699,612			
	3,699,705	3,700,142	3,700,699	3,701,147		3,700,781		3,699,615			
	3,699,707	3,700,178	3,700,723	3,701,152		3,700,858		3,699,625			
	3,699,711	3,700,185	3,700,725	3,701,153		3,700,937		3,699,671			
	3,699,712	3,700,191	3,700,729	3,701,156		3,700,995		3,699,677			
	3,699,713	3,700,208	3,700,748	3,701,161		3,701,011		3,699,678			
	3,699,715	3,700,230	3,700,762	3,701,162		3,701,045		3,699,679			

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18 : 3,699,611
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
October 31, 1972 Volume 903 Number 5

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PATENT OFFICE NOTICES

Reduction in Patents Granted

The backlog of patent applications awaiting printing has been virtually eliminated. Effective with patents issuing on October 31, 1972, the weekly number of General and Mechanical, Electrical, and Chemical patents granted will be determined by the availability of applications in which the Base Issue Fee has been paid. Applicants who desire to obtain early patent grant dates are encouraged to remit payment of Base Issue Fees promptly.

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.

Oct. 10, 1972.

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before November 29, 1972.

Campbell, John F., 9808 Cahart Place, Silver Spring, Md. 20903
Cooper, John C., III, 3365 N. Summit Ave., Milwaukee, Wis. 53211
Kaufman, Daniel C., 3205 West End Ave., Apt. 6, Nashville, Tenn. 37203
Linker, Raymond O., Jr., % Parrott, Bell, Seltzer, Park & Gibson, 1211 E. Morehead St., Charlotte, N.C. 28201
McLaughlin, John J., 8015 1st St., Lanham, Md. 20801
Woodbridge, Richard C., 517 S. 25th St., Arlington, Va. 22202

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Oct. 11, 1972.

Trademark Registration Treaty

Vienna Diplomatic Conference

THIS is further to the notice published in Volume 902 of the OFFICIAL GAZETTE of September 19, 1972 (Trademark Section, p. 105 and Patent Section, p. 751) including the Conference draft of the Trademark Registration Treaty (TRT), the current draft of the Regulations and related documents.

As a result of the decision taken on September 29, 1972, by the Executive Committee of the Paris Union, a Diplomatic Conference for the negotiation of the proposed Trademark Registration Treaty will convene in Vienna, Austria, from May 17 to June 12, 1973.

In order to assist in the development of a position for a final preparatory meeting of a Committee of Experts scheduled in Geneva from December 5 to 12, 1972, to review the draft Regulations for the Treaty, interested parties were requested in the notice published on September 19 to submit their views or suggestions, particularly in regard to the draft regulations, to the Commissioner of Patents, Washington, D.C., 20231 by November 20, 1972. We have been advised that the Conference draft of the Regulations to be produced from the December meeting is planned to be released by the World Intellectual Property Organization in January 1973. When released it will be published in the OFFICIAL GAZETTE.

Final comments on the Conference drafts of the Treaty and the Regulations should be submitted to the Commissioner of Patents by April 6, 1973, in order to be considered in preparation of the U.S. position at the Diplomatic Conference of Vienna.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Oct. 24, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,686,039, J. C. Bender, METHOD OF AND APPARATUS FOR DETERMINING PHYSICAL PROPERTIES OF MATERIALS; **2,790,140**, same, METHOD OF AND MEANS FOR TESTING FERROUS MATERIAL; **2,814,019**, same, MAGNETIC METHOD OF DETECTING STRESS AND STRAIN IN FERROUS MATERIAL; **2,892,151**, same, APPARATUS FOR LOCATING ANOMALIES IN A WELL BORE; **2,960,755**, Bender and McWhorter, METHOD OF MAKING A MAGNETIC CORE; **2,961,602**, J. C. Bender, METHOD OF AND APPARATUS FOR DETERMINING PHYSICAL PROPERTIES OF MATERIALS; **2,961,624**, Bender and McWhorter, MAGNETIC CORE; **3,095,736**, A. S. Rogers, STUCK PIPE LOCATOR; **3,233,170**, same, MAGNETIC STUCK PIPE LOCATOR AND DETONATOR USING A SINGLE LINE TO TRANSMIT SIGNALS, filed Mar. 17, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–1936, *Homco International, Inc.* v. *Gearhart-Owen Industries, Inc., GO International Inc. and Rawco Instruments, Inc.* Consent judgment, defendants have infringed. No provision is made and this judgment does not and is not intended to release any joint tort feasor or other third parties from past infringement of said Letters Patent, May 15, 1972.

2,790,140. (See 2,686,039.)

2,810,549, W. A. Morrison, FLUID ACTUATED PERCUSSIVE TOOL; **2,886,004**, same; **2,937,619**, E. H. Kurt, HOLE CLEANING DEVICE; **2,942,579**, W. A. Morrison, ROCK DRILL; **2,951,467**, same; **3,431,984**, Buehler and Peterson, CHECK VALVE VENT AND BLOW AIR METERING PLUG FOR ROCK DRILLS, filed Apr. 20, 1972, D.C. Conn. (Bridgeport), Doc. B–489, *Ingersoll-Rand Company* v. *Numa Tool Co., Inc.*

2,814,019. (See 2,686,039.)

2,886,004. (See 2,810,549.)

2,892,151. (See 2,686,039.)

2,931,953. (See 3,611,763.)

2,937,619. (See 2,810,549.)

2,942,579. (See 2,810,549.)

2,951,467. (See 2,810,549.)

2,960,755. (See 2,686,039.)

2,961,602. (See 3,686,039.)

2,961,624. (See 2,686,039.)

3,051,939. (See 3,316,547.)

3,095,736. (See 2,686,039.)

3,125,641, D. R. Von Recklinghausen, APPARATUS FOR INDICATING STEREOPHONIC BROADCASTING TRANSMISSION AND THE LIKE; **3,296,378**, Fish and Russell, MONOPHONIC-STEREOPHONIC AUTOMATIC SWITCHING AND DEMODULATOR CIRCUIT; **3,348,154**, Fish and Von Recklinghausen, SIGNAL MIXING AND CONVERSION APPARATUS EMPLOYING FIELD EFFECT TRANSISTOR WITH SQUARE LAW OPERATION, filed Nov. 26, 1968, D.C., S.D.N.Y., Doc. 68–C–4688, *H. H. Scott, Inc.* v. *Fisher Radio Corporation.* Stipulation and order, Emerson Electric Co. is substituted as defendant in place of Fisher Radio Corp. and on this stipulation the complaint and counterclaims are discontinued without prejudice, Apr. 18, 1972.

3,233,170. (See 2,686,039.)

3,296,378. (See 3,125,641.)

3,316,547, S. K. Ammann, INTEGRATING ANALOG-TO-DIGITAL CONVERTER; **3,651,939**, R. W. Gilbert, ANALOG-TO-DIGITAL CONVERTER; **D. 217,289**, J. R. Andreaggi, DIGITAL PANEL METER, filed Feb. 15, 1972 D.C., N.D. Calif. (San Francisco), Doc. C–72–269, *Weston Instruments Inc.* v. *Data Technology Corp. et al.*

3,348,154. (See 3,125,641.)

3,386,564, L. Pease, FEED TABLE; **3,620,432**, V. V. Emery, MACHINE FOR DRAWING EXTRUDED PLASTIC TUBING OR ROD FROM AN EXTRUDER, filed Mar. 17, 1972, D.C., N.D. Ala. (Montgomery), Doc. 1213–S, *Vern Emery Company, Inc.* v. *Abel L. Trujillo et al.* Upon consideration of plaintiff's motion to dismiss this cause without prejudice, ordered, cause dismissed without prejudice to the parties, May 10, 1972.

3,393,838. (See D. 215,259.)

3,421,171, T. Tsuruzawa, BRUSH FOR CLEANING, filed May 24, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1160–IH, *K-Tel International, Inc.* v. *Sav-On-Drugs, Inc., and S. C. Chan, doing business as Sing Lee Plastic & Metal Mfg.* Same, filed May 31, 1972, D.C.N.J. (Camden), Doc. 930–72, *K-Tel International, Inc.* v. *Albert E. Price, Inc.*

3,429,022, E. A. Oster, SCRAP RECOVERY PROCESS, filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38273, *Earl A. Oster* v. *Grant-Southern Iron & Metal Company.* Same, filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38274, *Earl A. Oster* v. *Sam Allen & Sons, Inc.*

3,431,984. (See 2,810,549.)

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, filed June 9, 1972, D.C. Conn. (New Haven), Doc. 15099, *Leviton Manufacturing Co., Inc.* v. *Arrow-Hart, Inc.* Same, filed June 9, 1972, D.C. Conn. (New Haven), Doc. 15100, *Slater Electric Inc.* v. *Arrow-Hart, Inc.*

3,440,792, H. H. Schmidgall, COMBINATION STIRRUP AND SPACER FOR RE-ENFORCED CONCRETE PIPE AND LIKE STRUCTURE, filed Feb. 9, 1972, D.C. Minn. (Minneapolis), Doc. 4–72–C–96, *William E. Schulte, doing business as DeWalt Company* v. *Hartzell H. Schmidgall, Hawkeye Concrete Products Co., and Peerless Chain Company.*

3,450,436, W. N. Phillips, HIGH-LIFT SIDE DUMP MECHANISM, filed Sept. 24, 1971, D.C., N.D. Fla. (Tampa), Doc. 71–436–C, *Leco, Inc.* v. *Stoney's Hi-Lift Service, Inc.* Stipulation of dismissal under F.R.C.P. 41(a)(1), May 23, 1972.

3,464,025, W. E. Bell, GAS LASERS, filed June 5, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1254–LTL, *Spectra-Physics, Inc.* v. *Britt Electronic Products Corporation.* Same, filed June 7, 1972, D.C., M.D. Fla. (Orlando), Doc. 72–155–Orl–C, *Spectra-Physics, Inc.* v. *Control Laser-Orlando, Inc.*

3,471,862. (See 3,611,763.)

3,484,735, J. G. Fanelli, ELECTRIC TERMINAL ADAPTER, filed Feb. 10, 1970, D.C., N.D. Ind. (South Bend), Doc. 70S17, *Coleman Cable & Wire Company* v. *Trinetics, Inc.* Stipulation of non-infringement in favor of defendant, May 22, 1972.

3,488,868, Gutowski, Kuchta and Ferguson, MEASURING TOOL; **D. 213,643**, same, MEASURING TOOL FOR CARPENTRY AND THE LIKE, filed Apr. 5, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–438, *The Stanley Works* v. *Oxcall Tool Co., Ltd.*

3,543,760, L. R. Bolduc, DISPOSABLE GROUND PLATE ELECTRODE; **3,624,590**, same, CLAMP FOR DISPOSABLE GROUND PLATE ELECTRODE, filed Feb. 1, 1972, D.C. Colo. (Denver), Doc. C–3699, *Medical Plastics, Inc.* v. *Valleylab, Inc.*

3,572,596, M. J. Dykmans, CABLE STRESSING AND WINDING APPARATUS, filed Apr. 19, 1972, D.C., S.D. Calif. (San Diego), Doc. 72–128–T, *Maximiliaan J. Dykmans and BBR Prestressed Tanks, Inc.* v. *Gulf Oil Corporation.*

3,584,402, J. J. Silverman, SANDAL FOR FOOT CAST, filed May 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38223, *Ortho Industries, Inc.* v. *S. H. Camp & Company.*

3,599,921, W. J. Cumber, INDEPENDENT SUPPORT CLIPS, filed May 25, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–549, *Erico Products, Inc.* v. *Fastway Fasteners, Inc.*

3,611,763, B. S. Sedley, MAGNETICALLY OPERATED MECHANISM AND MAGNETIC CARD; **2,931,953**, W. Barney, MAGNETICALLY CONTROLLED LOCK AND SWITCH; **3,471,862**, same, ENCODER APPARATUS FOR MAGNETIC CREDIT CARDS AND THE LIKE, filed May 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–961–JWC, *H. O. Boehme, Inc.* v. *Rusco Industries, Inc. et al.*

3,620,432. (See 3,386,564.)

3,624,590. (See 3,543,760.)

D. 213,643. (See 3,488,868.)

D. 215,259, M. J. Syverson, BEVERAGE DISPENSER; **3,393,838**, same, STORAGE CONTAINER AND DISPENSER, filed Feb. 28, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–258, *Fountain Industries, Inc.* v. *Consolidated Chemical Corp.*

D. 217,289. (See 3,316,547.)

Board of Appeals Decisions Rendered in the Month of September 1972

Examiner affirmed	176
Examiner affirmed in part	12
Examiner reversed	33
Total	221

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,256,244, R. C. Byloff and J. Chun, ALTERNATING CURRENT POWER GENERATING SYSTEM, decided Dec. 14, 1971, Interference No. 95,865, claims 5, 6, 7, 8, 11, 15, 16, and 17.

Patent No. 3,279,573, W. R. E. Hensel, FRICTION CLUTCH CONSTRUCTION, decided May 31, 1972, Interference No. 96,162, claims 4, 5, 6, 7, 10, and 11.

Patent No. 3,297,708, M. Garber and B. Miller, METHOD OF PREPARING THIAZOLIDINES, decided Mar. 21, 1972, Interference No. 97,461, claim 5.

Patent No. 3,347,663, C. G. Bieber, PRECIPITATION HARDENABLE STAINLESS STEEL, decided Aug. 29, 1972, Interference No. 97,406, claims 4, 27, and 31.

Patent No. 3,431,247, N. J. H. Gulpen and H. G. Gerritsen, CHEMICAL PROCESS AND PRODUCTS, decided Apr. 26, 1972, Interference No. 97,080, claims 1 and 3.

Patent No. 3,465,068, V. G. Camacho, J. J. Anderson, and W. M. Byrd, Jr., PHOSPHORUS-CONTAINING ESTERS AND PROCESS THEREFOR, decided Aug. 4, 1972, Interference No. 97,940, claims 1, 2, 3, 9, 11, 17, 18, and 25.

Patent No. 3,522,950, R. C. Schenck, Jr., PISTON AND PTFE RING ASSEMBLY FOR INTERNAL COMBUSTION ENGINES, decided Aug. 31, 1972, Interference No. 97,741, claims 1, 2, 3, 4, 5, and 6.

Patent No. 3,529,692, W. A. Meier, SOUND BARRIER, decided Aug. 31, 1972, Interference No. 97,700, claims 1, 2, 3, 4, 5, 7, and 8.

Patent No. 3,571,737, S. E. Miller, TRANSMISSION LINE, decided Aug. 18, 1972, Interference No. 97,801, claims 1, 2, 3, 4, 6, and 9.

Certificates of Correction for the Week of Oct. 31, 1972

D. 224,234	3,623,825	3,643,289	3,663,324
3,527,846	3,623,900	3,645,747	3,663,708
3,538,599	3,624,958	3,647,119	3,664,169
3,563,764	3,625,404	3,647,658	3,664,316
3,568,706	3,626,138	3,647,967	3,664,837
3,578,723	3,626,504	3,648,052	3,665,338
3,581,240	3,627,292	3,648,740	3,665,489
3,589,855	3,628,099	3,649,135	3,665,608
3,591,349	3,628,965	3,649,319	3,666,050
3,592,170	3,629,594	3,649,761	3,666,079
3,594,112	3,629,623	3,649,914	3,666,407
3,594,141	3,629,968	3,650,222	3,666,581
3,597,082	3,629,977	3,650,262	3,666,854
3,598,739	3,630,264	3,650,320	3,667,162
3,601,450	3,630,442	3,650,512	3,667,435
3,601,458	3,630,743	3,651,384	3,667,743
3,601,657	3,631,405	3,652,440	3,667,808
3,603,408	3,631,872	3,652,670	3,668,616
3,603,744	3,632,029	3,652,960	3,669,632
3,608,798	3,632,544	3,653,064	3,670,023
3,610,478	3,632,582	3,653,270	3,670,065
3,610,791	3,632,843	3,655,647	3,670,095
3,610,862	3,633,915	3,655,956	3,670,381
3,612,428	3,634,073	3,655,995	3,670,560
3,614,086	3,634,117	3,656,446	3,670,794
3,615,080	3,634,142	3,657,003	3,670,800
3,615,083	3,634,782	3,657,338	3,670,912
3,615,584	3,635,707	3,657,842	3,671,10[illegible]
3,616,668	3,635,901	3,658,591	3,671,380
3,617,270	3,636,234	3,658,619	3,671,472
3,617,797	3,637,106	3,658,837	3,671,800
3,618,052	3,637,368	3,658,988	3,673,878
3,619,134	3,638,756	3,659,488	3,674,008
3,620,311	3,639,142	3,660,137	3,674,645
3,620,605	3,639,674	3,660,291	3,675,419
3,621,694	3,640,132	3,660,534	3,675,721
3,621,908	3,640,216	3,660,823	3,675,858
3,622,437	3,641,144	3,661,399	3,676,195
3,622,491	3,641,331	3,662,194	3,676,440
3,622,870	3,641,508	3,662,230	3,677,939
3,623,719	3,643,148	3,662,968	3,678,409

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 17, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-02-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-09-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus: Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-23-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-16-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. I. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-01-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-71

Expiration of patents: The patents within the range of numbers indicated below expire during November 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,721,999 to 2,725,557, inclusive
Plant Patents..... Numbers 1,427 to 1,435, inclusive

REISSUES

OCTOBER 31, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

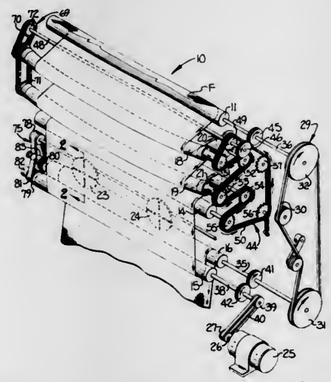
27,516
CLOTH STRAIGHTENING APPARATUS

Frank W. Leitner and William T. Griffin, Charlotte, N.C., assignors to Coltron Industries, Inc., Matthews, N.C.

Original No. 3,402,443, dated Sept. 24, 1968, Ser. No. 548,552, May 9, 1966. Application for reissue Sept. 23, 1970, Ser. No. 74,645

Int. Cl. D06h *3/12*

U.S. Cl. 26—51.5 **10 Claims**



Apparatus for correcting fabric distortions, such as bow, skew, or combinations thereof, including correction means defining a correction zone, feeding means for positively feeding distorted fabric to the correction means for correction of the distortions therein and serving to delineate the input side of the correction zone, and advancing means for positively advancing the corrected fabric from the correction means and for delineating the output side of the correction zone, the feeding means and advancing means operating at substantially equal lineal surface speeds so that elongation or stretching of the fabric during correction is avoided.

27,517
METHOD OF CUMULATIVELY RECORDING INTELLIGENCE ON A RECORD CARD

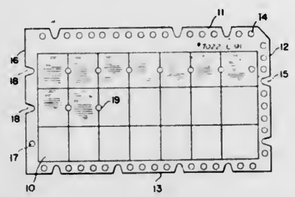
Morris Schwartz, Plainville, Conn., and Edward K. Kaprelian, Mendham, N.J., assignors to The Kalart Company, Inc., Plainville, Conn.

Original No. 3,418,119, dated Dec. 24, 1968, Ser. No. 471,172, July 12, 1965, which is a continuation of Ser. No. 283,670, May 24, 1963, which in turn is a continuation of Ser. No. 437,540, June 17, 1954. Application for reissue Dec. 15, 1969, Ser. No. 884,864

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 **9 Claims**

There is disclosed a method of cumulatively recording independent intelligence entries spaced in time in the form of photographic images by producing on a carrier such as a card providing space for a plurality of photographic images each representing one entry, a photographic image occupying a selected one of several predetermined fractional areas on the card while shielding the remaining fractional areas, and producing after an arbitrary period of time a second photographic image representing a second entry on another selected fractional area of the card



and so forth, thereby accumulating on the same card a sequence of entries representing a continuing transaction in numerical and chronological order.

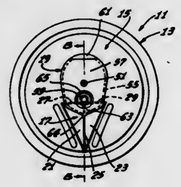
27,518
EASY-OPENING CAN END WITH NONREMOVAL TAB

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Original No. 3,446,389, dated May 27, 1969, Ser. No. 675,215, Oct. 13, 1967. Application for reissue Feb. 24, 1971, Ser. No. 118,580

Int. Cl. B65d *17/20*

U.S. Cl. 220—48 **28 Claims**



There is described herein an easy-opening container wall having a wall region formed by a rupturable score line and a bendable score line. A tab is secured to the container wall outside of the wall region and has a rupturing portion that overlies a portion of the wall region. Upon lifting the tab, the rupturing portion engages the wall region and forces the latter inwardly to thereby rupture the rupturable score line and cause the wall region to be bent inwardly into the interior of the container about the bend line.

27,519
PACKAGE FOR STERILIZED ARTICLE

Kenneth M. Shepherd, Prospect Heights, and Ronald L. Whipperman, North Chicago, Ill., assignors to Container Corporation of America, Chicago, Ill.

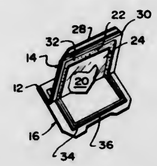
Original No. 3,527,400, dated Sept. 8, 1970, Ser. No. 775,345, Nov. 13, 1968. Application for reissue Mar. 10, 1971, Ser. No. 122,840

Int. Cl. B65d *33/16*

U.S. Cl. 229—87 R **2 Claims**

A package, formed from a blank of foldable paperboard, has top and bottom panels adapted to be folded into a face-to-face relationship to enclose an article to be

positioned therebetween. The bottom panel has a coating compound applied to the inner surface thereof while the inner surface of the top panel has flexible material secured thereto. The flexible material is sealed to the coated surface along predetermined lines of seal when the panels are folded to enclose the article. A portion of the coating



compound on the inner surface of the bottom panel is releasable from that surface in the areas of the lines of seal upon opening of the package so that it adheres to the flexible material at the lines of seal and is pulled away from the bottom panel without tearing the paperboard and thereby preventing contamination of the article by loose particles of torn paperboard.

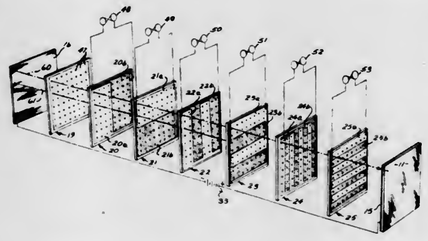
27,520
ELECTRON BEAM SCANNING DEVICE UTILIZING DIGITAL CONTROL SIGNALS, AND CAPABLE OF RANDOM ADDRESSING

Donald E. Hultberg, Venice, and Lester A. Jeffries, Palos Verdes, Calif., assignors to Northrop Corporation, Beverly Hills, Calif.

Original No. 3,408,532, dated Oct. 29, 1968, Ser. No. 511,747, Dec. 6, 1965. Application for reissue Oct. 28, 1969, Ser. No. 871,979

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **22 Claims**



This invention relates to an electron beam scanning device, and more particularly to such a device which is operative in response to a digital control signal and is capable of random addressing.

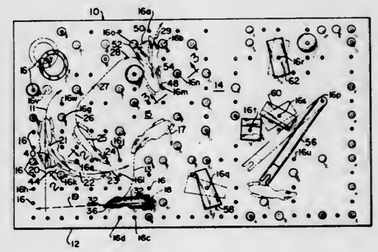
27,521
MAZE DEVICE

Ronald W. Redo, 773 Blossom Way, Hayward, Calif. 94541

Original No. 3,539,190, dated Nov. 10, 1970, Ser. No. 718,984, Apr. 1, 1968. Application for reissue Dec. 16, 1970, Ser. No. 98,970

Int. Cl. A63f *9/08*

U.S. Cl. 273—153 R **6 Claims**



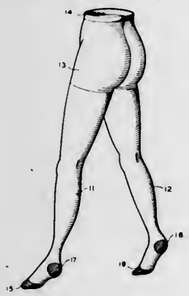
A maze device including a board or the like to provide a working surface from which a plurality of pins at various spaced intervals from each other project, thus defining a multiplicity of connected and intersecting paths between the pins. A token is provided so shaped and dimensioned that it can be slidably maneuvered between certain of the pins and not others, and thus the token is movable along a mazelike path on the surface of the board from one station thereon to another remote from the first. The mazelike path or paths which permit passage of a token, and those which do not, are such as not to be visually discernible to the average observer in respect to which will permit such passage until actual movement with the token is undertaken. In addition, certain of the pins are provided with impediments of various shapes positioned at different elevations above the working surface of the board, and these impediments cofunction with portions of the token to permit or bar passage on the path between the pin with the impediment and the one adjacent to it.

PATENTS

GRANTED OCTOBER 31, 1972

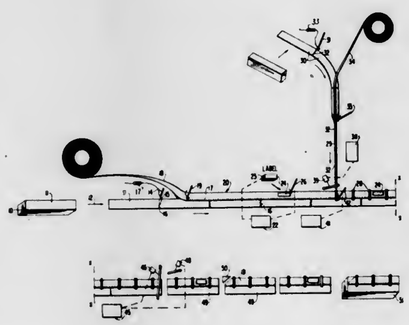
GENERAL AND MECHANICAL

3,701,164
PANTY-HOSE
James H. Blore, Greenville, S.C., assignor to Phillips Fibers Corporation
Filed Jan. 14, 1970, Ser. No. 2,870
Int. Cl. A41b 9/04
U.S. Cl. 2—224 R **9 Claims**



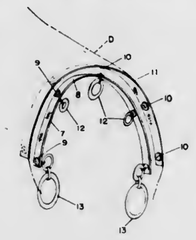
A panty-hose garment with the panty portion formed of textured polypropylene yarns and the stocking portion formed of nylon yarns. The heels and toes of the stocking portions can be formed with textured polypropylene yarns. The polypropylene yarns can be solution dyed a different color from the remainder of the garment.

3,701,165
GARMENTS WITH DETECTABLE MARKS
Erie George Huddleston, Monroe, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 851,921, Aug. 21, 1969, Pat. No. 3,661,016. This application April 29, 1971, Ser. No. 138,598
Int. Cl. A41d
U.S. Cl. 2—243 R **8 Claims**



Garments are formed with marks or stitching which carry a substance detectable by magnetic detecting devices. When the magnetized substance on the garment part is detected in a process of making garments, subsequent garment making steps are actuated in response to the detection of the stitching.

3,701,166
ORNAMENT FOR SLEEVELESS DRESSES
Signe R. Lindblom, 10 Beech St., Garden City, N.Y.
Filed March 4, 1971, Ser. No. 121,026
Int. Cl. A41d 27/08
U.S. Cl. 2—244 **6 Claims**



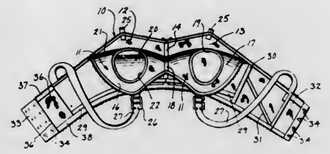
This invention consists of a strip of covered feather-boning having a plurality of snap fasteners or the like adapted to secure the aforesaid strip to the underside of a strip of tape that is secured to that part of a sleeveless dress from which the arm of a lady extends. A plurality of plastic rings are secured by any desired means in longitudinal spaced relation to one another to the underside of the aforesaid featherboning.

3,701,167
PRE-CONSTRUCTED BUTTONHOLE AND METHOD OF INCORPORATING SAME IN A GARMENT
Mary Ann Spetz, 5675 Fiercier Court, Utica, Mich.
Filed May 7, 1971, Ser. No. 141,293
Int. Cl. A41f 1/02
U.S. Cl. 2—266 **9 Claims**



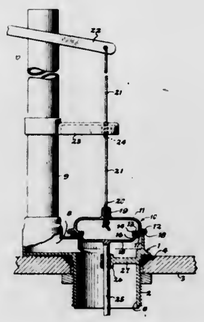
A pre-constructed buttonhole consisting of components independent of an article to which they are to be attached, and a method for incorporating the components into a material to form a finished buttonhole. The components consist of a reinforcing piece disposed on the surface opposite the exterior finished surface of the article, and buttonhole pieces having tab-portions disposed on the finished surface of the article. A slit is made which extends through the reinforcing piece and layers of material composing the article. The tab portions of the buttonhole pieces are inserted through this slit to the exterior finished surface of the article and affixed thereto to form a buttonhole. The buttonhole components are manufactured from continuous strips of material. The individual components may be separated prior to being placed in the hands of the user.

3,701,168
BRASSIERES FOR MASTECTOMY PATIENTS
Zella J. Balow, 3810 Nimitz St., Eau Claire, Wis.
Filed Aug. 23, 1971, Ser. No. 173,853
Int. Cl. A61f 1/00; A41c 3/10
U.S. Cl. 3—36 **10 Claims**



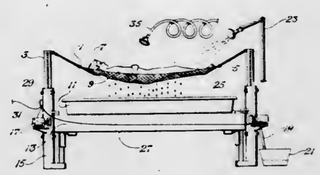
A brassiere for mastectomy patients who have had one breast surgically removed, which improved brassiere includes an artificial breast insert or so-called prosthesis of a size identical to the patient's normal breast and filled with weighted filling adapted to conform in shape, contour, and weight to the patient's normal breast, said novel insertable prosthesis having an opening therein through which filling can be easily added or removed, as desired, and said brassiere being designed with a special integral retaining pocket-like lining therein for removably securing said prosthesis insert in position, the removability of said insert permitting it to be temporarily removed from the bra when desired.

3,701,169
TOILET FLUSH VALVE ASSEMBLY
Dan Kamphausen, Littleton, Colo., assignor to Twentieth Century Products Corporation, Englewood, Colo.
Filed Nov. 25, 1969, Ser. No. 879,884
Int. Cl. E03d 1/34
U.S. Cl. 4—57 **8 Claims**



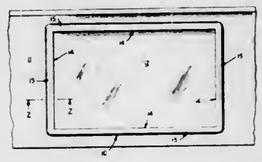
A toilet flush vale including a buoyant valve member movable toward and away from a valve seat and normally held thereagainst by the hydrostatic pressure of water in the tank. The valve member has an annular flange for seating on the valve seat, and a flexible sealing gasket is carried by the valve member a small distance below the annular flange so as to define an annular gap therebetween. A guide rod depends from the valve member in guided engagement with a guide structure below the seat. The valve member is moved away from the seat by means of a flexible line, and an external arm member connected to an overflow pipe of the flush valve assembly serves to guide the flexible line and to limit upward travel of the valve member and thereby prevent disengagement of the guide members.

3,701,170
APPARATUS FACILITATING CARE OF A BEDFAST PATIENT
James M. Bond, 3435 Ave. H, Fort Worth, Tex.
Filed July 8, 1971, Ser. No. 160,875
Int. Cl. A47k 3/06, 3/062
U.S. Cl. 4—174 **16 Claims**



Apparatus facilitating care of a bedfast patient characterized by a bed adapted to support bedding and a patient, the bedding including an upper layer to protrude through apertures in a flat net and support a patient's body without irritating the patient's skin. The bed has a vertical support means adjacent each corner to which a patient support carrying the patient can be affixed, enabling a distance to be placed between the patient and the bedding when the vertical support means adjacent each corner of the bed are raised or when the mattress is lowered. The patient support comprises a flat net which can remain in place beneath the patient and on top of the bedding, yet when affixed to the vertical support means adjacent the corners of the bed by appropriate means such as chains and snap hooks, will support the patient. A portable shower nozzle is provided, and a portable container for water which has been run over the patient is provided for emplacement beneath the patient while the patient is being washed. Heat means such as heat lamps, and a heated air blower and hose are provided for preventing chilling and for drying the patient. The specific structure and accessories are disclosed.

3,701,171
WORK SURFACE CLAMPING MEANS FOR DROP-IN COOKING EQUIPMENT
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company
Division of Ser. No. 836,036, June 24, 1969, Pat. No. 3,561,020. This application Sept. 22, 1970, Ser. No. 74,888
Int. Cl. F03c 1/18; F24c 15/10
U.S. Cl. 4—187 A **2 Claims**

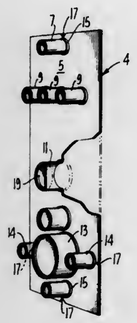


A clamping arrangement for fastening a drop-in device in an opening in a work surface. A trim, formed integrally with the drop-in device, overlies and extends generally parallel to the work surface. A threaded stud is permanently attached to and extends downwardly from the trim. A clamp member has first and second right angularly disposed legs with a hole in the second leg. The threaded stud extends through the hole and a nut is threaded on the stud, the nut being movable between clamping and unclamping positions. In moving to its clamping position, the nut causes the upwardly extending first leg to engage the trim and the second leg to engage the work surface.

3,701,172
PLUMBING INSTALLATION JIG

William F. McClenahan, 778 Burlway Road, Burlingame, Calif.

Filed March 31, 1971, Ser. No. 129,663
Int. Cl. E03d 11/00
U.S. Cl. 4—252 3 Claims

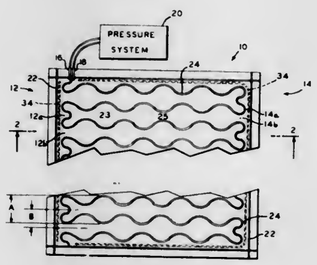


A plumbing installation jig is provided for the rapid installation of plumbing fixtures which is adaptable for either poured concrete or Gunite walls. The device includes a metal plate having a plurality of sleeves thereon having the correct size and configuration for the fixture to be mounted.

3,701,173
INFLATABLE BODY SUPPORT

John K. Whitney, Lenneys Lane, Orchard Park, N.Y.

Filed May 22, 1970, Ser. No. 39,661
Int. Cl. A47c 27/08
U.S. Cl. 5—349 6 Claims



An inflatable body support having sequentially expandable first and second banks of cells which comprise transversely extending fingers. Each of the finger cells have substantially the same effective diameter with a center to center distance, between a cell from the first bank and a cell from the second bank, which is less than said effective diameter.

3,701,174
QUILT AND CUSHION CONSTRUCTION AND BUTTON THEREFOR

Arthur J. Randolph, Santa Rosa, Calif., assignor to Tuftamatic, Inc., San Diego, Calif.

Filed Feb. 8, 1971, Ser. No. 113,514
Int. Cl. A44b 1/18
U.S. Cl. 5—356 9 Claims

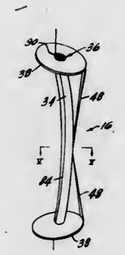


A button formed of male and female parts insertable through a quilt or cushion, the male part penetrating the female part and being locked in place when so inserted. Quilt or cushion constructed with such buttons.

3,701,175
HYDROPHONE DAMPER ASSEMBLY

James W. Widenhofer, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

Filed June 9, 1971, Ser. No. 151,269
Int. Cl. B63b 21/52, 51/02
U.S. Cl. 9—8 R 12 Claims



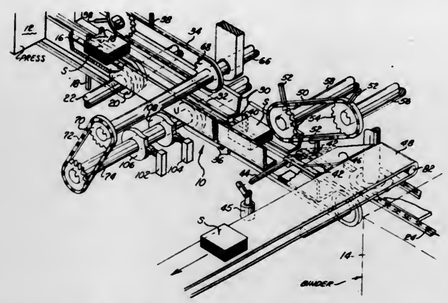
A damper for use in submerged hydrophone suspension systems including an elongated mass cylinder defined by a tube of flexible synthetic plastic film utilizing a check valve located at each end permitting water to enter the tube and preventing egress. Additionally, each tube end is provided with a disk transversely disposed to the tube length and of a diameter substantially greater than that of the tube to provide drag and hydrodynamic mass damping. The tube and disk are of a configuration to eliminate vortex shedding and the entire damper assembly is capable of being folded and packed within a concise configuration prior to deployment.

3,701,176
PRESS TO BINDER TRANSFER SYSTEM

James F. Procter, Milliken, Ontario, Canada; Henry R. Mebus; Robert J. De Young, and Joseph Coviello, all of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 29, 1971, Ser. No. 167,275
Int. Cl. B42c 19/00
U.S. Cl. 11—1 R 7 Claims

A transfer system for transferring collated signatures from a continuously operating collating press to a synchronously operating binder wherein a transfer conveyor means transfers the collated signatures from the press to the binder and a divert system is provided for diverting signatures from the transfer conveyor means when the binder is shut down thereby enabling the press to continue to operate. A synchronizing system is provided for re-starting the binder and establishing

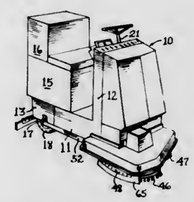


synchronism with the press and the transfer conveyor without stopping either the press or the transfer conveyor.

3,701,177
FRONT WHEEL DRIVEN FLOOR SCRUBBER

Leonard Meyer, Highland Park; Walter G. Ashton, Winnetka, and James E. Siegele, Mundelein, all of Ill., assignors to Star Industries, Inc., Chicago, Ill.

Filed April 22, 1971, Ser. No. 136,376
Int. Cl. A47l 11/16
U.S. Cl. 15—50 R 6 Claims

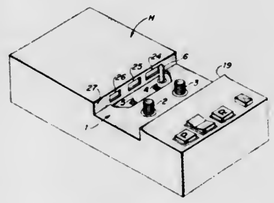


A battery-powered three-wheeled floor scrubber vehicle having a single steerable front drive wheel and a frameless body structure consisting of a series of interconnected tank members and a pair of hydraulically controlled floor scrubbing brushes and squeegee arrangement mounted forwardly of the front steerable drive wheel.

3,701,178
CASSETTE TAPE CLEANER

Jonathan C. Kuntz, 63 Elm St., North Reading, Mass.

Filed Dec. 2, 1970, Ser. No. 94,453
Int. Cl. A47l 5/38
U.S. Cl. 15—308 7 Claims

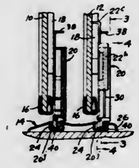


Apparatus for cleaning magnetic tape in a cassette has a plurality of scraping blades which project into the standard openings in the cassette when the cassette is inserted in the apparatus and a drive mechanism which engages the take-up reel in the cassette to pull the tape past the blades while a flow of air past the blades and away from the cassette removes the scrapings from the blades.

3,701,179
GUIDES FOR SLIDING DOORS

Arthur T. Cox, 18311 E. Railroad St., Industry, Calif.

Filed Sept. 30, 1971, Ser. No. 185,221
Int. Cl. A47h 15/00; E05d 13/02
U.S. Cl. 16—90 8 Claims

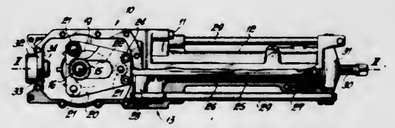


This invention pertains to hardware for installing framed door panels in a doorway to provide a sliding door installation. Door panels are framed with rails and stiles that are interconnected at the door corners by identical brackets. The brackets at the top corners of the doors are used to carry roller wheels that rest on upper trackways of the doorway and the brackets at the bottom corners of the doors are used to carry guides that guide the doors over the trackways of a threshold of the doorway.

3,701,180
DOOR CLOSER

Dietrich Jentsch, and Herbert Cleff, both of Ennepetal-Voerde, Germany, assignors to Dorken & Mankel KG, Ennepetal-Voerde, Germany

Filed July 2, 1970, Ser. No. 51,768
Claims priority, application Germany, July 10, 1969, P 19 34 912.3
Int. Cl. E05f 3/20
U.S. Cl. 16—55 6 Claims

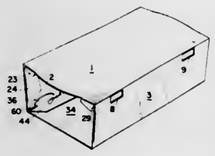


A closing device for doors and analogous structural elements has an elongated housing in which a slide is longitudinally movable in a predetermined path between a rest position and a working position. A biasing arrangement permanently urges the slide to its rest position and connecting means connects the slide with a structural element capable of moving between a closed and an open position so that the slide moves toward working position as the structural element moves away from its closed position. An elastomeric braking element is positioned in the path of the slide and serves to abuttingly engage the slide and brake the movement of the same in response to the slide approaching its working position.

3,701,181
PANEL INTERLOCKING MEANS AND METHOD

Joseph H. Lock, Mableton, Ga., assignor to The Mead Corporation

Filed Jan. 23, 1970, Ser. No. 5,271
Int. Cl. A44b 17/00, 19/00; B65d 5/10
U.S. Cl. 24—204 5 Claims



A pair of angularly related panels are interlocked by providing a plurality of locking slots formed along a fold line adjoining one edge of one of the panels and an associated guide panel together with a plurality of locking tabs foldably joined to an edge of the other panel. The slots are configured to extend into the guide panel and define entry tabs integral with the associated panel and the slots are arranged to extend into that panel along an angular fold line. When inserting the locking tabs into the associated locking slots the guide panel is first moved into normal relationship with respect to its associated panel and the other panel is bowed in such a way as to impart bodily rotation in sequence to the locking tabs whereby the dimension of the locking tab in the general direction of the locking slot is reduced following bowing to facilitate entry of the lock and the panel is restored to a planar condition upon completion of a locking operation so as to rotate the locking tabs sequentially to cause a larger dimension of the tab to become aligned with the general direction of the slot.

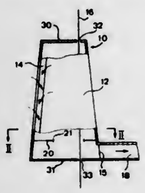
ERRATUM

For Class 24—117 see:
Patent No. 3,701,572

3,701,182
METHOD AND APPARATUS FOR TREATMENT OF AN ENDLESS FIBER STRAND OR THE LIKE

Hermann Gasser, and Hansruedi Hotz, both of Zurich, Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed July 27, 1970, Ser. No. 58,520
Claims priority, application Switzerland, July 30, 1969, 11583/69
Int. Cl. D06c 1/06
U.S. Cl. 28—59 12 Claims

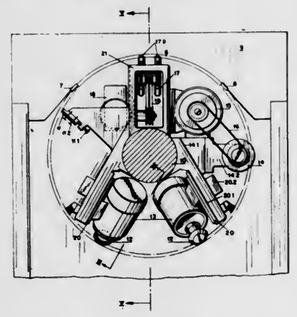


There is disclosed a method and apparatus for the treatment of an endless fiber strand by means of at least one gas current serving as a carrier medium, the direction of flow of this gas extending at an angle to the path of movement of the fiber strand, the gas current flowing past a section of predetermined length of the path of travel of the fiber strands. According to the invention a vortex or spin flow is imparted to the gas, the fiber strand being guided so as to pass near the axis yet outside of the core region through the vortex flow.

3,701,183
FINISHING UNIT FOR STEREO PLATES

Roland von Angerer, D-8702 Veitshochheim bei Wurzburg, and Witmar Gillig, D-8702 Hettstadt bei Wurzburg, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed May 22, 1969, Ser. No. 826,831
Claims priority, application Germany, June 20, 1968, P 17 61 648.7
Int. Cl. B23p 17/00
U.S. Cl. 29—21 7 Claims

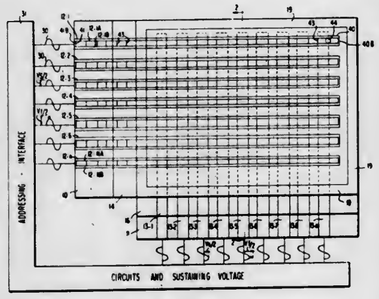


A finishing unit for stereo plates is provided. In one form, the curved stereo plate or plates are stationary and they are of such large radius that within the curvature there is not only mounted the plate feeding and delivery mechanism, the scraping knives, the severing tools, but also the milling cutters and their drives for producing internal lock-up grooves running in circumferential direction. The other form is the mounting of the curved stereo plates within a large radius cylinder that has rotating means while all the tools are mounted therewithin in a stationary manner.

3,701,184
METHOD OF INCREASING LIGHT TRANSMISSION EFFICIENCY OF GAS DISCHARGE DEVICE

John D. Grier, Temperance, Mich., assignor to Owens-Illinois, Inc.

Division of Ser. No. 812,801, April 2, 1969, Pat. No. 3,603,836. This application May 4, 1971, Ser. No. 140,223
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.16 8 Claims

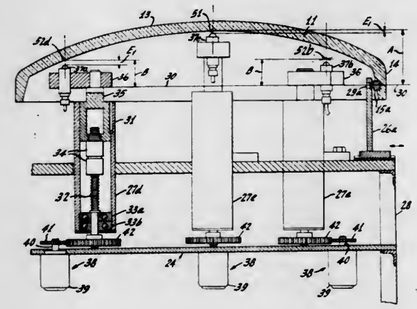


There is disclosed a method of increasing the light transmission efficiency of a gas discharge device and assuring the electrical continuity of non-transparent printed conductors in the device, the conductors comprising transversely oriented row and column conductor arrays. The conductors of a conductor array on a plate forming the viewing side of the device are formed by sets of coplanar conductor elements spaced apart so that when a discharge occurs, an observer sees more of the center of the discharge which would ordinarily be partially hidden by a solid conductive line on the viewing side of the device. Likewise the conductor elements of a set may be connected at regular intervals to provide a plurality of electrically parallel routes for conduction in case a section of a conductor element of a set is discontinuous. The gas discharge is more visible since the applied field between selected conductor elements is across two conductors which are not congruent as seen by the observer.

3,701,185
METHOD OF ASSEMBLING A MASK WITH A FRAME ASSEMBLY FOR MOUNTING IN A CATHODE-RAY TUBE USING A REMOTE ASSEMBLY POSITION

Marinus Van Renssen, Lancaster, Pa., assignor to RCA Corporation

Filed Jan. 18, 1971, Ser. No. 107,053
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.15 2 Claims



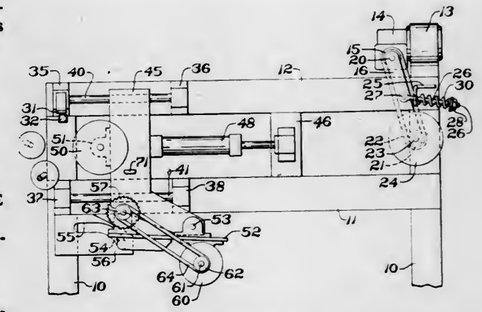
The method includes locating three frame-positioning points on a faceplate panel and measuring the panel contour at at least four spaced points on a circle of given radius at a first spacing with respect to the frame-positioning points. Then, at a remote location, (a) a frame assembly is oriented on three reconstructed frame-positioning points which are in substantially the same geometric relationship with respect to one another as are the frame-positioning points on the faceplate panel, (b) signals are generated related to the position of the measured contour of the panel, and (c) the signals are utilized to position four mask supports in substantially the same geometric relationship with respect to one another as are the measured contour points but at a second spacing with respect to the reconstructed frame-positioning points. Then, the contour of the mask is conformed to the contour established by the mask supports. With the mask conformed to the contour of the mask supports, the mask is permanently attached to the frame.

A particular embodiment of the method also includes measuring the contour of the faceplate panel substantially at the center of the panel, measuring the contour of the mask substantially at the center of the mask and adjusting the second spacing to obtain a desired center spacing between the mask and panel when the mask is mounted in the panel while maintaining the mask conformed to the contour established by the mask supports.

3,701,186
TRIMMING MACHINE

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,455
Int. Cl. B29h 7/22, 3/06
U.S. Cl. 29—33 A 13 Claims

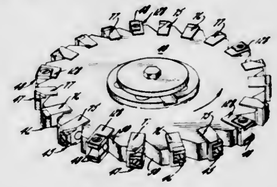


A trimming machine having a pair of cutters which trim the respective sides of a V-belt in cooperation with a retractable rotary cutter that operates on the smaller surfaces of the V-belt parallel surfaces when viewed in cross section, to provide a more uniform and a controlled dimensional core for a V-belt.

3,701,187
SLOTTING CUTTER AND INDEXABLE INSERTS THEREFOR

Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Dec. 15, 1970, Ser. No. 98,235
Int. Cl. B26d 1/00, 1/12
U.S. Cl. 29—95 20 Claims



Ribbed cutting inserts providing scalloped cutting edges are spaced angularly around the periphery of a supporting disk and are staggered relative to one another along the axis of the disk to remove laterally spaced chips from the bottom of the slot while the sides of the slot are face milled by side cutting inserts spaced angularly from the ribbed inserts.

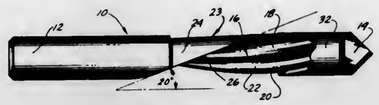
3,701,188
HELICALLY FLUTED ROUTER BIT

Harry W. Wall, Glendora, and Eugene W. Wall, Claremont, both of Calif., assignors to Wall Machine Works, El Monte, Calif.

Filed Jan. 14, 1971, Ser. No. 106,368
Int. Cl. B26d 1/12
U.S. Cl. 29—103 A 10 Claims

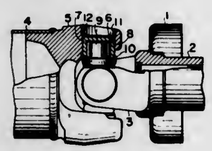
A router bit has an elongated cylindrical body with a closed helical flute having a concave wall surface merging into a convex wall surface. The width of the flute spans approximately half the circumference of the body, with the flute being formed by a single mill cut from a rotary mill cutter. A recess is formed in the unfluted portion of the body by holding the

body against the cutting edge of the rotary grinding wheel and rotating it so the recessed portion forms a substantially cylindrically curved peripheral relief wall encircling the body from



one edge to the other of the flute. The relief wall intersects the concave surface of the flute to form a helical cutting edge extending approximately 90° around the circumference of the relief wall.

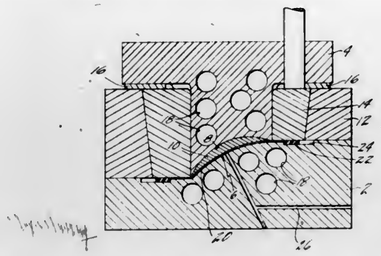
3,701,189
METHOD OF FIXING A BEARING CUP IN A HOOKE'S TYPE UNIVERSAL JOINT
Yoji Kadono; Yukio Ogasawara, and Keizo Kamo, all of Totota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed May 19, 1971, Ser. No. 144,749
Claims priority, application Japan, May 21, 1970, 45/42835
Int. Cl. B23p 11/00, 19/00
U.S. Cl. 29—148.4 A **7 Claims**



In securing a bearing cup in a hole in the yoke of a Hooke's type universal joint, another hole having a diameter slightly greater than the diameter of the bearing cup hole is drilled in the yoke concentric with the bearing cup hole and to a depth so that the bases of both holes are in a common plane. After inserting the bearing cup into its hole so that its end is spaced a short distance from the common plane of the bases of the holes, a tool having a diameter slightly greater than the diameter of the bearing cup hole is positioned within the other hole and is rotated while it exerts pressure against the surface of the yoke in the common plane of the bases of the holes for deforming the wall of the bearing cup hole inwardly between the common plane and the end of the bearing cup for securely fixing the bearing cup in place.

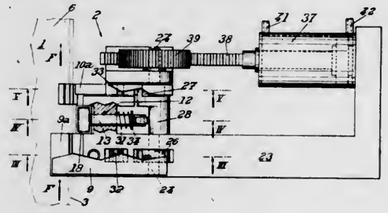
3,701,190
APPARATUS FOR AND THE METHOD OF COMPACTING AN IRREGULARLY SHAPED ARTICLE
Hilton F. Stone, Jr., Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed April 7, 1971, Ser. No. 131,968
Int. Cl. B21k 3/04
U.S. Cl. 29—156.8 **5 Claims**

An apparatus for use in and a method of compacting an article such as a fan or compressor blade made up of plies of a composite of high strength fibers in a metallic matrix with heat applied during the compacting in which a fluid pressure is ap-



plied to the article during the heating to assure a complete compaction and a removal of any voids in the article.

3,701,191
APPARATUS FOR ASSEMBLING A SLIDER ON A FASTENER STRIP
Leon Ker Laguerre, Boulogne-sur-Seine, France, assignor to Minigrip, Inc., Orangeburg, N.Y.
Continuation-in-part of Ser. No. 770,023, Oct. 23, 1968. This application Dec. 28, 1970, Ser. No. 101,581
Claims priority, application France, Jan. 12, 1970, 7000944
Int. Cl. B23p 19/04
U.S. Cl. 29—207.5 SL **13 Claims**

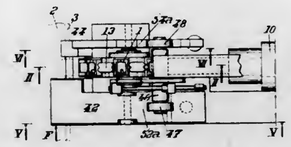


A device for installing sliders over the edge of continuous rib and groove type plastic fastener members with the sliders having a back and sides projecting downwardly and spaced closer together at a closing end to join the rib and groove fastener members and spaced further apart at an opening end to permit separation of the fastener members with a leg on the back at the opening end of the slider, installing means for moving a slider from an engagement location spaced from the fastener members to an installed position with the sides of the slider straddling the fastener members and the leg between the fastener members, and including first means holding the fastener members separated at the opening end of the slider and second means holding the fastener members together at the closing end of the slider.

3,701,192
MECHANISM FOR ASSEMBLING SLIDERS FOR INTERLOCKING FASTENER STRIPS
Leon Ker Laguerre, Boulogne-sur-Seine, France, assignor to Minigrip, Inc., Orangeburg, N.Y.
Continuation-in-part of Ser. No. 770,023, Oct. 23, 1968. This application Dec. 28, 1970, Ser. No. 101,582
Claims priority, application France, Jan. 26, 1970, 7002667
Int. Cl. B23p 19/04
U.S. Cl. 29—207.5 SL **14 Claims**

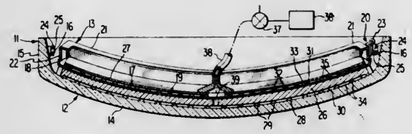
A mechanism for positioning sliders on releasably interlocking rib and groove flexible plastic fasteners which operates to clamp the fastener closed at a closing end of the

slider and hold the fastener with the profiles open at the opening end of the slider and press the slider from an engagement position onto the fastener to an operative position with the legs of the slider straddling the rib and groove closure. The mechanism includes a pusher with alternating movement from



a slider engaging position to a slider installing position wherein the pusher places the slider on the fastener strips and includes delivery means for bringing individual sliders to said slider engaging position and drive means operating the pusher and the delivery means in phase.

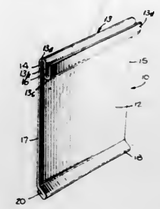
3,701,193
METHOD OF ASSEMBLING AND MOUNTING AN APERTURE MASK IN A MASK-PANEL ASSEMBLY OF A CATHODE-RAY TUBE USING A FULL SURFACE SPACER
Frank Rowland Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation
Filed March 5, 1971, Ser. No. 121,308
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.15 **8 Claims**



The method includes supporting a panel of a cathode-ray tube in a given position, placing on the inner surface of the faceplate a flexible spacer having a predetermined thickness related to the desired spacing q between an aperture mask to be assembled with the panel and the faceplate, and then, placing the mask against the flexible spacer. The spacer is forced against the inner surface of the faceplate and the mask is forced against the spacer. The mask, frame and frame supports are assembled and detachably mounted on the studs of the panel. In a particular form of the method, the mask is detachably mounted in the panel by welding the support members to the frame and by welding the mask to the frame while maintaining the mask conformed to the desired contour at the desired spacing q.

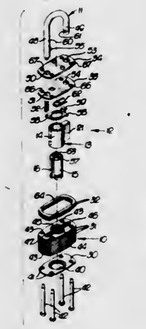
3,701,194
TOOL FOR ASSEMBLING DUCTS HAVING PITTSBURGH TYPE JOINTS
Erwin Richard Widman, 86-15 Elmhurst Avenue, Elmhurst, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,076
Int. Cl. B25b 27/14
U.S. Cl. 29—278 **3 Claims**

A tool for assembling sections of sheet metal duct. The tool includes a substantially flat body which is substantially vertically disposed during use and a horizontal top marginal edge in the form of a pair of vertically disposed reverse folds defining two laterally adjacent and longitudinally extending channels for receiving the respective parts of the duct being joined. A bottom marginal edge, parallel to the upper edge, is angularly disposed with respect to the body of the tool so that the forward and rearward ends of the tool body portion are spaced laterally away from the duct side wall to be conveniently



grasped by the fingers when repositioning the tool along the length of the duct section as the assembly and joining procedure proceeds.

3,701,195
METHOD OF KEYING A PADLOCK
Frank W. Russell, Whittier, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed April 23, 1971, Ser. No. 136,976
Int. Cl. B23p 19/00; B23q 17/00
U.S. Cl. 29—434 **5 Claims**

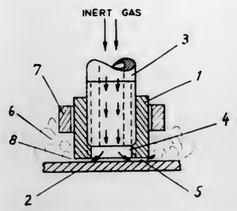


A series of sheet metal plates are formed into laminations and openings are provided in them so that when they are stacked together the openings form a chamber of such size and configuration that it snugly accommodates the housing of a key-actuated mechanism. The cylinder plug has a keyway formed in it of such cross-sectional shape that it can receive keys of a number of different kinds. Appropriate pin tumblers are matched to a selected key and the mechanism then assembled in the padlock made up of the laminations, with the laminations set in a convenient jig and riveted together by hand.

3,701,196
METHOD OF MAKING WELDED JOINTS
Wilhelm Kiesow, Hagen, and Gerhard Heuser, Dortmund, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Filed July 16, 1970, Ser. No. 55,395
Claims priority, application Germany, Aug. 21, 1969, P 19 42 572.0
Int. Cl. B23k 5/22, 31/02
U.S. Cl. 29—494 **5 Claims**

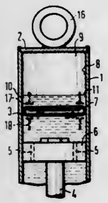
Method of making welded joints between metals of different heat conductivity, and which have a tendency to form intermetallic phases when contacted at high temperatures, such for

example as titanium and copper, and titanium and iron. The metal of the better heat conductivity is preheated and the



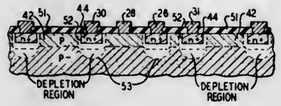
other metal is protected from premature heating by an inert gas stream. Both metals are separated from each other during preheating and that portion ahead of the welding zone.

3,701,197
METHOD OF PROVIDING A PARTITION WALL IN THE CYLINDER OF A TELESCOPIC SUSPENSION UNIT
Rudi Vers, Heindenfeld, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed May 11, 1971, Ser. No. 142,131
Claims priority, application Germany, May 14, 1970, P 20 23 578.3
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—522 **1 Claim**



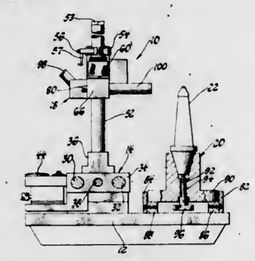
A radial partition wall member is fixedly installed in the cylinder cavity of a telescopic suspension unit by positioning the wall member in the cylinder and axially compressing a hollow bead along the edge of the wall member until it spreads radially into frictional clamping engagement with the inner cylinder surface. Application of this method to the construction of two suspension units is described.

3,701,198
MONOLITHIC INTEGRATED CIRCUIT STRUCTURES AND METHODS OF MAKING SAME
Vincent J. Glinski, Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 786,228, Dec. 23, 1968, Pat. No. 3,614,555. This application Aug. 14, 1970, Ser. No. 63,885
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **14 Claims**



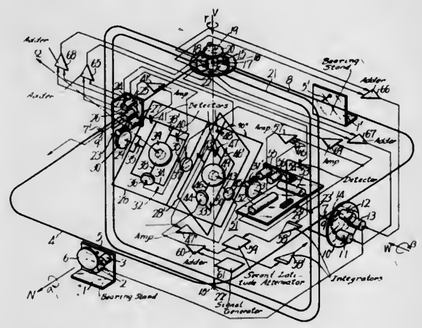
An annular PN junction in conjunction with a relatively high resistivity substrate enables improved means for isolating functional elements in a monolithic semiconductor integrated circuit. In a semiconductor wafer, localized emitter zones and collector zones extend to a common depth from the surface of the wafer. The collector zone is annular in shape and encloses laterally the emitter zone. The resistivities and spacings of the regions in the wafer are such that with the annular PN junction reverse-biased, the depletion region therefrom extends completely underneath the material enclosed by the annular zone and thereby provides electrical isolation for a functional element in the enclosed material.

3,701,199
BIAXIAL OPTICAL TOOL PRESETTER
Hubert G. Lewis, 28128 Independence, Farmington, Mich.
Filed April 9, 1970, Ser. No. 26,869
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **16 Claims**



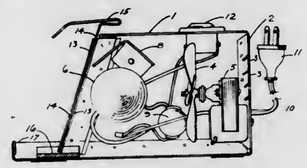
A biaxial optical tool presetting apparatus including a base, a pair of horizontal guide bars which slidingly support a horizontal carriage, a pair of vertical guide bars mounted on the horizontal carriage to slidingly support a vertical carriage, an optical sighting device carried by the vertical carriage, and a tool holder disposed adjacent the biaxial carriage arrangement to receive and hold a presetable tool in a substantially vertical orientation. The vertical carriage arrangement is provided with a fine tuning feature.

3,701,200
GYROSCOPIC INSTRUMENT
Takeshi Hojo, Fujisawa, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho, Tokyo, Japan
Filed April 8, 1970, Ser. No. 26,640
Claims priority, application Japan, April 15, 1969, 44/29579
Int. Cl. G01c *19/38*
U.S. Cl. 33—321 **1 Claim**



A gyroscopic instrument having a gyro platform pivotable about three shafts perpendicular to one another and defining a plane stable relative to inertial space and including means for holding the first shaft of the gyro platform substantially horizontal and means for generating a signal corresponding to the differential with respect to time of inclination of the gyro platform about the first shaft relative to a horizontal plane, and means for causing the gyro platform to rotate about a shaft perpendicular to the first shaft in response to the signal from the signal generating means.

3,701,201
MICROSCOPE SLIDE DRYER
James A. Drury, 1951 Benson Highway, Tucson, Ariz.
Filed Feb. 10, 1971, Ser. No. 114,227
Int. Cl. F26b *19/00*
U.S. Cl. 34—60 **6 Claims**



The dryer of the present invention comprises a substantially rectangular housing open at its front end and its rear wall is provided with one or more openings for the ingress of air. The front end is adapted to receive and hold in locked position a microscope slide tray, the locking being provided by a pair of slidably mounted legs carried by the front ends of the housing side walls. The upper ends of the legs are attached to a transverse shield. An electric fan is mounted in the rear portion of the housing and an electric light bulb, or other suitable heat source, is mounted in the upper portion of the front portion of the housing. A transverse heat and air baffle or shield is mounted intermediate the bulb and top of the housing.

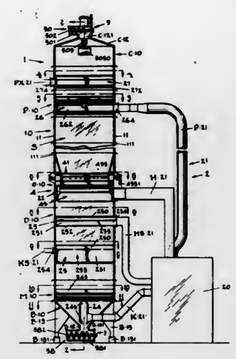
3,701,202
DISTRIBUTOR FOR LIQUID TEXTILE CONDITIONERS
Russel Edward Compa, 24 McClellan Terrace, West Orange, N.J., and Marvin Liebowitz, 14 Barlow Road, Edison, N.J.
Filed April 13, 1971, Ser. No. 133,613
Int. Cl. F26g *25/14*
U.S. Cl. 34—72 **3 Claims**



A distributor for liquid textile conditioners for use in combination with a dryer drum comprising an elongated container detachably secured to the drum. The container has a removable closure for filling of the container will a textile conditioning substance. The container has a series of outlet apertures thereon and is covered with a porous material for distributing the conditioning substance.

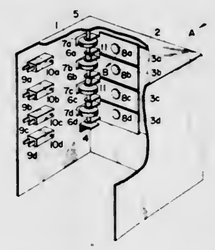
3,701,203
PARTICULATE MATERIAL DRYING APPARATUS
Robert J. Anderson, Toledo, Ohio, assignor to The Andersons, Maumee, Ohio
Division of Ser. No. 856,009, Sept. 8, 1969, Pat. No. 3,645,006. This application Nov. 22, 1971, Ser. No. 201,092
Int. Cl. F26b *7/00*, *17/12*
U.S. Cl. 34—170 **23 Claims**

An apparatus for drying particulate material, particularly that which like grain, has a critical degree of heat tolerance, while the material forms and moves through a bed of material,



utilizing a heated dry gaseous medium and passing the same to and in direct contact with the bed forming and traversing material.

3,701,204
EDUCATIONAL PROJECTOR HAVING MOVABLE SHUTTERS
Kozo Yamamoto, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 9, 1970, Ser. No. 79,565
Claims priority, application Japan, Oct. 11, 1969, 44/81421
Int. Cl. G09b *3/06*
U.S. Cl. 35—9 E **4 Claims**

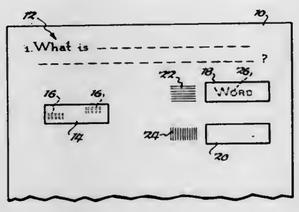


A projector in which a picture including a plurality of problems and answers is projected on a screen, but the answers are concealed from a viewer, the result of the choice being electrically detected at the same time as operating to reveal the answers.

3,701,205
RESPONSIVE ANSWER SYSTEM
Stanley Wolf, Pleasantville, N.Y., assignor to Docent Corporation, Pleasantville, N.Y.
Filed Sept. 27, 1971, Ser. No. 184,033
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 G **11 Claims**

A teaching device including a work sheet on which are visibly printed one or more outlined response areas in which a student is expected to write his answer to questions put to him. In addition, two or more feedback areas are visibly outlined on the same or a separate work sheet corresponding to each outlined response area. In a predetermined one of the feedback areas the correct answer is printed as an invisible image. The student writes his answer with a bullet point marker contain-

ing a chemical which makes the response visible. Writing the response also develops and makes visible segments of certain preprinted symbols or markings in the response area which identify to the student which feedback area contains the invisibly printed correct answer. The student may thereafter

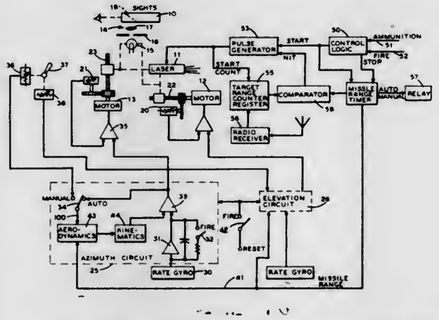


develop the invisible image in the identified feedback area to confirm the correctness of his own response. The latent symbols in the response area are randomly spaced to maximize the chance of being developed when any answer is written but to minimize the chance of being developed by only a few inconspicuous dots of the marking device in an attempt to cheat.

3,701,206
WEAPON TRAINING SYSTEMS

Peter Thomas Ormiston, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Feb. 24, 1970, Ser. No. 13,410
Claims priority, application Great Britain, Feb. 27, 1969, 10,663/69
Int. Cl. G09b 9/00; F41g 3/26
U.S. Cl. 35—25 **27 Claims**



A weapons-effect simulating system especially suitable for use with missile-launching weapons such as bazookas. The system includes sighting means for aiming the launcher at a target and a source of electromagnetic radiation having its orientation or direction changed with respect to the sighting means by generated signals applied to a control system coupling the sighting means and the source. Subsystem apparatus for generating the control signals include aerodynamic and kinematic simulation circuits; the output of the aerodynamic circuit representing the dynamic response of the simulated missile to, for example, changes in sidewise acceleration, and the output of the kinematic circuit representing, for example, random flight disturbances and crosswinds.

3,701,207
SCHIFFLI-EMBROIDERED PANEL AND KIT CONTAINING THE SAME

Erich Henry Conrad, Box 537, Weaverville, N.C.

Filed July 21, 1970, Ser. No. 56,924
Int. Cl. G09b 11/10
U.S. Cl. 35—26 **5 Claims**

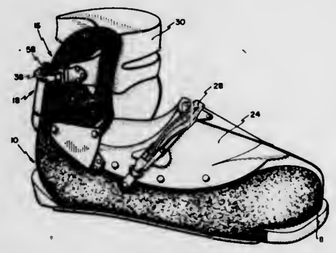


An ornamental article consisting of a fabric panel with a Schiffli-embroidered design formed thereon; the fabric being treated to reject fluid coloring material which is absorbable by the embroidery yarn. The design is embroidered in monocolored yarn and the coloring thereof is done as a do-it-yourself project by the purchaser of the panel. Commercially, such panel is packaged in a kit with the coloring materials, applicators, instructions, a frame and framing accessories for the panel.

3,701,208
SKI BOOT

Melvin W. Dalebout, 3661 Ceres Dr., Salt Lake City, Utah

Continuation-in-part of Ser. No. 726,094, May 2, 1968, Pat. No. 3,521,385, Continuation-in-part of Ser. No. 8,547, Feb. 4, 1970. This application July 16, 1970, Ser. No. 55,435
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **9 Claims**

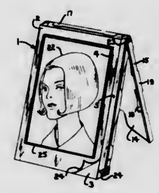


A ski boot which includes a low cut rigid oxford type lower shell having spaced sidewalls affixed to a sole, a rigid ankle cuff having sidewalls connected together in a spaced relationship with a rear connecting wall and secured to the sidewalls of the lower boot wherein the ankle of the individual using the boot passes through the open front portion of the ankle cuff when the boot is placed onto and removed from the individual's foot, and strap means connected to the opposite sidewalls of the ankle cuff across its open front end for securing the individual's ankle within the cuff. The sidewalls of the ankle cuff can be connected to the lower boot to pivot back and forth thereon in a direction substantially parallel with the longitudinal axis of the boot and at the natural pivot point of the individual's ankle.

3,701,209
METHOD OF FRAMING A PICTURE AND PRODUCT THEREOF

Earl W. Kobusch, 6001 Claremont, Kansas City, Mo.

Filed May 10, 1971, Ser. No. 141,867
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 **7 Claims**

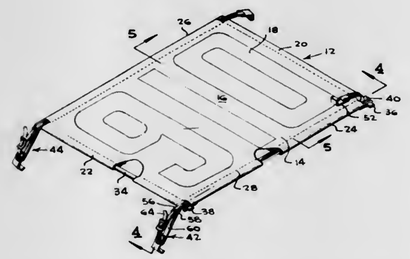


A photographic film pack container assembly is converted into a frame for photographs and the like by inserting the picture in the framing opening, maintaining the picture in position by the pack retainer, and securing the back cover to the assembly only at one end thereof and at an angle to the balance of the assembly, thereby providing leaning support for vertical pictures. In the alternative, pressure tines in the back cover are bent rearwardly, providing leaning support for horizontal pictures.

3,701,210
TEMPORARY VEHICLE MARKINGS

George E. Smith, Box 354, River Avenue, Island Heights, N.J.

Continuation-in-part of Ser. No. 855,478, Sept. 5, 1969, abandoned. This application June 9, 1970, Ser. No. 44,703
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C **3 Claims**



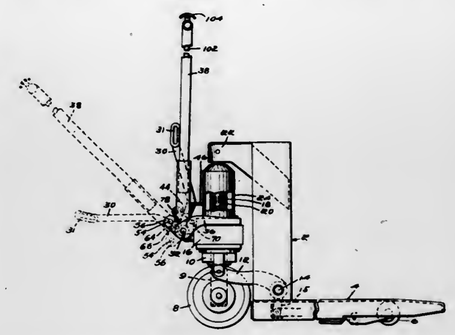
Identification means for vehicles, the identification means comprising indicia bearing panels with rigidifying slats adapted for temporary mounting on vehicle roofs, trunk deck lids, hoods, or the like, by adjustable straps.

3,701,211
MEANS FOR CONTROLLING PALLET TRUCK FOOT PEDAL POSITION

Eric Best, Welland, Ontario, Canada, assignor to Hyster Company, Portland, Oreg.

Filed Nov. 4, 1969, Ser. No. 873,821
Int. Cl. B62d 21/18
U.S. Cl. 280—43.12 **9 Claims**

In a hand operated hydraulic type pallet truck, means actuated by limited downward swinging movement of the truck handle from vertical position to cause a pivoted foot treadle originally in a position substantially parallel to the handle to



swing downwardly through a greater arc to a position where the operator may readily place his foot thereon to actuate the hydraulic truck lifting means.

3,701,212
SALT WATER SINKER

Joe L. Gilliam, Tampa, Fla., assignor to Mary E. Melvin

Filed Jan. 15, 1970, Ser. No. 3,172
Int. Cl. A01k 95/00
U.S. Cl. 43—44.87 **6 Claims**



A sinker designed to be attached to a fishing line or leader comprising a base having a crown arranged in partially spaced relation thereto by means of an elongated slot formed between the crown and the base. A pair of locking arms are also integrally attached to the base and positioned in overhanging relation to the crown. Each of the arms further include an arm slot co-axially aligned with the elongated slot in the crown such that all of the slots are positioned to slidingly engage the line or leader on which the sinker is mounted. Both arms and the crown can be crimped over the respective slots into engagement with the base to prohibit relative movement of the sinker to the line or leader.

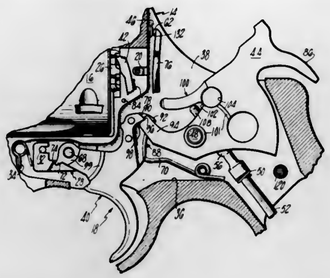
3,701,213
REVOLVER FIRING MECHANISM WITH SINGLE ACTION AND DOUBLE ACTION MOVEMENT

Karl R. Lewis, Wethersfield, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed March 18, 1969, Ser. No. 843,869
Int. Cl. F41c 1/00
U.S. Cl. 42—65 **5 Claims**

A firing mechanism incorporating an improved sear nose on a trigger providing both single and double action movements, a single leaf spring positioning both a hand and a connector during such movements, a detachable sideplate having a recess providing a connector guide surface, and a depressible hammer strut having an integral hub bearing portion pivotally supported in captured relation to the hammer. A multi-func-

tion fastener arrangement removably secures the sideplate to the frame and provides for locating stocks in relation to the

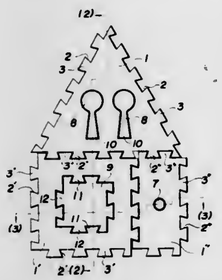


frame before attachment, as well as maintaining them against unintended displacement relative to the frame after attachment.

ERRATUM

For Class 43—44 see:
Patent No. 3,701,212

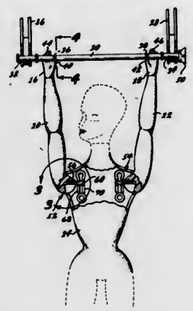
3,701,214
FLEXIBLE, SOFT, FOAM RESIN ASSEMBLING PIECES
Tsuneo Sakamoto, Tokyo, Japan, assignor to Kyoikushuppan Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1970, Ser. No. 100,663
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **3 Claims**



Assembling of toys in which, assembling pieces are obtained by cutting soft, flexible, elastic, foam synthetic resin material in suitable shapes, and more particularly to such toys wherein circumferential margin of said assembling pieces are cut off at a certain interval in such a manner that a cut-off portion and a setting protrusion, whose shape conforms to that of said portion, alternate with each other, and inlaying pieces are punched or cut out from the assembling pieces.

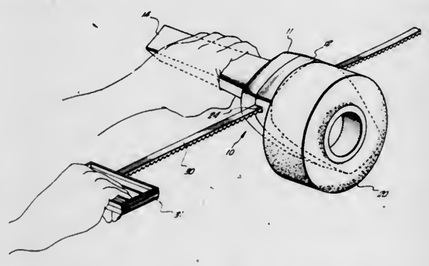
3,701,215
DOLL LIMB JOINT FOR SELECTIVELY ALLOWING FREE ROTATION OF LIMB OR RESISTING SAME
Gabriel Marason, Jr.; Austin C. Ma, both of Los Angeles, and Brian G. Osborne, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 5, 1971, Ser. No. 186,626
Int. Cl. A63h *3/46, 13/12*
U.S. Cl. 46—163 **4 Claims**

A trapeze apparatus and doll wherein the doll may be played with independently of the trapeze apparatus and it then has a natural appearance and poseable arms. The trapeze has a rotatably mounted bar with a pair of holes for receiving thumbs of the doll hands so that the slightly cupped hands of the dolls can partially encircle and hold onto the bar, the doll hands having a natural appearance when the doll is played with independently of the trapeze. The doll arms have connectors joining them to the doll body, which can be snapped



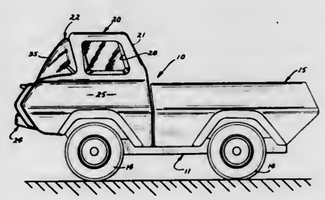
between a first position for free swinging of the arms on a trapeze and a second position for resisting swinging to enable posing of the arms. Each connector includes a shaft with an enlarged end that can be held in a swivel joint on the body wherein the arm bears against part of the body to prevent swinging, or that can be unsnapped outwardly to another position wherein the inner end of the arms do not contact the body and therefore are free to swing.

3,701,216
WHEEL APPARATUS AND RACK AND PINION LAUNCHER ENABLING REPEATED STROKES AND HAVING AUTOMATIC EJECTOR
Jay Smith, III, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Lawrence T. Jones, Pacific Palisades, all of Calif., assignors to California R & D Center, Palisades, Calif.
Filed Dec. 22, 1971, Ser. No. 210,730
Int. Cl. A63h *1/04*
U.S. Cl. 46—206 **22 Claims**



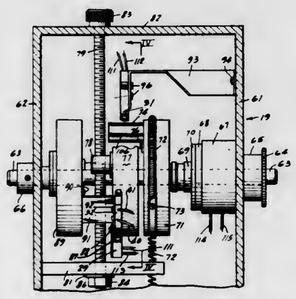
A toy apparatus is disclosed in which a launcher is utilized to propel a wheel. The launcher comprises an output shaft upon which the wheel is mounted. The shaft is rotatably driven by a gear train with the input gear thereof being connected to a slidable gear rack. The gear rack is hand manipulated to slide within a guideway formed in the launcher. The input gear is floatingly mounted within the launcher to positively drive the gear train in the forward direction, when the gear rack travels in one direction along the guideway, and to move out of engagement with the gear train when the gear rack moves in the other direction along the guideway. This uncoupling movement enables the gear rack to repeat its drive cycle while the gear train is still moving in the forward direction. In this manner, the gear rack need not be completely withdrawn from the guideway to repeat its drive cycles. These repeated drive cycles greatly increase the rotational speed of the output shaft before actual launching. A wheel ejector is pivotally mounted adjacent the output shaft and is slidingly coupled to the gear rack to pivot and force the wheel off of the shaft when the gear rack is finally withdrawn completely from the guideway.

3,701,217
TOY VEHICLE CAB ASSEMBLY
Douglas S. Jensen, Mound, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed June 7, 1971, Ser. No. 150,583
Int. Cl. A63h *17/26*
U.S. Cl. 46—222 **2 Claims**



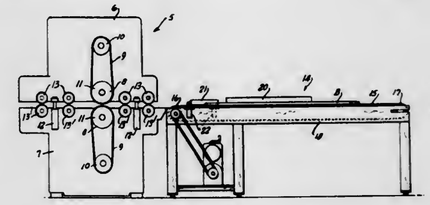
A toy vehicle cab having an open front outer cab shell mounted on a vehicle chassis, a passenger compartment assembly comprising a window forming bubble of transparent material, a seat insert within the bubble, and a grill member locking the insert within the bubble so that said assembly may be inserted as a unit rearwardly into the shell through the open front thereof, and said grill member having latch means for automatically locking the assembly in the shell. The structure also provides for partial automatic locking of the cab shell to the chassis.

3,701,218
SPRAY TYPE ROW CROP THINNER
Melvin E. Priest, Caldwell, Idaho, assignor to Deere & Company, Moline, Ill.
Filed Aug. 7, 1969, Ser. No. 848,161
Int. Cl. A01b *41/00*
U.S. Cl. 47—1.43 **9 Claims**



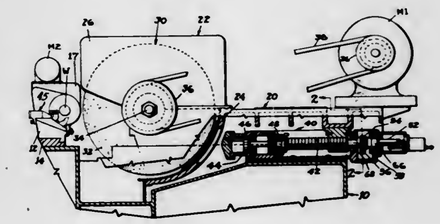
An agricultural machine which is moved along the ground over a row of plants and which has a plant detecting means for sensing the presence of the plants and which controls a herbicide sprayer so as to selectively destroy plants in the row. The distance of plants left and the distance of plants destroyed may be adjusted.

3,701,219
APPARATUS FOR EFFECTING SUPERIOR SANDING
Lambert S. Sternal, Wayzata, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.
Division of Ser. No. 71,546, Sept. 11, 1970, Pat. No. 3,654,738, which is a continuation-in-part of Ser. No. 860,860, Sept. 25, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 217,741
Int. Cl. B66c *23/60*
U.S. Cl. 51—140 **6 Claims**



A sanding machine with complementary upper and lower sanding heads which have fast moving abrasive belts trained about and constantly shifted edgewise along superimposed contact drums between which the work is fed in a manner whereby the parallel narrow zones of work performing engagement of the abrasive belts with the opposite sides of the work extend at an oblique angle of not more than 75° to the lengthwise dimension of the work.

3,701,220
ELECTRIC FEED FOR MACHINE ELEMENT
George E. Wespi, Holden, Mass., assignor to Norton Company, Worcester, Mass.
Filed Aug. 3, 1970, Ser. No. 60,288
Int. Cl. B24b *49/10*
U.S. Cl. 51—165.74 **20 Claims**

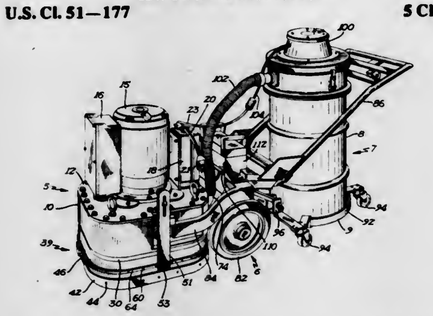


For a movably mounted element of a machine, an automatic feed, electrically energized and driven, including an electric pulse motor connected to produce sequential equal incremental movements of the movably mounted element and electrical control means therefor featuring a constant frequency pulse generator producing a continuous series of electrical impulses, frequency dividers converting the constant frequency electrical impulses into selected different frequencies of electrical impulses, an automatic control system with adjustable means to initiate and to terminate the application of series of electrical impulses to the electric pulse motor in the directional sense and at the frequencies required to produce a predetermined precise movement, wherein the automatic feed may include an electric pulse motor comprising an electric stepping motor and an hydraulic motor selectively operable alone to displace the movably mounted element and automatically operative with and to assist the electric stepping motor.

3,701,221
DRY GRINDING TERRAZZO FLOOR FINISHING MACHINE

Frank P. Vinella, 6732 Pillsbury Avenue, Minneapolis, Minn.

Filed April 7, 1971, Ser. No. 132,147
Int. Cl. B24b 23/00, 55/06
U.S. Cl. 51—177 5 Claims

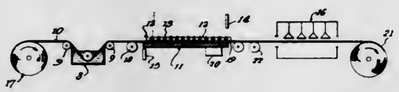


The invention relates to a machine for the dry grinding of terrazzo floors and particularly to the utilization of a vacuum cleaner attachment for the collection and control of dust raised during the grinding operation. This dust comprises fine particles ground from the floor, sand used for dressing the grinding stones and small particles worn from the grinding stones. A chamber of the machine in which the grinding stones are disposed has a vacuum pick-up head and the chamber is formed in part by a loose fitting skirt assembly which is resiliently biased in a downwardly direction. A wear shroud forming the lower part of the skirt assembly is biased into firm engagement with the floor and adjustable vent plates are provided for controlling the flow of air through the chamber. The dust collecting assembly for the machine comprises a drum unit mounted on a wheeled cart which is closely coupled to the machine so that the drum unit is within the lateral confines of the handle of the machine.

3,701,222
CONTINUOUS SHEET GRAINING PROCESS

Reno J. Testolin, Wheaton, Ill., assignor to The Richardson Company, Melrose Park, Ill.

Division of Ser. No. 019,794, March 16, 1970, Pat. No. 3,643,379. This application Dec. 13, 1971, Ser. No. 207,669
Int. Cl. B24b 31/06
U.S. Cl. 51—317 12 Claims



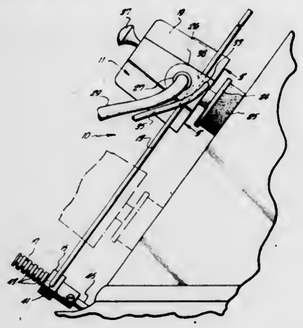
This invention relates to the graining of metal sheet especially of the type employed as the supporting base for lithographic printing plates. More particularly, this invention relates to the continuous ball graining of such metal sheet and processes for effecting such continuous ball graining.

3,701,223
GLASS REFINISHING APPARATUS

Jack Cole, 11646 Cherrylee, El Monte, Calif., and John Robert McIntosh, 13903 Nolandale, Valinda, Calif.

Filed Feb. 5, 1971, Ser. No. 112,967
Int. Cl. B24b 19/00, 7/02, 7/24
U.S. Cl. 51—241 S 13 Claims

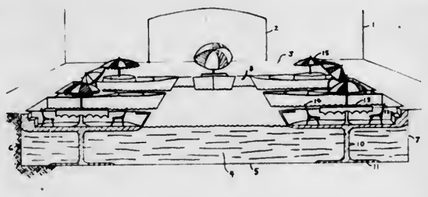
A glass refinishing apparatus is disclosed in which a hydraulically driven buffer is slidably and pivotally guided over the exterior surface of an automobile windshield to produce a smooth and polished finish thereon. The buffer is rotatably mounted on a motor housing that is adapted to be manipulated manually. The motor housing is slidably mounted on a pair of guide rods to enable the buffer to axially traverse along the lengths thereof. The bases of the guide rods are connected to a support arm which in turn is pivotally mounted on a fulcrum. In one embodiment, the fulcrum is adapted to be mounted on the studs located on the automobile which normally support the windshield wipers. This construction enables the buffer to traverse the windshield in an arc similar to the traversal of the windshield wiper. In a second embodiment, the fulcrum is adapted to be mounted on a pair of suction cups in order to be universally mounted on or near any glass surface.



3,701,224
RESTAURANT ARRANGEMENT INCLUDING DINING TABLES ON SIMULATED BOATS

Edna G. Mozier, Box 2493, Charlotte, N.C.

Filed Feb. 12, 1971, Ser. No. 114,965
Int. Cl. E04b 3/16
U.S. Cl. 52—27 3 Claims



A dining area for a restaurant comprises a body of water and a plurality of platforms such as simulated boats disposed thereon and accessible by diners, each platform supporting facilities for individual dining parties.

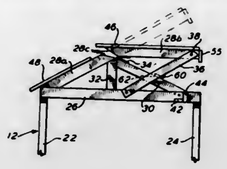
3,701,225
ROOF STRUCTURE WITH STATIONARY AND MOVEABLE SHEATHED SECTIONS

Elmer W. Perry, 31 Fawn Lane, Watchung, N.J.

Filed March 2, 1970, Ser. No. 15,325
Int. Cl. E04b 7/16
U.S. Cl. 52—71 6 Claims

A truss supported roof structure in substantially completed

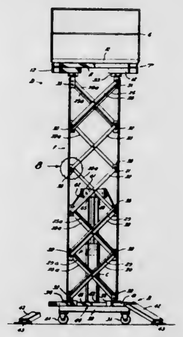
form in which a portion of the upper end thereof is hinged and provided with adjustable supporting means whereby said hinged portion may be adjusted to a lowered position for shipment and raised to final position at the erection site.



3,701,226
ADJUSTABLE POSITIONABLE STRUCTURAL DEVICE

Junius H. Fulcher, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 20, 1971, Ser. No. 108,094
Int. Cl. E04g 1/22
U.S. Cl. 52—109 3 Claims



A structural device composed of lazy-tong frame members is adjusted to different positions by an enclosed piston, which exerts a force upon the structure in a location providing improved stability in the device while the position is being adjusted. Stabilizer arm members situated substantially parallel to the lazy-tong frame members assist in overcoming twisting forces, and consequent lateral movement, created when the position is being adjusted. The lazy-tong frame members and stabilizer arms are mounted at their ends to angle iron corner members which prevent the structure from locking up when such structure is in a collapsed position. Adjustable tension spring loading is provided at the mounting between the lazy-tong frame members and the angle iron corner members, to assist in overcoming and neutralizing inertia and friction in the structure.

3,701,227
PRESSURE TANK FOR A NUCLEAR REACTOR

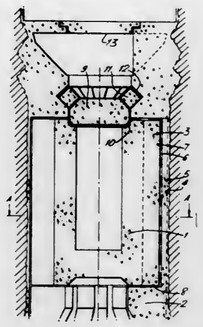
Rolf Johan Lenschow, Trondheim, Norway, assignor to Institutt for Atomenergi, Kjeller, Norway

Filed Feb. 27, 1970, Ser. No. 15,092
Claims priority, application Norway, Feb. 27, 1970, 826/68
Int. Cl. E04c 3/10
U.S. Cl. 52—224 12 Claims

The invention generally relates to a concrete pressure tank, particularly for a nuclear reactor, which is mounted in a rock shaft and prestressed by means of jacks disposed between the tank and shaft walls, in order to transfer prestressing forces to the tank from the surrounding rock.

A horizontal prestressing of the above type may be combined with a conventional vertical prestressing by means of vertical prestressing cables, or even the vertical prestressing may be accomplished in the above manner by means of jacks bearing against a filler load on the top of said tank in the shaft.

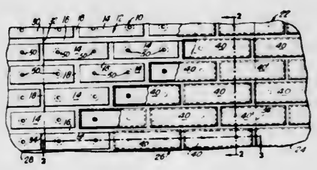
Said jacks are preferably of a membrane type adapted to be disposed in intervening slots between ribs, moulded either on the external tank wall or the internal shaft wall, and the opposing cylindric inner shaft or outer tank wall, respectively.



3,701,228
DECORATIVE WALL FACING

Frank Taylor, 1319 Bernie St., LaSalle, Quebec, Canada

Filed Nov. 5, 1970, Ser. No. 87,161
Claims priority, application Canada, July 23, 1970, 35,782/70
Int. Cl. E04f 13/18
U.S. Cl. 52—309 6 Claims



A simulated brick wall composed of backing panels having retaining means in the form of apertures or adhesive onto which is applied a plurality of discrete brick facings, each of the facings has a peripheral rearwardly extending flange which is adapted to simulate the sides of a brick and including cooperating means for cooperating with the adhesive or apertures to retain the brick facings in position.

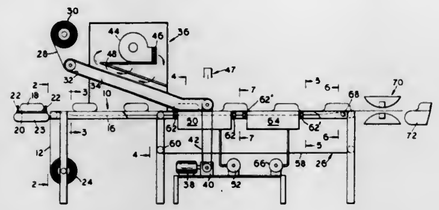
3,701,229
METHOD AND APPARATUS FOR SKIN-PACKAGING ARTICLES BETWEEN FILM-ON-FILM

Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Filed Feb. 19, 1971, Ser. No. 116,769
Int. Cl. B65b 31/04
U.S. Cl. 53—22 A 11 Claims

There is provided a continuous motion skin-packaging machine and method for the production of air-evacuated see-

through film-on-film packages of products. One of the film layers is softened by heat and is contoured around the

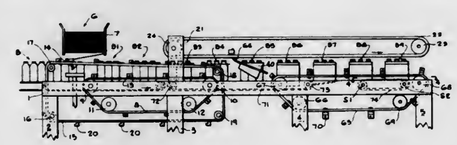


product. Also, provision may be made for the introduction of an inert fluid, for example, nitrogen, into the package after the removal of air therefrom.

3,701,230
PACKAGING MACHINE

Hermond G. Gentry, Atlanta, Ga., assignor to The Mead Corporation

Continuation of Ser. No. 41,743, June 6, 1970, abandoned, which is a continuation of Ser. No. 706,327, Feb. 19, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,726
Int. Cl. B65b *11/10*
U.S. Cl. 53—48 **3 Claims**



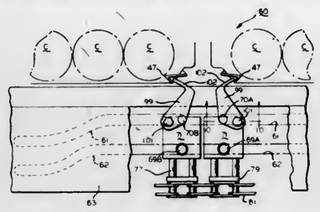
A machine for securing a wrapper about a group of articles to be packaged incorporates means for moving the article sin groups along a predetermined path, means for withdrawing wrapper blanks from a hopper and for depositing such blanks atop successive groups of articles and for folding each blank about its associated group of articles in such manner that its bottom lap panels are disposed below the group of articles and conveyor means having a plurality of transversely disposed rods is utilized to support transversely reciprocable blank tightening elements together with blank locking means in the form of support blocks each of which in turn supports a pivotally mounted locking element arranged to engage a fixed cam whereby pivotal locking movement is imparted thereto. In order to withdraw each locking element following completion of a locking operation, a retracting cam is arranged to engage a part of the locking element and to effect withdrawal thereof.

3,701,231
MECHANISM FOR FORMING GUSSET FOLDS IN CONTAINER WRAPPERS

Wendell E. Standley, Lake Forest, Ill., assignor to Container Corporation of America, Chicago, Ill.

Continuation of Ser. No. 2,232, Jan. 12, 1970, abandoned. This application Aug. 25, 1971, Ser. No. 174,984
Int. Cl. B65b *11/08, 21/24*
U.S. Cl. 53—48 **18 Claims**

Mechanism for forming gusset folds in container wrappers which are formed about a moving group of containers. The gusset folds are formed in gusset panels and are employed to stabilize the position of the endmost containers of the wrapped group, and are formed as the wrapper blank moving with the group is wrapped therearound. The mechanism includes a cam and cam follower mechanism so configured that the tip of the folding member at all times engages a fold line of

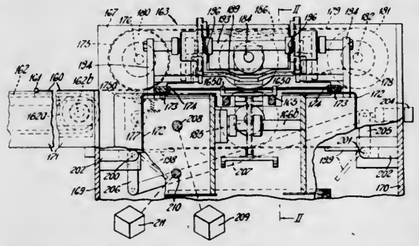


the gusset panel of the wrapper blank, irrespective of the movement of the gusset panel during the folding of same.

3,701,232
ARTICLE INSERTION DEVICES

David George Parker, 21 Westhall Road, Warlingham, England, assignor to Masson Scott Thrissell Engineering Ltd., Bristol, England

Filed May 5, 1971, Ser. No. 140,506
Int. Cl. B65b *5/04, 43/30*
U.S. Cl. 53—187 **8 Claims**

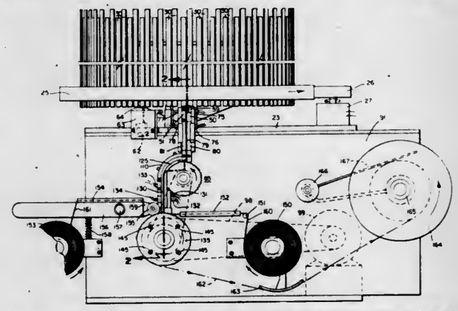


A record and an open ended bag are conveyed along different paths at right angles to each other, but in the same plane, insertion of the record into the bag taking place at the intersection of the paths. As the bag is being conveyed it passes between a pair of rotatable eccentric suction rollers which grip the front and back faces of the bag respectively and cause the bag to be opened as the surfaces of the rollers move apart, due to the rotation of the rollers.

3,701,233
COMPONENT SEQUENCING AND TAPING MACHINE

Franklin P. Luckman, Jr., 1905 Acorn Lane, Abington, Pa.

Filed Dec. 16, 1970, Ser. No. 98,581
Int. Cl. B21f *1/02*; B65b *13/02*
U.S. Cl. 53—198 **9 Claims**



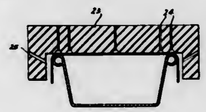
A component sequencing and taping machine including a rotatable taping head having a notched cylindrical portion to

which adhesive tapes and components are supplied, and a non-resilient roller for applying pressure to the tapes and the component leads to press them into said notches. The machine also includes improved means for dispensing components in sequence and supplying them to the taping head, means for insuring proper orientation of components as they are removed from dispenser, and improved means for straightening leads of the components before supplying them to the taping head.

3,701,234
APPARATUS FOR MAKING A CLOSURE ON A CONTAINER

Martin M. Sternau, Flushing, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 665,419, Sept. 5, 1967, abandoned, which is a continuation of Ser. No. 591,628, June 15, 1956. This application March 12, 1971, Ser. No. 123,856
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 **2 Claims**

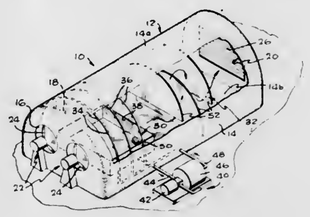


An apparatus for forming covers of heat shrinkable material on dish-shaped containers comprising means for maintaining a film cover on a container, means for gathering the edge of the film extending beyond the edge of the container into a skirt and heat sealing means adjacent to the support to heat shrink the gathered edge of the film.

3,701,235
METHOD OF AND APPARATUS FOR TREATING A GAS TO REMOVE FOREIGN CONSTITUENTS THEREFROM

Boris Isaacson, 14532 Vanowen, Van Nuys, Calif.

Filed Oct. 26, 1970, Ser. No. 83,735
Int. Cl. B01d *47/06*
U.S. Cl. 55—84 **6 Claims**

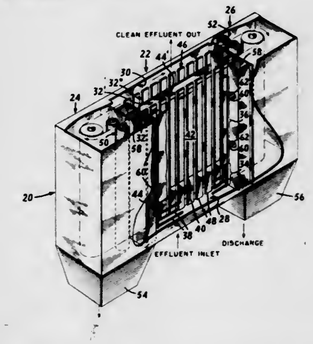


A method of and apparatus for treating a gas to remove foreign constituents from the gas by inducing flow of the gas through and inflatable treatment chamber constructed of a thin plastic film in a manner such as to effect inflation of the chamber by gas pressure, and washing, drying, and or otherwise treating the gas during its flow through the chamber to remove the foreign constituents for the gas. Primary applications of the invention involve the treatment of atmospheric air to remove therefrom dust, smog, fog, and or other foreign constituents. In these primary applications, the inflatable treatment chamber may be installed on level ground, on building tops, in natural or artificial ravines, such as washes or storm drains, or in natural or artificial tunnels, such as sewer tunnels having openings to the atmosphere.

3,701,236
MODULARIZED ELECTROSTATIC PRECIPITATOR

Bernard A. Rotsky, Oakland, and Gilbert M. Dunne, Jr., Sparta, both of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.

Filed Dec. 1, 1970, Ser. No. 94,033
Int. Cl. B03c *3/10*
U.S. Cl. 55—114 **32 Claims**

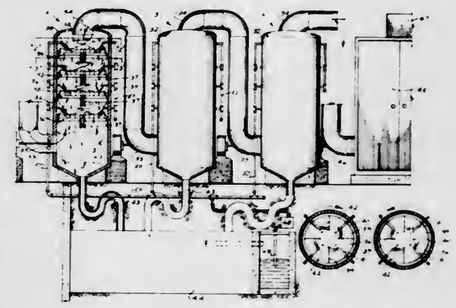


A self-contained electrostatic precipitator module adapted to be inserted into and removed from a housing as a unitary assembly includes a slatted, endless belt defining a composite attractor electrode-collector electrode subassembly, a forced air system for cooling and cleaning electrode holder structures, a power supply for establishing the charging and precipitating fields, a drive motor and train and mounting system for moving the endless belt, and rotary brushes at a remote location for neutralizing and cleaning the belt. The belt slats are flat, rigid members of simplified design and are individually mounted to allow selective replacement of a local belt section. Insulating gaps of optimized configurations are provided around high-potential electrode holders to prevent electrical shorting or sparking. Increased capacity is readily obtainable by employing plural units arranged in parallel within a common housing.

3,701,237
SMOKE ELIMINATOR

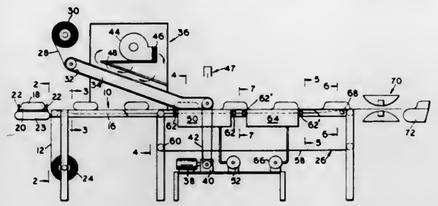
Harry A. Smuck, 6050 Ritchie Highway, Anne Arundel County, Md.

Continuation of Ser. No. 12,763, Feb. 19, 1970, abandoned. This application March 10, 1972, Ser. No. 233,808
Int. Cl. B01d *45/10*
U.S. Cl. 55—230 **1 Claim**



A gas scrubber and purifier for the exhaust gases from incinerators, furnaces and the like, the exhaust gases being forcibly passed through water curtains and sprays produced by revolving discs which throw water by centrifugal force

through film-on-film packages of products. One of the film layers is softened by heat and is contoured around the

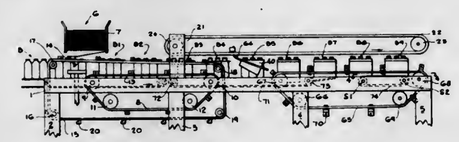


product. Also, provision may be made for the introduction of an inert fluid, for example, nitrogen, into the package after the removal of air therefrom.

3,701,230
PACKAGING MACHINE

Hermond G. Gentry, Atlanta, Ga., assignor to The Mead Corporation

Continuation of Ser. No. 41,743, June 6, 1970, abandoned, which is a continuation of Ser. No. 706,327, Feb. 19, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,726
Int. Cl. B65b *11/10*
U.S. Cl. 53—48 **3 Claims**



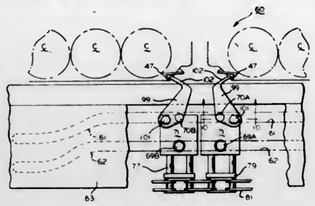
A machine for securing a wrapper about a group of articles to be packaged incorporates means for moving the article sin groups along a predetermined path, means for withdrawing wrapper blanks from a hopper and for depositing such blanks atop successive groups of articles and for folding each blank about its associated group of articles in such manner that its bottom lap panels are disposed below the group of articles and conveyor means having a plurality of transversely disposed rods is utilized to support transversely reciprocable blank tightening elements together with blank locking means in the form of support blocks each of which in turn supports a pivotally mounted locking element arranged to engage a fixed cam whereby pivotal locking movement is imparted thereto. In order to withdraw each locking element following completion of a locking operation, a retracting cam is arranged to engage a part of the locking element and to effect withdrawal thereof.

3,701,231
MECHANISM FOR FORMING GUSSET FOLDS IN CONTAINER WRAPPERS

Wendell E. Standley, Lake Forest, Ill., assignor to Container Corporation of America, Chicago, Ill.

Continuation of Ser. No. 2,232, Jan. 12, 1970, abandoned. This application Aug. 25, 1971, Ser. No. 174,984
Int. Cl. B65b *11/08, 21/24*
U.S. Cl. 53—48 **18 Claims**

Mechanism for forming gusset folds in container wrappers which are formed about a moving group of containers. The gusset folds are formed in gusset panels and are employed to stabilize the position of the endmost containers of the wrapped group, and are formed as the wrapper blank moving with the group is wrapped therearound. The mechanism includes a cam and cam follower mechanism so configured that the tip of the folding member at all times engages a fold line of

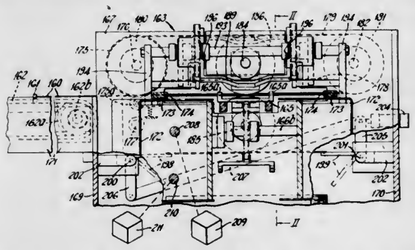


the gusset panel of the wrapper blank, irrespective of the movement of the gusset panel during the folding of same.

3,701,232
ARTICLE INSERTION DEVICES

David George Parker, 21 Westhall Road, Warlingham, England, assignor to Masson Scott Thrissell Engineering Ltd., Bristol, England

Filed May 5, 1971, Ser. No. 140,506
Int. Cl. B65b *5/04, 43/30*
U.S. Cl. 53—187 **8 Claims**

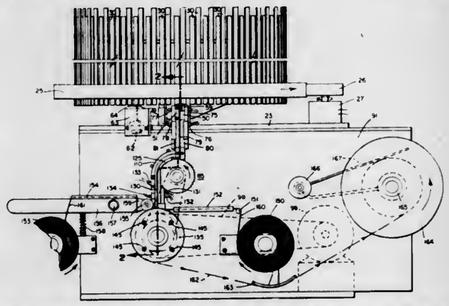


A record and an open ended bag are conveyed along different paths at right angles to each other, but in the same plane, insertion of the record into the bag taking place at the intersection of the paths. As the bag is being conveyed it passes between a pair of rotatable eccentric suction rollers which grip the front and back faces of the bag respectively and cause the bag to be opened as the surfaces of the rollers move apart, due to the rotation of the rollers.

3,701,233
COMPONENT SEQUENCING AND TAPING MACHINE

Franklin P. Luckman, Jr., 1905 Acorn Lane, Abington, Pa.

Filed Dec. 16, 1970, Ser. No. 98,581
Int. Cl. B21f *1/02*; B65b *13/02*
U.S. Cl. 53—198 **9 Claims**



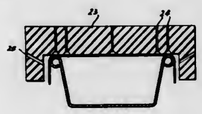
A component sequencing and taping machine including a rotatable taping head having a notched cylindrical portion to

which adhesive tapes and components are supplied, and a non-resilient roller for applying pressure to the tapes and the component leads to press them into said notches. The machine also includes improved means for dispensing components in sequence and supplying them to the taping head, means for insuring proper orientation of components as they are removed from dispenser, and improved means for straightening leads of the components before supplying them to the taping head.

3,701,234
APPARATUS FOR MAKING A CLOSURE ON A CONTAINER

Martin M. Sternau, Flushing, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 665,419, Sept. 5, 1967, abandoned, which is a continuation of Ser. No. 591,628, June 15, 1956. This application March 12, 1971, Ser. No. 123,856
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 **2 Claims**

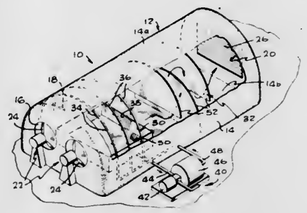


An apparatus for forming covers of heat shrinkable material on dish-shaped containers comprising means for maintaining a film cover on a container, means for gathering the edge of the film extending beyond the edge of the container into a skirt and heat sealing means adjacent to the support to heat shrink the gathered edge of the film.

3,701,235
METHOD OF AND APPARATUS FOR TREATING A GAS TO REMOVE FOREIGN CONSTITUENTS THEREFROM

Boris Isaacson, 14532 Vanowen, Van Nuys, Calif.

Filed Oct. 26, 1970, Ser. No. 83,735
Int. Cl. B01d *47/06*
U.S. Cl. 55—84 **6 Claims**

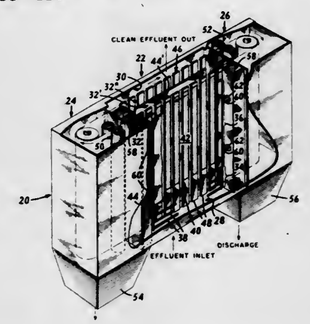


A method of and apparatus for treating a gas to remove foreign constituents from the gas by inducing flow of the gas through and inflatable treatment chamber constructed of a thin plastic film in a manner such as to effect inflation of the chamber by gas pressure, and washing, drying, and or otherwise treating the gas during its flow through the chamber to remove the foreign constituents for the gas. Primary applications of the invention involve the treatment of atmospheric air to remove therefrom dust, smog, fog, and or other foreign constituents. In these primary applications, the inflatable treatment chamber may be installed on level ground, on building tops, in natural or artificial ravines, such as washes or storm drains, or in natural or artificial tunnels, such as sewer tunnels having openings to the atmosphere.

3,701,236
MODULARIZED ELECTROSTATIC PRECIPITATOR

Bernard A. Rotsky, Oakland, and Gilbert M. Dunne, Jr., Sparta, both of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.

Filed Dec. 1, 1970, Ser. No. 94,033
Int. Cl. B03c *3/10*
U.S. Cl. 55—114 **32 Claims**

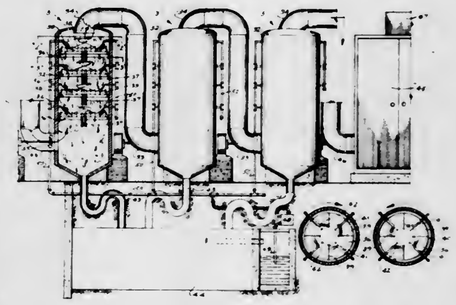


A self-contained electrostatic precipitator module adapted to be inserted into and removed from a housing as a unitary assembly includes a slatted, endless belt defining a composite attractor electrode-collector electrode subassembly, a forced air system for cooling and cleaning electrode holder structures, a power supply for establishing the charging and precipitating fields, a drive motor and train and mounting system for moving the endless belt, and rotary brushes at a remote location for neutralizing and cleaning the belt. The belt slats are flat, rigid members of simplified design and are individually mounted to allow selective replacement of a local belt section. Insulating gaps of optimized configurations are provided around high-potential electrode holders to prevent electrical shorting or sparking. Increased capacity is readily obtainable by employing plural units arranged in parallel within a common housing.

3,701,237
SMOKE ELIMINATOR

Harry A. Smuck, 6050 Ritchie Highway, Anne Arundel County, Md.

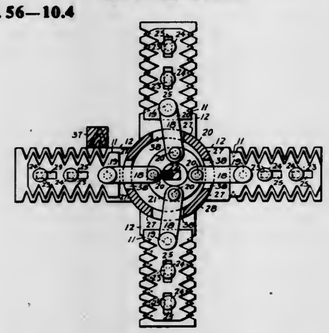
Continuation of Ser. No. 12,763, Feb. 19, 1970, abandoned. This application March 10, 1972, Ser. No. 233,808
Int. Cl. B01d *45/10*
U.S. Cl. 55—230 **1 Claim**



A gas scrubber and purifier for the exhaust gases from incinerators, furnaces and the like, the exhaust gases being forcibly passed through water curtains and sprays produced by revolving discs which throw water by centrifugal force

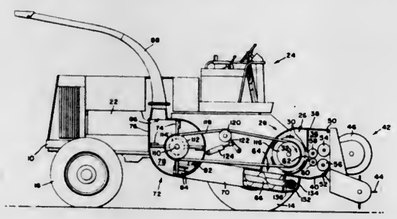
through which the exhaust gases are forced to pass to capture any fine solid matter such as dust, fly ash and the like and to dissolve any soluble gaseous ingredient in the exhaust gases.

3,701,238
FENCE MOWER
George Hintze, Jr., 2411 Avenue "G", Nederland, Tex.
Filed Aug. 28, 1970, Ser. No. 67,688
Int. Cl. A01d *35/08*
U.S. Cl. 56—10.4 7 Claims



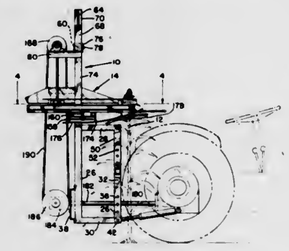
The invention has to do with utilizing a fence mower for mowing vegetation such as grass, weeds and the like in hard to reach places such as under and beyond fences supported by fence posts which vegetation is inaccessible to the conventional type mowers heretofore disclosed. The mower is operated by means of a lifting supporting arm attached to a wheeled tractor which supports and guides the mower durings operative and non-operative positions. The lower edge of the bottom portion of a sleeve and the upper spring held sleeve of a lower companion sleeve holds opposed cam faces on said sleeves in meshed position yieldingly, but upon the cutting element protruding through and under the fence coming into contact with a vertical fence post supporting the fence. The forward movement of the tractor will cause the blade cutting element under the fence contacting the pos. to turn backward 90° and thus allow the meshed cam faces of the lower companion spring held sleeve which is attached to the lower collar or housing which carries the blades to turn 90° and the matching cam face edges of the upper and lower sleeves to again releasably mesh and held only by tension of the spring will allow the cutting blade next under the fence to mow the vegetation under the fence forward thereof to the next succeeding fence post.

3,701,239
HARVESTING MACHINE
John Joseph Hennen, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 12, 1971, Ser. No. 188,217
Int. Cl. A01d *45/02*
U.S. Cl. 56—13.5 16 Claims



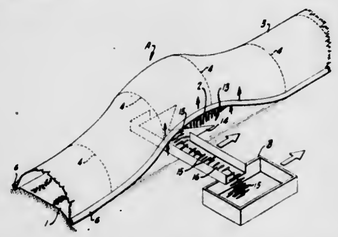
A drive arrangement for a self-propelled forage harvester having a forwardly mounted transverse cutterhead, a side mounted blower fan rotatable about a transverse axis, and a rear mounted engine, the drive including a transverse shaft driven by the engine and extending axially through and driving the blower fan. The outer end of the shaft is drivingly connected with the cutterhead shaft by means of a longitudinally extending endless flexible drive element.

3,701,240
TOBACCO TOPPING APPARATUS
David F. Wise; R. B. Tyndall, and Donald E. Jones, all of Clinton, N.C., assignors to Vann Industries, Inc., Clinton, N.C.
Filed Jan. 12, 1970, Ser. No. 2,110
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 7 Claims



An attachment adapted to be mounted on a tractor or other mobile support for traversing rows of tobacco plants to remove the bloom or top portions from the stalks. A cutting and conveying unit generally aligned with a plant row utilizes guide arms for directing each stalk to a rotary saw for removing the top portion of each plant, and conveyors for gripping and positively displacing the cut top portions rearwardly and to one side of the plant row to insure that the tops do not fall into the plant row just topped.

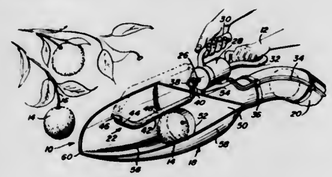
3,701,241
METHOD OF PRODUCING AND HARVESTING WHITE ASPARAGUS SPEARS
John S. Zuckerman, 1515 West Weber Avenue, Stockton, Calif.
Filed Aug. 30, 1971, Ser. No. 175,875
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 A 9 Claims



A method of producing and harvesting white asparagus spears along a ridged crop row wherein the asparagus plants are growing, and from which row the asparagus spears emerge and thereabove grow to harvest maturity; the method including essentially the step of shielding the crop row against access of sunlight to said emerging and growing spears whereby, in darkness, they remain white.

It is anticipated that the crop row will be shielded, for the above purpose, by a longitudinally extending shroud of opaque material, with the shroud formed so that it may be progressively elevated above the crop row to permit of ready and convenient access to and harvesting of the white spears in the zone in which the shroud is so elevated; such progressive elevation of the shroud, and harvesting of the white spears, being preferably accomplished by a machine designed for such purposes.

3,701,242
MANUAL FRUIT HARVESTER
Curtis J. Townsend, P.O. Box 374, Port Orange, Fla.
Filed June 9, 1970, Ser. No. 44,819
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R 8 Claims



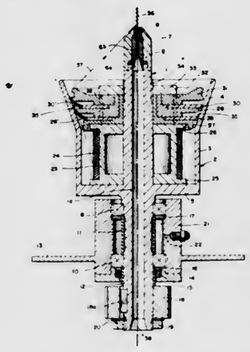
A manually manipulated device for removing fruit, particularly oranges or other citrus fruit, from the trees on which they grow by separating the fruit from the stems and collecting the dislodged fruit. The device includes a small portable motor having an offset longitudinally extending fruit engaging member which is rotated in a circular path in order to engage the fruit in a downward direction adjacent its connection with the stem for separating the fruit from the stem with the device also including an attached collection pan communicated through a hose with the source of vacuum or provided with a ground supported collection tray which underlies substantially one-half of a tree which also may be communicated with a source of vacuum from its lowest point.

3,701,243
ADJUSTABLE RAKE
Gale H. Durkee, 4301 Stafford S.W., Wyoming, Mich.
Filed July 26, 1971, Ser. No. 165,483
Int. Cl. A01d *7/00*
U.S. Cl. 56—400.18 11 Claims



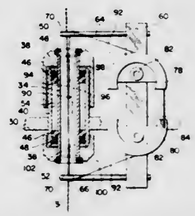
A hand rake having a plurality of tines whose spread is adjustable in width for different operations. The tines extend through a guide at the bottom of the rake handle and are secured at their upper end to a retainer which slides along the handle. A special retainer structure clamps the upper end of the tines tightly so that the rotational position of the retainer is maintained by the tines in a fixed position with respect to the guide position. A split collar and locking nut arrangement facilitate the locking of the retainer with one hand in various adjusted positions along the handle. The handle can be made in two parts for separation when not in use. A hook extends from the guide for hanging the rake when not in use.

3,701,244
APPARATUS FOR APPLYING A WIRE COIL TO A FINE WIRE STRAND
Peter Dismon, Porselen, and Heinz Jansen, Kirchhoven, both of Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed July 13, 1971, Ser. No. 162,060
Claims priority, application Germany, July 21, 1970, P 20 36 040.1
Int. Cl. B65h *81/08*
U.S. Cl. 57—18 16 Claims



Apparatus for applying a wire coil to a fine wire strand, in which the fine strand to be wound is drawn through the axis of a rotatable hollow shaft which is arranged coaxially with the supply reel for the coiling wire, this supply reel being mounted within an open ended pot receptacle joined to the shaft and rotating therewith, wire guiding and braking means preferably in the form of radially extending disks or rings being inserted in the path of the coiling wire as it is drawn from the supply reel over the guide and brake means to a winding point adjacent the front or exit end of the hollow shaft.

3,701,245
FRICTION TWISTING UNIT
Hans H. Richter, Warwick, R.I., assignor to Lenona Corporation, Warwick, R.I.
Filed Sept. 10, 1970, Ser. No. 71,027
Int. Cl. D02g *1/00*; D01h *7/92*, *13/04*
U.S. Cl. 57—34 R 10 Claims



Method and apparatus for false twisting one or more strands is disclosed. The apparatus includes an improved false twisting unit operable to impart false twist into one or more strands as the strand or strands are advanced and engaged by the friction twister. Guide means are provided for directing each strand in an inactive path remote from the twister while the twister is being threaded up, during the interval when the twister is being brought up to speed, and while advance of the strand from its supply to its take-up is commenced. Subsequent to these steps each strand is shifted into an active position where it engages with the friction twister to be twisted thereby.

3,701,246
RING THREADING TOOL

John Michael Greenway, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 29, 1971, Ser. No. 110,846
Claims priority, application Great Britain, Feb. 5, 1970, 5,592/70
Int. Cl. D01h 17/00
U.S. Cl. 57—34 R 7 Claims

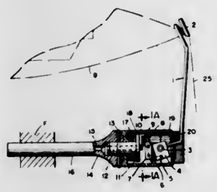


A tool for use in threading an advancing strand through a hole comprising a body member, severing means carried by the body member, a yieldable guide carried by the body member, said guide being biased toward a first position in which it blocks engagement of a strand with the severing means and being movable toward a second position in which it permits engagement of the strand with the severing means, whereby a strand may be engaged with the guide so that tension in the strand tends to urge the guide toward its second position and when the tension in the strand is sufficiently high to overcome the biasing force of the guide, the latter moves to permit the strand to engage and be severed by the severing means.

3,701,247
AUTOMATIC SWITCH-OFF ASSEMBLY FOR FEED SPOOLS IN TEXTILE MACHINES

Karl-Heinz Rehn, and Klaus Detlef Otten, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed May 13, 1971, Ser. No. 142,903
Claims priority, application Germany, May 16, 1970, P 20 24 122.9
Int. Cl. D01h 13/16
U.S. Cl. 57—81 14 Claims

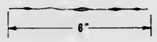


An automatic switch-off assembly in the operation of individual feed spools on textile machines essentially including a balloon thread guide connected to a holder on the machine frame in such a manner that the thread guide as a monitor or sensing element is urged to tilt against the normal tension exerted by the thread running thereagainst and as a guide element is also rotatable on said holder laterally away from the normal balloon thread path, both the tilting and rotating movements actuating a switch to its shut off position for at least the associated operating unit of the textile machine.

3,701,248
INTERLACED MULTIFILAMENT YARN

Walter Clarke Gray, Greenville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 115,770, Feb. 16, 1971, which is a division of Ser. No. 883,536, Dec. 9, 1969, Pat. No. 3,563,021, which is a continuation-in-part of Ser. No. 801,596, Feb. 24, 1969, abandoned. This application April 28, 1971, Ser. No. 138,181. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. D02g 3/22
U.S. Cl. 57—153 9 Claims

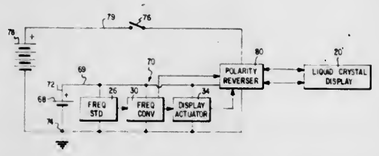


Interlaced multifilament yarn for weaving as warp in automatic power looms without size or twist is compact and uniform with unusually high bundle cohesion. Interlacing processes and finishes for retaining interlace are illustrated. Suitable intensity and permanence of interlace for weaving are defined by simple measurements.

3,701,249
SOLID STATE TIMEPIECE WITH LIQUID CRYSTAL DISPLAY

John M. Bergey, Lancaster; Eric L. Blouch, Richland, and Richard S. Walton, Lancaster, all of Pa., assignors to Hamilton Watch Company, Lancaster, Pa.

Filed March 12, 1971, Ser. No. 123,672
Int. Cl. G04b 19/30
U.S. Cl. 58—50 R 19 Claims



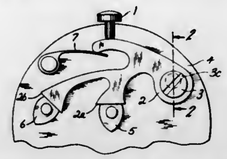
Disclosed is a solid state wristwatch having an improved liquid crystal time display. Solid state time-keeping components are continuously energized from a low voltage battery while the display is energized only on demand from a separate high voltage battery. The direction of current flow through the liquid crystals is reversed during display to improve display life. A highly polished mirror surface is provided on the outside of the back plate of the thin glass sandwich where it is not in contact with the liquid crystal material.

3,701,250
ADJUSTABLE RETURN MECHANISM FOR A WATCH

Tsuneyoshi Ono, Chino, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1971, Ser. No. 210,958
Claims priority, application Japan, Dec. 28, 1970, 45/132725
Int. Cl. G04f 7/04
U.S. Cl. 58—76 5 Claims

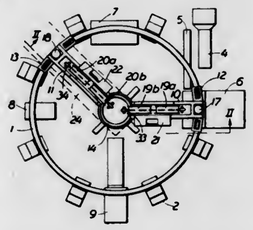
A return mechanism for a watch having two hands comprises a pivoted lever acting on two heart cams, one for one watch hand and the other for another watch hand. The return lever is pivoted on a support by an eccentric pivot pin which is frictionally mounted on the support so that it can be rotated to change the pivot axis of the return lever relative to the two cams and thereby return both hands precisely to zero position.



3,701,251
CHAIN MAKING APPARATUS

Per Arvid Andreasson, and Mats Olof Persson, both of Laxa, Sweden, assignors to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden

Filed Feb. 16, 1971, Ser. No. 115,326
Claims priority, application Sweden, June 18, 1970, 8477/70
Int. Cl. B21l 5/02
U.S. Cl. 59—16 8 Claims

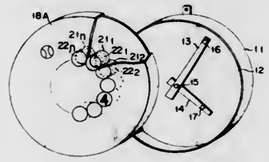


A chain making plant in which at least one arm is supported by a central supporting structure for rotation about a vertical axis so as to successively present a depending portion of a chain supported by the arm to a number of operating stations distributed around said control structure, said operating stations serving successively to add a link to the chain and to perform the operations required to finish said link. A conveyor provided on the arm serves to discharge the chain step by step into a vertical passage near said vertical axis, and additional means are provided to guide and advance the chain along a path extending from the lower extremity of said passage to a discharge point located further away from the central supporting structure than said operating station.

3,701,252
COMPLEMENTARY TIME INDICATING MECHANISM FOR A CLOCK

Takeshi Okamoto, 2-3-9, Shibuya, Shibuya-ku, Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,361
Int. Cl. G04b 19/00
U.S. Cl. 58—126 R 1 Claim



A complementary time indicating mechanism for a clock comprising a clock body including mechanisms for indicating the predetermined divisions of time, long and short hands having each inner end rotatably pivoted to said clock body and actuated by said time division mechanisms, a piece of permanent magnet fitted to the outer end of at least one of said hands, a panel of a transparent or semitransparent material covering the surface of said clock body containing said hands and a piece of magnetic material movably placed on said panel facing of said permanent magnetic piece.

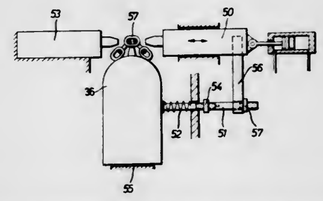
ERRATUM

For Class 59—16 see:
Patent No. 3,701,251

3,701,253
DEVICE FOR MOVING CHAIN LINKS IN A RESISTANCE WELDING MACHINE

Toni Wust, Cologne-Bickendorf, Germany, assignor to Meyer, Roth & Pastor, Cologne-Raderberg, Germany

Filed Oct. 7, 1969, Ser. No. 864,407
Claims priority, application Germany, Oct. 9, 1968, P 18 01 955.1
Int. Cl. B21l 3/02
U.S. Cl. 59—31 8 Claims

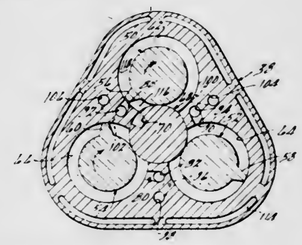


A device is used for moving bent C-shaped links joined into a continuous chain to be welded in a resistance welding machine. The device has an inlet guide and an outlet guide, consisting, for example, of guiding rails. The device also has a saddle moving a link between tensioning tools and supporting it during the welding, as well as a transporting tool for the chain. The device is particularly characterized by the arrangement whereby the saddle is movable relatively to the guides substantially perpendicularly to the direction of movement of the chain link.

3,701,254
ROTARY PISTON ENGINE

Oskar Michejda, Fort Wayne, Ind., assignor to Jadwiga Koltermann, London, England, a part interest

Filed June 12, 1970, Ser. No. 45,840
Int. Cl. F02g 3/00
U.S. Cl. 60—39.61 11 Claims

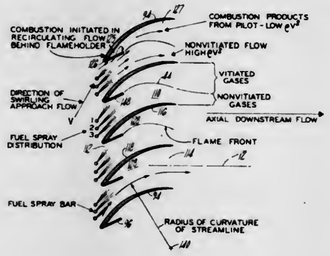


A rotary piston engine in combination with a compressor and a burner for providing combustion by-product gases at

high pressure to operate the rotary piston engine. The rotary piston engine is provided with a rotary valve for timing the introduction of the high pressure gas to the engine piston chambers.

3,701,255
SHORTENED AFTERBURNER CONSTRUCTION FOR TURBINE ENGINE

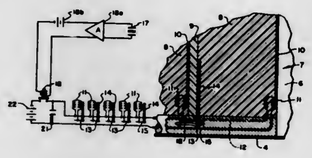
Stanley J. Markowski, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 26, 1970, Ser. No. 84,087
Int. Cl. F02k 3/10
U.S. Cl. 60—39.72 R 46 Claims



An afterburner construction for a turbine engine, such as a turbofan engine, which is foreshortened by using a construction which utilizes swirl flow phenomena to rapidly mix the engine products of combustion and coolant flow, such as fan air, and/or to rapidly accomplish the afterburning combustion process in the afterburner, while maintaining engine performance and structural part integrity.

3,701,256
DEMAND, SOLID-PROPELLANT GAS GENERATOR

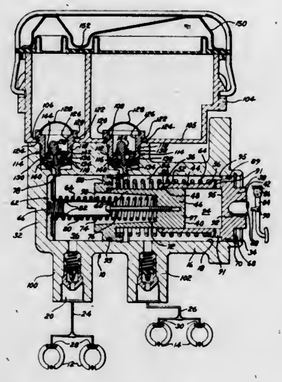
Joseph E. Pelham, and Albert Ray Osburn, both of Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Sept. 13, 1971, Ser. No. 179,687
Int. Cl. F02k 9/04
U.S. Cl. 60—39.47 5 Claims



An orificed pressure vessel has a combustion chamber adjacent the orifice and a propellant charge in the remainder thereof comprising wafer segments of propellant separated from each other by combustion barriers; an electric igniter adjacent each propellant wafer has a thermally operated, normally open switch, so that the circuit is closed for each igniter as the adjacent wafer is burned; a pressure transducer in communication with the combustion chamber operates a master switch connected in series with the igniters and an electrical energy source to close the entire circuit or open it in response to a predetermined maximum and minimum chamber pressure; and valve means on the orifice permits withdrawal of gases from the combustion chamber for use as desired. Optional equipment includes a pressure relief valve in the combustion chamber and a capacitor connected in parallel between the energy source and the igniters.

3,701,257
HYDRAULIC MASTER CYLINDER

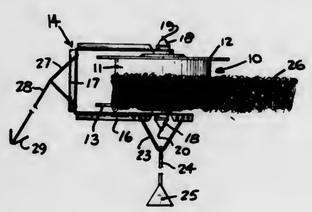
Robert F. Gaiser, St. Eph, Mich., assignor to The Bendix Corporation
Filed April 12, 1971, Ser. No. 133,047
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 E 5 Claims



A hydraulic brake pressurizing mechanism for a motor vehicle including a dual master cylinder having independent connections to front and rear brakes of the vehicle. The front and rear brakes are in communication respectively with first and second variable volume chambers formed in the cylinder housing by two telescoping pistons reciprocally positioned therein for displacement of fluid from said chambers upon actuation. A fluid reservoir communicates with said chambers via tilt valve means actuable in response to movement of one of said pistons.

3,701,258
BUOYANT PULLEY LOCATING AND ANCHORING DEVICE FOR AN OIL MOP

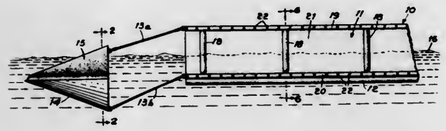
Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop Inc., Metairie, La.
Filed Feb. 16, 1971, Ser. No. 115,328
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 3 Claims



The present disclosure is directed to a buoyant pulley for use with an oil mop for positioning the pulley and locating same to maintain the pulley in substantially the desired height in the water and at substantially a horizontal attitude against the pull of the endless oil mop passing about the pulley.

3,701,259
OIL POLLUTION BARRIER

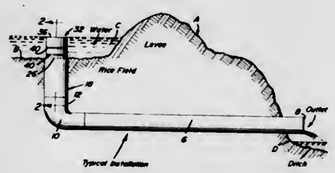
Olaf Heartness, 41 Van Reypen St., Jersey City, N.J.
Filed Aug. 13, 1971, Ser. No. 171,693
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 9 Claims



The method of laying and the construction of an oil pollution barrier for use on the ocean or other bodies of water. The method comprises the simultaneous and synchronized unreeling from a vessel of a resilient barrier strip formed with spaced inflatable pockets and a sectioned resilient hose containing a liquid chemical. Each inflatable pocket has an opening formed at the base which is in communication with an injection tube which is removably mounted below each pocket in the lower edge of the barrier strip. Each injection tube contains a chemical powder, reactive with the liquid in the hose to form a gas. At a predetermined point the injection tube is forced into the hose, the hose is compressed to force the liquid upward into contact with the chemical powder, the gas formed by the reaction inflating the pocket in the plastic barrier. In alternative forms of the invention the pocket is inflated by the use of a low boiling point volatile liquid or compressed gas stored in the hose. The barrier strip and hose are unreeled until the oil slick is surrounded, whereafter the ends of the barrier and hose are cut to form an enclosure around the oil spill.

3,701,260
WATER LEVEL CONTROL DEVICE

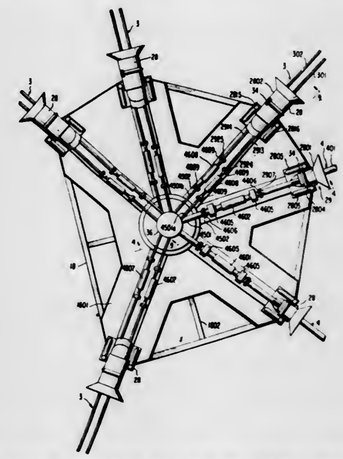
Hosea J. Solleau, 614 N. Corell, Ville Platte, La.
Filed May 12, 1970, Ser. No. 36,579
Int. Cl. E02b 13/00
U.S. Cl. 61—12 6 Claims



A water levelling device for use in a rice field, comprising an L-shaped conduit embodying a horizontal branch embedded beneath a levee and a complemental vertical upstanding branch at the inner end which is also embedded. The inner end has an elbow whose upper shoulder-equipped end supports a cylindrical adapter which, in turn, provides a coupling for an extensible and contractible water level controlling sleeve. This sleeve is insertable and removable and has an adjustively applicable rubber joint sealing ring seated atop a limit stop shoulder at the upper end of the adapter.

3,701,261
APPARATUS FOR PROVIDING OFFSHORE INSTALLATION

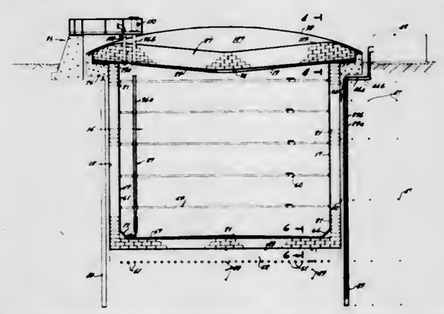
Clyde E. Nolan, Jr., Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed Feb. 8, 1971, Ser. No. 113,252
Int. Cl. F16l 35/00; E21b 43/01
U.S. Cl. 61—72.3 24 Claims



Method and apparatus for providing an offshore installation wherein a base means is positioned on a submerged surface, one or more pipelines drawn into socketed engagement with the base means, and divers manipulate misalignment accommodating coupling means to interconnect the socketed pipeline means with a submerged, fluid receiving or supplying riser means housed in a caisson means.

3,701,262
MEANS FOR THE UNDERGROUND STORAGE OF LIQUIFIED GAS

Joseph A. Connell, Harbor City, and Anthony J. Baranyi, Costa Mesa, both of Calif., assignors to Systems Capital Corporation, Phoenix, Ariz.
Filed Oct. 12, 1970, Ser. No. 79,980
Int. Cl. F17c 7/02
U.S. Cl. 62—45 16 Claims

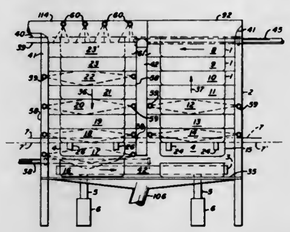


Liquified gas is stored underground in a large double walled container seated in an opening in the earth's surface. Between the walls of the liner, thermal insulation is distributed in a continuous layer along the floor and wall of the opening. A diaphragm is supported across the top of the opening with a seal being provided between the diaphragm and the double

walled liner to form a container for the liquified gas. Surrounding the lip of the opening is a concrete ring across which a net of cables is stretched to support a thermally insulating ceiling. A cooling system is provided for freezing the earth to aid in the excavation of the opening and this system is subsequently used to maintain the wall and floor of the opening frozen to a controlled thickness by cooling them in response to a rise in the temperature of the surrounding earth above a predetermined temperature level.

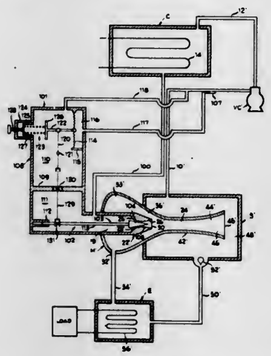
Also disclosed are various techniques for constructing a storage tank of the type described.

3,701,263
DIRECT CONTACT FOOD FREEZING
Arthur Lee Barrett, 2928 Lothair Way, Michigan City, Ind.
Continuation-in-part of Ser. No. 743,356, July 9, 1968, abandoned. This application May 18, 1970, Ser. No. 38,558
Int. Cl. F26d *25/04*
U.S. Cl. 62—63 **24 Claims**



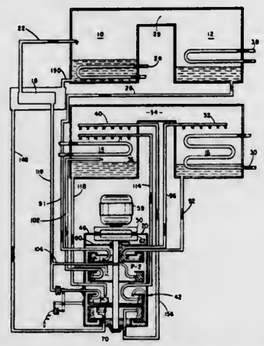
A direct contact food freezing method and apparatus which incorporate food carrying trays circulating through freezer chamber while food carried thereby is being sprayed with liquid refrigerant for freezing the food.

3,701,264
CONTROLS FOR MULTIPLE-PHASE EJECTOR REFRIGERATION SYSTEMS
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 8, 1971, Ser. No. 113,226
Int. Cl. F25b *1/06*
U.S. Cl. 62—191 **14 Claims**



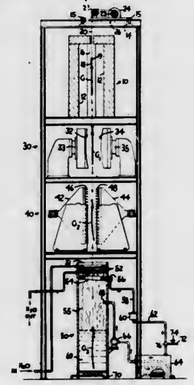
A multiple-phase ejector refrigeration system including capacity controls allowing part-load operation. The capacity is varied by controlling the flow of liquid refrigerant from a condenser into the nozzle of the multiple-phase ejector. This has the effect of increasing the suction pressure at a compressor, connected to an evaporator, above the pressure at the outlet of the cooling coil, thus reducing the compression ratio at which the compressor must operate, and regardless of the actual percentage of load at which the system may be operating at a given time and despite any changes in the speed of the compressor in response to compression ratio differences.

3,701,265
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Division of Ser. No. 20,777, March 18, 1970, Pat. No. 3,608,332. This application June 21, 1971, Ser. No. 155,080
Int. Cl. F25b *15/06*
U.S. Cl. 62—475 **3 Claims**



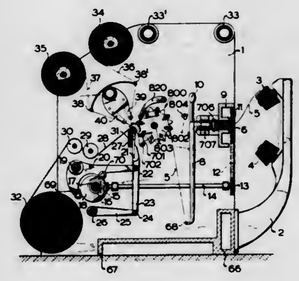
An absorption refrigeration system wherein there is provided in communication with the evaporator, absorber, generator and condenser fluid handling apparatus in the form of a hermetic housing mounting therein a rotatively driven shaft member journaled at opposite ends in bearing means and supporting a plurality of scoop pumps for effecting, among other functions, circulation of refrigerant and absorbent solution through the system, purging, and machine capacity control.

3,701,266
METHOD OF TEMPERING GLASS IN A LIQUID
Raymond S. Chisholm, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 44,151, June 8, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,808
Int. Cl. C03b *27/00*
U.S. Cl. 65—116 **11 Claims**

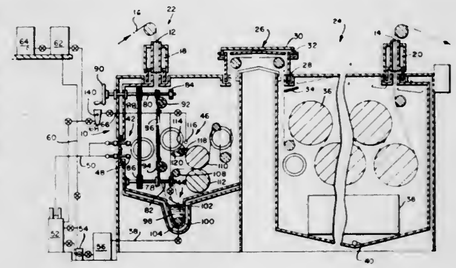


Tempering a heated glass sheet or other glass articles by moving the sheet through a body of vapor and quenching in a liquid or liquid-vapor tempering medium maintained in a container. A condenser surrounds the upper portion of the container to provide the vapor body or barrier that inhibits rapid evaporation of the tempering medium and permits ready entry and removal of the glass sheet relative to the tempering medium. Several compositions having dense vapors and a boiling point above about 110° C. are suggested for the tempering medium.

3,701,267
WARP KNITTING MACHINE
Stefan Furst, assignor to W. Schlafhorst & Co., Monchengladbach, Germany
Filed March 13, 1970, Ser. No. 19,431
Claims priority, application Germany, Nov. 13, 1969, P 19 12 645.5
Int. Cl. D04b *23/00, 27/00*
U.S. Cl. 66—86 **13 Claims**

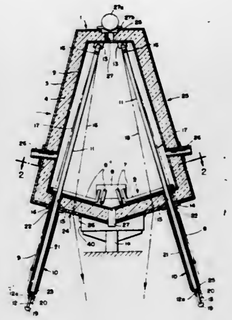


Warp knitting machine having a zone wherein knitting needles are disposed and means for supplying warp threads to the needles, includes a device for filling a weft to the warp threads having a plurality of holder members located in the vicinity of respective weft reversal locations disposed at opposite lateral edges of a fabric web being knitted by the machine, thread guide means movable along a continuous travel path and cooperating with the holder members for making the weft ready by looping the weft about respective holder members at opposite weft reversal locations, the holder members at each of the weft reversal locations being mounted so as to be displaceable successively in direction toward the needle zone.



3,701,268
AIR HEATING BOX FOR TEXTILE MACHINES
Heinz Treptow, Ennepetal-Milspe; Benno Frank, Wuppertal-Elberfeld, and Heinz Schippers, Remscheid, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed July 13, 1971, Ser. No. 162,082
Claims priority, application Germany, July 13, 1970, P 20 34 610.5; Jan. 22, 1971, P 21 02 956.1
Int. Cl. D06c *1/00, 7/00*
U.S. Cl. 68—5 D **23 Claims**

An insulated air heating box for treating threads transported by textile machinery wherein one wall of the box is provided with entry and exit slots for each thread together with an adjustable thread loading and guiding means insertable through the same wall between or adjacent to the thread entry and exit slots. The box is also equipped with one or more differen



heating devices, permitting contact-free heating of the threads and/or direct heating on a contact plate arranged within the box.

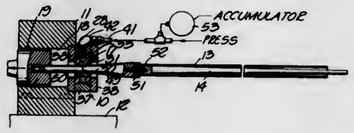
3,701,269
APPARATUS FOR APPLYING LIQUIDS TO A RUNNING WEB
Harold R. Wilcox, assignor to Riggs & Lombard, Inc., Lornell, Mass., Maynard, Mass.
Filed May 7, 1971, Ser. No. 141,304
Int. Cl. B05b *13/02*; B05c *9/14*
U.S. Cl. 68—19 **10 Claims**

One or more liquids may be applied to a running textile web in flat tubular or open width form by three different cooperative and integrated systems. A drying chamber is associated with the apparatus for recovering solvent which may be included in certain liquid chemicals. The chemical applicating apparatus includes spray nozzles spaced transversely adjacent the path of travel of the web for spraying chemicals on the moving web. Guiding means are provided for selectively positioning the web with respect to the nozzles for optimum spraying position. A padding tank is also provided for passing the web directly through a bath of the chemical and a metering system including an applicator roll and an adjustable blade in different configurations is provided for applying precisely controlled amounts of chemicals to the web.

3,701,270
METHOD OF DRAWING METAL TUBES

Raymond A. Matthews, 2332 Via Anacapa, Palos Verdes Estates, Calif.

Division of Ser. No. 760,823, Sept. 19, 1968, Pat. No. 3,570,297. This application Dec. 3, 1970, Ser. No. 94,755. The portion of the term of this patent subsequent to March 16, 1988, has been disclaimed.
Int. Cl. B21c 3/06
U.S. Cl. 72—57 9 Claims

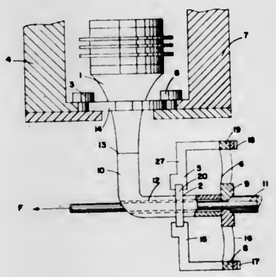


A method of drawing tubing using a conventional draw bench and a die assembly having a die ring in the form of a peripherally grooved nylon spool held in a case defining a pressure chamber around the spool. A tube to be drawn is telescoped onto a shaped mandrel and inserted in the die, and the chamber is filled with fluid under substantially constant pressure that is maintained by a relief valve or an accumulator, while the tube is drawn through the die, the pressure being sufficient to collapse the tubing initially around the mandrel and then to iron the tubing smoothly onto the mandrel during drawing.

3,701,271
WIRE DRAWING APPARATUS USING VIBRATORY-MECHANICAL ENERGY AND CURVED TRANSMISSION LINE

Lytton A. Kendall, Jr., Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Feb. 24, 1970, Ser. No. 13,538
Int. Cl. B21d 26/02; B21j 5/04
U.S. Cl. 72—56 3 Claims

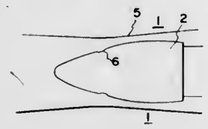


Apparatus for drawing wire utilizing a piezoelectric electromechanical transducer and an axially drilled curved transmission line in conjunction with a wire-drawing die to reduce the cross section of the wire. Static force exerted on the die by retaining diaphragms hold the die intermittent contact with the free end of the transmission line.

3,701,272
METHOD OF MANUFACTURING SEAMLESS STEEL PIPES

Hiroshi Nagai, and Haruo Kamimura, both of Kawasaki, Japan, assignor to Nippon Kokan Kabushiki Kaisha

Filed Oct. 20, 1970, Ser. No. 82,258
Int. Cl. B21b 19/04
U.S. Cl. 72—97 1 Claim

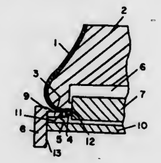


In a method of manufacturing a seamless steel pipe by piercing a blank by means of a piercing machine and then rolling the pierced blank into the product by means of a rolling mill, the blank is pierced at a reduction rate of 75 to 85 percent by using a piercing machine comprising rolls having flat gorges at the center thereof and a piercing plug provided with an annular recess on its outer periphery at portions corresponding to the gorges and then the pierced blank is rolled by a single pass and at a reduction rate of 15 to 25 percent by means of a rolling mill having rolls and a plug, the curvature of the relieve of the caliber of the rolls of the rolling mill is reduced to minimize the tendency of forming fins on the surface of the product.

3,701,273
METHOD OF MAKING FOOTWEAR

Horace R. Auberry, and Anton Liebacher, both of Waynesville, N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.

Continuation-in-part of Ser. No. 34,003, May 4, 1970. This application March 2, 1971, Ser. No. 120,078
Int. Cl. A43d 21/00
U.S. Cl. 12—145 8 Claims



The invention refers to the manufacture of shoes with uppers lasted by pulling a string secured to the lasting margin of the upper. Improvements are presented which reduce costs of manufacture especially if the sole is molded directly to the upper. The method of manufacture includes use of a last deformed to obtain preselected location of the lasting margin and to prevent the formation of undesirable spew.

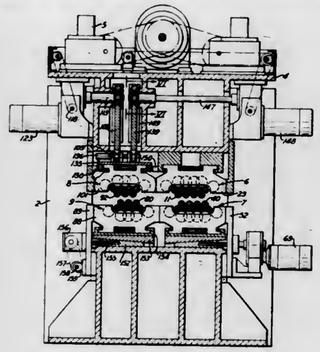
3,701,274
ROLLER LEVELER WITH ADJUSTABLE FLATTENING SECTION

Christian Roesch, Middle Village, N.Y., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Nov. 9, 1970, Ser. No. 87,842
Int. Cl. B21d 1/02
U.S. Cl. 72—165 11 Claims

A vertically spaced pair of roll units, constituting a shape correction section, extend lengthwise between the bed and vertically adjustable beam of a roller leveler. One of these roll units is supported by the beam. There is a second vertically

spaced pair of roll units that form a flattening section beside the shape correction section. The side of one of the flattening roll units nearest the other section is pivotally connected to the beam on an axis extending lengthwise of it. There also are vertically adjustable means, located between the pivot and the opposite side of the pivoted roll unit, which connect the latter

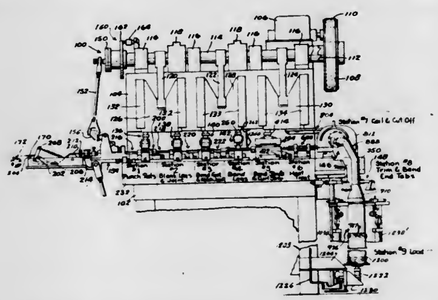


to the beam in a manner that permits the roll unit to be tilted transversely. Means are provided for moving the pivot vertically relative to the beam to enable the pivoted flattening roll unit to be adjusted vertically relative to the shape correction roll unit beside it. Means also may be provided for deflecting the other flattening roll unit relative to the shape correction section.

3,701,275
MACHINE FOR FORMING PISTON RING SPACER-EXPANDERS FROM STRIP STOCK

Roy E. Overway, Grand Haven, and Frank G. Warrick, Muskegon, both of Mich., assignors to Seal Power Corporation, Muskegon, Mich.

Filed May 21, 1970, Ser. No. 39,499
Int. Cl. B21d 28/00; B23p 15/06
U.S. Cl. 72—335 25 Claims

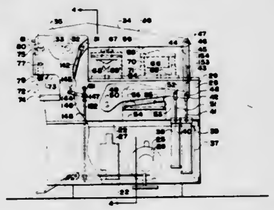


A machine for making spacer-expanders for piston oil rings of the type described in United States Pat. No. 3,477,732. The machine comprises a punch press having a plurality of stations through which strip stock is fed progressively in accurately predetermined increments, the strip stock being worked between dies at each station to transform the strip stock into completed rings. The press includes one or more punching stations where the strip stock is pierced and blanked, one or more forming stations where the pierced and notched strip is bent to form the spring legs of the spacer-expander and then curled into a channel-shaped cross-section, a coiling station where the channel-shaped stock is fashioned into a coil, and a cut-off station where each coil is sheared from the strip to form the semi-finished ring. The press also includes a special transfer apparatus for transferring the semi-finished ring to a final work station wherein the end joints are trimmed and formed to final configuration, after which the finished rings are loaded automatically in stacked relation on a cylindrical mandril.

3,701,276
IRON AND METAL WORKING MACHINERY

John Stanley Malmgren, Winnipeg, Manitoba, Canada, assignor to Excel Mfg. Ltd., Winnipeg; Manitoba, Canada

Filed July 15, 1970, Ser. No. 55,053
Int. Cl. B21j 9/12
U.S. Cl. 72—404 28 Claims

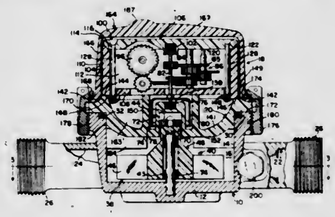


A main beam is pivoted between the ends and operates punch on the downward stroke of the shorter end and a plurality of detachable metal working tools on the down stroke of the longer end. A secondary beam operates a shear also on the down stroke of the longer end. Two piston and cylinder assemblies are connected to the beam and valving permits the larger of the cylinders to be used for most operations with the smaller cylinder returning the beam to the starting position rapidly. If more force is required both cylinders can be used together for the power stroke.

3,701,277
FLUID FLOW METER

Richard A. McMahon, Pittsburgh; Winston F. Z. Lee, Delmont, and Elmer F. Painley, Uniontown, all of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed May 27, 1969, Ser. No. 828,135
Int. Cl. G01f 1/06
U.S. Cl. 73—229 15 Claims



A fluid flow meter having a recessed body defining a fluid measuring chamber which is open at one end and which rotatably receives a fluid driven metering rotor. A register casing containing a fluid flow register mechanism is detachably fixed to the meter body and has a bottom wall part covering the open end of the chamber. Drive magnets and follower elements respectively disposed within the chamber and the casing on opposite sides of the casing bottom wall part transmit rotation of the rotor to actuate the register mechanism. The bottom wall part is interiorly concavely contoured so that its peripheral end portion extends essentially axially and terminates in an axially directed annular edge surface on which a

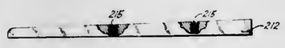
structure, which mounts the register mechanism, is supportingly seated. The bottom wall part is further integrally formed with a flange extending radially from its axially extending end portion so that the wall part may be secured in place by clamping the flange between the meter body and a separately formed cover part of the casing. Concentric embossments formed integral with the bottom wall part define concentric wells opening in axially opposite directions respectively into the chamber and into the interior of the casing and respectively receiving the drive magnets and driven elements. The rotor is molded as one piece with an internal protrusion that forms a thrust bearing surface for a rotor support shaft extending into the rotor hub. A meter calibrating member selectively and transversely displaceably into an accurately diametered orifice at the inlet port for the measuring chamber provides an adjustment for meter registration.

3,701,278

TEST APPARATUS FOR COMBUSTION EVALUATION

Robert E. Askins, and George P. Roys, both of Huntsville, Ala., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 17, 1970, Ser. No. 12,081
Int. Cl. G01l 5/14
U.S. Cl. 73—35 **10 Claims**



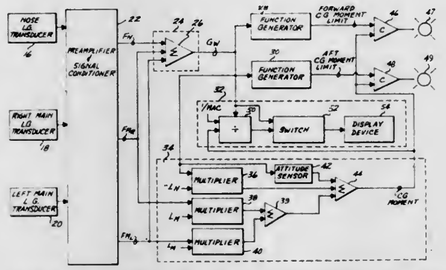
A combustion chamber for testing under actual burning conditions the ability of air augmented solid propellants to meet operational requirements under subsonic or supersonic environments.

3,701,279

AIRCRAFT WEIGHT AND CENTER OF GRAVITY INDICATOR SYSTEM

Carl R. Harris, Kirkland; Robert B. Banks, Bellevue, and Dallas V. Soward, Seattle, all of Wash., assignors to Electro Development Corporation, Lynnwood, Wash.

Filed Feb. 8, 1971, Ser. No. 113,129
Int. Cl. G01m 1/12
U.S. Cl. 73—65 **8 Claims**



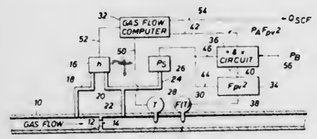
After a discussion of the prior art techniques and apparatus for insuring that an aircraft is loaded correctly, such as loading charts, manifest forms, tipping alarms, and the like, an improved weight and balance system for aircraft is described for providing automated monitoring of aircraft loading. The system includes a plurality of transducers generating signals proportional to the forces acting on the landing gear of the aircraft. These signals are summed to obtain a signal proportional to the instantaneous gross weight of the aircraft. In addition, an analog computer derives from these signals a signal which is proportional to the aircraft's instantaneous center of gravity moment. A display means provides for the continuous display of gross weight and center of gravity, in terms of percent MAC. In addition, the gross weight signal is applied to first and second function generators which develop therefrom signals corresponding to forward and aft center of gravity limits. Comparison is made in appropriate circuitry of the instantaneous center of gravity moment with the forward and aft CG limits, and an appropriate indication is made if either limit is exceeded during loading. An embodiment of the function generators and comparators is described in detail. A modification of the system to compensate for effects of fuel withdrawal upon center of gravity during flight is also described.

3,701,280

METHOD AND APPARATUS FOR DETERMINING THE SUPERCOMPRESSIBILITY FACTOR OF NATURAL GAS

Larry J. Stroman, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed March 18, 1970, Ser. No. 20,606
Int. Cl. G01f 1/00
U.S. Cl. 73—194 M **20 Claims**



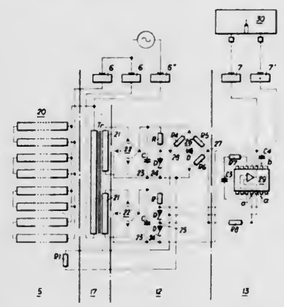
In one exemplar embodiment, an electrical circuit for deriving an electrical signal representative of the square of the supercompressibility factor of natural gas by providing means for measuring the static pressure of the gas, multiplying the static pressure measurement by predetermined functions of pressure, temperature and specific gravity for a preselected range of operation and adding a predetermined constant factor, approaching unity, to the product of the pressure and functions of pressure, temperature and specific gravity.

3,701,281

MEASURING INSTALLATION

Dominik Sogner, Timelkam, Austria, assignor to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Oct. 6, 1970, Ser. No. 78,360
Claims priority, application Austria, Oct. 7, 1969, 9423/69
Int. Cl. G01k 13/08, 7/20
U.S. Cl. 73—351 **4 Claims**



A circuit arrangement for measuring a characteristic of a moving member wherein an electric current, representative of the characteristic is generated on the moving member and the value thereof indicated on an instrument mounted on associated fixed structure. The circuit includes a sensing element forming an arm of a bridge network, the output of which provides an input to an operational amplifier. The sensing element, bridge and amplifier, along with a suitable power supply, are mounted on the moving member. The indicating instrument receives the output of the operational amplifier through slip rings or the like and the circuit compensates for the resistance variations normally encountered in slip ring coupling. In a particular application, the circuit arrangement is adapted to measure the temperature of heated rolls in a rolling mill, the sensing element (in this case a resistance thermometer), power supply, bridge and operational amplifier being mounted to rotate with the roll shaft and coupled via slip rings to the indicating instrument.

3,701,282

COLD STORAGE TEMPERATURE MONITOR

John B. Peterson, Madison, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 1, 1970, Ser. No. 42,127
Int. Cl. G01k 11/06
U.S. Cl. 73—358 **4 Claims**



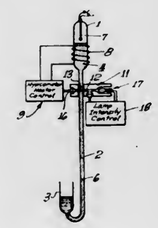
This invention comprises a reusable temperature recording telltale for cryogenic refrigerators, and in particular a telltale for use in a cryogenic refrigerator with racks for the storage of ampules, vials or other containers. The telltale device consists of an ampule, vial or other similar container which contains a liquid which has a melting-freezing point at a definite known temperature. This contained liquid within the ampule is frozen in a first orientation, and placed in the cryogenic refrigerator in a second orientation, but since frozen, it maintains its first orientation. However, if the cryogenic refrigerator achieves a temperature above the melting-freezing point of the contained liquid, it takes up the second orientation, recording the temperature excursion. Further, when a series of ampules containing liquids have varying melting-freezing points, the temperature excursion can be closely calculated, and when used in combination with a rack which maintains the orientation within the refrigerator, there is no possibility of an erroneous reading.

3,701,283

PRESSURE-SUBTRACTING HYPSOMETRIC APPARATUS

Ernest W. Lichfield, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 26, 1970, Ser. No. 84,029
Int. Cl. G01l 7/18
U.S. Cl. 73—401 **7 Claims**



A hypsometric liquid such as water is supported in a closed chamber on a tubular column of mercury, the mercury being exposed in a manometric manner to atmospheric pressure so that variations in the atmospheric pressure increase or reduce the height of the mercury column. Also, an increase in pressure applied to the hypsometric liquid reduces the height of the mercury column since the liquid rests directly on the mercury. The hypsometric liquid is heated in a controlled manner to produce a vapor that exerts pressure on the liquid and the mercury column. As the temperature is increased by the heater, the mercury moves down the tube until it reaches a constant or fixed level at which sensor electronics adjust the power to the heater so that the top of the mercury column remains exactly at this fixed level. The pressure on the liquid is determined by measuring the temperature inside the hypsometric chamber. Atmospheric pressure is essentially equal to the hypsometric chamber pressure plus the pressure equivalent of the mercury column.

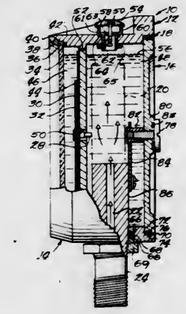
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,701,284

PRESSURE GAUGE

Roy W. De Meyer, Mount Prospect, Ill., assignor to Colorado Manufacturing Corporation, Colorado Springs, Colo.

Filed Sept. 21, 1970, Ser. No. 73,705
Int. Cl. G01l 7/04; G01d 11/24
U.S. Cl. 73—416 **8 Claims**



A sliding, radial compression seal is provided between the main gauge casing and a movable blow-out closure element, in a fluid-filled pressure gauge, with yieldable retention of the closure in its normal case closing position. The closure seal insures maintenance of an effective fluig-tight seal of the gauge housing under normal conditions while permitting ready movement of the closure for release of unusual internal pressures.

ERRATUM

For Class 74—695 see:
Patent No. 3,701,623

3,701,285

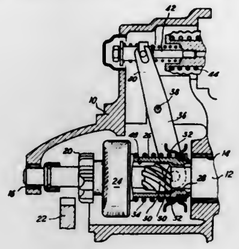
GEARING STARTER

Pierre Touiler, Le Monastere, France, assignor to Societe Anonyme DBA

Filed May 25, 1971, Ser. No. 146,641
Claims priority, application France, June 1, 1970, 7019970
Int. Cl. F02n 11/00
U.S. Cl. 74—6 **3 Claims**

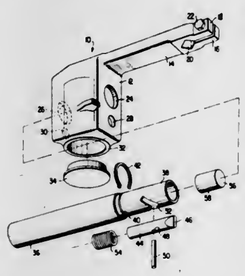
Starter gearing of the positive shift type for an internal combustion engine in which the sleeve has short splines slightly shorter than the half of the length of the sleeve at the end of the latter opposite to the one connected to the free wheel. Ad-

jacent the free wheel an inner cavity is provided in the sleeve the walls of which do not contact the splines when the starter



drive assembly is in its released condition. With such an arrangement the engine vibrations cannot cause the advance of the pinion towards the flywheel.

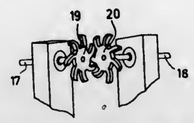
3,701,286
HANDLE FOR POSITIONING AN ELEMENT
James F. Donnelly, Worcester; Wendell P. Gee, Westboro, and Nelson S. Phipps, Leicester, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.
Filed Sept. 30, 1969, Ser. No. 862,306
Int. Cl. F16b 27/02
U.S. Cl. 74—142 **7 Claims**



Disclosed is an improvement in a handle for operating an element such as a valve member, comprising a support member having a hollow portion, said support member including means to grasp a rotatable member, such as a valve control member so that movement of the support member causes rotation of the control member, said support member further including a first opening, handle means extending through said first opening into said hollow portion of said support member, said handle means including channel means therein, pawl means extending through said second opening into said hollow portion of said support member, said pawl means including pin means mounted thereto, said pin means being disposed in said channel means of said handle means whereby rotation of said handle means about its longitudinal axis causes said pin means to travel in said channel means causing the movement of said pawl means in a predetermined direction.

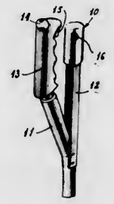
3,701,287
TOOTHED GEARING
Hendrik Kulken, Luttelgeest, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 23, 1970, Ser. No. 74,571
Claims priority, application Netherlands, Oct. 2, 1969, 6914889
Int. Cl. F16h 55/06, 1/12
U.S. Cl. 74—462 **5 Claims**

For transmitting small power between rotating shafts having skew or intersecting axes, gearwheels having teeth each of which defines convex and concave involute curved blanks



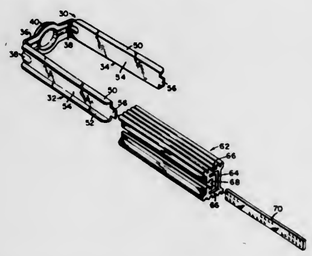
respectively for leading and trailing edges, the gearwheels being thin in the axial direction relative to the diameter.

3,701,288
CONTROL APPARATUS HAVING A FINGER OPERATED DUAL MOTION CONTROL DEVICE
David B. Jordan, Wantagh, N.Y., assignor to Fairchild Hiller Corporation, Montgomery County, Md.
Filed Aug. 10, 1970, Ser. No. 62,494
Int. Cl. G05g 9/04
U.S. Cl. 74—471 XY **7 Claims**



Control apparatus having a manual control device has two potentiometers located within a housing that are connected through two respective gear trains to an input lever that is adapted to be operated both up and down in substantially a vertical direction and forward and backward in substantially a horizontal direction by finger or thumb pressure. Movement of the input lever in one direction activates one potentiometer and movement of the input lever in another direction activates the other potentiometer. A mounting member is also provided that can be used to mount the control device on an aircraft control stick.

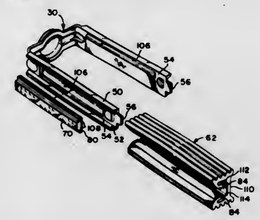
3,701,289
REFLECTIVE PEDAL
Carlton P. Pawsat, and Robert F. Humlong, both of Maysville, Ky., assignors to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed July 20, 1970, Ser. No. 56,291
Int. Cl. B62m 3/12
U.S. Cl. 74—594.4 **14 Claims**



The pedal frame comprises a pair of spaced legs onto each of which is telescoped an elongate extruded tread member or

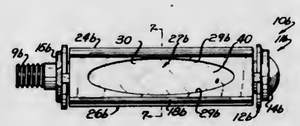
block having formed therein open-ended passageway or channel means receptive of a frame leg and a reflector element, the frame legs each having a pair of spaced parallel rigid flanges outwardly turned to overlie and underlie the reflective element, thereby to buffer and protect the reflective element against twisting and compressive forces directed onto the tread member by the foot of the cyclist, and to preclude internal cutting of the tread member by the reflective element.

3,701,290
REFLECTIVE PEDAL
Carlton P. Pawsat, 47 Bryant Circle, and Robert F. Humlong, 46 Bryant Circle, both of Maysville, Ky.
Continuation-in-part of Ser. No. 56,291, July 20, 1970. This application April 29, 1971, Ser. No. 138,646
Int. Cl. B62m 3/12
U.S. Cl. 74—594.4 **7 Claims**



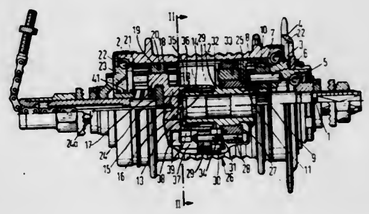
The pedal frame comprises a pair of spaced legs onto each of which is telescoped an elongate extruded tread member or block having formed therein open-ended passageway or channel means receptive of a frame leg and a reflector element, the frame legs each having a pair of spaced parallel rigid flanges outwardly turned to overlie and underlie the reflective element, thereby to buffer and protect the reflective element against twisting and compressive forces directed onto the tread member by the foot of the cyclist, and to preclude internal cutting of the tread member by the reflective element.

3,701,291
BICYCLE PEDAL HAVING LUMINOUS PORTIONS THEREON
Martin R. Baginski, Austinberg Twsp, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio
Continuation of Ser. No. 795,948, Feb. 3, 1969, abandoned. This application May 6, 1971, Ser. No. 141,024
Int. Cl. G05g 1/14
U.S. Cl. 74—594.4 **4 Claims**



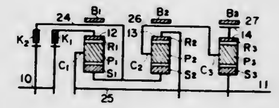
An improved bicycle pedal includes a pedal body with upper and lower sides adapted to be engaged by a rider's foot and luminescent outer sides adjacent to the upper and lower sides. To render the bicycle pedal luminous such that a cyclist's presence on the bicycle will be indicated, the outer sides have a luminescent paint supported thereon. The luminescent paint is supported on the pedal body in a manner such that no special attaching means formed as a part of the pedal body is necessary.

3,701,292
MULTIPLE SPEED HUB WITH AUTOMATIC GEAR CHANGE AND MANUAL OVERRIDE
Horst Schulz, Schweinfurt, Germany, assignor to Eichtel & Sachs AG, Schweinfurt, Germany
Filed Nov. 17, 1970, Ser. No. 90,398
Claims priority, application Germany, Dec. 24, 1969, P 19 64 866.9
Int. Cl. F16h 5/46
U.S. Cl. 74—752 E **12 Claims**



A dual speed bicycle hub with a planetary gear transmission and automatic gear shift operated by a centrifugal governor is additionally equipped with a manual override permitting manual speed selection while movement of the flyweights in the governor under the influence of centrifugal forces is blocked. The manual controls may hold the flyweights near or remote from the axis of hub rotation and thereby engage or disengage an overrunning clutch which connects a fast-moving transmission element to the hub shell.

3,701,293
GEAR TRAIN ARRANGEMENTS
Yoicho Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, Kamiikedai, and Tetsuya Iijima, both of Ohta-ku, Tokyo, all of Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed April 21, 1970, Ser. No. 30,496
Int. Cl. F16h 57/10
U.S. Cl. 74—759 **1 Claim**

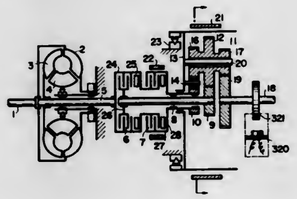


Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction an another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,701,294
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Shin Ito; Seitoku Kubo, and Takakazu Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 15, 1970, Ser. No. 98,271
Claims priority, application Japan, Dec. 16, 1969, 44/101441
Int. Cl. B60k 21/00
U.S. Cl. 74—866 6 Claims

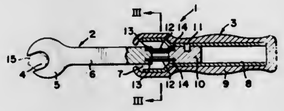


A hydraulic control system for a fluid controlled automatic transmission having means for controlling fluid pressure applied to servo chambers for multiple disc clutch means and brake band means for carrying out an automatic speed change. In the system, the fluid pressure is varied depending on the load on the engine represented by a variable such as the negative pressure in the air intake manifold or the opening of the engine throttle valve.

3,701,295
TORQUE WRENCH

Shirou Mende, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakkusho, Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,841
Claims priority, application Japan, June 3, 1970, 45/47749
Int. Cl. B25b 23/14
U.S. Cl. 81—52.4 4 Claims



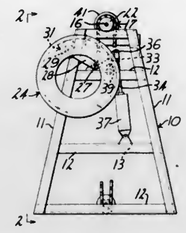
A torque wrench comprises a tightening member and a handle member. The handle member includes a sleeve having an enlarged open end and an insert block is secured in the sleeve adjacent the enlarged open end. The tightening member and the insert block are connected with each other by means of a pair of spaced trough-shaped springs each having an arcuate transverse cross-section. A pair of the trough-shaped springs are arranged with the concaved surfaces thereof confronting each other.

3,701,296
APPARATUS FOR CUTTING STRIPS FROM VEHICLE TIRES

James A. Snow, Route 3, Box 405, Gadsden, Ala.

Filed Feb. 18, 1971, Ser. No. 116,489
Int. Cl. B23b 5/14
U.S. Cl. 82—54 7 Claims

Apparatus for cutting an elongated strip from the tread of a vehicle tire having rotating cutters spaced from each other the width of the strip to be cut. Roller is mounted for movement toward and away from cutters with axis of roller being parallel to axis of rotation of cutters. Roller is adapted to enter tire and

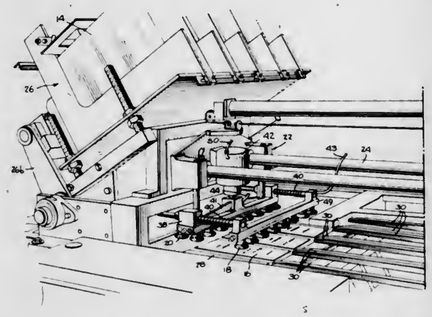


engage opposite side of tread from side thereof engaged by cutters to force the tread into cutting relation with cutters and impart rotary motion to tire being cut.

3,701,297
APPARATUS AND METHOD FOR TRANSPORTING ARTICLES

Joseph J. Kovic, Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Filed July 27, 1970, Ser. No. 58,420
Int. Cl. B65b 5/10
U.S. Cl. 83—13 17 Claims



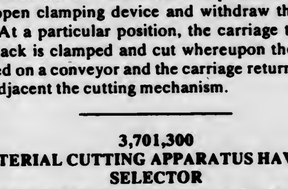
The apparatus and method of the disclosure relate to the lifting, transporting and releasing of articles from one station of a production line operation to another station. The apparatus and method particularly relate to transporting flexible blister packaged articles. The apparatus includes a plurality of transfer arms equipped with suction cups and adapted for lifting the articles and supporting them at a plurality of points along the surface of each article while they are being transported.

3,701,298
DE-REELING APPARATUS FOR ELECTRICAL COMPONENTS

Martin G. Heller, 78 Warren Road, West Orange, N.J., and Donald Kelly, 19 Mitchell Ave., Roseland, N.J.

Filed July 15, 1970, Ser. No. 54,926
Int. Cl. B26d 4/11
U.S. Cl. 83—23 10 Claims

Electrical components having a wire lead extending from each end are arranged in taped strips with the leads spaced in like determined intervals. The arranged spacing of the leads from each other is customarily either two hundred thousandths of an inch, three-eighths of an inch or four hundred thousandths of an inch; however, other pitches may be used. In this invention a de-reeling apparatus is provided for automatically feeding a taped strip of said electronic components with leads arranged in a determined spacing to an adjustable wire cutting mechanism whereby the leads are cut to a desired and selected length from the component body. After cutting the leads, the electrical components are delivered to a chute whereby they are fed in an aligned manner to other ap-

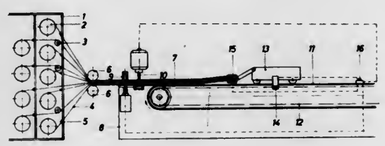


paratus such as grouping, bending and/or counting mechanisms. One type of processing apparatus may be bending apparatus similar to that shown in U.S. patent application Ser. No. 8,192 filed Feb. 3, 1970 in the name of Martin G. Heller and Donald D. Kelly.

3,701,299
APPARATUS FOR FORMING STACKS OF CLOTH WEBS WHICH ARE CUT TO LENGTH

Gunter Stumpf, 7421 Mehrstetten/Kreis Munsingen, Germany

Filed March 2, 1971, Ser. No. 120,162
Int. Cl. B26d 5/28
U.S. Cl. 83—72 12 Claims



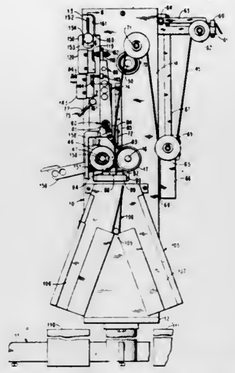
Webs of material are withdrawn from superposed cloth rolls to form a stack of layers on a table. The stack is clamped and compressed in a clamping device and the stack is cut by a cutting mechanism. The cut ends of the stack are gripped in a carriage which travels on the table to pull the stack through the now open clamping device and withdraw the webs from the rolls. At a particular position, the carriage trips a switch and the stack is clamped and cut whereupon the cut stack is transported on a conveyor and the carriage returns to its initial position adjacent the cutting mechanism.

3,701,300
MATERIAL CUTTING APPARATUS HAVING A SELECTOR

Volker Schmidt, Todds Road, R. R. No. 7, Lexington, Ky., and Erich A. Schmidt, 2415 Liberty Road, Lexington, Ky.

Filed March 9, 1971, Ser. No. 122,415
Int. Cl. B26d 7/06
U.S. Cl. 83—80 11 Claims

A vertically fed strip of material is cut into segments of selected lengths by a horizontally movable cutting blade. The thickness of the strip of material is measured so that the cut segment has its thickness measured during the feed portion of the previous cycle to that in which it is cut. If the thickness of

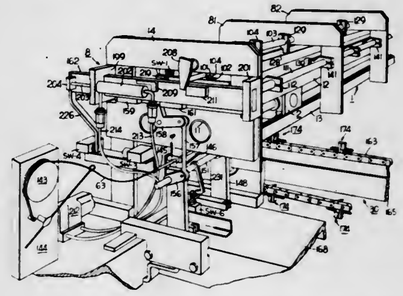


the strip of material exceeds a predetermined thickness, the measured segment is diverted into another area after being cut during the next cycle.

3,701,301
WIRE LENGTH MEASURING AND CUTTING APPARATUS

Ragnar Gudmestad, 2754 S. Waukesha Road, Waukesha, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed March 17, 1971, Ser. No. 125,164
Int. Cl. B26v 7/06
U.S. Cl. 83—151 15 Claims



An apparatus for producing electrical wire leads has two feeding clamps which are counter reciprocated between a fixed control station and an adjustable control station whose spacing from the fixed control station determines the length of the produced wire lead. Varying the spacing between the control stations automatically varies the cycling of the apparatus as required for the increased or decreased length of the produced wire lead.

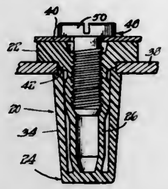
3,701,302
GROMMET TYPE FASTENER

John A. Pestka, Park Ridges, and Lloyd A. Erickson, Niles, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed March 29, 1971, Ser. No. 128,801
Int. Cl. F16b 13/06
U.S. Cl. 85—80 9 Claims

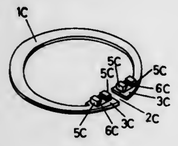
The present invention relates generally to improvements in plastic fasteners and more particularly to the provision of novel and extremely practical one-piece plastic grommet type

anchor members for accommodating the threaded shank of a screw member when positioned within a work aperture. The anchor member disclosed herein includes a head section for clampingly engaging one side of an apertured workpiece, and a shank section comprising an elongate hollow portion for ac-



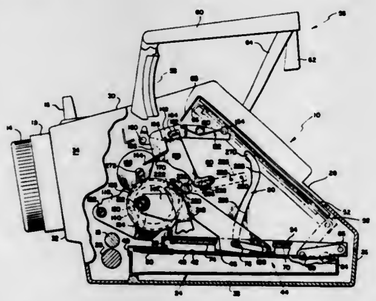
commodating a screw shank, and diametrically disposed outwardly flaring shank arms integrally connected with the entering extremity of hollow portion and having free work engaging extremities. The shank arms and the wall defining the hollow portion are laterally expandable in response to forces applied axially thereof.

3,701,303
STOP RING
Isamu Kondo, 2899 Aza Minamizuka, Yanizu-cho, Hashima-gun, Gifu Prefecture, Japan
Filed March 23, 1971, Ser. No. 127,118
Int. Cl. F16b *21/18*
U.S. Cl. 85—8.8 **6 Claims**



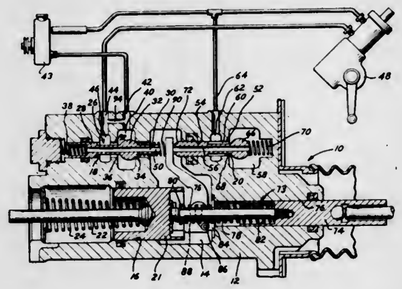
A circular stop ring has hook parts of a L-shape of a circular shape or other shapes which catch nipples of snap pinchers and which is protruded and formed on the base surface of a stop ring body having a gap formed between the hook parts by cutting and separating a part of the circular stop ring.

3,701,304
REFLEX MEMBER VELOCITY CONTROL MEANS
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 20, 1971, Ser. No. 209,564
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **17 Claims**



A reflex camera having an operator mechanism which positions a viewing surface closed proximate the film plane for focusing purposes, and in a subsequent exposure mode positions a reflective surface within the optical path in a position causing a coincidence of a focal plane with the film plane. A fixed specular surface is positioned in the optical path to the viewing surface in the focusing mode and said viewing surface is in spaced parallel relation to said fixed specular surface during the exposure mode. The operator mechanism is provided with positioning mechanism whereby the viewing surface approaches the fixed specular surface in a direction generally parallel to the same and at a minimized velocity so as to prevent bouncing of the viewing surface.

3,701,305
HYDRAULIC BRAKE BOOSTER WITH BALL VALVES
Richard L. Lewis, South Bend, Ind., and Edward J. Goscenski, Jr., Marshall, Mich., assignors to The Bendix Corporation
Filed Jan. 13, 1971, Ser. No. 106,189
Int. Cl. F15b *11/08, 13/10*
U.S. Cl. 91—457 **3 Claims**

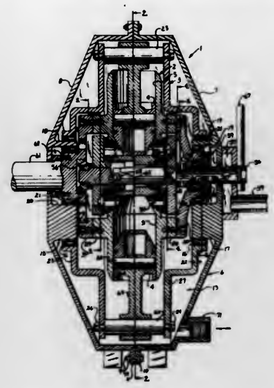


A hydraulic brake booster is disclosed which includes a pair of ball valves which control fluid communication between the booster pressure chamber and the fluid pressure source and between the booster pressure chamber and a fluid reservoir. Each of the ball valves is provided with a valve stem. Each of the valve stems engage opposite sides of an operator-operated lever which extends between stems. The lever is normally urged toward a position opening one of the valves to communicate the chamber with the reservoir and closing the other valve. However, when a brake application is effected, the lever is shifted to close fluid communication between the pressure chamber and the reservoir and initiate fluid communication between the pressure source and the pressure chamber.

3,701,306
ROTARY ENGINE
Leonard F. Eck, 418 North Hartup, McPherson, Kans.
Filed Sept. 28, 1970, Ser. No. 76,131
Int. Cl. F01b *13/06*
U.S. Cl. 91—482 **7 Claims**

A rotary fluid driven engine includes a stationary housing having a cylinder block rotatably mounted therein and having a plurality of spaced bores. Each bore has a piston reciprocally mounted therein and connected by connecting rods to an eccentric rotor which is rotatably mounted within the housing for rotation about an axis spaced from and parallel with the axis of rotation of the cylinder block. Fluid under pressure is applied is sequence into bores of the cylinder block in accordance with controlled ports to effect movement of the respective piston in the bores and rotation of the eccentric rotor. A plurality of spaced shafts are fixed relative to the

cylinder block and engage respective cam surfaces in the eccentric rotor to rotate the cylinder block and a driven shaft

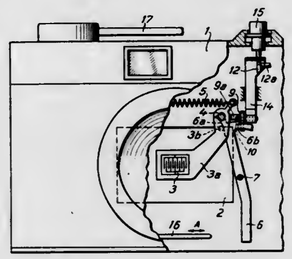


connected to said block and to maintain relative rotation of the cylinder block and eccentric rotor and reciprocation of the pistons.

ERRATUM

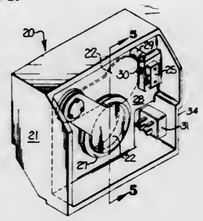
For Class 95—42 see:
Patent No. 3,701,304

3,701,307
SHUTTER RELEASE MECHANISM IN PHOTOGRAPHIC CAMERAS
Karl Clos, Katzenfurt, and Fritz Keiner, Ehringshausen, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany
Filed Sept. 20, 1971, Ser. No. 181,758
Claims priority, application Germany, Sept. 30, 1970, P 20 48 078.8
Int. Cl. G03b *19/12*
U.S. Cl. 95—10 PO **5 Claims**



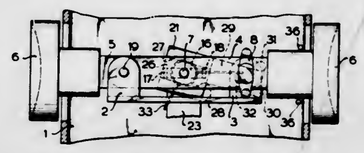
In a photographic camera including a light path barrier component in the space between the objective and the film, and further including a release rod for releasing the camera shutter, the release rod is arranged to render the barrier component movable out of the light path upon rod actuation. During the movement of the barrier component the latter reacts on the release rod and moves it further, thereby eventually releasing the camera shutter automatically and independently from the camera operator.

3,701,308
PHOTOGRAPHIC CAMERA EXPOSURE CONTROLLING MEANS
Stuart C. Davis, Charlotte, N.C., assignor to Photo Corporation of America, Charlotte, N.C.
Filed April 19, 1971, Ser. No. 135,209
Int. Cl. G03b *9/10, 9/70*
U.S. Cl. 95—11.5 R **4 Claims**



An exposure controlling subassembly for a photographic camera wherein a shutter is oscillated about a pivot axis from a light blocking position wholly occluding a shutter aperture to an exposure position wherein the shutter aperture is open and a flashtube controlling electrical switch is actuated by the shutter member upon movement thereof to the exposure position. The subassembly containing the shutter is moduarly removable from the photographic camera and replaceable in the event of failure. The shutter within the subassembly is mounted for oscillatory movement and is electrically operated.

3,701,309
PHOTOGRAPHIC CAMERA WITH MOTORIZED FOCAL LENGTH AND DISTANCE ADJUSTMENT OF THE OBJECTIVE
Heinz Thiele, Leinfelden; Dietrich Becker, Stuttgart; Roland Hochstein, Stuttgart; Horst Reckstroh, Stuttgart, and Hans Lieckfeldt, Stuttgart, all of Germany, assignors to Zeiss Ikon Aktiengesellschaft, Stuttgart-S, Germany
Filed Nov. 2, 1970, Ser. No. 86,213
Claims priority, application Germany, Nov. 4, 1969, P 19 55 317.4
Int. Cl. G03b *3/10*
U.S. Cl. 95—45 **6 Claims**



A photographic camera is provided with an objective whose focal length and distance are adjusted by a motorized control device which includes at least one one-armed lever pivotally supported at one end in the camera housing and having at its other free end a manually operable handle for initiating the operation of two motors, one of which effects an adjustment of the focal length while the other effects a distance adjustment of the objective.

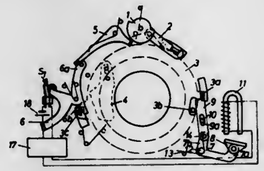
In one embodiment of the invention two one-armed levers are employed which are disposed parallel to one another and are operatively connected with each other in such a manner that either one of the same may be used to effect a motorized adjustment of the focal length and the distance of the camera. The free ends of these two one-armed levers extend horizontally in opposite directions and each of said free ends has an operating handle attached thereto.

In another embodiment of the invention the one-armed lever is provided with a handle which is slidable along the outer camera wall and carries an actuating member for a switch which controls a focusing motor. A second handle which is axially movable into a recess of the first handle is operatively connected with a slidable member which is slidably and also pivotally mounted on a stationary pin in the camera housing. When the second handle is pushed into the first handle the slidable member operates a switch which controls a focal length adjusting motor.

3,701,310
PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIME SETTING DEVICE

Ernst Hermann Dietz, Calmbach/Black Forest, Germany, assignor to Prontor-Werke Alfred Gauthier GmbH, Calmbach/Schwarzwald, Germany

Filed Feb. 24, 1970, Ser. No. 13,449
Int. Cl. G03b 9/00
U.S. Cl. 95—53 E **2 Claims**

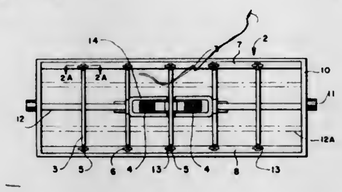


A photographic shutter includes a reciprocating drive element that places the shutter segments in the open and closed position and cooperates with an electronically controlled time setting device having an electromagnetic open-time-block operable to hold the drive element in the open position during the exposure time. The time setting device has a contact switch operable by a shutter release member to switch on the time setting device. Advantageously a nose is provided on the shutter release member which is engagable with a pin on the drive element during the opening movement of the segment drive element. The engagement of the nose with the pin prevents the return of the shutter release member for the period of time during which the drive element is blocked by the electromagnetic open-time-block.

3,701,311
LOUVER CONSTRUCTION

Shirley McLarty, Hutchins, Tex., assignor to Cary Products, Inc., Hutchins, Tex.

Filed Dec. 7, 1970, Ser. No. 95,588
Int. Cl. F24f 13/10
U.S. Cl. 98—110 **4 Claims**

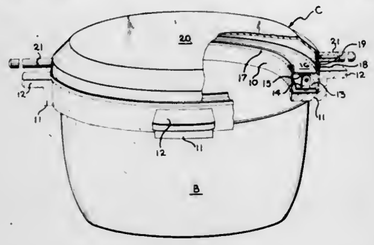


An air conditioner louver construction which permits easy insertion of a control wheel into the frame of the louver by virtue of a unique approach, whereupon the control wheel is locked into place by a novel frame structure that permits rotation in each direction and positively prevents inadvertent dislocation of the control wheel from the louver frame, while also providing a reduced complexity and increased air volume in a louver construction.

3,701,312
CORN POPPER

Myron D. Martin, 6632 Maplewood Avenue, Apt. 314, Sylvania, Ohio

Filed July 19, 1971, Ser. No. 163,861
Int. Cl. A23l 1/18
U.S. Cl. 99—238.6 **5 Claims**

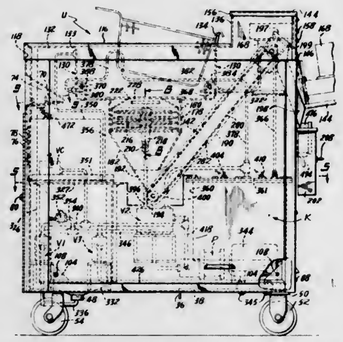


A popcorn popper of generally ring-like form rests upon the rim of a bowl or the like into which the popped corn is deflected. The corn to be popped is placed in an annular tray, below which is an heating means. A cover lid covers the tray so that the corn when popped strikes against the lid and is deflected into the bowl. Upon completion, the popper is lifted from the bowl into which all of the popped corn has been deposited.

3,701,313
DEEP FAT FRYER UNIT WITH SOLENOID VALVES AND AUTOMATIC CONTROLS

Weldon C. Boggs, Tampa, Fla., assignor to Food Research & Equipment Company, Tampa, Fla.

Filed Feb. 12, 1971, Ser. No. 115,031
Int. Cl. A47j 37/12
U.S. Cl. 99—330 **34 Claims**

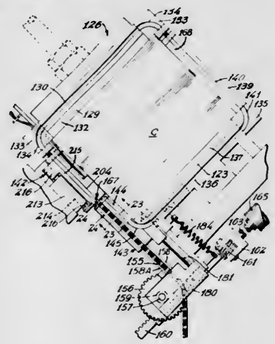


A deep fat fryer unit having solenoid operated valves controlled by switches, relays and motor driven timers for controlling the various phases of operation of the unit, including the pumping of oil from a storage tank into a heater tank and then into a cooking pot, through a filter, and return to the heater tank. The oil is continuously circulated through the heater tank and may be circulated through the cooking pot or bypass the cooking pot. A removable crumb conveyor continuously removes crumbs from a crumb well at the lower end of a filter bowl opening into the cooking pot and containing the filter. A vacuum switch is connected with the inlet of the pump and is set to close when the filter is about 50 percent clogged. Closing of the vacuum switch automatically effects return of the oil from the cooking pot to the storage tank and precludes resumption of normal cooking operations until after the filter has been cleaned. Upon removal of the filter and crumb conveyor, a pump-out adapter can be mounted in the filter bowl together with a pump-out hose and the oil pumped out of the crumb-well in response to operation of a sump switch. The storage tank and heater tank can be emptied one at a time by operating separate switches. An emergency STOP switch can be operated at any time to shut down the unit. Automatic signal lights on a control panel indicate when the unit is turned on, when the unit is in operation, when the heating grids are operating, when the heating grids are not working and oil is being circulated through the filter, and when a change of the filter is required.

3,701,314
STRAPPING APPARATUS

Herbert G. Tull, III, Charlottesville, Va., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Sept. 21, 1970, Ser. No. 73,967
Int. Cl. B65b 13/10
U.S. Cl. 100—28 **20 Claims**

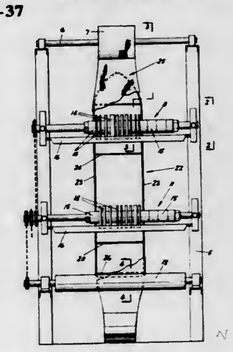


A hopper is provided which is filled with a stack of paper bags or other material to be baled. The bags are transferred to a compression area where the stack is compressed. Straps are drawn about the stack and secured. The strapped bale is then discharged.

3,701,315
APPARATUS FOR PRINTING ON TUBULAR KNITTED FABRIC

Roderick A. Maund, 54 Pemberton Street, Botany, Wales

Filed Sept. 21, 1967, Ser. No. 669,602
Int. Cl. B41f 17/38
U.S. Cl. 101—37 **1 Claim**

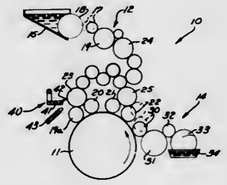


An apparatus for simultaneously printing on both sides of tubular fabric and having at least one pair of coacting printing rolls contacting both sides of the fabric and being supplied with coloring material. A spreader is disposed within the tubular fabric to hold the fabric in a spread out condition while passing between the printing rolls. Coacting support rolls act to hold the spreader in position between the printing rolls as the fabric passes over it.

3,701,316
INK AND DAMPENER FORM ROLL INTERRUPTION FOR CLEANING PURPOSES

Peter A. Sylvester, Dayton, and Walter J. Wajciechowski, Cleveland, both of Ohio, assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 38,009
Int. Cl. B41f 7/40, 31/34, 35/02
U.S. Cl. 101—148 **3 Claims**

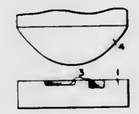


A lithographic printing press includes a rotatable plate cylinder for carrying a printing plate. An ink distribution system applies ink to the plate, and a dampener solution distribution system applies a dampening solution to the plate. Both the ink distribution system and the dampening solution distribution system include form rolls which have a cooperative fluid-transferring relationship with the plate. The dampener form roll carries both ink and dampening solution during printing. During wash-up or cleaning of the ink distribution system, the form rolls of the ink distribution system are moved away from the plate cylinder, and an ink-cleaning solution is distributed through the system. In accordance with the present invention, means is provided for transmission of the ink-cleaning solution from the ink distribution system to at least the dampener form roll to effect cleaning of at least the dampener form roll during cleaning of the ink distribution system.

3,701,317
METHOD FOR PRINTING ELECTRICAL CIRCUITS ON SUBSTRATES

Hiroshi Miyamoto, 5-36, Yoyogi, Shibuya-ku, Tokyo; Tsuyoshi Isojima, 217 Ohmamedo-cho, Kohoku-ku, Yokohama-shi, and Osamu Minowa, 4-32-6, Samnp., Pjta-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 720,040, April 10, 1968, abandoned. This application Oct. 5, 1970, Ser. No. 77,909
Claims priority, application Japan, Sept. 19, 1967, 42/59614
Int. Cl. B41m 3/08
U.S. Cl. 101—170 **4 Claims**



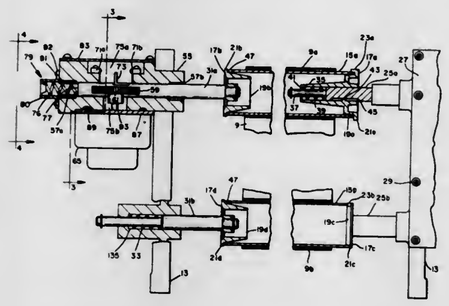
A method for forming an electrical circuit on a substrate by printing wherein a fluid ink material which consists of a resin solution and one of insulating, dielectric and conductive materials in powder dispersed in the solution is used. The ink material is replaced from an integlio plate to a silicone rubber transcriber and then printed on the substrate.

3,701,318

SKEW CONTROL APPARATUS FOR FEEDING A WIDE-WEB RIBBON IN A HIGH SPEED PRINTER

Paul R. Loscan, and Charles J. Sabouis, both of Utica, N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed April 15, 1970, Ser. No. 28,794
Int. Cl. B41l 27/00
U.S. Cl. 101—336 **4 Claims**



An apparatus and method for feeding a wide-web inking ribbon in alternate directions between a pair of mandrels in an on-the-fly printer. The mandrels are detachably mounted in the printer such that their positions may be interchanged and the locations of the ribbon's left and right portions reversed. This extends the ribbon's life when printing is performed only in columns grouped at one side of the document. The apparatus includes means for sensing and correcting skew in the ribbon as it travels between the two mandrels. A photoelectric sensor, positioned adjacent an edge of the ribbon, senses any skew and in response signals a tracking device which axially moves one of the mandrels to overcome the skew. The tracking device includes a movable shaft having a series of teeth thereon which mesh with the teeth of a gear rotatable in either direction by a reversible motor in response to the output of the sensor. Where the ribbon feed is used in a "shuttle" printer which prints each line by initially printing one group of columns and then "shuttling" the document to print another group of columns in the line, a pair of sensors are used. They cause the tracking device to move the mandrel so that the ribbon alternately tracks along two paths spaced apart a distance equal to the distance the document is shuttled. This allows substantially the entire area of the ribbon to be used. Even with the usual type of on-the-fly printer which prints in all the columns of a line at one time, the ribbon preferably tracks along two paths. In this case, the distance between the two paths is equal to one-half the distance between adjacent columns so that those areas of the ribbon which would normally always be located at the spaces between the columns are used.

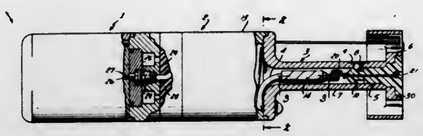
3,701,319

UNDERWATER SOUND SIGNAL FOR EXPLOSIVE ECHO RANGING

Carl A. Axelson, 190 McKay Street, Beverly, Mass.; John R. Hinves, 249 Caroline Avenue, Somerset, Mass.; Elton Y. McGann, 214 Kingswood Drive, Williamsburg, Va., and Robert M. Johnson, 110 Green Briar Drive, Clarks Green, Pa.

Filed Dec. 1, 1970, Ser. No. 93,977
Int. Cl. F42b 21/00
U.S. Cl. 102—7 **2 Claims**

A bomb-type underwater sound signal source is disclosed wherein the explosive charge is in the form of an explosive cord which is normally coiled within the bomb casing and automatically deployed upon impact with the sea surface. The



extended cord trails behind the bomb until it is detonated at a preset depth to produce an acoustic signal substantially confined to a horizontal plane.

ERRATUM

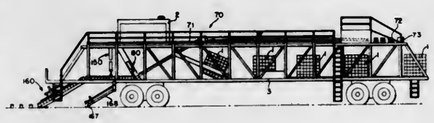
For Class 102—57 see:
Patent No. 3,701,573

3,701,320

METHOD AND APPARATUS FOR LAYING RAILROAD TIES ON A PREPARED ROAD SURFACE

Joseph G. Fearon, and George Monte Gilbert Battermann, both of Libby, Mont., assignors to Morrison-Knudsen Company, Inc., Boise, Idaho

Filed Feb. 12, 1971, Ser. No. 114,808
Int. Cl. E01b 29/32, 29/06
U.S. Cl. 104—6 **11 Claims**



A method and means are disclosed for dispensing railroad ties at regularly spaced intervals along a prepared roadbed surface from a moving vehicle. Bundles of ties are placed in the input end of the tie laying vehicle and conveyed to a breaking station where the rows of ties making up the bundle are separated into individual ties and conveyed in sequence along a first flow path to a tie plate receiving and spike setting station. The ties have predrilled holes therein in the positions where the spikes are normally set in place. Tie plates having a requisite number of spikes associated therewith are conveyed along a second flow path to the tie plate receiving and spike setting station. At the tie plate receiving and setting station the ties are aligned in position relative to the spikes extending through the tie plates, and the spikes set into place. The ties with their associated spikes are then conveyed to a pressing station where the outer spikes are completely inserted in the railroad ties. The ties are then discharged at spaced intervals along the prepared roadbed in position for laying rails thereon.

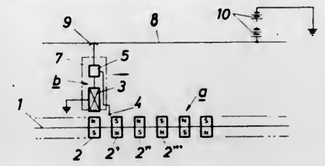
3,701,321

CONTINUOUS RAILWAY TRANSPORTATION SYSTEM

Geun Sam Lee, No. 12-6, 3-chome, Yushima, Bunkyo-ku, Tokyo, Japan

Filed Oct. 23, 1970, Ser. No. 83,467
Int. Cl. B61b 13/00; B61c 11/00; H02k 41/02
U.S. Cl. 104—148 LM **10 Claims**

This invention relates to a continuously movable device operable by a.c. voltage on a railway powered by a linear motor. When a.c. voltage is fed to the movable device or to the railway, a magnetic system mounted on the movable device generates magnetic attraction or repulsion between this mag-



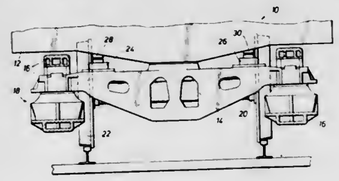
netic system and another magnetic system fixed to the railway effecting the movable device to move thereon.

3,701,322

FLUID DAMPENED RAILWAY BOLSTER SPRING

Ross G. Carle, Houston, Tex., assignor to ACF Industries Incorporated, New York, N.Y.

Continuation of Ser. No. 849,105, Aug. 11, 1969, abandoned.
This application Feb. 22, 1971, Ser. No. 117,810
Int. Cl. B61f 3/02, 5/10, 5/14
U.S. Cl. 105—197 B **4 Claims**



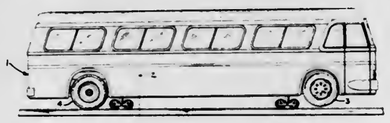
A fluid suspension system for railway vehicles having a uniformly varying spring rate to achieve a constant natural frequency in the vertical or bounce mode and to resist lateral or rocking motion of the railway car. The suspension system includes a damper supporting each end of a bolster on the side frame of a railway car truck. Each damper employs resilient material such as synthetic rubber in shear for hysteresis damping and utilizes metering of hydraulic fluid between upper and lower fluid metering chambers to provide hydraulic snubbing action during both compression and expansion of the suspension system to control vertical movement of the vehicle and to resist excessive rolling of the vehicle body. The fluid within the suspension system is maintained under a predetermined preload pressure to help support the load and to dissipate energy as the suspension system expands. Interfitting means between the bolster and the dampers maintain rotational alignment between the truck bolster and side frames.

3,701,323

CONVERTIBLE RAIL-HIGHWAY VEHICLE

Edwin W. Cox, North Kansas City, Mo., assignor to W. T. Cox Company, Camdenton, Mo.

Filed Nov. 16, 1970, Ser. No. 97,406
Int. Cl. B61d 15/00; B61f 9/00; B62d 61/12
U.S. Cl. 105—215 C **7 Claims**



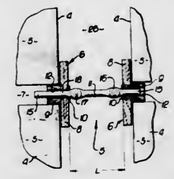
A conventional highway bus is adapted for alternate use on highways and railways by providing rail conversion units located adjacent respective road wheels of the bus. The conversion units raise the front of the bus on rail wheels to a position which deactivates the front road wheels and the rear of the bus is supported by rail wheels only to the extent that it is guided on the rails but propulsion and some braking is obtained through contact between the rails and the rear road wheels. Air bellows suspension is provided on the rail conversion units to simulate road driving characteristics and hydraulic cylinders permit the rail wheels to be withdrawn upwardly out of service during road operation.

3,701,324

BOXED PRODUCT CARLOADING

Harold C. Pierce, 234 Mountain View Avenue, Pomona, Calif.

Filed June 10, 1970, Ser. No. 44,942
Int. Cl. B61d 45/00; B60p 7/10
U.S. Cl. 105—369 B **7 Claims**



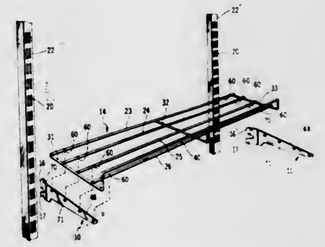
Boxed produce load for refrigerated rail cars of the type having boxes arranged in vertical stacks and the stacks aligned in plural rows running longitudinally of the car and in which the rows have a cumulative width less than the load width of the car, means being provided to expand the load to the car load width and to support the rows against lateral displacement including a longitudinal series of opposed pairs of uprights engaging the rows and rigid elements extending between and supporting the upright pairs; the rigid elements being length adjustable to selectively transversely space the rows to occupy the full load width of the car and brace the load.

3,701,325

SHELF AND BRACKET ASSEMBLY

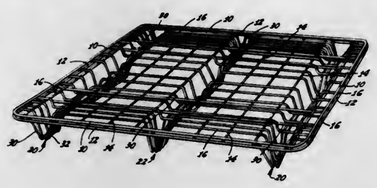
Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.

Filed May 7, 1971, Ser. No. 141,118
Int. Cl. A47f 5/12
U.S. Cl. 108—1 **2 Claims**



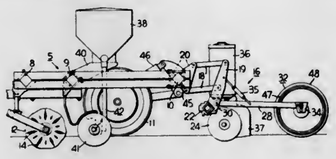
The invention relates to a shelf and bracket assembly of the type in which the bracket has hooks which are adapted to fit into slots of vertically extending support standards. The invention is directed to fastening means for attaching the shelf to the brackets which fastening means are incorporated in the design of and are integral parts of the bracket and shelf members.

3,701,326
WIRE-FORMED PALLET
Leslie E. Herman, 64 La Cuesta, Orinda, Calif.
Filed May 18, 1971, Ser. No. 144,579
Int. Cl. B65d *19/38*
U.S. Cl. 108—53 5 Claims



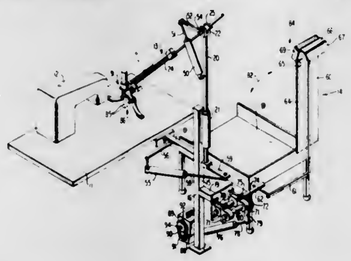
An improved wire-formed pallet is provided as a load carrying platform for storing or handling goods in a warehouse or other facility and for shipment of unit loads via rail and truck. The wire-formed platform of the invention is constructed to be nestable, so that many such platforms may be stored in a minimum space when not in use.

3,701,327
PLANTER AND METHOD OF PREPARING SOIL
Frank C. Krumholz, Hales Corners, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Continuation of Ser. No. 662,393, Aug. 22, 1967, abandoned.
This application June 1, 1970, Ser. No. 41,736
Int. Cl. A01c *5/00*
U.S. Cl. 111—81 2 Claims



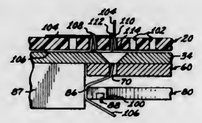
A combination of rolling ground contacting tools for preparing a seed bed, fertilizing, dropping seed and covering and forming the soil about the seed under existing conditions without previous soil preparation.

3,701,328
GARMENT RETRIEVER AND STACKER
Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed Jan. 11, 1971, Ser. No. 105,451
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 4 Claims



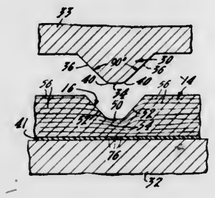
A garment retriever and stacker for use in the manufacture of shirts or the like wherein the collar portion of a shirt is grasped and lifted away from a sewing machine so that the remaining portion of the shirt tails in a downward direction, the shirt collar portion is released, and the shirt is urged in a downward arc and packed into a stack of shirts in a generally horizontal attitude.

3,701,329
STITCH CONTROL MECHANISMS AND THREAD CUTTER
Frederick Darwin Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Watham, Mass.
Filed Jan. 4, 1971, Ser. No. 103,508
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 11 Claims



Stitch control mechanisms modify a sewing machine to provide for the sewing of variably spaced stitches and provide for the control of the last stitch in a terminating series and the initial stitch in a subsequent series by severing only the bobbin supplied portion of these stitches and positioning the free ends thereof adjacent to a workpiece.

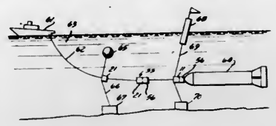
3,701,330
METHOD AND TOOL FOR FORMING A SCORE
Christian F. Kinkel, Arlington Heights, Ill., assignor to American Can Company, New York, N.Y.
Division of Ser. No. 782,919, Dec. 11, 1968, Pat. No. 3,650,006. This application March 25, 1971, Ser. No. 127,950
Int. Cl. B21d *51/26*
U.S. Cl. 113—15 A 9 Claims



A score having improved abuse and fatigue resistance qualities is formed by using a scoring punch which is specially profiled to obtain a smooth continuous flow of the displaced metal, thereby eliminating the "dead zone" of compressed, work-hardened metal which exists at the base of conventional scores.

3,701,331
MOORING LINE CUTTER SYSTEM
William G. Harris, Jr., Titusville, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 8, 1968, Ser. No. 775,995
Int. Cl. B63g *7/04*, *13/00*, *9/00*
U.S. Cl. 114—221 A 1 Claim

A mooring line cutter is incorporated in a sweep system that is towed underwater by a ship or other tractor vehicle. It includes a cylinder that has a hole drilled along the longitudinal axis thereof which allows it to be threaded on a sweep cable. A beveled cutting edge around the forward periphery thereof may include either a knife edge or a plurality of sharp teeth.



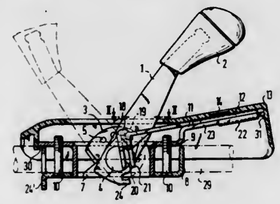
The cylinder may be made either as a one piece unit or as several pieces joined together by bolts or screws for easy mounting on said sweep cable.

3,701,332
BOOK MARK AND PAGE HOLDING DEVICE
Doyle K. Brooks, 413 W. 19th, Hays, Kans.
Filed April 14, 1969, Ser. No. 815,631
Int. Cl. B42d *9/00*
U.S. Cl. 116—119 3 Claims



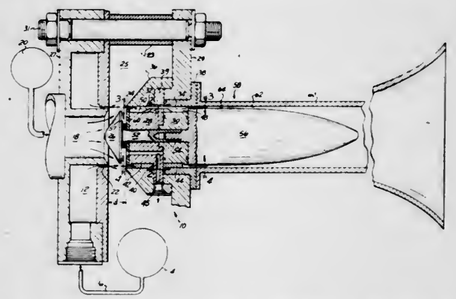
A page holder made from a flat piece of fairly rigid material into the form substantially in the shape of an "E." The center portion can be shaped in the form of a tapered section which is wider at the bottom where it is joined to two arms extending therefrom. Each of the arms has a piece extending therefrom which is substantially parallel th the sides of the center portion. The arms and the center portion form two slots of different spacing for holding different numbers of pages. The center portion can also be covered with a rubber material to assist in keeping the book page holder positioned.

3,701,333
GEAR SHIFTING MECHANISM FOR A BICYCLE TRANSMISSION
Hans Joachim Schwerdhoefer, Schweinfurt on Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Aug. 25, 1971, Ser. No. 174,790
Claims priority, application Germany, Sept. 1, 1970, P 20 43 225.1
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 R 9 Claims



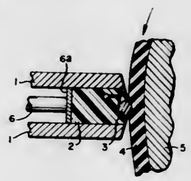
The gear shifting lever for a multiple-speed hub in a bicycle is attached to the bicycle frame by two clamping plates which are connected by screws, and of which one carries the support for the lever. The support and the clamping members are covered by a housing having a viewing aperture for sequential display of indicia indicating the transmission ratio as the lever is pivoted, the indicia being arranged on a carrier coupled to the leer and guided between one of the clamping plates and the housing.

3,701,334
ANNULAR SLOT PROPORTIONAL JET AMPLIFIER FOR A FLUIDIC SOUND GENERATOR
Bernard R. Teltelbaum, Birmingham, Mich., assignor to The Bendix Corporation
Filed Sept. 14, 1970, Ser. No. 71,711
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 11 Claims



An annular slot proportional jet amplifier is disclosed in which an annular control jet is used to deflect an annular power jet from an annular receiver into a low pressure region to provide a high gain proportional jet amplifier. A fluidic sound generator is also disclosed utilizing an annular slot proportional jet amplifier, with the annular receiver coupled to a centerbody and horn radiator structure in order to provide high intensity sound generation.

3,701,335
COATING APPARATUS FOR SHEET MATERIAL
Wolfgang Barnscheidt, Straberg/Neuss, Germany, assignor to Feldmuhle Aktiengesellschaft, Dusseldorf, Germany
Filed Feb. 12, 1971, Ser. No. 114,845
Claims priority, application Germany, Feb. 17, 1970, P 20 07 067.1; July 9, 1970, P 20 34 004.9
Int. Cl. B05c *11/02*, *1/08*
U.S. Cl. 118—104 9 Claims

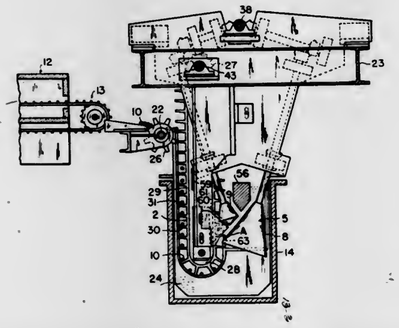


In an apparatus in which the thickness of a coating on sheet material is controlled by passing the material between a backing roll and a thin, rotating rod of a doctor blade assembly, the rod is rotatably embedded in a confined body of elastomeric polyurethane or synthetic rubber. A circumferential portion of the rod is exposed between two lips of the body which is under compressive stress between the confining walls and the rod. Lubricant and cooling liquid is fed to an axial groove open toward the receptacle of the body, mainly discharged axially from the groove and partly withdrawn by suction from another groove circumferentially spaced from the first groove in the direction of rod rotation.

3,701,336
PIPE COATING APPARATUS

William M. McConnell; William H. Bradley, both of Ben Avon; Howard E. Chappel, Butler; George P. Whitfield, Greentree, and Raymond L. Carey, Pittsburgh, all of Pa., assignors to Taylor-Wilson Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 723,411, April 23, 1968, Pat. No. 3,559,794. This application March 16, 1970, Ser. No. 24,460
Int. Cl. B05c 3/10
U.S. Cl. 118—423 9 Claims

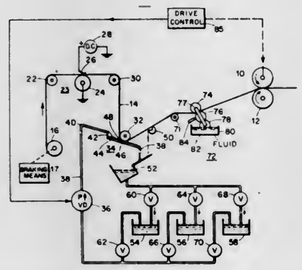


An automatic processing line having a conveyor system continuously feeding workpieces to chain sinkers which lower the workpiece into a process area at a slope and raise the workpiece from the process area at a slope and a screw apparatus which removes the workpiece from the chain sinker in the process area and conveys it to a continuous dragout conveyor for removal.

3,701,337
PRINTING APPARATUS

Ronald F. Borelli, Medfield, and Donald J. Garand, Chelmsford, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 29, 1969, Ser. No. 888,769
Int. Cl. G03g 13/00
U.S. Cl. 118—637 14 Claims

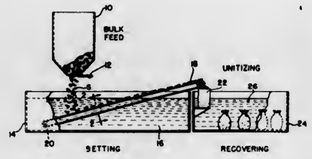


A recording medium is printed upon by exciting it, developing the medium in a toning liquid, and drying the medium. The toning liquid is applied by passing the medium longitudinally around an arc and pumping the toning liquid to flow so that its surface touches the medium on only one face. The latter preferably is substantially liquid impenetrable.

3,701,338
OYSTER SETTING METHOD AND APPARATUS

David C. McMillin, Shelton, Wash., assignor to Olympia Oyster Company, Shelton, Wash.

Filed Dec. 10, 1970, Ser. No. 96,905
Int. Cl. A01k 61/00
U.S. Cl. 119—4 7 Claims

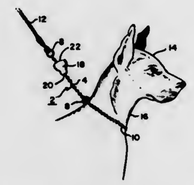


Oyster shells are fed in bulk from a storage hopper and allowed to free-fall into a setting tank containing liquid and free-swimming oyster larvae. The shells land on their convex side on a moving open-mesh conveyer. The conveyer transports the shells through the liquid and out of the tank. As the shells are passed through the liquid the larvae set on the convex undersides. As the shells leave the setting tanks with the larvae attached they are utilized in open-mesh bags and then placed in a recovery tank for a few days until suitably conditioned for transporting and placing in natural oyster beds.

3,701,339
CHOKER-TYPE COLLAR

Arthur E. Kemmerling, 955 Ringgold Street, Pittsburgh, Pa.

Filed May 18, 1971, Ser. No. 144,449
Int. Cl. A01k 27/00
U.S. Cl. 119—106 1 Claim



A choker-type collar having a ring at each end of the collar with a sleeve guard member inserted along the collar between the two rings. The sleeve has an opening at each end of the sleeve to permit it to slide along the collar. One opening of the sleeve is smaller than the circumference of one of the rings to prevent the sleeve from slipping away from the collar. The other end of the sleeve is larger than the circumference of the ring to permit the sleeve to slide over the ring and cover it.

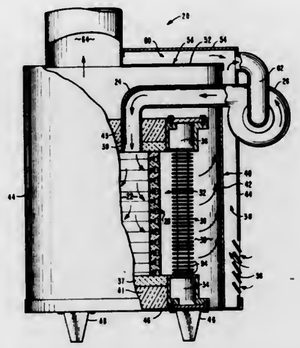
3,701,340
HEATING SYSTEM

Avy Lewis Miller, 4090 Valley Meadow Road, Encino, Calif.

Filed June 8, 1970, Ser. No. 44,334
Int. Cl. F22b 21/00
U.S. Cl. 122—367 C 10 Claims

An improved compact heating system, particularly adapted for heating water and generating steam, includes a combustible gas supply zone, a combustion chamber therearound in the form of a hollow burner element having a plurality of radial channels in heat exchange relation with an array of heat exchange elements spaced peripheral therefrom, and gas ignition means. The channels are preferably of special configuration to improve heat transfer efficiency. The system is adapted

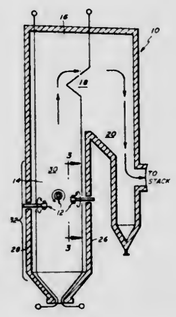
to efficiently burn a high velocity stream of combustible gases and develop a wide range of B.T.U. outputs per hour, including multi-million B.T.U. output, while retaining advantages of larger types of heating systems. Improved baffles for heat exchanger elements are also provided.



3,701,341
APPARATUS AND PROCESS FOR SLAG DEPOSIT REMOVAL

Cullie B. Willis, Jr., Westfield, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Continuation of Ser. No. 851,875, Aug. 21, 1969, abandoned. This application March 18, 1971, Ser. No. 125,773
Int. Cl. F22b 37/52
U.S. Cl. 122—392 7 Claims

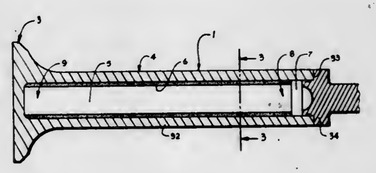


An apparatus and process for slag deposit removal wherein water is injected under pressure towards the heat absorption surface in the furnace section of a vapor generator to create a thermal shock and a mechanical force which causes the slag deposits on the surface to separate therefrom. A nozzle is provided which has a plurality of orifice units extending at different acute angles with respect to a plane perpendicular to the longitudinal axis of the body portion of the nozzle, so that when the nozzle is rotated, a plurality of spiral streams of cleaning fluid are injected.

3,701,342
VALVE MEMBER

Herbert B. Owsley, and Stuart E. Bunn, both of P.O. Box 388, Shawnee Mission, Kans.

Filed March 8, 1971, Ser. No. 121,933
Int. Cl. F01l 3/14
U.S. Cl. 123—41.16 7 Claims

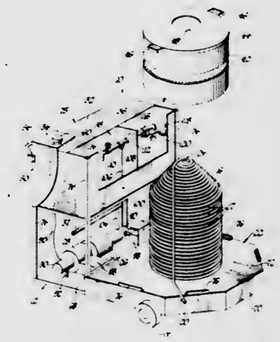


A valve member operative for use in an internal combustion engine and which incorporates evaporation-condensation heat transfer structure. The valve member has a head and a stem extending therefrom and a hermetically sealed cavity therein lined with a capillary flow medium and containing a volatile and condensible working fluid which establishes heat-transfer flow paths within the valve member by repeated evaporation and condensation of the working fluid.

3,701,343
STEAM CLEANER

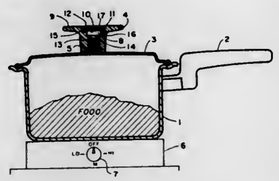
Regis D. Bowers, Detroit, Mich., assignor to Chausse Manufacturing Co., Inc., River Rouge, Mich.

Filed Feb. 16, 1971, Ser. No. 115,551
Int. Cl. F22b 21/26
U.S. Cl. 126—271.2 R 18 Claims



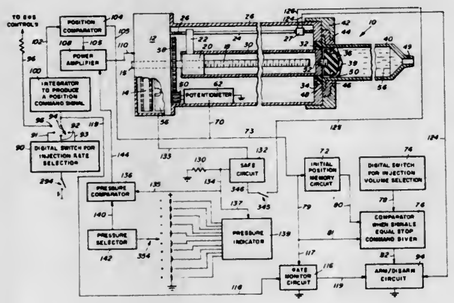
A portable steam cleaner comprising a wheeled carriage, an enclosure on the forward part of the carriage defining a swirl chamber having a horizontally tangential air input and a vertically axial outlet, a heating coil having spaced convolutions disposed over the chamber such that air passes upwardly therethrough from the chamber, and an oil burner for heating the air which is driven through the swirl chamber and the heating coil by means of a blower. A float valve controlled water supply is disposed toward the upper rear of the carriage along with a soap supply. A hand-held steam gun is disclosed.

3,701,344
WATERLESS COOKING APPARATUS
Henry M. Walls, DuBois; George M. Sayers, Clearfield, and Noel B. Walls, Reynoldsville, all of Pa., assignors to Thermo-Sentinel Corporation, DuBois, Pa.
Filed Aug. 24, 1970, Ser. No. 66,314
Int. Cl. A47j 27/212
U.S. Cl. 126—388 **6 Claims**



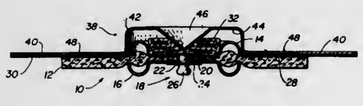
A waterless cooking apparatus is improved by the provision of a knob having an indicator which by its change of color will enable the cook to manipulate the heat in order to obtain the best results in using waterless cookware. This knob is formed of heat insulated material and has embedded therein a heat sink in metallic contact with an attaching means in direct thermal contact with the cookware cover. A layer of color reversible temperature-sensitive material is positioned on the surface of the heat sink closest to the top of the knob and exposed for observation by the cook. The method of manipulating the heat supply to this cookware to make advantageous use of the two color changes utilized during the normal cooking cycle.

3,701,345
ANGIOGRAPHIC INJECTOR EQUIPMENT
Marlin S. Heilman, Gibsonia; Rudolph J. Kranys, Pittsburgh, and Donald Jones, Churchill, all of Pa., assignors to Medrad, Inc., Allison Park, Pa.
Filed Sept. 29, 1970, Ser. No. 76,491
Int. Cl. A61b 06/00; A61m 05/00, 05/20
U.S. Cl. 128—2 R **33 Claims**



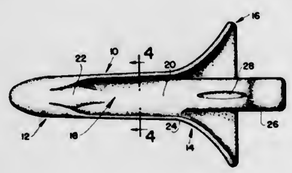
An angiographic injector control system for delivering a controlled volume of injection fluid is described. The injector has a motor driven piston for ejecting fluid from a syringe cartridge contained within a pressure jacket. The drive motor is operated in accordance with a command voltage corresponding to an incremental position of the injector piston, the command position signal also corresponding to the volume of fluid to be ejected from the cartridge. This command position voltage signal is compared to an actual position voltage to produce an error signal for operating the drive motor, whereby the syringe piston follows the position command signal. Volume selector means produce a volume signal corresponding to a desired maximum volume of fluid to be ejected; this volume signal is compared to the sum of the position command increments, producing a stop signal when the position command signal equals or exceeds the volume limit signal. Thus, the injector control system regulates the injection of fluid by sensing and controlling the position of the injector piston.

3,701,346
MEDICAL ELECTRODE
Charles T. Patrick, Jr., and Roman Szpur, both of Dayton, Ohio, assignors to Bionetics Inc., Dayton, Ohio
Filed Jan. 4, 1971, Ser. No. 103,498
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E **9 Claims**



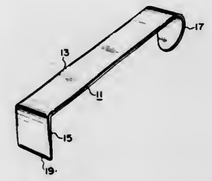
An electrode for attachment to the skin includes a pad of foamed material soaked with electrode jelly positioned in a low profile cup member and engaging an electrical conductor at the base of the cup member. Because the pad is wetted by the jelly, it adheres to the cup member and conductor. The cup member and soaked pad are protected by a cover, a projecting portion of which engages and holds the pad in the cup member. The area of the projecting portion engaging the pad has a relatively small area in comparison to the area of the pad engaging the cup member base and conductor. The pad therefore has comparatively little adhesion to the projecting portion and the cover can be removed from the electrode without pulling the pad away from the cup member.

3,701,347
PROCTOSCOPE
Joseph W. Belkin, 58 Dorset Lane, Farmington, Conn.
Filed March 4, 1970, Ser. No. 16,466
Int. Cl. A61b 1/30
U.S. Cl. 128—5 **5 Claims**



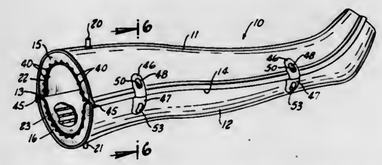
A unitary disposable proctoscope of plastic or the like comprising an elongated body with a gradually curved front end portion, an elongated rearwardly open viewing slot with a gently arcuate front end wall, a relatively wide flaring flange at a rear portion of the body serving as an external rectractor, and an integral handle disposed rearwardly of the flange.

3,701,348
CHISEL RETRACTOR TOOL
Joseph Navara, 2105 West Walton Street, Chicago, Ill.
Filed Dec. 9, 1970, Ser. No. 96,350
Int. Cl. A61b 17/02, 17/16; B25d 3/00
U.S. Cl. 128—20 **1 Claim**



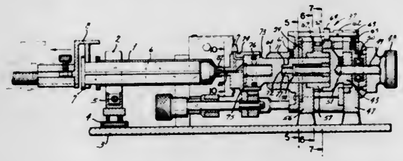
An instrument or tool for opening sections of the body such as the skull for performing pathological procedures.

3,701,340
BI-VALVED CAST
Leighton W. Larson, c/o The Waconia Clinic, 46 West Main Street, Waconia, Minn.
Filed May 13, 1971, Ser. No. 142,907
Int. Cl. A61n
U.S. Cl. 128—82.1 **7 Claims**



A bi-valved cast for immobilizing broken limbs in which complementary rigid shells, each having an inflatable liner, are releasably secured together about the limb or other body portion to be immobilized, so that upon pressurizing the liners, the limb or other body portion will be immobilized. A significant feature of the disclosed invention resides in the provision of air entry passages through which ventilating air reaches the interface between the immobilized limb and the inner surfaces of the inflatable liners.

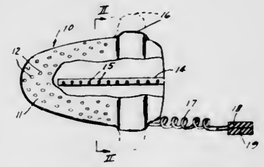
3,701,350
BLOOD EXCHANGING APPARATUS AND PROCESS
Harvey C. Guenther, 325 Main Street, O'Fallon, Ill.
Filed July 28, 1970, Ser. No. 58,829
Int. Cl. H61m 01/02
U.S. Cl. 128—214 B **5 Claims**



In a blood exchanging apparatus useful for automatically withdrawing deleterious blood from the body, discharging said blood, and supplying a like quantity of specified blood for infusion into the bloodstream of the body, a syringe is coupled to a valve that includes a series of ports that provide passage for accomplishment of the foregoing select blood transferring functions, with the plunger of said syringe connecting with a carriage that threadedly engages to a feed screw that may be selectively turned in either direction by means of a reversing motor, with the turning of said motor being reversible by means of the actuation of limit means or switches that are functionally disposed to said feed screw and operative through the movements of said carriage for effecting their select actuation and reversal of said motor and feed screw. The valve is also sequentially set to provide for the select movements of blood into or from the syringe, and to achieve this a gear means connecting to said valve is turned by means of a drive means, such as a rack and pinion, that are actuated by a solenoid which is regulated in its functioning by means of the aforesaid limit means or switches.

In the process of exchanging of blood through the use of the aforesaid device, the passages of the valves are set to coordinate with the functioning of the plunger within the syringe, so that in its first setting blood may be withdrawn from the body, and then discharged through a second setting of said valve, with the valve then being adjusted to provide for the drawing of specified blood into said syringe which may then be infused into the bloodstream of the body through a final adjustment and setting of said valve. All of these functions are coordinated through the circuit relationship between the alternate movements of the syringe means by operation of the feed screw, which operations are changed through actuation of the switch means, which also signals the timed operation of the solenoid and its interconnected gear and valve means so that selective passages of said valve may be opened in sequence with the operations of said syringe.

3,701,351
INFLATABLE INTRAVAGINAL APPLICATOR FOR ANIMALS
Douglas G. Harvey, R. R. No. 1 Freeport Road, Sterling, Ill.
Filed June 28, 1971, Ser. No. 157,273
Int. Cl. A61m 7/00
U.S. Cl. 128—260 **6 Claims**

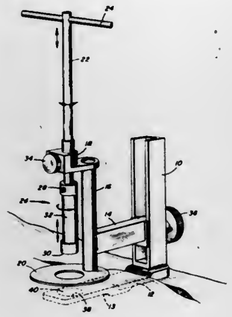


An intra-vaginal device for hogs and other animals comprising a flexible capsule having apertures therein, a fluid-tight distendible collar on the capsule arranged to be enlarged by introduction of fluid therein, and a fluid inlet conduit communicating with the collar to introduce fluid therein, the conduit being self-retractable during use.

3,701,352
ABDOMINAL WALL PUNCH
Nathaniel L. Bosworth, 1701 Fincastle Rd., Lexington, Ky.
Filed Dec. 1, 1970, Ser. No. 94,012
Int. Cl. A61b 17/32; B23d 21/14; B23b 49/00
U.S. Cl. 128—305 **9 Claims**

A surgical instrument to cut a clean defect in an abdominal wall needed for ileostomies and colostomies. The instrument

has an "L" shaped body with a lower arm which is inserted through an incision and a circular cutter supported from an



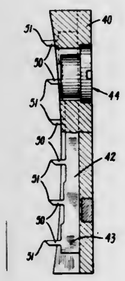
upper arm is pushed and turned through the tissue layers above the lower arm.

3,701,353

CIGARETTE PERFORATING APPARATUS

Arthur R. Pasquine, 106 Eldorado Drive and Harland J. Snow, 9424 Camrose Road, both of Richmond 23229; and Edward E. Wagner, 12500 Winfree St. (P.O. Box 122), Chester 23831, all of Va.

Filed Dec. 9, 1970, Ser. No. 96,486
Int. Cl. A24c 5/2, 5/46
U.S. Cl. 131—23R 14 Claims



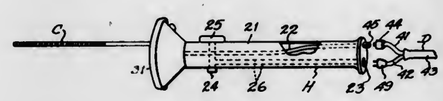
A mechanism for perforating cigarettes in conjunction with the operation of assembling filter sections to the cigarettes including the application of a tipping wrap connecting the filter section to the tobacco rod section the mechanism embodying a stationary shoe peripherally adjacent a cigarette carrier drum whereby the tipping paper is wrapped around the sections by rolling the rod sections between the drum and shoe, the shoe having in its surface needle points which penetrate the rod assembly as it is rolled, the needle points being provided by a thin strip of sheet metal appropriately ground at an edge facing the rod sections to provide an arc-shaped row of needles adapted to result in a peripheral row of venting apertures in the assembled cigarette.

3,701,354

POWER ACTUATED HAIR TEASING APPARATUS WITH FLEXIBLE CABLE DRIVE

Charles C. May, 11605 Washington Place, Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,547
Int. Cl. A45d 24/00
U.S. Cl. 132—11 A 7 Claims



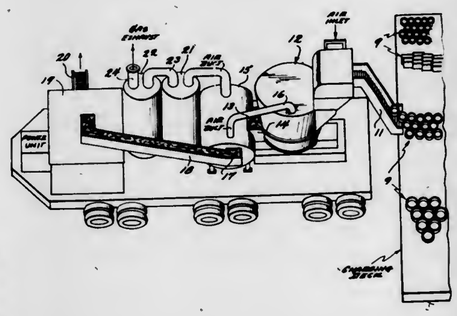
A teasing comb is releasably held by a lightweight hand unit containing gearing for imparting a purely laterally reciprocating movement to the comb. The hand unit also embodies a thumb switch for power control and a spring-loaded drive release responsive to entanglement of the comb in the hair. Drive is transmitted to the hand unit from a remotely located motor-reduction gear unit through a flexible drive cable, associated with an electric power lead cord extending to the control and automatic release switches, both cable and cord being embodied in a flexible transmission unit having at each end a pair of releasable couplings for connecting the drive cable and electric cord respectively to the motor-gear unit at its one end and to the hand unit at its other end.

3,701,355

MOBILE CONTAINER DECONTAMINATOR AND RECYCLE METAL RECLAIMER

Jack H. McKean, Kansas City, Mo., assignor to Baychem Corporation, Kansas City, Mo.

Filed Nov. 24, 1971, Ser. No. 201,940
Int. Cl. B08b 7/04; C23g 5/00
U.S. Cl. 134—19 6 Claims



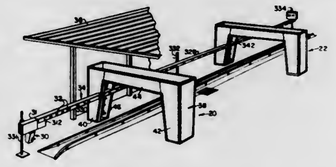
A method for recycling, as high grade steel scrap, spent metal pesticide containers by shredding the containers into reduced nugget-sized pieces followed by incinerating at a temperature sufficient to burn off all organic residual matter in the can using as combustion air for incineration the pesticide contaminated exhaust air generated by the shredder. A further step includes the removal by after-burning and scrubbing of any residual pesticide entrained in the incinerator off-gases.

3,701,356

CAR WASHING APPARATUS

Daniel C. Hanna, 1133 S.W. Rivington Dr., Portland, Oreg.; Jack F. Ebeling, and David Hildebrand, both of Portland, Oreg., assignors to said Hanna by said Ebeling and Hildebrand

Continuation of Ser. Nos. 526,161, Feb. 9, 1966, abandoned, and Ser. No. 734,835, May 31, 1968, abandoned. This application June 16, 1969, Ser. No. 838,000
Int. Cl. B60s 3/04; B08b 3/02
U.S. Cl. 134—58 R 10 Claims



Nozzles mounted on inclined pipes project narrow, concentrated streams of washing liquid against a car and the pipes are oscillated so that the streams wash inclined, overlapping swaths on the car. Two of the pipes are on the side and are drivingly interconnected by a top pipe. The operations of the sprays in a plurality of arches of the car wash are controlled by a coin actuated timer which also sequentially lights a series of electric lamps extending along one side of the car wash to pace a driver of a car through the car wash.

ERRATUM

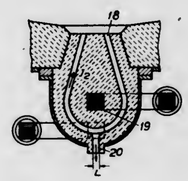
For Class 137—81 see:
Patent No. 3,701,458

3,701,357

ELECTROMAGNETIC VALVE MEANS FOR TAPPING MOLTEN METAL

Staffan N. Granstrom, and Ingemar E. Goransson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 23, 1969, Ser. No. 860,253
Claims priority, application Sweden, Sept. 30, 1968, 13158/68; June 16, 1969, 8512/69
Int. Cl. F15c 1/04
U.S. Cl. 137—81.5 6 Claims



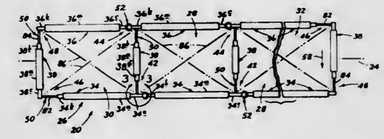
Valve means for ladles or furnaces, preferably of channel type, provided with at least one bottom tap hole. This means comprises a magnetic circuit with an "air gap" in the hole and with a flux direction straight across the flow direction in said hole. Current conductors are also arranged to conduct electric current straight across the stream, perpendicular to the flux, and a force is thus produced in the melt in the hole directed upwards or downwards and depending on the law of magnetic force. The invention also includes an embodiment with similar means in a channel type furnace, but used for circulating molten metal in the channels of the furnace.

3,701,358

ARTICULATED FRAME FOR MOBILE GROUND-TRAVELING INSTRUMENTALITY

Carl V. Von Linsowe, San Jose, Calif., assignor to John T. Page, Portland, Oreg., part interest to each

Filed June 22, 1970, Ser. No. 48,192
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 7 Claims



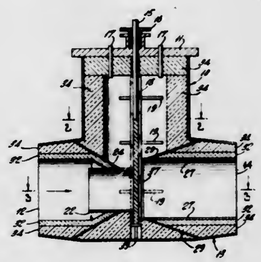
A mobile irrigator having an elongated articulated frame adapted to travel over the ground in a direction substantially normal to its longitudinal axis. Joints between different parts in the frame enable the latter to undulate while traveling over uneven terrain, while resisting horizontal bowing along its axis.

3,701,359

HIGH TEMPERATURE SLIDE VALVE

Arthur C. Worley, Meadham, and Ronald S. Kane, Saddle Brook, both of N.Y., assignors to Esso Research and Engineering Company

Filed Jan. 25, 1971, Ser. No. 109,122
Int. Cl. F16k 3/00
U.S. Cl. 137—375 6 Claims



An internally insulated slide valve for throttling and blocking solids flow at high temperature and moderate pressure in fluid solids transfer lines. The metal body of the valve operates at lower temperatures than if it had no insulation. Internal parts of the valve are supported so that they do not transmit excessive heat through the supporting members to the body.

3,701,360

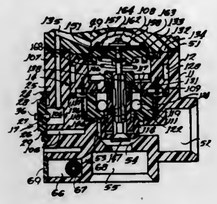
WATER SOFTENER VALVE

Edwin A. Morrison, Highland Park, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed June 3, 1971, Ser. No. 149,514
Int. Cl. F16k 31/18
U.S. Cl. 137—454.6 4 Claims

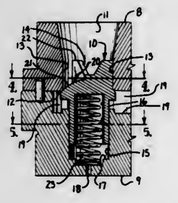
An improved water softener control valve for use on an automatic water softening or conditioning tank where the valve housing is formed of a suitable plastic material positioned within a rigid mounting bracket secured to a water softening tank, and valve cartridges having a double diaphragm actuation are controlled by solenoid operated valves mounted on a plate secured to the valve housing. The valve cartridge has been improved by the elimination of the side drain opening

with bleed-off from the upper pressure chamber occurring through the upper diaphragm and an annular bottom seal for the valve cartridge, and the solenoid valve structure has been



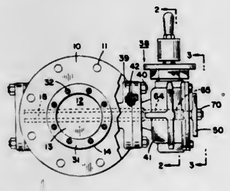
improved to provide an easier and quicker mounting arrangement of the solenoid valves on the valve plate secured to the control valve and mounting bracket.

3,701,361
VALVE ASSEMBLY AND VALVE MEMBER THEREFOR
Stuart E. Bunn, and Herbert B. Owsley, both of P.O. Box 388, Shawnee Mission, Kans.
Filed March 8, 1971, Ser. No. 121,934
Int. Cl. F16k *15/06*
U.S. Cl. 137—543.23 **3 Claims**



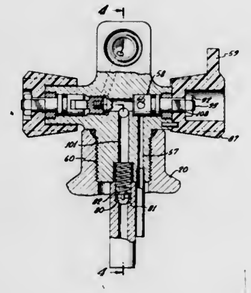
A valve assembly for controlling the flow of fluid under pressure through a portion of a fluid moving structure is formed of a plurality of elements adapted to be arranged to form either an intake or an exhaust or discharge valve assembly. Each valve assembly includes a seat and cage with a valve member mounted to open and close a respective fluid flow passage through the seat in response to differential pressure. The valve head and the valve seat have opposed curves to effect self-aligning and a line contact therebetween when the valve is seated in flow closing position. The seat and cage each have a guide bore for receiving respective portions of the valve member during opening and closing movement of the valve member.

3,701,362
POSITION INDICATING BUTTERFLY VALVE
Anthony L. Reese, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed July 12, 1971, Ser. No. 161,805
Int. Cl. F16k *37/00, 17/14, 1/22*
U.S. Cl. 137—556.3 **8 Claims**



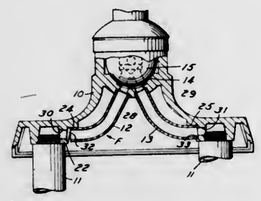
A butterfly valve construction having an outside indicator for indicating vane relation between open and closed positions of the valve. A single assembly mode between the vane, drive shaft and outside indicator assures accurate exterior indication of vane relation. Vane operating force is transmitted through a replaceable shear pin which, in event of operating interference, fractures to prevent damage to other valve components.

3,701,363
SCUBA VALVE
Manfred Schuler, 4100 Patrice Road, Newport Beach, Calif., and Tatsumi Yamamoto, 2231 Joana Dr., Apt. A, Santa Ana, Calif.
Filed Dec. 2, 1970, Ser. No. 94,307
Int. Cl. A62b *9/02*
U.S. Cl. 137—599 **5 Claims**



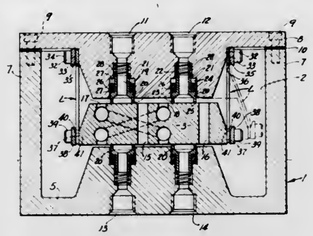
The reliability of a reserve air supply for underwater diving can be greatly improved by using a rotary valve arrangement for releasing air through a parallel passage. The actuation of such a valve can also be made independent of the mechanism which detects the condition that the supply of air remaining in the tank is low.

3,701,364
FAUCET BODY AND METHOD OF MANUFACTURE
Terence G. Hare, Union Lake, Mich., assignor to Miller Manufacturing Company, Southfield, Mich.
Continuation of Ser. No. 842,229, July 16, 1969, abandoned.
This application Jan. 4, 1971, Ser. No. 103,885
Int. Cl. F16k *11/10*
U.S. Cl. 137—625.41 **12 Claims**



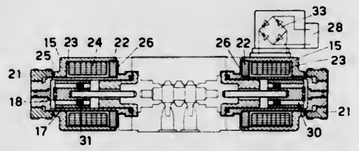
A faucet body comprising a brass casting having a valve seat and spaced annular walls. The valve seat has a pair of openings therein and the annular walls each have an opening therethrough. A conduit is positioned with one end adjacent one of the pair of openings and the other end adjacent an opening in the annular wall and a force is applied to the conduit to deform it into position after which the conduit is fixed to the faucet body.

3,701,365
SLIDE VALVE
Joseph T. Abdo, 25 Crest Rd. W., Rolling Hills, Calif.
Filed May 24, 1971, Ser. No. 146,049
Int. Cl. F16k *11/06*
U.S. Cl. 137—625.43 **21 Claims**



A slide valve in which the slide is supported in the valve chamber on links interengaged between the ends of the slide and the body, the body and slide having fluid passages, and the body passages having tubular seals having face-to-face sealing engagement with the slide. The slide is actuated by a lever extending through a wall of the body and engaged with the slide between its ends.

3,701,366
HYDRAULIC SOLENOID VALVE DIRECTLY OPERATED WITH ADJUSTABLE OVER-RIDE SPEED
Paolo Tirelli, Milan, and Elio Saporiti, Cusano Milanino, Milan, both of Italy, assignors to ATOS Apparecchiature Oleodinamiche S.r.l., Milan, Italy
Filed Aug. 14, 1970, Ser. No. 63,865
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.65 **10 Claims**



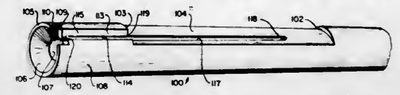
A hydraulic valve is operated by an electromagnet which is enclosed in a tight chamber and actuates a core movable in a cylinder, said core being provided with longitudinal perforations through which the liquid governed by the valve passes as the core moves through said cylinder; the section of the perforation may be adjustable for regulating the speed of the core in the cylinder.

ERRATA

For Classes 137—599 and 137—625 see:
Patents Nos. 3,701,598 and 3,701,599

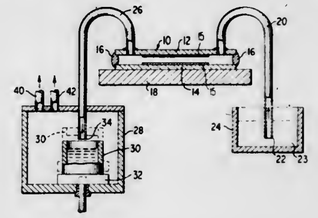
3,701,367
WIRE WRAP TOOL
Daniel Whitney Ackerman, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,704
Int. Cl. B21f *15/04*
U.S. Cl. 140—119 **11 Claims**

A wire wrapping tool having an elongated cylindrical bit with an aperture in the end thereof for receiving a terminal stud and a wrapping sleeve which telescopes on the bit to lock a length of wire thereon. A flange on the wrapping sleeve



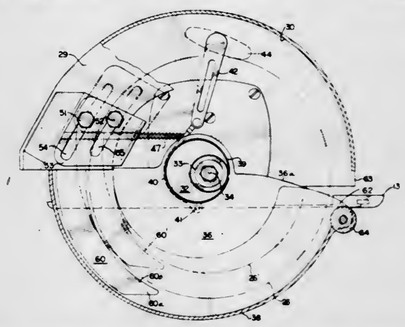
cooperates with a relieved and grooved surface and a wire slot on the bit to hold the wire properly as both bit and sleeve are being rotated on the stud to effect a wirewrap.

3,701,368
FABRICATION OF LIQUID CRYSTAL DEVICES
Herman Abraham Stern, Somerville, N.J., assignor to RCA Corporation
Filed June 23, 1971, Ser. No. 155,845
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 **5 Claims**



During device filling, as by flowing the liquid crystal material through ports opening into opposite ends of the device, the walls of the device are caused to alternately outwardly bow and inwardly collapse to cause variations in the paths of flow of the material through the device.

3,701,369
CIRCULAR SAW
Ronald E. Gronke, Des Plaines, and William H. Schultz, Northbrook, both of Ill., assignors to Skil Corporation
Filed July 27, 1970, Ser. No. 58,530
Int. Cl. B27b *9/00*
U.S. Cl. 143—43 C **12 Claims**

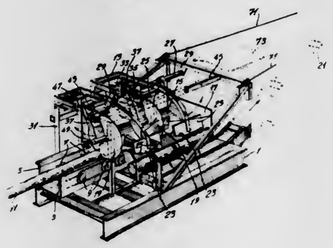


The circular saw includes a movable blade guard mounted for rotation about an axis offset from the axis of rotation of the circular blade, such guard enclosing a kerf guide and the teeth on the lower portion of the blade. The movable blade guard is retracted by a manually operable lever mounted on the side of the fixed blade guard adjacent the motor housing. The kerf guide is adjustably mounted so as to be rocked in its own plane thereby to cooperate with circular blades of different diameters.

3,701,370
MULTIPLE SAW TREE SLASHER

Jean Paul Tanguay, Roberval, Quebec, Canada, assignor to Placements Jean Paul Tanguay Ltee,, Roberval County, Quebec, Canada

Filed Aug. 20, 1970, Ser. No. 65,546
Int. Cl. B27b 5/00
U.S. Cl. 143—46 5 Claims

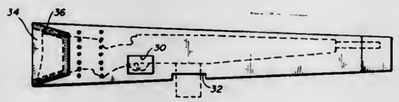


A tree slasher having a feed conveyor and a sawing and discharging station at the downstream end of the conveyor. The tree stems moved by this feed conveyor are discharged into a transfer table which has a stop plate at the end thereof to stop the tree stems once on the transfer table. Two spaced saws are mounted over the transfer table and swing from an inoperative retracted position to an operative position to saw the tree stems. The saws are spaced from one another and from the stop plate distances that correspond to the length of logs required. A discharge conveyor is provided alongside the transfer table to displace the logs in the same direction and load them into a waiting vehicle. Sweeping blades displaceable across the transfer table move the logs into the discharge conveyor.

3,701,371
RAIN GUN CASE

Robert H. Stackhouse, 3970 East Frank Phillips, Bartlesville, Okla.

Filed Sept. 21, 1970, Ser. No. 73,701
Int. Cl. B65d 65/02
U.S. Cl. 150—52 R 1 Claim

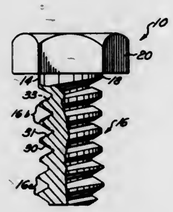


A gun case is made of light, flexible material, and is capable of being rolled or folded to fit into a pocket holder for storage and carrying. The gun case is designed to be folded into a packet small enough to be carried in a person's shirt pocket. In one embodiment the gun case is rolled or folded into a pocket holder formed as an integral part of the gun case at one end thereof. The gun case may have openings formed therein by which a person may operate the trigger while the gun is in the case, or by which a person may insert a cartridge clip, or it may include other openings for ejection of spent cartridges.

3,701,372
LOCK BOLT AND METHOD OF MAKING THE SAME

Arthur R. Breed, Euclid, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Continuation of Ser. No. 716,219, March 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 629,133, April 7, 1967, Pat. No. 3,526,914. This application Sept. 4, 1970, Ser. No. 69,811
Int. Cl. F16b 39/30
U.S. Cl. 151—22 8 Claims

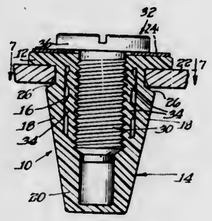


An external locking thread convolution is provided which deviates from a standard Class 5 interference-fit thread in that the space provided at the root of the thread form between adjacent locking threads is greater than the maximum space provided at this location for the standard class 5 thread. Also, an externally threaded locking fastener having such a locking thread convolution and a method for making such a locking fastener by a thread rolling operation is provided.

3,701,373
GROMMET TYPE FASTENER

Louis J. Wronke, Hillpoint, Wis., and John A. Pestka, Park Ridge, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed March 3, 1971, Ser. No. 120,505
Int. Cl. F16b 13/06
U.S. Cl. 151—41.75 6 Claims

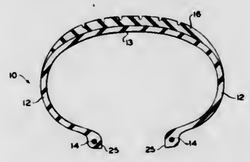


The present invention relates generally to improvements in plastic fasteners and more particularly to the provision of a unique and improved one-piece plastic grommet type anchor member for accommodating the threaded shank of a screw member when positioned within a work aperture. The anchor member disclosed herein includes a head section for clampingly engaging one side of an apertured workpiece, and a shank section comprising an elongate hollow portion for accommodating a screw shank, and diametrically disposed peripherally positioned shank arms integrally connected with and extending axially between underside of the head section and the entering extremity of said hollow portion.

3,701,374
ELASTOMERIC ARTICLES FREE FROM REINFORCING ELEMENTS

Daniel R. McGillvary, Massillon, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,150
Int. Cl. C08g 22/04; B60c 5/00
U.S. Cl. 152—330 8 Claims

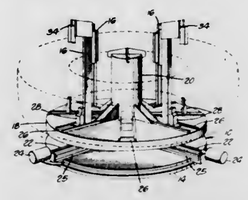


Pneumatic tires and other elastomeric articles subject to tensile stress and dynamic flexure in service, said articles having no reinforcing elements, or having reinforcing elements in portions only thereof, are made from elastomers having, in the cured state, a molecular weight between covalent cross-links of 5,100 – 40,000, and a molecular weight between electrostatic cross-links of 800 – 5,000. Such articles exhibit excellent strength, elasticity, tear resistance, flat-spotting properties and overall performance in service, both at ambient and elevated temperatures.

3,701,375
DEVICE FOR DEMOUNTING TIRES

Richard E. Dixson, 81635 Shadow Drive, and Linus R. Merrill, both of Indio, Calif.

Filed Oct. 14, 1970, Ser. No. 65,605
Int. Cl. B60c 25/06
U.S. Cl. 157—1.33 6 Claims



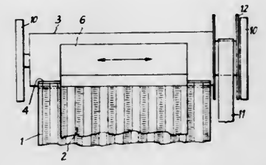
A device for removing heavy duty tires from their wheel assemblies which employs a base, vertical press members mounted thereon and a movable platform which operates to force the rim of the wheel upwardly of the flange thereby reducing the pressure on the wheel assembly, and a lifting assembly for removing the annular bead seat band from the wheel assembly thereby rendering the tire and wheel assembly in condition for easy demounting.

3,701,376
DEVICE FOR SLIDE-SHIFTING AND WINDING TWIN VERTICAL SCREENS OR BLADES

Pierre Froget, Nemours, France, assignor to "Griesser", Alpes Maritimes, France

Filed Dec. 23, 1969, Ser. No. 887,579
Claims priority, application France, Dec. 30, 1968, 68182061
Int. Cl. E06b 9/08
U.S. Cl. 160—121 5 Claims

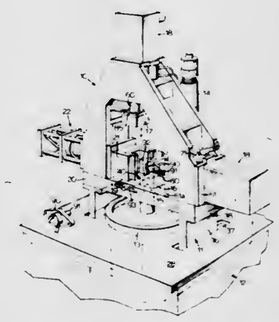
In a blind comprising a pair of vertical screens adapted to be rolled up or down on or from a winding drum, said screens consisting either of continuous sheets or of parallel blades adapted to be oriented to permit of controlling the ingress of air and light through the blind, in the closed or unrolled condition thereof, a device for producing the mutual lateral movement of said screens, this device comprising suspension means associated with the winding drum and operatively connected to the winding means whereby the operation of said winding means will both roll up the blind and cause the desired relative lateral movement of said screens.



3,701,377
METHOD AND APPARATUS FOR DIE CASTING BY PRESSURE INJECTION

William Frederick Fisher, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Ontario, Canada

Filed Sept. 29, 1970, Ser. No. 76,483
Claims priority, application Great Britain, Oct. 10, 1969, 50,011/69
Int. Cl. B22d 27/14, 33/04
U.S. Cl. 164—113 22 Claims

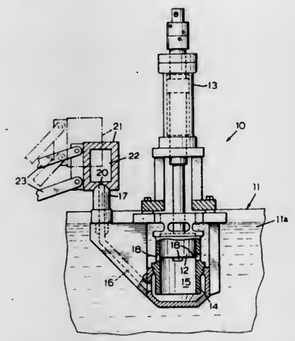


A method and apparatus for pressure die casting in which the frame carrying the gated die is counterbalanced over the injection nozzle for movement between a lowered seated position and a raised unseated position, and floated initially to seat the gate on the nozzle. Certain of the interfitting die parts are moved and releasably locked by applying, by pivotal leverage through the die frame, a force acting in the direction of closing movement of the die, preferably by wedge means acting parallel to that direction. The sprue in the die is sheared by moving the gated die part laterally, and a subsequent lateral movement of the gated die part may introduce pressurized fluid into the die cavity to blow the sprue from the gate.

3,701,378
METHOD OF INJECTION DIE CASTING

Eric Purdy Graham, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Ontario, Canada

Filed Sept. 29, 1970, Ser. No. 76,558
Claims priority, application Great Britain, Oct. 10, 1969, 50,012/69
Int. Cl. B22d 27/10
U.S. Cl. 164—113 2 Claims



A method of injecting molten metal into a die cavity in a pressure die casting operation using a die which removably seats on a nozzle fed from an injection pump having a reciprocable plunger movable to cover entry ports in the pump chamber. After the plunger is advanced to close the ports and fill the die cavity, the plunger is locked and pressure by the plunger is maintained for a predetermined time, after which the pressure is released, followed after a further predetermined time by a short retraction and re-locking of the plunger while the die is being retracted from the nozzle.

3,701,379
PROCESS OF CASTING UTILIZING MAGNESIUM OXIDE CORES

Michael H. Fassler, Middletown, Conn., and Norman E. Brinker, Gardena, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 6, 1971, Ser. No. 160,184
Int. Cl. B22d 29/00
U.S. Cl. 164—132 9 Claims

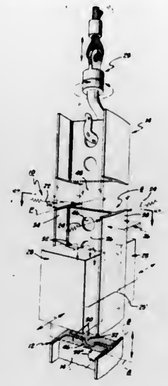
A metal casting having internal passages and apertures can be formed by pouring molten metal into a mold having a magnesium oxide core disposed therein. The core can be made by forming a mixture of magnesium oxide and an evanescent resin and shaping this mixture by suitable molding techniques. The evanescent resin is then slowly volatilized to leave a core of substantially pure MgO which can be sintered to form a carbonaceous material-free, self-supporting body. After a casting is made around the core, it can be removed by washing the casting in a non-corrosive media such as water or dilute acetic acid.

3,701,380
CLADDING MOLD SYSTEM

Robert K. Richter, Walnut Creek, and Jurek Shkredka, Oakland, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 1, 1969, Ser. No. 881,169
Int. Cl. B22d 17/24, 19/00
U.S. Cl. 164—334 7 Claims

Improved cladding mold system for use in cladding an elongated metallic rail element and the like wherein special floating guide elements are employed to guide the rail element into, through and then out of the cladding zone as successive portions of the rail element are first passed through the

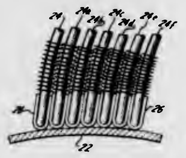


cladding zone and upon completion of the cladding operation are then withdrawn from the cladding zone by means of a common hoist device.

3,701,381
HEAT EXCHANGER SUPPORTING MEANS

Hargus Watts, Hawthorne, N.J., assignor to Curtiss-Wright Corporation

Filed July 21, 1971, Ser. No. 164,556
Int. Cl. F28f 13/00
U.S. Cl. 165—82 5 Claims



A heat exchanger comprising serpentine finned tubes disposed in an annular configuration, with means for positioning and supporting the unfinned return bends of the tubes in such a manner as to prevent coolant fluid from bypassing the finned portions, and to allow movement of the tubing in thermal expansion.

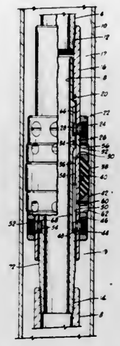
3,701,382
WELL PACKER APPARATUS

Robert C. Williams, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 2, 1971, Ser. No. 149,278
Int. Cl. E21b 33/12
U.S. Cl. 166—183 15 Claims

A packer is provided, one or more of which may be used to seal between a well casing and a tubing string placed inside the well casing. The well packer is provided with a bypass valve to permit flow of fluid through the packer inside the packing element to facilitate lowering the packer into the well and to facilitate lifting the packer out of the well. The pipe below the packer must be anchored to withstand upstrain exerted in tubing above the packer to cause setting of the packer, closing of the bypass valve and holding force to hold the packer in position in the casing after setting. The packer may be held in a

retracted position, while lowering into the well, by screws or pins which shear when the setting upstrain is applied to the

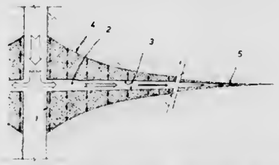


packer. A latch is provided to lock the packer in retracted position to hold the bypass valve open while the packer is being lifted from the well.

3,701,383
FRACTURE PROPPING

Edwin A. Richardson, Houston, Tex., and Herbert W. Barnes, New Orleans, La., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,689
Int. Cl. E21b 33/138, 43/26
U.S. Cl. 166—280 5 Claims



Fractures within subterranean reservoir formations are propped open by injecting electroless metal plating solution at a rate that hydraulically separates the walls of the fracture while fluid is leaking into the fracture walls and, after the walls have been converted to structures which are integral and porous, disposing a fracture propping material between the fracture walls.

3,701,384
METHOD AND COMPOSITION FOR CONTROLLING FLOW THROUGH SUBTERRANEAN FORMATIONS

Willis G. Routson, Walnut Creek, Calif., and Albert L. Caldwell, Houston, Tex., assignors to The Dow Chemical Company, Midland, Mich.

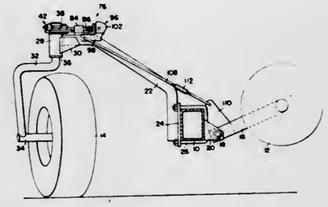
Filed March 11, 1971, Ser. No. 123,387
Int. Cl. E02d 3/14; E21b 33/138, 43/22
U.S. Cl. 166—292 6 Claims

A slurry of finely divided inorganic solids, such as silica flour, magnesium oxide, or magnesium or calcium carbonates, silicates or hydroxides, is injected into a porous subterranean formation together with an aqueous composition consisting of a colloidal dispersion of a water-insoluble, inorganic compound formed in an aqueous solution of a high-molecular-weight organic polymeric polyelectrolyte to accomplish plugging of thief zones, fractures or other zones of excessive permeability.

3,701,385
LAND WHEEL CONTROL MEANS

Robert Lee Patterson, Fonthill, Ontario, and Mario Ventresca, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed July 14, 1971, Ser. No. 162,428
Int. Cl. A01b 15/14
U.S. Cl. 172—386 9 Claims

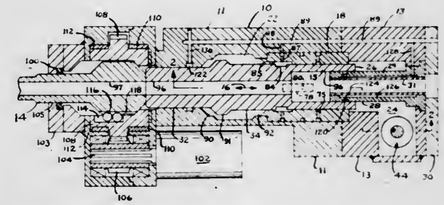


Apparatus for automatically locking the land wheel of a disk tiller in a preselected transport position in response to movement of the ground-working disks thereon out of engagement with the ground.

3,701,386
HYDRAULIC DRIFTER

Jacob E. Feucht, Sidney, Ohio, assignor to Dresser Industries, Inc.

Filed Dec. 11, 1970, Ser. No. 97,164
Int. Cl. B25d 9/00, 17/14
U.S. Cl. 173—78 8 Claims



A hydraulically-actuated percussion drill having a hydraulic control valve arranged so that hole-cleaner air can be directed through an axial passage in the piston without interference from the hydraulic valve; the piston is annular so that its central bore acts as an air passage. Oil drainage grooves are provided at the piston-housing joints where high pressure oil might otherwise tend to escape into the air passage; air pressure is used to retard leakage of oil past the grooves. Preferably the piston is built to include a cushioner flange which moves into hydraulic snubber cavities to decelerate the piston. The hydraulic supply system is such that high pressure oil is continually washed through the snubber cavities to take away heat developed by the snubbing actions.

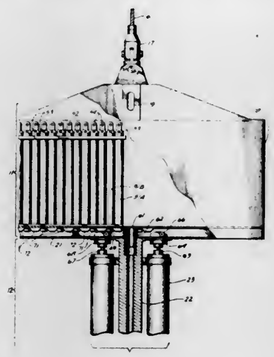
3,701,387
CORE SAMPLING APPARATUS

Nicholas L. Koot, Lafayette, La., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Nov. 4, 1970, Ser. No. 86,650
Int. Cl. F21b 7/12
U.S. Cl. 175—6 15 Claims

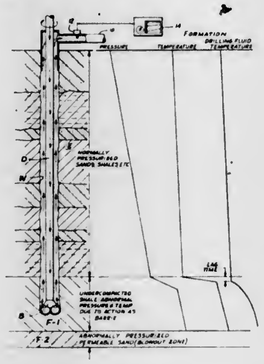
Apparatus for taking a plurality of sequential punch core samples in underwater sediments is provided. Core sampling tubes are driven into the sediments by hydraulic pressure acting through a central guide tube. The core sampling tube is withdrawn by hydraulic pressure applied through an annular

space between the guide tube and a surrounding pipe. The hydraulic pressures are applied by a pair of hydraulic pumps using sea water as the fluid. A plurality of core sampling tubes are contained in a magazine and are fed to the guide tube one at a time for taking samples. The filled core tubes are returned



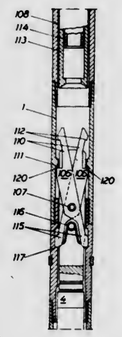
to the magazine where they are retained and stored. First and second sets of drive cams on the magazine are operated alternately by reverse operation of the hydraulic pumps so that the containers in the magazine controllably advance only one container width at a time.

3,701,388
DRILLING METHOD
Jasper N. Warren, 6102 Yarwell, Houston, Tex.
Filed Feb. 11, 1970, Ser. No. 10,376
Int. Cl. E21b *47/06*
U.S. Cl. 175—50 **5 Claims**



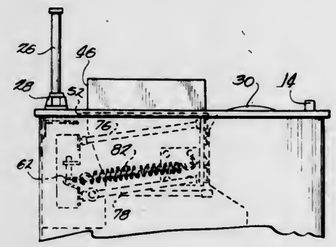
A drilling method which includes the usual steps of rotating a drill string and circulating a drilling fluid together with the steps of detecting an increase in the rate of increase of temperature of the drilling fluid and taking appropriate steps responsive to such increase in rate such as increasing the weight of drilling fluid, setting casing to allow drilling fluid weight to be increased, to prepare for a high pressure formation being approached by the drill bit or stopping the drilling to avoid drilling into the high pressure formation.

3,701,389
WIRE LINE CORE DRILLING APPARATUS
Gunnar Kristoffer Egnelov, and Sune Vilhelm Eriksson, both of Sundbyberg, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed April 23, 1971, Ser. No. 136,804
Claims priority, application Sweden, March 30, 1970, 6007/70
Int. Cl. E21b *25/00*
U.S. Cl. 175—246 **8 Claims**



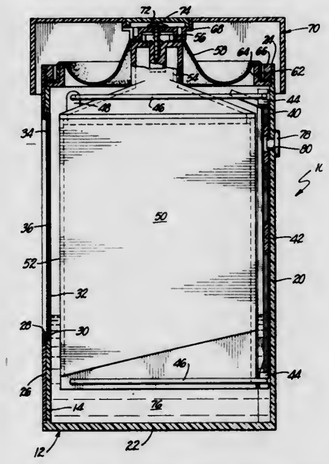
A wire line core drilling apparatus comprising a tubular drill stem, an annular drill bit mounted at the forward end of the drill stem and an inner core tube assembly, the latter of which is provided with at least one latch dog for being lockable against longitudinal displacement relative to the drill stem and for being connectable to a retrieving device introduced in the drill stem.

3,701,390
SAMPLE SCALE
George H. Fathauer, Decatur, Ill., assignor to Overton Corporation, Countryside, Ill.
Continuation of Ser. No. 43,770, June 5, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 199,325
Int. Cl. G01g *13/18, 13/34, 3/04*
U.S. Cl. 177—113 **14 Claims**



Spring operated sample scales for use in grain moisture testers to measure a fixed weight of the material under test and including a hopper mounted on four parallel bars for parallel vertical movement with respect to the remainder of the tester, the hopper having automatically actuated doors on the lower wall thereof, are disclosed.

3,701,391
BUOYANCY TYPE WEIGHING SCALE
Erland G. Paulson, Huntington Beach, and Charles G. Mandala, Palos Verdes Peninsula, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.
Filed Oct. 21, 1971, Ser. No. 191,525
Int. Cl. G01g *5/02*
U.S. Cl. 177—207 **12 Claims**



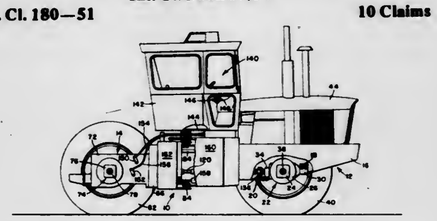
A weighing device for weighing items through the use of Archimedes' principal can be constructed utilizing a float suspended or supported by a liquid within a housing. To prevent the loss of liquid the interior of the housing above the liquid is sealed off by a flexible diaphragm extending between the float and the housing. To insure accurate weighing, means are provided for controlling the pressure in the housing above the liquid and for adjusting a means for determining the depth of the float within the housing so that the level of the liquid will be a true indication of the weight of an item being weighed.

3,701,392
FLAT VIBRATING MEASURING STRING
Walter Wirth, Uitikon, Zurich, Switzerland, and Burkhart Kuhl, Karlsruhe, Germany, assignors to August Sauter KG, Ebingen, Germany
Filed Dec. 17, 1970, Ser. No. 99,211
Claims priority, application Germany, Dec. 17, 1969, P 19 63 303.5
Int. Cl. G01g *3/14*
U.S. Cl. 177—210 **13 Claims**



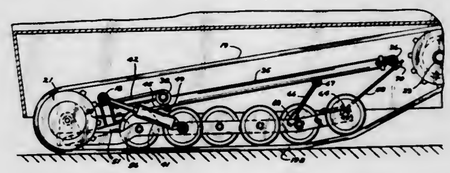
A flat vibrating measuring string or ribbon suitable for use with a vibrating string weighing apparatus. The cross-section of the string is selected with such a large ratio of the largest to the smallest cross-sectional axis that the resonant frequencies of the desired mth vibrating mode in the direction of the minimum bending rigidity are situated below the resonant frequencies of the first mode in the transverse direction. The string is also enlarged at its ends, preferably by means of interconnecting rounded portions, to minimize the peak stress where the string is clamped. To further minimize the tension at the ends of the string where they are clamped, the string is secured to a junction mass having a resistance and modulus of elasticity which is within an order to magnitude of that of the string.

3,701,393
ARTICULATED TRACTOR
David Forrest Lemons, Cedar Falls; Gordon Le Roy Marquart, Jessup, and Saul Herscovici, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 30, 1970, Ser. No. 85,460
Int. Cl. B60k *17/34*
U.S. Cl. 180—51 **10 Claims**



An articulated four-wheel drive tractor has front and rear frame structures joined by a vertical pivot. The front frame structure is supported on an oscillating front drive axle assembly and the rear frame structure is rigid with the rear drive axle assembly, which is directly connected to a change-speed transmission also on the rear frame structure. The transmission is driven by an engine on the front frame structure through an upper drive shaft, which crosses the axis of articulation at engine output speed and drives a gear train on the rear frame structure forwardly of the transmission. A second drive shaft extends forwardly from the transmission across the axis of articulation below the upper drive shaft and is connected at its forward end to the front drive axle assembly, the lower drive shaft like the upper drive shaft including a pair of universal joints equally distant to the front and to the rear of the pivot axis. An operator's station is mounted on the front frame structure above the pivots between the frame structures and the transmission is controlled from the operator's station through flexible cables.

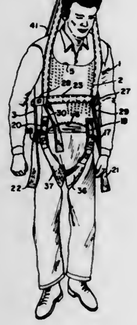
3,701,394
DRIVE MEANS FOR SNOWMOBILE DEVICES
George Vernon Hendrickson, Twin Valley, Minn., assignor to Viking Snowmobiles, Inc., Twin Valley, Minn.
Filed July 23, 1971, Ser. No. 165,451
Int. Cl. B62m *27/02*; B62d *55/10*
U.S. Cl. 180—5 R **14 Claims**



A drive and suspension assembly for snowmobiles or similar vehicles having endless track propulsion means, wherein the angular disposition of the base of the track is responsive to increases in torque being applied to the drive sprockets. The snowmobile vehicles are provided with conventional frames

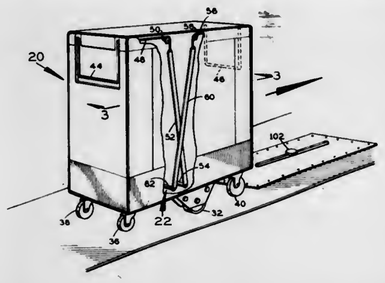
with forward and rear mounts for attaching the drive and suspension assembly to the frame, and means are provided on the drive and suspension assembly for receiving a drive track. Forward drive sprocket means are provided for delivering power to the track and rear idler sprockets are provided to support the track and define upper and lower spans in the track. The drive and suspension assembly comprises an elongated generally longitudinally disposed suspension support means having a forward end portion journaled to the forward frame mount and being adapted for pivotal motion thereabout. A rearwardly disposed mounting means is provided including a generally transversely disposed mounting shaft having stabilizing means resiliently coupling the rear mounting shaft to the rear frame mount, with the stabilizer means normally urging the suspension support means away from the rear frame mount. The stabilizer means normally include shock absorbers and coil springs. The suspension support means further has a rear pivotal coupling means disposed adjacent the rear portion thereof, the rear pivotal coupling means being attached to longitudinally arranged support rails for the lower span of the drive track. The longitudinal support rails are journaled with the rear pivotal coupling means of the suspension support, with lug means being provided extending upwardly from the support rail means for mounting the rear axle shaft for the rear idler sprockets. The longitudinal support rail means further are provided with track contacting means which support the inner surface of the lower span of the drive track to define a running surface for the lower span.

3,701,395
RESCUE AND SAFETY VEST
Stuart J. Theobald, 3206 Paul Drive, Wheaton, Md.
Filed May 14, 1971, Ser. No. 143,560
Int. Cl. A62b *35/00*
U.S. Cl. 182—3 **15 Claims**



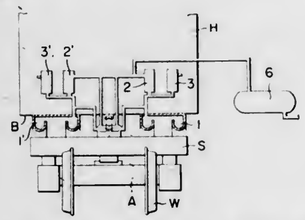
A rescue and safety vest comprising separate front and back portions having means thereon for quickly and releasably joining the front and back portions together about the torso of a person. Both the front and back portions include enlarged vest portions which provide support and evenly distribute pressure over the torso of the person, and one of the portions includes relatively wide leg straps which encircle the legs of the person and provide lifting support therefor.

3,701,396
OPERATING APPARATUS FOR CART
Bruce F. House, Miami, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.
Filed Feb. 16, 1971, Ser. No. 115,313
Int. Cl. B60t *1/02, 1/14*
U.S. Cl. 188—21 **10 Claims**



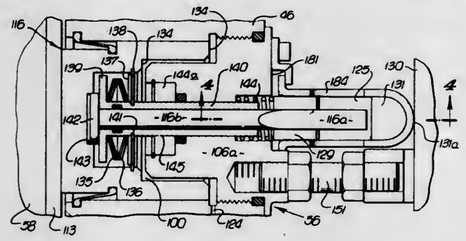
A wheeled vehicle which can be moved in either of two opposite directions has an operating mechanism including a brake shoe normally engaging a wheel of the vehicle, one actuator at one end of the vehicle and another actuator at the opposite end of the vehicle, the actuators being coupled to the brake shoe so that by operating either actuator the brake shoe can be released for movement of the cart in either direction. Thus, a stewardess, for example, can use the cart to dispense beverages, and can use the actuators as handles whereby she can push the cart from either end and at the same time release the brake. The operating apparatus also preferably includes an anchoring means for engaging a floor mounted stud to moor the vehicle, the anchoring means including two spaced members adapted to capture the stud between them and each movable by operation of one of the actuators. Thus, when the stewardess releases the brake, she also releases an anchoring member so that the cart can be moved away from the stationary stud. The linkage or coupling between the actuators and the brake shoes includes a sliding connector which provides for simultaneous operation of two brakes.

3,701,397
ROLL DAMPENING
Yasuhior Shirane, Nishinomiya, and Junzo Yamada, Osaka, both of Japan, assignors to Sumitono Metal Industries Limited, Osaka, Japan
Filed Oct. 16, 1970, Ser. No. 81,322
Claims priority, application Japan, Oct. 18, 1969, 44/83516
Int. Cl. B61h *9/04, 11/00, 13/00*
U.S. Cl. 188—33 **3 Claims**



This invention relates to a car body roll controlling method wherein a car body roll is controlled by using a plurality of rows and steps of supply and exhaust valve means and any number of rows and steps of supply and exhaust valve means can be operated in response to the magnitude of the lateral acceleration acting parallel with the car body floor so that a proper control may be always made without causing hunting or the like.

3,701,398
FLUID AND MECHANICALLY ACTUATED DISC BRAKE SYSTEM
Samuel J. Martins, Reseda, Calif., assignor to Airheat Products, Inc., Van Nuys, Calif.
Filed Oct. 15, 1970, Ser. No. 80,979
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **10 Claims**

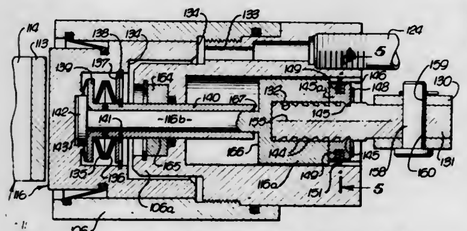


The invention concerns improvements in a disc brake assembly that comprises:

a. first means operable in response to controlled application of fluid pressure transmitted from a source to advance a brake part into braking engagement with a rotating disc, the brake part being subject to wear, and

b. second means operable in response to predetermined decrease in source fluid pressure to effect displacement of said brake part into braking engagement with said disc and irrespective of the worn condition of said part.

3,701,399
RESETTABLE, FAIL-SAFE DISC BRAKE SYSTEM
Franklin B. Airheart, Granada Hills, Calif., assignor to Airheat Products, Inc., Van Nuys, Calif.
Filed Oct. 21, 1970, Ser. No. 82,761
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **15 Claims**



The invention concerns the combination comprising:

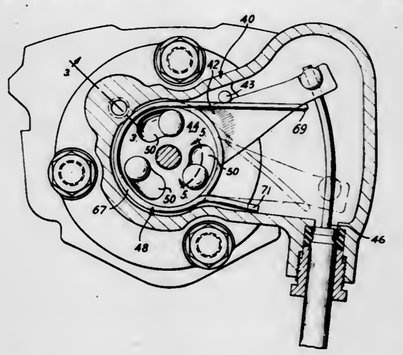
(a) a plunger and cylinder assembly, the plunger being responsive to fluid pressure application to advance relative to the cylinder to transmit actuating force for displacing a brake part into braking engagement with a relatively rotating disc, the brake part being subject to wear, and

(b) auxiliary means to mechanically advance the plunger relative to the cylinder to displace said part into braking engagement with the disc,

(c) said means including a ram element operatively connected with the plunger and there being interengagable load transmitting shoulders carried by said element and plunger located for relative shifting in one direction in response to predetermined plunger advancement relative to said means thereby to block retraction of the plunger relative to said means so as to compensate for brake part wear,

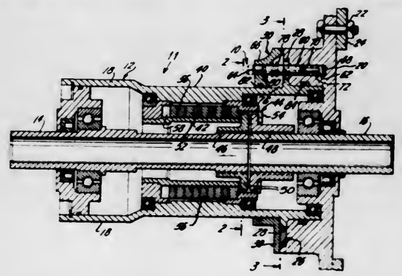
(d) said shoulders being interrupted to be disengageable in response to relative rotation of said element and plunger to permit relative shifting of the shoulders in the opposite direction for re-setting of the element relative to the plunger.

3,701,400
PARKING ACTUATOR FOR DISC BRAKE
Richard T. Burnett, and James J. Colpaert, both of South Bend, Ind., assignors to Bendix Corporation
Filed Jan. 20, 1971, Ser. No. 107,967
Int. Cl. F16d *55/00*
U.S. Cl. 188—72.6 **5 Claims**



A disc brake includes a rotor mounted for rotation with a member to be braked and a caliper slidably mounted on a fixed torque member. The caliper includes a housing defining a bore therewithin, and a piston is slidably mounted in the bore to urge friction elements disposed on opposite sides of the rotor into braking engagement with the latter when pressurized fluid is admitted into the bore during a brake application. A parking actuator is provided which includes a lever mounted within the caliper housing for rotation about an axis extending generally parallel to the axis of the rotor and for movement relative to the caliper along this axis. An elongated member interconnects the lever with the piston. Force transmitting elements are disposed between the lever and the end of the housing, so that when the lever is rotated, the force transmitting elements urge the latter toward the rotor. This axial movement is transmitted to the piston by the elongated member, to urge the piston toward the rotor, effecting a brake application.

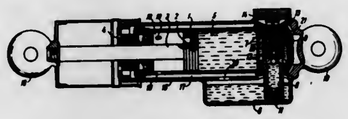
3,701,401
TORQUE OVERLOAD SENSING AND INDICATING DEVICE FOR TORQUE LIMITING BRAKE MECHANISM
Michael A. Palma, Parsippany, and Joseph W. Minarick, Oakland, both of N.J., assignors to Curtiss-Wright Corporation
Filed May 12, 1971, Ser. No. 142,569
Int. Cl. B60t *7/12*; F16d *66/00*
U.S. Cl. 188—134 **16 Claims**



A torque overload sensing and indicating device for a torque limiting brake mechanism having a torque limiting and

brake means coacting with brake drum means which is connected for limited rotative movement relative to a stationary support to interrupt and arrest transmission of rotation upon a predetermined torque load, the sensing and indicating device comprising at least one spring biased bin axially slidably disposed in the stationary support and a stop member carried by the brake drum means and disposed to abut the pin to restrain movement of the pin in the direction in which it is biased until said predetermined torque load occurs and the brake means engages and rotates the brake drum means through said limited movement.

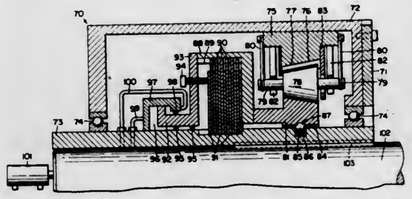
3,701,402
VIBRATION DAMPER FOR VEHICLES
Ivan Ivanovich Chelnokov, Vladimir Mikhailovich Garbuzov, Vladimir Andreevich Koshelev; Georgy Mikhailovich Levit; Albert Alexandrovich Maltsev, all of Leningrad, and Vladimir Fedorovich Myachev, Kalinin, all of U.S.S.R., assignors to Leningradsky Institut Inzhenerov Zheleznofarozhnogo Transporta Imeni Akademika N.V. Obraztsova and Kalininsky Vagonostroitelny Zavod, Leningrad and Kalinin, U.S.S.R.
Filed Feb. 3, 1970, Ser. No. 8,357
Claims priority, application U.S.S.R., Feb. 7, 1969, 1309391
Int. Cl. F16f 9/34
U.S. Cl. 188—314 **4 Claims**



A vibration damper for vehicles, particularly, for railway vehicles is disclosed, which comprises a single-acting working cylinder cooperating with a piston carried by a piston rod, this working cylinder forming thereinside a working or piston chamber communicating with a working fluid supply reservoir, the latter being disposed below or at a lower level than the closure seal through which the piston rod extends. Disposed adjacent to the bottom of this supply reservoir is a valve controlling communication through a working fluid replenishing passage, this valve being mounted in a structure having a space thereinside, adapted to establish a hydraulic seal therein; this space communicates, on the one hand, through a throttling passage with the piston chamber of the working cylinder, and, on the other hand, with the supply reservoir through the working fluid replenishing passage. Moreover, with the working cylinder of the vibration damper disposed horizontally, the throttling passage is adapted to establish fluid communication between the upper extremity of the piston chamber and the working fluid supply reservoir; the valve controlling communication through the replenishing passage being disposed adjacent to the bottom of the supply reservoir, below the level of the working fluid filling the supply reservoir in operation of the vibration damper. The above-mentioned structure, which is a removable one, receives thereinside the throttling passage and the replenishing passage, the valve controlling communication trough the replenishing passage and a safety valve.

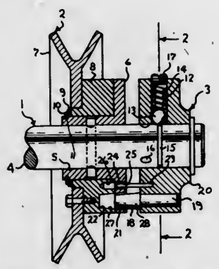
3,701,403
POSITIVE ENGAGEMENT CLUTCH
Earl A. Peterson, 4111 Chestnut Ave., Long Beach, Calif.
Filed July 1, 1971, Ser. No. 158,703
Int. Cl. F16d 43/21, 11/06, 13/14
U.S. Cl. 192—38 **28 Claims**

A clutch for providing positive engagement between a driving and driven member. A driving member having tapered V-block cams and aligned tapered rollers in registration therewith are suitably journeled about a hub having a slidably engaged wedge ring adapted to be received by the tapered rollers. Irrespective of whether or not the driving member is in a dynamic or static position, axial movement of the wedge ring against the supported rollers establishes positive engagement



between the rollers and the V-block cams providing for the transmission of power from the driving member to the driven member and the supporting shaft. To compensate for the shock inherent in the positive engagement of moving loads or where high inertia loads are moved from zero velocity, shock absorbing members are disposed immediate the wedge ring and supporting hub.

3,701,404
TORQUE OVERLOAD RELEASE COUPLING
Perry E. Cassell, 132 Shipmans Eddy, Warren, Pa.
Filed March 31, 1971, Ser. No. 129,752
Int. Cl. F16d 43/20
U.S. Cl. 192—56 R **7 Claims**



A torque overload release coupling having a clutch member rotatably and slidably journaled on one of the driving and driven members with drive keys extending through the member on which it is journaled. The drive keys and the other member have cooperating cam surfaces engaging in the driving position and exerting an axial force in proportion to drive torque tending to move the drive keys out of engagement. Snap action detents hold the clutch member in the driving and released positions.

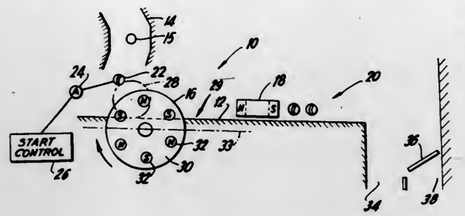
ERRATUM

For Class 194—74 see:
Patent No. 3,701,600

3,701,405
COIN SELECTOR UTILIZING A COIN IMPELLER
Guy L. Fougere, Sand Pond Road, Lincoln, Mass.
Continuation-in-part of Ser. No. 858,351, Sept. 16, 1969, abandoned. This application March 3, 1971, Ser. No. 120,652
Int. Cl. G07f 3/02
U.S. Cl. 194—101 **40 Claims**

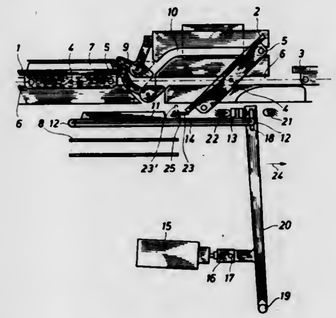
A coin selector which utilizes a coin impeller is disclosed,

the impeller comprising magnetic field means for accelerating the coin. Coin velocity sensing means located downstream



from the coin impeller and associated circuitry serve to compare the coin's acceptance ratio with predetermined values for acceptable coins.

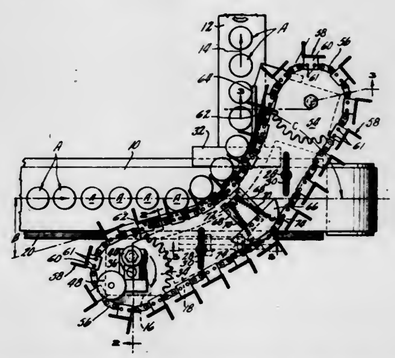
3,701,406
STORING MECHANISM FOR USE IN TRANSFERRING OBJECTS FROM ONE CONVEYOR TO ANOTHER
Kai Christian Sophus Aasted, Skovgardsvej 41, 2920 Charlottenlund, Denmark
Filed Jan. 26, 1971, Ser. No. 109,914
Claims priority, application Denmark, Jan. 30, 1970, 454/70
Int. Cl. B65g 47/00, 37/00
U.S. Cl. 198—20 **5 Claims**



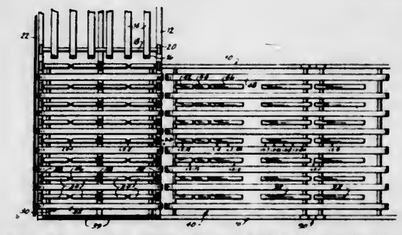
When chocolate slabs are transferred from a conveyor plate to an inferior transverse conveyor band by tilting the plate the slabs will be unevenly deposited on the band. A storing mechanism consisting of a slab receiving intermediate plate has been introduced between the two conveyors and then suddenly pushed away, whereby the slabs fall simultaneously down on the band. To avoid scraping of the underside of the slabs it is now suggested to substitute the intermediate plate by a conveyor band having its ends attached to a fixed bar and said band being laid over two cross bars or rollers which are simultaneously displaceable mainly in the plane of the band.

3,701,407
GLASSWARE TRANSFER MECHANISM
Constantine W. Kulig, Windsor, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Continuation of Ser. No. 801,395, Feb. 24, 1969, abandoned. This application Feb. 2, 1971, Ser. No. 111,855
Int. Cl. B65g 47/00
U.S. Cl. 198—20 **1 Claim**

A transfer mechanism for use with mutually perpendicular in-feed and cross conveyors has an endless chain entrained over two sprockets arranged one on either side of the in-feed conveyor, with the first of these being driven in timed relationship with the in-feed converter and located somewhat upstream of the cross conveyor. The second sprocket is located adjacent the cross conveyor and downstream of both it and the driven sprocket. A portion of the chain extends across adjacent portions of these conveyors and carries pusher elements for feeding the articles being handled off the in-feed conveyor across a deadplate, and onto the cross conveyor in accurately index relationship to one another. A guide bar associated with the cross conveyor urges the articles being transferred outwardly beyond the extremities of the pusher elements as they reach the desired point on the cross conveyor. Means is also described for confining the chain portion referred to above for movement in a generally arcuate path such that the glassware articles on the in-feed conveyor are engaged by the pusher elements as the latter move in substantially same direction as said in-feed conveyor, and for gradually turning the articles off the in-feed conveyor across the deadplate and onto the cross conveyor.



3,701,408
BOARD HANDLING APPARATUS
George A. Northsea, St. Petersburg, Fla., assignor to National Gypsum Company, Buffalo, N.Y.
Continuation of Ser. No. 140,974, July 8, 1968, abandoned. This application May 6, 1971, Ser. No. 140,974
Int. Cl. B65g 47/29
U.S. Cl. 198—32 **10 Claims**

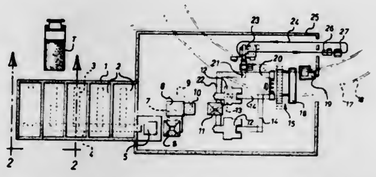


Board handling apparatus and method for arranging boards such as plasterboard, plywood and composition board into sets wherein boards are held by lifters and then teamed with another board or boards.

3,701,409
BATCHING SYSTEM
Pierre Gagnon, 5637 Wilderton Ave., and Pierre Laforest, 1945 Bruxelles St., both of Montreal, Quebec, Canada
Filed July 6, 1970, Ser. No. 52,348
Int. Cl. B65g 47/18
U.S. Cl. 198—54 **6 Claims**

A batching system for supplying weighted amounts of various aggregates, for instance to a concrete mixer, in which the

bins for storing the aggregates and the weighing hoppers have at their bottom discharge ends an elongated slot opposite which is the top run of a conveyor, spaced from said slot and which serves to close the bin or hopper and to convey the material to other equipment in such a way that shearing of the

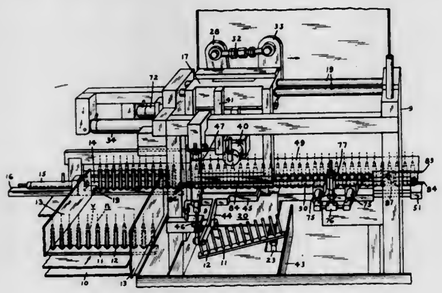


mass of material is effected at the slot level so as to eliminate friction between the conveyor and the material. The weighing hoppers for the various aggregates are arranged in association with a common conveyor which, in combination with the hoppers, effect preliminary mixing of the various aggregates to diminish the mixing time in the concrete mixer.

3,701,410
CONVEYING VIALS IN A STRAIGHT PATH

Walter A. Shields, 181-41 Henley Road, Jamaica, N.Y.

Filed Sept. 1, 1972, Ser. No. 176,963
Int. Cl. B65g 37/00
U.S. Cl. 198—106 13 Claims



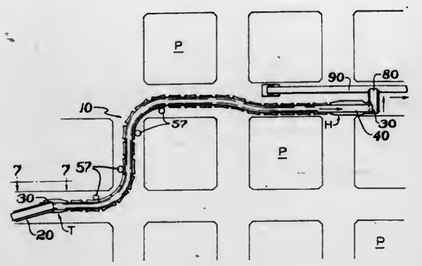
A predetermined number of vials are supported by a carrier and the carriers are delivered to a path of conveyance and while in the path of conveyance, the vials are removed from the carrier by removing the carrier from the path of conveyance while retaining the vials against vertical movement. After the removal of the vials from the carrier the vials are advanced by the retaining means to a walking beam mechanism including a member actuated in a delayed or omitted sequence to advance the vials in predetermined numbers less than the number originally on the carrier.

3,701,411
CONVEYOR SYSTEM

Herbert E. McGinnis, Akron, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,320
Int. Cl. B65g 41/00
U.S. Cl. 198—109 8 Claims

A mobile conveyor system for carrying bulk material in both a straight and transversely curved path having an endless elastomeric belt formed with an embedded inextensible central spine and the margins on either side corrugated for permitting transverse flexing. A self-propelled tractor is pivotally connected at each end of a chain of pivotally interconnected single-axle carriages with the load carrying and return spans of

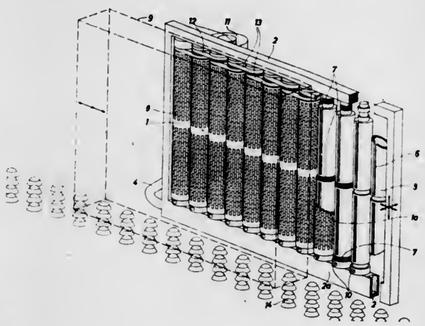


the conveyor belt trained over pulleys provided on the tractors and on rollers on the carriages intermediate the tractors.

3,701,412
DEVICE FOR THE MOVEMENT OF ARTICLES WITH A FLAT, RIGID, HOLDING SURFACE

Alfred Wriedt, Kroonhorst 130, Hamburg 53, Germany

Filed Sept. 9, 1970, Ser. No. 70,640
Claims priority, application Germany, Sept. 10, 1969, P 19 45 732.0; Aug. 18, 1970, P 20 40 879.1
Int. Cl. B65g 13/02
U.S. Cl. 198—127 R 18 Claims



A device for conveying articles along a working plane provided with openings distributed over and movable in the plane and connected to a vacuum source, and including systems comprising combinations of such devices alone and with conventional conveyors, all to provide means for moving, conveying, sorting, distributing, and classifying articles. The device and systems thereof is useful, for example, in handling baggage and packages.

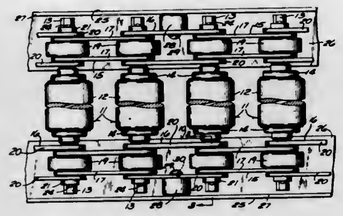
3,701,413
ROLLER FLIGHT CONVEYOR CHAIN

James B. Leahy, Farmington, and Robert B. Pierson, Orchard Lake, both of Mich., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Sept. 14, 1970, Ser. No. 71,823
Int. Cl. B65g 17/24
U.S. Cl. 198—183 3 Claims

A roller flight conveyor includes conventional hexagonal

shaft rolls mounted between a pair of carrier roller chains. The roller chain pins are provided with hexagonal bores to receive

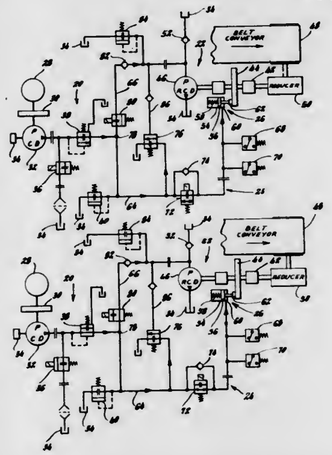


and provide mounting for the roll shaft ends and to secure the shafts against rotation.

3,701,414
FAILSAFE DECELERATING SYSTEM

Gerald C. Mayer, Wayne, N.J.; Gregory A. Vaka, Hacienda Heights, Calif.; Raymond S. Zuckermann, Teaneck, N.J., and Alonzo B. Jarman, Wrightstown, Pa., assignors to Litton Industrial Systems, Inc., Passaic, N.J.

Filed April 6, 1971, Ser. No. 131,720
Int. Cl. B65g 23/00
U.S. Cl. 198—203 16 Claims

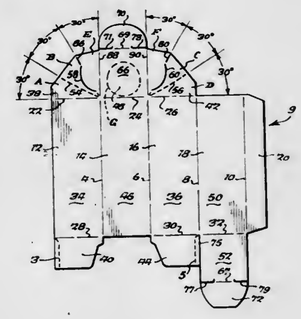


The comparison of fluid flows or electrical signals is utilized to decelerate a system (e.g., a conveyor) by regulating the fluid pressure in a brake assembly. A time decay reference signal which is related to the speed of a control motor, conveyor or other reference source is compared with a similar signal related to the speed of a controlled conveyor. The comparison of these two signals is employed to control the application of the brake in the controlled conveyor system so that the controlled conveyor will decelerate in a predetermined manner. Once the controlled conveyor is stopped, any rearward or forward movement of the controlled conveyor generates a signal which actuates the brake to again decelerate the controlled conveyor. The drive assembly of the controlled conveyor has a flywheel to insure that the minimum stopping time of the controlled conveyor from its normal operating speed exceeds a predetermined time.

3,701,415
WEB-LOCK CARTON

Milton James Tuitt, Daly City, Calif., assignor to International Paper Company, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,349
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 12 Claims

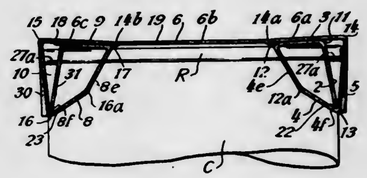


A tuck-end or tuck-frame carton containing a web-lock construction for cooperating with a cap of a tapered container such as a bottle or tube and anchoring the container within the carton.

3,701,416
HOLDERS FOR CONTAINERS

Frank D. Lawrence, 387 Chickerell Road, Weymouth, Dorset, England

Filed May 14, 1970, Ser. No. 37,088
Claims priority, application Great Britain, May 30, 1969, 27,438/69; May 30, 1969, 27,439/69
Int. Cl. B65d 61/00
U.S. Cl. 206—65 C 10 Claims



A holder of the kind which is snapped on the rimmed end of an article, which holder comprises an end wall for disposing adjacent to one end of a rimmed article, two side members connected to the end wall for disposing at opposite sides of the article and having rim-holding means for holding the rim formed at said end of said article, two tie walls connected to the side members and inwardly directed therefrom and directed towards said end wall and having openings for receiving the portion of the article which is adjacent to the rim, and two strut walls connected to the tie walls and disposed beside said end wall, each tie wall being divided by a folding line spaced from the side member and the strut wall which are connected to the tie wall. Each of the side members may comprise an inner side wall connected to the adjacent strut wall and an outer side wall which is connected to the end wall and to the adjacent tie wall, the inner side walls being provided with the rim-holding means.

3,701,417
PURIFICATION OF CLAY BY SELECTIVE FLOCCULATION

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

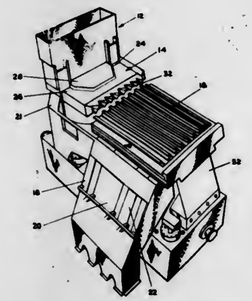
Filed Sept. 28, 1970, Ser. No. 76,219
Int. Cl. B03d 3/06
U.S. Cl. 209—5 **9 Claims**

To remove a colored tita...a impurity from kaolin clay, the impure clay is formed into a well-deflocculated aqueous slip. A small amount of a soluble source of polyvalent cations, e.g., calcium chloride, is dissolved in the slip. An anionic organic polyelectrolyte is added and the slip is agitated until titania-rich flocs form and settle out from the deflocculated slip. The flocs are separated from the deflocculated slip of purified clay.

3,701,418
GRADING MACHINE

Robert R. Chapman, Lowell, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed March 8, 1971, Ser. No. 121,892
Int. Cl. B07c 5/04
U.S. Cl. 209—99 **13 Claims**



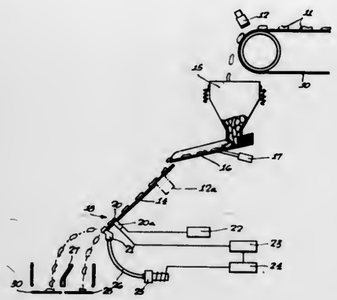
An improved diameter grading machine having a plurality of aligned pairs of rails, each pair forming a diverging slot therebetween from one end to the other for passage of articles therethrough. Articles of smallest minimum diameter fall through the slot nearest the end at which the articles are fed to the rails and larger diameter articles fall through the slot along the length of the rails according to their minimum diameter. One rail in each pair is mounted on a fixed support and the other rail of the pair is mounted on a support which is laterally adjustable with respect to the fixed support to adjust the slot width so that the rails can be simultaneously adjusted to grade items of different mean diameter with a minimum of adjustment. An improved feeding device singulates the articles for feeding to each of the rails. The feeding device has a plurality of spaced grooves of increasing width and depth juxtaposed with a plurality of ridges of increasing height and width.

3,701,419
METHOD OF AND APPARATUS FOR SORTING ORES

James Francis Hutter, and Leonard Kelly, both of Peterborough, Ontario, Canada, assignors to Sphere-Investments Limited, Nassau, Bahamas

Filed Nov. 6, 1969, Ser. No. 874,424
Claims priority, application Great Britain, Nov. 12, 1968, 53,471/68
Int. Cl. B07k 5/344
U.S. Cl. 209—111.8 **11 Claims**

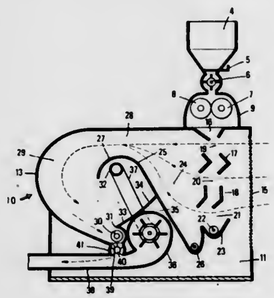
In the machine sorting of objects which have a material with magnetic properties, an auxiliary magnetic field is provided in the sorting zone to enhance a magnetic characteristic of the material with magnetic properties. In one embodiment the objects are passed through a strong, steady magnetic field just prior to passing a magnetic field detector. The magnetic field detector provides a sorting signal related to remanence of the objects, and the objects are deflected or not in accordance with the sorting signal.



3,701,420
HUSKER SEPARATOR

Toshihiko Satake, 2-38, Nishihon-machi, Saijyo-cho, Kamogun, Hiroshima-ken, Japan

Filed April 6, 1970, Ser. No. 25,689
Claims priority, application Japan, April 25, 1969, 44/37986; Jan. 28, 1970, 45/7855
Int. Cl. B07b 4/02
U.S. Cl. 209—135 **6 Claims**

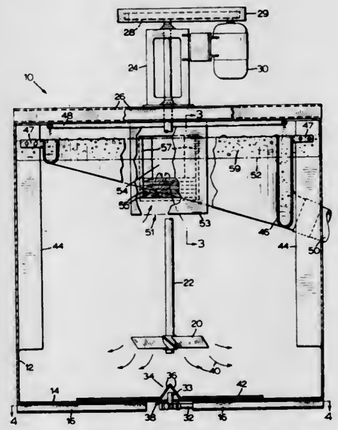


A husk separator in which a stream of husked grain and husks is subjected to streams of air produced by a single blower or aspirator housed inside a housing consisting of a winnowing chamber, settling chamber and chamber for housing said blower, whereby husked grain is separated from the husks in the winnowing chamber, and said streams are joined together after passing through the winnowing chamber to form in the settling chamber a stream of air which solely carries the husks, passes along an inner surface of rear side wall of the housing by centrifugal force working thereon and remotely from an inlet opening of the blower and discharges the husks from an opening connected to an outlet conduit of the blower.

3,701,421
METHOD OF MINERAL SEPARATION BY FROTH FLOATATION

John Russell Maxwell, Chapais, Quebec, Canada, assignor to Technequip Limited, Weston, Ontario, Canada

Continuation-in-part of Ser. No. 735,168, June 7, 1968, abandoned. This application April 29, 1970, Ser. No. 32,906
Int. Cl. B03d 1/02, 1/22
U.S. Cl. 209—164 **3 Claims**

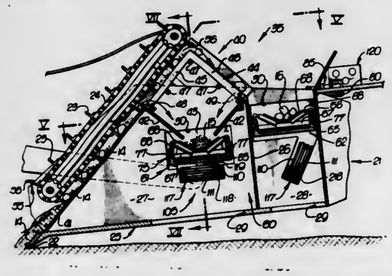


A method of mineral separation by froth floatation in which pulp is fed into a cylindrical tank of height approximately equal to its diameter. The pulp is mechanically agitated, and air at low pressure is fed into the bottom of the tank, to keep the tank contents in suspension and to float the desired fraction of the pulp. The feature of the invention is that a low flow of air is used, in the range between 0.05 and 0.30 cubic foot per minute per cubic foot of pulp, and low power mechanical agitation is used, the total consumed power for both the air and the mechanical agitation being between 0.010 and 0.035 horsepower per cubic foot of pulp.

3,701,422
VEHICLE MOUNTED EARTH SEPARATING AND CONVEYING SYSTEM

Thomas A. Downey, Ontario, Calif., assignor to Zurn Engineers, Upland, Calif.

Filed May 21, 1970, Ser. No. 39,428
Int. Cl. B07b 1/00
U.S. Cl. 209—241 **1 Claim**



An earth moving vehicle including a scraper for collecting rocky earth and other native material to be carried upwardly by an endless paddle elevator across a grizzly for separating the material into fines and larger aggregates or tailings. The fines drop through the separator onto a continuously moving transverse conveyor adapted to discharge the fines along a line parallel to the line of vehicle movement and spaced laterally therefrom, for example in a partially filled trench for a pipeline or the like. The tailings are simultaneously discharged onto a second transversely extending continuously moving conveyor to be discharged along a longitudinal ridge, preferably on the opposite side of the vehicle from the trench being filled, and extending parallel to movement of the vehicle. The conveyors are driven by suitable motor means, preferably hydraulically actuated by pressurized fluid from a pump on the vehicle, the fluid being conducted to and from the hydraulic motors by flexible conduits wound around a sheave to maintain proper tension in the fluid lines and to avoid slack or fouling thereof, while permitting the operator to selectively adjust the discharge ends of the conveyors at desired distances laterally of the vehicle.

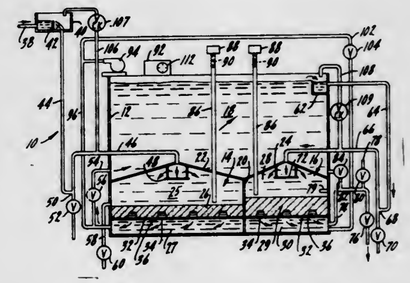
ERRATUM

For Class 210—198 see:
Patent No. 3,701,609

3,701,423
METHOD AND APPARATUS FOR FILTERING A LIQUID

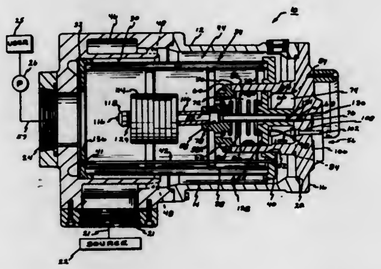
Anders Lindstol, Oakville, Ontario, Canada, assignor to Ecodyne Corporation, Chicago, Ill.

Filed May 12, 1970, Ser. No. 36,568
Int. Cl. B01d 23/24
U.S. Cl. 210—80 **9 Claims**



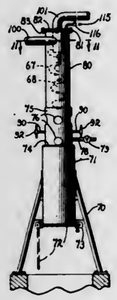
A liquid is filtered by first delivering it to a first enclosed chamber having a first filter bed, and passing the liquid downwardly through the bed. The liquid is then delivered to a backwash storage chamber above the first bed, and then to a second enclosed chamber containing a second bed. The liquid is passed downwardly through the second bed, and is then delivered to service. The apparatus includes means defining a first filter chamber containing a first filter bed, means defining a second filter chamber containing a second filter bed, and means defining a backwash storage chamber above the filter chambers. Suitable pipe means are provided for delivering liquid in series through the first filter bed, the backwash storage chamber, and the second filter bed. Pipe means are also provided for backwashing the first and second filter beds with water from the backwash storage chamber. The preferred embodiment also provides means for gas-scouring the filter beds.

3,701,424
FLUID FILTERING DEVICE
Carl A. Brown, Birmingham, and Jerald F. Thomas, Utica, both of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed June 1, 1970, Ser. No. 42,029
Int. Cl. B01d 35/14
U.S. Cl. 210—90 2 Claims



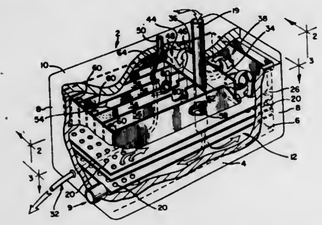
A fluid filtering device having a housing with a cavity in which a cylindrical filter element is disposed defining an annular chamber between the outer wall of the filter element and the interior of the housing, the annular chamber registering with an inlet port of the device. One end of the filter element registers with an outlet port of the device such that the normal path of fluid flow is from the inlet port into the annular chamber, radially through the walls of the filter element, axially through the interior of the filter element and externally of the filtering device via the outlet port. When the filter element becomes clogged by a predetermined amount a valve mechanism disposed at the opposite end of the filter element causes the fluid to bypass the filter element. The valve mechanism is carried within a boss integrally formed with a cover member, which in turn closes the housing cavity and further includes means operatively connected to the valve mechanism for indicating the filtering condition of the filter element.

3,701,425
SEWAGE SOLID SEPARATING DEVICE
Claude C. Laval, Jr., 2444 N. Farris Ave., Fresno, Calif.
Filed Oct. 16, 1970, Ser. No. 81,597
Int. Cl. B01d 21/26
U.S. Cl. 210—136 6 Claims



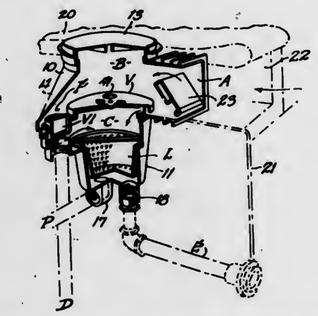
A device for separating sewage solids from sewage fluids. The device is characterized by a variably dimensioned orifice for tangentially jetting a stream of fluid into a vortexing chamber supported in an upwardly spaced relationship with an accumulator for descending solids. A flexible closure member is extended across the orifice in the direction of the flow and is provided with a first surface against which fluids passing through the orifice impinge and a second surface against which fluids within the chamber impinge, whereby the effective dimension of the orifice is varied in response to variations in the flow characteristics of the stream.

3,701,426
COMPACT SEWAGE TREATMENT APPARATUS
Robert D. Wetzel, Marshfield, Mass., assignor to James R. O'Connor, Arlington, Mass., a part interest
Filed Nov. 18, 1971, Ser. No. 200,160
Int. Cl. C02b 3/06; C02c 5/06
U.S. Cl. 210—152 21 Claims



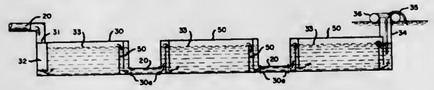
A compact, compartmentalized sewage treatment apparatus housed in a single tank having a length appreciably greater than its height in which sewage discharged into the apparatus is progressively clarified by anerobic bacterial decomposition, primary sedimentation and flotation, chemical attack to reduce coliform bacteria and BOD, and secondary sedimentation, flotation and filtration to highly clarify the effluent for discharge into lakes, rivers, harbors and other water courses.

3,701,427
SWIMMING POOL SKIMMER WITH VACUUM AND SWEEPING CONTROLS
Herbert H. Howard, Woodland Hills, Calif., assignor to Marine Swimming Pool Equipment Co., North Hollywood, Calif.
Filed Jan. 11, 1971, Ser. No. 105,338
Int. Cl. F04h 3/20
U.S. Cl. 210—169 8 Claims



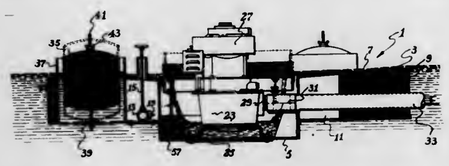
A skimmer having an upper chamber with a floating weir-controlled inlet, a lower chamber for holding a leaf basket, and a lateral chamber for a main drain connection, is provided with a rotary valve diaphragm cover for the lower chamber and a plug valve for the lateral chamber. By adjusting the two valves to different combinations of positions, the skimmer can be utilized to set the circulatory system of the pool for 1) normal skimming, 2) application of suction to the main drain in the pool bottom, for jet sweeping operation, or 3) vacuuming.

3,701,428
SEWAGE DISPOSAL SYSTEMS
Ed Lesh, 1337 Woods Run, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 662,255, July 28, 1967, abandoned. This application July 17, 1970, Ser. No. 55,644
Int. Cl. E02b 15/04
U.S. Cl. 210—170 7 Claims



A sewage disposal unit is provided comprising a plurality of flexible sewer pipes adapted to be connected at one end to the mains of a sewage disposal system, a flexible plastic septic tank submerged in a body of water adjacent the said sewage mains and connections between the other ends of said flexible sewer pipes whereby the said mains are connected for discharge through the plastic pipes into the flexible plastic septic tank, said tank being supported and protected by the surrounding water in which it is submerged.

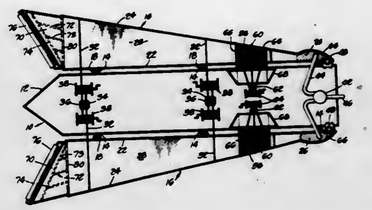
3,701,429
SKIMMER FOR REMOVING FLOATING MATTER FROM A BODY OF LIQUID
Orville Carroll Schell, Rogers, Ark., assignor to Hoyt Corporation, Rogers, Ark.
Filed Oct. 9, 1970, Ser. No. 79,607
Int. Cl. C02b 9/02
U.S. Cl. 210—242 7 Claims



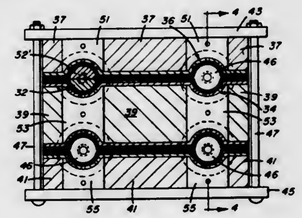
A skimmer for removing floating matter from a body of liquid, such as skimming oil spills from water, comprises a floating annular body having gently downwardly centrally inclined upper surfaces that terminate radially inwardly adjacent an annular weir. Oil is drawn over the inclined surfaces and flows over the weir and collects in a central sump. The weir is raised by an annular float disposed in the sump when the overflow in the sump is too great to be removed by a centrally positioned pump. A ballast chamber makes possible a rough adjustment of the draft of the skimmer. Peripherally spaced marginal floats disposed in upright casings that extend above and below the water line are vertically adjustable to trim the floating skimmer and to make possible a fine adjustment of the draft.

3,701,430
OIL SKIMMER
Ralph L. Tuttle, 7135 Hollywood Boulevard, Hollywood, Calif.
Filed Feb. 16, 1971, Ser. No. 115,416
Int. Cl. C02b 9/02
U.S. Cl. 210—242 7 Claims

A structure to be used in conjunction with a barge for skimming oil spilled on the surface of harbor waters, lakes and the like comprising one or two outriggers which can be partially positioned just below the surface of the oil and which have harvesting booms that converge at the rear joining a collector sump from which the oil and water can be pumped into the barge. The system may also include a means for separating the oil from the water and also for separating out large particles of debris which are frequently found floating in these waters. For use in situations where the body of water has a light-swell condition, the outriggers include flexible leading ends which will follow the contour of the water surface.



3,701,431
REVERSE OSMOSIS APPARATUS AND METHOD FOR MAKING SAME
Barry M. Brown, Rochester, and Elbert L. Ray, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 19, 1971, Ser. No. 144,970
Int. Cl. B01d 31/00
U.S. Cl. 210—321 14 Claims

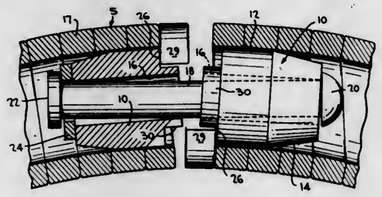


Reverse osmosis apparatus comprises one or a plurality of reverse osmosis membrane tubes enclosed within a housing. Each tube comprises two mating rigid support forms, each having a long and narrow perforate channel therein and flat flanges extending laterally therefrom on opposite sides of the channel. Two reverse osmosis membrance sheets are clamped between the flanges, and each sheet extends into one of the channels, so that together the sheets form a tube for conducting solution. Elements of the housing can bear on the flanges with clamping pressure. A series of such tubes can be formed side-by-side in a unit. The apparatus advantageously is made by placing a flat sheet of membrane across each of first and second support forms, with or without an interposed spacer sheet, depressing the membrance into the channel by a mandrel or by applying a gas pressure differential, and then fitting the two together with the channels facing toward one another and in register. The flanges are then clamped together and the whole is enclosed in a housing in spaced relation thereto for collecting solvents. Each support form can have a series of such channels spaced from and parallel to one another.

3,701,432
ARTICULATED CONNECTOR
William L. Schlegel, Stanhope, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.
Filed Nov. 1, 1971, Ser. No. 194,168
Int. Cl. B01d 33/14
U.S. Cl. 210—401 2 Claims

A connector for the terminal ends of the coil springs such as are employed in a coil spring filter, includes a pair of plugs each proportioned for reception within the said terminal ends,

and means interconnecting the plugs for universal relative angular movement and to withstand the spring tension. The adjacent ends of the plugs are formed with relatively opposed shoulders which are spaced apart to define between them a space for reception of inwardly directed terminal ends of the wire filament or filaments forming the coil spring or springs. The abutting engagement between the similarly directed ends with the said shoulders prevents removal of the plugs from the springs. In a preferred embodiment, the universal interconnection between the plugs is defined by forming the plugs with relatively aligned bores through which is loosely disposed a rigid pin having sufficient clearance with the bores to permit limited angular movement of the plugs in an axial plane of the pin. The ends of the pins are enlarged to retain the plugs thereon and the plugs are relatively freely rotatable to release any torsional forces in the spring ends which might tend to laterally displace them by rolling motion on the filter drum or associated rollers.

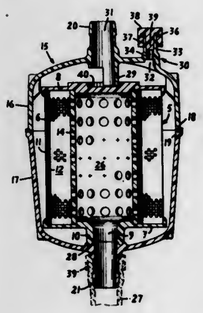


3,701,433

FILTER FOR USE IN THE FILTRATION OF BLOOD

Sidney Krakauer, and David Rosenberg, both of Glen Cove N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,356
Int. Cl. B01d 27/06, 39/08
U.S. Cl. 210—436 **18 Claims**



A filter element is provided for use in the filtration of blood such as in cardiopulmonary bypass techniques in open heart surgery, comprising a woven square weave mesh of polyester monofilaments having a pore size within the range from about 25 to about 50 microns.

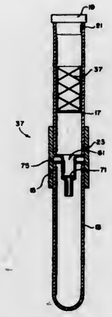
3,701,434

TEST TUBE SYSTEM FOR SEPARATING BLOOD INTO SERUM AND RED CELLS

Hugh C. Moore, 66 East Parkway North, Memphis, Tenn.

Filed March 15, 1971, Ser. No. 123,990
Int. Cl. B01d 29/04
U.S. Cl. 210—477 **4 Claims**

A test tube system for separating blood into serum and red cells. The system includes a first test tube, a second test tube and a connector joining the first test tube and the second test tube. The first test tube is for initially containing the blood sample and includes a sleevelike body portion that is closed at the upper end with s stopper and is closed at the lower end by a cap removably threaded on the end thereof. The first test tube has a plurality of non-wettable strands extending across



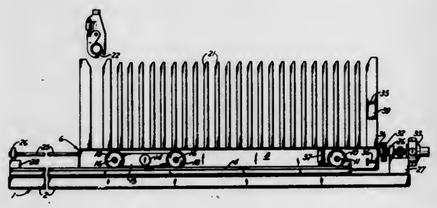
the interior thereof for providing a place for the blood to clot. The connector is adapted to be threaded onto the lower end of the first test tube and the upper end of the second test tube. The connector includes a filter for the serum to flow therethrough into the second test tube.

3,701,435

HORIZONTALLY MOVING PIPE RACK

Homer J. Woolslayer; Joseph R. Woolslayer; Cecil Jenkins, all of Tulsa, and Erwin A. Campbell, Bixby, all of Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed Oct. 26, 1970, Ser. No. 83,743
Int. Cl. A47f 7/00
U.S. Cl. 211—60 RS **1 Claim**



A carriage is mounted on a track. Rigidly mounted on the carriage there may be a row of parallel vertical posts that are spaced apart to provide vertical slots for receiving reclining pipe. The carriage is movable along the track intermittently to locate each of the slots in succession at a pipe-receiving station. Preferably, the carriage is narrow and a like carriage is spaced laterally from it and is movable in unison with it.

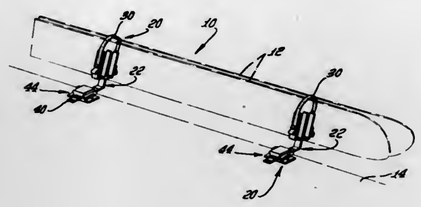
3,701,436

WATER SKI RACK

Harvey Keith Adams, Santa Maria, Calif., assignor to Radco Manufacturing Co., Inc., Santa Maria, Calif.

Filed Dec. 28, 1970, Ser. No. 101,489
Int. Cl. A47b 81/00; A47f 7/00
U.S. Cl. 211—60 SK **5 Claims**

A water ski rack comprising two spaced rack units for supporting a pair of water skis adjacent the respective ends thereof. Each rack unit includes a fork-like rack element having three tines adapted to receive the skis therebetween. Each rack element has a projecting prong adapted to be plugged into a socket in a bracket mounted on a suitable supporting



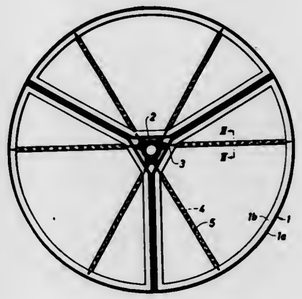
structure. A spring clip carried by each bracket and engageable with the corresponding prong retains it in its socket. Straps secure the skis in the rack elements.

3,701,437

TURNTABLE TYPE DISPLAY RACK ASSEMBLY

Karl E. G. Splik, Breviksvagen 114, 42166 Vastra Frolunda, Sweden

Filed July 22, 1970, Ser. No. 57,046
Int. Cl. A47f 5/00
U.S. Cl. 211—133 **4 Claims**



A display rack assembly has a turnable central column with rails thereon which have slits into which ends of lateral brackets are detachably inserted at any desired height of the rails, sectional racks are positioned on said brackets and guiding means are located on the undersides of the racks and each rest on the upper edges of one of said brackets for the purpose of supporting a display tray, rack, basket or the like on each rack.

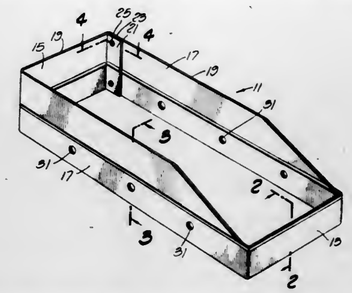
3,701,438

DISPLAY PLACE-KEEPER

Hugo J. Maisnik, Monterey Park, Calif., assignor to Myer Show Print, Inc.

Filed Feb. 27, 1969, Ser. No. 802,898
Int. Cl. A47f 5/11; B65d 5/02
U.S. Cl. 211—184 **4 Claims**

A collapsible mechanical device is disclosed for keeping a place reserved in a frozen-food type of show case or shelf for a particular product, even when the space is empty. The disclosed place-keeper displays the goods conveniently until sold



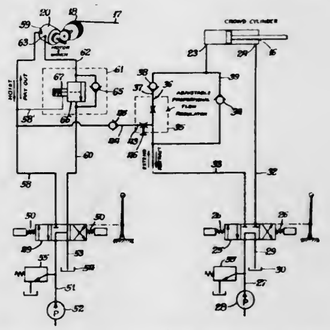
out, and then assures that the empty space is not filled up with goods of a different source.

3,701,439

SYSTEM FOR AUTOMATICALLY PAYING-OUT LINE PROPORTIONAL TO EXTENSION OF CRANE BOOM

William J. Lado, Rome, N.Y., assignor to Pettibone Corporation, Chicago, Ill.

Filed May 1, 1970, Ser. No. 33,726
Int. Cl. B66c 23/06
U.S. Cl. 212—55 **3 Claims**



In a hydraulic system, a proportional flow valve is used for automatically paying-out line as a crane boom is extended so that extension of the boom will not draw up the hook or cause damage if there is no free line. The proportional flow valve diverts to the winch motor some of the hydraulic fluid directed by a manual valve toward the boom-extending cylinder. The necessary pressure in the line to the winch motor, required for actuating a safety valve in the return line from the winch motor, is achieved through the use of a special reversing valve for the winch motor. This reversing valve has a combination closed and open center spool so that when centered it blocks the line to which fluid is diverted while leaving open the return line.

3,701,440

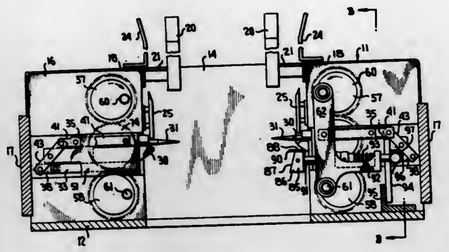
EGG CARTON DENESTER MACHINE

Robert F. Windstrup, and Charles J. Chebuhar, both of Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 20, 1969, Ser. No. 834,952
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 A **11 Claims**

This disclosure relates to an article denesting apparatus wherein nested articles are supplied in stacked form and

mechanism is provided for separating a lowermost article from the stack while supporting the remaining articles of the stack.

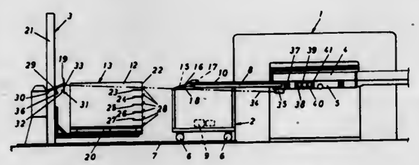


The apparatus includes a continuously operating combined rotary and reciprocatory movement drive mechanism for the support and separator bars of the apparatus.

3,701,441
TRANSFER DEVICE FOR USE IN CUTTING UNITS FOR PAPER SHEETS

Gustav Ake Bernhard Gadler, Lantmannavagen 9, S-342 00 Alvesta, Sweden

Filed June 28, 1971, Ser. No. 157,226
Claims priority, application Sweden, Jan. 28, 1970, 1033/70
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 SS **5 Claims**



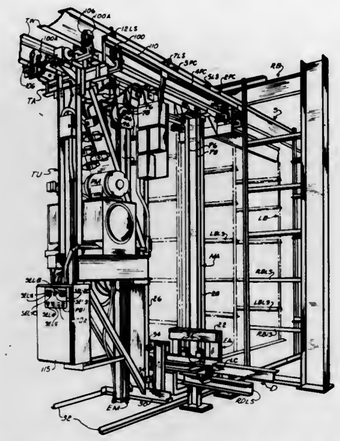
A cutting unit for paper sheets comprising a conveyor carriage for transferring paper sheets from a vertically displaceable support unto the working table of said cutting unit, by engagement of horn-like extensions provided on said carriage with the amount of sheets to be transferred at each transfer movement of the carriage. To prevent the paper sheets from sliding during transfer and to ensure correct positioning thereof on the carriage so as to avoid improper engagement with the feeder roller advancing the sheets from the conveyor onto the cutting means proper, a counter-holder means is arranged which operates independently of the vertically movable support and is adapted, upon displacement of the conveyor carriage into the stack of sheets, to lift the rear end of said sheets. The counter-holder preferably consists of a plate mounted on arms which are hingedly connected to a frame. Guide means are arranged on the conveyor carriage to cooperate with roller means on the counter-holder to lift it during displacement of the carriage.

3,701,442
STORAGE AND RETRIEVAL APPARATUS

Franklin W. Dunning, Painesville, and Henry A. Gorjanc, Mentor, both of Ohio, assignors to McNeil Corporation

Continuation of Ser. No. 769,444, Oct. 21, 1968, abandoned, which is a continuation of Ser. No. 470,380, July 8, 1965, abandoned. This application Sept. 25, 1970, Ser. No. 75,668
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **1 Claim**

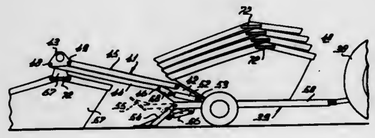
Material handling apparatus for storing and retrieving loads, which is presettable at a first area for automatic transfer of a load between the first area and load supports of a second area and also between different load supports of the second area. The apparatus can be preset to select two positions in the second area at which load transfer is to be effected and will effect the transfer by movement directly from the first to the second selected positions regardless of their locations relative to the first area and independently of external commands once a transfer is initiated.



3,701,443
TRAILERS

Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland

Filed Oct. 21, 1970, Ser. No. 82,589
Claims priority, application Netherlands, Oct. 21, 1969, 6915852
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 **7 Claims**

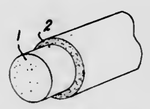


The combination of a trailer with a lifting mechanism and one or more relatively large containers for receiving agricultural produce and which, when empty, can be stacked one in the other. The lifting mechanism comprises a pair of parallelogram rod systems which extend from either side of the trailer and are pivotable relative thereto, a shaft connecting the upper ends of the rod systems for supporting engagement means adapted to connect to pins which extend from the upper rims of the containers whereby when such connection is made, a single container or a plurality of stacked containers can be loaded or unloaded from the trailer or stacked containers on the trailer by pivoting the lifting mechanism. The engagement means may be selectively affixed to its supporting shaft for maintaining the containers at a desired inclination throughout the loading or unloading cycle irrespective of their center of gravity. The containers may be provided with a pouring spout and tipped by the lifting mechanism to cause material therein to pour out of same.

3,701,444
FLEXIBLE WELDING ROD HAVING ORGANICALLY BOUND CORE AND PROTECTIVE SHEATH

Rene Clement, Route de Bigary, 26 Suze-la-Rousse; Pierre Manfredi, Chemis de Caffin, 84 Ste-Cecile-les-Vignes, and Roger Roulliay, 15 rue de Cygne, 91 Vauhallan, all of France

Filed Aug. 24, 1970, Ser. No. 66,305
Claims priority, application France, Aug. 28, 1969, 6929483
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **7 Claims**

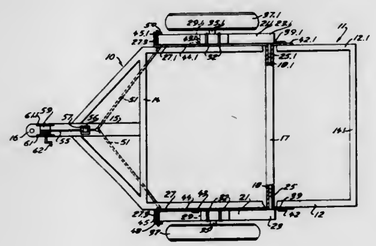


Primarily intended for arc welding, the cord consists of a core formed of a mineral powder which is mixed with an organic binder and contains at least the constituents of a welding flux, the core being encased in a flexible protective sheath of organic material.

3,701,445
TILTING BED TRAILER

Alfred E. Haslem, 5363 Ranger Avenue, North Vancouver, B.C., Canada

Filed Sept. 13, 1971, Ser. No. 179,635
Int. Cl. B60p *3/10*
U.S. Cl. 214—506 **6 Claims**



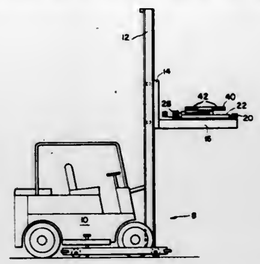
A tilting bed trailer having a bed frame connectable at one end to a towing vehicle, and having supporting arms, ground wheels mounted on the supporting arms, the arms being connected for swinging movement at after ends to the frame so that when the arms are swung between horizontal and upwardly sloped positions the frame is moved between elevated and lowered positions.

3,701,446
HORIZONTALLY TURNABLE MATERIAL HANDLING FORKS

Raymond Leonard Smith, Jr., Southbury, Conn., assignor to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed Dec. 2, 1970, Ser. No. 94,334
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **7 Claims**

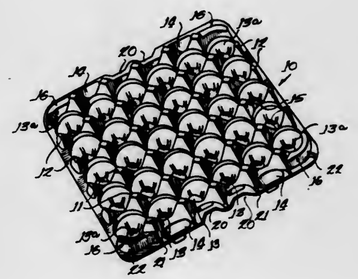
Forks are mounted on a vertical pin which extends upright from a carrier elongated in the direction of travel of a lift truck. The carrier moves between parallel rails mounted on a platform of a carriage which is vertically movable on a mast. A turning device connected to the forks and to the carrier turns the forks to one of three positions, left, right or straight ahead. Another device moves the carrier to the left or to the right on the platform.



3,701,447
TRAY CONSTRUCTION

James W. Boyd, Crown Point, Ind., and Clifford H. Bessett, South Holland, Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Oct. 20, 1970, Ser. No. 82,407
Int. Cl. B65d *81/00*
U.S. Cl. 217—26.5 **3 Claims**



A multi-sided tray of molded construction is provided having downwardly extending pockets arranged in spaced parallel rows, and upwardly projecting posts arranged in spaced parallel rows disposed in alternate relation with the rows of pockets. At the corners of the tray are disposed corner pockets which are partially delimited by elongated, upwardly projecting, hollow protuberances. The height of each protuberance is less than the height of said posts. Each protuberance has one end thereof terminating at a post disposed adjacent the corner pocket.

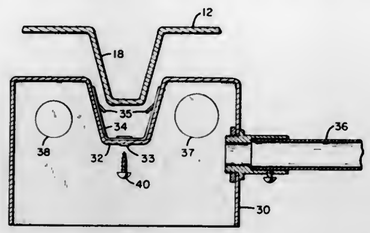
3,701,448
ELECTRICAL JUNCTION BOX

James D. Vadnais, Stillwater, Minn.

Filed April 29, 1971, Ser. No. 138,639
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.9 **3 Claims**

An electrical junction box having an indentation or groove on one side so that the box can be fitted over the ridges com-

monly found in typical roofing panels. Electrical conduit connecting holes in the box are positioned so that the conduit is



directly in line with the edge of the ridges so as to avoid the necessity for bending the pipe. A spring clip in the groove on the box holds the electrical junction box in place on the ridge.

3,701,449

SHORT BOTTLE CRATES MADE OF PLASTIC

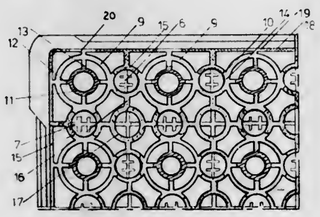
Alexander Schoeller, Karl-Marr Str. 10, 8000 Munich-Solln, Germany

Filed June 14, 1971, Ser. No. 152,719

Claims priority, application Switzerland, Dec. 9, 1970, 18254/70

Int. Cl. B65d *1/24, 1/35, 57/00*

U.S. Cl. 220—21 **8 Claims**



A short bottle crate made of plastic having a plurality of annular webs forming the bottom of the crate. A set of first annular webs are disposed such that each web is concentric with a compartment of the crate. A set of second annular webs connect adjacent first webs and the centers of the second annular webs lie at the centers of the compartment walls. Projections are fashioned on the second annular webs between the regions of their connections with the first annular webs and extend outwardly to a level below the level of the first annular webs. The projections are dimensioned such that the crate may be supported on the bottle tops in a filled crate in displaced fashion. The projections do not interfere with the normal crate stacking.

3,701,450

SELF-HOLDING TUBE END CLOSURES

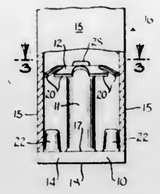
Samuel I. Belzberg, Cote St. Luc, Quebec, Canada, assignor to Unican Security Systems, Ltd., Montreal, Quebec, Canada

Filed March 24, 1971, Ser. No. 127,697

Int. Cl. B65d *41/00*

U.S. Cl. 220—24 **6 Claims**

A closure for an end of a square cross section tube comprises a base member having sides corresponding to those of the tube and a stem projectable into the end of the tube. A anchor disc is axially immovably connected to the outer end of the stem but can be rotated about the axis thereof. Barb-like fingers on the periphery of the disc allow insertion thereof into the tube end but preclude its withdrawal therefrom. The fingers also prevent rotation of the disc about its axis after it has entered the tube end. During application of the closure to a tube end, the base and stem can be unitarily rotated with respect to the disc to dispose locating elements on the base in



position to enter the tube end and cooperate with internal wall surfaces thereof in holding the base member with its sides in coincidence with those of the tube.

3,701,451

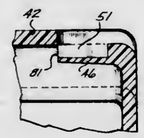
MOLDED ELECTRICAL JUNCTION BOX

Edgar C. Schindler, Seattle, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Kent, Wash.

Filed Sept. 3, 1970, Ser. No. 69,266

Int. Cl. B65d *17/00*; H02g *3/08*

U.S. Cl. 220—27 **11 Claims**



An electrical junction box characterized by the provision of knockouts provided in the walls of the outlet box which are accessible from the interior of the box for easy removal. The junction box, which is constructed of an injection moldable resinous material having insulating properties, is provided with tapered ribs on the exterior surface of the side walls to properly orient the box with respect to the wall yet provide sufficient draft angle to enable injection molding. Additional volume on the interior of the electrical outlet box is provided by a lateral extension of the box constructed and arranged to fit within the wall structure. Grounding means for use with the boxes is provided wherever necessary.

3,701,452

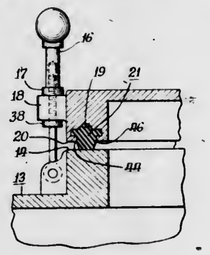
SEALING GASKET FOR A CONTAINER

Erwin W. Tona, 7734 S. Christiana, Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 178,280

Int. Cl. B65d *53/00*

U.S. Cl. 220—46 R **6 Claims**



An improved sealing gasket for providing a seal for vessels subject to a differential in pressure.

3,701,453

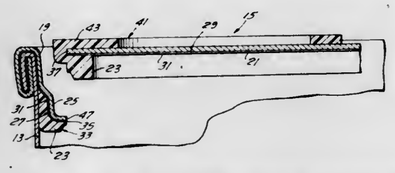
PLASTIC RING PULL EASY OPEN END

John Robert Platt, Crystal Lake, and Stanley Edward Rohowetz, Barrington, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed June 17, 1971, Ser. No. 154,064

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **10 Claims**



An easy open end for a container which incorporates an injection molded, plastic opening feature having no exposed, sharp, bare edges. An adhesive promoting coating system permanently bonds the plastic to the inside surface of the end.

3,701,454

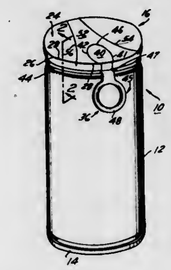
EASY OPENING CONTAINER CLOSURE

Richard Conrad Thorp, Crystal Lake, Ill., assignor to American Can Company, Greenwich, Conn.

Filed July 6, 1971, Ser. No. 159,651

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **18 Claims**



An easy-open end closure for attachment to a container body is provided which has a top panel, a peripheral depending skirt, a pair of score lines defining a partial opening closure section which includes a portion of the skirt and a portion of the top panel, a tab connected to the section for tearing the partial opening section along the score lines to provide a limited opening through the closure, another pair of score lines defining a full opening closure section which includes a portion of the skirt and a portion of the top panel, and another tab connected to the full opening closure section for tearing the same along the other pair of score lines to effect removal of the entire end closure from the container.

3,701,455

CAN FOR LIQUIDS AND PROCESS FOR CLOSING SAME

Herbert Warnecke, Vienna, assignor to Tuwa-Plastik Dr. Herbert Warnecke Erzeugung von Kunststoffartikeln, Vienna, Austria

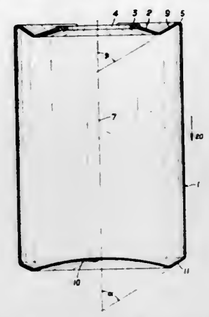
Filed Oct. 12, 1970, Ser. No. 79,955

Claims priority, application Austria, Oct. 17, 1969, 9836; April 20, 1970, 3541

Int. Cl. B65d 7/42

U.S. Cl. 220—66 **8 Claims**

The can of the invention is intended for containing liquids, such as oils, is made of a plastic material, and is substantially circular in cross-section. The top end wall is provided with a central opening having a reinforced rim and is adapted to be closed with a heat sealing foil. An elevated border at the outer



circumference of the top end wall concentrically surrounds the rim and is connected with said rim by a wall portion having the shape of a flat cone.

3,701,456

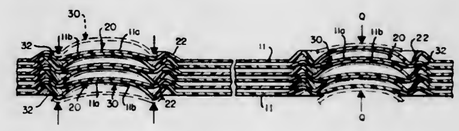
STACKABLE MEMBERS

John D. Alroy, 380 Mountain Road Ste:1713, Union City, N.J.

Filed April 2, 1970, Ser. No. 25,051

Int. Cl. B65d *21/02, 1/34*

U.S. Cl. 220—97 C **23 Claims**



Articles of deformable material which are formed with means on a wall thereof which permit a number of articles nested one within the other to be compressed into a smaller volume when force is applied thereto and which also cause the articles to move apart when the force is removed.

3,701,457

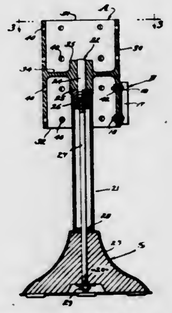
CUP DISPENSER WITH REVOLVING ADAPTER

William G. Anderson, 5942 Gildred Circle, Huntington Beach, Calif.

Filed Feb. 26, 1971, Ser. No. 119,176

Int. Cl. B59g *59/06*

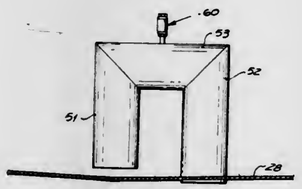
U.S. Cl. 221—120 **4 Claims**



A carrier comprising a stand with an elevated bearing means rotatably carrying an adapter supporting mountings at

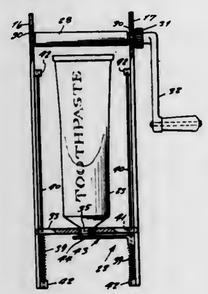
various heights, for replaceably securing and transporting a plurality of vertically disposed elongated cup dispensers into convenient proximity to the person withdrawing various cups of selected size or kind therefrom.

3,701,458
A METHOD OF REMOVING LIQUID FROM A SUNKEN FLOATING ROOF OF A LIQUID STORAGE TANK
Robert B. Wagoner, Griffith, Ind., and John S. Kinghorn, Houston, Tex., assignors to Aerojet-General Corporation
Division of Ser. No. 15,112, Feb. 27, 1970, Pat. No. 3,606,071. This application April 23, 1971, Ser. No. 137,008
Int. Cl. F04f 10/02
U.S. Cl. 137—1 **9 Claims**



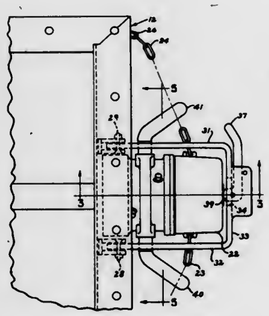
A method for removing liquid from a sunken floating roof of a liquid storage tank. The method comprises the steps of: withdrawing liquid from below the sunken floating roof; and siphoning liquid from above the floating roof to below the floating roof when the liquid level of the tank is below the accumulated liquid above the floating roof.

3,701,459
TUBE PASTE SQUEEZER FOR TOOTH PASTE AND THE LIKE
Ernest Ward, R. R. No. 1, Box 93 A, Piqua, Ohio
Filed Nov. 16, 1970, Ser. No. 89,708
Int. Cl. B65d 35/56
U.S. Cl. 222—102 **2 Claims**



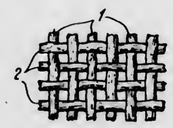
A device adaptable for being mounted on a wall of a bathroom, the device being used for dispensing either toothpaste or shaving cream in a more efficient manner than from a losely placed tube, the device including a case within which the tube is fitted so to be fed between a pair of rollers which are manually rotated by a crank handle outside of the case so that paste can be dispensed from the bottom of the device.

3,701,460
HOPPER OUTLET VALVE PROVIDING LADING SAMPLING
Richard H. Dugge, and John L. Carney, Jr., both of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed July 19, 1971, Ser. No. 163,737
Int. Cl. B67d 5/54
U.S. Cl. 222—193 **10 Claims**



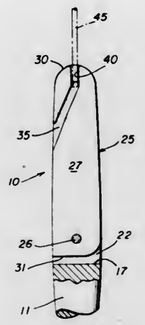
A pneumatic hopper outlet having a valve operated by handles at each end of the outlet. Each end of the outlet has a sleeve or tube closed by caps adapted to be locked by bails extending over the ends thereof. Each tube has a pair of handles near each end. One handle on each end engages a portion of each bail so as to prevent rotation of the rotary tube in either direction when the bails are in their locking position, and the other two handles are slightly spaced from the bails. Thus, when one of the bails is removed from its locking position, the tube can be rotated to partially open the valve for the purpose of obtaining a sample of the lading.

3,701,461
HOOK FOR HAND HOOKING RUGS
Louis Bailly, En Bon-Vallon, Corsier sur Vevery, Switzerland
Filed Dec. 2, 1970, Ser. No. 100,123
Claims priority, application Switzerland, Dec. 19, 1969, 18891/69
Int. Cl. D05b 85/00
U.S. Cl. 223—102 **7 Claims**



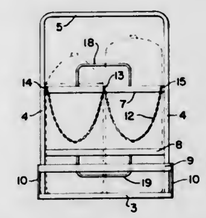
A hook for the hand hooking of rugs comprises a body tapering in narrowing sense from a hook portion to its opposite end and a V-shaped member pivotably connected to the body and riding in a slot therein to open and close the hook portion. In its closed position a knuckle at the vertex of the V-shaped member emerges from the body at the side opposite the hook portion, so that pressure on the knuckle results in pushing the V-shaped member into its open position. The knuckle is located further from the hook portion than the arm of the V-shaped member which effects its closure.

3,701,462
NEEDLE
Howard B. Riley, 114 West Reynolds, Newton, Ill.
Filed Oct. 26, 1971, Ser. No. 192,245
Int. Cl. D05b 85/00, 91/00
U.S. Cl. 223—102 **6 Claims**



A needle having an elongated body tapered to a point at one end thereof and having two spaced apart legs at the other end thereof, a thread holder pivotally mounted on the body between the spaced apart legs and having an elongated slot therein extending to one side thereof and ending at opposed grooves in the thread holder extending from the slot to the end of the thread holder away from the pivotal connection. The thread holder is movable between a thread receiving position wherein the slotted and grooved end of the thread holder is spaced from the spaced apart legs and is in position to receive thread in the slot and a thread locking position wherein the thread holder is between the spaced apart legs to lock the thread between the grooves in the thread holder and the spaced part legs, the thread being locked in the needle and extending therefrom away from the pointed end thereof when the thread holder is in the thread locking position thereof.

3,701,463
HOLDING AND CARRYING RACK FOR MINIATURE OXYGEN AND FUEL GAS TANKS
Herbert C. Goss, Glenshaw, Pa., assignor to Goss Gas, Inc., Glenshaw, Pa.
Filed Dec. 22, 1970, Ser. No. 100,583
Int. Cl. B65d 61/00
U.S. Cl. 224—45 R **3 Claims**

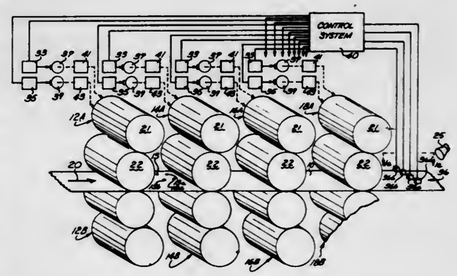


An elongated horizontal base plate is provided for supporting a pair of miniature oxygen and fuel gas tanks side by side in upright position. Secured at their lower ends to the back corners of the plate is a pair of parallel upright side rails, the upper portions of which are inclined forward over the base plate. The upper ends of the side rails are connected by a handle. A cross member extends between the side rails and is connected to them below their inclined portions. Attached to the side rails above the base plate is a rigid retaining member that extends along the front of the base plate for holding tanks on the plate. The handle is located above the center of gravity of the rack so that the base plate will remain substantially horizontal when the rack is lifted by its handle. Hooks may project from the back of the rack to support a coil of hoses attached to the tanks.

ERRATUM

For Class 226—155 see:
Patent No. 3,701,608

3,701,464
CIRCUMFERENTIAL AND LATERAL WEB REGISTRATION CONTROL SYSTEM
James N. Crum, Stonington, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 15, 1970, Ser. No. 81,041
Int. Cl. B41f 5/16; B65h 23/02
U.S. Cl. 226—3 **17 Claims**

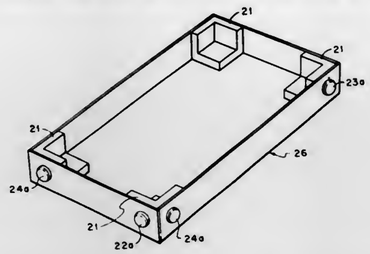


A control system for controlling registration in a multi-color web-fed printing press system senses register marks which are printed on the web. Any circumferential registration error which is detected by sensors that sense the register marks is translated into a count in a circumferential counter which is coupled to a circumferential motor control circuit. The circumferential motor control circuit drives a stepping motor which in turn drives appropriate gearing to correct for the circumferential misregistration of the web as directed by the count in the circumferential counter. The apparent lateral registration error is then measured in a similar manner and is stored as a count in a lateral counter which corrects for lateral misregistration through a stepping motor and appropriate gearing. The error previously determined in the circumferential register is employed to correct the apparent error in the lateral register so that it represents the true lateral registration error instead of the apparent lateral registration error.

3,701,465
PACKAGING STRUCTURE
Robert H. Richter, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.
Filed Dec. 28, 1970, Ser. No. 104,687
Int. Cl. B65d 25/14
U.S. Cl. 229—14 C **5 Claims**

A resilient member having three round projections on each outer side for use in a packaging container for receiving and carrying articles to be protected against shock as may be experienced in loading, transporting, and storing. In ordinary application, a cardboard tray is supported at each corner with a resilient member with the projections of such member being in registration with openings in each corner of the tray to posi-

tion the resilient members, hold the tray sides together, and to form a resilient cushion at each corner for supporting an article transported in the container. In the usual circumstance, there are two trays per container, one at the bottom of the article and one at the top.

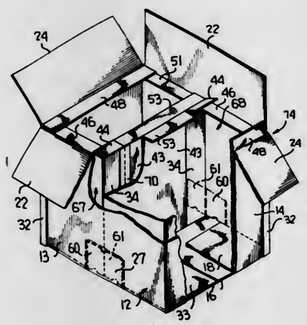


3,701,466

SHIPPING CONTAINER WITH EMPTYING CHUTE

James R. Woodrow, and Robert R. Lynski, both of Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed April 12, 1971, Ser. No. 132,986
Int. Cl. B65d 5/72, 5/48
U.S. Cl. 229—17 B **11 Claims**



This disclosure relates to a corrugated shipping container which is provided with a dispensing spout. The shipping container is formed of an outer container having the interior thereof divided into a plurality of adjacent compartments by internal liners. Adjacent portions of liners defining adjacent compartments are provided with dispensing opening defining flaps, which in turn, are aligned with a dispensing opening defining flap in a wall of the outer container. The flaps open in opposite directions both to facilitate the dispensing of material through the openings defined thereby and to reinforce one another against accidental opening. In addition, upstanding liner walls are disposed intermediate the ends of the flap of the outer container so as to reinforce the flap against inward deformation.

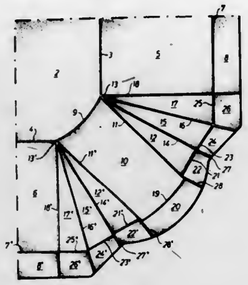
3,701,467

TRAY-LIKE STACKABLE CONTAINER

Hans Arne Valendier Johansson, Eslov, Sweden, Mo och Domsjo Aktiebolag Ltd. Co., Ornskoldsvik, Sweden

Filed July 6, 1971, Ser. No. 160,043
Claims priority, application Sweden, July 6, 1970, 9347/70
Int. Cl. B65d 5/24
U.S. Cl. 229—31 R **6 Claims**

Nestable tray-like containers are provided having an unbroken rim flange and rounded corners. The containers are erected from a flat blank to an angle of less than 90° to the horizontal plane, and the corner panels folded bellow-wise and joined together along a number of score lines.

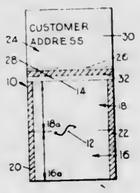


3,701,468

MAILING ENVELOPE AND MESSAGE PIECE/LABEL COMBINATION

Wilbur L. Steinhauser, Cincinnati, Ohio, assignor to Steinhauser Incorporated, Cincinnati, Ohio

Filed Dec. 4, 1970, Ser. No. 95,081
Int. Cl. B65d 27/00
U.S. Cl. 229—70 **4 Claims**



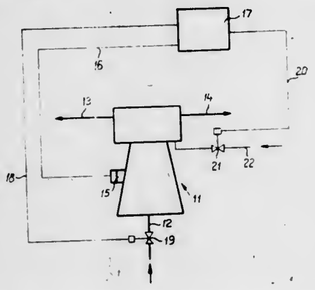
Structure defining an envelope pocket is provided with an enlarged flap divided by a line of perforations into a sealing tab for the envelope pocket and a detachable, gummed message piece/label.

3,701,469

CENTRIFUGE SLUDGE CONTROL AND METHOD OF OPERATING SAME

Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to ALFA-Laval AB., Tumba, Sweden

Filed Nov. 2, 1970, Ser. No. 86,218
Int. Cl. B04b 11/00
U.S. Cl. 233—20 A **9 Claims**



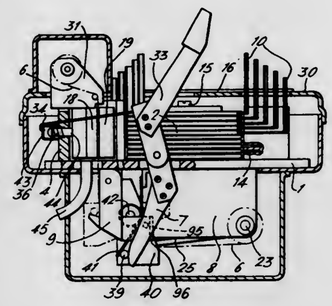
When the rotor of a sludge centrifuge is to be emptied of its contents during operation, its peripheral sludge outlets are opened to discharge at least part of the settled sludge; and while liquid is still retained in the rotor, its balance condition is determined by a sensing means. If the latter senses a predetermined degree of unbalance at the prevailing speed of the rotor, as when sludge adheres to the rotor wall and thus fails to discharge, a suitable control is signalled to prevent complete emptying of the rotor at the prevailing speed, thereby avoiding possible damage to the rotor.

3,701,470

APPARATUS FOR PUNCHING A DATA CARRIER SUCH AS A TAPE

Wolfgang Binder, Kyritz; Hasso Kalkreuth, Stolpe/uber Neustadt; Josef Glaser, Leubnitz bei Werdau, and Gunter Fahrenkrug, Alt Daber, all of Germany, assignors to VEB Kombinat Mess-und Regelungstechnik Dessau Werk Massindustrie Werdau, Werdau, Germany

Filed July 8, 1970, Ser. No. 53,043
Int. Cl. G06k 1/10
U.S. Cl. 234—99 **8 Claims**



A hand punching apparatus for translating information into a punched tape, comprising a base plate, a shaft secured to the base plate and carrying a plurality of coding disks stacked one above the other and each having information carrying notches and teeth cut along a peripheral portion thereof and a fine teeth segment along an opposite peripheral portion thereof to cooperate with a stop to fix a tooth in aligned position with a punch member, a lever attached to each coding disk for rotating each disk individually about the shaft when the stop is rendered inoperative, a plurality of punch members arranged in a matrix form and each line cooperating with the teeth of a disk so that a single disk will affect punching one line of holes in the tape, while a punching member extending into one of the notches will thereby be prevented from causing a perforation.

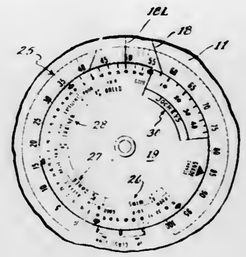
3,701,471

SPEED REGISTER

Jerome J. Kurland, 2725 W. Fitch Avenue, Chicago, Ill.

Division of Ser. No. 857,998, Sept. 15, 1969, Pat. No. 3,635,397, which is a division of Ser. No. 653,061, July 13, 1967, Pat. No. 3,473,731.
Filed Jan. 4, 1972, Ser. No. 215,344
Int. Cl. G06c 27/00
U.S. Cl. 235—78 **3 Claims**

A speed register intended for thoroughbred racing (flat) is disclosed in a circular slide embodiment and in a straight slide embodiment. The circular slide has a base provided with an annular elapsed time scale and a set of corresponding speed readout scales spaced therealong according to individual race distances. The circular slide embodiment includes a set of rotary discs and cursors secured by a pair of eyelets to accommodate relative shifting movement. The straight slide embodiment includes a plurality of base scales each associated with common cursor elements, with the base scales being relatively shiftable to portray relative performance factors simultaneously with direct speed readouts. A pivoted base scale also enables conversion of past performance data between tracks having different speed characteristics.

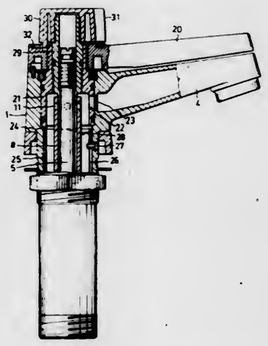


3,701,472

THERMOSTAT-CONTROLLED MIXING VALVE

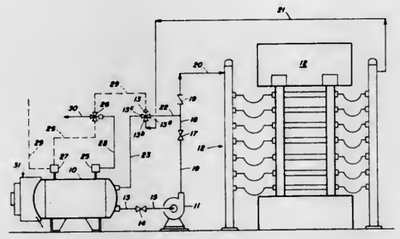
Sven Emil Eklund, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden

Filed Feb. 5, 1971, Ser. No. 112,915
Claims priority, application Sweden, Feb. 13, 1970, 1865/70
Int. Cl. G05d 23/13
U.S. Cl. 236—12 R **4 Claims**



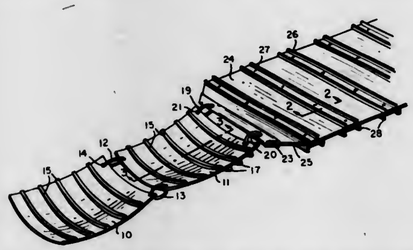
The invention concerns a thermostat-controlled mixing valve, especially hot and cold water mixers for sinks and sanitary installations, comprising a manually operated flow control at the outlet, separate hot and sold fluid valves at the inlet and rod shaped feeler members for each of said inlet valves enclosed within a common, surrounding housing traversed by the fluid, the feeler member being both of a material with a higher coefficient of expansion than the surrounding housing in which one of the feeler members is tubular and surrounds the other feeler member, the valve for the cold water inlet and the valve for the hot water inlet moving in opposite control directions at the expansion or contraction of the feeler members. The valve for the cold fluid is further adjusted to be still open when the valve for the hot fluid is closed. The valve for the hot fluid is further connected to the flow control so as to be kept closed when the flow control is closed. A temperature control member is provided for longitudinal displacement of the feeler member for the cold fluid and thereby of the cold fluid valve member relative to its seat.

3,701,473
HEATING SYSTEM
William M. Teller, Scarborough, N.Y., assignor to American Hydrotherm Corporation
Filed Aug. 19, 1970, Ser. No. 65,023
Int. Cl. F24d 7/00
U.S. Cl. 237—8 R 10 Claims



An industrial heating system, in particular a method and apparatus for intentionally or automatically shutting down a high temperature, high pressure fluid system for a user, such as a platen press, kettles, rolls, etc. where the user has a higher hydrostatic head than the fluid supply tank under non-operating conditions.

3,701,474
EMERGENCY TRACKAGE FOR VEHICLE WHEELS
Rudolf Welz, 122 Ethelbert Street, Winnipeg 10, Manitoba, Canada
Filed July 16, 1970, Ser. No. 55,457
Int. Cl. E01b 23/00; E01c 9/10
U.S. Cl. 238—14 1 Claim



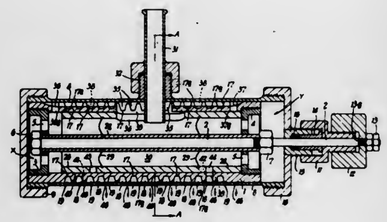
A pair of rectangular dished plates are ring-hinged together at their adjacent edges and each provided with spaced upper cross battens, the second plate also having cross battens thereunder and being similarly hinged to a ground tread having spaced upper and lower cross bars; the first plate is placed in the ground and against the tire of a mired automobile wheel, and when the wheel is driven, it grips the battens to drag the plates thereunder until the plates and ground tread anchor at the ground opening formed by the rotating wheel, and so permit the wheel to ride in and up the track so formed.

3,701,475
APPARATUS FOR TREATING HUMAN HAIR
Michael John Neale, and Henry Edward Gotch, both of Herriard, England, assignors to Rene Andre Louis Moulard
Filed Aug. 31, 1970, Ser. No. 68,452
Int. Cl. B05b 11/14
U.S. Cl. 239—11 1 Claim

Means for controlling the outflow of two fluids having different physical and/or chemical characteristics, particularly hot and cold water for the treatment of hair, to provide discrete sprays of said fluids from an array of jet ports, which includes

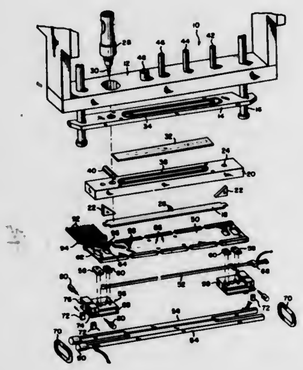
a body member having two sets of fluid passages which are adapted to communicate respectively with sources of the two fluids under pressure;

a closure member slidably mounted relative to the body member and carrying the array of jet ports which are so located that, during relative sliding movement between



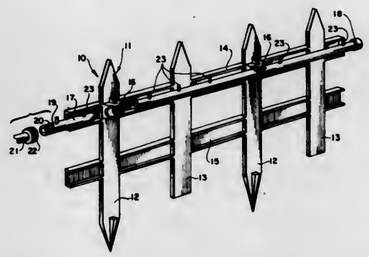
the closure member and body member, they simultaneously move sequentially into and out of communication with passages of the two sets alternately so that the two fluids can pass alternately through the jet ports to provide distinct and sequential impulses of the two fluids alternately.

3,701,476
DROP GENERATOR WITH ROTATABLE TRANSDUCER
Philip H. Houser, Chillicothe, Ohio, assignor to The Mead Corporation, Chillicothe, Ohio
Filed Oct. 14, 1971, Ser. No. 189,296
Int. Cl. B05b 3/14
U.S. Cl. 239—102 8 Claims



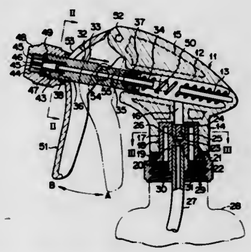
A drop generator in which a working fluid is forced through orifices in a flexible plate mounted on the drop generating head. The resulting filaments of working fluid break down into drops and the size and spacing of the drops are regulated by propagating a series of bending waves down the length of the orifice plate. The waves are propagated by means of an ultrasonic transducer mounted for rotation about its axis on the drop generator and directly contacting the orifice plate. Fine control over the exact point of contact between the tip of the transducer and the orifice plate is attained by forming the tip offset with respect to the axis of the transducer and rotating the transducer about its axis.

3,701,477
ELEVATED AND CONCEALED SPRINKLER SYSTEM
Alex Matt, 1595 North Calle LaCumbre, and Derek Brand, 2132 North Lynhurst Avenue, both of Camarillo, Calif.
Filed March 8, 1971, Ser. No. 121,703
Int. Cl. B05b 9/00
U.S. Cl. 239—276 11 Claims



A sprinkler system includes an upright support such as a fence and a flexible hose carrying multiple nozzles along its end-to-end length. The hose is removably held by the fence in an elevated position and is concealed from view against one side of the fence.

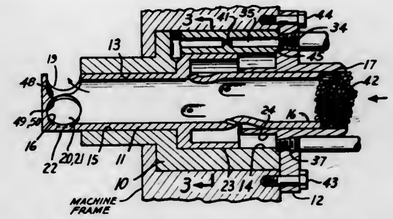
3,701,478
HAND SPRAYER
Tetsuya Tada, 2-6, 3-chome, Nishi-Nakanobu, Shinagawa-ku, Tokyo, Japan
Filed April 14, 1971, Ser. No. 133,870
Claims priority, application Japan, Oct. 8, 1970, 48/88101; Oct. 8, 1970, 45/88100
Int. Cl. B05b 1/32
U.S. Cl. 239—333 7 Claims



This sprayer essentially consists of a body having a cylinder and stock portion, a piston and a handle. The piston has a through passage integrally formed therein, a check valve consisting of a one-piece resilient element and spraying cartridge; resilient element with a recess, in which a spring seats, forms a piston ring preventing leakage, the spring providing a returning force for the piston after handle operation.

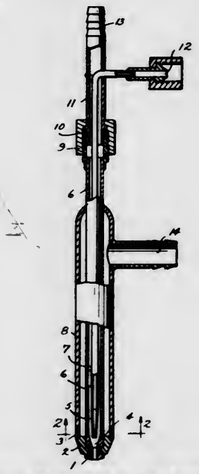
3,701,479
INJECTOR VALVE FOR GRANULAR MATERIALS
Robert J. Leslie, 3207 Olive Hill Road, Fallbrook, Calif.
Continuation-in-part of Ser. No. 860,325, Sept. 23, 1969, abandoned. This application March 18, 1971, Ser. No. 125,551
Int. Cl. B05b 7/12
U.S. Cl. 239—407 12 Claims

A valve for controlling the flow of granular material into die cavities for forming and molding of plastic materials. An example is the injection of styrene granules into a die where they will be expanded and bonded together to form a lightweight unitary contoured body. The valve includes a poppet with a central bore through which bore material is fed into the die cavity. The poppet is moved to its opened or closed position by air under pressure, and air which opens the poppet is also used to convey the granular material out of the bore and into



the die cavity. To improve distribution of the material in the die cavity, the exit end of the poppet bore is provided with a deflector section. Restrictor means may be provided in the air passages to the poppet to smooth out the opening and closing of the valve under the substantial air pressures and volumes required for actuation and injection.

3,701,480
APPARATUS AND PROCESS FOR ATOMIZING LIQUIDS, PARTICULARLY CARBON BLACK RAW MATERIALS
Gerhard Kuhner; Heinrich Sauer; Gerhard Jager, all of Grossauheim, and Gerhard Dusing, Wolfgang kreis Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany
Continuation of Ser. No. 801,554, Feb. 24, 1969, abandoned. This application May 26, 1971, Ser. No. 147,248
Claims priority, application Germany, Feb. 22, 1968, P 16 25 206.5
Int. Cl. F23d 11/16, 13/40, 15/00
U.S. Cl. 239—420 7 Claims

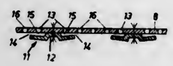


There is provided an apparatus for atomizing a liquid by means of a gas comprising a nozzle at one end, a jacket pipe for gas contracting at said one end, a feed pipe for liquid arranged axially inside said jacket pipe and terminating therein as a constricted end, the length of both pipe ends in the axial direction being at most 10 times the inner diameter of the jacket tube. The apparatus is preferably used in the production of furnace blacks wherein the liquid hydrocarbon raw material is introduced into an atomizing stream of higher velocity and the dispersion is then separated into a reaction chamber.

3,701,481
BURNER PLATE, IN PARTICULAR FOR FORCED-DRAFT OILGAS OR GAS BURNERS

Horst Reichmann, Wuppertal-Elberfeld, and Gernot Rottmann, Lache, both of Germany, assignors to Joh. Vaillant KG, Berghauser, Germany

Filed July 6, 1971, Ser. No. 159,602
Claims priority, application Austria, Sept. 14, 1970, 8288
Int. Cl. B05b 1/14
U.S. Cl. 239—553.5 4 Claims

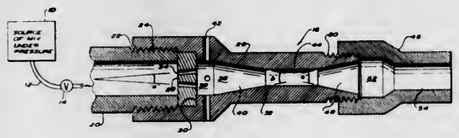


A blank to be coned into a burner plate for a forced draft burner has rows of openings extending thereacross. Strips are formed having a longitudinal rib with wings at each side of the rib. Each strip is positioned with its rib between a respective pair of rows of openings, and secured to the plate, with the wings projecting outwardly over said rows to form expansion chambers. The blank with the strips thereon is then coned.

3,701,482
FOAM GENERATING NOZZLE

Norman H. Sachnik, 1035 Columbia, Houston, Tex.

Filed March 17, 1971, Ser. No. 125,172
Int. Cl. B05b 1/14
U.S. Cl. 239—590.3 2 Claims



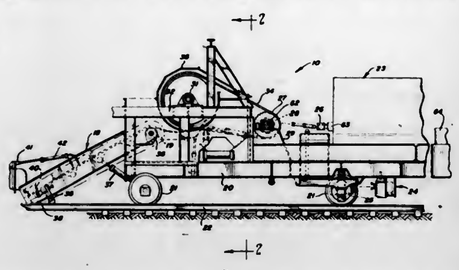
A foam generating nozzle is to be used for applying treating material entrained into foam to plants. A mix of water, foam agent and treatment material is fed through a valve to the generating nozzle. The generating nozzle jets the liquid into a low pressure chamber where it draws air into it and from there, the low pressure chamber is isolated from the high pressure chamber by a throat section. Effort is made to conserve as much energy as possible so the high pressure section will have a pressure of at least one-fifth the pressure of the source of the liquid. The foam is dispersed from the high pressure section by interchangeable spray-pattern nozzles to obtain the desired pattern for dispersing the foam.

3,701,483
RAILROAD TIE SHREDDER

Robert C. Crosby, Knoxville, Tenn., and John D. Holley, Montgomery, Ala., assignors to The Marmon Group, Inc.

Filed Aug. 5, 1970, Ser. No. 61,245
Int. Cl. B02c 13/31
U.S. Cl. 241—32 25 Claims

An apparatus for reducing wood elements such as railroad ties into preselected size shreds. The apparatus includes tearing means arranged for separating metal inclusions from the wood elements without substantially affecting the wood-tearing ability of the wood-tearing means. The apparatus is

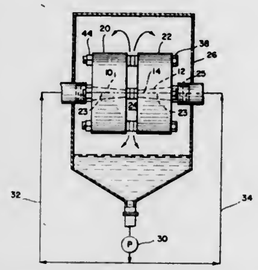


adapted to be moved on a conventional railroad track to a tie disintegrating site and is arranged to discharge the shredded wood fibers adjacent the railroad track.

3,701,484
APPARATUS AND PROCESS FOR SUSPENDING SOLIDS

Howard Gleason Donovan, Westfield, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,276
Int. Cl. B02c 19/06
U.S. Cl. 241—5 12 Claims



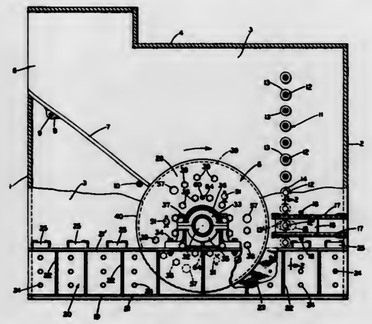
A size reduction method and apparatus are provided in which a pair of coaxially aligned opposing nozzles impel liquid streams toward one another between a pair of panels that form a narrow zone that extends radially outwardly from the axis of the nozzles. A plurality of posts protrude into the narrow zone. These posts increase the size reduction capability of the apparatus and are particularly effective in opening (reducing the diameter of) fibers, such as asbestos, and reducing the particle size of particulate materials such as clay, pigments and the like.

3,701,485
ROTOR CONSTRUCTION FOR IMPACT CRUSHER

Floyd E. Kimble, R. D. No. 1, Dover, Ohio, and Richard H. Buchsieb, Cambridge, Ohio, assignors to said Kimble, by said Buchsieb, a part interest

Continuation of Ser. No. 764,675, Oct. 3, 1968, abandoned.
This application June 19, 1970, Ser. No. 47,659
Int. Cl. B02c 13/09, 13/26
U.S. Cl. 241—32 16 Claims

An impact crusher having a rotor with hammers in the form of elongated breaker bars extending longitudinally of the rotor. Adjusting means provides for extending the breaker bars out tangentially to compensate for wear. The rotor comprises an end drive assembly at each end, a tube or shaft rotatably connected at its ends to the end drive assemblies, a plurality of spaced breaker support rings fixed upon the tube or shaft, the endmost breaker support rings being fixed to the corresponding end drive assemblies. A plurality of open-ended tangential slots are formed in each breaker support ring. The breaker bars are located in said slots. Wedges, adjustably mounted in the inner enlargement of each slot, wedge the corresponding breaker bar against a breaker support bar located in the outer enlargement of each slot, firmly holding the breaker bar in ad-

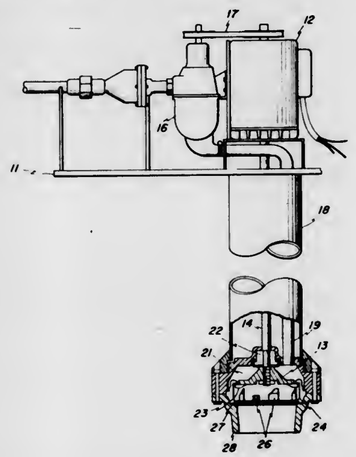


justed position. Adjusting rings, rotatably mounted upon the tube, have peripheral lugs contacting the inner edges of the breaker bars. Adjusting screws threaded through rods located through the breaker bar support rings engage said lugs. Shear rods are located through registering apertures in the support rings and adjusting rings for holding the breaker bars in adjusted position.

3,701,486
SNAGGING DEVICE FOR INVERTED GRINDER

Robert P. Farrell, Jr., Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Interior

Filed Sept. 1, 1970, Ser. No. 68,691
Int. Cl. B02c 18/06
U.S. Cl. 241—46.11 2 Claims

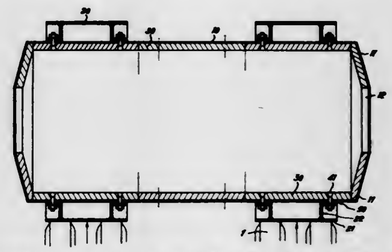


Improved inverted pump/grinder construction is presented herein. At least one sharp-edged protrusion is located below the impeller/shredder zone to interrupt the spinning motion of objects, which tend to become entangled on the impeller. This interruption by the protrusion renders such objects more readily subjected to the impeller/shredder action and thereby prevents formation of a large tangled mass.

3,701,487
ROTATABLE DRUM DEVICE

Guy Quesnel, 7, Parc Vatonne Yvette a, Gif 91, and Francis Feugere, 20, rue du General Leclerc, St-Remy-les-Chevreuses 78, both of France

Filed Feb. 3, 1971, Ser. No. 112,351
Claims priority, application France, Feb. 5, 1970, 7004090
Int. Cl. B02c 17/24
U.S. Cl. 241—178 6 Claims

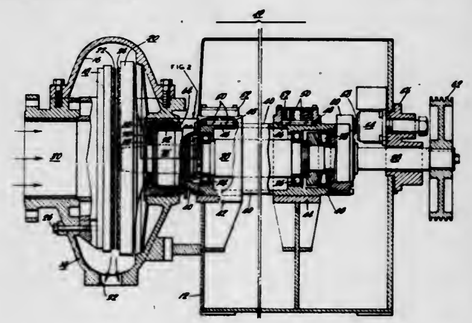


A rotatable drum device, such as ball mill or the like, including acylindrical drum having an internal lining, external hooks encompassing the periphery of the drum adjacent the ends thereof and adapted to be supported on and rotated by pneumatic tires. The tracks are fastened to the lining by suitable bolts or rivets passing through larger dimensioned apertures in the drum to permit relative lateral movement between the drum, the lining and the bolts or rivets. Flexible and malleable material may be interposed between the outer periphery of the drum and the radially innermost surfaces of the tracks to compensate for radial deformations.

3,701,488
PRESSURIZED REFINER SEAL ASSEMBLY

Chester Donald Fisher, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed July 22, 1971, Ser. No. 165,211
Int. Cl. B02c 7/11
U.S. Cl. 241—256 13 Claims

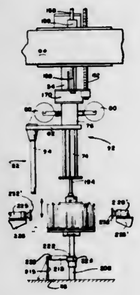


A seal assembly for sealing the passage of a rapidly rotating axially adjustable shaft through a pressurized housing containing particulate materials such as pulp fibers. The shaft is journaled within an axially adjustable quill disposed exteriorly of the housing. A quill extension surrounding the shaft is sealed for axial movement with respect to the housing by a packing gland. The rotating shaft is sealed with respect to the quill extension by a labyrinth seal and a mechanical seal having a pressurized liquid cooling system. Means are provided to permit a purging flow of the pressurized liquid into the labyrinth to prevent particulate material from reaching the mechanical seal, the pressurized cooling system liquid being at a higher pressure than the interior of the housing.

3,701,489
APPARATUS FOR WINDING FILAMENT ABOUT THREE AXES OF A MANDREL

William D. Goldsworthy, 2504 Novato Place, Palos Verdes Estates, Calif., and John A. Bunnell, 31186 Pedro St., South Laguna, Calif.

Continuation-in-part of Ser. No. 591,387, Oct. 18, 1966, abandoned, Continuation of Ser. No. 156,563, Nov. 29, 1961, abandoned. This application March 1, 1968, Ser. No. 709,676
Int. Cl. B65h 54/64
U.S. Cl. 242—7.21 13 Claims

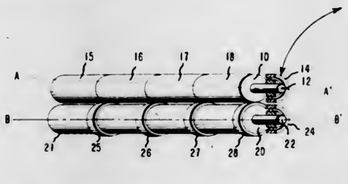


An apparatus and method for winding fiberglass filament about three axes of a substantially rectangular mandrel. Five basic methods are employed where the filament feeding head is rotatable and reciprocative with respect to the mandrel and where the mandrel is rotatable and reciprocative with respect to the filament feeding head. Similarly, one of the elements can be rotated and the other thereof can be reciprocatable. The winding apparatus includes a supporting table and a series of clamps which are designed to automatically shift and rotate the mandrel to the second and third axis positions for winding about the three axes of the mandrel. A second embodiment of the apparatus employs mandrel tables located at 90° planes with respect to each other. The mandrel tables serve as supports and also as clamping members for changing the position of the mandrel. A plug-in programming mechanism is also provided for operating the apparatus on an automatic basis.

3,701,490
DRIVE ROLL FOR A YARN WINDUP

Rhodes Ebeling Wray, Staunton, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1971, Ser. No. 110,961
Int. Cl. B65h 54/08
U.S. Cl. 242—18 DD 2 Claims

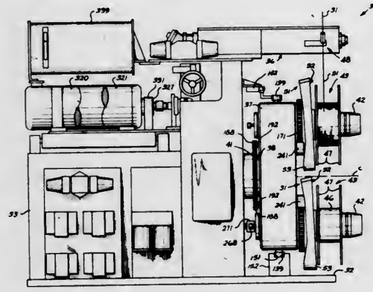


In an apparatus for high-speed winding of a plurality of threadlines on an equal number of separable yarn package supports on a common chuck, a drive roll for surface driving the yarn packages is provided with a novel arrangement of starting lands. The lands engage abutting ends of adjacent supports and there is another land at the inboard end of the roll. This arrangement functions to substantially eliminate axial bobbin movement which may occur when the axes of the chuck and the drive roll are warped out of parallelism.

3,701,491
METHODS OF AND APPARATUS FOR CONTINUOUSLY REELING STRAND MATERIAL

William Brownlee Brown, Pasadena, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,283
Int. Cl. B65h 54/02
U.S. Cl. 242—25 A 18 Claims



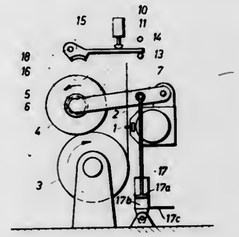
A pair of transversely aligned arbors are rotatably cantilevered at opposite ends of a vertically disposed rotatable turret. Each arbor is provided with a plurality of internally floating, cam-operated mechanisms for locking a take-up reel thereon. Independent drive mechanisms drive the reels separately at varying speeds. A snagger device is cantedly mounted on the cantilevered end of each arbor for rotation therewith and extends a radial distance slightly greater than the adjacent flange of the reel thereon to oscillate between two points coplanar with respect to the inner and outer surfaces of the flange, respectively. A distributor adjacent to one of the reels actively taking up the strand is provided with a reversible drive screw for driving a traversable strand guide controlled alternately by a stationary limit switch adjacent to the reel flange associated with the snagger and a rectilinearly movable limit switch mounted on a second drive screw and normally positioned adjacent to the opposite reel flange. Prior to cutover from a full reel to an empty reel, when a footage counter indicates that a length of strand approximating one layer of convolutions thereof remains to be taken up: (a) the turret is rotated 180° to position an empty reel between the distributor and the nearly full reel; and the second drive screw is actuated to move the movable limit switch toward the stationary limit switch at the traverse speed of the strand guide. The limit switches continue to control the reversal of the first drive screw. When the remaining length of strand is taken up and the advancing strand is traveling close to the inside flange of the empty reel, the snagger associated therewith is thrust into the path of the strand to grip and sever its connection to the full reel and to commence winding thereof upon the empty reel. The full reel is replaced by an empty reel to await the next cutover operation.

3,701,492
METHOD OF BRAKING AND RELEASING A BOBBIN MANDREL AND WINDING APPARATUS FOR IMPLEMENTING THE AFORESAID METHOD

Olivier Wust, Seuzach, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Aug. 3, 1970, Ser. No. 60,346
Claims priority, application Switzerland, Aug. 12, 1969, 12446/69
Int. Cl. B65h 63/08
U.S. Cl. 242—39 6 Claims

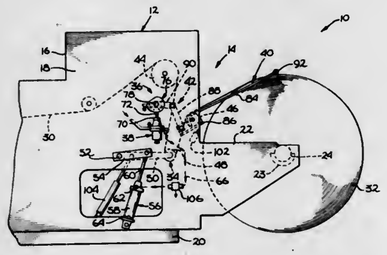
A method and apparatus for braking a bobbin mandrel supported on a pivotable arm and for releasing a full bobbin formed on a bobbin tube fixed on said bobbin mandrel of a yarn winding apparatus, which contemplates pivoting the bobbin mandrel against a brake lever mounted to be pivotable about a fixed axis to assume either a first position for braking the bobbin mandrel or a second position for actuating a switching function to release the bobbin tube from the bobbin mandrel. A braking force component is generated which acts against the braking lever to prevent such braking lever from pivoting into the second position for activating a switching function for releasing the bobbin tube from the bobbin mandrel until the bobbin mandrel has come to a complete standstill. After the bobbin mandrel has been braked and comes to a complete standstill, a force is applied to the braking lever which causes it to pivot into the second position for activating the switching function to release the bobbin tube from the bobbin mandrel.



3,701,493
TAPER TENSION WEB WINDING MACHINE

Bernhard J. Welsch, Downey, and James A. Schafer, Stanton, both of Calif., assignors to Western Gear Corporaton, Lynwood, Calif.

Filed Sept. 14, 1970, Ser. No. 71,821
Int. Cl. B65h 25/22, 25/04
U.S. Cl. 242—75.53 11 Claims

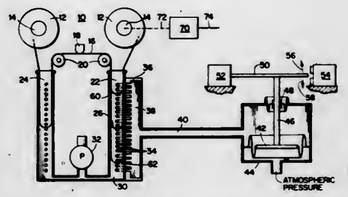


A taper tension winding machine for winding a web of sheet material, particularly paper or paperboard, on a motor driven take-up core in a manner such that the web tension progressively diminishes according to a programmed function of the increasing web roll diameter, i.e., taper ratio, to prevent circumferentially and axial creep of the inner layers of the roll and permanent elongation of the web. The web tension is regulated by a fluid-pressure-actuated web tensioning mechanism including a fluid pressure regulating valve which is progressively adjusted in relation to the increasing roll diameter to vary the fluid pressure to the tensioning mechanism in such a manner as to achieve the programmed taper ratio. The web roll drive motor may also be regulated to increase the DC electrical motor speed range and reduce the DC motor torque at the beginning of a new rewind roll to permit the use of a relatively small motor. A taper tension control for the winding machine.

3,701,494
ELECTROPNEUMATICALLY CONTROLLED SERVO FOR TAPE MECHANISM

George G. Proulx, Bedford, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed April 20, 1970, Ser. No. 29,938
Int. Cl. B65h 59/00
U.S. Cl. 242—184 15 Claims

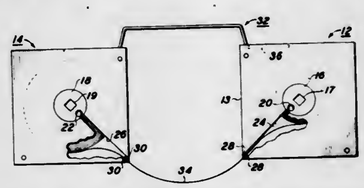


An electropneumatic servo device for a tape drive mechanism including vacuum tape loop chambers, the differential pressures of which are sensed to develop signals which, in conjunction with a motor speed feed-back signal, are used to drive the reel motors of the tape drive.

3,701,495
EXPANDABLE CASSETTE

Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 10, 1970, Ser. No. 62,395
Int. Cl. G11b 23/10
U.S. Cl. 242—197 14 Claims

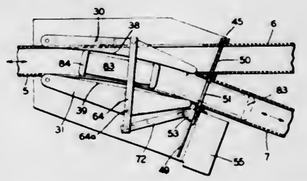


A microfilm cassette having two film cartridges connected by a spacer unit which permits the cartridges to be placed adjacent to one another for compact storage and separated to a variety of distances for viewing the microfilm. At least one edge of each cartridge contains a keyway in which a leg of the spacer unit slides relative to the cartridge to provide easy adjustment to the distance desired between the cartridges.

3,701,496
PNEUMATIC TUBE SYSTEM Y-TUBE DIVERTER CONSTRUCTION

Pieter J. Ekama, Malvern, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

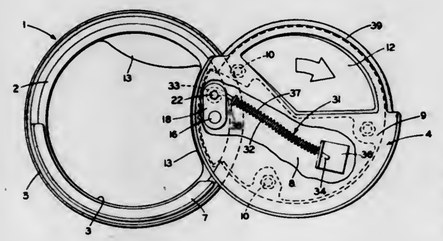
Filed Feb. 16, 1971, Ser. No. 115,181
Int. Cl. B65g 51/24
U.S. Cl. 243—29 14 Claims



A Y-tube diverter construction for multiple station pneumatic tube systems. A Y-tube section having a main and two

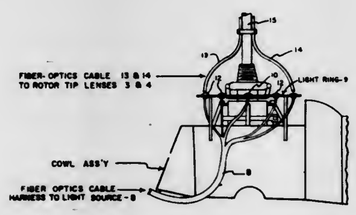
branch legs is mounted within an airtight housing and is provided with a pair of slots throughout the tube section main and branch legs. A pair of guide members alternately extend through the slots and provide connecting portions between the main leg and one of the branch legs. A slide plate alternately diverts the air flow between the main leg and a selected branch leg, which, in cooperation with the guide members, enables a carrier to travel in either direction through the main diverter leg and a selected branch leg.

3,701,497
PNEUMATIC TUBE CARRIER CONSTRUCTION
Walter G. Anders, and Herbert C. Obermiller, both of Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio
Filed Aug. 12, 1970, Ser. No. 63,233
Int. Cl. B65g 51/06
U.S. Cl. 243—35 **7 Claims**



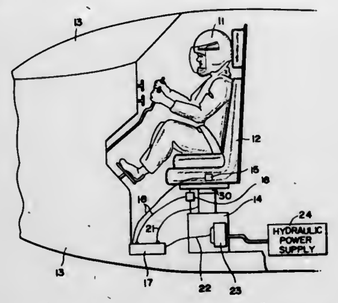
A closure construction for an open end of a tubular material-conveying carrier for a pneumatic tube system, especially adapted for banking service transactions. An end cap is pivotally mounted for lateral movement across an open end of a tubular carrier body between fully closed and fully opened positions forming a closure for the open end. A spring-biased toggle-connected mechanism is contained within the cap to urge and hold the cap in either fully closed or fully opened position.

3,701,498
FIBEROPTIC CLEARANCE LIGHT SYSTEM
Peter B. Ferrara, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed June 3, 1971, Ser. No. 149,420
Int. Cl. B64c 27/00
U.S. Cl. 244—17.11 **6 Claims**



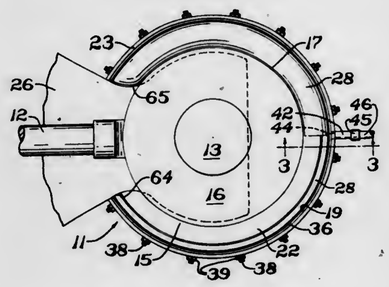
Problems with individual lamps on helicopter blades are minimized by use of a single source of white light and fiberoptic cables to pipe the light together with colored lenses (e.g. red for port and green for starboard).

3,701,499
ACTIVE FLUID ISOLATION SYSTEM
Dale W. Schubert, Sudbury, and Frederick D. Ezekiel, Lexington, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.
Filed April 8, 1968, Ser. No. 719,472
Int. Cl. B64c 27/04
U.S. Cl. 244—17.27 **21 Claims**



A body to be stabilized, such as an aircraft pilot seat includes means, such as an accelerometer, for providing an acceleration signal representative of the acceleration of the body. This acceleration signal is used to control the action of a servovalve-controlled hydraulic actuator, to reduce the force applied to the body tending to reduce the acceleration sensed by the accelerometer to a substantially zero value. There is also a position transducer for providing a signal representative of the displacement of the body relative to the supporting structure position to provide a displacement control signal that controls the actuator so that the mass position is normally in a predetermined rest position, typically at the hydraulic actuator midposition.

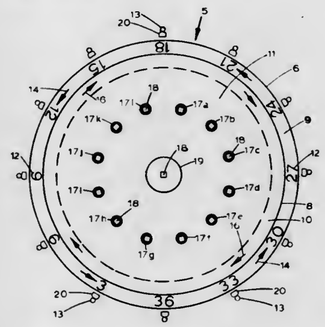
3,701,500
AIRCRAFT WHEEL WELL SEAL
Arthur A. Zeffer, Wadsworth, Ohio, and James A. Briscoe, Doylestown, Ohio, assignors to The B.F. Goodrich Company, New York, N.Y.
Filed Oct. 16, 1970, Ser. No. 63,834
Int. Cl. B64c 25/16
U.S. Cl. 244—103 R **14 Claims**



An annular inflatable seal of resilient elastomeric material with the radially outer wall mounted in the wheel well and the radially inner wall spaced from the tire in the deflated condition. The walls of the seal are stretched during inflation so as to decrease the circumferential length of the radially inner wall and provide a wrinkle-free surface in engagement with the tire. Reinforcing cords are embedded in the seal to strengthen and control the stretching and contraction of the

walls during inflation and deflation of the seal. The radially outer wall is attached to the wheel well in an area spaced from the edge of the seal to permit the edge portion to move radially inward during inflation and provide for increased radial movement of the radially inner wall.

3,701,501
AIRPORT DESIGN
Robert G. Scelze, 1848 Sunnyside Avenue, Westchester, Ill.
Filed Nov. 16, 1970, Ser. No. 89,908
Int. Cl. B64f 1/18
U.S. Cl. 244—114 R **7 Claims**



An aircraft landing and take-off facility having a center area and two circular runways surrounding the center area. Two series of indicia visible to an approaching aircraft are provided for indicating straight runways in a plurality of compass directions in which an aircraft should take off or land in accordance with prevailing wind directions. The take-off or acceleration run of the aircraft is initiated on one of the circular runways with flying speed attained on one of the straight runways. Landing of the aircraft is initiated on a straight runway with deceleration accomplished on the same circular runway.

3,701,502
EJECTION SEAT AND MECHANISM THEREFOR
James Martin, Southlands Manor, Southlands Road, Denham near Uxbridge, Middlesex, England
Filed March 19, 1971, Ser. No. 126,119
Claims priority, application Great Britain, April 3, 1970, 16,011/70
Int. Cl. B64d 25/10
U.S. Cl. 244—122 AD **11 Claims**



The invention concerns initiator mechanism for ejection seats (and seats provided therewith) such initiator mechanisms being provided for a rocket motor provided on an ejection seat pan which is movable with respect to a seat frame, the initiator being provided on the frame and comprising a pressure fluid source which when initiated in response to withdrawal of a static line stored in a housing on the frame, releases pressure fluid which is transmitted by conduit means to a rocket motor firing pin remote from the source.

3,701,503
PARACHUTE HARNESS AND RELEASE MECHANISM THEREFOR
James Martin, Southlands Manor, Southlands Road, Denham, near Uxbridge, Middlesex, England
Filed March 22, 1971, Ser. No. 126,614
Claims priority, application Great Britain, April 16, 1970, 18,238/70
Int. Cl. B64d 25/10
U.S. Cl. 244—122 AD **6 Claims**

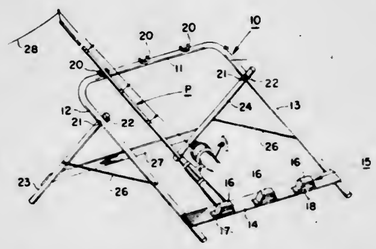


The invention concerns an ejection seat escape installation for providing escape from a vehicle where it is not possible to provide an escape opening directly above an ejection seat, the installation being particularly applicable to rotor aircraft such as a helicopter, the installation comprising at least one ejection seat carried by a frame, means angularly to incline the seat and the frame and a rocket motor to cause the ejection seat to deviate from the trajectory which it would normally take under the influence of the standard ejection gun of the seat.

ERRATUM

For Class 248—204 see:
Patent No. 3,701,610

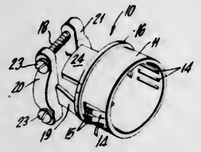
3,701,504
FISHING POLE RACK
Virgie L. Woods, 12709 Irvington Avenue, and LaVerne Readus, 759 Thornhill Drive, both of Cleveland, Ohio
Filed March 15, 1971, Ser. No. 124,072
Int. Cl. A01k 97/10
U.S. Cl. 248—39 **6 Claims**



An improved rack of simplified structure is provided for supporting a series of fishing poles and the like. The rack com-

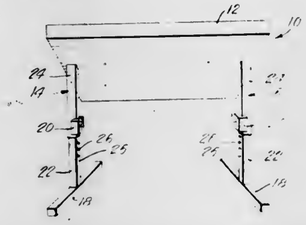
prises an inverted, U-shaped frame which is collapsible with respect to leg members and readily portable and storable. The frame has supports for a pole or rod which are designed to anchor the butt end of poles to the frame and prevent their loss, as by a strike by a fish, and yet which enable the poles to be immediately removed from the rack by a fisherman without loss of time to insure hooking a fish or playing a sporting fish after a strike.

3,701,505
CABLE CONNECTOR
Ferdinand Klumpp, Jr., Mountainside, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.
Filed Nov. 23, 1970, Ser. No. 91,923
Int. Cl. F16l 5/00
U.S. Cl. 248—56 **8 Claims**



A plastic connector including an aperture gripping feature and closeable gripping yokes safely functions to replace prior expensive metal parts requiring laborious installation.

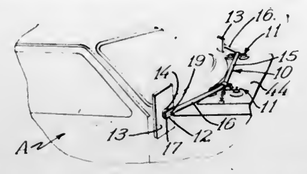
3,701,506
ADJUSTABLE FURNITURE LEG
Marcel Favreau, Cowansville, Quebec, Canada, assignor to Vilas Industries Limited, Cowansville, Quebec, Canada
Continuation-in-part of Ser. No. 15,332, March 2, 1970, abandoned. This application June 28, 1971, Ser. No. 157,292
Int. Cl. A47b 13/00
U.S. Cl. 248—188.5 **5 Claims**



A leg structure formed by a pair of telescoping leg members, one of which is provided with a plurality of spaced apertures. A retractable detent is associated with the other leg member. Movable wedging means are associated with the retractable detent. Means are further provided to move the detent and simultaneously the wedging means to and from a locking position wherein the detent is received in one of the apertures and the wedging means forces the first member into frictional contact with the second member. In the open position the detent and wedge means are clear of the slot and the first member.

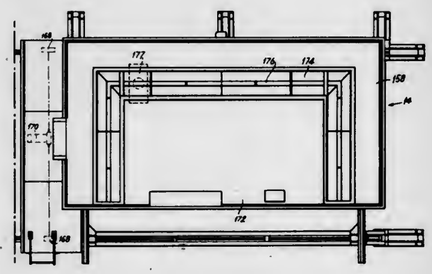
3,701,507
REAR VIEW MIRROR ATTACHMENT FOR VEHICLES
Lee J. Bell, 1457 Hazel, Saint Paul, Mich.
Filed Oct. 12, 1970, Ser. No. 79,801
Int. Cl. B60r 1/06
U.S. Cl. 248—467 **3 Claims**

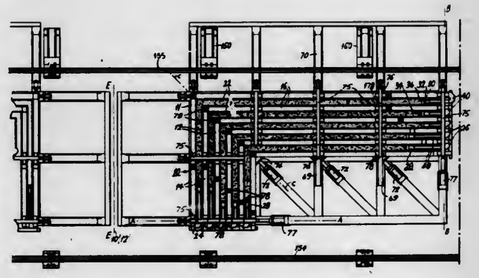
An elongated bracket arm is supported in an pair of bearing brackets including bearings are mounted near opposite sides of a vehicle hood. The ends of the bracket arms are angularly bent relative to the axis of the bearing supported central position, and mirrors are adjustably supported at the ends of the



bracket arm. The height of the mirrors may be adjusted by rotating the bracket arm in the bearings and clamping in adjusted position.

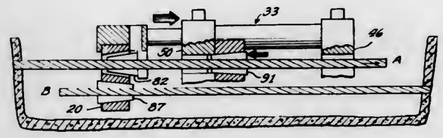
3,701,508
BATTERY CASTING OF CONCRETE PANELS
Walter Peter Cross, 44 Green Dell Way, Leverstock Green, Hemel Hempstead, Hertfordshire, England
Filed Nov. 18, 1969, Ser. No. 877,749
Int. Cl. B28b 7/02
U.S. Cl. 249—129 **6 Claims**





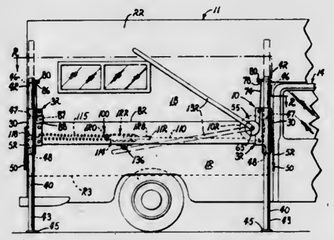
A concrete casting assembly including at least one battery of L-type mould members preferably with an overhead gantry providing a chute of rectangular C-shape which can be located over different mould spaces of the battery. The mould members are arranged in the battery one within the other so as to have the adjacent edges of the adjacent arms of the mould members alined with one another in respective mutually orthogonal planes each inclined by an angle of 45° to the plane containing the corner edges of the mould members. The mould members are preferably of steel construction.

3,701,509
SPLICING SYSTEM AND JACK FOR STRESSING CONCRETE
Frederick M. Stinton, R.R. No. 2, Woodbridge, Ontario, Canada
Filed May 6, 1970, Ser. No. 35,168
Int. Cl. E04g 21/12
U.S. Cl. 254—29 A **12 Claims**



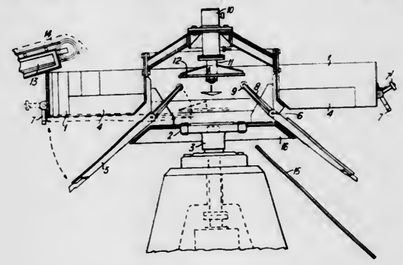
A system and hydraulic jack are disclosed for stressing concrete structures with stranded steel cable. In one embodiment, a pocket is formed in a concrete slab with two pairs of stranded cables extending in opposite directions in the slab. Each pair of cables defines a plane that is perpendicular to the plane formed by the other cable pair. One pair of cables is passed in a first direction through apertures in a splice block and secured to it with conical grips. The other pair of cables is passed through the splice block and held releasably by a removable fitting. A hydraulic jack having first and second cylinder and piston rod units is then placed over the overlapped free ends of the cable pairs to force the temporary fitting away from the splice block and thereby tension the cable pairs against each other when the cylinder and piston rod units are expanded. The jack straddles the tensioned cables and is supported solely by the cables once suitable tension is achieved to bear the weight of the jack. A second pair of conical grips is located adjacent the splice block on the pair of cables held by the temporary fitting so that when the pressure is released in the jack, the second pair of grips are seated into the splice block to secure that cable pair and complete the stressing splice. Additional tension may be achieved by contracting the jack and taking a new grip on the free ends of the second pair of cables. Since the jack straddles the tensioned cables it is easily removed or placed into operative engagement with the cable pairs by lifting.

3,701,510
ELEVATIONAL POSITIONING AND SUPPORTING DEVICE
James Rollin Logan, 2229 Logan Court, Modesto, Calif.
Filed Sept. 14, 1970, Ser. No. 72,017
Int. Cl. B66f 7/26
U.S. Cl. 254—47 **3 Claims**



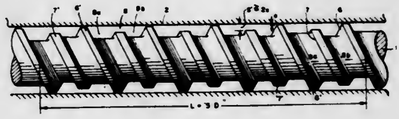
An elevational positioning and supporting device for mounting and demounting a camper on the bed of a pickup truck or the like providing a plurality of spaced substantially upright support legs having a plurality of elongated flexible tension members suspended therefrom in supporting relation to the camper with actuating means on the camper engageable with the tension members to vary their effective lengths slidably to raise and lower the camper on the support legs and counterbalancing means operably associated with the actuating means to overcome the force of gravity acting upon the camper to maintain it in any desired elevational position on the support legs throughout its entire range of movement thereon.

3,701,511
APPARATUS FOR THE MIXING AND DISTRIBUTION OF GRANULATED MATERIALS
Angelo Teodoro Manara, Breno, Italy, assignor to Carlo Tassara S.p.A. Stabilimenti Elettrosiderurgici, Breno Brescia, Italy
Filed Sept. 8, 1970, Ser. No. 70,107
Claims priority, application Italy, Sept. 30, 1969, 22726A/69
Int. Cl. B01f 9/10
U.S. Cl. 259—3 **10 Claims**



An apparatus for the mixing and distribution of different granulated materials, particularly fit for mixing the components of the charge in the iron and steel industry, comprising a cylindrical container for the mixed material, said container being divided in a plurality of peripherally distributed cells, means being provided for imparting a relative rotational movement between the container and the feeder.

3,701,512
SCREW EXTRUDER FOR PROCESSING THERMOPLASTIC MATERIALS
Heinz Schippers; Friedhelm Hensen, and Erich Lenk, all of Remscheid-11, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed April 7, 1971, Ser. No. 132,064
Claims priority, application Germany, April 13, 1970, P 20 17 580.8
Int. Cl. B29b 1/10
U.S. Cl. 259—191 **12 Claims**

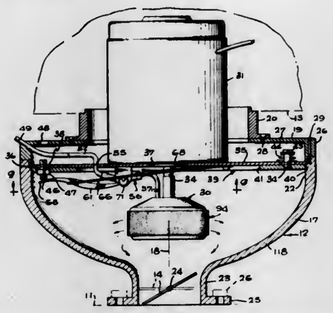


A screw extruder for processing thermoplastic materials, e.g. high molecular weight polymers, in which the spiral worm passage formed by a conveying screw is subdivided into two compartments of different and oppositely varying cross-section by an intermediate shearing screw having a radial clearance from the extruder barrel housing of at least twice that of the conveying screw, the thread depth in each subdivision or compartment of the worm passage being continuously varied over the length of the screw between maximum and minimum values, thereby causing a predetermined flow of thermoplastic material across the flight land of the shearing screw.

3,701,513
FUEL FEEDING APPARATUS

Shirley J. Carter, 7339 Petrol Ave., Bellflower, Calif.

Continuation-in-part of Ser. No. 772,551, Nov. 1, 1968, abandoned. This application July 21, 1970, Ser. No. 56,964
Int. Cl. F02m 9/12
U.S. Cl. 261—18 A 2 Claims

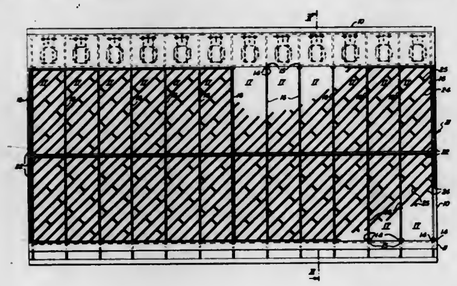


A device for intimately intermixing a liquid fuel, air, and preferably also a metered proportion of water, for delivery to an internal combustion engine or other fuel burning mechanism, the device including a rotor to which the fuel and water are delivered for centrifugal discharge radially outwardly in finely divided mist form, with the rotor preferably carrying a large number of minute fibers projecting radially outwardly and along which the liquids flow in a manner subdividing the liquids into minute droplets. The rate of delivery of the fuel and water is regulated in accordance with the rate of flow of air through the device, and by a control structure actuable by the air.

3,701,514
BURNING TABLE AND EXHAUST SYSTEM THEREFOR

Joseph J. Walters, and Verdun R. McGibbon, both of Coatesville, Pa., assignors to Lukens Steel Company, Coatesville, Pa.

Filed Nov. 12, 1970, Ser. No. 88,876
Int. Cl. F27d 17/00
U.S. Cl. 266—15 18 Claims

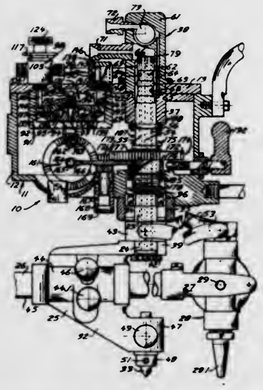


The combination of a table for cutting steel plate and an exhaust system for evacuating the fumes and smoke produced by the cutting operation. The expendable grating of the cutting table utilizes bars which are diagonal to the usual cutting directions and are connected by staggered stiffening bars also diagonally located so that the bars are not normally cut along their longitudinal axis. Duct work under the grating comprises heavy vertically extending removable plates resting on edge which additionally provide support for the grating and lead to an elongated exhaust manifold channel having a plurality of openings and a normally closed plate covering each of such openings. The openings are disposed in a horizontal dividing plate and communicate with the space formed between each of the vertically extending plates making up the ductwork under the grating. The cover plates are hinged and raised from a horizontal position by a pneumatic cylinder actuated through a photoelectric cell which is responsive to light from plasma of the cutting torch. The photoelectric cell further actuates adjacent cover plates on either side of the cover plate which corresponds to the duct that the photoelectric cell involved is aligned. Each hinged cover plate has a deep lip soft sealed ring which seats on the peripheral surface of the dividing plate about the corresponding opening and the arrangement is such that the fumes must make a 90° turn prior to entering the opening which slings out heavy particles which then drop to the bottom of the exhaust chamber for easy removal.

3,701,515
PORTABLE CUTTING TORCH APPARATUS

William J. Field, New Westminster, British Columbia, Canada, assignor to Fields Industrial Research (1971) Ltd, Vancouver, British Columbia, Canada

Filed June 7, 1971, Ser. No. 150,582
Int. Cl. B23k 7/02
U.S. Cl. 266—23 K 7 Claims



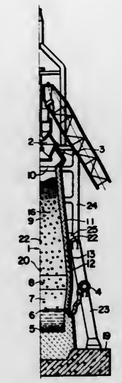
A portable cutting torch apparatus having a casing adapted to be supported over a work piece, the casing having a vertical spindle mounted for rotation therein and through which fuel gasses are fed under pressure to a cutting torch connected at a lower end of but off-set from the spindle axis. A motor driven by oxygen is connected to the spindle for rotating the latter when oxygen is fed to the cutting torch.

3,701,516
APPARATUS FOR SUPPORTING A BLAST FURNACE

Kumao Ueshima; Kenzo Fukada, both of Kitakyushu; Masakazu Yoshinaga, Osaka, and Hiroshi Nakazona, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 662,337, Aug. 22, 1967, abandoned. This application Feb. 24, 1971, Ser. No. 118,349
Int. Cl. C21b 7/00
U.S. Cl. 266—25 5 Claims

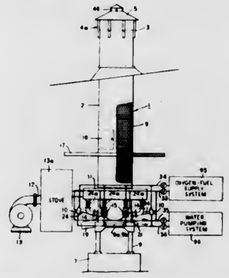
The present invention relates to an apparatus for supporting the furnace body of a blast furnace. Said apparatus is characterized by supporting the furnace body near the middle part of its shaft above the center of gravity of the furnace body; more in detail, it is so constructed as to support the furnace body with a supporting member provided around the shell of the shaft above the center of gravity of the furnace body so as to support the refractory lining of the furnace body, with a plurality of struts set on the foundation so as to support said supporting member, and with a plurality of supporting stands adjustable in height each placed between each of said struts and said supporting member, and also as to support the top unit of the furnace with a plurality of columns supported by said struts.



3,701,517
OXY-FUEL BURNERS IN FURNACE TUYERES

Bronis G. Gray, Orange, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 602,381, Dec. 16, 1966, Pat. No. 3,547,624. This application Aug. 7, 1970, Ser. No. 62,180
Int. Cl. F27d 23/00
U.S. Cl. 266—29 8 Claims



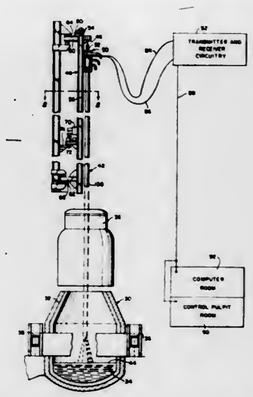
Industrial furnaces for processing metal bearing charge in which a plurality of oxy-fuel burners are interposed through the walls of the furnace to direct high velocity streams of oxygen and hydrocarbon fuel into the hearth portion of the furnace. Each of the burners comprising a plurality of separate channels for high velocity streams of commercially pure oxygen and hydrocarbon fluid fuel, said channels terminating in a nozzle constructed to emit a plurality of high velocity jets of oxygen surrounding at least one jet of hydrocarbon fuel.

3,701,518
OXYGEN LANCE CONTROL ARRANGEMENT FOR BASIC OXYGEN FURNACE

Louis M. Herff, Pittsburgh, Pa., assignor to Berry Metal Company, Harmony, Pa.

Filed Oct. 3, 1969, Ser. No. 863,609
Int. Cl. C21c 7/00
U.S. Cl. 266—34 LM 16 Claims

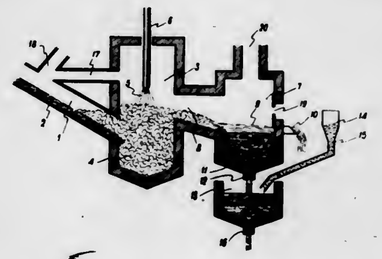
A ranging radar system is employed in combination with the oxygen blowing lance of a basic oxygen furnace to make an absolute measurement of the distance between the lance and the level of molten material within the furnace vessel. This measurement may be made while the level of molten material is quiescent, i.e., before the oxygen blowing operation is started, and may be used either to calibrate the existing lance drum indicator or directly as a measurement of lance height in the overall computer control of the furnace. In the alternative, the measurement of lance height from the molten surface may be made during the oxygen blowing operation and may be employed for accurate lance positioning during blow or the accurate repositioning of the lance in the event a reblow operation is required to obtain a desired quality of steel for a particular heat.



3,701,519
APPARATUS FOR THE CONTINUOUS REFINING OF METALS

Pierre Vaysiere, Metz Queuleu, France, and Juan Kindelan Y Gomez De Bonilla, Madrid, Spain, assignors to Institut de Recherches de la Siderurgie Francaise, Saint Germain-en-Laye, France

Division of Ser. No. 698,046, Jan. 15, 1968, Pat. No. 3,565,605, which is a continuation of Ser. No. 431,427, Feb. 9, 1965, abandoned. This application Oct. 21, 1970, Ser. No. 82,604
Claims priority, application France, Feb. 14, 1964, 64963736; Oct. 12, 1964, 64991114; Oct. 12, 1964, 649911116; Oct. 23, 1964, 64992419; Nov. 26, 1964, 64996437
Int. Cl. C21c 7/00
U.S. Cl. 266—34 R 5 Claims



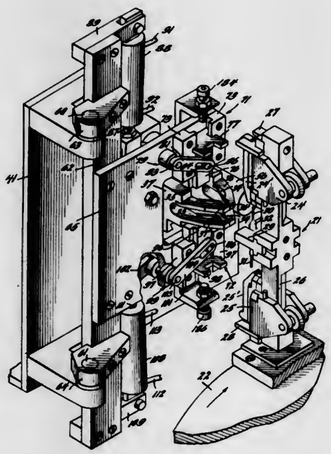
An arrangement for the continuous refining of metal, especially pig iron. This arrangement comprises a refining reactor, a decantation vessel, means for feeding at a first level liquid metal containing slag forming impurities into the reactor and

discharging means located at the second level which is higher than the first level for discharging material from the reactor into the decantation vessel. The arrangement also includes means for blowing a refining gas into the reactor so as to form a metal-slag foam which passes through the discharging means into the decantation vessel.

3,701,520
APPARATUS FOR REMOVING AN ARTICLE CLAMPED IN A WORKHOLDER

Samuel Pinnolis, and Wilhelm E. A. Schmidt, both of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 877,573, Nov. 26, 1969, Pat. No. 3,586,179, which is a division of Ser. No. 620,318, March 3, 1967, Pat. No. 3,491,900. This application Jun. 5, 1971, Ser. No. 103,972
Int. Cl. B23q 7/04
U.S. Cl. 269—13 **1 Claim**



An apparatus opens clamping jaws on workholders mounted on a turret and then unloads articles held by resilient clamps on the workholder. A pair of open jaws are moved about an article held in a workholder and then closed while spring members bear against the article urging it against inner faces of the jaws. The jaws are withdrawn and opened to release the article into a bin which has a plurality of compartments and is indexed in synchronism with the turret so that articles removed from a particular workholder are always delivered to the same compartment of the receiving bin.

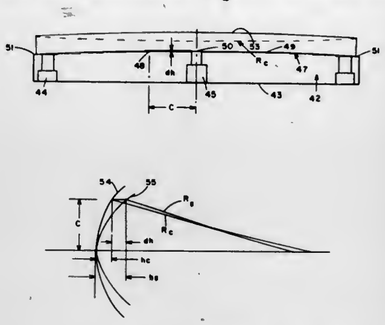
3,701,521
MEANS FOR MAKING A MULTI-FACET SUBSTANTIALLY PARABOLOIDAL COLLIMATOR

Allan D. LeVantine, Tarzana, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 656,093, July 26, 1967, Pat. No. 3,494,231. This application Jan. 12, 1970, Ser. No. 7,306
Int. Cl. B23q 3/18; B25b 11/02; B23p 21/00
U.S. Cl. 269—48 **1 Claim**

A light reflecting collimator having a substantially paraboloidal surface and being formed of a plurality of juxtaposed facets each having a substantially paraboloidal surface.

A method for making such a collimator of a plurality of facets each having a substantially paraboloidal surface on individual plates and each facet formed on each plate being defined by two paraboloidal radii lying in orthogonal planes.



3,701,522
PROCESS FOR FOLDING SHEET MATERIAL AND PACKAGED DISPENSERS THEREFOR

Tzu-Chiang Chi, New York, N.Y., assignor to William I. Andress, Kirkwood, Mo., a part interest

Filed Aug. 15, 1969, Ser. No. 850,453
Int. Cl. B41l 1/32
U.S. Cl. 270—39 **12 Claims**



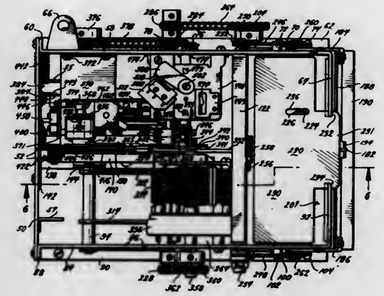
The invention disclosed herein relates to a unique method for folding sheet material for serial extraction from packaged dispensers involving longitudinal folding and a series of transverse folds of superimposed sheets of paper, cloth or other flexible material. Packaged dispensers of various shapes and containing supplies of such folded products for serial extraction thereof through apertures of varying geometrical configuration are provided. An additional embodiment involves a continuous process for folding and rolling sheet material into generally cylindrically-shaped association for packaging and dispensing.

3,701,523
MONEY-HANDLING DEVICE

Gustav F. Erickson, Hot Springs, Ark., assignor to U.M.C. Industries, Inc., St. Louis, Mo.

Filed July 16, 1970, Ser. No. 55,501
Int. Cl. B65h 45/18
U.S. Cl. 270—67 **21 Claims**

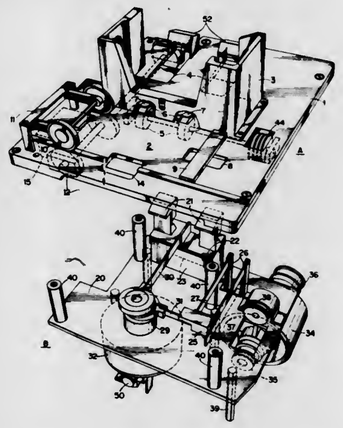
A paper money dispensing device stores bills in stacked relation, successively separates the lowermost bill from the stack of bills, and moves the separated bills to an area where they can be dispensed to a patron. That paper money dispensing device automatically senses when two bills stick together and are simultaneously separated from the stack of bills; and it moves those bills to a storage area for safe-keeping, and then separates further bills from the stack of bills and moves those further bills to the area where they can be dispensed to a patron. Where that paper money dispensing device is used to dispense a fixed number of bills, that paper money dispensing device separates the said number of bills from the stack of bills during each cycle of operation and then dispenses the separated bills at the start of the next-succeeding cycle of operation; thereby providing prompt dispensing of the bills to be dispensed during the next-succeeding cycle of operation. Where that paper money dispensing device is used to dispense variable numbers of bills, that paper money dispensing device separates the desired number of bills from the stack of bills and promptly dispenses the separated bills. That paper money dispensing device dispenses all of the bills of the desired number of bills at the same instant, and it folds those bills as they are dispensed; thereby minimizing the likelihood that a patron would inadvertently fail to take all of the bills due him.



3,701,524
MODULARIZED CARD READER

Harold M. Shneider, Weston, and Robert G. Bower, Concord, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 29, 1970, Ser. No. 76,412
Int. Cl. B65h 3/24
U.S. Cl. 271—10 **2 Claims**

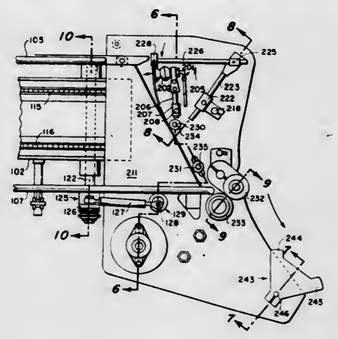


A card reader having a combination of electro-mechanical modules, each of which operate independently of one another and yet when spatially positioned with respect to one another perform the machine functions of card transport and card reading. A pick-push module, comprising a picker knife and a pusher arm, cooperates with a card carrying module which includes rolls for moving cards through a visible wait station to a read station. A read head within the read station reads the cards.

3,701,525
APPARATUS AND METHOD FOR ERECTING A CARRIER

Helmut E. W. Masch, San Jose, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Division of Ser. No. 664,390, Aug. 30, 1967, Pat. No. 3,521,427. This application March 19, 1970, Ser. No. 24,974
Int. Cl. B65h 3/24
U.S. Cl. 271—43 A **9 Claims**

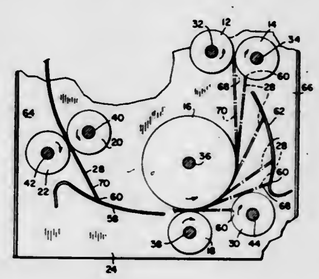


Flattened basket style carrier blanks are loaded into a carton magazine and are individually removed therefrom at a feeding station. The feeding station sequentially comprises a pivoted suction cup for bending a trailing end of a blank out of the magazine, a shuttle mechanism for engaging a trailing edge of the blank and for moving the blank transversely relative to the magazine, deflecting means for engaging opposite surfaces of the blank and for deflecting a leading end thereof tangentially relative to the deflecting means and pinch rolls for receiving the leading end of the blank from the deflecting means.

3,701,526
FILM TURNABOUT SYSTEM

Henry F. Hope, 195 Welsh Road, Huntingdon Valley, Pa., and Stephen F. Hope, 2321 Wyandotte Road, Willow Grove, Pa.

Filed Dec. 14, 1970, Ser. No. 97,808
Int. Cl. B65h 5/06
U.S. Cl. 271—51 **3 Claims**

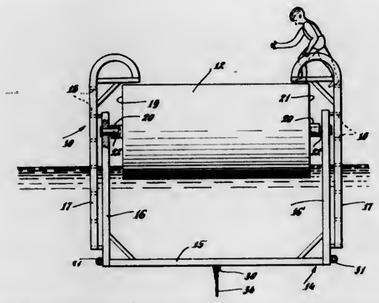


A film turnabout system for conveying X-ray or other film through a processing tank which incorporates a rack assembly having pairs of rollers and discretely positioned film guides which cooperate to drive the film through the processing tank at constant speed without scratching the surface of the film. The device further includes a bottom positioned soft roller which functions at increased rotative speed to direct the film across the bottom of the rack assembly in a minimum of required width and then upwardly through the tank without scratching or other injury.

3,701,527
TRANSPORTABLE FLOATING BIRLING DEVICE WITH LADDER MOUNT

Joseph R. Beaton, Hillside Terrace, Marcy, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,075
Int. Cl. A63b 23/06
U.S. Cl. 272—1 B 8 Claims

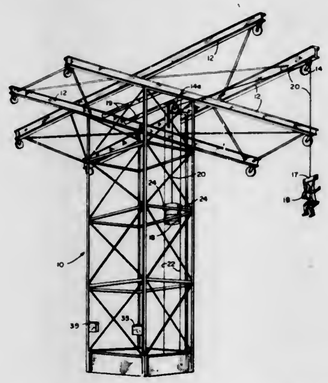


A birling device is disclosed as including a "U" shaped control bar supporting a cylindrical buoyant member in a manner to permit the free rotation of the member. The cylindrical member is rotationally mounted to the arms of the control bar. A ladder is carried by at least one arm of the control bar. The diameter of the cylindrical member is substantially greater than the width of an arm of the control bar and the ladder so that when out of the water, the cylindrical member provides a rolling surface unobstructed by projecting surfaces of the birling device.

3,701,528
METHOD FOR SIMULATING THE REDUCTION OF GRAVITY

Jerry E. Ryan, 4150 S. Elwood, Tulsa, Okla.

Filed April 20, 1970, Ser. No. 29,887
Int. Cl. A63j 5/12
U.S. Cl. 272—6 1 Claim

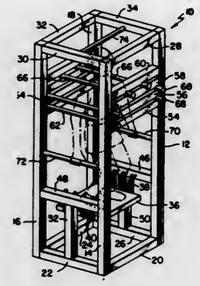


This invention provides a method and means for simulating the reduction of gravitational forces upon persons. The gravity-reducing effect is achieved by counterbalancing the person through a cable and pulley system having a weight somewhat less than the person. This expedient in fact counterbalances the weight of the person in a manner resulting in an actual reduction of the free acceleration of the person toward the earth, thereby simulating a reduction in the natural gravitational pull. The disclosed embodiment is for an amusement park "ride" device employing this principle.

3,701,529
EXERCISING APPARATUS

Charles H. Kruthaupt, 10200 Trapp Lane, Cincinnati, Ohio

Filed Dec. 14, 1970, Ser. No. 97,694
Int. Cl. A63b 21/20
U.S. Cl. 272—83 R 9 Claims

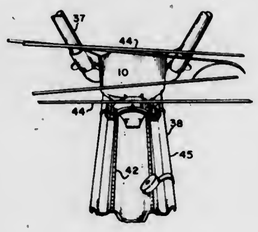


An exercising apparatus for permitting individual body building and conditioning exercising is disclosed. A platform is yieldably mounted in a supporting frame for movement in the vertical direction. A plurality of horizontal bars are mounted on the frame vertically above the platform. An exerciser stands on the platform and exerts pressure or force against the horizontal bars. The force is transmitted through the body to the platform which moves vertically downward.

3,701,530
TURN AROUND PAN SHIELD FOR AUTOMATIC PIN SETTERS

Edwin C. Broussard, 1713 Pasadena, San Antonio, Tex.

Filed Feb. 16, 1971, Ser. No. 115,614
Int. Cl. A63d 5/00
U.S. Cl. 273—43 R 5 Claims



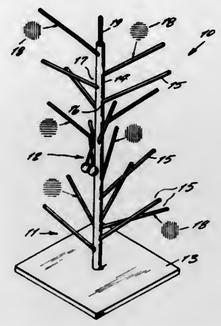
A turn around shield positioned above the turn around pan in an automatic pin setter positioned between the pan and the "V" belts utilized to drive the gear case, ball elevator and the cross conveyor or other belts adjacent thereto. The turn around pan shield may be secured by clips to the frame of the cross-conveyor and the turn around pan frame. The shield is preferably constructed of a rigid, highly polished metal such as stainless steel and is of an arcuate configuration of such dimensions as to be compatible with and cooperatingly assist the turn around pan in performing its function.

3,701,531
ELASTIC PROJECTILE AND TREE-LIKE TARGET

Jeffrey L. Bowers, 1023 E. N. Broadway, Columbus, Ohio

Filed Feb. 11, 1971, Ser. No. 114,422
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 1 Claim

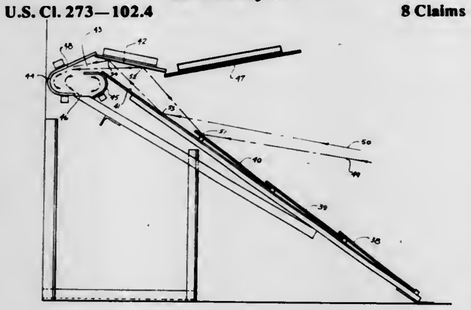
A ball tossing game which includes a goal post and an elastically resilient tossing ball unit, the goal post including a vertical trunk with sidewardly extending branches, each one of which is painted with a specific color so to designate a different scoring value and over which the tossing ball unit is attempted to be hooked or entwined when thrown.



3,701,532
BULLET DEFLECTION APPARATUS

Joseph Nikoden, Inverness, Ill., assignor to Detroit Trap Corporation, Schaumberg, Ill

Filed Oct. 7, 1970, Ser. No. 79,028
Int. Cl. F41j 1/12
U.S. Cl. 273—102.4 8 Claims



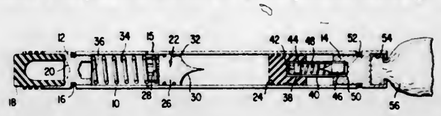
A bullet trap for a practice shooting range having an upwardly angled main deflecting plate leading to a bullet spending or de-energizing chamber. An upper deflection plate is located vertically above the main plate and is also angled upwardly and rearwardly leading to the opening of the bullet spending chamber. The bullet spending chamber has a plate which is angled downwardly and rearwardly from the rearward edge of the deflection plate. The bullet spending chamber has cylindrical surfaces facing one another which redirect the bullet back and forth until its kinetic energy is exhausted. The lead may then be recovered at any convenient location. A further plate is provided immediately forwardly of the upper deflection plate, and this plate is angled rearwardly and downwardly and terminates adjacent to the forward edge of the upper deflection plate. The upper deflection plate may be angled from 5° to 12° for optimum conditions.

3,701,533
MATERIAL DISCHARGING DART

Harold C. Palmer, Douglasville, Ga., assignor to Palmer Chemical and Equipment Company, Inc., Douglasville, Ga.

Filed Oct. 29, 1970, Ser. No. 85,106
Int. Cl. A63b 65/02; F42b 11/18, 13/36
U.S. Cl. 273—106.5 R 8 Claims

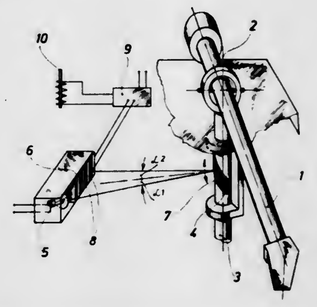
A dart projectile for carrying and discharging a fluid material upon impact wherein an explosive-actuated fluid or other material directing piston is moved longitudinally in the dart past a series of openings in the wall thereof. The piston includes a cuspidal-curved surface which provides discharge of the material in an improved spray pattern as the material is moved by the surface and out through the openings in the wall.



3,701,534
PHOTOELECTRIC SWITCHING DEVICE FOR RECORD PLAYERS

Eckhard Laue, St. Georgen, Black Forest, Germany, assignor to DUAL Gebruder Steidinger, St. Georgen/Schwarzwald, Germany

Filed Nov. 25, 1969, Ser. No. 879,694
Claims priority, application Germany, Nov. 26, 1968, P 18 10 983.6
Int. Cl. G11b 19/14
U.S. Cl. 274—1 L 1 Claim



A light electric switching device for a record playing apparatus, which comprises a tone arm which is swingably mounted about a vertical axis for sensing the surface of a record. A mirror is secured close to the vertical axis of the tone arm and with its plane perpendicular to a radial plane of the vertical swinging axis of said tone arm. A light source and a light electric transmitter are provided, to constitute two elements. Both elements are immovably disposed on the record playing device and disposed opposite the mirror, such that a light beam emitted from said light source reflected from the mirror impinges upon the light sensitive transmitter, as soon as the tone arm is disposed within the range of the exit groove of the record.

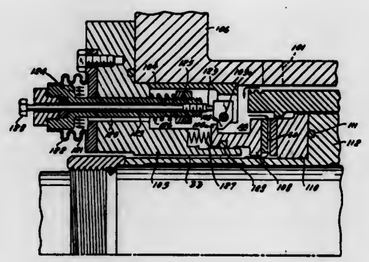
3,701,535
CONTACT-FREE HYDROSTATIC SEAL

Dieter Born, Hessheim; Peter Stech, and Werner Huebner, both of Roxheim, all of Germany, assignors to Klein, Schanglin & Becker A.G., Frankenthal-Pfalz, Germany

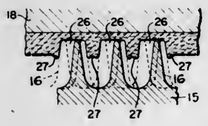
Division of Ser. No. 702,001, Jan. 31, 1968. This application April 27, 1970, Ser. No. 32,210
Claims priority, application Germany, July 27, 1967, K 62907; Aug. 11, 1967, K 63081
Int. Cl. F16j 15/40, 15/44
U.S. Cl. 277—3 5 Claims

A contact-free hydrostatic seal wherein a rotary first annular sealing element defines with a second annular sealing element a gap for leak fluid. The second sealing element is biased

toward the first sealing element by closing springs which tend to reduce the width of the gap. A pump delivers fluid into the gap to oppose the action of closing springs and to prevent direct contact between the sealing elements. When the pressure of fluid drops to such an extent that it can be overcome by the bias of closing springs, a safety device becomes operative to oppose such bias and to hold the second sealing element away from the first sealing element. The safety device includes a lever which is pivoted into engagement with the second sealing element by one or more strong springs when such strong spring or springs overcome the fluid pressure at a time when the fluid pressure is too low to prevent the closing springs from moving the second sealing element into frictional engagement with the first sealing element.

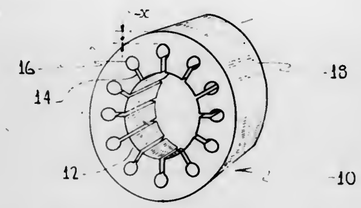


3,701,536
LABYRINTH SEAL
Jennifer V. Matthews, Phoenix, and Thomas T. Hamrick, Scottsdale, both of Ariz., assignors to The Garret Corporation, Los Angeles, Calif.
Continuation of Ser. No. 689,574, Dec. 11, 1967, abandoned. This application May 19, 1970, Ser. No. 38,657
Int. Cl. F02f 11/00
U.S. Cl. 277—56 **15 Claims**



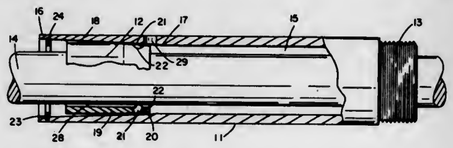
This labyrinth seal has first and second relatively movable members with a rub-tolerant layer on one and spaced, continuous projections on the other. The projections have relatively thin edges initially disposed in closely spaced relation to the surface of the rub-tolerant layer, and when relative movement between the members takes place, some engagement of the edges with the rub-tolerant layer may take place. The layer is of a composition such that when the edges of the projections engage it during relative movement, some of the material will be compressed or moved to one or both sides of the projections to form grooves. The displaced material builds up at the sides of the grooves and increases their effective depth. The spacing of the projections exceeds the potential relative lateral movement between the members so that the resulting ribs at the sides of the grooves will not be destroyed. The resulting interfitting projection edges and grooves form a tortuous passage and reduce the flow of fluids between the members.

3,701,537
SPLIT TRANSFER SLEEVE
Joseph J. Rossman, 926 N. Hill Lane, Cincinnati, Ohio, and Wilbur E. Hudgins, 2581 Belhaven Drive, Cincinnati, Ohio
Filed May 20, 1970, Ser. No. 39,015
Int. Cl. B23b 31/10
U.S. Cl. 279—1 A **1 Claim**



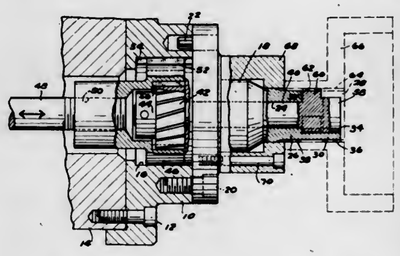
A split transfer sleeve for use in conjunction with expanding arbors and chucks is disclosed. The transfer sleeve is so constructed that, upon completion of the expansion or contraction of the sleeve to engage a workpiece, the sleeve work engaging surface is a continuous and uninterrupted surface.

3,701,538
COLLET ASSEMBLY
Joe L. Hartsell, P.O. Box 171, Casa Grande, Ariz.
Filed Jan. 11, 1971, Ser. No. 105,179
Int. Cl. B23b 31/22
U.S. Cl. 279—30 **4 Claims**



A clamping mechanism for a collet type chuck which is movable longitudinally in the clamping mechanism from a work clamping position to a work releasing position and employing a plurality of ball bearings movable laterally of the chuck for gripping and releasing the work.

3,701,539
WORK HOLDER FOR SPLINED WORKPIECES
London T. Morawski, Mt. Clemens, and John J. Parker, Birmingham, both of Mich., assignors to The John J. Parker Living Trust
Filed March 3, 1971, Ser. No. 120,447
Int. Cl. B23b 31/10
U.S. Cl. 279—1 G **12 Claims**

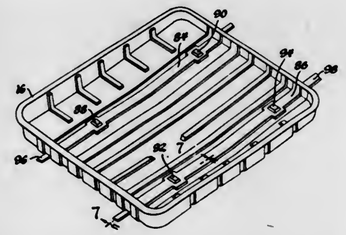


A chuck for holding a splined workpiece having two relatively movable members each formed with a set of circumferentially spaced fingers thereon. The members being assembled with the fingers in circumferential interdigital relation. One of the members has two sets of axially spaced teeth thereon and the fingers on the other member have a single set of teeth thereon located axially between the two sets of spaced teeth on the other member. When a splined workpiece is telescoped over the fingers and one of the members is rotated the two sets of teeth on the one member engage one side face of the splines on the workpiece and the single set of teeth on the other member engage the opposite side face of the splines on the workpiece to firmly retain the workpiece on the holder.

ERRATUM

For Class 280—43 see:
Patent No. 3,701,211

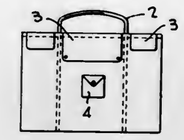
3,701,540
FUEL TANK ASSEMBLY
William L. Pringle, Grosse Pointe Shores, Mich., assignor to William L. Pringle and Associates, Inc., Detroit, Mich.
Division of Ser. No. 36,022, May 11, 1970, Pat. No. 3,648,886. This application Dec. 10, 1971, Ser. No. 206,764
Int. Cl. B60p 3/22
U.S. Cl. 280—5 A **4 Claims**



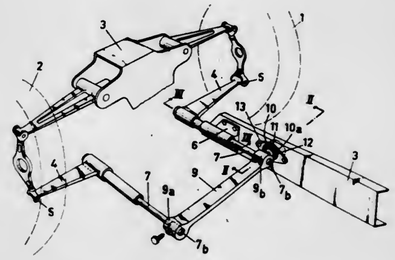
A vehicular fuel tank assembly comprising a steel outer container and a pliable inner member such as a liner or diaphragm having a plurality of circular folds in a substantially horizontal wall portion thereof to permit the center of the wall to collapse telescopically and vertically relative to the bottom of the container as fuel is exhausted from the tank assembly. This telescopic collapse provides volumetric variation in the fuel storage area and further provides variable anti-slosh baffling for the unused fuel. A control valve regulates air flow into and out of the exhausted space between the container and the internal member. Fuel gaging is accomplished by monitoring the displacement of the collapsible internal member portion relative to the container. The container is mounted on the vehicle to permit limited damped longitudinal displacement under abnormally high acceleration load conditions.

3,701,541
FOLDING BAGS TO BE USED IN SHOPPING HAVING COLLAPSIBLE WHEELS, AND CAPABLE TO BE REDUCED TO A HAND-BAG
Tullio Tarducci, Via Caffaro 82, 00154; Alvaro Gatti, Via Alessandro Puerio, and Antonio Buffa, Via Tozzi No. 37, all of Rome, Italy
Filed April 24, 1970, Ser. No. 31,506
Int. Cl. B62b 11/00
U.S. Cl. 280—37 **2 Claims**

A wheeled shopping cart is collapsible so that it may be carried as a hand-bag. The wheels of the cart along with its supports may be collapsed and the cart may thereafter be folded so as to reduce the overall size thereof into a hand carrying bag.



3,701,542
VEHICLE SUSPENSION SYSTEM
Albert A. G. Grosseau, Chaville (Hauts-de-Seine), France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed July 15, 1970, Ser. No. 55,055
Claims priority, application France, July 16, 1969, 6924221; May 14, 1970, 7017675
Int. Cl. B60g 11/24
U.S. Cl. 280—124 B **4 Claims**

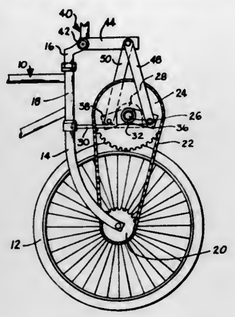


A vehicle suspension system for a transverse pair of vehicle wheels comprising a pivotal linkage connected to each wheel and torsion bars connected to each pivotal linkage and each bar being mounted on the vehicle chassis. The torsion bars are interconnected at their ends remote from the respective connections to the pivotal linkages by an elongate lamina member or members, the member or members lying in the plane of the torsion bars or in a plane parallel to the plane of the torsion bars.

3,701,543
DRIVE MECHANISM FOR WHEELED VEHICLE
Wallace Clark, 1830 South German Church Road, Indianapolis, Ind.; Reginald A. Jones, 35 Grand Canyon Drive, Los Alamos, N. Mex., and James L. Teeters, 2115 Bryen Avenue, Lot C-9, Panama City, Fla.
Filed Sept. 21, 1970, Ser. No. 73,991
Int. Cl. B62m 1/12
U.S. Cl. 280—234 **2 Claims**

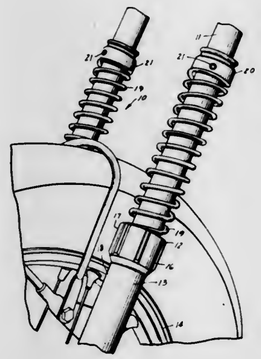
Drive mechanism for occupant propelled wheeled vehicle including an occupant actuated pivotal lever drivingly con-

nected by a crank mechanism to a pair of overrunning clutches carried on the driving sprocket shaft. The clutches



are arranged to drive the shaft in the same direction but through angularly spaced limited driving arcs.

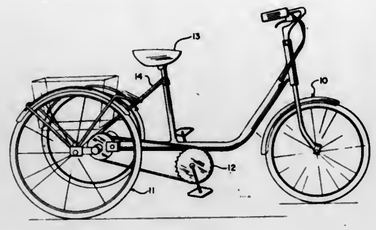
3,701,544
MOTORCYCLE FRONT END ASSEMBLY
Frank M. Stankovich, 1130 Florence, Evanston, Ill.
Filed Oct. 13, 1970, Ser. No. 80,296
Int. Cl. B62k 21/02, 25/02
U.S. Cl. 280—276 **6 Claims**



A front end suspension assembly for a motorcycle having a pair of fork tubes telescopically received in a pair of front wheel axle connected support tubes terminating at their open ends in spring collars, and a compression spring entrapped between the support tube collar and an adjustable locking collar received on the fork tubes.

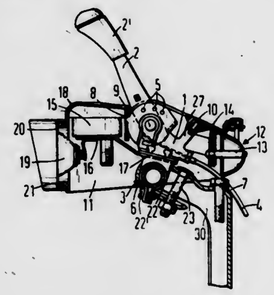
3,701,545
FRAME FOR UTILIZATION WITH A THREE-WHEEL, PEDAL DRIVEN VEHICLE
Robert G. Hendricks, and Billie J. Eberhart, both of 9242 North 36th Drive, Phoenix, Ariz.
Filed Dec. 17, 1969, Ser. No. 885,841
Int. Cl. B62k 5/06
U.S. Cl. 280—282 **1 Claim**

In order to convert a bicycle to a three-wheeled vehicle, a frame member is provided which consists of a single primary tube extending between the front and rear wheel support means with seat support means and front sprocket journal support means fixed thereto. The primary tube of the frame has first and second straight sections and an intermediate curved section. The first straight section extends forwardly from the rear wheel assembly to the rearward terminus of the curved



section, and the second straight section extends downwardly and rearwardly from the front wheel assembly to the forward terminus of the curved section.

3,701,546
BICYCLE AND GEAR SHIFTING ARRANGEMENT FOR THE SAME
Hans Joachim Schwerdhofer, and Gerhard Max Wolf, both of Schweinfurt, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Dec. 21, 1970, Ser. No. 100,330
Claims priority, application Germany, Dec. 24, 1969, P 19 64 867.0
Int. Cl. G05g 9/00, 11/00
U.S. Cl. 280—289 **4 Claims**

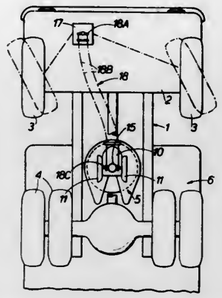


The gear shifting lever on a bicycle equipped with a multiple-speed transmission between the pedal shaft and the rear wheel is mounted centrally on the handle bar in such a manner that it projects upwardly from the handle bar and pivots in a plane which includes or is contiguously adjacent to the axis of the steering column and of the front wheel fork attached to the column.

3,701,547
COUPLING UNITS FOR ARTICULATED VEHICLES
Raymond Goold, 3 Beaufort Road, Downend, Bristol, England
Filed March 16, 1970, Ser. No. 19,764
Claims priority, application Great Britain, March 19, 1969, 14,487/69
Int. Cl. B62d 53/08
U.S. Cl. 280—432 **9 Claims**

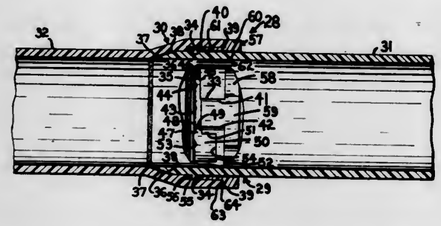
The coupling unit of an articulated vehicle is locked to prevent jacknifing or trailer swing, by releasable locking means which may be mechanical or hydraulic. The locking means are selectively released only in response to steering

movements of the vehicle, so as to permit limited and preferably unidirectional, relative angular movement of the



tractor and trailer, only by an amount and in a direction determined by the magnitude and sense of the steering movements.

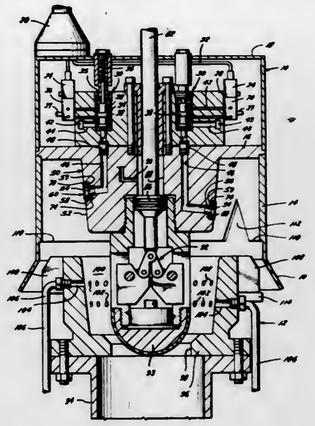
3,701,548
PIPE JOINT SYSTEM
John S. McGuire, P.O. Box 157, Ozark, Mo.
Filed June 25, 1970, Ser. No. 49,596
Int. Cl. F16l 19/02, 21/08, 37/24
U.S. Cl. 285—81 **6 Claims**



A system for joining elongate interfitting male and female portions of adjacent tubular members having interengaging locking means on the male and female portions to retain the male portion within the female portion and to effect relative longitudinal movement of the male portion into the respective female portion which moves cooperative seating surfaces on the male and female portions into sealing engagement in response to relative rotative movement of the male and female portions after interengagement of the locking means.

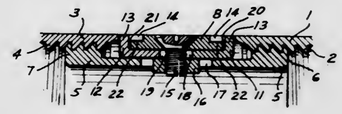
3,701,549
CONNECTOR
Paul C. Koomey, 970 Bunker Hill Road, Douwe DeVries, Tex., and Samuel E. Gilmore, 265 Bellaire, Bellaire, Tex.
Continuation-in-part of Ser. No. 824,474, May 14, 1969, abandoned. This application Oct. 9, 1970, Ser. No. 79,504
Int. Cl. F16l 35/00
U.S. Cl. 285—24 **19 Claims**

The present invention is directed to a connector of the type commonly used in underwater well drilling operations for control of the wellhead functions. The preferred embodiment utilizes a tapered stinger with a mating receptacle. A plurality of passageways are contained in both the stinger and receptacle, which passageways mate when the stinger is engaged in the receptacle. An improved annular seal is positioned around each of the stinger passageways to form a water and pressure tight seal with its mating receptacle passageway. Through these joined passageways hydraulic fluid, water or a mixture of both is pumped to perform the control functions. The seals are comprised of an annular resilient seal member which is secured to the stinger by an internally positioned retainer. A



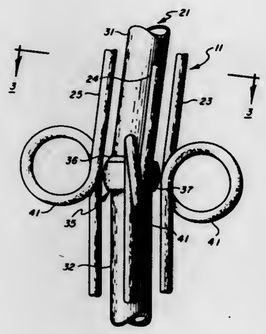
modification of the seal utilizes a reinforcing ring to prevent the flexible seal from improperly shifting positions in response to the pressure moving through the passageways.

3,701,550
COUPLING DEVICE FOR PIPES WITH CIRCULAR CROSS SECTIONS
Gunnar Jacobson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed March 8, 1971, Ser. No. 121,923
Claims priority, application Sweden, March 19, 1970, 3701/70
Int. Cl. F16l 17/00
U.S. Cl. 285—39 **9 Claims**



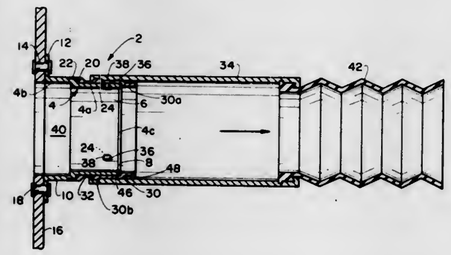
Two pipes having at their ends to be coupled internal threads of the opposite hand are coupled by a coupling ring which has corresponding external threads. Rotating of the coupling ring is effected by means of an intermediate member encompassing the ring axially displaceable thereon. A locking device in the form of movable guide rings is interposed between the coupling ring and the intermediate member. These guide rings have protrusions which are engageable with corresponding recesses at the ends of the pipes. In the event the threads on the coupling ring are initially engaged with the threads on one pipe end only, rotation of the intermediate member causes axial displacement thereof with respect to its position relative to the threads on the coupling ring thereby causing engagement of the threads on the coupling ring with the threads of the second pipe also. Upon completion of the threading operation the guide rings are in pressure engagement with the intermediate member so that the latter is locked in its position relative to the pipes thereby absorbing torsional forces as may occur between the coupling ring and the intermediate member.

3,701,551
MULTI-CONDUIT RISER WITH A FLEXIBLE JOINT
George W. Morgan, Anaheim, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed Nov. 23, 1970, Ser. No. 91,749
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R 10 Claims



A multi-conduit riser, primarily for use in underwater installation, has its larger center core conduit connected to a fixed structure on the ocean floor by a ball and socket assembly and has each of its smaller conduits that are disposed around the center core conduit forming a 360° loop near the ocean floor before communication with the fixed structure to provide a pinned connection.

3,701,552
COMPOSITE CONSTRUCTION FOR NIPPLE USED IN GROUND STARTING FOR JET ENGINES
Arnold A. Cowan, Tarzana, Calif., assignor to Bobrick Aero Missile Products, Hollywood, Calif.
Filed Oct. 19, 1970, Ser. No. 81,645
Int. Cl. F16l 3/04
U.S. Cl. 285—158 6 Claims

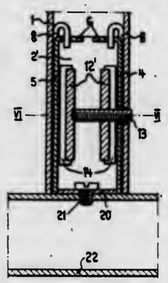


A nipple construction particularly adapted for use in aircraft cooperative with a corresponding coupling wherein optimum structural and durability characteristics, consistent with minimum weight design criteria, are obtained by the incorporation in said nipple of a first member of lightweight metal having a second member or sleeve of greater wear resistance and structural strength encompassing said first member and imparting said wear resistance and structural strength to a majority of the external surface of said nipple by acting as a buffer to absorb wear and impact arising out of the many connect and disconnect operations to which nipples of this type are usually subjected.

ERRATUM

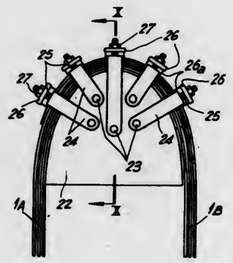
For Class 287—189 see:
Patent No. 3,701,613

3,701,553
FRAME STRUCTURE
Wilhelm Vogt, Oberhofen, Switzerland, assignor to Aktiengesellschaft fur Vogt-Patentverwertungen, Thun, Canton of Berne, Switzerland
Filed Nov. 30, 1970, Ser. No. 93,686
Claims priority, application Switzerland, Dec. 5, 1969, 18160/69
Int. Cl. F16b 2/14
U.S. Cl. 287—54 C 9 Claims



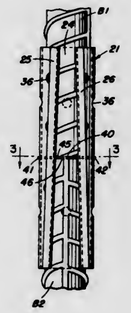
A frame structure comprising hollow members of polygonal cross-section, hollow members forming different frame portions being interconnected by means of spreadable coupling units comprising loosely assembled parts held in predetermined positions within said hollow members and adapted to be braced in at least two directions in pairs against the inside surfaces of said hollow members.

3,701,554
REINFORCING AND PRESTRESSING CABLE
Andre Puyo, and Pierre Andre Habib, both of Paris, France, assignors to Coyne et Bellier, Bureau d'Ingenieurs Conseils, Paris, France
Filed Nov. 21, 1969, Ser. No. 878,856
Claims priority, application France, Nov. 26, 1968, 68175335
Int. Cl. F16b 7/04
U.S. Cl. 287—78 7 Claims



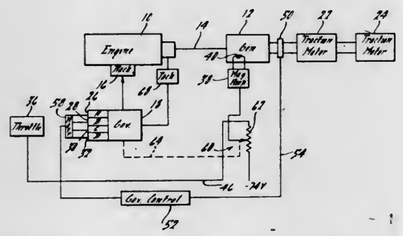
A tension cable essentially composed of a multiplicity of thin strips is clamped at one or more locations with freedom of slight relative slippage of the strips to equalize their stresses. At each clamping point the strips may be separated by interposed foils which may be constituted by parts of the strips of a similar cable or by the opposite ends of the same cable bent back upon itself. The clamping pressure may be partly absorbed by laterally projecting foil portions with interposed spacers having substantially the thickness of the strips. A terminal member embraced by an end of the cable may contribute to the clamping effect.

3,701,555
CLAMP
Kenneth D. Harris, 108 Windward, Euless, Tex.
Continuation-in-part of Ser. No. 654,522, July 19, 1967. This application Nov. 24, 1969, Ser. No. 879,382
Int. Cl. F16b 2/14
U.S. Cl. 287—110 6 Claims



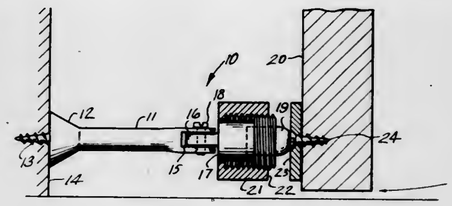
A clamp for securing adjacent ends of longitudinally aligned reinforcing bars of concrete structures which includes a tubular longitudinally split sleeve and a contracting member for pulling the ends of the tubular sleeve toward one another to contract the sleeve radially into firm gripping engagement with adjacent end portions of the reinforcing bars which are telescoped into opposite ends of the sleeve, the sleeve having internal support means intermediate its ends for holding the sleeve in a predetermined position on one of the reinforcing bars.

3,701,556
CONTROL SYSTEM FOR DIESEL LOCOMOTIVE
Abraham W. Richmond, Sycamore, Ill., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Oct. 1, 1971, Ser. No. 185,639
Int. Cl. H02p 9/04
U.S. Cl. 290—40 B 30 Claims



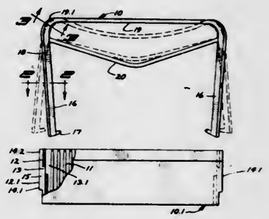
A control system for a diesel locomotive wherein the locomotive is controlled on a power basis, the engineer selecting the power to be supplied the traction motors from the electrical generator, the power selection being sensed and used to control the diesel engine. The system includes means for selecting an infinite number of power settings. Thus, the engineer selects a particular desired power setting or successively selects power settings and the control system automatically controls the engine to achieve that power setting.

3,701,557
ADJUSTABLE MAGNETIC DOOR STOP
James Vincent Centofante, 102 Randall Street, Cranston, R.I.
Filed July 20, 1971, Ser. No. 164,258
Int. Cl. E05c 17/56, 19/16
U.S. Cl. 292—251.5 4 Claims



An adjustable door stop. This device includes a knurled sleeve threaded onto a cylinder having an extending rubber portion for abutting with a door and a projection is pivotably secured to a shank which mounts to the wall base and the door has secured to it a magnetic disc which will be attracted and held to the face of the sleeve when it is threaded outward to cover the rubber projection.

3,701,558
DETACHABLE HANDLE FOR RECEPTACLE
William H. Baker, Chaska, Minn., assignor to Fluoroware, Inc., Chaska, Minn.
Filed July 19, 1971, Ser. No. 163,966
Int. Cl. A47j 45/07
U.S. Cl. 294—33 10 Claims

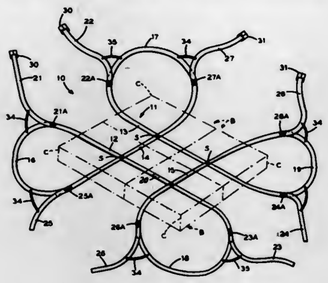


A detachable lifting handle for a receptacle, wherein depending leg portions swing outwardly to release the receptacle, and transverse and superposed flexible bars extending between the leg portions produce outward swinging of the legs when squeezed together.

3,701,559
COMBINATION SLING AND UNITIZING MEANS
Frank J. Marino and Anthony P. Marino, Brooklyn, N.Y., assignors to Marino Systems, Inc., Bay Shore, N.Y.
Filed Mar. 25, 1971, Ser. No. 128,352
Int. Cl. B66c 1/18
U.S. Cl. 294—74 4 Claims

A cargo sling for unitizing a plurality of cargo units;

the sling being adapted to remain with the unitized cargo units to facilitate successive transfer operations as the

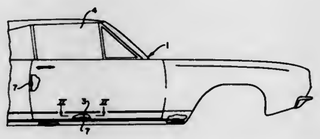


cargo units are moved between warehouses and various transport means.

3,701,560
AUTOMOTIVE VEHICLE BODY ACCESS AND DRAIN PLUG

Arthur F. Emmerson, 539 Walnut Drive, Euclid, Ohio 44132

Filed Dec. 30, 1970, Ser. No. 102,861
Int. Cl. F16k *15/14*
U.S. Cl. 296—1 R 3 Claims

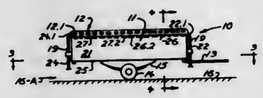


An automotive vehicle body has walls that form a chamber between them, such as a hollow door. At least one of the walls has an opening through it. In the case of a door there would be such an opening in the bottom. This opening is filled by a resilient closure plug that has a central passage through it, which normally is substantially closed by a transverse flexible wall. This wall is provided with at least three uniformly spaced radial slots intersecting at its center to form flaps that can move back and forth to open and close the wall.

3,701,561
TRAILER CONSTRUCTION

Peter Friesen, 3627 204th St., Langley, British Columbia, Canada

Filed May 28, 1970, Ser. No. 41,225
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 13 Claims

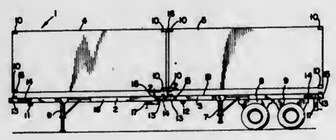


A trailer including a box and a roof, the trailer adapted to be towed behind a vehicle in a closed condition with the roof adjacent the box. The roof is adapted to be raised by a crossed four-bar mechanism, the roof forming one of the bars and an opposite bar being effectively of variable length, variation in length accomplished by cable actuated slide mechanism at bases of roof supporting corner posts. Undesirable roof tilt prevented by lengths of cable or links secured to the corner posts and the box, or by canvas acting as guylines.

3,701,562
CONTAINER CHASSIS ATTACHMENT ARRANGEMENT

George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 6, 1969, Ser. No. 874,427
Int. Cl. B65j *1/22*
U.S. Cl. 296—35.A 4 Claims

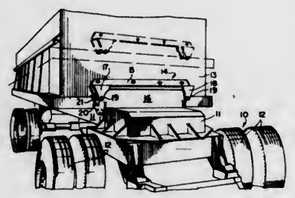


A trailer container chassis attachment arrangement for coupling one large container or two smaller containers to the chassis including twist lock means comprising a twist lock structure on the chassis at each corner casting connecting same to the chassis, each twist lock structure including a housing receiving a vertically retractable shear block reciprocally supported by a screw retained on the housing by nut means to elevate and lower the screw means with the shear block into the bottom of the corner casting, the top portion of the screw carrying a twist lock head rotatably positioned into locking position in the container, and lock means in the form of a vertically reciprocable plunger locking the screw against rotation in elevated and lowered locked and unlocked positions of the twist lock head and twist lock screw.

3,701,563
LOCKING MEANS FOR DUMP TRUCK

John Jaye Lasko and Douglas Gordon Hough, Prince George, British Columbia, Canada, assignors to Douglas Gordon Hough, Prince George, British Columbia, Canada

Filed Jan. 26, 1971, Ser. No. 109,805
Claims priority, application Canada, Jan. 22, 1970, 072,869
Int. Cl. B62d *27/00*
U.S. Cl. 298—38 6 Claims

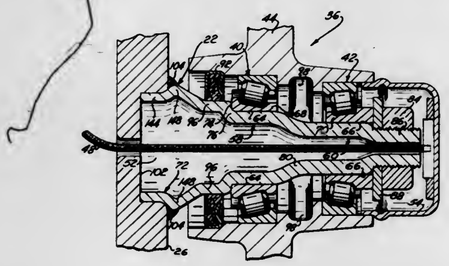


A clamping device for securing the free end of the dump body of a dump body assembly in which the clamping device includes a pin secured to the body and engageable in a slot in a locking member rotatably mounted in the frame between positions in which the slot can receive or release the pin and in which the slot may retain the pin. The locking member is urged in an over-center fashion between the two positions.

3,701,564
VEHICLE AXLE SPINDLE

Otto V. Pulik, Willoughby, Ohio, assignor to Willow Hill Industries, Inc., Willoughby, Ohio

Filed July 28, 1970, Ser. No. 58,950
Int. Cl. B21k *1/06*
U.S. Cl. 301—131 5 Claims

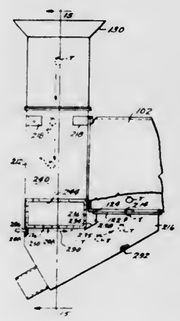


A hollow axle spindle for a vehicle is formed with an axially extending cavity by cold working a tubular blank. During this cold working process, dies are utilized to reduce the external diameter of a portion of the tubular blank to form an inner bearing support section. An outer bearing support section is formed by further reducing the external diameter of an outer portion of the tubular blank. The inner bearing support section is subjected to relatively large operating stresses and has a greater wall thickness than a base section of the spindle. A radially extending shoulder is provided between the base section and inner bearing support section to position an inner bearing assembly relative to the spindle. In one embodiment of the invention, a pair of hollow spindles are integrally formed with a common axle.

3,701,565
ARTICLE INPUT DEVICE FOR LIQUID-CONTAINING APPARATUS

Robert P. Gutterman, Bethesda, Md., and Le Baron H. Washington, Annandale, Va., assignors to General Kinetics Inc., South Reston, Va.

Filed June 10, 1970, Ser. No. 45,199
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 6 Claims

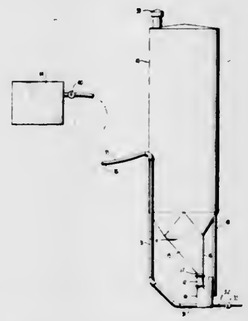


For introducing articles into a container of liquid in which many of the articles will become suspended or float, the container is provided with a J-shaped inlet chute having its shorter leg opening through the bottom of the container. The longer leg of the chute extends above the level of liquid and below that level is provided with an aerator which produces an air/liquid slurry within the longer leg. This slurry has a lower specific gravity than the liquid alone, so articles dropped into the longer leg of the chute fall gently downwardly through the slurry, then bob upwardly in the chute shorter leg, through the container bottom opening and into the container. By preference, fluid jets are provided in the chute below the aerator to gently transfer the articles from the longer leg to the shorter leg of the chute.

3,701,566
METHOD AND APPARATUS FOR CONVEYING DUST

Percy E. Todd, Jackson Road, P.O. Box 1144, Apison, Tenn. 37302

Continuation-in-part of application Ser. No. 756,820, Sept. 3, 1968, now Patent No. 3,578,814, dated May 18, 1971. This application Mar. 9, 1970, Ser. No. 17,536
The portion of the term of the patent subsequent to May 18, 1988, has been disclaimed
Int. Cl. B65g *53/12*
U.S. Cl. 302—66 4 Claims



A method and apparatus for conveying fine particulate material from a storage silo at atmospheric pressure to a container or the like in which the material is transferred by gravity from the silo to a surge hopper below the silo, and pressurized air is then directed through the surge hopper and displaces the material and conveys it through a conduit to the container. The conduit includes a flow trap to assure that the particulate material is displaced by the fluid.

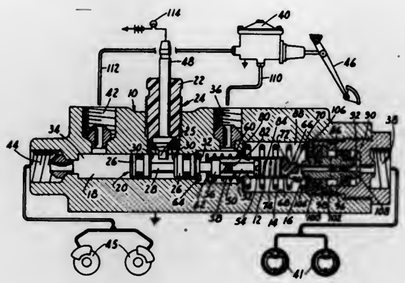
3,701,567
COMBINATION PROPORTIONING AND BYPASS VALVE

Paul B. Shutt and Charles M. Barnes, St. Joseph, Mich., assignors to The Bendix Corporation

Original application June 11, 1969, Ser. No. 832,162. Divided and this application Oct. 22, 1970, Ser. No. 82,924
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C 2 Claims

A flow control valve for use in a braking system to systematically proportion hydraulic fluid to the front and rear brakes of the braking system. The flow control valve will correspondingly decrease the hydraulic fluid to the rear brakes with a shift in the center of gravity of the

vehicle during a rapid deceleration. With a failure in the front brake supply, the flow control valve permits un-



obstructed hydraulic fluid flow to provide maximum braking capability in the rear brakes.

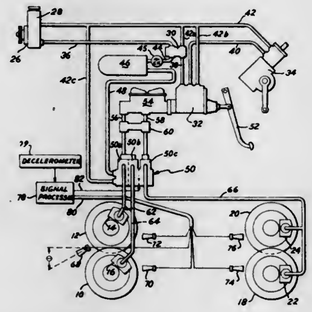
ERRATUM

For Class 303—22 see:
Patent No. 3,701,616

3,701,568
ADAPTIVE BRAKING SYSTEM UTILIZING DOPPLER RADAR

Richard L. Lewis, St. Joseph, Mich., George B. Hickner, South Bend, Ind., and William P. Harokopus, Southfield, Mich., assignors to The Bendix Corporation

Filed Sept. 30, 1970, Ser. No. 76,953
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 P **7 Claims**

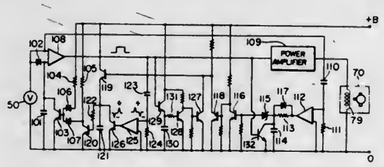


An adaptive braking system for a vehicle in which Doppler radar devices are used to measure wheel speeds and vehicle speed and provide electrical signals proportional thereto. These signals are processed and combined to provide further signals proportional to wheel slip, rate of change of wheel slip and vehicle acceleration. A system for detecting peaks of vehicle acceleration and transmitting a signal indicating the occurrence of such a peak may also be included. These several signals are transmitted to a programmer and/or logic element. Outputs from the programmer and/or logic element are received by brake pressure modulators to vary the pressure applied by the operator thereby maintaining maximum braking torque. A limiter can be incorporated to prevent slip values between the tire and road surface from exceeding some predetermined maximum.

3,701,569
ANTI-SKID SYSTEM FOR VEHICLES

Hiroshi Arai and Akira Nakamura, Toyota, Atutoshi Okamoto, Toyohashi, and Shunji Okumura, Kariya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, and Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed Oct. 6, 1970, Ser. No. 78,524
Claims priority, application Japan, Oct. 16, 1969, 44/82,816, 44/82,817
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **7 Claims**



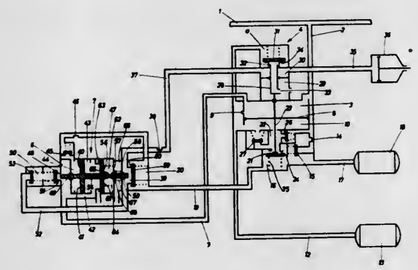
An anti-skid system for vehicles is disclosed having a novel wheel lock detecting apparatus for supplying brake release signals. The exemplary system includes an actual wheel speed voltage generator for generating an actual wheel speed voltage corresponding to an actual wheel speed as well as a reference wheel speed voltage generator for generating a reference wheel speed voltage corresponding to a reference wheel speed. The reference wheel speed voltage exists across a capacitor and decreases with a first discharging time constant value corresponding to a first preset deceleration value. The reference voltage starts discharging from an initial value which is lower than the actual wheel speed voltage when the rate of reduction of actual wheel speed voltage reaches a value corresponding to said first preset deceleration value. A differential amplifier is included for producing an output signal to reduce braking pressure when said reference wheel speed voltage becomes higher than an actual wheel speed voltage. There is also a detector for detecting a predetermined variation in the actual wheel speed voltage during a time starting from the termination of the output signal from said differential amplifier or, in other words, after the brake release signal terminates. A time constant setting device is provided for switching the discharging time constant corresponding to said first preset deceleration value to a second discharging time constant value corresponding to a second preset deceleration value, which is smaller than the first. The switching between first and second discharge time constants is controlled by an output signal of said detector to thereby control the reference wheel speed voltage generator, whereby the wheel lock detecting apparatus accurately detects any tendency of the wheels to lock and produces a braking pressure reducing signal to actuate a braking pressure modulator thereby reducing braking pressure.

3,701,570
SINGLE RELEASE AIR BRAKE FOR RAILROAD VEHICLES

Reinhard Reitz, deceased, by Gertrud Reitz, legal representative, Munich, Germany, assignor to Knorr-Bremse G.m.b.H., Munich, Germany

Filed June 14, 1971, Ser. No. 152,683
Claims priority, application Germany, June 15, 1970, P 20 29 408.0
Int. Cl. B60t *15/52*
U.S. Cl. 303—70 **4 Claims**

A single release air brake for railroad vehicles has a double-pressure regulating valve connected between a brake cylinder and the main air line. First and second auxiliary air reservoirs are also connected to the regulating valve. A single structural unit comprising a rapid braking accelerator and a switching device is connected to the regulating valve and through the regulating valve to the brake cylinder and to the second auxiliary air reservoir. The structural unit has a control piston and a valve piston displaceably mounted therein and having an abutment coupling therebetween. These pistons, in response to decreases in pressure in the main air line, operate valves which connect the first auxiliary reservoir to the braking cylinder upon a small lowering of pressure in the main air line occurring during operational braking. For rapid braking action, valves are opened in the unit to open the main air line to the atmosphere to quickly empty the main air line. The regulating valve is provided with a device for quickly refilling the second auxiliary reservoir from the main air line after a rapid braking operation.



3,701,571
BEARING ASSEMBLY

Herbert Percival Eck, 517 26th St., West Palm Beach, Fla. 33480

Filed May 28, 1971, Ser. No. 147,857
Int. Cl. F16c *17/10*
U.S. Cl. 308—18 **8 Claims**



A bearing assembly in which opposite cheek plates include shafts having tapered bearing surfaces in sliding contact with tapered bearing surfaces on a roller. Annular recesses in the cheek plates compensate for wear of the bearing surfaces.

3,701,572
STRETCH SHOE STRING

Joe M. Velasquez, 9640 Wahoo Lane, El Paso, Tex. 79924

Filed June 22, 1971, Ser. No. 155,438
Int. Cl. A43c *1/00*
U.S. Cl. 24—117 A **1 Claim**

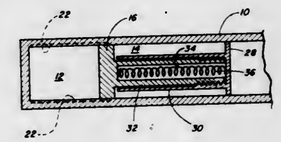
An improved shoe string for all various types of shoes, the device consisting of a shoe lace made of stretchable elastic material, the opposite ends of the shoe lace being provided with an interconnectable eye and hook, so to eliminate tying the ends with a knotted bow which frequently becomes accicentally untied; the present invention thus insuring a positive securement.



3,701,573
WARHEAD

William E. McQuistion, Port Tobacco, and Giorgio Tesi, Accokeek, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1970, Ser. No. 17,991
Int. Cl. F42b *13/00*
U.S. Cl. 102—57 **3 Claims**

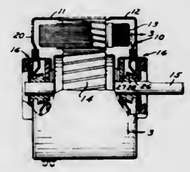


A warhead in which the explosive ingredients are stored separately in partitioned spaces to render each ingredient by itself inert to shock. The explosion is effected by removing the partition in response to the propulsion forces imparted upon the weapon and mixing the ingredients and igniting the mixture.

3,701,574
BEARING STRUCTURE

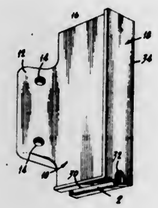
Benjamin Phillips, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.

Filed Aug. 10, 1971, Ser. No. 170,441
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 **12 Claims**



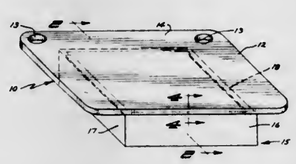
An electric motor comprises a motor housing, a stator and a rotor. The housing has an end wall with an opening therein and slots extending radially outwardly from the opening to define a plurality of cantilever mounted segments. Each segment has a first portion extending generally radially and a second portion forming a free end extending generally axially so that the segment is yieldable axially. The ends of the segments define a cylindrical supporting surface that engages a spherical contacting surface of a bearing member which has a bore therein for receiving the shaft of the rotor. Alternate segments have their free ends extending generally axially in opposite directions from adjacent segments.

3,701,575
FLUID DISPENSING DEVICE
Joseph B. Ringkamp, 515 Jefferson Ave., Morrisville, Pa. 19067
Filed Feb. 10, 1971, Ser. No. 114,322
Int. Cl. A47f 1/00
U.S. Cl. 312—45 9 Claims



A predetermined amount of a fluid material such as toothpaste, hand cream, perfume or the like is dispensed in the form of an elongated capsule adapted to be squeezed to discharge the fluid material for use. The capsules are individually removed from a dispensing device in which they are fed by gravity to the lower end of a chamber having a slot therein through which a portion of the capsule is exposed so that it can be engaged by the finger for movement lengthwise through an opening in an end wall of the chamber.

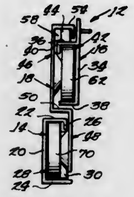
3,701,576
LAP SUPPORTED WORK TRAY
Carl D. Moen, 24 66½ Way, Minneapolis, Minn. 55432
Filed Dec. 4, 1970, Ser. No. 95,098
Int. Cl. A47b 27/00, 81/00, 97/00
U.S. Cl. 312—231 1 Claim



A lap supported work tray consisting of a plate member forming a work surface and having a drawer thereunder, said drawer being lap supported and said drawer supporting said plate member with a pair of slide members arranged for said plate member to be movable in a direction away from the user to uncover said drawer for access thereto.

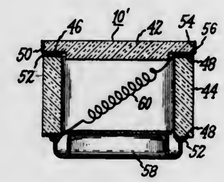
3,701,577
DRAWER SLIDE ASSEMBLY
Jack Fischer, Mount Prospect, Ill., assignor to Advertising Metal Display Co., Chicago, Ill.
Filed Oct. 12, 1970, Ser. No. 79,932
Int. Cl. A47b 88/10
U.S. Cl. 312—339 20 Claims

The drawer slide assembly comprises a cabinet runner, a drawer runner and an intermediate slide member. The cabinet and drawer runners each have longitudinally extending guideways, and the intermediate slide member has a pair of longitudinally extending parallel sections, the top section of which carries a roller and has a longitudinally extending guideway. The cabinet runner has a roller which is disposed within the guideway of the slide member top section, and the roller of the slide member top section is disposed within the guideway of the cabinet runner. The slide member bottom section carries a pair of rollers which



are disposed within the roller guideway of the drawer runner. Interengageable formations on the cabinet and cabinet runner facilitate the installation of the drawer slide assembly.

3,701,578
METHOD OF MAKING CERAMIC ELECTRICAL DEVICE
Roger A. Krey, Mirror Lake, N.H. 03853
Original application Feb. 28, 1966, Ser. No. 530,716. Divided and this application Jan. 31, 1969, Ser. No. 795,459
Int. Cl. H01j 9/18
U.S. Cl. 316—19 3 Claims

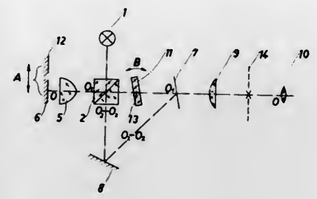


A method of making a ceramic light bulb or other electrical device having a ceramic envelope portion formed of a translucent ceramic material and a metal closure member. The ceramic material is metalized in desired areas. The metal closure member is assembled with the ceramic envelope and a filament is mounted within the envelope with opposite ends in contact with metalized portions of the envelope. Brazing metal is placed at all contact areas between the envelope and the closure member. The assembly is then heated in a furnace at a temperature and time sufficient to braze the assembly into an hermetically sealed device.

3,701,579
HOLOGRAPHIC INTERFERENCE MICROSCOPY
Friedrich Zollner, Jena, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, Germany
Filed Jan. 29, 1971, Ser. No. 103,358
Int. Cl. G02b 21/00, 27/00
U.S. Cl. 350—12 4 Claims

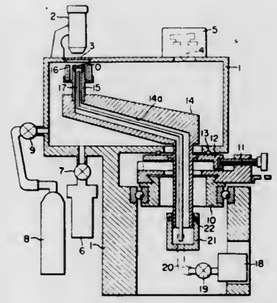
In an interferometer system for micro-observation in incident light, a reference beam and a specimen beam interfere in a hologram which represents an interference image due to superposition of said two beams on

one another and substitution of a plane mirror for the specimen under observation. If the magnification is varied



by changing the objective, the hologram must also be changed.

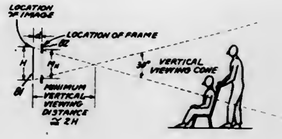
3,701,580
DEVICE FOR QUENCHING AND COOLING A SPECIMEN IN A HIGH-TEMPERATURE MICROSCOPIC VIEWING SYSTEM
Masaru Sobajima, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 16, 1971, Ser. No. 208,697
Claims priority, application Japan, Dec. 24, 1970, 45/116,648
Int. Cl. G02b 21/28, 21/30
U.S. Cl. 350—90 3 Claims



In a high-temperature microscopic viewing system a specimen heating furnace is installed around the specimen and is in the form of a hollow cylinder having one end thereof closed to provide a test surface, and a cylindrically shaped specimen holder open at opposite ends carries the specimen on top thereof, the hollow interior of the holder communicating with the exterior of the hermetically sealed chamber while maintaining a gas-tight seal with respect to the interior of the chamber. A pipe extends through the holder along the length thereof for passing a coolant from the exterior of the hermetically sealed chamber to the inner side of the test surface of the specimen.

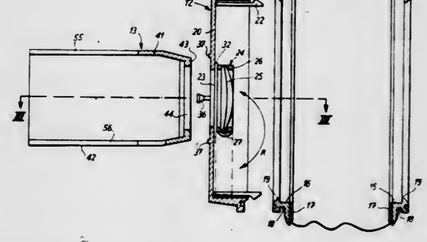
3,701,581
STEREOSCOPIC ENHANCEMENT OF PICTORIAL DISPLAYS
John L. Henkes, Jr., Loudonville, N.Y., assignor to General Electric Company
Filed Nov. 15, 1971, Ser. No. 198,523
Int. Cl. G02b 27/22
U.S. Cl. 350—144 4 Claims

Methods and apparatus are described for enhancing the stereoscopic information content of a two-dimensional display surface so that stereoscopic information is perceived with the realism of the original scene. The apparatus includes a stereographic frame surrounding the display and spaced therefrom. The frame, including means for decreasing the scene brightness at a non-linear rate, disassociates the display from the surrounding environ-



ment by defocusing the edge of the frame so that it is difficult for the mind of the viewer to determine the distance "d" between the frame and the display surface. Suitable spacings d range between approximately $W/40$ and $W/5$, where W is equal to the width of the display surface.

3,701,582
OPTICAL ATTACHMENT FOR VIEWING A FOCUSING SCREEN OF A CAMERA
Carl Koch, Stetten, Switzerland, assignor to Sinar AG Schaffhausen, Feuerthalen, Switzerland
Filed Jan. 8, 1971, Ser. No. 105,042
Int. Cl. G02b 27/04, 23/18, 23/20
U.S. Cl. 350—145 4 Claims

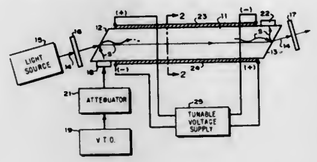


An optical attachment for viewing the focusing screen of a large-size focusing screen camera. The attachment comprises a light-tight bellows structure including a pair of spaced, opposed end frames interconnected by a flexible bellows. One of the frames is adapted to be releasably attached to a focusing screen and a plate having a viewing window therein is mounted on the other frame. A binocular optical magnifying system is mounted on the plate adjacent the viewing window. The binocular system is selectively swingable on the plate between an operative viewing position in front of said window and an inoperative position away from the window. The optical attachment includes an external lever which is operably connected with the binocular system for moving the binocular system between its operative and inoperative positions. The attachment also includes a tunnel-shaped shield having spaced, opposed open ends. One of the ends of the shield being releasably secured to the plate in surrounding relationship to the window and the other end being shaped to complementally accommodate the head of a photographer. The bellows is relatively self-supporting and laterally and longitudinally flexible to allow both perpendicular and parallel movement of the plate and the shield relative to the focusing screen.

3,701,583
ACOUSTO-OPTICAL FILTER HAVING SCANNED ACOUSTIC FREQUENCY COMPENSATED BY CONTROLLED DISTRIBUTED BIREFRINGENCE

Donald L. Hammond, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 14, 1970, Ser. No. 97,523
Int. Cl. G02f 1/24
U.S. Cl. 350—149 12 Claims

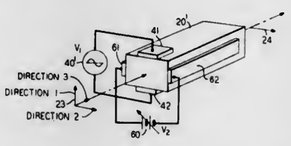


An electronically tunable acousto-optic filter is scanned over a wide range of optical frequencies by varying the acoustic frequency and is provided with means for controllably varying the birefringence of the filter medium along the length thereof to compensate for acoustic k vector distribution, thereby increasing the rate at which the filter may be scanned.

3,701,584
TUNED VOLTAGE VARIABLE BIREFRINGENT ACOUSTO-OPTICAL FILTER

Peter Klaus Runge, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,207
Int. Cl. G02f 1/24
U.S. Cl. 350—149 12 Claims



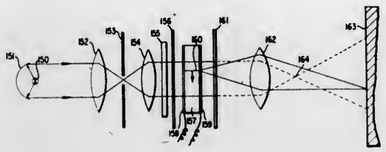
A voltage tunable acousto-optical filter with reduced power requirements acts as a bandpass optical filter with its center frequency determined by a DC voltage source. Prior art acousto-optical filters rely on the natural birefringence of the filter crystals, hence a change in the output optical frequency is accomplished by a change in the acoustical frequency established in the crystal. However, the acoustical frequency can be fixed and the output optical frequency changed by varying the birefringence of the crystal with the application of a voltage to a set of electrodes on the crystal.

3,701,585
OPTICAL LINE SCANNER USING THE POLARIZATION PROPERTIES OF FERROELECTRIC-FERROELASTIC CRYSTALS

John R. Barkley, James J. O'Reilly, and Robert K. Waring, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 26, 1971, Ser. No. 119,237
Int. Cl. G02f 1/26
U.S. Cl. 350—150 34 Claims

In certain ferroelectric-ferroelastic crystals, the domains are biaxially birefringent. The region of a linear domain wall dividing adjacent domains transmits polarized light having a substantial component wherein the polarization direction is unchanged. With appropriate polarization filtering the difference in polarization properties of the domains and the domain wall can be used

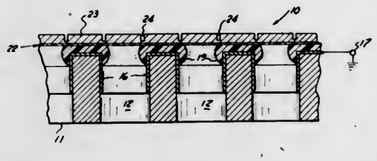


to generate a dark line on a light field or a light line on a dark field corresponding on the domain wall. The domain wall, and the corresponding optical line can be moved in response to electrical or mechanical control signals to provide an optical line scanner.

3,701,586
LIGHT MODULATING DEFLECTABLE MEMBRANE

George G. Goetz, 27992 Green Willow, Farmington, Mich. 48024

Filed Apr. 21, 1971, Ser. No. 136,012
Int. Cl. G02f 1/34
U.S. Cl. 350—161 11 Claims



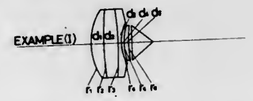
A light modulating deflectable membrane useful in modulating light is described. A deflectable membrane is applied to the surface of a microchannel plate (MCP) so that the membrane extends over the entire surface of the MCP, including the output openings of the channels. The membrane is made reflective by the application of an array of symmetrically arranged elements which are formed from a light reflective material. Electrical separation of the membrane and MCP is achieved by a thin insulating film which is interposed between the membrane and the MCP. The surface of the MCP is placed at ground potential, while the membrane is normally neutral. In this condition the structure is a planar mirror. When electrons are directed to the structure, a charge accumulates on the membrane and forms a pattern dictated by the signals applied to the electron gun. Electrostatic attraction between the MCP surface and the accumulated charges causes deflection of the membrane into the MCP channels. Accordingly, light impinging upon the membrane is phased modulated by dimples in the membrane as electrostatic attraction occurs. Because the deflection at each dimple is dependent upon the charge placed there by the electron gun, and because the charge from the electron gun is dependent upon its energizing signals, image informations contained in the electronic signals is reproduced in the phase of the light reflected from the dimpled membrane. Holographic reconstructions can be produced by

energizing the electron gun with electrical signals representative of the interference pattern of a hologram and then illuminating the dimpled surface with coherent energy.

3,701,587
IMAGE FOCUSING LENS SYSTEM FOR COPYING MACHINES

Tadashi Kojima, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 19, 1971, Ser. No. 144,718
Claims priority, application Japan, May 20, 1970, 45/42,436
Int. Cl. G02b 9/58
U.S. Cl. 350—202 4 Claims

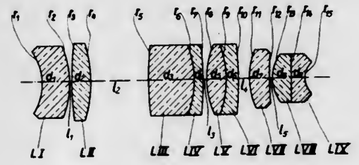


A new system for copying machines, including an image focusing lens system is now proposed. The said image focusing lens system which is the subject matter of the present application has a bright F number as large as about 4 and is well compensated in aberration. The image focusing lens system incorporates a substantially symmetrical image focusing lens construction or a symmetrical half of the focusing lens construction with the addition of a plane mirror, roof mirror or roof prism (Dach prism) disposed behind the symmetrical lens half.

3,701,588
REPRODUCTION LENS OF HIGH IMAGE-RESOLVING POWER WITH AN IMAGE-SIDE NUMERICAL APERTURE OF 0.5 COMPRISING THREE DOUBLETS AND THREE SINGLE LENS ELEMENTS

Doris Trebitz, Jena, and Ernst Rumpoldin, Apolda, Germany, assignors to Jenoptik Jena G.m.b.H., Jena District of Gera, Germany

Filed Mar. 18, 1971, Ser. No. 84,469
Int. Cl. G02b 9/62
U.S. Cl. 350—215 1 Claim

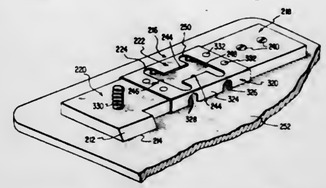


A reproduction lens of high image-resolving power comprises three doublets and three single lens elements, I, II, III/IV, V/VI, VII, VIII/IX from object side to image side, and is divided into three groups. The first group consists of the elements I and II, I being a dispersive meniscus, and II being a convergent element. The second group consists of the two cemented convergent doublets III/VI and V/VI, whereof the single elements III and V are convergent and the single elements IV and VI are divergent. The third group consists of the convergent element VII and the cemented thick meniscus VIII/IX. The lens aperture is 0.5. The focal length of the lens is 15 mm. The image scale is 1:15. The lens is suitable for microphotographic techniques and micro-wave circuits.

3,701,589
VARIABLE WIDTH SLIT MECHANISM FOR USE IN A SCANNING MONOCHROMATOR

Jack A. Haines, Champaign, Ill., assignor to Heath Company, St. Joseph, Mich.

Filed Nov. 8, 1968, Ser. No. 774,301
Int. Cl. G02f 1/30; G01j 3/12
U.S. Cl. 350—271 3 Claims



In a scanning monochromator of the diffraction grating type, an improved slit mechanism is provided adjacent the monochromator entrance and exit ports. Each slit mechanism includes a pair of closely spaced parallel slit edges and, additionally, incorporates a parallelogram arrangement. The parallelogram arrangement permits the slit edges forming a slit to be moved relatively toward and away from one another to vary the slit width, but the edges are always maintained in very accurate parallelism. A unique drive arrangement connects the inlet port slit mechanism and the outlet port slit mechanism so that an increase or decrease in the slit width of one causes a corresponding increase or decrease in the slit width of the other. A further unique drive arrangement permits the diffraction grating to be adjusted at either normal scanning speed or at rapid speed.

3,701,590
METHOD OF IMPROVING COLOR DISCRIMINATION

Harry I. Zeltzer, Manchester by the Sea, Mass., assignor of a fractional part interest to Joseph Zallen, Boston, Mass.

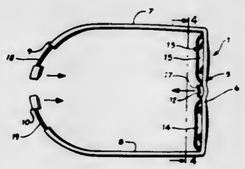
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,584
The portion of the term of the patent subsequent to June 22, 1988, has been disclaimed
Int. Cl. G02c 7/10, 7/04; G02b 1/04
U.S. Cl. 351—39 1 Claim

Color discrimination is improved in color blind persons by applying to one eye only a thin corneal contact lens transmitting light substantially only in the red zone and having light transmission in excess of approximately 40%.

3,701,591
HEAD ENGAGING SPECTACLE STRUCTURE

Max F. Wichers, Main Mall, White Lake Center, 3636 Topeka Blvd., Topeka, Kans. 66611

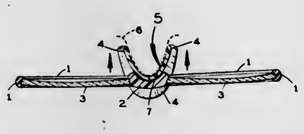
Filed Mar. 29, 1971, Ser. No. 128,927
Int. Cl. G02c 3/00
U.S. Cl. 351—41 6 Claims



A spectacle structure having portions engaging spaced parts of the head of a person to support same in proper position and includes a frame having a front positioning

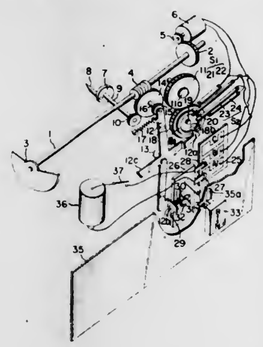
member engageable with a brow of the person and temple members extending rearwardly from the front positioning member and having portions shaped to engage the back portion of the head. The end portions of the temple members engage the head adjacent and below an occipital prominence and at a respective side of the head of a person wearing the spectacle structure to cooperate with the brow engagement of the front member to maintain the spectacle structure in position on the head. Lens means are mounted on the frame and depend therefrom with connectors spaced from the person's nose.

3,701,592
VACUUM SPECTACLE BRIDGE
Jose J. Fernandez, 430 NE. 29th St., Miami, Fla. 33137
Filed Oct. 1, 1971, Ser. No. 185,786
Int. Cl. G02c *5/02*
U.S. Cl. 351—130 **3 Claims**



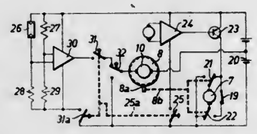
A pair of spectacles provided with a nose bridge specifically contoured to conform to the upper nose of the wearer with a central portion of the bridge made from plastic or metal alloy material including a U shaped cavity forming a vacuum around a portion of the nose for retaining the spectacles in their normal position. The spectacles are attached by modest pressure at the bridge without the deforming permanent pressure of the pincenez type bridge and without the well known ear bows. This invention also includes the process of manufacture for custom fitting to each wearer.

3,701,593
SAFETY DEVICE FOR A NORMAL-TO-REVERSE ROTATION CHANGE-OVER SWITCH IN A MOVIE CAMERA
Hideyo Nozawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Sept. 10, 1971, Ser. No. 179,417
Claims priority, application Japan, Sept. 30, 1970, 45/96,787
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **4 Claims**



A safety device for preventing a normal-to-reverse change-over switch from being inadvertently changed over to a position causing reverse rotation of a prime mover in a movie camera. The change-over switch is in a motor circuit of the movie camera and includes a slide provided with a lock member which is spring-biased for pivoting in one direction. A clutch member is pivotally mounted to the body of the camera so as to be selectively displaceable into a first position for transmitting the rotation of the prime mover to a film take-up mechanism and into a second position for transmitting the rotation of the prime mover to a film length determining means. The clutch member has one end thereof adapted to engage one end of the lock member when the clutch member is in its first position, preventing the change-over switch from changing into a position causing reverse rotation of said prime mover.

3,701,594
AUTOMATIC LAP DISSOLVE FOR MOTION PICTURE CAMERAS
Heinz Keiner, Oberndorf, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed Nov. 2, 1970, Ser. No. 85,950
Claims priority, application Germany, Aug. 17, 1970, P 20 40 727.6
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **2 Claims**



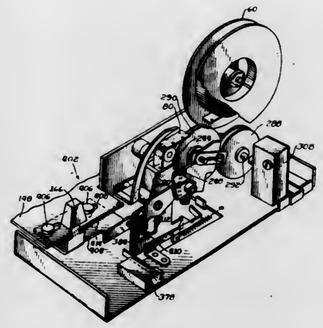
Automatic lap dissolve mechanisms are provided in motion picture cameras having an electronic film drive, a diaphragm with leaves positioned in the light path of the camera, current controlled diaphragm control means coupled to the diaphragm and photo resistor means positioned in the light path from an object to be photographed and connected to the diaphragm control means for varying the magnitude of current in the diaphragm control means and thereby varying the opening of the diaphragm in accordance with the intensity of light in the light path from the object to be photographed. The automatic lap dissolve mechanism includes:

(a) two electrical contacts actuated by the diaphragm leaves moving into their closed position to effect a reversal of the polarity of the camera motor;
(b) switching means arranged in the circuit of the camera motor; and
(c) a timer which is actuated at the beginning of the camera motor reversal of polarity and operates the switching means after a predetermined period of time has elapsed to interrupt the current flow to the camera motor.

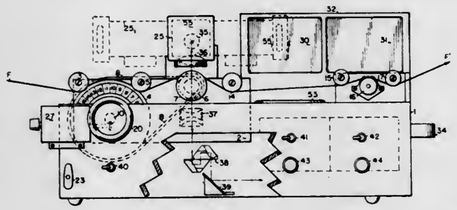
3,701,595
MOTION PICTURE PROJECTOR
Jack W. Thomsen, La Grange Park, Arthur E. Nupnau, Chicago, Raymond W. H. Kim, Morton Grove, and Jaroslav Cherniavskyj, Skokie, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Original application Nov. 19, 1968, Ser. No. 777,018, now Patent No. 3,635,548. Divided and this application Jan. 28, 1971, Ser. No. 110,618
Int. Cl. G03b *1/58*
U.S. Cl. 352—124 **7 Claims**

A motion picture projector with means for automatically threading a filmstrip through the gate to a take-up reel and for rewinding the filmstrip after projection. A

roller acts against the outside convolution of the film upon the reel during the threading phase and upon the reel itself during the rewinding phase. A solenoid through its plunger and a linkage shifts the roller from its inactive positions to its active positions during threading and rewind. The solenoid coil is slidably mounted so that when energized it activates another linkage to open up the film path during threading and rewind.



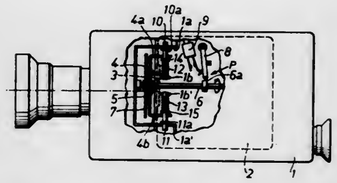
3,701,596
PORTABLE DUAL MOTION PICTURE VIEWER
Benjamin T. Hill, Jr., 6842 Ranchito Ave., Van Nuys, Calif. 91405
Filed Jan. 11, 1971, Ser. No. 105,293
Int. Cl. G03b *21/00*
U.S. Cl. 352—129 **6 Claims**



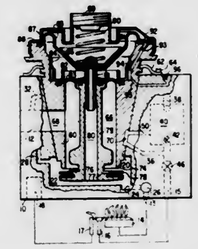
A portable motion picture viewer for simultaneously and synchronously reproducing both sight and sound from typically two motion picture films. A dual lamphouse is pivoted to allow the films to be easily threaded. The films are aligned to allow easy editing. Manual advance of both films or reproduction at sound speed are available. Typically each film is exhibited on separate side-by-side screens, but the views may be super-imposed to accomplish dissolves. A modification provides three-dimensional viewing. A third sound track may be mixed-in.

3,701,597
MOVIE CAMERA WITH CAM-DRIVEN GRIPPER
Heinz Keiner, Oberndorf, and Wilhelm Schafer, Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed Mar. 6, 1972, Ser. No. 231,926
Claims priority, application Germany, Mar. 11, 1971, P 21 11 703.3
Int. Cl. G03b *1/22*
U.S. Cl. 352—194 **3 Claims**

In a movie camera the cam-driven gripper is under the influence of spring means for eliminating the play in the gearing between the driving motor and the gripper. The spring means comprise a first and a second spring. Both springs are arranged symmetrically to the gripper path. The first spring acts on the gripper only at the end of the down stroke and the second spring acts on the gripper only at the end of the up stroke. It is thereby achieved that the gripper is not under a spring load in its rest position and during most of its travel, and still the advantage of the spring influence, i.e. a good picture steadiness is maintained.



3,701,598
FLOW CONTROL DEVICE WITH PRESSURE REGULATION
Jay R. Katchka, 3535 Ely Ave., Long Beach, Calif. 90808
Filed June 26, 1968, Ser. No. 740,150
Int. Cl. F23d *5/16*
U.S. Cl. 137—599 **12 Claims**

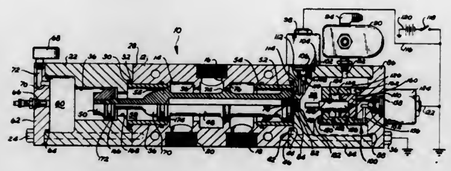


A flow control device having a manually operable valve movable between a plurality of controlling positions for delivering fluid flows to main and pilot outlets; a pressure regulator assembly downstream of the manually operable valve regulates the pressure of the pilot flow and the manually operable valve selectively permits the pilot flow to bypass the pressure regulator as well as the main flow. Upstream of the pilot flow outlet the pilot flow line is provided with restricting orifices to prevent an excess of a non-regulated pilot flow and to dampen a regulated pilot flow as is necessary during initial compensation of the regulator.

3,701,599
FAST ACTING VALVE
William K. Stewart, Ontario, Calif., assignor to Seco-Dyn, Inc.
Filed Nov. 25, 1970, Ser. No. 92,134
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 **11 Claims**

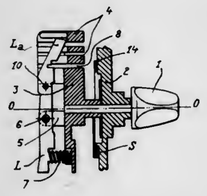
A fast acting spool type valve having an inlet port, a normally open outlet port and a normally closed outlet port. Low pressure is applied to continuously urge the spool assembly to a forward position in communication with a high pressure chamber to an extent insufficient to overcome the low pressure force. A solenoid valve.

aided by an electromechanical booster, shifts the spool to apply the high pressure against a portion of the spool sufficient to overcome the forward pressure and accelerate



the spool to its rear position. A constant-volume dampening chamber effects smooth deceleration of the spool assembly.

3,701,600
COIN SIZE TESTER PREVENTING FRAUDULENT OPERATION OF PARKING METERS
Francis Jacques Guillot, "Le Cirius," bloc D, Les Constellations de Fabron, 56 Avenue Joseph Jourdan, 06200 Nice, France
Filed Dec. 11, 1970, Ser. No. 97,246
Claims priority, application France, Jan. 23, 1970, 7002356
Int. Cl. G07f *5/02*
U.S. Cl. 194—74 **4 Claims**



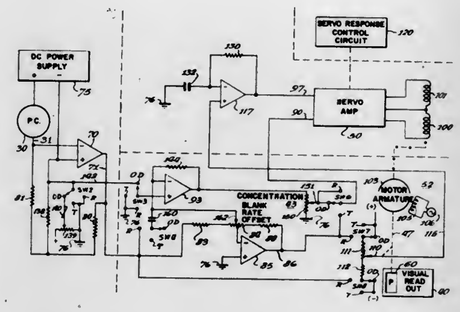
A parking meter preventing the fraudulent use of false coins such as iron washers, the thickness of which is less than that of the coins required for operation of the latter; to this end, the lever normally controlled by the coin upon abutment against a stop at the end of its travel so as to operate the mechanism of the meter, is provided in registry with the coin-receiving slot with a notch the breadth of which is smaller than the thickness of the required coins; thus, the notch does not prevent normal operation of the lever by said required coin, but is engaged by the thinner false coin the shifting of which by the stop cannot therefore act on the lever.

ERRATUM

For Class 356—246 see:
Patent No. 3,701,620

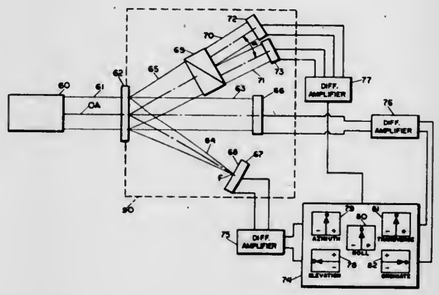
3,701,601
PHOTOMETRIC READ OUT AND ANALYZING SYSTEM
William H. Plumpe, Jr., and Theodore E. Weichselbaum, St. Louis, Mo., assignors to Sherwood Medical Industries, Inc.
Continuation of application Ser. No. 710,161, Mar. 4, 1968. This application Sept. 17, 1970, Ser. No. 73,269
Int. Cl. G01j *3/42, 3/46*; G06f *15/20*
U.S. Cl. 356—96 **16 Claims**

A servomechanism system coupled to a spectrophotometer provides direct read out of the transmittance of a solution being analyzed. Circuits selectively connectable in the system convert transmittance into the nonlinear functions of optical density, concentration and rate of



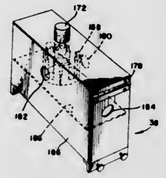
chemical reaction, which are also directly read out by the servomechanism. Additional circuits provide noise suppression and cause the servomechanism to be responsive to the time duration an input is off null.

3,701,602
MULTI-AXIS OPTICAL ALIGNMENT SYSTEM INCLUDING A SPATIAL FILTER
Michael T. Bergin, Whitestone, and Charles S. Bartolotta, Nesconset, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 30, 1971, Ser. No. 138,892
Int. Cl. G01b *11/27*
U.S. Cl. 356—152 **11 Claims**



A multi-axis optical alignment system using a holographic lens. A spatially filtered, collimated beam of light is divided by the holographic lens into three distinct paths; an undiffracted beam, a converging beam, and a diverging beam. The undiffracted beam intercepts a position-sensitive photodetector to monitor linear displacement and the converging beam is focused on a similar detector to monitor angular displacement. The diverging beam is directed through a Wollaston Prism and detector arrangement to monitor displacement about the roll axis. Two methods for making the holographic lens used in the system are disclosed.

3,701,603
COMBINATION TEACHING AID AND MODULAR INSTRUMENTAL ANALYSIS SYSTEM AND COMPONENTS THEREFOR
Roy E. Boostrom, 898 Chatham Ave., Elmhurst, Ill. 60126; Arman Mandell, 6126 N. Harding Ave., Chicago, Ill. 60624; and Lewis Malter, 7741 W. Davis St., Morton Grove, Ill. 60053
Original application Dec. 29, 1967, Ser. No. 694,517, now Patent No. 3,554,648, dated Jan. 12, 1971. Divided and this application Nov. 3, 1969, Ser. No. 871,249
Int. Cl. G01n *1/10*; G01j *3/48*
U.S. Cl. 356—246 **10 Claims**



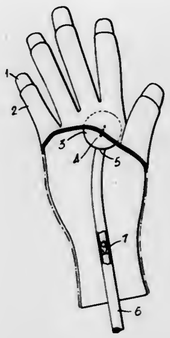
A combination teaching aid and modular instrumental analysis system in which a plurality of modules are provided, each having a separate function, and in which the different modules are adapted to be placed together in different combinations to provide different optical analysis instruments. The modules include a light source for providing light, a detector module for receiving light which has been exposed to a sample compartment module which receives one or more samples to be analyzed, and may include display means in the form of a meter or the like for reading the output of the detector module. The combination may also include a monochromator unit for providing substantially monochromatic light, and a filter module which is adapted to contain one or more filters through which a light beam may be passed for obtaining a beam of desired frequency.

Different arrangements of the various modules will produce a spectrophotometer, a filter photometer, or a nephelometer. The described module units are arranged so that at least some of them may be disposed on a base and optically aligned by means of combination adjusting and clamping means, so that the units may be thereafter moved, or replaced as desired without affecting the alignment thereof. The described units are constructed and arranged so that all the significant operational and functional properties of each module may be directly observed by the student. Therefore, each module is adapted to perform a minimum number of functions, and the modular concept and the construction features are used as a teaching aid used to emphasize the relation between various systems of optical instrumental analysis.

The filter compartment module and the sample compartment module include holder means for holding light filters or sample units, and the holder unit is constructed so as to facilitate interchange of sample holders and filter units, and to be adapted for use without change to perform different functions in different instrumental combinations.

3,701,604
APPLICATOR FOR LIQUIDS
John Holroyd, Oxford, England, assignor to National Research Development Corporation, London, England
Filed May 26, 1970, Ser. No. 40,554
Int. Cl. A46b *5/04*
U.S. Cl. 401—7 **12 Claims**

A device for the manual application of a liquid over a surface comprising a glove having absorbent material on the outside and front thereof and adapted for connection to passage means for supplying a controlled flow of liquid from a reservoir to the absorbent material beneath the



outer surface thereof, the absorbent material being such that the liquid is expressible through the material on to its outer surface by manual pressure.

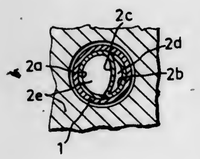
3,701,605
FILING IMPLEMENT
Yoshio Morishima, Osaka, Japan, assignor to Ryoji Shibata, and Zenzaburo Shibata, both of Osaka, Japan
Filed May 3, 1971, Ser. No. 139,450
Claims priority, application Japan, May 6, 1970, 45/44,219
Int. Cl. B42f *3/04*
U.S. Cl. 402—58 **8 Claims**



A filing implement for use in filing a pile of mounts in an album or the like, enabling to increase the number of the piled mounts by consecutively increasing elements of said filing implement inserted through each penetration bore provided in the piled mounts of the album, a coupling element, an extension element, and a base element which last comes undermost being detachably coupled together and inserted through each penetration bore of the filed mounts from the bottom thereof, a filing element being fitted from the top of said penetration bore thereby detachably coupling said filing element with the extension element, said pile of mounts being retentively secured between a flange provided on the base element

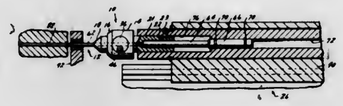
and a flange provided on the filing element respectively, each of said elements being integrally and retentively coupled together by fitting a lock pin into the filing element, the length of the filing implement being increased, if necessary, by coupling a plurality of extension elements alone among all the component elements of the filing implement thereby enabling to increase the number of the piled mounts.

3,701,606
DRILL, PARTICULARLY A SO-CALLED DEEP HOLE DRILL OR GUN BORING DRILL
Anders Richard Bogsten, Jarnagatan 6A, Sodertalje, Sweden
Filed June 29, 1970, Ser. No. 50,716
Claims priority, application Sweden, July 15, 1969, 9,975/69; Sept. 1, 1969, 12,068/69
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **11 Claims**



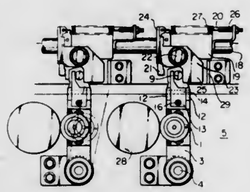
A drill, particularly a gun boring drill, comprising a drill tube provided with two internal axial flow channels separated by a partition wall having its side edges located at two spaced positions along the inner circumference of the drill tube, one channel being intended for supply of flushing medium and the other channel for discharge of borings together with flushing medium.

3,701,607
DEEP HOLE DRILLING TOOL
Robert C. Johnson, 9 Flower Court, Lakeside Park, Ky.
Continuation-in-part of application Ser. No. 783,644, Dec. 13, 1968. This application Oct. 23, 1970, Ser. No. 83,329
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **2 Claims**



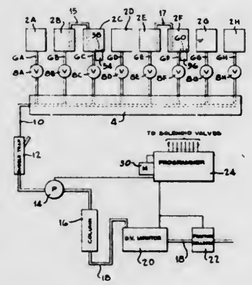
A deep hole drilling tool which includes a cutting tip brazed to an elongated shank, a second shank integrally formed upon the first and having a greater diameter thereover, and a third shank integrally formed upon the second shank and having a greater diameter therefrom. A pair of O-rings are spacedly mounted in their respectively annular grooves about the periphery of the third shank whereby upon insertion of the third shank in a spindle mounted in a stock of a tooling machine, seepage of coolant and lubricating oil about the tool's shank is prevented and all such oils flows within the tube's bore to the cutting tip itself.

3,701,608
TEXTILE-FORWARDING UNITS WITH PRESSURE ROLLERS OPERABLE JOINTLY AND INDIVIDUALLY
Sadao Sanjo, 1–2750 Oaza-minamiyoshida; and Hiroshi Yamada, 2901 Oaza-minamiyoshida, both of Matsuyamashi, Japan; and Yoshio Gono, 4–10 Oaza-monzen, Iwakuni-shi, Japan
Filed Apr. 13, 1970, Ser. No. 27,681
Claims priority, application Japan, Apr. 19, 1969, 44/30,446
Int. Cl. B65h *17/22*
U.S. Cl. 226—155 **4 Claims**



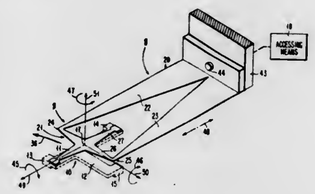
Apparatus for engaging or disengaging driven pressure rollers with rotating driving rollers provided in a plurality of the yarn-forwarding units. The former rollers are engaged or disengaged with the latter rollers by the movement of a single common shaft in all units and in case of an accident one or more driven rollers are engaged or disengaged individually with the driving rollers without the movement of the shaft.

3,701,609
APPARATUS FOR AUTOMATICALLY ADDING PRESELECTED PATTERNS OF ELUENT SOLUTIONS TO A CHROMATOGRAPHIC COLUMN AND MONITORING AND COLLECTING ELUTED FRACTIONS
David G. Bailey, 789 St. Davids Ave., Warminster, Pa. 18974
Filed May 13, 1971, Ser. No. 142,952
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **2 Claims**



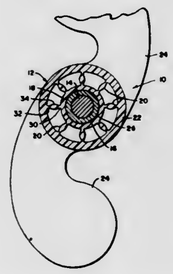
An apparatus for automatically adding eluent solution to a chromatographic column according to a preselected stepwise or gradient addition pattern or combinations of stepwise and gradient addition patterns and for automatically controlling the operation of accessory and eluate monitoring and collecting equipment. A programmer is electrically connected by a number of circuits and relays to a programmer motor, solenoid valves, a pump and accessory and monitoring equipment and is preset to make the proper contacts necessary to accomplish any desired sequence of eluent additions and eluate collections and to monitor the eluates by a variety of instruments.

3,701,610
SUSPENSION SYSTEM FOR HOLDING A SLIDER
Walter S. Buslik, San Jose, and Albert S. Chou, Monte Sereno, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,976
Int. Cl. G11b *5/60*
U.S. Cl. 248—204 **12 Claims**



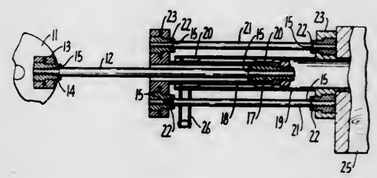
This invention teaches an assembly for holding a transducer-carrying T-shaped slider in compliance with a moving magnetic medium. The assembly comprises a suspension system including a flexure supporting the slider for allowing the slider to have freedom in pitch and roll and maintaining the slider in a constant yaw position, and a flexible supporting structure joined to the flexure. The supporting structure becomes stiff in the direction of access under load.

3,701,611
MARINE PROPELLER WITH RESILIENT HUB STRUCTURE
Ralph E. Lambrecht, Lake Bluff, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Dec. 21, 1970, Ser. No. 99,882
Int. Cl. B63h *21/26*
U.S. Cl. 416—134 **6 Claims**



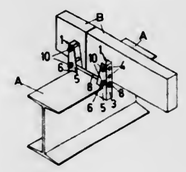
A marine propeller and hub structure for absorbing sudden rotational loads which may be applied to the propeller when it strikes a submerged object. The hub structure for the propeller includes an inner hub, a plurality of ribs extending radially outwardly from the inner hub and an outer hub joined to the inner hub by the radially extending ribs. The propeller assembly is completed by a plurality of blades extending outwardly from the outer hub. The ribs of the hub structure are flexible enough to provide a resilient cushioning effect in the propeller hub structure when a blade strikes an underwater obstacle.

3,701,612
ROTOR HUB AND BLADE ATTACHMENTS
Gerald L. Breuner, 50 Melody Lane, Orinda, Calif. 94563
Original application Feb. 3, 1970, Ser. No. 8,232. Divided and this application July 7, 1971, Ser. No. 160,483
Int. Cl. B64c *27/38*
U.S. Cl. 416—141 **5 Claims**



This invention relates to an improved attachment for a rotor blade in a rotating wing aircraft having a semi-rigid rotor system. More particularly, the invention provides a low cost, lightweight, low maintenance rotor system embodying all of the desired characteristics of the semi-rigid hub but with a minimum chance of fatigue or failure.

3,701,613
BUILDING FRAME BRACKETS
Arthur Raymond Turner, 69 Church Road, Taradale, Napier, New Zealand
Filed Sept. 14, 1970, Ser. No. 72,005
Claims priority, application New Zealand, Sept. 22, 1969, 157,287
Int. Cl. F16b *2/06*
U.S. Cl. 287—189.36 C **1 Claim**

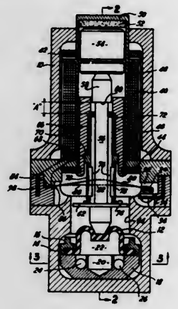


A bracket for use in connecting or supporting metal and other members, the bracket characterised by being of a vertical elongated nature, having a lower open slot adapted for mounting on one side of one beam, a hole passing through the bracket above and in line with the depth of the open slot, and at least one further hole passing through the bracket at right angles to the axis of the first hole, whereby in conjunction with a similar opposite-handed bracket, each bracket may be mounted by its open slot on one edge of a first member, a bolt passed through the lower holes of the two brackets and secured by a nut screwed onto the bolt for clamping the brackets to the first member, at least a further bolt passed the further hole of each bracket and through a hole in a second member or members and secured by a nut to connect or link the members together.

3,701,614
ELECTROMAGNETIC PUMP

Charles Guidicelli, Bagnolet, France, assignor to Societe Anonyme STOP

Filed May 4, 1971, Ser. No. 140,038
Claims priority, application France, May 5, 1970, 7016322
Int. Cl. F04b *43/04*
U.S. Cl. 417—413 3 Claims

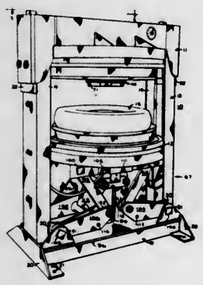


Reciprocating electromagnetic pump comprising a pump element the elastically returned diaphragm of which displaces fluid between a suction valve and a delivery valve, an electromagnet core connected by a rod to the said diaphragm to deform the latter when the electromagnet is energized and a switch tripped by the rod at the end of the operative stroke of the said core to interrupt the energization of the electromagnet and permit the elastic return of the said diaphragm into a rest position. The rod controls the displacements of an element associated with the switch and is connected elastically to the casing of the pump so as to be able to occupy, by sudden tripping, two stable positions respectively in the periods of end of forward stroke and end of return stroke of the said rod, the said element being disposed so that it can produce the open condition of the switch in one position and the closed condition in the other position.

3,701,615
TIRE VULCANIZING MACHINE

David John Johnson, Amherst, Nova Scotia, Canada, assignor to M. Holmes Manufacturing & Equipment Ltd., Halifax, Nova Scotia, Canada

Filed Apr. 6, 1971, Ser. No. 131,603
Claims priority, application Canada, May 29, 1970, 84,110
Int. Cl. B29h *5/04*
U.S. Cl. 425—23 11 Claims

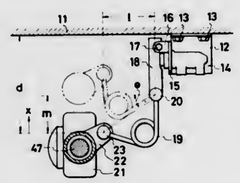


A device for treating pneumatic tires includes a pair of relatively moveable mold sections and a means to open, close and lock the sections in a closed position. A tire-inflating mechanism is also included comprising a flexible tire insert and a pair of relatively moveable plates, the plates and insert definings a sealed chamber, said plates having means to release air trapped between the plates and the tire-inflating means.

3,701,616
BRAKING FORCE REGULATING ASSEMBLY

Shinji Kawai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi, Japan

Filed July 6, 1970, Ser. No. 52,247
Claims priority, application Japan, July 14, 1969, 44/55,938
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R 12 Claims

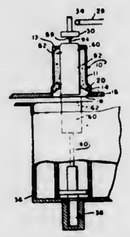


A braking force regulating assembly for use on the vehicle to vary the hydraulic pressure dependent upon the wheel load, comprising a brake force controlling valve and a member responsive to the wheel load which is arranged to cooperate with the controlling valve in such manner as to increase a responsive load on said wheel load responsive means in dependence upon increases of the wheel load and to decrease said responsive load after said wheel load has attained a predetermined value.

3,701,617
LOCK ASSEMBLY FOR CONNECTING A VIBRATING CORE OF A CONCRETE PIPE MAKING MACHINE

Gerald R. Crawford and Joseph F. Wenther, Sioux City, Iowa, assignors to Concrete Pipe Machinery Company, Sioux City, Iowa

Filed Jan. 12, 1971, Ser. No. 105,877
Int. Cl. B28b *21/28*
U.S. Cl. 425—186 11 Claims



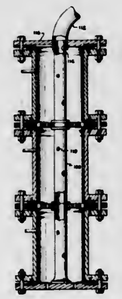
A pipe forming apparatus comprising a pipe form and a platform for supporting the pipe form with means for inserting cementitious materials into the interior of the pipe form and a rotating packerhead for distributing the material in the form, and a powered main lift mechanism for raising the packerhead after it has distributed and

formed the pipe, and a non-rotating vibratory core adapted to be inserted through the bottom of the pipe form and means for detachably engaging said core with said rotating packerhead, and an upwardly movable guide system for said vibratory core, with said detachably engaging means including a hydraulic system and an upwardly movable sleeve member adapted to encompass a biased locking collar to maintain said packerhead and core in interengaged relationship until said hydraulic system is moved downwardly.

3,701,618
PERISTALTIC EXTRUSION PRESS

Donald G. Wall, Rte. 1, Box 161–C, Indian Head, Md. 20640, and Kenneth N. Temkin, 5805 Fisher Road, Apt. 201, Oxon Hill, Md. 20031

Filed Jan. 27, 1971, Ser. No. 110,225
Int. Cl. B28b *17/00*
U.S. Cl. 425—192 3 Claims



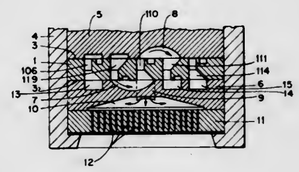
An extrusion press which forces plastic material through a die plate by means of one or more peristaltic pumps each having a hydraulically actuated tubular elastomeric diaphragm as the pumping element. The peristaltic pumps are used either singly or in series to feed material directly through a die plate, or are connected in groups of series-connected pumps to feed a plenum chamber containing the die plate. Pump lining sleeves facilitate cleaning and protect the diaphragms against corrosion. Perforated plates positioned between series-connected pumps facilitate straining and mixing of the plastic material.

3,701,619
MIXING APPARATUS

Jacques W. J. Appeldoorn and Robert Sluijters, Arnhem, Netherlands, assignors to American Enka Corporation, Enka, N.C.

Filed Oct. 23, 1970, Ser. No. 83,402
Claims priority, application Netherlands, Nov. 14, 1969, 6917131
Int. Cl. B01f *15/02*
U.S. Cl. 425—198 3 Claims

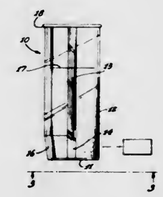
An improved mixer with no moving parts is obtained by arranging mixing elements in side-by-side relationship. This apparatus, which is especially suitable for mixing one or more viscous liquids, includes a first body with substantially parallel end faces which contains a plurality of mixing elements with inlets and outlets arranged adjacent to each other in a common plane, the inlets and outlets of the adjacent mixing elements being located in the same face; a second body engaging one end face of the first body and having a passage for receiving one or more viscous liquids and directing the liquid to the inlet of an initial mixing element and channels for connecting the inlets and outlets of adjacent mixing elements in the end face in a pattern; and a third body engaging the other face of the first body and having channels for connecting the inlets and outlets of adjacent mixing elements in the other end face in a pattern, and a passage for discharging the viscous liquids from the exit of a final mixing element, the pattern of the channels being such as to guide the viscous liquids sequentially through each of the mixing elements to repeatedly divide and double the liquids whereby intensive mixing is obtained. This mixer is particularly suitable for use in an apparatus for melt spinning synthetic yarn wherein the first, second and third bodies are arranged so that the viscous liquids from the exit of a final element are directed to a spinneret plate.



3,701,620
SAMPLE SCATTERING CELL FOR A PHOTOMETER

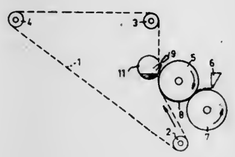
Richard M. Berkman, Santa Barbara, and Peter B. Schoefer, Goleta, Calif., assignors to Science Spectrum, Inc., Santa Barbara, Calif.

Filed Oct. 21, 1971, Ser. No. 191,374
Int. Cl. G01n *1/10, 21/00*
U.S. Cl. 356—246 8 Claims



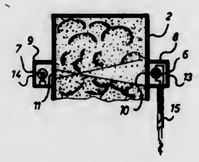
A sample cell holds a liquid or a particle suspension to be illuminated within a photometer. The photometer measures the intensity of the scattered light light at one or more angular positions about a point defined by the intersection of the axis of illumination and acceptance cone of the detector. The detector usually rotates along an arc in a plane about this point thereby defining a scattering plane. To minimize the effect on the measurement of secondary reflections within the cell, the side wall of the sample cell opposite the arc along which the detector rotates includes an oblique portion sloping outwardly toward the top of the sample cell. Because the side wall is oblique, any light reflected by the side wall will be directed up and out of the plane of the acceptance cone in which the scattering measurement is made.

3,701,621
APPARATUS FOR PRODUCING FIBRES OF THERMOPLASTIC MATERIAL
Per Henrik Sixten Berglund, Floda, Peter Robert Fanto-Kurtos, Vastra Frolunda, and Nils Albert Uno Mattson, Goteborg, Sweden, assignors to Continental Linoleum-Union-Betriebs AG, Zurich, Switzerland
Filed Nov. 23, 1970, Ser. No. 91,632
Claims priority, application Sweden, Nov. 24, 1969, 16,124/69
Int. Cl. B29c *17/14*
U.S. Cl. 425—115 **11 Claims**



Thermoplastic fibres are produced by heating a layer of thermoplastic material by passing it between a heated roll and a web or belt. This passage simultaneously shreds the fibres, which are thereafter cooled and collected.

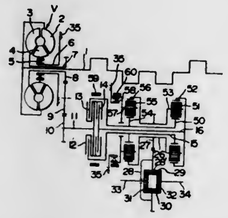
3,701,622
EXCESS SMOKE ELIMINATING SYSTEM FOR BOILERS
Viateur Ducasse, 2041 Wurtele St., Montreal, Quebec, Canada
Filed Nov. 23, 1970, Ser. No. 92,050
Claims priority, application Canada, July 20, 1970, 088,643
Int. Cl. F23n *5/08*
U.S. Cl. 431—76 **10 Claims**



A system to detect excess smoke in the smoke stack of an oil-fired industrial boiler and to automatically reduce the oil supply to the burner of the boiler while allowing said burner to continue to operate, thus eliminating excess smoke which would otherwise be discharged through the smoke stack.

CHEMICAL

3,701,623
AUTOMATIC SPEED CHANGE DEVICE FOR VEHICLES
Yoichi Mori, Nagayuki Marumo, Noburu Fukazawa, and Koichi Ohie, Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Original application July 18, 1967, Ser. No. 654,231, now Patent No. 3,489,037, dated Jan. 13, 1970. Divided and this application May 2, 1969, Ser. No. 861,541
Claims priority, application Japan, Sept. 27, 1966, 41/63,386
Int. Cl. F16h *37/08, 37/10*
U.S. Cl. 74—695 **5 Claims**



A speed change device for vehicles comprising a torque converter connected to an engine crankshaft, a clutch means, a planetary gear assembly means selectively connectable to said torque converter through said clutch means, a brake and one-way brake means selectively engageable with said planetary gear assembly means, an output gear located at a point corresponding to the longitudinal middle point of said crankshaft, wherein axes of said clutch means, said planetary gear assembly means, said brake and one-way brake means, and said output gear are in alignment with a common axis which is parallel with the axis of said crankshaft.

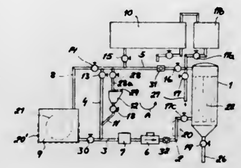
3,701,624
DYEING COTTON AND PAPER WITH BIS(ARYLAZO OR SULFOARYLAZO)-J-ACID UREA REACTION MIXTURE AND COMPOSITION THEREFOR
Richard C. Franklin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Oct. 3, 1968, Ser. No. 764,966, now Patent No. 3,600,376. Divided and this application Feb. 1, 1971, Ser. No. 111,604
Int. Cl. C09b *35/26*; D06p *1/04*; D21h *1/46*
U.S. Cl. 8—7 **2 Claims**

Direct bis(arylazo- and sulfoarylazo)-J-acid urea dyestuffs, useful for dyeing cellulosic materials, their preparation by a process which comprises coupling an aryl or sulfoaryl diazonium compound to J-acid urea in a neutral to alkaline aqueous medium to which is added a lithium base selected from the hydroxide, bicarbonate and carbonate, and stable, uniform, aqueous, dye pastes of said dyes.

3,701,625
PROCESS FOR THE CHEMICAL TREATMENT OF TEXTILE GOODS
Johannes Helmut Sieber, Aystetten, Germany, assignor to Bowe, Bohler & Weber KG Maschinenfabrik, Augsburg, Germany
Filed Apr. 28, 1969, Ser. No. 819,893
Claims priority, application Austria, Apr. 26, 1968, A 4,085/68
Int. Cl. C09b *67/00*; D06p *1/68*; D06l *1/04*
U.S. Cl. 8—94 **4 Claims**

A process for the chemical treatment of textile goods, e.g. the dyeing, dressing or finishing of textile fibers, yarn, thread or fabric, wherein the chemical-treatment agent is slightly soluble in an organic solvent, especially perchlorethylene and trichloroethylene. The slightly soluble chemical-treatment agent is introduced into a circulating stream of the solvent together with a filter-aid powder which is collected together with particles of the agent upon a porous wall before the liquid reaches the textile goods. As the chemical agent is depleted from the liquid contacting the goods, its recycling through the layer of treatment

agent adsorbed upon the filter powder releases additional treatment agent to the solvent by dissolving therein. Consequently, undissolved particles of the treatment agent cannot accumulate on the fiber of other textile goods to cause blotching or irregular treatment.



3,701,626
PROCESS FOR RENDERING CELLULOSICS WATER- AND OIL-REPELLENT
Samuel E. Ellzey, Jr., 6335 Dwyer Road; and William J. Connick, Jr., 4936 Louisa Drive, both of New Orleans, La. 70126; and Wilson A. Reeves, 715 Marguerite Road; and George L. Drake, Jr., 700 Sadie Ave., both of Metairie, La. 70003
No Drawing. Original application Dec. 9, 1969, Ser. No. 883,624, now Patent No. 3,655,413, dated Apr. 11, 1972. Divided and this application Dec. 23, 1970, Ser. No. 101,131
Int. Cl. D06m *13/28, 13/44, 13/34*
U.S. Cl. 8—115.5 **1 Claim**

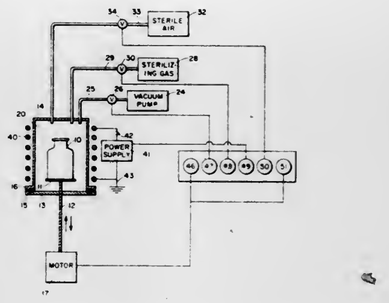
The reaction product of tetrakis(hydroxymethyl) phosphonium salts and primary 1,1-dihydroperfluoroalkylamines, when applied from aqueous emulsions, renders cellulosic materials repellent to oil and water and increases their resistance to staining by oily materials.

3,701,627
PROCESS FOR THE CHEMICAL CLEANING OF TEXTILES
Werner Grunewalder, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie G.m.b.H., Holthausen, Germany
No Drawing. Filed Jan. 27, 1971, Ser. No. 110,345
Claims priority, application Germany, Jan. 30, 1970, P 20 04 232.4
Int. Cl. D06l *1/00*
U.S. Cl. 8—142 **4 Claims**

A process for the chemical cleaning of textiles which comprises treating soiled textiles with a clear water-containing organic solvent mixture consisting essentially of (A) from 20% to 40% by volume of a halogenated hydrocarbon having from 1 to 2 carbon atoms, (B) from 55% to 70% by volume of a monohydric alcohol having from 2 to 5 carbon atoms selected from the group consisting of alkanols and ethylene glycol monoalkyl ethers, and (C) from 5% to 12% by volume of water and recovering cleaned textiles.

3,701,628
TREATMENT OF SURFACE WITH LOW-PRESSURE PLASMAS
Leland E. Ashman, Belmont, and Wilson P. Menashi, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
Filed Feb. 25, 1970, Ser. No. 14,083
Int. Cl. A61l *1/00*
U.S. Cl. 21—54 R **6 Claims**

Method and apparatus for sterilizing surfaces which cannot tolerate intensive heating or which, if heated, must be brought up to temperature and then cooled over an extended period of time. Sterilization is accomplished by exposing the surface to a low-pressure plasma of a sterilizing gas such as chlorine, bromine or iodine.



3,701,629
METHOD FOR THE PREPARATION OF FAUJASITE-TYPE ZEOLITES
Dale D. Maness, Austin, Tex., assignor to Esso Research and Engineering Company
No Drawing. Filed Aug. 4, 1971, Ser. No. 169,069
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 **6 Claims**

Faujasite-type zeolites having high SiO_2/Al_2O_3 ratios are prepared by the acidification of the reaction mixture intermediate an initial holding period and a second holding period. Suitable sources of silica include sodium silicate, silica gel, and silicic acid. Crystalline aluminosilicate zeolites, such as clinoptilolite, may be employed as sources of both silica and alumina. A promoter, such as sodium chloride, is optionally added to the reaction mixture.

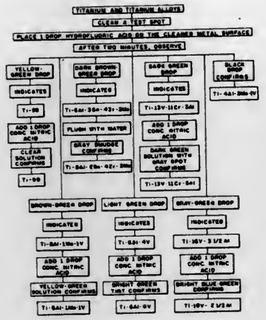
3,701,630
PROCESS IMPROVEMENT IN SYNTHESIS OF OXYCHLORINE TRIFLUORIDE
Charles B. Lindahl, Woodland Hills, Carl J. Schack, Chatsworth, and Donald Pilipovich, Agoura, Calif., assignors to North American Rockwell Corporation
No Drawing. Filed Feb. 9, 1970, Ser. No. 14,820
Int. Cl. C01b *7/24, 11/02, 11/24*
U.S. Cl. 23—203 **10 Claims**

In a process for preparing oxychlorine trifluoride by the reaction of chlorine nitrate and fluorine, the improvement wherein the reaction is initiated in the presence of a covalent fluoride which is capable of oxidizing chlorine nitrate. Oxychlorine trifluoride is useful as an oxidizer.

3,701,631
NONDESTRUCTIVE SPOT TEST METHOD FOR TITANIUM AND TITANIUM ALLOYS
Maywood L. Wilson, Tabb, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Apr. 21, 1971, Ser. No. 136,085
Int. Cl. G01n *33/20*
U.S. Cl. 23—230 R **18 Claims**

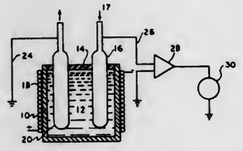
A method for spot test identification of titanium and various titanium alloys commonly used in aerospace

applications. The spot test identification involves color codes obtained when a drop of concentrated hydrofluoric



acid and a drop of concentrated nitric acid are placed on the surface to be tested.

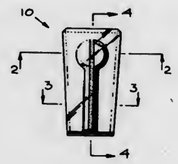
3,701,632
VAPOR PHASE DETECTORS
James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to California Institute of Technology, Pasadena, Calif.
Filed June 1, 1970, Ser. No. 41,905
Claims priority, application Great Britain, Mar. 5, 1970, 12,003/70
Int. Cl. G01n *27/04, 7/10*
U.S. Cl. 23—232 E **9 Claims**



The change in potential difference, resistance or current flow between electrodes in an electrolytic cell is utilized to detect pressure change, absolute hydrogen pressure and pressure of other gases present in hydrogen carrier gas, particularly those which are reactive with the electrodes. At least one of the electrodes is formed of a material selectively permeable to hydrogen, preferably comprising palladium. The cell may be simultaneously utilized for separation and regeneration of hydrogen carrier gas and may be conveniently integrated and combined with a gas chromatographic column on a small size chip containing recesses for the cell and column components formed by conventional etching-masking techniques.

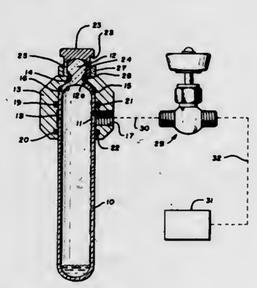
3,701,633
DISPOSABLE COLORIMETRIC pH INDICATOR AND SAMPLING DEVICE FOR SWIMMING POOL WATER AND THE LIKE
Ward B. Davis, Glendale, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.
Continuation-in-part of application Ser. No. 800,887, Feb. 20, 1969, now Patent No. 3,620,676. This application Feb. 10, 1971, Ser. No. 114,188
Int. Cl. G01n *31/22, 33/18*
U.S. Cl. 23—253 TP **6 Claims**

A disposable pH colorimetric indicator and sampling device particularly for swimming pool water is formed by embossing a synthetic plastic sheet with a syringe-like cavity and closing the cavity by adhering a plane synthetic plastic sheet over the cavity, the two sheets being either heat-sealed or adhesively joined together on the margins around the cavity, the cavity having a tubular portion one end of which opens at the edge of the adhered sheets, and the other end of the cavity being enlarged to



form a finger-compressible enlargement. An interior coating of a pH colorimetric indicator composition reactive with the water to be tested is provided, the liquid being drawn into the tubular cavity by first compressing the enlargement, and releasing the pressure to draw in a water sample to dissolve and react with the indicator coating. The preferred indicator composition comprises a sodium salt of phenol red, an antichlor reagent and a binder.

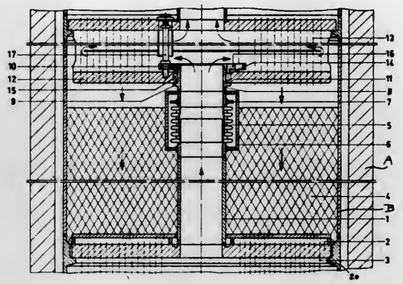
3,701,634
REACTION VESSEL ASSEMBLY
Raymond D. Worden, Houston, Tex., assignor to Ruska Instrument Corporation, Houston, Tex.
Filed May 10, 1971, Ser. No. 141,599
Int. Cl. B01l *3/14*
U.S. Cl. 23—259 **1 Claim**



A reaction vessel assembly including a reaction vessel and cap for readily viewing the reaction of two or more compounds in which pressure developed within the vessel does not tend to separate the vessel and cap thus permitting them to be held together by a simple latch mechanism with provisions for one or more compounds to be added after the cap has been secured to the reaction vessel.

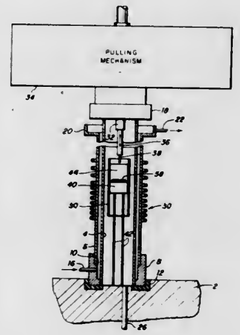
3,701,635
PIPE CONNECTOR FOR THE INTERIOR OF REACTION VESSELS
Herbert Staarmann and Hans-Gunter Brieke, Dortmund, and Dirk Gerdes, Kamen, Germany, assignors to Friedrich Uhde G.m.b.H., Dortmund, Germany
Filed Nov. 3, 1970, Ser. No. 86,524
Claims priority, application Germany, Nov. 18, 1969, P 19 57 826.8
Int. Cl. B01j *9/04*
U.S. Cl. 23—289 **4 Claims**

In a reaction vessel, for example an ammonia synthesis converter, a detachable pipe connector for the reaction sections that are filled with catalyst, and a number of intermediate heat exchangers, and which ensures



at all times, despite thermal expansion, the necessary gas-tightness, but at the same time affords accessibility to the catalyst beds.

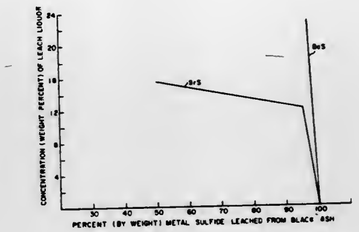
3,701,636
CRYSTAL GROWING APPARATUS
Harold E. La Belle, Jr., Quincy, and William T. Little, Millis, Mass., assignors to Tyco Laboratories, Inc.
Filed Sept. 23, 1970, Ser. No. 74,306
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **12 Claims**



Apparatus for use in growing large size monocrystalline plates of materials such as alumina. The apparatus consists of a forming member for which the plate is grown and heat susceptor means shaped so as to provide a temperature pattern symmetrical with the edge configuration of the plate.

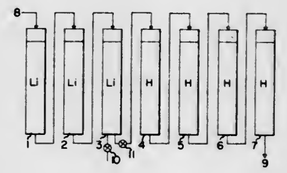
3,701,637
PROCESS FOR LEACHING STRONTIUM SULFIDE BLACK ASH
Jose L. Arnaud, Modesto, Calif., assignor to FMC Corporation, New York, N.Y.
Filed June 30, 1970, Ser. No. 51,113
Int. Cl. C01f *11/04, 11/10;* B01d *11/02*
U.S. Cl. 23—312 R **3 Claims**

An improved process is described for leaching strontium sulfide black ash with an aqueous solvent in which at least 90% of the strontium sulfide values are extracted by an aqueous solvent, in a plurality of leaching stages, by treating the black ash in at least one leaching stage



with an aqueous solvent so as to obtain an extract having no more than 12% by weight of strontium sulfide.

3,701,638
LITHIUM ISOTOPE SEPARATION
Zenji Hagiwara, Sendai-shi, Japan, assignor to Nippon Rensui Kabushiki Kaisha (also known as Japan Water Treatment Services Company), Tokyo-to, Japan
Filed Sept. 26, 1968, Ser. No. 762,766
Claims priority, application Japan, Oct. 2, 1967, 42/63,207
Int. Cl. B01d *11/04;* C01d *1/32*
U.S. Cl. 23—312 **2 Claims**



A solution containing lithium isotope ions is treated with at least one cation exchanger to cause adsorption of the lithium ions on the cation exchanger, which is then treated with an eluent in the form of a solution of a water-soluble compound of a metal other than lithium in a water or a polar solvent to cause elution of the lithium ions.

3,701,639
SOFT-SOLDERABLE MOLYBDENUM AND TUNGSTEN SURFACES CONTAINING DIFFUSED TIN
Newell C. Cook, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Original application June 23, 1969, Ser. No. 835,737, now Patent No. 3,567,598, dated Mar. 2, 1971. Divided and this application Aug. 21, 1970, Ser. No. 66,070
Int. Cl. B32b *15/00, 15/04*
U.S. Cl. 29—195 **4 Claims**

Molybdenum and tungsten can be tinided in a fused salt bath. The surfaces so produced are readily wet by molten soft solder and, therefore, such surfaces can be readily soft-soldered by conventional soft-soldering techniques to themselves or to other objects which can be soft-soldered.

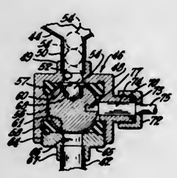
3,701,640
COMPOSITION
Charles A. Lease, Chicago, Seymour H. Patinkin, Skokie, and Frank J. Chloupek, South Holland, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Continuation of application Ser. No. 44,612, June 8, 1970, now abandoned. This application Nov. 5, 1971, Ser. No. 196,241
Int. Cl. C10l *1/22*
U.S. Cl. 44—66 20 Claims

A hydrocarbon gasoline composition containing, as an additive, a minor amount, sufficient to improve the detergency of said gasoline, of the reaction product of:
(A) a monocarboxylic acid or derivative thereof;
(B) a polyamine having at least three nitrogen atoms, at least two primary and at least one secondary;
(C) an alkyl-substituted phenol; and
(D) formaldehyde;
A preferred reaction product contains 4,7,10-tris(2-hydroxy-5-alkyl) benzyltetraethylenepentamine-1,13 palmitic acid diamide.

3,701,641
STABILIZED DISTILLATE HYDROCARBON FUEL OIL COMPOSITIONS AND ADDITIVES THEREFOR
Marvin S. Rakow and Robert J. Konig, East Brunswick, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.
No Drawing. Filed Aug. 29, 1969, Ser. No. 854,266
Int. Cl. C10l *1/22*
U.S. Cl. 44—73 6 Claims

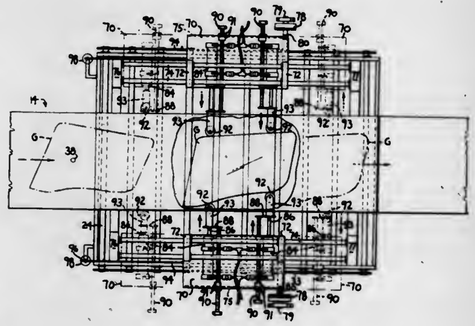
A stabilized distillate hydrocarbon fuel oil composition comprising a major proportion of a distillate hydrocarbon fuel and a minor proportion of a stabilizing additive comprised of (a) a polyamine having 2 to about 6 amino groups and containing about 24 to 50 carbons, (b) N,N'-disalicylidine-1,2-propylenediamine, and (c) a cyclohexylamine. The additives of the invention are useful in stabilizing distillate hydrocarbon fuels such as No. 2 fuel oils, diesel fuels, and jet fuels.

3,701,642
APPARATUS FOR MAKING CONTINUOUS GLASS FIBERS
Ralph M. Stream, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Continuation of abandoned application Ser. No. 799,848, Feb. 17, 1969. This application May 21, 1971, Ser. No. 145,963
Int. Cl. C03b *37/02*
U.S. Cl. 65—11 W 8 Claims



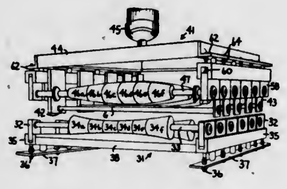
This invention pertains to a pressurized glass fiber stream feeder having a rotary supply means for supplying glass marbles to a melting compartment of the feeder. The rotary supply means has yieldable members within the housing to prevent escape of pressurized air from the feeder.

3,701,643
MOVING GLASS LOCATING DEVICES
Robert G. Frank, Tarentum, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.
Filed May 11, 1971, Ser. No. 142,268
Int. Cl. C03b *23/02*
U.S. Cl. 65—62 10 Claims



Apparatus for aligning and orienting moving glass sheets immediately prior to their treatment. This invention is especially suitable for use with glass sheets heated while conveyed through a furnace on a roller conveyor where the glass becomes misaligned or misoriented prior to entry into a shaping station. However, the invention is also capable of use with any type of conveyor defining an enclosed conveyor path for said glass sheets where the glass is liable to lose its orientation and/or alignment and must be oriented and/or aligned preparatory to processing.

3,701,644
METHOD AND APPARATUS FOR SHAPING GLASS SHEETS WITH OPPOSED ROLLER SETS
Robert G. Frank, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 18,242, Mar. 10, 1970, and Ser. No. 95,015, Dec. 4, 1970. This application Nov. 3, 1971, Ser. No. 195,152
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 36 Claims



Shaping a succession of continuously moving discrete, heat-softened glass sheets by momentarily engaging the opposite surfaces of each sheet in succession at longitudinally spaced longitudinal increments between opposed rolls of complementary shape as each sheet moves continuously through a press bending station and disengaging the sheets after momentary pressurized engagement after the sheet has been shaped but before any longitudinally spaced increment is subjected to pressurized engagement between more than two pairs of adjacent rolls.

3,701,645
CROP CULTURE WITH 1H-1,2,4-TRIAZOLES
Henry H. Scott, 2672 W. Newell Ave., Walnut Creek, Calif. 94595
No Drawing. Continuation-in-part of application Ser. No. 767,830, Oct. 15, 1968. This application Sept. 25, 1970, Ser. No. 75,770
Int. Cl. C05g *3/08*
U.S. Cl. 71—1 14 Claims

The present invention relates to crop culture and is particularly concerned with practices for conserving soil nitrogen and for supplying the requirements for plant nutrition. These practices involve the employment, as active agent, of such triazole compound as 1H-1,2,4-triazole, as well as other triazole compounds, which are substituted in the 1-position by alkylcarboxylate, alkylthiocarboxylate, carboxamide or thiocarboxamide groups. Useful compositions employing such compounds are also disclosed. Typical compositions comprise a reduced nitrogen fertilizer and a triazole compound.

3,701,646
COMBATING WEEDS WITH LOWER ALKYL 3-PHENYLCARBAMOYLOXYTHIOLCARBANILATES
Ralph P. Neighbors, Olathe, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,857
Int. Cl. A01n *9/12*
U.S. Cl. 71—100 1 Claim

Weeds are combated in both soybeans and small grains by post-emergent application of lower alkyl 3-phenylcarbamoyloxythiolcarbanilates, for example, S-ethyl 3-(N'-m-tolylcarbamoyloxy)thiolcarbanilate.

3,701,647
PROCESS FOR OBTAINING NICKEL CONCENTRATES FROM NICKEL OXIDE ORES
Hiroshi Yasui, Tokyo, and Mitsuo Takahashi, Toda, Japan, assignors to Nippon Mining Co., Ltd.
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,303
Claims priority, application Japan, Feb. 17, 1969, 44/11,020
Int. Cl. C22b *1/08, 23/06*
U.S. Cl. 75—3 10 Claims

The nickel grade of nickel oxide ores containing silicic acid and magnesia is improved by process of pulverizing the ore, and then calcining and roasting the pulverized ore at a temperature above 750° C. so that the mineral structure of the ore is transformed into the forsterite or enstatite form. The thus treated ore is then subjected to a segregation reaction whereby the nickel is separated in the form of ferronickel particles, and then the ore is concentrated by magnetic or flotation separation in the usual manner, whereby a high grade nickel concentrate is obtained.

3,701,648
RECOVERY OF COPPER FROM COPPER ORE
Carl T. Ashby, James W. Berry, and Archie J. Deutschman, Jr., Tucson, Ariz., assignors to Owens-Illinois, Inc.
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,340
Int. Cl. C22b *15/14*
U.S. Cl. 75—72 11 Claims

Copper metal is advantageously obtained from copper sulfide ores, without the production of air-polluting SO_2, by contacting the ore either simultaneously or step-wise with hydrogen and water vapor at a temperature from about 700° C., preferably above about 750° C., to above the melting point of the ore.

3,701,649
PROCESS FOR THE PRODUCTION OF HIGH MELTING METALS
Elis Kjell Ake Svanstrom and Lars Henry Ramqvist, Nynashamn, Sweden, assignors to Rederiakliebolaget Nordstjernan, Nynashamn, Sweden
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,746
Claims priority, application Sweden, Apr. 9, 1968, 4,765/68; Feb. 7, 1969, 1,661/69
Int. Cl. C22b *57/00*
U.S. Cl. 75—84.5 6 Claims

Pure tungsten, niobium, tantalum, zirconium, hafnium, uranium and other higher melting metals are prepared by reduction of an ore thereof to produce an alloy having the metal in solid solution. This alloy has a melting point being substantially lower than that of the pure metal. This alloy is crushed and the contained metals are transformed to halides with a halogen. The halides are separated thereafter and the major part reduced to metal. Alternatively tungsten is produced by treating the alloy obtained with a suitable agent dissolving the alloying agents. This tungsten is particularly suitable for producing tungsten carbonyl.

3,701,650
COPPER, NICKEL, COBALT AND IRON SEPARATION PROCESS
Abraham J. van der Zeeuw, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 29, 1970, Ser. No. 50,920
Claims priority, application Great Britain, June 30, 1969, 32,905/69
Int. Cl. C22b *15/12, 23/04*
U.S. Cl. 75—101 BE 4 Claims

Copper, nickel and cobalt values are selectively recovered from aqueous solutions also contining iron values by the process of (1) extracting from the solution the copper, nickel, cobalt and iron values employing certain secondary and tertiary carboxylic acids as extraction agent and (2) selectively and sequentially reducing the copper value, the nickel value and finally the cobalt value present in the organic extract to sequentially isolable metallic precipitates under controlled hydrogen reduction conditions.

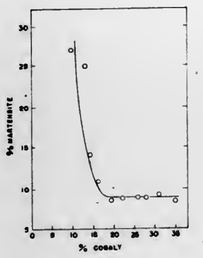
3,701,651
PROCESS FOR PRODUCTION OF MERCURY
Albert G. W. Hack, Denver, and John B. Hamilton, Boulder, Colo., assignors to Al Hack & Associates, Inc., Denver, Colo.
Continuation-in-part of application Ser. No. 707,707, Feb. 23, 1968. This application Feb. 6, 1970, Ser. No. 9,214
Int. Cl. C22b *43/00*
U.S. Cl. 75—101 R 4 Claims

Metallic mercury is produced by leaching mercury ore with an aqueous alkaline sulfide solution while simultaneously precipitating the mercury by the addition of a metallic precipitant, such as aluminum metal, directly to the leaching tanks, or by electrodeposition directly from the leaching tanks.

3,701,652
VALVE SEAT INSERTS
Delmar O. Stanley, Mentor, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 19, 1971, Ser. No. 107,667
Int. Cl. C22c *39/08*
U.S. Cl. 75—126 A 5 Claims

A valve seat insert having improved mechanical properties and being substantially nickel free, the insert hav-

ing a composition containing from 1.00 to 2.25% carbon, a maximum of 0.75% manganese, a maximum of



1.00% silicon, from 28 to 32% chromium, from 18 to 30% cobalt, from 2 to 8% tungsten, with the balance substantially iron except for incidental impurities.

3,701,653
STAINLESS STEEL
James L. Schanck, Beaver Falls, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.
No Drawing. Filed Dec. 3, 1970, Ser. No. 94,994
Int. Cl. C22c *39/20*
U.S. Cl. 75—124 **4 Claims**

An age hardenable stainless steel having a wholly austenitic structure at hot working temperatures for efficiency of processing and a wholly martenitic structure at the temperature of fabrication and use for effectiveness of product.

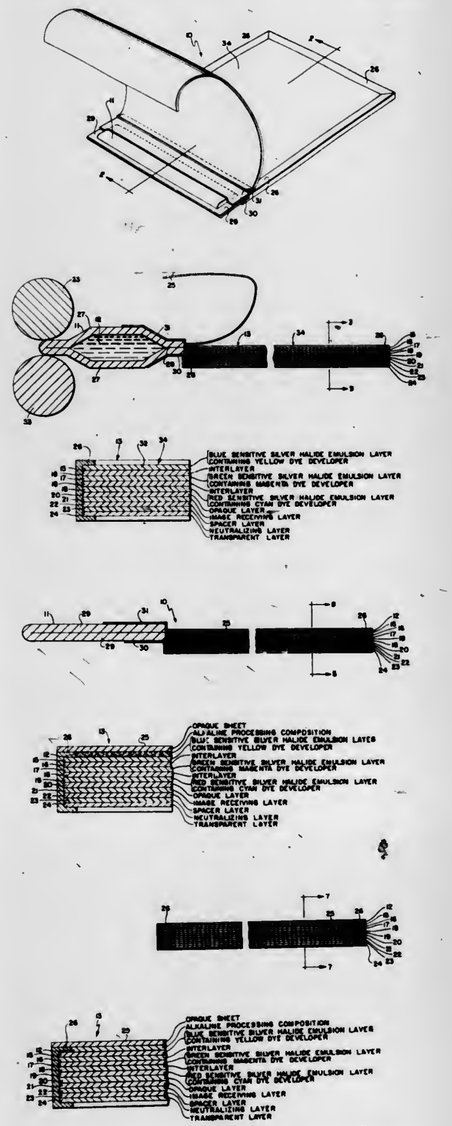
3,701,654
SILVER-BASE ALLOY FOR MAKING ELECTRICAL CONTACTS
Teuvo J. Santala, Attleboro, and Hans G. Hirsbrunner, South Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 3, 1967, Ser. No. 607,034
Int. Cl. C22c *5/00, 31/04*
U.S. Cl. 75—173 **2 Claims**

Improved alloys of cadmium oxide and silver are produced by incorporating therein between 0.001% and 5.0% by weight of sodium, beryllium or palladium as an additive. Electrical contacts formed from such alloys exhibit less arc-erosion and contact-sticking with lower contact-resistance than do electrical contacts formed from cadmium oxide-silver alloys having cobalt incorporated therein as an additive.

3,701,655
COLUMBIUM BASE ALLOY
John J. Rausch, Antioch, and Ray J. Van Thyne, Oak Lawn, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
Continuation-in-part of application Ser. No. 755,658, Aug. 27, 1968, which is a continuation-in-part of application Ser. No. 665,510, Sept. 5, 1967. This application Dec. 18, 1970, Ser. No. 99,523
Int. Cl. C23c *11/14, 27/00*
U.S. Cl. 75—174 **1 Claim**

An alloy useful in making nitrided wear resistant materials consisting essentially of 20% tungsten, 30% titanium, balance columbium.

3,701,656
PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR COLOR DIFFUSION TRANSFER
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation of application Ser. No. 39,666, May 22, 1970, which is a continuation-in-part of abandoned application Ser. No. 815,585, Apr. 14, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 728,535, May 13, 1968. This application July 2, 1971, Ser. No. 159,207
Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—3 **28 Claims**



The present invention relates to a composite photographic diffusion transfer color process film unit which comprises a photosensitive laminate including a dimensionally stable transparent support carrying a dyeable polymeric layer, a processing composition permeable opaque layer, and a photosensitive silver halide layer having associated therewith a dye transfer image-forming material; a dimensionally stable sheet adapted to be superposed substantially coextensive the surface of the laminate opposite the transparent support, and a processing composition adapted to be spread on the surface of the laminate opposite the transparent support and between the laminate and superposed sheet; and means for reducing the pH of said processing composition from a first pH at which said dye image-forming material is soluble and diffusible to a second pH at which said material is substantially non-diffusible; and to specified color diffusion transfer processes employing such film unit.

3,701,657
PROCESSING OF PRESENSITIZED PHOTOLITHOGRAPHIC PRINTING PLATES
Brian Joseph Moore and Leonard James Watkinson, Yorkshire, England, assignors to W. H. Howson Limited, Yorkshire, England
No Drawing. Filed May 8, 1968, Ser. No. 727,656
Claims priority, application Great Britain, May 18, 1967, 23,249/67
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **5 Claims**

This disclosure relates to developer solutions suitable for developing exposed presensitized photolithographic printing plates, which solutions comprise a solvent for the areas of presensitized layer to be removed from the printing plate and a surface active agent, the volumetric ratio of solvent to surface active agent being considerably higher than conventionally used, whereby the efficacy of the developer solution is considerably enhanced.

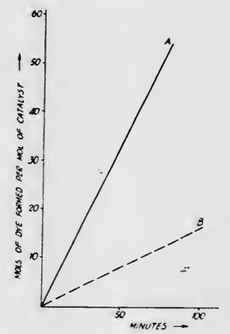
3,701,658
PROCESS FOR APPLYING PHOSPHOR PARTICLES TO A DIELECTRIC LAYER OF A GASEOUS DISCHARGE DEVICE
Robert N. Clark, Mason, Mich., assignor to Owens-Illinois Inc.
No Drawing. Filed Dec. 24, 1970, Ser. No. 101,433
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **20 Claims**

There is disclosed a process for embedding phosphor particles in the surface of at least one dielectric member to be assembled in a multiple gaseous discharge display/memory panel such that the phosphor particles are partially exposed to the gaseous medium of the assembled panel and are capable of being excited by radiation from the gaseous discharges of such assembled panel. Any suitable luminescent phosphor which is compatible with the dielectric may be used; however, photoluminescent phosphors are highly preferred. One embodiment comprises partially embedding the phosphor particles by means of a photosensitive material.

3,701,659
PHOTOLITHOGRAPHIC MASKS OF SEMICONDUCTOR MATERIAL
Ven Y. Doo, Poughkeepsie, Joseph Regh, Wappingers Falls, and David K. Seto, Lagrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 1, 1970, Ser. No. 42,344
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **3 Claims**

A photolithographic mask comprising a substrate of quartz or glass and a pattern-defining layer of a semiconductor material such as silicon. The pattern is defined in the semiconductor material by etching of the semiconductor, involving displacement of the semiconductor in selected areas with a metal such as copper. In this way, a high resolution mask is obtainable having the added feature of being partially transparent.

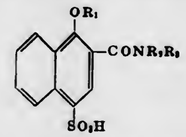
3,701,660
PHOTOSENSITIVE ELEMENT CONTAINING PHOTOLABILE COBALT OR IRON COMPLEX AND THE USE THEREOF IN COLOR DEVELOPMENT
John Macdonald Pratt, Whitegate, and Brian Ronald David Whitear, Ilford, England, assignors to Imperial Chemical Industries Limited, London, and Ilford Limited, Ilford, England
Filed Oct. 21, 1970, Ser. No. 82,724
Int. Cl. G03c *5/24*; G03 *1/48*
U.S. Cl. 96—48 R **4 Claims**



This application describes a process for the production of a photographic image which comprises subjecting to light exposure a layer comprising a photolabile cobalt or iron complex of a specified formula and treating the exposed layer with compounds which, when one of them is oxidised, will react to form a coloured or black compound.

3,701,661
COLOR DEVELOPING WITH A 4-SULFO NAPHTHAMIDE BASE
Boris Peter Brand, Bramhall, England, assignor to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,927
Claims priority, application Great Britain, Nov. 26, 1969, 57,799/69
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **7 Claims**

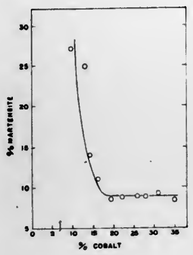
This application describes a compound of the formula:



wherein R_1 is selected from an alkyl, aralkyl, alkaryl, acyl and a substituted acyl group and R_2 and R_3 are each selected from a hydrogen atom and an alkyl, aralkyl, alkaryl, aryl and a substituted aryl group.

Compounds of this formula are of use in colour photography. When the compounds are present during the colour development of silver halide photographic material they cause an increase in density of the resultant dye image.

ing a composition containing from 1.00 to 2.25% carbon, a maximum of 0.75% manganese, a maximum of



1.00% silicon, from 28 to 32% chromium, from 18 to 30% cobalt, from 2 to 8% tungsten, with the balance substantially iron except for incidental impurities.

3,701,653
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Int. Cl. C22c *39/20*
U.S. Cl. 75—124 **4 Claims**

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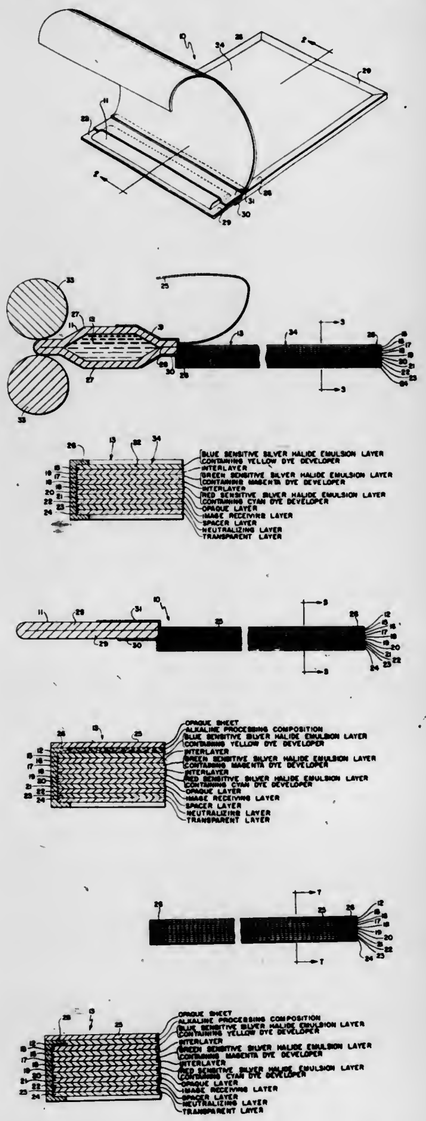
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Filed Jan. 3, 1967, Ser. No. 607,034
Int. Cl. C22c *5/00, 31/04*
U.S. Cl. 75—173 **2 Claims**

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Int. Cl. C23c *11/14, 27/00*
U.S. Cl. 75—174 **1 Claim**

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Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—3 **28 Claims**



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3,701,657
PROCESSING OF PRESENSITIZED PHOTOLITHOGRAPHIC PRINTING PLATES
Brian Joseph Moore and Leonard James Watkinson, Yorkshire, England, assignors to W. H. Howson Limited, Yorkshire, England
No Drawing. Filed May 8, 1968, Ser. No. 727,656
Claims priority, application Great Britain, May 18, 1967, 23,249/67
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **5 Claims**

This disclosure relates to developer solutions suitable for developing exposed presensitized photolithographic printing plates, which solutions comprise a solvent for the areas of presensitized layer to be removed from the printing plate and a surface active agent, the volumetric ratio of solvent to surface active agent being considerably higher than conventionally used, whereby the efficacy of the developer solution is considerably enhanced.

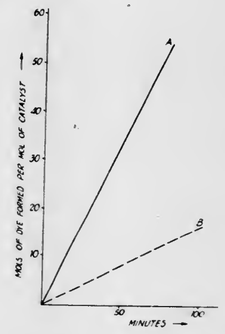
3,701,658
PROCESS FOR APPLYING PHOSPHOR PARTICLES TO A DIELECTRIC LAYER OF A GASEOUS DISCHARGE DEVICE
Robert N. Clark, Mason, Mich., assignor to Owens-Illinois Inc.
No Drawing. Filed Dec. 24, 1970, Ser. No. 101,433
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **20 Claims**

There is disclosed a process for embedding phosphor particles in the surface of at least one dielectric member to be assembled in a multiple gaseous discharge display/memory panel such that the phosphor particles are partially exposed to the gaseous medium of the assembled panel and are capable of being excited by radiation from the gaseous discharges of such assembled panel. Any suitable luminescent phosphor which is compatible with the dielectric may be used; however, photoluminescent phosphors are highly preferred. One embodiment comprises partially embedding the phosphor particles by means of a photosensitive material.

3,701,659
PHOTOLITHOGRAPHIC MASKS OF SEMICONDUCTOR MATERIAL
Ven Y. Doo, Poughkeepsie, Joseph Regh, Wappingers Falls, and David K. Seto, Lagrangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 1, 1970, Ser. No. 42,344
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **3 Claims**

A photolithographic mask comprising a substrate of quartz or glass and a pattern-defining layer of a semiconductor material such as silicon. The pattern is defined in the semiconductor material by etching of the semiconductor, involving displacement of the semiconductor in selected areas with a metal such as copper. In this way, a high resolution mask is obtainable having the added feature of being partially transparent.

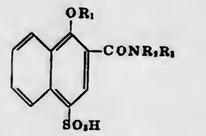
3,701,660
PHOTOSENSITIVE ELEMENT CONTAINING PHOTOLABILE COBALT OR IRON COMPLEX AND THE USE THEREOF IN COLOR DEVELOPMENT
John Macdonald Pratt, Whitegate, and Brian Ronald David Whitear, Ilford, England, assignors to Imperial Chemical Industries Limited, London, and Ilford Limited, Ilford, England
Filed Oct. 21, 1970, Ser. No. 82,724
Int. Cl. G03c *5/24*; G03 *1/48*
U.S. Cl. 96—48 R **4 Claims**



This application describes a process for the production of a photographic image which comprises subjecting to light exposure a layer comprising a photolabile cobalt or iron complex of a specified formula and treating the exposed layer with compounds which, when one of them is oxidised, will react to form a coloured or black compound.

3,701,661
COLOR DEVELOPING WITH A 4-SULFO NAPHTHAMIDE BASE
Boris Peter Brand, Bramhall, England, assignor to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,927
Claims priority, application Great Britain, Nov. 26, 1969, 57,799/69
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **7 Claims**

This application describes a compound of the formula:



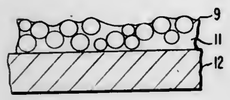
wherein R_1 is selected from an alkyl, aralkyl, alkaryl, acyl and a substituted acyl group and R_2 and R_3 are each selected from a hydrogen atom and an alkyl, aralkyl, alkaryl, aryl and a substituted aryl group.

Compounds of this formula are of use in colour photography. When the compounds are present during the colour development of silver halide photographic material they cause an increase in density of the resultant dye image.

3,701,662
COLOR PHOTOGRAPHIC PROCESS USING A BLEACH-FIX SOLUTION CONTAINING A METAL COMPLEX OF A SELENIUM COMPOUND
Enzo Piccotti, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Jan. 12, 1971, Ser. No. 105,956
Claims priority, application Great Britain, Jan. 13, 1970, 1,617/70
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 9 Claims

This application describes a colour development process for colour silver halide photographic material, wherein the material after development is treated with a bleach-fix solution which contains a mild oxidising agent, a silver halide solvent and as a bleach-fix accelerator a water-soluble complex consisting of a specified metal and selenourea, a specified N-alkyl substituted selenourea or a specified selenosemicarbazide.

3,701,663
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Asaji Kondo, Hiroshi Fujisaki, Shizuo Miyano, and Kenichiro Yazawa, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 3, 1969, Ser. No. 863,645
Claims priority, application Japan, Oct. 4, 1968, 43/72,273
Int. Cl. G03c *1/94*
U.S. Cl. 96—86 16 Claims



This invention relates to a photographic light-sensitive material comprising a highly reflective support with a lustrous surface coated with at least one layer of microcapsules containing a silver halide emulsion.

3,701,664
PROCESS FOR HARDENING LIGHT-SENSITIVE PHOTOGRAPHIC LAYERS CONTAINING GELATINE
Bernhard Piller, Marly-le-Petit, and Karl Seitz, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation of abandoned application Ser. No. 796,570, Feb. 4, 1969. This application May 25, 1971, Ser. No. 146,853
Claims priority, application Switzerland, Feb. 9, 1968, 1,927/68
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 12 Claims

Colorless halogeno pyrimidines and halogeno-1,3,5-triazines containing no free acidic groups are used for hardening light sensitive gelatine layers.

3,701,665
REDUCTION OF SULFUR EXTRACTION FROM POLY(ARYLENE SULFIDE) COATED COOKWARE
Monford D. Grimes and James T. Edmonds, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,017
Int. Cl. A47j *36/04*
U.S. Cl. 99—1 5 Claims

Cookware which is to come in contact with food substances which can extract organic sulfur is coated with a composition comprising poly(arylene sulfide) and 3–30 parts of a fluorocarbon polymer per 100 parts of said poly(arylene sulfide). The resulting coating is highly resistant to extraction of organic sulfur.

3,701,666
PROCESS FOR MAKING AMINO ACID COMPOSITION
Milton Winitz, Palo Alto, Calif., assignor to Morton-Norwich Products, Inc., Chicago, Ill.
No Drawing. Filed Feb. 14, 1968, Ser. No. 705,287
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 29 Claims

A process for making palatable compositions containing all of the essential amino acids necessary for human nutrition. Particular processes are described for making compositions containing combinations of amino acids, carbohydrates and minerals which are palatable to human taste. Processes are also shown for making palatable chemically defined diets for human consumption containing the above plus vitamins and fat as an aqueous emulsion or in dry form.

3,701,667
METHOD FOR PUFFING GELATINIZED RICE GRAINS
Takao Heki, Katsuharu Yasumatsu, and Koshichi Sawada, Osaka-fu, and Yoshiro Funakoshi, Kyoto-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka-shi, Japan
Filed Oct. 1, 1969, Ser. No. 862,672
Int. Cl. A23l *1/18*
U.S. Cl. 99—81 6 Claims

A method for puffing gelatinized rice grains is characterized by subjecting gelatinized rice grains to a hot air stream which slows down as it moves upward in a tower to puff the rice grains. An apparatus for the method is characterized by the provision of a tower whose inner diameter increases gradually toward its upper portion, the inclination angle of its generating line with respect to the axis thereof being in the range of 2.5 to 30 degrees.

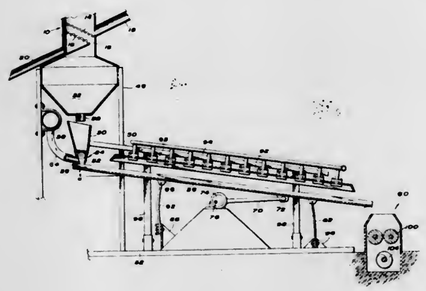
3,701,668
COMPOSITION FOR IMPROVING BREAD MAKING AND TEXTURE
Lewis D. Morse, 133 Snowden Lane, Princeton, N.J. 08540, and Paul A. Hammes, 1886 Lamberts Mill Road, Westfield, N.J. 07090
No Drawing. Filed June 9, 1970, Ser. No. 44,881
Int. Cl. A21d *2/06, 2/10*
U.S. Cl. 99—91 1 Claim

A composition for addition to bread dough to improve the texture of the bread produced therefrom is an aqueous solution of ascorbic acid or its equivalent which is solubilized in a hydrocarbon by the solubilizing action of micelles formed by a surfactant.

3,701,669
EDIBLE FOAM-PRODUCT
Wilhelm Elbertus van der Hoven, The Hague, Netherlands, assignor to Lenderink & Co. N.V., Schiedam, Netherlands
Filed May 20, 1969, Ser. No. 826,210
Claims priority, application Great Britain, May 23, 1968, 24,733/68
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 6 Claims

An edible foam product is prepared by preparing a mixture containing foamable protein, liquid fatty material, and an edible binder on the basis of guar and/or carregenate of potassium and/or sodium and/or calcium carregenate, and foaming the mixture thus obtained.

3,701,670
INFRARED MICRONIZING COOKER
Chardo W. Pierce, Lubbock, Tex., assignor to Chardo Pierce Micronizing Company, Amarillo, Tex.
Continuation-in-part of application Ser. No. 854,693, Sept. 2, 1969, which is a continuation-in-part of application Ser. No. 576,353, Aug. 31, 1966. This application May 6, 1971, Ser. No. 140,834
Int. Cl. A23k; A23l *1/18*
U.S. Cl. 99—235 A 3 Claims



Grain is thoroughly cleaned and fed at a predetermined regulated rate on the high end of a tilted metal vibrating plate. As the grain moves down the plate, it is heated at a very fast rate by infrared radiation. The cooked grain is dropped from the low end of the plate into a rolling mill where the soft grain is rolled into flakes.

3,701,671
MASONRY MATERIALS AND METHOD OF MAKING THE SAME
Helmer L. Blengsli, Old Greenwich, Conn., assignor to Tekology Corporation, Palisades Park, N.J.
No Drawing. Filed July 1, 1970, Ser. No. 51,675
Int. Cl. C04b *31/14*
U.S. Cl. 106—98 5 Claims

A unique mineral found in the subsoil of the Bahama Islands was found to yield high quality masonry products in form of bricks, blocks and tiles when crushed to particle sizes ranging from 8 mesh to dust and reacted with a hydraulic cement and water and molded under pressure of at least 500 p.s.i.

To reduce moisture absorption tendency of the masonry products made from the Bahama minerals, these may in part be substituted with silicon sand or Bahamian dredged sea sand. To increase the green strength of the products, the water of hydration may contain upward of 5 percent of a mineral chloride.

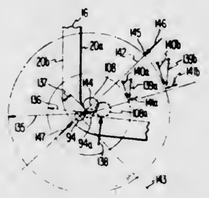
3,701,672
BITUMINOUS FIBROUS BUILDING PRODUCT AND METHOD OF PREPARING SAME
David L. Ruff and Nadeem U. Siddiqui, Torrance, Calif., assignors to Grefco, Inc., Philadelphia, Pa.
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,462
Int. Cl. C08h *13/00, 17/02, 17/66*
U.S. Cl. 106—282 7 Claims

A building product is disclosed comprising expanded perlite and a specifically prepared corrugated boxboard based fiber. The building product exhibits superior properties in the strength and abrasion resistance categories among others.

3,701,673
SIMULTANEOUS CONVERSION AND FUSION OF ELECTROSTATICALLY PRODUCER PRINTING MASTERS
Martin W. Hellar, Novelty, and Michael A. Kiener, Cleveland, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
No Drawing. Filed Jan. 20, 1971, Ser. No. 108,214
Int. Cl. G03g *13/06*
U.S. Cl. 117—17.5 2 Claims

To provide a printing master, by the electrostatic process, a master sheet is charged and selectively discharged and then toned in the conventional manner to produce an image. The toned master is then brought into contact with a heated conversion solution to simultaneously fix the image and convert the master non-image areas from a hydrophilic condition.

3,701,674
APPARATUS AND METHOD FOR APPLYING A BEAD OF SEALING MATERIAL TO A SEALING SURFACE OF A CATHODE-RAY TUBE
Laurence B. Kimbrough, Lititz, Pa., assignor to RCA Corporation
Filed Aug. 12, 1970, Ser. No. 63,134
Int. Cl. B05c *7/00;* B44d *5/00;* C03c *17/00*
U.S. Cl. 117—43 3 Claims



An apparatus including a rotatable support for holding a cathode-ray tube component, for example, a funnel comprising a sealing surface having a closed configuration including radiused corners, an inner border, and an outer border, a means for rotating the support, a sealing-material container having a bottom outlet, a means for tracking the sealing surface with the container along a first path

on the sides of the sealing surface, and a means for tracking the sealing surface with the container along a second path displaced towards the outer border on the corners of the sealing surface. Method includes positioning sealing surface of the cathode-ray tube; for example, a funnel-sealing surface in a horizontal plane, movably positioning a container having a bottom outlet over the sealing surface, rotating the sealing surface about the center of the closed configuration, tracking said rotating sealing surface with the outlet along the first path, approaching the beginning of the corners of the sealing surface gradually moving the outlet from the first path to the second path, tracking the rotating sealing surface with the outlet on each of the corners at the second path, approaching the ending of each of the sealing surface corners gradually moving said outlet from the second path to the first path, and during rotation dispensing a bead of sealing material at a uniform rate on the sealing surface.

3,701,675
PROCESS FOR THE NONELECTROLYTIC TIME METALLIZING OF NONCONDUCTORS

Gottfried Kallrath, Bruhl-Vochem, Helmut Knorre, Hainstadt (Main), Eugen Meyer-Simon, Frankfurt am Main, and Hanns Biegler, Wesseling, Bezirk Cologne, Germany

No Drawing. Application Feb. 4, 1970, Ser. No. 12,888, now Patent No. 3,672,937, which is a continuation of abandoned application Ser. No. 593,736, Nov. 14, 1966. Divided and this application June 24, 1971, Ser. No. 156,569

Claims priority, application Germany, Nov. 12, 1965, D 48,636

Int. Cl. B44d *1/092*; C23c *3/02*

U.S. Cl. 117—47 A **6 Claims**

Improved process for applying adherent metal coatings to nonconductors by the nonelectrolytic deposition of an electric conductor metal layer from an aqueous metal salt solution containing a reducing agent and a metal for catalyzing the deposition of the metal from the salt solution wherein the nonconductor to be metallized has incorporated therein a finely divided filler having functional groups capable of chemically binding the catalytic metal and of imparting the degree of roughness to the nonconductor surface required for the metallization.

3,701,676
PROCESS FOR IMPREGNATING AND SEALING CAST METAL SURFACES

Erich Bader, Hanau am Main, Karl G. Kannenberg, Grossauheim, and Hans-Benno Ricke, Kirchhelm, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, and Buttner-Schilde-Haas AG, Krefeld, Germany

No Drawing. Filed May 20, 1970, Ser. No. 39,146

Claims priority, application Germany, May 22, 1969, P 19 26 126.8

Int. Cl. B44d *1/34*

U.S. Cl. 117—49 **3 Claims**

The surfaces of cast metal articles are impregnated and/or sealed by introducing into the pores of the metal a liquid polymerizable ester of methacrylic acid or acrylic acid or a mixture of both with at least one polyhydric alcohol whereupon the ester is cured in the absence of a polymerization catalyst. The application of the ester is effected upon application of pressure or of a vacuum or by applying, successively, both pressure and a vacuum. The polymerization is effected within the pores of the metal to improve the impermeability of the metal.

3,701,677
METHOD OF AFTER-TREATMENT OF METAL PLATINGS

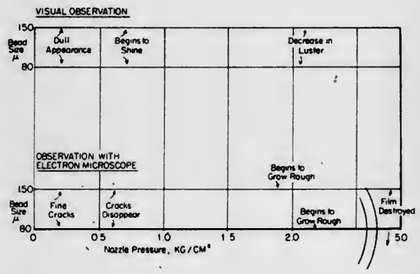
Akira Miyata, Hideyo Okubo, Chikayoshi Tomita, and Akio Suzuki, all % Nippon Kokan Kabushiki Kaisha Technical Institute, 2730 Minamiwataridachio, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of abandoned application Ser. No. 698,416, Jan. 17, 1968. This application Oct. 29, 1970, Ser. No. 85,163

Int. Cl. B24c *1/00*

U.S. Cl. 204—35 R **3 Claims**

Metal articles plated with metals having a tendency of forming cracks in the deposited metals are subjected to



a jet stream of solid particles such as glass beads to eliminate the cracks.

3,701,678
FILM FOR LAYER CHROMATOGRAPHY

Hubert Rossler, Herbert Halpaap, and Knut Klatyk, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,197

Claims priority, application Germany, Feb. 21, 1969, P 19 08 695.4

Int. Cl. B44d *1/14*; B01d *15/08*

U.S. Cl. 117—69 **14 Claims**

Coated films suitable for layer chromatography are obtained by applying the adsorbent coating to a polyester or other flexible plastic film whose surface is covered with a thin coherent coating of polymeric titanium dioxide and/or polymeric zirconium dioxide.

3,701,679
VINYL RESIN AND GRADED ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,540

Int. Cl. C08g *45/04*

U.S. Cl. 117—93.31 **34 Claims**

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated vinyl resin having molecular weight in excess of about 1,000 and, an addition product of a hydroxy-functional graded rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,701,680
POLYESTER FILM WITH PHENOXY RESIN COATING

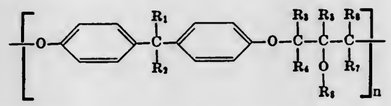
Edward William Lee, Keith Reid Tatchell, Kenneth John Challis, and Kenneth Archibald Cockerton, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,615

Int. Cl. G03c *1/80*

U.S. Cl. 117—138.8 F **2 Claims**

This application describes a process for the production of film base material which comprises treating one side of a film of synthetic linear polyester of highly hydrophobic character with an organic solvent solution of a phenolic adhesion promoting agent, removing the solvent and coating on to the treated side an organic solvent solution of an organic dicarboxylic acid half ester of a phenoxy resin which has the formula:



wherein each of R_1–R_7 is a hydrogen atom or a lower alkyl or cyclohexyl group, R_8 is a hydrogen atom or represents the acyl residue of a half ester of an organic dicarboxylic acid, n is at least 50, and from 10 to 95% of the R_8 groups are a said acyl residue.

3,701,681
MICROPOROUS COATINGS FOR TEXTILE FABRICS FROM CEMENTS OF POLYURETHANE IN DIMETHYLFORMAMIDE ADJUSTED TO pH RANGE 3 TO 6

Walter T. Murphy, 1091 Taft Ave., Cuyahoga Falls, Ohio 44223, and Archie B. Japs, 2884 Morewood Road, Akron, Ohio 44313

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,819

Int. Cl. B44d *1/09*; B32b *27/40*

U.S. Cl. 117—161 KP **2 Claims**

Process for forming a microporous coating of linear polyurethane on a textile substrate.

High cloud point, linear polyurethane cements in dimethylformamide containing a pyrogenic silica thixotropic viscosity improver exhibit improved states of viscosity stability when the pH, or apparent pH, of dimethylformamide plus silica is controlled in the range pH 3 to pH 6.

3,701,682
THIN FILM DEPOSITION SYSTEM

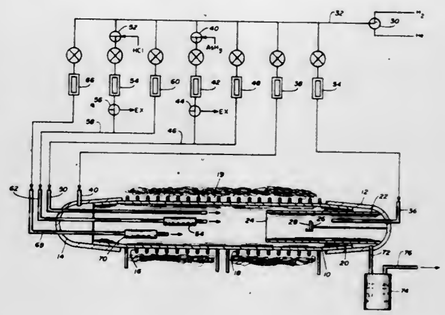
William W. Gartman and James G. Evans, Plano, and Harold A. Allen, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 2, 1970, Ser. No. 52,030

Int. Cl. B01j *17/30*

U.S. Cl. 117—201 **12 Claims**

A method and apparatus for chemical vapor phase deposition of semiconductor materials on a semiconductor substrate provides the capability for depositing continuous uniform films of semiconductor material less than 1 micron thick. A semiconductor substrate onto which a thin film is to be deposited is positioned and located in a zone of no flow or stagnation in a reactor enclosure. Gaseous reactants are continuously supplied to the reactor and are continuously withdrawn from the reactor along with by-products of the deposition reaction. The reactants contact the substrate by moving through the area of stagnation not by macroscopic vapor flow but by molecular diffusion from the area of flow through the stagnant area to the semiconductor substrate. The area of stagnation can also be provided with a backwash or flushing means which provides a positive mechanism for beginning and stopping diffusion into the stagnant



area, thus creating a deposition period of very definite length.

3,701,683
MANUFACTURE OF HIGH VOLTAGE INSULATED ELECTRIC CABLES

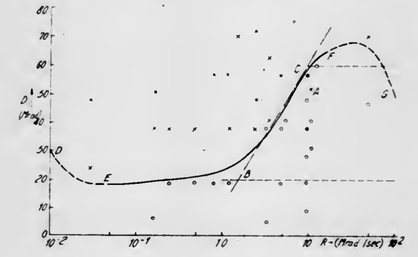
Graham Boyce Wills, London, and Frank Stanley Walker, Harpenden, England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Jan. 13, 1971, Ser. No. 106,086

Claims priority, application Great Britain, Jan. 16, 1970, 2,290/70

Int. Cl. B44d *1/50*

U.S. Cl. 117—232 **5 Claims**



In the manufacture of a high voltage electric conductor by applying to a metallic conductor an insulating covering of an ethylene polymer at least 2.5 mm. thick and subjecting the covering to high energy radiation, the insulating covering is caused to absorb a dose D mrad in the range 20–60 mrad (preferably 25–55 mrad) at an average rate R mrad/sec. such that

$$R \geq e^{0.046(D-10)}$$

Irradiation with high energy electrons is preferred.

3,701,684
ZINC-ZINC HALIDE STORAGE BATTERY

Mario De Rossi, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Continuation-in-part of application Ser. No. 742,331, July 3, 1968. This application Dec. 29, 1969, Ser. No. 888,986

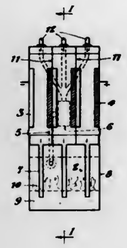
Claims priority, application Italy, May 2, 1968, 36,679/68

Int. Cl. H01m *43/02*

U.S. Cl. 136—30 **5 Claims**

Prior art electric storage batteries of the zinc-zinc halide aqueous solution type with a soluble cathode and a dis-

solved anode in circulating electrolyte are improved by (1) adding salts such as NH_4Cl and Cs_2SO_4 which have very mobile ions capable of assuring good electrical conductivity, which are soluble in the aqueous electrolyte and



which react with the zinc halide to obtain a zinc salt and a metallic halide both of which are only slightly soluble thereby giving a precipitate and (2) adding an organic solvent, insoluble in water.

3,701,685

PROCESS FOR A SOLID STATE CELL BY SPRAYING WITH AN ORGANIC SOLVENT

Guy Ervin III, Canoga Park, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed July 21, 1970, Ser. No. 56,956
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 R **6 Claims**

A sprayed-in-place solid state electric cell on a substrate surface, the cell consisting of overlying films of anode, solid electrolyte, and cathode. The cell is formed by successively spraying a silver-containing anode, a silver-ion-conducting solid electrolyte, and a tellurium tetraiodide-complexed cathode, using an inert organic solvent, preferably acetone.

3,701,686

SOLID STATE CELL CONSTRUCTION

Gary R. Argue, Woodland Hills, and Boone B. Owens, Calabasas, Calif., assignors to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 526,842, Feb. 11, 1966. This application Aug. 1, 1966, Ser. No. 573,744
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 **5 Claims**

A solid state electric cell having a solid electrolyte disposed between an anode and a cathode, and wherein solid electrolyte material is dispersed in at least the anode, and preferably in both the anode and the cathode. Preferably the dispersed electrolyte material is of substantially the same composition as the material of the solid state electrolyte.

3,701,687

ELECTRODE CONTAINING A CATALYTIC COATING OF PLATINUM, PALLADIUM, AND A THIRD METAL AND FUEL CELL UTILIZING SAME

Willard T. Grubb, Schenectady, N.Y., and Robert Anthony Macur, Milwaukee, Wis., assignors to General Electric Company

Original application Aug. 29, 1968, Ser. No. 756,120, now Patent No. 3,573,992, dated Apr. 6, 1971. Divided and this application Apr. 27, 1970, Ser. No. 31,946
Int. Cl. H01m *13/00*
U.S. Cl. 136—86 R **7 Claims**

An electrode is described which has a catalytic coating of platinum, palladium, and a third less noble metal on a substrate. Such an electrode provides a high performance anode for electrochemical cells.

3,701,688

NON-AQUEOUS ELECTROLYTE FOR LITHIUM ELECTROCHEMICAL GENERATORS

Jean-Paul Gabano, Poitiers, and Gerard Marcel Gerbier, Biard, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Pont de la Folie, Romainville, France

No Drawing. Filed July 27, 1970, Ser. No. 58,726
Int. Cl. H01m *11/00*
U.S. Cl. 136—100 R **6 Claims**

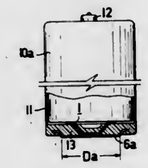
Electrochemical generators utilizing lithium negative electrodes and a solution of lithium perchlorate solute in organic solvent such as tetrahydrofuran together with an additional organic solvent selected from the group consisting of methyltetrahydrofuran, tetrahydropyran, isopropylamine, diethylamine, methylpyrrolidone and methylmorpholine. The range of tetrahydrofuran by weight is from about 70 to about 75% and the additional organic solvent ranges by weight from about 10 to 19% while the lithium perchlorate solute ranges by weight from 11 to 15%. The positive electrodes are preferably of copper sulfide and separators between the electrodes are, for example, of cellulose or polytetrafluoroethylene felted fabric.

3,701,689

PRIMARY CELLS

Ernst Karobath and Wolfgang Pulitzer, Vienna, Austria, assignors to Firma Telephon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne, Vienna, Austria

Filed June 4, 1971, Ser. No. 149,902
Claims priority, application Austria, Aug. 21, 1970, A 7,620/70
Int. Cl. H01m *1/02*
U.S. Cl. 136—135 R **5 Claims**



A primary cell of the kind having a leak-proof casing made of a thermoplastic resin has a contact member which is embedded in the bottom of the casing to provide an external electrical connection to the negative electrode of the cell and which comprises a contact plate and a tubular conductor piece which is preferably cup-shaped with an inverted frusto-conical wall. The tubular conductor piece is embedded in the casing bottom with the material of the casing extending through a series of perforations spaced around the wall of the conductor piece, one end of the conductor piece being in electrical contact with the negative electrode and the other end being bonded to the contact plate. The contact plate has an exposed face externally of the casing bottom with a diameter greater than the diameters at both ends of the conductor piece.

3,701,690

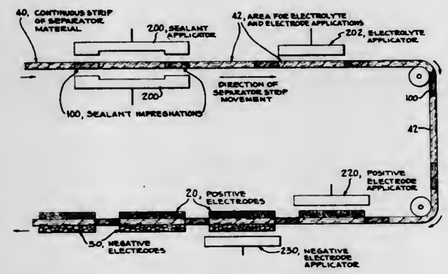
BATTERY HAVING SEALANT IMPREGNATED INTO SEPARATOR

William J. Dermody, Titusville, N.J., and John E. Oltman, Madison, Wis., assignors to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 99,983
Int. Cl. H01m *3/04*
U.S. Cl. 136—175 **16 Claims**

Patches of adhesive are impregnated into battery separator material, each patch being in the form of a closed

loop inside of which is an area of separator material not impregnated with the adhesive. Electrolyte is then impregnated into the area inside each patch of adhesive, after which the separator segments are assembled into batteries where the adhesive patches serve as seals.



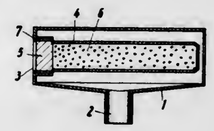
Preferably the adhesive patches are nonconductive and are impregnated along continuous strips of separator material, and a further preference is to assemble the separator segments into the batteries which are structurally connected together by the continuous strips. After assembly of the batteries the continuous strips may be cut between patches of adhesive to obtain structurally unconnected batteries.

3,701,691

APPLIANCE FOR THE CATALYTIC RECONSTITUTION OF HYDROGEN AND OXYGEN GASES GENERATED BY ELECTRIC ACCUMULATORS INTO WATER

Guenter Sassmannshausen, Brilon, and Norbert Lahme, Hoppecke, Westfalen, Germany, assignors to Accumulatorenwerk Hoppecke Carl Zollner & Sohn KG, Hoppecke, Westfalen, Germany

Filed Dec. 22, 1970, Ser. No. 100,602
Claims priority, application Germany, Feb. 21, 1970, P 20 08 218.2
Int. Cl. H01m *1/08*
U.S. Cl. 136—179 **5 Claims**



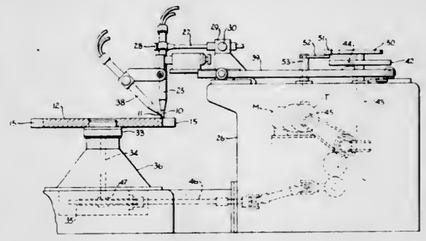
Prior appliances for the catalytic reconstitution into water of the hydrogen and oxygen generated by electric accumulators suffer from the disadvantage that an appreciable amount of the gases or water vapour escape to the atmosphere. The invention provides a gas proof casing linked with the inside of the accumulator and containing a catalyst container inserted into the casing through an opening which is subsequently sealed by a porous element of high flow resistance. The casing may comprise the casing of the accumulator gas chamber.

3,701,692

METHOD OF FLAME CUTTING MUD RELIEF CONCAVITIES IN SPROCKETS

William H. B. Wright III, Whitefish Bay, Wis., assignor of a fractional part interest to Glenway Maxon, Jr., Milwaukee, Wis.

Continuation-in-part of abandoned application Ser. No. 51,640, July 1, 1970. This application Dec. 16, 1971, Ser. No. 208,573
Int. Cl. B23k *7/00*
U.S. Cl. 148—9 **9 Claims**



While a sprocket is rotated on its axis, heating and cutting flames are directed toward one side thereof. The heating flame preheats zones of the sprocket between adjacent teeth thereof. The cutting flame is oriented to diverge sharply outwardly away from the sprocket axis, and it is moved radially in and out, toward and from inner limits at which the cutting flame impinges and traverses said zones to thereby cut out mud relief concavities at said zones. In a modification of the method, the mud relief concavities are flame cut without use of a heating torch.

3,701,693

METHOD OF TREATING STEEL

Hiroshi Iijima, Masaji Terasaka, and Osamu Tokita, Kawasakai, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 689,795, Dec. 12, 1967. This application Oct. 1, 1970, Ser. No. 77,372
Claims priority, application Japan, Dec. 17, 1966, 41/82,518
Int. Cl. C23f *7/24*
U.S. Cl. 148—6.24 **8 Claims**

Steel stocks are immersed in certain solutions and the solutions are heated and pressure is applied thereto to form a corrosion resistant and heat resistant protective film on the steel.

3,701,694

HEAT TREATMENT METHOD FOR FERRITE-PEARLITE STEEL

Tatsumi Osuka and Chiaki Oouchi, Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Japan

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,261
Claims priority, application Japan, Nov. 22, 1968, 43/85,179
Int. Cl. C21d *7/14*
U.S. Cl. 148—12 **3 Claims**

The invention relates to a hot forming method for producing steel with a ferrite-pearlite structure. The steel of the invention has improved toughness.

3,701,695
METHOD OF MANUFACTURING A PERMANENT MAGNET

Kurt Heinz Jürgen Buschow and Frans Frederik Westendorp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

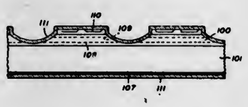
No Drawing. Filed Apr. 28, 1970, Ser. No. 32,701
Claims priority, application Netherlands, May 14, 1969, 6907499
Int. Cl. H01f 1/08
U.S. Cl. 148—103 5 Claims

Method of manufacturing a M_5R magnet having a very high coercive force (M is a rare earth metal or Th or a combination thereof; R is Co or Co combined with one or more of the elements Fe, Ni and Cu) by sintering between 800° C. and 1100° C. in the presence of an oxygen getter. Examples of such an oxygen getter are Y, Th, Ca, Zr, Gd and Ce.

3,701,696
PROCESS FOR SIMULTANEOUSLY GETTERING, PASSIVATING AND LOCATING A JUNCTION WITHIN A SILICON CRYSTAL

Edwin J. Mets, Skaneateles, N.Y., assignor to General Electric Company

Filed Aug. 20, 1969, Ser. No. 851,595
Int. Cl. H01l 7/36, 5/00; B01j 17/00
U.S. Cl. 148—175 8 Claims



An epitaxial layer is deposited onto a silicon crystal with the layer and adjacent crystal surface being of opposite conductivity types and the epitaxial layer containing a higher impurity concentration. The adjacent crystal surface is then converted to the conductivity type of the epitaxial layer to displace the junction into the crystal away from the epitaxial layer. Silicon dioxide is formed on the exterior surfaces of the crystal to act as a passivation layer. Both steps are performed concurrently by heating the crystal in an oxidizing atmosphere. A stressed region may be formed on the crystal prior to heating that will trap fast diffusing impurity atoms during heating. In one form the silicon crystal is grooved so that the grooved surfaces intersect the final location of the junction, and the crystal is sub-divided along groove trough areas to form separately useable, discrete elements.

3,701,697
PRESSURE COMPENSATED PYROTECHNIC TIME DELAY COMPOSITION

Roswitha Zimmer-Galler, Niceville, Fla., and James E. Rose, Bryans Road, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed May 27, 1971, Ser. No. 147,690
Int. Cl. C06b 11/00
U.S. Cl. 149—40 10 Claims

This invention relates to a pyrotechnic time delay composition which comprises tungsten, potassium perchlorate, barium chromate, diatomaceous earth, and a metal fluoride selected from the group consisting of magnesium fluoride, ceric fluoride, strontium fluoride, and calcium fluoride.

3,701,698
METHOD FOR PRODUCING FISSURES IN METALLIC SURFACES OF CHROMIUM

Clarence W. Forestek, 8160 Briarwood Drive, Broadview Heights, Ohio 44147

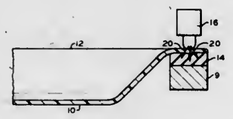
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,873
Int. Cl. C23g 1/10
U.S. Cl. 156—18 10 Claims

The process described herein involves a method of producing fissures in a metal surface, such as chromium, by the chemical action of a sulfuric acid bath in which are dissolved a number of metal salts, chromium sulfate, ferrous sulfate and aluminum sulfate, which retard the attack of the acid on the surface so that controlled fissuring is effected to produce the desired size and uniformity of fissures. These fissures are suitable for the interference locking of particles of polytetrafluoroethylene or other friction reducing material.

3,701,699
METHOD OF HEAT SEALING A PEELABLE COVER ONTO A CONTAINER

James C. Jackson, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Aug. 11, 1969, Ser. No. 848,910
Int. Cl. B29c 27/00
U.S. Cl. 156—69 4 Claims

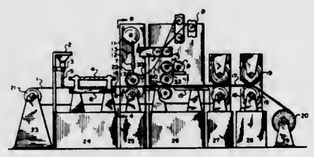


A cover adapted to be removed by peeling is sealed to a container by depressing a cover of heat sealable material and a substantially flat, peripheral container edge of heat sealable material together with a force that is substantially perpendicular to the area being depressed.

3,701,700
PROCESS FOR PRODUCING A CONTINUOUS NON-WOVEN FABRIC

Elmer J. von der Heide, Hudson, Ohio, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Original application Dec. 28, 1966, Ser. No. 605,346. Divided and this application Aug. 5, 1970, Ser. No. 61,411
Int. Cl. D05c 15/00
U.S. Cl. 156—72 6 Claims



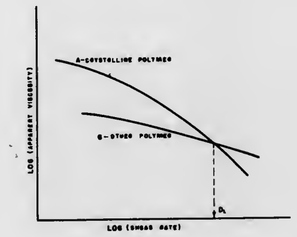
A backing for non-woven fabric made from particulate thermoplastic material eliminates residual stress in thermoplastic backings. The fabric is produced by spreading particulate thermoplastic to a uniform depth, heating the thermoplastic until the particles are fused; applying

face material to the thermoplastic, and then cooling the thermoplastic whereby the face material is locked therein. The yarn is applied to the backing from a rotating drum having peripheral pockets into which the yarn is inserted to form loops. After application of the yarn the fabric may be embossed or printed.

3,701,701
FIBROUS SHEET MATERIAL AND METHOD OF PRODUCING THE SAME

Hidenobu Sogi, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 10, 1970, Ser. No. 96,820
Claims priority, application Japan, Dec. 19, 1969, 44/102,767, 44/102,768
Int. Cl. B32b 3/10
U.S. Cl. 156—229 16 Claims



The fibrous sheet material obtained by the method comprising:
(i) extruding a molten mixture of 30 to 70 volume percent of a crystalline polymer (1) and 70 to 30 volume percent of another polymer (2), which is incompatible with said crystalline polymer (1) and has a lower apparent melt viscosity than the crystalline polymer (1) under the extrusion conditions to make a film consisting of said mixture, in which the crystalline polymer (1) forms the discontinuous phase and the latter polymer (2) forms the continuous phase in said film, and having the crystalline orientation in the longitudinal axis of the film:
(ii) laminating more than two films in an orientation such that at least two of said films are in directions at an angle of 60 to 120° with respect to each other, and then
(iii) biaxially stretching said laminate to 2 to 4 times in both lengthwise and crosswise directions simultaneously to produce a fibrous sheet material.

3,701,702
METHOD OF FREE CURING RUBBER

Daniel Shichman, Cedar Grove, and Sung Whee Hong, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.

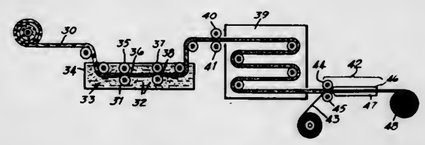
Filed Aug. 25, 1970, Ser. No. 66,753
Int. Cl. B29c 25/00
U.S. Cl. 156—244 31 Claims

A vulcanizable rubber is modified by the addition of a resin at a temperature above the melting point of said resin, whereupon curatives and other additives are added to the blend at a temperature below the melting point of said resin. A shaped article is formed from the resulting blend and cured without restraining pressure at a temperature below the melting point of said resin.

3,701,703
METHOD OF MAKING AN ABRASIVE FOAM LAMINATE

William F. Zimmer, Jr., Paxton, Mass., and Harvey L. Chew, Latham, N.Y., assignors to Norton Company, Troy, N.Y.

Original application Dec. 4, 1969, Ser. No. 882,110, now Patent No. 3,653,859. Divided and this application July 12, 1971, Ser. No. 161,570
Int. Cl. B32b 31/12, 5/18; B24d 11/00
U.S. Cl. 156—278 3 Claims

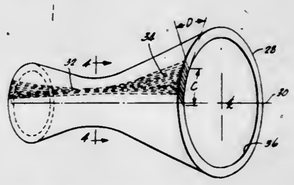


The present invention relates generally to an improved abrasive material and more specifically to a method of preparing an abrasive material designed to give both high finish and stock removal.

3,701,704
METHOD OF FABRICATING A ROCKET NOZZLE LINER

Aram J. Dervy, Santa Monica, Calif., assignor to McDonnell Douglas Corporation

Filed May 18, 1970, Ser. No. 38,264
Int. Cl. B32b 31/18, 31/20; F02k 1/24
U.S. Cl. 156—297 22 Claims



Rocket nozzle liner is formed from substantially identical longitudinal segments which have been circumferentially fused together into an integral unit. Rectangular flakes are preferably cut from cloth material having good insulative and ablative properties to provide flakes of the same width but of different lengths, the length of a flake being a function of the nozzle liner thickness at the longitudinal point where such flake is to be used. The flakes are preferably cut so that the dominant warp filaments of each flake are generally parallel to its length, and each liner segment is molded from suitably arranged flakes to provide a segment having predetermined warp filaments orientations therein.

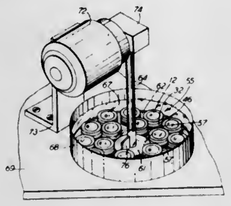
3,701,705
FLUIDIC MASKING APPARATUS FOR ETCHING

Harold Arthur Hetrich, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,345
Int. Cl. H05k 3/00; C23f 1/04
U.S. Cl. 156—345 4 Claims

In making a target for a television camera tube, it is necessary to thin the backside of a semiconductive substrate, which is opposite a face having a diode array thereon. To thin the substrate, it is positioned face down

on a fluid nondeleterious to the substrate and diode array. The fluid is contained in a cavity of a holding device. The positioning is such that there is no space between the fluid and the substrate. An apertured top member is then mounted on the substrate and the holding device to retain the substrate on the fluid. The assembly of the holding device and top member with the substrate therebetween



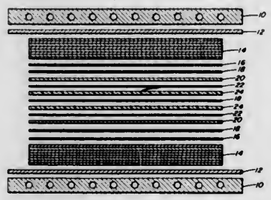
is immersed and rotated in an etchant to thin the backside of the substrate through the aperture of the top member. The fluid provides a tight seal on the face of the substrate to prevent the etchant from damaging such face and the diode array thereon. A vent extending from the cavity of the holding device to its outer edge assists in the subsequent removal of the substrate from the cavity.

3,701,706

PROCESS FOR PREPARING A DECORATIVE LAMINATE IN WHICH A THERMOPLASTIC FILM IS USED TO ABSORB THERMAL SHOCK SHEAR STRESS

Sydney Arthur Giddings and Paul Nicholas Valerius, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Oct. 5, 1970, Ser. No. 77,794
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **10 Claims**



A process for preparing a decorative laminate surfaced with a transparent thermoplastic film in which a removable film of polypropylene is utilized in order to absorb thermal shock and shear stress in the production of a high pressure laminate.

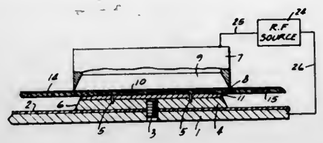
3,701,707

APPARATUS FOR MAKING HEAT-SEALED ARTICLES

Carl W. Scholl and Milo L. Raffaelli, Sr., Chicago, Ill., assignors to Scholl, Inc., Chicago, Ill.

Original application Feb. 16, 1967, Ser. No. 616,721, now Patent No. 3,520,754, dated July 14, 1970. Divided and this application Feb. 2, 1970, Ser. No. 7,630
The portion of the term of the patent subsequent to July 14, 1987, has been disclaimed
Int. Cl. B29c *19/02*
U.S. Cl. 156—380 **6 Claims**

The invention relates to apparatus including die means for electronically heat sealing thermoplastic cover material to a more rigid backing member. The backing member, if not of thermoplastic material, is striped with thermoplastic material and the cover material is heat sealed to the side edge and a marginal area of the rear or otherwise uncovered face of the backing member.

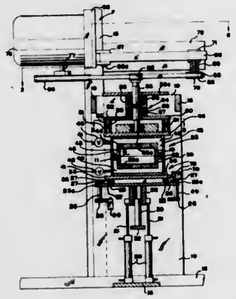


3,701,708

APPARATUS FOR FRICTION WELDING SYNTHETIC PLASTIC CONTAINER PARTS AND THE LIKE

Gaylord W. Brown and Larry Brushaber, Beaverton, and Melvin L. Brown, Gladwin, Mich., assignors to Koehring Company, Milwaukee, Wis.

Filed Jan. 2, 1969, Ser. No. 788,536
Int. Cl. B32b *31/20, 31/04*
U.S. Cl. 156—582 **11 Claims**



Apparatus and methods for friction welding thermoplastic synthetic plastic container parts of non-cylindrical configuration wherein a holder for one part is moved toward another holder for a second part to engage the respective surafces of the parts to be friction welded, and wherein an eccentric shaft extending substantially perpendicularly to the surfaces to be welded together oscillates one of the holders and parts relative to the other in the plane of engagement of the surfaces for a time sufficient to achieve a friction weld of the surfaces, sensing means being provided in the path of movement of the holder for the non-oscillated part which senses when the weld is achieved and is connected to disable the drive for oscillating the one holder, for withdrawing one holder relative to the other to permit unloading and reloading, and for releasing the vacuum employed by the holders to hold the parts.

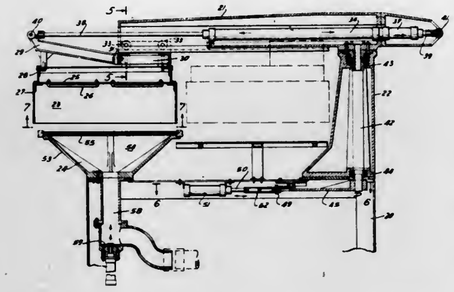
3,701,709

METHOD AND MEANS FOR HEAT BONDING

Giacomo Bianchini, Bollate Milan, Italy, assignor to DHJ Industries, Inc., New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,851
Int. Cl. B30b *15/34;* B29c *19/02*
U.S. Cl. 156—583 **5 Claims**

A method and means for heat bonding materials together utilizing two spaced cooperating plates wherein the first of said plates supports the material to be bonded and through which a vacuum is applied and the second of said plates supports a heat source and there is relative movement of said plates substantially parallel to one another.



ERRATUM

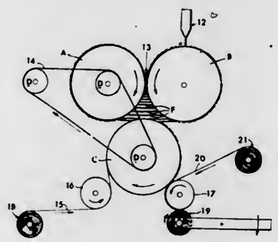
For Class 161—262 see:
Patent No. 3,701,743

3,701,710

ADHESIVELY LAMINATED FLEXIBLE WEBS

Leo M. Germain, Shawinigan, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Original application Oct. 21, 1968, Ser. No. 769,243, now Patent No. 3,629,027. Divided and this application Jan. 25, 1971, Ser. No. 109,718
Int. Cl. B32b *7/14*
U.S. Cl. 161—148 **3 Claims**



This invention provides a laminated web comprising a lamina of paper tissue and another flexible lamina adhesively secured thereto by filaments of adhesive fine enough to preclude them from obviously affecting the properties of the combined lamina.

3,701,711

DECORATIVE ALUMINUM CLAD LAMINATE

Peter Bernard Kelly, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed May 20, 1971, Ser. No. 145,568
Int. Cl. B32b *15/08, 15/12, 15/30*
U.S. Cl. 161—214 **9 Claims**

A decorative aluminum clad laminate comprising a heat and pressure consolidated assembly of (1) a rigidity imparting base member, (2) an alpha cellulose paper decorative layer wherein the alpha cellulose layer contains from about 30% to 70% by weight of a thermosetting melamine formaldehyde resin, having a mole ratio between about 1:1.5 to 1:2.5 melamine to formaldehyde respectively, (3) positioned on the decorative layer is an adhesive copolymer film of ethylene and acrylic acid and (4) an aluminum foil positioned on the copolymer film.

3,701,712

PROCESS FOR TREATING CELLULOSIC MATERIALS WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS

Hans Olof Samuelson, Goteborg, and Sture Erik Olof Noréus, Ornskoldsvik, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

No Drawing. Continuation-in-part of applications Ser. No. 869,875, Oct. 27, 1969, now Patent No. 3,652,386, and Ser. No. 36,670, May 12, 1970, now Patent No. 3,652,385. This application Feb. 26, 1971, Ser. No. 119,369
Claims priority, application Sweden, Mar. 2, 1970, 2,732/70
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 **41 Claims**

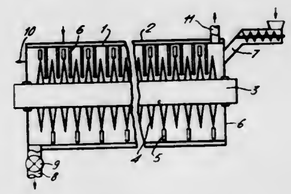
A process is provided for treating cellulosic materials with alkali in the presence of oxygen, and particularly air, and in the presence of complex magnesium salts of aminopolycarboxylic acids or alkali metal salts thereof. The invention is of particular application to the reduction of lignin content in cellulose pulps and the digestion of wood cellulose without causing deleterious degradation of the cellulose, the complex magnesium salts reducing or entirely preventing attack of oxygen on hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process.

3,701,713

SOLVENT REMOVAL FROM MICRO-ORGANISMS

Ian Cameron Bennett, Pinner, England, and Jean Amaudric du Chaffaut, Marseille, France, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 16, 1969, Ser. No. 866,840
Claims priority, application Great Britain, Oct. 18, 1968, 49,547/68
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **4 Claims**



A method for removing solvent from a micro-organism containing fermentation product which has been produced by cultivating a micro-organism in the presence of a hydrocarbon and subjecting the cultivated micro-organism to a solvent extraction treatment to remove residual hydrocarbon. The method consisting essentially of passing steam over the heated fermentation product in such a manner as to maintain in the product a certain minimum water content whilst the solvent is being removed.

3,701,714
PROCESSES FOR THE PRODUCTION OF OLIGOSACCHARIDES HAVING FRUCTOSE MOLECULES ON THEIR REDUCING ENDS
Shigetaka Okada, Nara, and Naoto Tsuyama, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan
No Drawing. Filed Feb. 23, 1971, Ser. No. 118,193
Claims priority, application Japan, Feb. 24, 1970, 45/15,692
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 R 6 Claims
Process for the production of oligosaccharide mixtures having fructose molecules on their reducing ends (oligosyl fructose) by subjecting mixtures of starch, sucrose or fructose to the actions of specific alpha-amylases, and thus with the utilization of the alpha-amylases, attaining simultaneous hydrolysis of starch and transfer of the formed oligosaccharides into sucrose or fructose.

3,701,715
METHOD FOR THE PRODUCTION OF GLUCOSE OXIDASE
Krishnaiyer Lakshminarayanan, Harbor Beach, Mich., assignor to Dawe's Laboratories, Inc., Chicago Heights, Ill.
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,806
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 19 Claims
This invention is addressed to an improved method for the preparation of glucose oxidase in which glucose oxidase-producing strains of the genera Aspergillus and Penicillium are cultivated in medium having a low carbohydrate content in which the carbohydrate has a dextrose equivalent of 60–85, in the presence of hydrated magnesium sulfate, monopotassium phosphate, and a source of assimilable nitrogen in the form of a nitrate salt or an ammonium salt.

3,701,716
LIQUID ANALYSIS APPARATUS
Rudolf Deuringer, El Toro, and Robert A. Ray and James C. Sternberg, Fullerton, Calif., assignors to Beckman Instruments, Inc.
Filed Apr. 15, 1969, Ser. No. 816,329
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 13 Claims
An apparatus for batch analysis of liquid samples wherein syringes are employed for delivering repeatable volumes of reagent to a cell prior to the addition of a sample and for withdrawing liquid from the cell after analysis thereof. Sensing means, such as a polarographic oxygen sensor, is mounted in the side wall of the cell with its sensing end contacting the liquid therein. A stirring element is positioned within the cell and rotated about the vertical axis of the cell so that a high tangential stirring force is produced to promote mixing of sample with reagent and to optimize sensor performance, yet only small sample volumes are required. The apparatus is particularly suited for rate sensing batch analysis of biological fluids such as blood or urine.

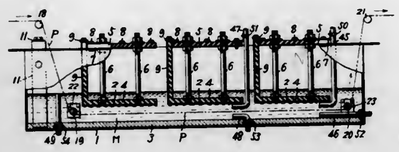
3,701,717
SUBSTRATE-CONTAINING TEST CONTAINER FOR THE CULTIVATION AND INSPECTION OF MICRO-ORGANISMS
Helmuth Ingvorsen, 8 Algade, 4000 Roskilde, Denmark
Filed Feb. 25, 1970, Ser. No. 13,937
Claims priority, application Great Britain, Feb. 26, 1969, 10,373/69; Sept. 5, 1969, 44,127/69
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 1 Claim
Substrate-containing test container for the cultivation and inspection of micro-organisms comprising a coating of said substrate on the inner surface of the side walls of said container and an insert means for supporting said coating.

3,701,718
HIGH-POROUS ACTIVATED ALUMINA AND METHOD
Denis Papee, Paris, and Michel Lavalou, Saint-Gratien, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 410,315, Nov. 10, 1964. This application Sept. 29, 1969, Ser. No. 862,090
Int. Cl. B01j *11/32*; C01f *7/02, 7/44*
U.S. Cl. 23—141 12 Claims
This invention is addressed to the preparation of agglomerates of activated alumina having a high degree of porosity and mechanical strength and in which the porous volume is within the range of 50–100 cm.^{3}/100 grams with a large number of pores having a diameter greater than 0.1 micron in which dehydrated alumina is reduced to a particle size within the range of 1 to 25 microns and impregnated with water, with or without mixture with an organic naphthalene type material and in which the amount of water is limited to an amount which does not exceed the porous volume of the particles by more than 8 percent. The impregnated particles are molded into agglomerates, aged and then reactivated by calcination at elevated temperatures.

3,701,719
CONTINUOUS ELECTROCHEMICAL PROCESS FOR REACTION OF COMPOUNDS CONTAINING ALIPHATIC UNSATURATION
Joseph-Adrien M. Leduc, Short Hills, and Charles Lurie, Plainfield, N.J., and Walter Kronig and Peter Konrad, Leverkusen, Germany, assignors to Pullman Incorporated, Chicago, Ill., and Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, fractional part interest to each
No Drawing. Filed Mar. 24, 1969, Ser. No. 809,962
Int. Cl. B01k *1/00*
U.S. Cl. 204—131 29 Claims
A preferred method is provided for the treatment of aqueous media from which olefin oxide has been separated, the olefin oxide having been produced from an olefin via a halohydrin intermediate, which comprises treating the aqueous media with an inorganic oxidizing agent such as a halogen, a metal hypohalite, hydrogen peroxide or ozone-enriched air after removal of the olefin oxide product followed by separation or destruction of contaminants from the aqueous media prior to recirculation thereof to an electrolytic cell in which the halogen required to form the halohydrin from the olefin is generated.

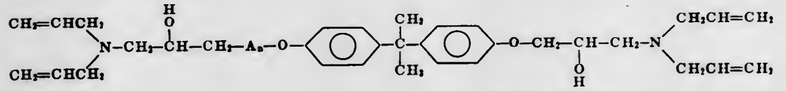
3,701,720
MANUFACTURE OF ELECTRICALLY INSULATING PAPER
Hideo Fujita, Masami Ishitobi, Hiroyoshi Suga, Keishiro Ishiwari, Yoshikazu Yotsui, Tadao Yamashita, Masayuki Edamitsu, and Shokichi Moriwaki, Amagasaki-shi, Japan, assignors to Dainichi Nippon Cables Ltd., Amagasaki-shi, Hyogo-ken, Japan
Filed Nov. 24, 1969, Ser. No. 879,187
Int. Cl. B01k *1/00*
U.S. Cl. 204—132 25 Claims
A method for producing electrically insulating paper having a reduced dielectric dissipation factor comprises continuously passing paper through a liquid medium which has a conductivity of at least 10 micro mhos/cm.

and which is filled between at least one pair of electrodes disposed in facing relationship with each other. Voltage is

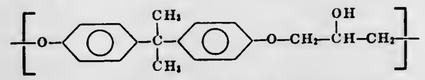


applied to the electrodes to thereby remove ionic substances from the paper and the treated paper is dried.

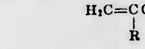
3,701,721
CURABLE LIQUID POLYENE-POLYTHIOL COMPOSITIONS CONTAINING POLYACRYLIC ACID AND DERIVATIVES THEREOF
Edwin W. Lard, Bowie, Md., assignor to W. R. Grace & Co.
No Drawing. Original application Nov. 2, 1970, Ser. No. 86,355. Divided and this application Dec. 6, 1971, Ser. No. 205,432
Int. Cl. B01j *1/00*; C08d *1/00*
U.S. Cl. 204—159.16 9 Claims
A curable liquid composition consisting essentially of:
(a) a polyene having the formula



where A is



and n is essentially 0 or greater (e.g., 0–20); and
(b) a polythiol, the equivalent ratio of polyene to polythiol being about 1:0.5–1.5; and
(c) a member selected from a group consisting of a monomeric acid having the formula

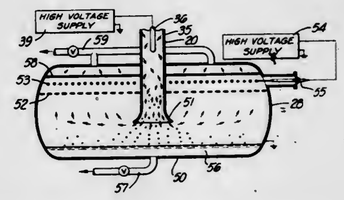


where R is H, CH_3, or C_2H_5 or a homopolymer or copolymer of such monomeric acid having an average molecular weight of about 140–1000, the group member constituting about 2–10% by weight of the composition.

The above composition can contain an effective amount of a photocuring rate accelerator.

3,701,722
PREPARATION OF α-HALOKETONES USING ULTRAVIOLET LIGHT
David C. Heckert, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed June 16, 1971, Ser. No. 153,845
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 R 13 Claims
A process for preparing α-haloketones from olefins, oxygen, and a hydrogen halide using a metal salt catalyst and ultraviolet light. Such haloketones are useful as intermediates in the preparation of fabric softening and surfactant compounds.

3,701,723
ELECTRIC TREATMENT OF DISPERSIONS
Ernest A. Cole, Weldon D. Mayse, and Frederick D. Watson, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Original application July 25, 1969, Ser. No. 844,963. Divided and this application Feb. 22, 1971, Ser. No. 117,264
Int. Cl. B03c *5/00*; B01d *13/02*
U.S. Cl. 204—188 3 Claims

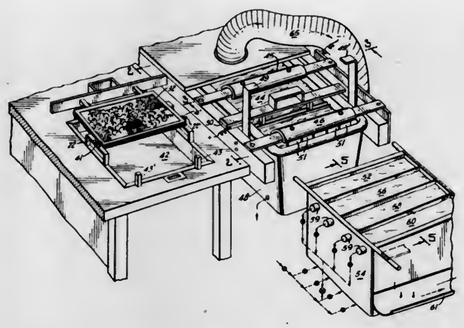


Process and apparatus for coalescing liquid droplets, such as water, dispersed in an oil distillate, such as gasoline or kersosene. Coalescing process and apparatus utilizing a unidirectional electric field between elongate electrodes with a high voltage gradient and a high rate of flow in the space between the electrodes. Coalescing process and apparatus wherein the coalesced liquid is maintained within the distillate and is separated from the distillate downstream of the coalescing electrodes.

3,701,724
ELECTRODES FOR ELECTROCHEMICAL PROCESSES
John Hubert Entwisle, Denis Lee, and Anthony Scrutton, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Oct. 3, 1969, Ser. No. 863,705
Claims priority, application Great Britain, Oct. 18, 1968, 49,479/68
Int. Cl. B01r *3/04*
U.S. Cl. 204—290 F 5 Claims
An electrode for use in electrochemical processes comprising a film-forming metal support member and a coating thereon consisting of (a) an operative electrode material, e.g., a platinum group metal oxide, in minor amount and (b) one or more of tin dioxide, antimony pentoxide, antimony tetroxide and germanium dioxide in major amount.

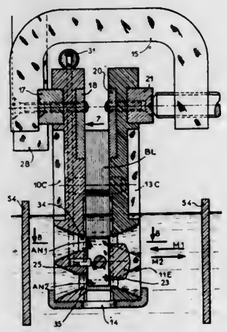
3,701,725
APPARATUS FOR ELECTROPOLISHING OF DRILLED SURGICAL NEEDLES
Howard Beroff, Somerville, and Ernest L. Richmond, North Plainfield, N.J., assignors to Ethicon, Inc., Somerville, N.J.
Original application Jan. 29, 1970, Ser. No. 6,878. Divided and this application Sept. 22, 1971, Ser. No. 182,798
Int. Cl. C23b *5/70, 3/06*; B01k *3/04*
U.S. Cl. 204—297 M 4 Claims
A large number of steel surgical needles are supported on a platinum gauze anode in a magnetic field and immersed in an orthophosphoric acid electropolishing bath.

The needles supported on the anode are polished by a current that flows through the solution, and needles to



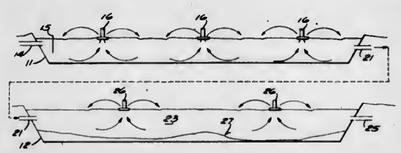
produce a smooth needle surface that is free of flaws at the point of contact with other needles on the anode.

3,701,726
SUPPORT ASSEMBLY FOR ELECTROLYTIC DEPOSITION ON CONTACT ELEMENT
Bernard Andre Laboue, Goussainville, France, assignor to Société Industrielle Honeywell Bull, Paris, France
Filed Dec. 11, 1970, Ser. No. 97,131
Claims priority, application France, Dec. 17, 1969, 6943700
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R **14 Claims**



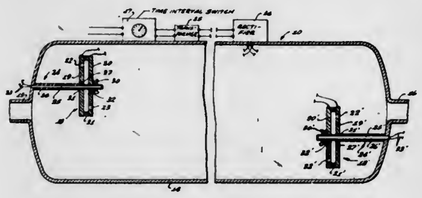
A support providing for the selective electroplating of the contact points of a pair of contact elements having arch-shaped portions, each element having a contact point at each extremity of the arch-shaped portions thereof, the two contact elements being electroplated with the arch-shaped portions thereof mutually opposed; whein an insulated spacing member extends between the two arch-shaped portions to protect such portions from the electroplating solution, but wherein the contact points extend beyond the spacing member; wherein a flat electrode is supported by the spacing member and extends between each opposed pair of contact points of the contact elements, and wherein when the support is immersed in an electrolytic solution, metal is selectively deposited on the contact points opposite to the electrode.

3,701,727
TWO-STAGE AEROBIC AND FACULTATIVE WASTE TREATMENT
Richard A. Kormanik, Milwaukee, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed July 19, 1971, Ser. No. 163,925
Int. Cl. C02c *1/02*
U.S. Cl. 210—14 **2 Claims**



A biodegradable waste is treated aerobically by high-rate aeration and mixing in a first basin for a critical period followed by low-rate aeration and mixing in the upper zone of a second basin and from which the effluent is withdrawn. The solids which settle to the lower zone decompose under anaerobic conditions and the liquid decomposition products are treated aerobically as they more upwardly from the lower into the upper zone. The second basin operates as a modified facultative lagoon.

3,701,728
WATER PURIFICATION SYSTEM
Milo Don Appleman, Los Angeles, Calif., assignor to Terminal Testing Laboratories, Inc., Lucille E. Appleman, and Milo D. Appleman, Jr., all of Los Angeles, Calif., fractional part interest to each
Continuation of application Ser. No. 571,834, Aug. 11, 1966. This application May 22, 1970, Ser. No. 41,672
Int. Cl. B01d *15/04;* **C02b** *1/36*
U.S. Cl. 210—29 **4 Claims**



A method of purifying water which comprises introducing bacteriacidal chlorine directly into, or just prior to purification media for said water at concentrations substantially above potable limits so that essentially all of the chlorine is available for reaction to kill microorganisms trapped in said purification material.

3,701,729
OIL-SOLUBLE MIXED COPPER SOAP PRODUCTS
Alfred Fischer, Bronx, N.Y., and Terry M. Strawser, Bound Brook, N.J., assignors to Tenneco Chemicals Inc.
No Drawing. Filed June 1, 1970, Ser. No. 42,536
Int. Cl. C10m *3/18, 5/14*
U.S. Cl. 252—1 **28 Claims**

Oil-soluble mixed copper soaps of structurally different organic monocarboxylic acids, the acids being selected from the group consisting of saturated aliphatic acids and olefinic acids, and solutions of such mixed soaps are provided.

3,701,730
EXTREME PRESSURE PROPERTIES OF SYNTHETIC LUBRICANTS
David A. Daniels, Kendall Park, and Kenneth T. Wendler, Freshold, N.J., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,098
Int. Cl. C10m *1/46, 1/30*
U.S. Cl. 252—49.9 **8 Claims**

Extreme pressure properties of synthetic lubricants, e.g., esters, are improved by the addition of (a) dibrominated neopentyl glycol ester, (b) a phosphate ester, (c) a polycarboxylic acid having 2–54 carbon atoms, or (d) combinations of (a), (b) and (c).

3,701,731
LIQUID TONERS FOR ELECTROPHOTOGRAPHY CONTAINING 12-HYDROXY STEARIN
Robert James Hercock and Simon Lindsay Scrutton, Ilford, England, assignors to Ilford Limited, Ilford, England
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,083
Claims priority, application Great Britain, Feb. 10, 1970, 6,399/70
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **3 Claims**

A liquid toner for use in an electrophotographic process which comprises a suspension of charged pigment particles in an inert liquid carrier, there being dispersed in the suspension 12-hydroxy stearin.

3,701,732
FUNCTIONAL FLUID COMPOSITIONS
Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 715,175, Apr. 22, 1968, now Patent No. 3,597,359. This application Mar. 26, 1971, Ser. No. 128,526
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **18 Claims**

Compositions comprising organo-silicates and a small amount of a perfluorinated alkylene ether-containing compound having a degree of polymerization from 1 to 50 exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,701,733
FUNCTIONAL FLUID COMPOSITIONS
Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 715,175, Mar. 22, 1968, now Patent No. 3,597,359. This application Mar. 26, 1971, Ser. No. 128,576
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **16 Claims**

Compositions comprising amides of an acid of phosphorus and a small amount of a perfluorinated alkylene ether-containing compound having a degree of polymerization from 1 to 50 exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,701,734
OIL ABSORBENT SLAG COMPOSITIONS
Arthur H. Stover, 125 Cross St., Wintersville, Ohio 43952
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,861
Int. Cl. B41f *1/30;* **C04b** *7/14;* **E06b** *7/02*
U.S. Cl. 252—88 **4 Claims**

Oil absorbent slag compositions are prepared by hydraulically decomposing molten slag from an electric smelting furnace and roasting the crushed slag at elevated temperatures.

3,701,735
AUTOMATIC DISHWASHING COMPOSITIONS
Patricia A. Finck, Bayonne, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,338
Int. Cl. C11d *7/18, 7/38*
U.S. Cl. 252—99 **9 Claims**

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of reducing spotting and filming thereof, containing as the essential ingredients about 1–20% sucrose, 0.5–5% halide bleaching agent, and 40–95% of at least one water-soluble organic and/or inorganic builder salt.

3,701,736
MEANS TO INHIBIT OVERGLAZE DAMAGE BY AUTOMATIC DISHWASHING DETERGENTS
Amory Earl Austin, Colonia, and Charles L. Bechtold, Edison, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,340
Int. Cl. C11d *7/18, 7/56*
U.S. Cl. 252—99 **9 Claims**

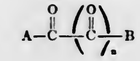
A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of inhibiting over-glaze attack containing as an essential ingredient metallic aluminum or aluminium alloy.

3,701,737
SODIUM CARBONATE-SODIUM BICARBONATE AGGLOMERATES
David Goldstein, East Brunswick, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,779
Int. Cl. C09k *3/00;* **H05b** *33/00*
U.S. Cl 252—182 **10 Claims**

A low bulk density, absorptive agglomerate containing both sodium carbonate and sodium bicarbonate values, for use in mild detergent formulations, is produced by (a) agglomerating fine soda ash particles with water, (b) carbonating the resulting wet sodium carbonate monohydrate with carbon dioxide to obtain carbonated agglomerates having an $NaHCO_3$:Na_2CO_3 mole ratio of about 0.4:1 to about 1.5:1 as the product.

3,701,738
CHEMILUMINESCENT IMPROVEMENTS
Bernard George Roberts, 13 Harstrom Place, Rowayton, Conn. 06853, and Michael McKay Rauhut, 7 Douglas Drive, Norwalk, Conn. 06850
No Drawing. Continuation of application Ser. No. 866,383, Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 577,596, Sept. 7, 1966. This application Apr. 29, 1971, Ser. No. 138,799
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **5 Claims**

A superior chemiluminescent composition for providing visible light, the composition containing (1) a bis-derivative of a polycarbonyl compound of the formula:



where A and B are organic groups to form an ester, an amide, an anhydride, or an O-acylhydroxylamine, (2) a peroxide, (3) a solvent, and (4) rubrene as a fluorescer.

3,701,739
METHOD FOR FORMING MIXED OXIDE HETEROGENOUS CATALYSTS
Bennett Bovarnick, Newton Centre, Robert E, Eberts, Framingham, and Ravindra Nadkarni, Cambridge, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,008
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—454 **18 Claims**
A heterogenous catalyst is formed by decomposing and partially dehydrating an ammoniacal solution of a mixture of the carbonate or hydroxide of at least one metal which is reducible in hydrogen and the carbonate or hydroxide of at least one metal which is non reducible in hydrogen in a fluid bed. Residual volatiles are then removed from the resulting fine particle agglomerates of metal oxides under conditions which prevent grain growth. After pelleting the composite material is treated with hydrogen at relatively low temperatures to reduce one or more of the oxides to its metal which remains dispersed in the remaining oxide or oxides. The catalyst thus formed has a large effective surface area and remains effective over a prolonged period of time.

3,701,740
PROCESS FOR MAKING POLY(ARYLENE-VINYLENES)
James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company
No Drawing. Filed Nov. 4, 1971, Ser. No. 195,833
Int. Cl. C08g *33/00*
U.S. Cl. 260—2 H **9 Claims**
Alkali metal adducts of hexa-substituted phosphoric triamides are improved dehydrohalogenating agents for making bright yellow fluorescent polymers by dehydrohalogenating, with a dehydrohalogenating agent under dehydrohalogenating conditions, a compound having at least two halomethyl groups substituted on an aryl nucleus in positions relative to each other so that the double bonds of the vinylene groups created by said dehydrohalogenating reaction are conjugated with one another through the double bonds of said aryl nucleus.

3,701,741
PURIFICATION OF IMPURE SCRAP POLY(ETHYLENE TEREPHTHALATE)
Max F. Meyer, Jr., Robert L. Combs, and Willis C. Wooten, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,651
Int. Cl. C08g *53/22*
U.S. Cl. 260—2.3 **10 Claims**
A process for the recovery of substantially pure poly(ethylene terephthalate) from scrap poly(ethylene terephthalate) contaminated with impurities which comprises dissolving the contaminated poly(ethylene terephthalate) at elevated temperatures and under superatmospheric pressure in a volatile solvent in which said poly(ethylene terephthalate) is insoluble at ambient temperatures but soluble at elevated temperatures, said solvent having an atmospheric boiling point of about —104° C. to 100° C. and being aliphatic alcohols or mixtures thereof; filtering off impurities; precipitating finely divided poly(ethylene terephthalate) by slowly cooling the resulting solution while maintaining the solution under superatmospheric pressure and at a substantially constant volume; and recovering said substantially pure poly(ethylene terephthalate) by a second filtration step.

3,701,742
VINYL CHLORIDE POLYMERS AND METHOD OF PREPARING SAME
Dean E. Richardson, La Marque, Adolph A. Peterson III, Dickinson, and Harold P. Brady, Jr., Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,262
Int. Cl. C08f *11/09*
U.S. Cl. 260—17 R **7 Claims**
Vinyl chloride polymers having enhanced porosity and lower fisheye values have been prepared by aqueous suspension polymerization using a combination of hydroxypropyl methyl cellulose and hydroxyethyl cellulose as suspending agents.

3,701,743
MODIFIED UREA-FORMALDEHYDE PLYWOOD ADHESIVE
Frederic Horowitz, Portland, and Joseph B. Dede, Jr., North Bend, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.
No Drawing. Original application Apr. 9, 1969, Ser. No. 814,827. Divided and this application Dec. 31, 1970, Ser. No. 103,292
Int. Cl. B32b *27/43;* **C08g** *51/18*
U.S. Cl. 161—262 **8 Claims**
A plywood adhesive especially useful for bonding hardwood overlays to softwood plywood cores which comprises a urea-formaldehyde adhesive modified with a phenol-formaldehyde resin.

3,701,744
POLYMERIZATION OF UNSATURATED COMPOUNDS WITH SALTS OF ARYLALIPHATIC CARBOXYLIC ACIDS
Layton Frederick Kinney, Villa Park, Ill., assignor to Armour Industrial Chemical Company
No Drawing. Filed Nov. 14, 1967, Ser. No. 682,996
Int. Cl. C08d *1/09;* **C08f** *1/13*
U.S. Cl. 260—23.7 **7 Claims**
An improved method for the production of linear polymers by polymerization of ethylenically unsaturated compounds dispersed in an aqueous medium which comprises using an alkali metal salt of an arylaliphatic carboxylic acid as emulsifying agent.

3,701,745
PROCESS FOR PREPARING A COATING COMPOSITION OF COPOLYMERIC VINYLIDENE CHLORIDE
Paul Herman Settlage, Richmond, Va., and Roger Lea Thornton, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of abandoned application Ser. No. 747,445, July 25, 1968. This application Dec. 23, 1970, Ser. No. 101,169
Int. Cl. C08f *45/52, 45/24*
U.S. Cl. 260—28.5 R **2 Claims**
A coating composition comprising a copolymer of vinylidene chloride is provided wherein the copolymer is of between about 60 parts and about 95 parts by weight of vinylidene chloride and includes a non-ionic surfactant especially adapted for coating film structures of organic thermoplastic polymeric material. A process for preparing said compositions characterized by continuous addition of monomeric materials into a polymerization solution containing a reduction-oxidation initiator and a non-ionic surfactant also is provided.

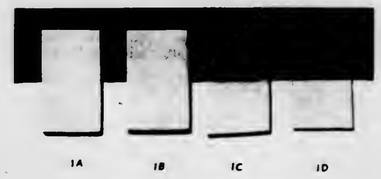
3,701,746
PLASTICIZED NONAQUEOUS METHYL METHACRYLATE POLYMER DISPERSION COATING COMPOSITIONS
William R. Johnson, Blauvelt, N.Y., William R. Sevy, Chattanooga, Tenn., and James E. Weigel, White Plains, and Robert A. Taller, Ossining, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 10, 1970, Ser. No. 27,377
Int. Cl. C08f *45/40, 47/20*
U.S. Cl. 260—31.6 **11 Claims**
A liquid coating composition producible into films of improved physical properties when applied to a substrate and dried, comprising a dispersion of a methyl methacrylate polymer or copolymer material in an organic liquid, a plasticizer and a high boiling solvent combinable with the plasticizer, wherein the copolymer material further comprises a polymer formed from an ethylenically unsaturated monomer, wherein the organic liquid is one in which particles of the polymer or copolymer are substantially insoluble, wherein the plasticizer is an ester plasticizer characterized by a certain critical volatility, and a certain critical solvency predictable in terms of the ratio of the polar to nonpolar solubility parameters, and wherein the high boiling solvent has a certain critical solvency, preferably the same critical solvency as the ester plasticizer. A metallic pigment may be added to the coating composition to produce a film of excellent metallic glamour.

3,701,747
PROCESS FOR MAKING A DISPERSION OF POLYMER PARTICLES IN AN ORGANIC LIQUID
Desmond Wilfred John Osmond, Windsor, Ian Wagstaff, Datchet, and Frederick Andrew Waite, Slough, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation-in-part of application Ser. No. 682,615, Nov. 13, 1967. This application Sept. 4, 1968, Ser. No. 757,480
Claims priority, application Great Britain, Nov. 14, 1966, 50,915/66
Int. Cl. C08f *47/20;* **C08g** *53/18;* **C08j** *1/46*
U.S. Cl. 260—33.6 **6 Claims**
Preformed polymer particles are dispersed in organic liquids such as hydrocarbons by use of a stabiliser comprising one component solvatable by the organic liquid and another component which is relatively non-solvatable and is, in bulk, a plastic solid or viscous liquid under the conditions of the dispersion, this other component serving to attach the stabiliser to the dispersed polymer particles.

3,701,748
UNSATURATED POLYESTER RESINOUS COMPOSITIONS
Charles Henry Kroekel, Churchville, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.
Filed July 20, 1966, Ser. No. 566,580
Int. Cl. C08f *43/08, 45/10*
U.S. Cl. 260—40 **7 Claims**
This invention provides a liquid, polymerizable composition of matter, suitable for molding glass fibrous reinforced articles with exceptionally smooth surfaces, said composition being curable under heat and pressure to form a rigid, cured product which is characterized by an optically heterogeneous appearance. The composition comprises an α,β-ethylenically unsaturated polymerizable polyester having a molecular weight per double bond factor of 150 to 186, a monomer containing a



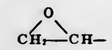
group copolymerizable with the unsaturated polyester, and a thermoplastic polymer which is soluble in the monomer but which, when present during the copolymerization of the unsaturated polyester and the monomer, yields an optically heterogeneous cured composition.



3,701,749
POLYVINYLIDENE FLUORIDE-FLAVANTHRON COMPOSITION
Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Apr. 2, 1971, Ser. No. 130,673
Claims priority, application Japan, Apr. 7, 1970, 45/29,515
Int. Cl. C08f *29/16*
U.S. Cl. 260—41 C **3 Claims**
Polyvinylidene fluoride composition of improved crystallinity and impact strength containing flavanthron as a crystal nucleating agent.

3,701,750
REINFORCED POLYETHYLENE
Renato C. Pomatti, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 10, 1969, Ser. No. 883,995
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 **7 Claims**
A solid polyethylene composition reinforced with between about 5 and 35 wt. percent glass fibers based on said composition, said fibers presoaked in a solution selected from the group consisting of aqueous mineral acid, aqueous alkali metal hydroxide and water.

3,701,751
FIBER REINFORCED MODIFIED POLYOLEFIN COMPOSITIONS
Charles H. Schramm, Ridgewood, Albert Schrage, East Orange, and Philip D. Readio, Rockaway, N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,527
Int. Cl. C08f *45/10;* **C08k** *1/14*
U.S. Cl. 260—41 A **10 Claims**
Enhanced physical properties are obtained with the fiber reinforced modified polyolefin compositions. The modified polyolefin compositions comprise the reaction product of a polyolefin and a polymerizable compound containing a terminal



group and a terminal vinyl group.

3,701,752

PREPARATION OF FLUORINATED ALCOHOLS

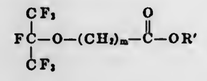
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application July 14, 1969, Ser. No. 841,616, now Patent No. 3,674,820, which is a division of application Ser. No. 703,199, Nov. 22, 1967, now Patent No. 3,527,742, which in turn is a division of application Ser. No. 477,331, Aug. 4, 1965, now Patent No. 3,424,785. Divided and this application July 28, 1971, Ser. No. 166,964

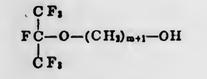
Int. Cl. C07c *43/00, 43/12*

U.S. Cl. 260—615 F 4 Claims

Fluorinated ketones are converted into alcohols, using the following typical plan: Hexafluoroacetone is reacted with an alkali metal fluoride, and the resulting intermediate is reacted wtih an omega-halo-aliphatic carboxylic acid ester, yielding an ester of the structure—



wherein m is 1–20, R′ is a hydrocarbon group. Reduction of this ester yields an alcohol of the structure—



3,701,753

SOLUTIONS OF ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS

Harvey P. Shaw, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,266

Int. Cl. C08b *23/00*

U.S. Cl. 260—9 R 8 Claims

A room temperature vulcanizable solution which is applied to surfaces and cured in situ to form a tough film over said surface comprising a silicon rubber composition containing (i) a silanol-terminated diorganopolysiloxane base polymer with a viscosity in the range of 1,000 to 100,000 centipoises at 25° C. and (ii) an organotriacyloxysilane. The silicone rubber composition is dissolved in an organic solvent, preferably cyclohexane, and applied to said surface.

3,701,754

PREPARATION OF THERMOSETTING COMPOSITIONS AND THERMOSET RESINS FROM POLYMERS OF N - 3 - OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Eugene Richard Farone, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation of abandoned application Ser. No. 817,577, Apr. 18, 1969. This application Nov. 30, 1970, Ser. No. 93,818

Int. Cl. C08g *1/18, 3/00*

U.S. Cl. 260—64 14 Claims

Thermosetting polymers are prepared by the reaction of an aldehyde with a homopolymer or interpolymer of an N-3-oxohydrocarbon-substituted acrylamide (such as diacetone acrylamide) in the presence of a strongly alkaline catalyst. The thermosetting reaction is effected by heating, usually in the presence of an alkaline compound. The thermoset resins are useful as surface coatings, especially for metal surfaces.

3,701,755

PRODUCTION OF ELASTOMERS

Misao Sumoto, Hideki Komagata, Hiroshi Matsumoto, and Hironobu Furusawa, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,906

Claims priority, application Japan, Dec. 4, 1968, 43/89,224; June 4, 1969, 44/44,170

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 3 Claims

The present invention relates to a process for producing elastomeric polyethylene terephthalate-poly(tetramethylene oxide) glycol block copolymers which comprises reacting poly (tetramethylene oxide) glycol, average molecular weight 1800 to 2500, with terephthalic acid (3 to 5 parts per part of glycol). The reaction is carried out until the specific viscosity $\eta_{sp./c.}$ of the copolymer is equal to or greater than $0.05x-1.75$ wherein x is the glycol unit in the copolymer.

3,701,756

CATALYTIC PREPARATION OF POLYIMIDES FROM POLYISOCYANATES

Peter S. Carleton, Branford, William J. Farrissey, Jr., North Branford, and James S. Rose, Guilford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,144

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF 7 Claims

The use of certain catalysts gives markedly improved reaction rates in the formation of imides (mono- and poly-) by reaction of an isocyanate and an intramolecular anhydride. The catalysts are hydroxides of Formula MOH and ureas of formula

(R and R¹ are hydrocarbyl) wherein M in each case is hydrogen or is such that the hydroxide MOH forms a urethane with isocyanate, which urethane will decompose with elimination of carbon dioxide at a temperature not greater than about 150° C. A preferred catalyst is phenylmercuric hydroxide. Tertiary amines can be employed as cocatalysts. The catalytic process can be applied to the preparation of both cellular and non-cellular polyimides by reaction of polyisocyanates and polycarboxylic anhydrides. Optionally a solvent is employed in the reaction.

3,701,757

ORTHOESTER CATALYSIS OF POLYESTER POLYCONDENSATION

Stanley David Lazarus, Petersburg, and Robert Alden Lofquist, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,730

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R 16 Claims

The preparation of linear high-molecular weight, film and fiber forming polyalkylene terephthalates, comprising reacting either by direct esterification or ester interchange an organic dicarboxylic acid and/or the lower alkyl ester thereof with a polyol having 2 to 10 carbon atoms per molecule to obtain the corresponding diglycol ester intermediate and then condensing said intermediate in the presence of an effective amount of a condensation accelerator which is an orthoester of an organic acid which produces volatile alcohol and acid upon reaction with water.

3,701,758

PRESSURE-SENSITIVE ADHESIVES OF CYANOACRYLATE POLYMERS

Rudolf Maska, Pittsburgh, Pa., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 657,777, Aug. 2, 1967. This application Aug. 28, 1969, Ser. No. 853,979

Int. Cl. C08f *15/38, 15/40*

U.S. Cl. 260—78.5 R 8 Claims

Acrylic interpolymers which are useful as pressure-sensitive adhesives having improved properties, especially after exposure to elevated temperatures, are obtained by including in the interpolymer a cyano-substituted alkyl ester of an unsaturated carboxylic acid. 2-cyanoethyl acrylate and 2-cyanoethyl methacrylate are the preferred cyano-substituted esters. The interpolymer also includes alkyl acrylates and/or methacrylates, and preferably contains carboxylic acid units. These adhesives have improved tack, adhesion and cohesive strength as compared to corresponding adhesives without the cyano-substituted ester component, the improvement being particularly pronounced after exposure of the adhesive to elevated temperatures.

3,701,759

CERTAIN GERANYL PHENYL ETHERS AND THEIR EPOXIDES AND THEIR USE IN CONTROLLING INSECTS

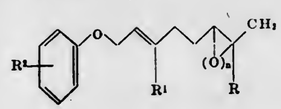
Hwalin Lee, San Francisco, Ferenc M. Pallos, Pleasant Hill, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 856,140, Sept. 8, 1969, which is a continuation-in-part of application Ser. No. 815,229, Apr. 10, 1969. This application Mar. 29, 1971, Ser. No. 129,192

Int. Cl. C07d *1/00*

U.S. Cl. 260—240 H 2 Claims

Compounds having the formula



in which R and R¹ are independently methyl or ethyl; n is the integer zero or one; R² is certain heterocyclic radicals; the use of these compounds in controlling insects.

3,701,760

HYDROCARBON DAC-B RESIN PREPARED BY POLYMERIZING DAC-B USING TWO POLYMERIZATION TEMPERATURE RANGES FOLLOWED BY HYDROGENATION

Hugh J. Hagemeyer, Jr., Harold E. Hogan, and Sam H. Johnson, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,333

Int. Cl. C08f *15/42*

U.S. Cl. 260—82 4 Claims

This invention provides a two-stage improved process for the preparation of light-color, high softening point hydrocarbon resins which comprises polymerizing a mixed hydrocarbon fraction using aluminum chloride as a catalyst in a two-stage reaction system. The temperature in the first stage is lower than that in the second stage to obtain a solution containing a high softening point crude resin in good yields. The chlorides are removed from the resin solution by methanol extraction or high temperature lime treatment followed by low pressure hydrogenation and/or alumina treatment followed by high pressure-high temperature hydrogenation to remove color and reduce unsaturation and thereafter stripping the resin solution to obtain a low color, color stable, melt stable, high softening point hydrocarbon resin in good yields.

3,701,761

TEMPERATURE CONTROL IN SUSPENSION POLYMERISATION

Yoshiro Ashina, Iwao Oshima, and Kazunori Sekine, Yokohama-shi, Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha (also known as Nitto Chemical Industry Co., Ltd.), and Mitsubishi Rayon Co., Ltd., both of Tokyo-to, Japan

Filed July 1, 1969, Ser. No. 838,085

Claims priority, application Japan, July 3, 1968, 43/45,876

Int. Cl. C08f *15/04, 15/22*

U.S. Cl. 260—85.5 R 5 Claims

The polymerization temperature in suspension polymerization of a monomer mixture comprising styrene monomer and acrylonitrile monomer is so controlled that it does not exceed a predetermined level until a gel effect begins to develop and is thereafter left to rise, whereby a homogeneous copolymer is obtainable in a short polymerisation time.

3,701,762

POLYALKENYLARENE COMPOSITIONS

Howard V. Holler, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 888,962, Dec. 29, 1969. This application July 19, 1971, Ser. No. 164,119

Int. Cl. C08f *7/02*

U.S. Cl. 260—88.2 C 10 Claims

Compositions are disclosed comprising one or more polyalkenylarenes having at least three nuclear substituents each having at least three carbon atoms, and 0.01 to 10% by weight of certain acidic curing agents, which compositions may be cured at temperatures above 80° C. to useful castings, pottings, and laminates.

3,701,763

PROCESS FOR POLYMERIZATION OF OLEFINS AND CATALYSTS THEREFOR

Shigeru Wada, Otake, Hidesaburo Oi, Wagi, and Norio Matsuzawa and Hiroshi Nishimura, Otake, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,540

Claims priority, application Japan, Oct. 20, 1969, 44/83,232, 44/83,233; Oct. 24, 1969, 44/84,625; Nov. 1, 1969, 44/87,255, 44/87,256, 44/87,257; June 15, 1970, 45/51,054

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—88.2 R 4 Claims

Stereospecific polymers of olefins are produced with little formation of amorphous polymers by contacting olefins with a catalyst composed of (A) a titanium trichloride composition obtained by pulverizing titanium trichloride in the presence of an auxiliary component selected from (1) organic oxygen-containing compounds such as saturated aliphatic monoethers, (2) organic nitrogen-containing compounds such as saturated aliphatic primary amines, (3) organic phosphorus-containing compounds such as trialkyl phosphines, (4) sulfur containing compounds such as carbon disulfide, (5) organic silicon-containing compounds such as triaryl silicon isocyanates, and (6) hydrocarbons such as saturated aliphatic hydrocarbons until α- or γ-crystal type of said titanium trichloride cannot be identified in the X-ray diffraction pattern and extracting the resulting titanium

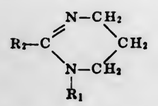
trichloride composition with a solvent such as hydrocarbons, halogenated hydrocarbons or carbon disulfide or mixtures of these with said components (1), (2) and/or (5); and (B) an organoaluminum compound.

3,701,764
PROCESS FOR THE FRACTIONATION OF POLYMERS
Bartholomew Hargitay, White Plains, N.Y., assignor to Union Carbide Corporation
Filed Aug. 26, 1968, Ser. No. 755,087
Int. Cl. C08f *1/94*
U.S. Cl. 260—88.3 **2 Claims**

Separation of the highest molecular weight fraction from polymers can be achieved by the selective formation in the homogeneous phase of soluble molecular complexes of the highest molecular weight fraction with specific other macromolecules and thereafter isolating the complexes from the polymers.

3,701,765
ANTISTATIC MOLDING COMPOSITIONS
Karl-Heinz Magosch and Konrad Rombusch, Marl, and Ursula Eichers, Recklinghausen, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,886
Claims priority, application Germany, Oct. 29, 1969, P 19 54 291.7; Jan. 19, 1970, P 20 02 095.5
Int. Cl. C08f *29/02, 29/04*
U.S. Cl. 260—93.7 **23 Claims**

Antistatic polyolefin molding compositions and articles containing 0.01–5.0% by weight of an antistat of the formula:



wherein R_1 is hydrogen, alkyl or alkenyl of 1–5 carbon atoms, or a group of the formula $(C_xH_{2x}O)_nH$ in which x is 2 or 3 and n is 1–10, and wherein R_2 is straight chain or branched alkyl or alkenyl of 5–25 carbon atoms, inclusive.

3,701,766
PROCESS FOR THE POLYMERIZATION OF α-OLEFINS
André Delbouille and Henri Toussaint, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium
No Drawing. Original application Aug. 29, 1968, Ser. No. 756,330, now Patent No. 3,594,330, dated July 20, 1971. Divided and this application Mar. 17, 1971, Ser. No. 125,327
Claims priority, application France, Aug. 31, 1967, 119,563
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 **9 Claims**

Polymerization of α-olefins is carried out in the presence of a solid catalyst which is composed of an organic compound of a metal of Groups I to III of the Periodic Table and a crystalline halide of a reduced metal of Groups IV*b*, V*b* or VI*b* of the Periodic Table deposited on a pulverulent support. The reduced metal halide is obtained by reducing a halide of the metal at its maximum valence with an organometallic compound at a temperature below 0° C. and in the absence of liquid diluent wherein the halide of the metal at its maximum valence or the organometallic compound has been absorbed on a solid pulverulent support prior to the reduction. Catalysts prepared in this manner have a high stereospecificity and catalytic activity, and polymerization carried out in the presence thereof yields highly isotactic crystalline polymer.

3,701,767
PEROXIDE BLEACHING OF EPOXIDIZED FATTY ACID ESTERS
William H. French, St. Paul, Minn., and Brian M. Rushton, Williamsville, N.Y., assignors to Ashland Oil, Inc., Houston, Tex.
No Drawing. Filed Feb. 2, 1971, Ser. No. 112,086
Int. Cl. C09f *1/02*
U.S. Cl. 260—97.5 **14 Claims**

A process of bleaching epoxidized fatty acid esters by treating the esters concurrently with an alkaline material and with hydrogen peroxide. Examples of some suitable epoxidized fatty acid esters are epoxidized soybean oil and epoxidized octyl tallate. Sodium hydroxide is the preferred alkaline material.

3,701,768
SIMPLE PROTEIN AND METHOD OF DERIVING IT FROM LIVER USING AN AQUEOUS SOLUTION OF A DIVALENT METAL ION
Jack G. Fortini, Oakland, Walter A. Blair, Palo Alto, and Gerold M. Grodsky, San Francisco, Calif., assignors to Blair/Johnson, Inc., Palo Alto, Calif.
Continuation-in-part of application Ser. No. 763,292, Sept. 27, 1968, which is a continuation-in-part of abandoned application Ser. No. 307,404, Sept. 9, 1963, which in turn is a continuation-in-part of abandoned application Ser. No. 5,376, Jan. 29, 1960. This application Dec. 27, 1971, Ser. No. 212,341
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 R **12 Claims**

A new simple protein of approximately 25,000 molecular weight exhibiting biological activity and method of deriving it from liver. The protein facilitates glucose uptake in muscle as well as glycogen deposition, leading to utility in the treatment of uremia and shock in animals.

3,701,769
N-(p-AMINOPHENYL) PYRROLIDINE CONTAINING MONOAZO DYES
Arnold F. Plue, Rensselaer, N.Y., and Leon Katz, Springfield, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,920
Int. Cl. C09b *29/00*
U.S. Cl. 260—152 **3 Claims**

Process for the preparation of N-(p-aminophenyl) pyrrolidines by coupling a diazotized aminobenzenesulfo acid with the pyrrolidino benzene corresponding to the desired product, and reducing the resulting azo compound to the corresponding amino derivatives. The intermediate azo compounds are useful as dyestuffs for polyamide fiber, and the N-(p-aminophenyl) pyrrolidines yield, on diazotization of the p-amino groups and conversion of the resulting diazonium compound to complex diazonium double salts, valuable sensitizers for light-sensitive diazotype copying materials.

3,701,770
9,11-CYCLIC BORONATE ESTERS OF THE 6,9-HEMIKETAL OF ERYTHROMYCIN A
Peter Hadley Jones, Lake Forest, and Kishori S. Iyer, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,733
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E **10 Claims**

The 9,11-phenyl; halo, nitro, and lower alkyl substituted phenyl; lower alkyl; fatty alkyl; and cyclyohexyl cyclic boronate ester of the 6,9-hemiketal of erythromycin A have useful antibiotic activity.

3,701,771
N-(2,4,6-TRIIODOBENZOYL)-SUGAR AMINES
Torsten H. O. Almen, Johan Haavaldsen, and Vegard Nordal, Oslo, Norway, assignors to Nyegaard & Co. A/S
No Drawing. Filed June 26, 1970, Ser. No. 50,075
Claims priority, application Great Britain, June 27, 1969, 32,699/69, Feb. 9, 1970, 6,130/70
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R **7 Claims**

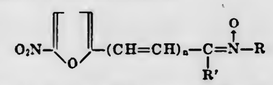
This invention relates to novel X-ray contrast agents particularly for use in the cerebrospinal cavities, comprising non-ionic alkanols carrying at least one N-bonded secondary or tertiary amide group and having at least two hydroxyl groups and at least one iodine atom in the molecule. Particularly useful compounds include the N-hydroxyalkyl iodoalkane sulphonamides having at least two hydroxyl groups, tri- and tetra-iodobenzene carrying carbamoyl, acylamino and/or acylaminomethyl substituents and having at least two hydroxyl groups in the molecule and at least one N-hydroxyalkyl group. Particularly preferred compounds comprise 2,4,6-triiodobenzamides which may be 3- and/or 5-substituted with a variety of groups. The compounds all show markedly low toxicities and a number show very high levels of water solubility.

3,701,772
PRODUCTION OF NUCLEOTIDE ANHYDRIDES
Kiminori Tamura, Manami Morozumi, Yutaka Noda, Morio Suzuki, and Hiroshi Yoshino, Choshi-shi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Araoi, Choshi-shi, Chiba-ken, Japan
No Drawing. Filed June 1, 1970, Ser. No. 42,579
Claims priority, application Japan, June 12, 1969, 44/45,786
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R **4 Claims**

Nucleotide anhydrides can be synthesized, in each case, by a single-step process by causing a nucleoside-5'-monophosphate and diphenyl phosphorochloridate or tetraphenyl pyrophosphate to react in a suitable solvent and in the presence of an alkylamine and then adding to the resulting process materials alkylammonium salt of an acid dissolved in pyridine or one of its derivatives.

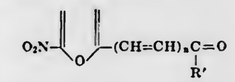
3,701,773
5-NITROFURYL NITRONES
Shinsaku Minami, Yamatokouriyama-shi, Jun-ichi Matsumoto, Osaka, Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki-shi, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 592,265, Nov. 7, 1966. This application July 23, 1968, Ser. No. 746,749
Claims priority, application Japan, Nov. 6, 1960, 40/68,196; July 27, 1967, 42/48,362
Int. Cl. C07d *5/30*
U.S. Cl. 260—240 A **42 Claims**

Nitrone derivatives having anti-microbial activity comprising compounds of the formula

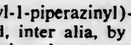


wherein n is 0 or 1; R is a substituted or unsubstituted alkyl radical having 1 to 6 carbon atoms. a substituted or unsubstituted phenyl radical, or a substituted or unsubstituted heterocyclic radical; and R' is hydrogen or an alkyl radical of 1 to 4 carbon atoms.

Such nitrone derivatives are prepared by condensing carbonyl compounds of the formula



with an N-substituted hydroxylamine of the formula



wherein n, R, and R' have the meaning set forth above.

3,701,774
5,5αβ,13,13αβ-TETRAHYDRO-5β,13β - DIHYDROXY-8H,16H-7α,15α - EPIDITHIO-7H-15H-BISOXEPINO-[3'4':4,5]PYRROLO[1,2-a:1',2'-d]-PYRAZINE - 7,15-DIONE, DIACETATE AND PRODUCTION THEREOF USING *ASPERGILLUS TERREUS*
Philip Andrew Miller, West Nyack, and Patrick Willoughby Trown, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed July 2, 1968, Ser. No. 741,849
Int. Cl. C07d *93/20;* A61l *13/00*
U.S. Cl. 260—243 R **2 Claims**

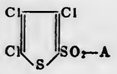
This disclosure describes 5,5αβ,13,13αβ-tetrahydro-5β, 13β - dihydroxy - 8H,16H-7α,15α-epidithio-7H,15H-bisoxepino[3',4':4,5]pyrrolo[1,2-a:1',2'-d]pyrazine - 7,15 - dione, diacetate, a new compound useful as an antiviral agent.

3,701,775
ESTERS OF MANDELOYLAMINOCEPHALOSPORANIC ACIDS
David A. Berges, Plymouth Meeting, George L. Dunn, Wayne, and John R. E. Hoover, Glenside, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,860
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **22 Claims**

Esters of mandelamidocephalosporanic acids having antibacterial activity are prepared by condensing the mandelamidocephalosporin with a carboxylic acid. Preferred compounds include those where the carboxylic acid is an amino acid.

3,701,776
SULFONES DERIVED FROM TRICHLOROTHIOPHENE
Daniel Pillon and Van Quy Trinh, Lyon, France, assignors to PEPRO, Société pour le Developpement et la Vente de Specialites Chimiques, Lyon, France
No Drawing. Filed Dec. 6, 1968, Ser. No. 781,968
Claims priority, application France, Dec. 8, 1967, 49,418
Int. Cl. C07d *87/46, 29/34, 63/14*
U.S. Cl. 260—247.1 **1 Claim**

Sulfones derived from trichlorothiophene having the general formula



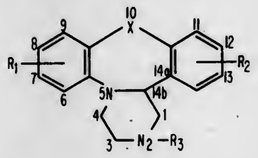
and the utilization thereof as a parasiticide, insecticide, fungicide, nematicide and herbicide.

3,701,777
SUBSTITUTED [3-(4-PHENYL-1-PIPERAZINYL) PROPOXY OR PROPYL THIO] ANILINES
Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,297
Claims priority, application Switzerland, Dec. 24, 1968, 19,269/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **16 Claims**

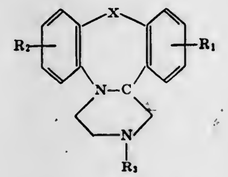
Substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio]anilines prepared, inter alia, by the reaction of the correspondingly substituted propoxy or propyl-thio anilines and N-phenyl-piperazines, are described. The end

products, i.e., the substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio]anilines are useful as hypotensive agents.

3,701,778
DIBENZO-PYRAZINO-AZEPINES
Willem Jacob van der Burg, Oss, Netherlands, assignor to Organon Inc., West Orange, N.J.
Filed June 26, 1968, Ser. No. 740,319
Claims priority, application Netherlands, July 7, 1967, 6709520
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 PC **7 Claims**



The present invention relates to new piperazine derivatives of the general formula:



in which X is sulfur, oxygen, or N-(C_1-C_6-alkyl); R_1 and R_2 are hydrogen, halogen, acyloxy, alkyl, alkoxy or trifluoromethyl; R_3 is hydrogen, alkyl, phenylalkyl aminoethyl or aminopropyl each of which latter may be substituted at N by alkyl or alkyl with a 5- or 6-membered nitrogen containing ring; and the acid addition salts, quarternary ammonium derivatives, nitrogen oxides, or sulfur oxides thereof. The above compounds exert antihistaminic, antiserotinic, antiinflammatory and cardiovascular activities and the intermediate products exert sedative, tranquilizing and anti-depressive activities.

3,701,779
PYRIDINE CARBAMATES
Cyril Donninger, East Sutton, and John A. Schofield and John E. Hawes, Kent, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 3, 1970, Ser. No. 86,635
Claims priority, application Great Britain, Nov. 7, 1969, 54,653/69
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 G **4 Claims**

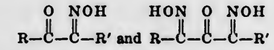
Certain novel 3-pyridyl carbamates, useful as insecticides, fungicides and nematocides.

3,701,780
IMIDAZO[1,2-a]PYRIDINES
Michael H. Fisher, Somerville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Sept. 18, 1970, Ser. No. 73,603
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C **5 Claims**

New imidazo[1,2-a]pyridines substituted at the 2 and 6 positions as well as processes for preparing such compounds are disclosed. Also disclosed are methods of using the above compounds for the treatment of helmintic and fungal infections as well as compositions containing the above compounds as an active ingredient for use as anthelmintic and fungicidal agents.

3,701,781
ALPHA-OXIMINO KETONE ANTISKINNING AGENTS
Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio
No Drawing. Filed May 14, 1971, Ser. No. 143,640
Int. Cl. C09d *3/64*
U.S. Cl. 260—22 A **6 Claims**

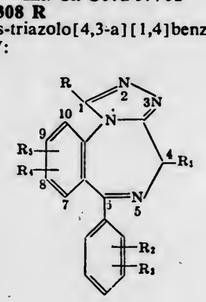
Compounds corresponding to the formulae:



wherein R and R' are straight chain alkyls having 1 to 10 carbon atoms, which may have one methyl branch are superior antiskinning agents for phenol-modified unsaturated polyester resins.

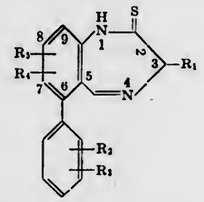
3,701,782
1-CARBOLOWER ALKOXY - 6 - PHENYL-4H-s-TRIAZOLO[1,4]BENZODIAZEPINE COMPOUNDS
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of applications Ser. No. 807,933, Mar. 17, 1969, and Ser. No. 872,394, Oct. 29, 1969. This application Feb. 10, 1972, Ser. No. 225,302
Int. Cl. C07d *57/02*
U.S. Cl. 260—308 R **2 Claims**

6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepines of the Formula IV:

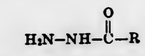


(IV)

wherein R is —COOR' in which R' is alkyl of 1 to 4 carbon atoms, inclusive; wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, are produced by condensing a 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thione of the Formula I:



wherein R_1, R_2 R_3, R_4, and R_5 are defined as above with an organic acid hydrazide of the formula:



(II)

wherein R is defined as above.

The new products of Formula IV including their pharmacologically acceptable acid addition salts are useful as sedatives, tranquilizers and muscle relaxants in mammals and birds.

3,701,783
CERTAIN MERCAPTAN-FORMING COUPLERS
Charles R. Barr, John Williams, and Keith E. Whitmore, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of application Ser. No. 270,709, Apr. 4, 1963, now Patent No. 3,227,554, which is a continuation-in-part of applications Ser. No. 817,860, June 3, 1959, now abandoned, Ser. No. 126,783, June 29, 1961, now abandoned, and Ser. No. 244,774, Dec. 14, 1962, now Patent No. 3,227,551. This application June 14, 1965, Ser. No. 507,975
The portion of the term of the patent subsequent to Jan. 4, 1983, has been disclaimed
Int. Cl. C07d *55/56*
U.S. Cl. 260—308 D **14 Claims**

Certain mercaptan-forming or thioether couplers having the general formula COUP—S—R wherein COUP is a photographic coupler radical, S is a monothio radical attached to the coupling position of the coupler moiety and R is an organic radical.

3,701,784
1,2,4-4H-TRIAZOLE DERIVATIVES
Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Hatboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 757,490, Sept. 4, 1968. This application July 3, 1969, Ser. No. 847,481
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 R **4 Claims**

Substituted 1,2,4-4H-triazoles of the formula



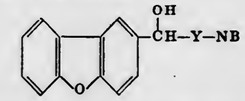
or a tautomeric form thereof, are fungicides particularly useful for the control of rusts. Certain of these compounds are systemic in action, giving excellent control of cereal rusts, notably wheat rust, and are particularly effective as seed treatments.

3,701,785
1,3-DIMETHYL-4,5-DI(p-SUBSTITUTED PHENYL)-6H-PYRROLO[2,3-c]PYRAZOLES
Leo Ralph Swett, Waukegan, Ill., and Gerard Yvon Paris, Duvernay, Quebec, Canada, assignors to Abbott Laboratories, Chicago, Ill.
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,767
Int. Cl. C07d *57/02*
U.S. Cl. 260—310 R **11 Claims**

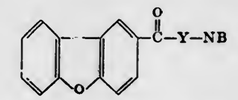
1,3 - dimethyl - 4,6 - di(p-substituted phenyl)-6H-pyrrolo[2,3-c]pyrazoles and novel intermediates useful in their synthesis. The compounds are useful as anti-inflammatory and anti-pyretic agents.

3,701,786
DIBENZOFURANYL-AMINOALCOHOLS
Harvey B. Hopps, West Allis, Wis., Dennis Jackman, University, Miss., and John H. Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.
No Drawing. Continuation-in-part of application Ser. No. 693,765, Dec. 27, 1967, which is a continuation-in-part of application Ser. No. 605,995, Dec. 30, 1966, which in turn is a continuation-in-part of application Ser. No. 462,066, June 7, 1965, all abandoned. This application May 19, 1971, Ser. No. 145,060
Int. Cl. C07d *99/04*
U.S. Cl. 260—293.58 **6 Claims**

Compounds of the formula



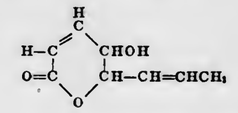
which possess hypotensive activity and are useful for treating hypertension in mammals and compounds of the formula



which are useful as intermediates in the preparation of the foregoing hypotensive agents and also in some cases exhibit hypotensive, sedative and muscle relaxant activity and processes for the preparation of the foregoing compounds. In the foregoing formulae, NB is a primary or secondary amino radical and Y is (lower)alkylene.

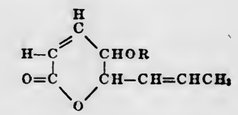
3,701,787
PREPARATION OF 5,6-DIHYDRO-5-HYDROXY-6-PROPENYL-2-PYRONE BY FERMENTATION AND DERIVATIVES THEREOF
Ralph Henry Evans, Jr., Rivervale, N.J., and Chester Eric Holmlund, Silver Spring, Md., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,686
Int. Cl. C07d *7/16*
U.S. Cl. 260—343.5 **2 Claims**

The new compound of Formula I:



I

is prepared by the cultivation under controlled aerobic conditions of Nigrospora species Z1276. Compound I is acylated or etherified by chemical methods to yield the new esters or ethers of Formula II:



II

wherein R is an acyl radical such as acetyl, propionyl, p-nitrobenzoyl or succinoyl; or an ether radical such as a lower alkyl group, e.g., methyl, ethyl or propyl. All the compounds of this invention have antimicrobial activity. The compound of Formula I also has anti-inflammatory activity.

3,701,788
4-AZIDOSULFONYLPHTHALIC ANHYDRIDE
Adnan A. R. Sayigh, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed May 10, 1971, Ser. No. 142,021
Int. Cl. C07c *63/14*
U.S. Cl. 260—346.3 **1 Claim**

4-azidosulfonylphthalic anhydride, obtained by reaction of sodium azide with 4-chlorosulfonylphthalic anhydride, is a novel compound useful, for example, in the preparation of radiation-sensitive polymers containing free carboxylic acid groups.

3,701,789
PROCESS FOR JOINTLY PRODUCING FURFURAL AND LEVULINIC ACID FROM BAGASSE AND OTHER LIGNOCELLULOSIC MATERIALS
Emiliano Ramos-Rodriguez, San Juan, Puerto Rico, assignor to Commonwealth of Puerto Rico
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,154
Int. Cl. C07d *5/22*
U.S. Cl. 260—347.9 **8 Claims**

The production of furfural and levulinic acid in high yields from lignocellulosic material, such as bagasse, in a single cook by heating within the range of 160°–170° C. in a closed vessel under saturating pressure in an aqueous sulfuric acid cooking liquor of relatively low concentration and with a relatively low lignocellulosic material to cooking liquor ratio to cause extensive depolymerization of carbohydrate polymers and material formation of free pentoses and hexoses but little production of furfural or levulinic acid; isothermally distilling off at a temperature within this range the furfural formed and being formed, whereby a cooking liquor more concentrated with respect to sulfuric acid is produced; and heating the resulting reaction mixture to a temperature within the range of 185°–210° C., this temperature being maintained until optimum production of levulinic acid is achieved.

3,701,790
ANTIBIOTIC SPHAEROPSIDIN
John H. Coats and Milton E. Herr, Kalamazoo, and Ross R. Herr, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Application Mar. 4, 1968, Ser. No. 709,901, now Patent No. 3,585,111, which is a continuation of application Ser. No. 506,853, Nov. 8, 1965. Divided and this application Mar. 3, 1971, Ser. No. 120,703
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 C **1 Claim**

Antibiotic sphaeropsidin producible by culturing a fungus belonging to the class *Fungi imperfecti*, genus Phoma, in an aqueous nutrient medium. Sphaeropsidin is an antifungal agent and can be used in shoe uppers.

3,701,791
SALICYLOYLAMINO-ANTHRAQUINONE PIGMENTS
André Pugin, Riehen, Kurt Burdeska, and Ernst Model, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Sept. 15, 1969, Ser. No. 858,126
Claims priority, application Switzerland, Oct. 11, 1968, 15,204/68
Int. Cl. C09b *1/42, 1/54*
U.S. Cl. 260—377 **7 Claims**

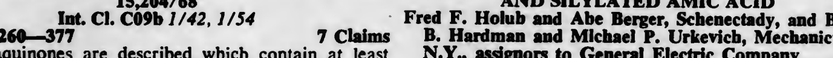
Anthraquinones are described which contain at least two salicyloylamino substituents in which substituents the benzene nucleus is substituted by

these anthraquinones are yellow to orange coloured pig-
R_1 being hydrogen, chlorine, bromine, the methyl, hydroxyl, methoxy, cyano or phenyl group or an alkylsulphonyl group having 1–4 carbon atoms, and
R_2 being hydrogen, chlorine, bromine or the methyl group;

ments of very good weather- and light-fastness and good fastness to migration and over-lacquering in synthetic plastic materials, as well as good colour strength.

3,701,792
1,4-BIS-(HEPTAFLUOROISOPROPOXY)-2,3-EPOXY-BUTANE
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Dec. 22, 1969, Ser. No. 887,380. Divided and this application Feb. 17, 1971, Ser. No. 116,289
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **1 Claim**

1,4-bis-(heptafluoroisopropoxy)-2-butene is oxidized to form the corresponding epoxide



$(CF_3)_2CF-O-CH_2-CH-CH-CH_2-O-CF(CF_3)_2$

This epoxide can be converted into homo- or co-polymers which are useful for enhancing the repellency of fibrous substrates, e.g., fabrics made from natural or synthetic fibers.

3,701,793
METHOD OF CARRYING OUT LIQUID GAS REACTIONS
Hans Joachim Schmidt and Theodor Voeste, Frankfurt, Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany
Filed Dec. 31, 1969, Ser. No. 889,564
Int. Cl. C11c *3/12*
U.S. Cl. 260—409 **1 Claim**

A chemical-reactor method, wherein a liquid phase and a gas phase are passed upwardly through unpacked reaction chambers in a reactor column. The chambers are separated from one another by perforated plates with openings such that the linear gas velocity through the plates is 1 to 50 meters per second.

3,701,794
METHOD FOR PREPARING 10-CHLORO-PHENOXARSINE
Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.
No Drawing. Filed July 23, 1971, Ser. No. 165,749
Int. Cl. C07d *105/06*
U.S. Cl. 260—440 **2 Claims**

10-chlorophenoxarsine is prepared by reacting a mixture of arsenic trioxide, anhydrous aluminum trichloride and diphenyl ether, the latter being in an amount between about 50 and 200 percent in excess of the stoichiometric amount, while agitating and heating the reaction mixture at a temperature between about 175° C. and about 260° C. until hydrogen chloride ceases to be evolved. Thereafter, the insoluble by-products are removed and the 10-chlorophenoxarsine is isolated from the excess diphenyl ether.

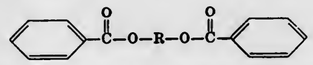
3,701,795
ALIPHATICALLY UNSATURATED AMIC ACID AND SILYLATED AMIC ACID
Fred F. Holub and Abe Berger, Schenectady, and Bruce B. Hardman and Michael P. Urkevich, Mechanicville, N.Y., assignors to General Electric Company
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,291
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 N **10 Claims**

Organopolysiloxanes are provided wherein the organopolysiloxanes have either a terminal aliphatically unsaturated amic acid or aliphatically unsaturated silylated amic acid group attached at one end and an alkenyl group attached at the other end, said amic acid or silylated amic

acid group being attached to silicon through carbon-silicon bonds. The novel compounds are used to form siloxanes useful as, for example, corrosion protective coatings for metal or ceramic surfaces.

3,701,796
STORAGE STABLE METHYLENEBIS (PHENYL ISOCYANATE) COMPOSITIONS
Nabil Najib Saaty, Palos Verdes Peninsula, and Richard Lee Jacobs, Hawthorne, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Sept. 29, 1970, Ser. No. 76,611
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 SP **4 Claims**

Methylenebis (phenyl isocyanate) is converted to a form which is a storage stable liquid even on exposure to temperatures as low as −5° C. The storage stable composition comprises from about 85 to about 50 percent by weight of (a) the isocyanate obtained by heating methylenebis(phenyl isocyanate) with about 0.1 percent to about 3 percent by weight of a trihydrocarbyl phosphate at a temperature within the range of about 160° C. to about 250° C. and from 15 to about 50 percent by weight of (b) a dibenzoate of the formula

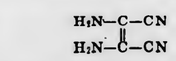


wherein R is the residue of an alkylene glycol or polyalkylene glycol.

The liquid isocyanate so obtained can be used for polyurethane syntheses for which the untreated methylenebis (phenyl isocyanate) is commonly employed.

3,701,797
PROCESS FOR PREPARING DIAMINOMALEONITRILE
Tomio Okada, Yamato, and Norio Asai, Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan
No Drawing. Filed May 1, 1970, Ser. No. 33,870
Claims priority, application Japan, May 7, 1969, 44/35,044; Aug. 7, 1969, 44/62,691
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.5 R **4 Claims**

Diaminomaleonitrile having the formula:



$H_2N-C-CN$
$H_2N-C-CN$

is prepared rapidly and in high yield by polymerization of hydrogen cyanide in the presence of a polar aprotic solvent and a basic material as a catalyst. Particularly, dimethylsulfoxide (DMSO) or dimethylformamide (DMF) is used as the solvent. Diaminomaleonitrile is useful as an intermediate for medicines or industrial chemicals.

3,701,798
SYNTHESIS OF UNSATURATED COMPOUNDS
Thomas Carter Snapp, Jr., Alden E. Blood, and Hugh John Hagemeyer, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Dec. 3, 1965, Ser. No. 511,327, now Patent No. 3,578,702. Divided and this application June 24, 1970, Ser. No. 59,836
Int. Cl. C07c *121/30, 49/20, 47/20*
U.S. Cl. 260—465.9 **9 Claims**

A process for producing α,β-unsaturated aldehydes, ketones or nitriles which comprises contacting formaldehyde and a saturated aldehyde, ketone or nitrile at 300° to 525° C. in the presence of at least one inorganic oxide of a rare earth metal of the lanthanide series impregnated on a silica gel, alumina or kieselguhr support.

3,701,799
PLANT GROWTH REGULATORS
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,296
Int. Cl. C07c *93/18, 93/22, 93/26*
U.S. Cl. 260—468 P **3 Claims**

Novel esters of chrysanthemumic acid are disclosed. The compounds are useful as plant growth regulators.

3,701,800
CIS 1-METHYL-2-ISOPROPENYL-CYCLOBUTYL ACETIC ACID
Rene C. Zurfluh and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
No Drawing. Original application Oct. 22, 1969, Ser. No. 870,009. Divided and this application June 25, 1971, Ser. No. 156,944
Int. Cl. C07c *61/16, 69/74*
U.S. Cl. 260—468 H **3 Claims**

Stereospecific synthesis of sex attractant component of the boll weevil by halogenation of 6-methylbicyclo [4,2,0]octan-2-one or ketal thereof, dehydrohalogenation, methylation of ketone, mild oxidative cleavage to desired cis isomer, Wittig conversion of ketone to methylene and reduction of acid or ester thereof to cis 2-(1'-methyl-2'-isopropenyl-cyclobutyl)ethanol.

3,701,801
ALKYL ESTERS OF 4-CHLORO-ALKYLRESORCYLIC ACID
James Douglas Grossman, Old Bridge, and Kenneth K. Light, Freehold, N.J., assignors to International Flavors and Fragrances Inc.
No Drawing. Filed Feb. 8, 1971, Ser. No. 113,699
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 S **3 Claims**

A process is described for the preparation of alkyl 3-chloro ring-substituted resorcylic acid esters which comprises reacting at temperatures of from −20 up to +50° C. an alkyl ring-substituted dihydroresorcylic acid ester with an oxidative chlorine source. Certain novel alkyl 3-chloro ring-substituted resorcylic acid esters which give to fragrances natural and distinctly oakmoss or mousse-like notes are obtained.

3,701,802
CYANOETHYLATION OF HYDROXY COMPOUNDS
Gerhard Maerker, Oreland, and Harold E. Kenney, Jenkintown, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 594,252, Nov. 14, 1966. This application Aug. 22, 1969, Ser. No. 852,469
Int. Cl. C09f *7/00*
U.S. Cl. 260—404 **8 Claims**

Long chain fatty acid derivatives containing at least one hydroxyl group per molecule are cyanoethylated by dissolving them in acrylonitrile and adding a strong base to catalyze the reaction between the fatty acid derivative and the acrylonitrile to provide a β-cyanoethylated product. The acrylonitrile functions both as a solvent and as a reactant.

A non-exclusive, irrevocable, royalty-free license in the invention herein described, throughout the world for

all purposes of the United States Government, with the power to grant sublicenses for the purposes, is hereby granted to the Government of the United States of America.

3,701,803
METHOD FOR THE PRODUCTION OF ACETOACETIC ACIDS
Karl-Josef Boosen, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland
No Drawing. Filed July 2, 1969, Ser. No. 838,646
Claims priority, application Switzerland, July 4, 1968, 10,035/68
Int. Cl. C07c *59/32, 59/36*
U.S. Cl. 260—526 R 9 Claims

The hitherto-undescribed crystalline acetoacetic acid and halogeno-acetoacetic acids of the formula

$$R_1CH_2—CO—CR_2R_3—COOH$$

in which R_1, R_2 and R_3 each represent hydrogen or R_1 represents halogen (preferably chlorine or bromine) and R_2 and R_3 each represents hydrogen or halogen (preferably chlorine or bromine) are obtained by converting diketene into an acetoacetic acid halide or halogeno-acetoacetic acid halide by means of hydrogen halide or halogen at a temperature of from about −10 to −40° C., and the acetoacetic acid halide or halogenoacetoacetic acid halide is converted into the corresponding acid by hydrolysis with a stoichiometrically equivalent quantity of water.

3,701,804
PROCESS FOR ADIPIC ACID MANUFACTURE
Walter H. Knoth, Jr., Mendenhall, Pa., and George W. Parshall, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,345
Int. Cl. C07c *55/14*
U.S. Cl. 260—530 R 5 Claims

Disclosed herein is a process for the manufacture of adipic acid, a reactant in the preparation of 6,6 nylon, comprising reacting cyclohexene and acetaldehyde in the presence of oxygen and a catalyst consisting of a salt of one of the metals vanadium, tungsten, molybdenum, osmium or ruthenium, said process optionally employing a cocatalyst consisting of an inorganic nitrogen-containing compound.

3,701,805
PREPARATION OF CITRACONIC AND ITACONIC ACIDS
Rudolph G. Berg, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,260
Int. Cl. C07c *51/38*
U.S. Cl. 260—531 R 4 Claims

High purity citraconic or itaconic acid can be prepared by a two step process using citric acid, isocitric acid, isocitric lactone, aconitic acid, their anhydrides or mixtures thereof as the starting reactant. The first step is a vapor-phase catalytic conversion of the starting reactant in admixture with an inert gas at about 215–400° C. to citraconic acid or anhydride from which citraconic acid can be recovered. The second step involves isomerization of the aqueous citraconic acid solution obtained to yield itaconic acid. The catalytic material employed in the first step comprises a supported alkali or alkaline earth metal salt of phosphoric acid, pyrophosphoric acid, boric acid, or sulfuric acid. The concentration of active catalyst material on the inert support is preferably about 0.1–5 weight percent for alkali metal dihydrogen phosphates. Potassium dihydrogen phosphate is most preferred as the active catalyst material. The second step isomerization is preferably carried out at 180–250° C. at an initial concentration of citraconic acid of 35–50 weight percent.

3,701,806
PROCESS FOR PREPARING A MIXTURE OF AROMATIC SULFONES AND AROMATIC SULFONYL CHLORIDES
Michael J. Keogh, Piscataway, and Arthur K. Ingberman, Somerville, N.J., assignors to Union Carbide Corporation
No Drawing. Filed June 10, 1966, Ser. No. 556,591
Int. Cl. C07c *143/70, 147/06*
U.S. Cl. 260—543 R 9 Claims

Mixtures of aromatic sulfones and sulfonyl chlorides are prepared by reacting an aromatic compound having the formula:



where X is hydrogen, fluoro, chloro, bromo, or methyl with a mixture of sulfur trioxide and thionyl chloride.

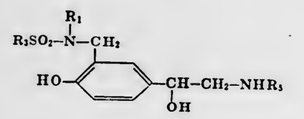
3,701,807
N-(1-CYCLOALKEN-1-YL) UREAS AND THIOUREAS
John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 721,877, Apr. 16, 1968, which is a continuation of application Ser. No. 523,856, Feb. 1, 1966. This application Nov. 12, 1968, Ser. No. 775,104
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 A 11 Claims

N-(1-cycloalken-1-yl)ureas and thioureas prepared by the reactions of a N-substituted imine with an isocyanate.

These compounds are useful as biocides, particularly phylotoxicants.

3,701,808
PHENYLETHANOLAMINES
David Hartley, Lawrence Henry Charles Lunts, and David Jack, London, England, assignors to Allen & Hamburys Limited, London, England
No Drawing. Original application Dec. 10, 1968, Ser. No. 782,742, now Patent No. 3,644,520. Divided and this application May 11, 1971, Ser. No. 142,420
Claims priority, application Great Britain, Dec. 21, 1967, 58,012/67
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 A 5 Claims

Compounds of the formula



wherein R_1 is H or alkyl of 1 to 6 carbon atoms; R_3 is alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted by lower alkyl and R_5 is H, alkyl of 1 to 6 carbon atoms, cyclopentyl or alkyl of 1 to 6 carbon atoms substituted by phenyl, lower alkoxyphenyl or phenoxy; or physiologically acceptable acid addition salts thereof. The compounds possess stimulant or blocking actions on adrenergic receptors.

3,701,809
CYCLIC PROCESS FOR THE PREPARATION OF AN OXIME FROM A HYDROXYLAMMONIUM SALT SOLUTION
Abraham H. de Rooij, Geleen, and Ferdinand J. G. Kwanten, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
Filed Nov. 12, 1969, Ser. No. 875,723
Claims priority, application Netherlands, Nov. 12, 1968, 6816075
Int. Cl. C07c *131/00*; C01c *1/28*; C01b *21/00*
U.S. Cl. 260—566 A 1 Claim

A cyclic process in which an aqueous acid reaction mixture is kept in circulation between a zone for the synthesis of hydroxylamine and a zone for the synthesis of oxime. Nitric acid is continuously added to the circulating liquid, the nitrate ions being catalytically reduced with H_2 to form NH_2OH and some NH_3 as by-product. The NH_2OH is consumed in oxime synthesis zone and the NH_3 by-product is continuously removed by contacting the circulating liquid with a mixture containing NO and NO_2 under such conditions that N_2 and H_2O result.

3,701,810
PROCESS FOR THE PRODUCTION OF METHYL ETHYL KETONE FROM n-BUTENE
Hiroshi Hasegawa, 500 Shimotsu, Shimotsu-cho, Kaiso-gun, and Makoto Iriuchijima, 448 Kata, Shimotsu-cho, Kaiso-gun, both of Wakayama, Japan
Filed Dec. 4, 1968, Ser. No. 780,958
Int. Cl. C07c *45/02*; B01j *11/78, 11/82*
U.S. Cl. 260—597 B 12 Claims

Producing methyl ethyl ketone at a high space-time yield with reduced formation of by-products comprising contacting n-butene with an aqueous catalyst solution containing a water-soluble chloride compound, water-soluble palladium compound and ferric sulfate, the chlorine ion content (per liter) of said aqueous solution being 0.005–0.15 gram-ion and the chemical equivalent ratio of chlorine to palladium in the solution being within the range 1.5/1–20/1. The novel catalyst solution described also forms part of the present invention.

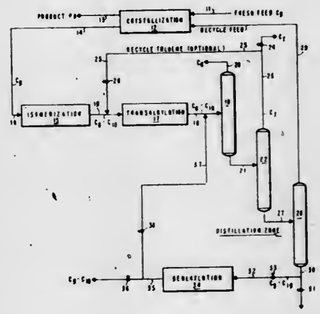
3,701,811
ALKYLATION OF PHENOLS
Thomas Nicklin, Middleton, England, assignor to The Gas Council, London, England
No Drawing. Filed Apr. 14, 1969, Ser. No. 816,046
Int. Cl. C07c *37/16*
U.S. Cl. 260—621 R 4 Claims

Phenols having either or both of the ortho positions available for substitution are alkylated with an alkyl group having up to three carbon atoms by contacting the phenol and the alkanol corresponding to the alkyl group with a catalyst comprising cerium oxide and uranium oxide. The active ingredients are preferably disposed on the surface of a catalyst carrier, and the process is particularly useful in the methylation of phenol itself.

3,701,812
PROCESS FOR PREPARATION OF TRICYCLOPENTADIENE
Herbert J. Gebhart, Jr., Ferguson, and Earle C. Makin, Jr., St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,252
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY 12 Claims

A process for preparing tricyclopentadiene from a feed stream containing dicyclopentadiene comprising heating the stream at a temperature of from 260 to 310° C. for a period of from 5 to 25 minutes and under a pressure sufficient to maintain cyclopentadiene essentially in solution. The process produces tricyclopentadiene in yields generally above 70 percent and substantially excludes production of cyclopentadiene polymers higher than the trimer.

3,701,813
PRODUCTION OF AROMATICS
Donald G. Stenmark, Houston, Tex., assignor to Esso Research and Engineering Company
Filed Nov. 12, 1970, Ser. No. 88,786
Int. Cl. C07c *5/28, 3/62*
U.S. Cl. 260—668 A 14 Claims



In the liquid phase isomerization of a selected monocyclic aromatic hydrocarbon, such as a xylene to p-xylene, the production of the selected aromatic hydrocarbon is enhanced and the amount of recycled unisomerized hydrocarbon is reduced by transalkylation of the isomerizate prior to recycle of the transalkylate and separation of it into its component fractions.

3,701,814
PROCESS OF ALKYLATION WITH BASE OF METAL OXIDE
Wilbur L. Shilling, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,502
Int. Cl. C07c *69/38, 69/76*
U.S. Cl. 260—475 SC 2 Claims

A base catalyzed alkylation process wherein the base employed is a metal oxide wherein the metal is lithium, sodium, potassium, calcium or barium. The preferred base is calcium oxide and the preferred solvent is dimethyl sulfoxide.

3,701,815
THERMOPLASTIC SILOXANE-POLYESTER BLOCK COPOLYMERS
Markus Matzner, Edison, Allen Noshay, East Brunswick, and Robert Barclay, Jr., New Brunswick, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 792,122, Jan. 17, 1969. This application Jan. 20, 1971, Ser. No. 108,161
Int. Cl. G08g *39/10, 47/10*
U.S. Cl. 260—824 R 10 Claims

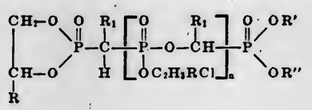
This invention relates to thermoplastic siloxane-polyester block copolymers having siloxane blocks that are linear and contain dihydrocarbylsiloxane groups and polyester blocks that are linear and contain groups derived from aromatic dicarboxylic acids and diols.

The block copolymers of this invention are elastomeric or rigid, depending on their specific composition, even

though thermoplastic and have exceptional thermal and oxidative stability. The block copolymers are useful, for example, as molding resins and extruding resins.

3,701,816
PHOSPHORUS-CONTAINING POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF
Sumitaka Nogami, Asaka, Masaki Ishigami, Nobeoka, and Jiro Kurita, Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Osaka Prefecture, Japan
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,953
Claims priority, application Japan, Nov. 16, 1967, 42/73,380
Int. Cl. C07f *9/32, 9/40*
U.S. Cl. 260—927 **10 Claims**

Polyphosphonates, useful as a plastic material, as a plasticizer and as an additive, represented by the general formula



wherein *n* represents an integer of 1 or more; R represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms; R_1 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a phenyl group, an alkenyl group or a cyclohexyl group; and R′ and R″ which may be the same or different and may form a phosphoran ring, each represent an alkyl group having 1 to 6 carbon atoms, a haloalkyl group having 1 to 6 carbon atoms or an aryl group and a process for the preparation of the same which comprises reacting a cyclic chlorophosphite with an aldehyde in the presence of an organic phosphite.

3,701,817
HALOGENATED PHOSPHORUS COMPOUNDS CONTAINING THE ATOM SKELETON P—(C—P)$_2$ OR P—(C—P)$_3$ AND PREPARATION
Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,638
Int. Cl. C07f *9/32, 9/40*
U.S. Cl. 260—932 **3 Claims**

Compounds of the formula

$$P(O)_a(OC_2H_5)_b[C(H)_cX_{2-c}P(O)(OC_2H_5)_2]_{3-b}$$

and processes for making by halogenating a compound of the formula

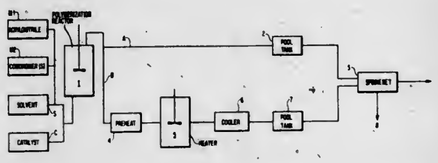
$$P(O)_a(OC_2H_5)_b[CH_2P(O)(OC_2H_5)_2]_{3-b}$$

The compounds are used as complexing agents and flame-proofing agents.

3,701,818
O-(HALOVINYL) PHOSPHORODICHLORIDOTHIOATES
Samuel B. Soloway and Juan G. Morales, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Oct. 9, 1970, Ser. No. 79,630
Int. Cl. A01n *9/36;* **C07f** *9/16, 9/20*
U.S. Cl. 260—957 **4 Claims**

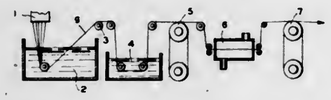
O-(halovinyl) phosphorodichloridothioates are useful as chemical intermediates in the preparation of biologically active O-(halovinyl) O,O-dihydrocarbyl phosphorothioates.

3,701,819
METHOD FOR PRODUCTION OF ACRYLIC COMPOSITE FIBER
Masatoshi Yoshida, Shizuoka, Yasuo Saji, Nakatogari, and Kazuhisa Saito and Shigeru Ikegami, Kamitogari, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan
Filed Aug. 14, 1969, Ser. No. 850,036
Claims priority, application Japan, Aug. 16, 1968, 43/58,435
Int. Cl. B29f *3/10;* **D01d** *5/22*
U.S. Cl. 264—168 **13 Claims**



A method of producing acrylic composite fibers having excellent bulkiness and wool-like hand by conjugate spinning of a solution of an acrylonitrile polymer and a heat-treated solution thereof in the presence of a concentrated aqueous zinc chloride solution as the spinning solvent.

3,701,820
PROCESS FOR HIGH SPEED WET SPINNING OF ACRYLONITRILE FIBERS
Keijiro Kuratani and Keitaro Fukushima, Saidaiji, Japan, assignors to Japan Exlan Company Limited
Filed July 22, 1969, Ser. No. 843,437
Claims priority, application Japan, July 22, 1968, 43/52,011
Int. Cl. D01f *7/02*
U.S. Cl. 264—182 **2 Claims**

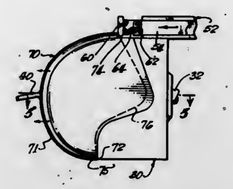


A process for producing acrylic synthetic fibers which have a uniform cross-sectional shape and luster at a high speed comprising extruding a spinning solution prepared from acrylonitrile polymers into an inert gas medium, then leading them into an aqueous coagulating bath to form unoriented gel fibers, washing with water, stretching and drying obtained fibrous materials and then re-stretching said fibrous materials in the presence of steam.

3,701,821
METHOD FOR MOULDING HELMET SHELLS AND THE LIKE
Ralph Barnes, 18909 Anelo Ave., Gardena, Calif. 90247
Filed Dec. 14, 1970, Ser. No. 97,619
Int. Cl. B29c *7/00*
U.S. Cl. 264—318 **1 Claim**

A helmet shell comprising a hollow generally hemiellipsoidal body provided with opposite integral converging lobes at the extremities of its minor axis is moulded in plastic material on a rigid core, from which it is removed by fulcruming about a point on a major axis of the core

to temporarily flex its lobes outwardly. This flexing is effected by camming action of the core's surface upon the interior surfaces of the lobes and accompanied by

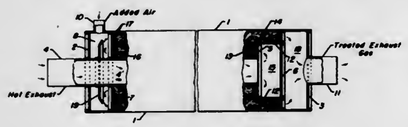


temporary distortion of the hemiellipsoidal portion of the body toward a more nearly spherical configuration. Upon removal from the core, the helmet shell resumes the shape in which it was moulded.

3,701,822
PROCESS AND CATALYST FOR TREATING COMBUSTION EXHAUST GAS
John S. Negra, South Plainfield, and Abe Warshaw, Matawan, N.J., assignors to Chemical Construction Corporation, New York, N.Y.
No Drawing. Filed June 11, 1970, Ser. No. 45,576
Int. Cl. B01d *53/54*
U.S. Cl. 423—213 **3 Claims**

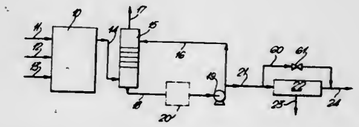
The exhaust gas from internal combustion engines or the like is treated to convert harmful or pollutant components such as nitrogen oxides, carbon monoxide and unburned hydrocarbons to innocuous compounds, by contacting the exhaust gas with a catalyst composition containing nickel, cobalt and manganese in catalytically effective amounts, deposited on a carrier such as alpha alumina.

3,701,823
METHOD AND MEANS FOR TWO-STAGE CATALYTIC TREATING OF ENGINE EXHAUST GASES
Leslie C. Hardison, Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 762,554, Sept. 25, 1968. This application Sept. 2, 1970, Ser. No. 69,060
The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed
Int. Cl. B01d *53/00;* **B01j** *9/04*
U.S. Cl. 423—213 **8 Claims**



A two-stage catalytic treatment of engine exhaust gases by passing the hot gas stream without cooling and without added air through a first catalyst section to effect reduction of nitrogen oxides and then mixing air with the resulting stream for passage through a second stage catalyst section so as to effect more complete oxidation of CO and unburned hydrocarbons. A preferred apparatus is built to have the second catalyst stage along side of and in heat-exchange relationship with the first stage so as to assist in maintaining a high temperature first catalytic reduction section.

3,701,824
METHOD OF REMOVING ODORIFEROUS SULPHUR COMPOUNDS FROM VAPOURS OR GAS STREAMS
Steven Prahacs, Beaconsfield, Quebec, and Satya Pal Bhatta, Pointe Claire, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Quebec, Canada
Filed Oct. 2, 1970, Ser. No. 77,412
Claims priority, application Canada, Mar. 25, 1970, 78,366
Int. Cl. B01d *53/34*
U.S. Cl. 423—225 **26 Claims**



Objectionably odoriferous sulphurous gases, e.g. H_2S and CH_3SH, are removed from a gaseous stream by intimately contacting the stream with an aqueous alkaline suspension of activated carbon having a pH of at least about 8 in the presence of at least about 12% by volume of CO_2 and not more than about 6% by volume of O_2, the activated carbon thereby promoting the oxidation of sulphide ions and CH_3SH.

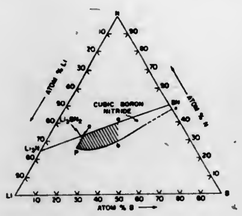
3,701,825
STABILIZATION OF HYDROGEN PEROXIDE WITH ETHYLENEDIAMINE TETRA (METHYLENEPHOSPHONIC ACID)
Kenneth J. Radimer, Little Falls, and Theodore F. Munday, Kendall Park, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,606
Int. Cl. C01b *15/02;* **C07d** *105/02*
U.S. Cl. 423—273 **9 Claims**

An aqueous hydrogen peroxide solution is stabilized against decomposition by contaminants such as cations of iron, copper, manganese, and the like, by addition of a water-soluble ethylenediamine tetra(methylenephosphonic acid) compound. This stabilized hydrogen peroxide solution is substantially less corrosive towards metals, especially aluminum, than prior stabilized hydrogen peroxide solutions. A synergistic improvement in stability comprises combining a water-soluble tin compound with the ethylenediamine tetra(methylenephosphonic acid) compound and the hydrogen peroxide. The incorporation of nitrate ion into the stabilized hydrogen peroxide solution provides a solution which is of especially low corrosivity towards metals, particularly aluminum, in comparison with hydrogen peroxide solutions stabilized with other stabilizers in the presence of nitrates.

3,701,826
CUBIC BORON NITRIDE PREPARATION FROM LITHIUM-BORON-NITROGEN MIXTURES
Robert C. De Vries, Burnt Hills, and James F. Fleischer, Scotia, N.Y., assignors to General Electric Company
Filed Jan. 28, 1971, Ser. No. 110,513
Int. Cl. C01b *21/06*
U.S. Cl. 423—290 **7 Claims**

The presence of oxygen has been found to be necessary during the reaction to produce cubic boron nitride crystals in the lithium-boron-nitrogen system when a lithium-rich system is employed particularly if much of

the lithium is present as Li_3BN_2. The preferred mechanism is to provide the oxygen in the reaction mixture in the



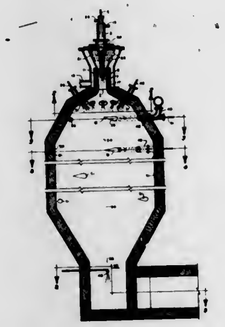
desired concentration by the addition of (a) B_2O_3 or (b) a boron source plus at least one decomposable metal oxide.

3,701,827

PROCESS AND APPARATUS FOR THE PRODUCTION OF LARGE PARTICLE-SIZE, LOW STRUCTURE CARBON BLACK

Karel R. Dahmen, Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed July 13, 1971, Ser. No. 162,064
Int. Cl. C09c *1/50*
U.S. Cl. 423—456 **29 Claims**



Large particle-size, low structure carbon black resembling thermal black is produced by a process and apparatus involving two stages of introduction of hydrocarbon oil feedstock. The first stage involves the introduction of a minor portion of the total feedstock axially into a tubular reactor section, the reaction products from which pass into an enlarged-diameter section into which the major portion of the feedstock is introduced radially in a downstream angle through a plurality of nozzles. The first-stage feedstock is heated by hot combustion gases, and supplementary heat is added to the enlarged-diameter section at a plurality of locations along that section.

3,701,828

HYDROTHERMAL SYNTHESIS OF PEROVSKITE COMPOSED OF $CaO \cdot TiO_2$

Robert Ian Harker, Bala Cynwyd, Pa., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,423
Int. Cl. C01g *23/00*; C01f *11/00*
U.S. Cl. 423—598 **5 Claims**

Hydrothermal method of synthesizing the mineral perovskite from lime and titania, and the product thereof exhibiting unique pigment and radiation opacifying characteristics.

3,701,829

TREATMENT OF PARKINSON'S DISEASE

Giuseppe Bartholini, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 9, 1971, Ser. No. 162,028
Claims priority, application Switzerland, July 24, 1970, 11,235/70
Int. Cl. A61k *27/00*
U.S. Cl. 424—319 **9 Claims**

Pharmaceutical compositions for treating Parkinson's disease which contain as the active anti-Parkinsonism ingredient, L-3-(4-hydroxy-3-methoxyphenyl)-alanine, or a hydrate or pharmaceutically acceptable salt thereof, and as an optional ingredient, a peripheral decarboxylase inhibitor, are described. The compositions are useful for the treatment of Parkinson's disease with little or none of the side-effects usually associated with L-dopa.

3,701,830

METHOD FOR IMPROVING ORAL HEALTH AND HYGIENE IN DOGS AND CATS

Bernard W. Weinrich, St. Charles, and David C. Boyce, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 9,999, Feb. 9, 1970, which is a continuation-in-part of application Ser. No. 846,930, Aug. 1, 1969, both now abandoned. This application Feb. 26, 1971, Ser. No. 119,421
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 **4 Claims**

Pet food compositions useful in promoting oral health and hygiene in dogs and cats consisting essentially of a solid, nutrient feed having incorporated therein neutral protease enzyme. The neutral protease is obtained by fermentation with a neutral protease producing microorganism preferably a strain of *Bacillus subtilis* or *Bacillus stearothermophilus*. The amount of neutral protease in the food composition typically is in the range of from about 4,000 to about 4,000,000 active units of enzyme per pound of feed. A method for removing plaque from, and preventing the formation of calculus on the teeth of dogs and cats is provided by feeding to dogs and cats said pet food composition.

3,701,831

METHOD OF INHIBITING DOPAMINE β-HYDROXYLASE

Curt C. Porter, Glenside, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,209
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **2 Claims**

A method of inhibiting the formation of dopamine β-hydroxylase which comprises the administration to a host of a therapeutically-effective amount of a pyrimidine.

3,701,832

METHOD OF INHIBITING DOPAMINE β-HYDROXYLASE

Curt C. Porter, Glenside, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,179
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **4 Claims**

Method of inhibiting dopamine β-hydroxylase which comprises the administration to a host of a therapeutically-effective amount of a mercaptoimidazole or a mercaptobenzimidazole.

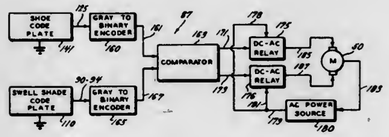
ELECTRICAL

3,701,833

SWELL SHADE CONTROL

Walwin J. Bosche, Jr., Highland, Ill., assignor to The Wicks Organ Company, Highland, Ill.

Filed Nov. 16, 1971, Ser. No. 199,205
Int. Cl. G10b *3/16*
U.S. Cl. 84—346 **14 Claims**



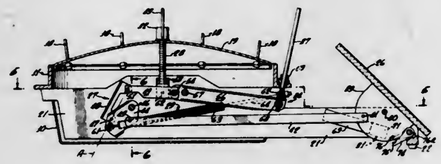
This invention relates to a swell shade control for use with pipe organs and comprises an actuator means and means for connecting the actuator means to the swell shades such that operation of the actuator means in one direction opens the shades, and operations of the actuator means in the opposite direction closes the shades. A command means transmits a first set of electrical signals to an electrical network, which signals represent a final swell shade position. Means responsive to the position of the swell shades are also provided for transmitting second sets of signals to the electrical network representing the instantaneous positions of the shades. The electrical network includes means for generating control signals depending on how the first and second sets of signals compare, which control signals are used to operate the actuator means in a direction to move the swell shades toward the final position.

3,701,834

KETTLEDRUM AND TUNING MECHANISM THEREFOR

Alfred M. Rubio, Chicago, Ill., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 822,542, May 7, 1969, abandoned. This application May 10, 1971, Ser. No. 142,018
Int. Cl. G10d *13/04*
U.S. Cl. 84—419 **32 Claims**



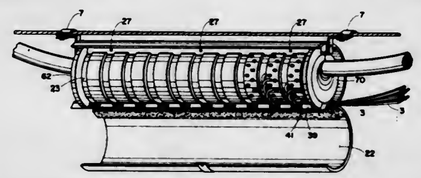
A kettledrum or the like incorporating a tuning mechanism whereby the timpanist may change the pitch of the drumhead over a range of at least a full octave by merely moving a foot pedal and without making any other adjustments. A linkage and counter-balancing spring means are so related to each other that the torques in opposite directions about a pivot point remain generally balanced throughout the full octave range, in order that the timpanist may achieve any desired pitch in a simple and accurate manner and without the necessity for excessive foot pressure. Friction brake means are employed to insure that the pedal will remain in any position to which it is adjusted by the timpanist, but the indicated torques are such that the amount of drag required from the friction brake is not great. Two interconnected four-bar linkages connect the foot pedal with the drumhead. One of such linkages is associated with a fine-tuning means which is readily adjustable by the timpanist without leaning over the drumhead. Such fine-tuning means complements a quick-acting master-tuning element. The linkages and associated elements are such that there is no "hair trigger" action at any portion of the scale. Instead, a reasonable degree of foot pedal pivot is required to change from any desired pitch to the pitch next higher or next lower. Means are provided to lock the foot pedal, when the instrument is not in use, in order to achieve various benefits including ease of drumhead changing.

3,701,835

MULTIPLE CONDUCTOR CABLE TERMINAL

Werner Frank Eisele, Kanata, Ontario, and Detlef Zimmermann, Ottawa, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 12, 1971, Ser. No. 188,111
Int. Cl. H02g *7/06*
U.S. Cl. 174—41 **5 Claims**



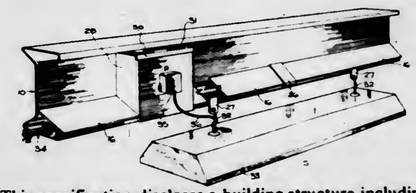
A multiconductor cable terminal unit, particularly useful in aerial telephone outside plant applications utilizing unpressurized PVC cable is disclosed. The terminal unit, designed for installation by a telephone lineman provides a limited access cable compartment within which electrical leads from a number of terminal blocks may be spliced into the telephone cable. Thereafter, electrical connection of telephone services via the terminal blocks may be carried on without direct physical access to the telephone cable which is failure prone when handled roughly in the area of the splices.

3,701,836

BUILDING STRUCTURES

Wilfred Ward, and Frank Ward, both of East Yorks, England, assignors to Ward Brothers (Sherburn) Limited, Sherburn, Malton, England

Filed June 28, 1971, Ser. No. 157,189
Claims priority, application Great Britain, June 27, 1970, 31,290/70
Int. Cl. H02g *3/04*
U.S. Cl. 174—48 **9 Claims**



This specification discloses a building structure including a structural member comprising a web, two flanges projecting from opposite edges of the web and inturned lips at the free edges of the flanges; electrical wiring laid in a channel defined by one of the flanges, its inturned lip and the portion of the web adjacent to said flange; and a U-section cover member having limbs which interfit with said lip and said portion of the web and a base which extends over the mouth of the channel thus protecting the wiring.

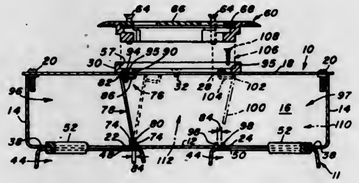
3,701,837
MULTIPLE ELECTRICAL SERVICE UNDERFLOOR ACCESS HOUSING

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 862,277, Sept. 30, 1969, abandoned. This application March 18, 1971, Ser. No. 125,490

Int. Cl. H02g 3/08, 3/28

U.S. Cl. 174—50 **11 Claims**



An underfloor access housing adapted for use with electrical raceway sections of the type normally placed in building floors. The access housing spans across adjoining raceways and is provided with inlet openings, each communicating with one of the adjoining raceways, and a central dual outlet opening providing communication between the interior of the housing and the space above the floor level. A partition detachably retained within the housing, divides the interior of the housing into separate compartments, each including one of the inlet openings. The partition is adapted to support an electrical plug receptacle whereby electrical connections may be made beneath the level of the finished floor.

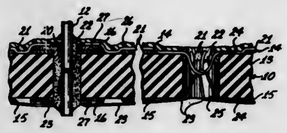
3,701,838
CIRCUIT BOARD

Frederick D. Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed June 29, 1970, Ser. No. 50,508The portion of the term of this patent subsequent to Feb. 29, 1989, has been disclaimed.

Int. Cl. H05k 3/32

U.S. Cl. 174—68.5 **6 Claims**



A circuit board having conductors sewn therein to electrically connect selected conductive areas is provided with apertured electrically-isolated areas into which the conductors are sewn for controlled routing of the conductors.

3,701,839
SHIELD CONNECTOR FOR MULTI-STRAND SHIELDED CABLES

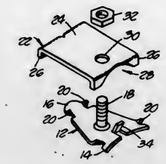
Donald J. Smith, Canoga Park, Calif., assignor to Smith-Schreyer & Assoc., Inc.

Filed Aug. 2, 1971, Ser. No. 168,087

Int. Cl. H01r 11/10, 11/20

U.S. Cl. 174—78 **12 Claims**

A connector for use in splicing multi-strand shielded cables, particularly designed for interconnecting the shields thereof. Here the connector is provided with a protruding tang providing a secondary current path between the shield and the connecting strap.



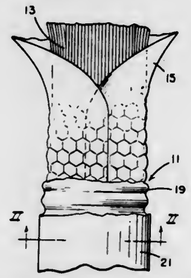
3,701,840
EMBOSSED CORE WRAP FOR ELECTRICAL CABLES

Charles R. Willmore, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 11, 1971, Ser. No. 142,211

Int. Cl. H01b 7/24

U.S. Cl. 174—107 **5 Claims**



An electrical cable having a conductor core and a protective covering therefor with an embossed polyester film interposed between the periphery of the conductor core and the protective covering. The embossed film provides an essentially liquid-tight seal about the conductor core and affords mechanical protection, thermal insulation, dielectric protection and electrical stability for such core.

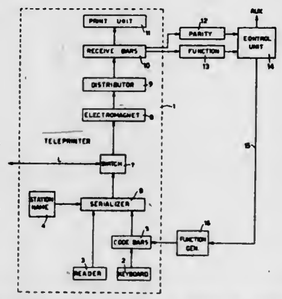
3,701,841
DATA TRANSMISSION BY TELEPRINTER

Bruno Brunialti, and Giovanni Zaffignani, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C.S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 764,118, Oct. 1, 1968, abandoned. This application May 19, 1971, Ser. No. 145,055

Int. Cl. H04q 9/00

U.S. Cl. 178—4.1 B **3 Claims**



Terminal station equipment for exchange of messages with a central data collecting station, including both message characters and service functions. The terminal station equipment includes a recognition device for the service functions and a parity checking device for the message characters, and a control unit responsive to both for controlling the generation of service functions necessitated by the information detected thereby.

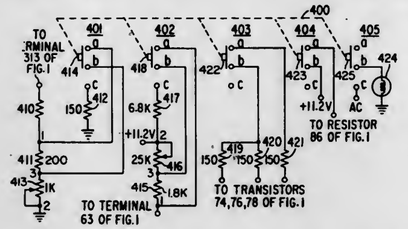
3,701,842
COLOR COMPENSATING NETWORK WITH RANGE LIMITATION

Loren Robert Kirkwood; Larry Allen Cochran, and Robert Dale Altmanshofer, all of Indianapolis, Ind., assignors to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,699

Int. Cl. H04n 9/48, 9/50

U.S. Cl. 178—5.4 HE **9 Claims**



Pending U.S. Pat. applications Ser. No. 36,045, filed May 11, 1970, entitled "TINT CORRECTION CIRCUITS", now U.S. Pat. No. 3,619,487 and Ser. 103,714, filed concurrently herewith, entitled "COLOR COMPENSATING NETWORK FOR AN INTEGRATED CIRCUIT TELEVISION RECEIVER" describe arrangements for improving flesh tone rendition in a reproduced image through a selective reduction in Q channel signal gain. The present invention utilizes a switch to energize circuitry—as in the disclosures of the above-noted applications—to effect such gain reduction in the presence of spurious phase errors of the color signal burst relative to the color sub-carrier, and additionally connects the switch in a manner to limit the range of saturation and tint control changes at the same time. This compression of possible range is in a direction to reduce the amount of color variation which could otherwise be introduced into the image by a viewer misadjusting such available controls when his receiver is in its flesh tone mode of operation.

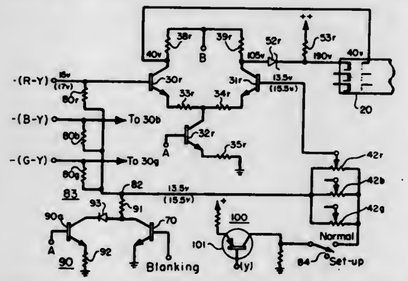
3,701,843
MATRIX AMPLIFIER NETWORK WITH NOVEL D-C SET-UP ARRANGEMENT

Charles F. Hepner, and George J. Tzakis, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 77,769

Int. Cl. H04n 9/50

U.S. Cl. 178—5.4 SD **13 Claims**



A matrix amplifier network, preferably of a monolithic configuration, having three transistorized differential amplifiers and a common bias arrangement to maintain conduction at the same current level. Means are included to operate the differential amplifiers in push-pull fashion to develop the desired primary color control signals. The matrix amplifier network further includes a novel set-up arrangement incorporating respective voltage dividers interconnected in a manner to develop a d-c control potential for establishing and maintaining reference black level notwithstanding variations in the d-c output levels of the associated chroma demodulators as frequently encountered in integrated circuit arrangements between unit-to-unit, or as may otherwise result from receiver power supply or line voltage fluctuations.

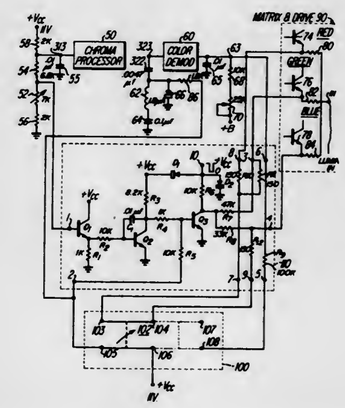
3,701,844
COLOR COMPENSATING NETWORK FOR AN INTEGRATED CIRCUIT TELEVISION RECEIVER

Larry Allen Cochran, Indianapolis, Ind., assignor to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,714

Int. Cl. H04n 9/48, 9/46

U.S. Cl. 178—5.4 HE **8 Claims**



The present invention describes a color compensating network which is coupled to available terminals on such circuit devices to improve the reproduction of flesh tones in the presence of spurious phase errors of the color signal burst relative to the color sub-carrier. A reduction in Q channel gain to improve flesh tone reproduction follows from the described attenuation of blue color difference signals, together with the shifting of the blue and red chroma demodulation axes. Flesh tone reproduction when phase errors are present is further improved by shifting the temperature of the cathode-ray kinescope during color transmission through a lowering of the bias on appropriate control gun electrodes.

3,701,845
HUE CONTROL CIRCUIT FOR A COLOR TELEVISION RECEIVER

John Stark, Jr., Indianapolis, Ind., and David Harry Carpenter, Fairfield, Conn., assignors to RCA Corporation

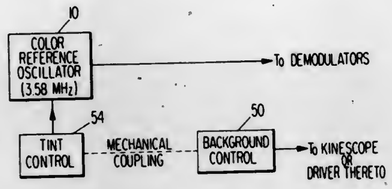
Filed Jan. 7, 1971, Ser. No. 104,625

Int. Cl. H04n 9/02

U.S. Cl. 178—5.4 HE **7 Claims**

The hue of a color image is controlled by a variable resistor which shifts the phase of a generated reference carrier wave

with respect to the phase of a received chrominance signal, and which also correspondingly shifts the background color of



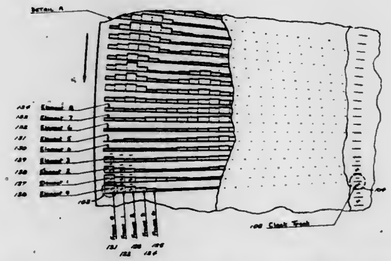
the reproduced picture so as to further obtain a more pleasing display on the color kinescope screen.

3,701,846

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING VIDEO

George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif.

Filed March 27, 1970, Ser. No. 23,289
Int. Cl. G11b 5/06, 5/82; H04n 5/78
U.S. Cl. 178—6.6 DD 13 Claims



The video or television signals are broken into numerous elements representing spaced portions of the video display screen along the line sweep, and imprints (electrical or optical) for each element are made in a path on a rotating medium which may be a disc, drum or belt. The lineal length of each imprint on the path is determined by the light characteristic of the video signal being recorded. Clock marks are permanently recorded in a separate path on the rotating medium, one for each spacing of the line elements, to accurately locate the elements on the rotating medium and thereby accurately locating the elements on the screen when the information is decoded. For the U.S. television operational mode, one rotation of the rotating medium takes place in one thirtieth of a second to give a complete picture frame, including interlacing.

Maximum density of imprints is achieved by using an extremely narrow width of about one ten thousandth to one thousandth of an inch wide, and not only make adjacent tracks contiguous but actually overlapping. This is accomplished by a highly efficient transducer in contact with the recording medium and to prevent this razor edge transducer from cutting the recording medium, a body surrounds the transducer structure to give a non-cutting bearing force per unit of area. With such narrow tracks, extreme accuracy of concentricity is required of the spindles on which the rotating medium moves and of the mounting of the medium on the spindles. The invention provides structure and a method of machining spindles that gives this extreme accuracy of concentricity.

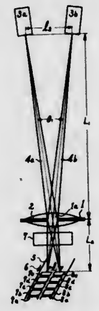
Sound is supplied by using an unused portion of the video signal and the trailing edges of the line start pulses are convenient portions. Because the tracks may overlap or small errors in concentricity may occur that would otherwise meld together sound from two side-by-side tracks, only certain digitally spaced parts of one track are used for sound and different digitally spaced portions of another track are used. For example, every fourth line start pulse can be used on one track and the used pulses on the succeeding track are staggered with respect to the one track, and so on. The method and apparatus permits transcribing broadcast television signals or transcribing directly from a television set and permits playback directly into a set, or if modulated by very high or ultra high frequency waves, may be broadcast as conventional television, or introduced directly into a broadcast television receiver by attachment to the antenna terminals.

3,701,847

ELECTRON BEAM RECORDER

Sakae Miyauchi, 4-13, 3-chome, Yato-machi, Tanashi-shi, Tokyo; Kazumitsu Tanaka, 458 Gochi-cho, and Nobuo Goto, 2246-5, Kurinoshawa, Haijima-cho, both of Akishima-shi, Tokyo, all of Japan

Filed Aug. 17, 1971, Ser. No. 172,523
Claims priority, application Japan, Aug. 20, 1970, 45/72944
Int. Cl. H04n 5/86, 9/16
U.S. Cl. 178—6.7 A 8 Claims



An electron beam recorder comprises a plurality of electron guns, a condenser lens, a device for scanning the electron beams produced by the electron guns, a device for conveying a recording medium and a device for supporting said recording medium in a recording chamber forming part of the electron beam recorder. The electron beams are modulated by the information to be recorded. The beams intersect at the center of said condenser lens so as to impinge on different parts of said recording medium. The beams are made to scan the recording medium by the scanning device, each beam exposing different areas of said recording medium.

ERRATUM

For Class 178—26 see:
Patent No. 3,701,856

3,701,848

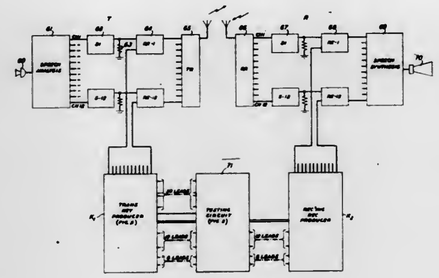
TESTING CIRCUIT FOR A SECRET SIGNALING SYSTEM

Joseph W. Dehn, Great Neck, N.Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Filed July 14, 1944, Ser. No. 544,944
Int. Cl. H04m 1/68, 3/22
U.S. Cl. 179—1.5 13 Claims

1. A testing circuit for testing the wiring of a panel, which panel includes groups of switches capable of advancing through successive positions and input terminals on said panel adapted to be connected via said switches operating in tandem stages to output terminals on said panel, said testing circuit comprising means for comparing said panel against a second similar panel and including means for applying test potentials

to the input terminals of both panels, means for causing all switches of both panels to move in unison, means to compare the potentials on the output terminals of one panel with the potentials on the corresponding terminals of the other panel,



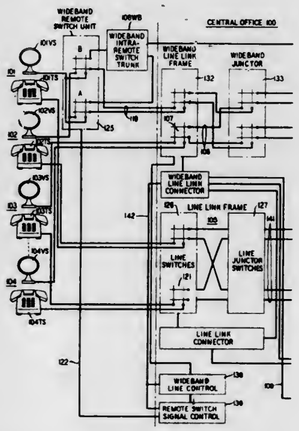
means responsive to a different potential condition on corresponding output terminals of said two panels for stopping the movement of all of said switches on both panels and for marking the output terminal on which such different potential condition was found.

3,701,849

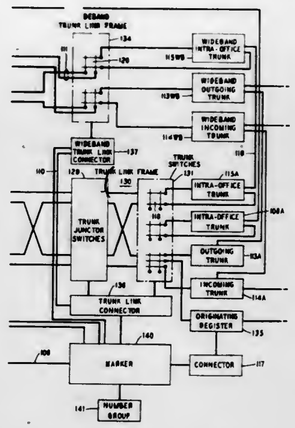
CONCENTRATOR ARRANGEMENT FOR WIDEBAND SWITCHING

Richard Joseph Stapleton, Westerville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1970, Ser. No. 9,915
Int. Cl. H04m 11/06; H04q 3/60
U.S. Cl. 179—2 TV 6 Claims



A combined voiceband and wideband communication system is disclosed. Customer stations are coupled directly to a switching office for voiceband service and wideband service is furnished to the stations via a concentrator which is controlled by the switching office. Signals transmitted from the stations directly to the office control the selection of voiceband or wideband paths to the stations. Provisions are also made for intraconcentrator wideband calls.

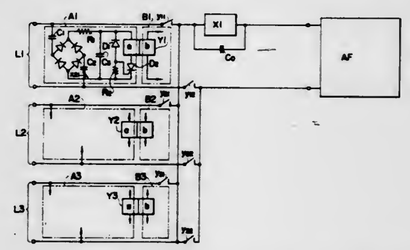


3,701,850

ADAPTER DEVICE FOR AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

Shizuo Ando, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,497
Claims priority, application Japan, Dec. 29, 1969, 44/2088
Int. Cl. H04m 1/64
U.S. Cl. 179—6 C 7 Claims



An adapter device connected between an automatic telephone answering apparatus and plural telephone lines, which connects the automatic telephone answering apparatus to the telephone line of a called telephone, so that the apparatus can be used to the best advantage.

3,701,851

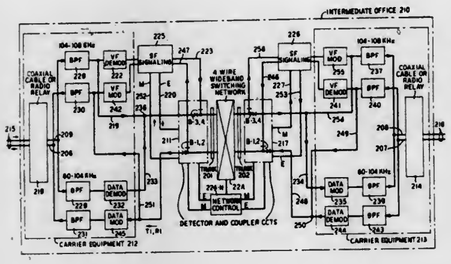
SWITCHING VOICE AND DATA COMMUNICATIONS SIMULTANEOUSLY OVER A COMMON PATH

William Roswell Starrett, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,313
Int. Cl. H04j 1/14
U.S. Cl. 179—15 BY 11 Claims

An integrated voice-and-data communication system is disclosed wherein voice-and-data channels are frequency multiplexed and switched through a wideband switching network on a common four-wire path. When the switching connection is being established, coupler-and-detector circuits couple the

voice channel, demultiplexed to baseband, to the network so that network control signals in the voice channel can be employed to establish the connection. The control signals, however, are isolated by the coupler-and-detector circuits from



the outgoing data channel. When the switching connection has been established, the coupler-and-detector circuits disconnect the baseband voice channel and connect frequency multiplexed voice and data signals to the common four-wire path through the network.

3,701,852

TRANSMISSION SYSTEM AND ASSOCIATED TRANSMITTERS AND RECEIVERS FOR THE TRANSMISSION OF SYNCHRONOUS PULSE SIGNALS

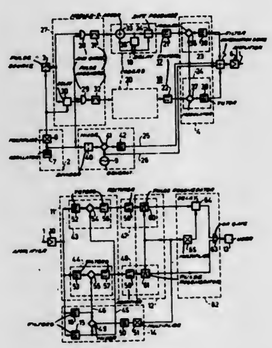
Robert Johannes Sluijter, and Petrus Josephus Van Gerwen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,877

Claims priority, application Netherlands, Aug. 29, 1970, 7012827

Int. Cl. H04b 1/00

U.S. Cl. 179—15 FS **13 Claims**



A transmission system for the transmission of binary synchronous pulse signals in the base group of a carrier telephony system in which these pulse signals are converted into two separate pulse signals, at half the original information speed each, which separate pulse signals are each modulated in accordance with a single sideband method on carrier signals of different frequencies located on either side of the central portion of the transmission band (base group) so that the transmitted frequency spectrum is constituted by the two non-adjacent single sideband signals.

3,701,853

SELECTION SYSTEMS FOR ELECTRICAL CIRCUITS OR EQUIPMENTS

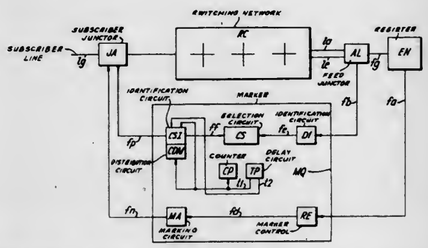
Georges A. Duval, Fresnes, and Francois Hernandez, Epinay-sur-Seine, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,161

Claims priority, application France, March 28, 1969, 6909285

Int. Cl. H04q 3/62

U.S. Cl. 179—18 HA **5 Claims**



Selection system applicable, namely, in telephone exchanges for the calls to subscriber lines grouped under a same number.

It enables selecting a free line (1*g*) out of a group of lines with the purpose of connecting it to a common unit (AL) through a connecting network (RC). A device (MA) designates the lines in the called group. A circuit (CSI) selects one free line out of the designated lines, according to an order of priority provided by a distributing circuit (CDM). Renewing means enable selecting another line when the connection does not take place, in case of congestion. The circuit (CDM) then gives highest priority to the line immediately following the one unable to be connected to.

3,701,854

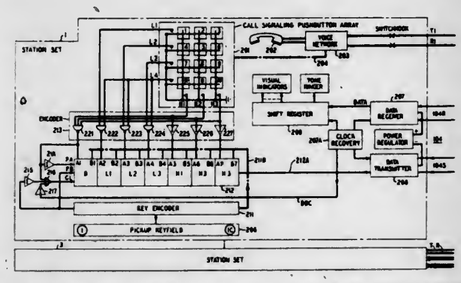
KEY TELEPHONE SYSTEM CALL SIGNALING AND STATION SET DATA TRANSFER ARRANGEMENT

Harold Peter Anderson, and Francis Michael Fenton, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,202

Int. Cl. H04m 1/00

U.S. Cl. 179—18 AD **13 Claims**



An electronic key telephone system is disclosed in which each key telephone set is equipped with a multifrequency call signaling push-button dial as well as a number of line pick-up keys. Regardless of the number of pick-up keys on a set, it is connected to the local key system via only a single pair of tip and ring conductors and a data link. The identity of an operated pick-up key is transmitted to the local key system over the data link. The multifrequency call signaling dial is

modified to generate the normal multifrequencies and in addition is connected to a digital encoder to transmit the identity of an operated call signaling push button over the data link when a certain pick-up key is operated. The local telephone system thus may dispense with the need for analog tone signaling receivers and can employ the operated push buttons for call signaling purposes in the digital mode. The station user is assured that his call signaling push buttons are operating correctly when the set is transmitting digital call signaling information to the local key system because the side tones of the multifrequency signals will be audible.

3,701,855

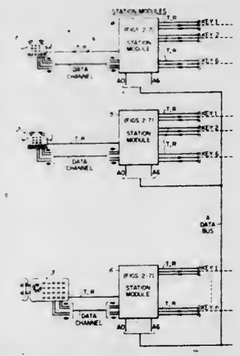
FIRST IDLE LINE PICKUP SERVICE

Howard Lloyd Reynolds, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 18, 1971, Ser. No. 107,003

Int. Cl. H04q 3/60

U.S. Cl. 179—18 ES **21 Claims**



A key telephone system arrangement is disclosed which comprises a plurality of station modules and line modules both of which respond to program instructions for controlling the interconnection of lines to key stations. The arrangement includes equipment directed by the program for automatically selecting an idle line in a prescribed manner from the lines terminated at a station and for connecting the selected line to the set without the necessity for depressing a line pickup key.

3,701,856

DATA TERMINAL SYSTEM

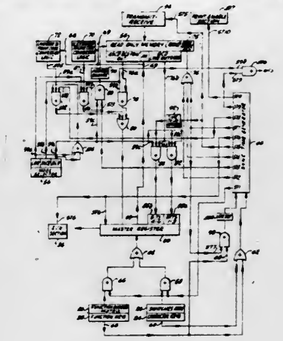
Carl G. Stuck, Chatsworth, and Arthur L. Wilkes, Woodland Hills, both of Calif., assignors to American Data Systems, Inc., Canoga Park, Calif.

Filed Dec. 15, 1970, Ser. No. 98,229

Int. Cl. H04l 3/00

U.S. Cl. 178—26 A **17 Claims**

An electronic apparatus and code conversion method for use in a data terminal system incorporating a modified type head electric typewriter as the data input-output device. A single timing sequence automatically controls all code converting operations of the terminal for both transmitting and receiving data. In a transmit cycle of the timing sequence, a keyboard code of the typewriter is converted to a selected one of a number of communications line codes which is then transmitted over the line. In a receive cycle of the timing sequence, the line code is then further converted into a suitable print code for operating the print or function mechanisms for the typewriter. When the terminal is receiving data, only the receive cycle of the complete timing sequence is effective. All conversions are made by means of a master register which is gated in parallel through code conversion logic gates, or a read-only memory, back into the register. The states of the master register flip-flops containing the print code determine which of a series of electromechanical actuators are activated to operate the print mechanism of the typewriter. Additionally, a method and apparatus is disclosed for generating a six bit line code from only three outputs of the read-only memory.



3,701,857

MULTIFREQUENCY SIGNAL RECEIVING CIRCUIT

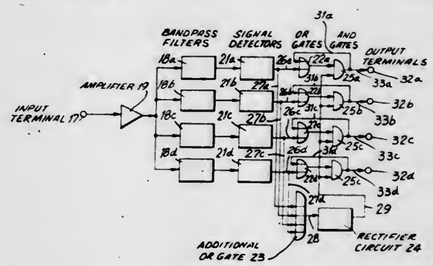
Shogo Usuda, Yokohama; Susumu Mizusawa, Kawasaki, and Harunobu Tateno, Yokohama, all of Japan, assignors to Fujitsu Limited and Nippon Telegraph & Telephone Public Corporation

Filed June 28, 1971, Ser. No. 157,361

Claims priority, application Japan, July 3, 1970, 45/57734

Int. Cl. H04m 1/50; H04q 9/12

U.S. Cl. 179—84 VF **3 Claims**

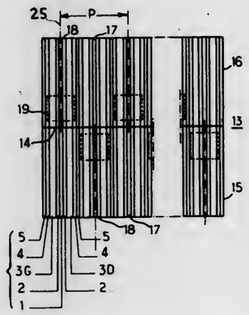


A plurality of bandpass filters equal in number to the number of frequencies of multifrequency input signals supplied thereto select the input signals. Each of a plurality of signal detectors is connected to a corresponding one of the bandpass filters and provides pulse trains corresponding to the frequencies of the signals selected by the bandpass filters. A plurality of OR gates is provided. Each of the OR gates has a first input connected to the output of a corresponding one of the signal detectors, a second input and an output. An additional OR gate has a plurality of inputs each connected to the output of a corresponding one of the signal detectors and an output for providing an output pulse train. A rectifier circuit has an input connected to the output of the additional OR gate and converts the output pulse train of the additional OR gate into continuous signals. A plurality of AND gates is provided. Each of the AND gates has a first input connected to the output of a corresponding one of the plurality of OR gates, a second input connected to the output of the rectifier circuit and an output connected to the second input of a corresponding one of the plurality of OR gates. The outputs are derived from the outputs of the AND gates.

3,701,858
MULTICHANNEL MAGNETIC HEAD UNIT OF LAMINATED CONSTRUCTION

Guy Prival, Chilly Mazarin, and Lucien Robert Prieur, Ecouen, both of France, assignors to Societe Industrielle Bull-General Electric (Societe Anonyme), Paris, France

Filed Aug. 10, 1970, Ser. No. 62,525
Int. Cl. G11b 5/16, 5/42
U.S. Cl. 179—100.2 C 8 Claims

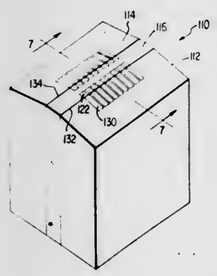


A multichannel magnetic transducer, wherein each of a plurality of aligned magnetic heads comprises a plurality of composite laminations, the composite laminations forming a magnetic circuit and electric and magnetic shields; and the process for fabrication of the transducer.

3,701,859
UNIPARTITE READ/WRITE AND/OR CENTER SECTION HOUSING FOR DUAL GAP MAGNETIC HEAD ASSEMBLIES EMPLOYING UNITARY INTERTRACK SHIELDING EXTENSIONS

Richard E. Braun, St. James, and Lionel G. Hopkins, Lake Grove, both of N.Y., assignors to Magnetic Head Corporation, Hauppauge, N.Y.

Filed May 12, 1971, Ser. No. 142,673
Int. Cl. G11b 5/26
U.S. Cl. 179—100.2 C 9 Claims

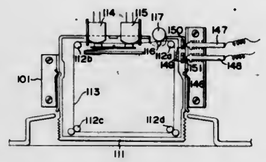


The opposed read and write head section housings of a multiple track, dual gap magnetic head assembly as well as the center section separating the same are fabricated from a nonmagnetic material having high electrical conductivity. Each of the housing and center sections include unitary portions thereof providing the total interhead and intertrack shielding.

3,701,860
MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH TIME CONTROL IN CARTRIDGE

Yasutaka Iwawaki; Minoru Yoshikawa, both of Tokyo, and Yukio Usui, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,384
Claims priority, application Japan, Oct. 28, 1969, 44/86256; April 1, 1970, 45/28127
Int. Cl. G11b 5/28, 23/06
U.S. Cl. 179—100.2 F 13 Claims

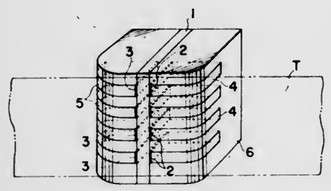


The magnetic recording and reproducing apparatus is provided with timing means which starts the time counting from the leading end of the signals to be recorded on an endless magnetic recording medium and is reset after one rotation of the endless recording medium, so that recording means may be retained in the recording mode during one rotation of the endless recording medium whereby the desired signals or informations may be recorded along the whole length of the endless recording medium during the interval from the setting to the resetting of the timing means. Part of the timing means is included in a tape cartridge.

3,701,861
MAGNETIC HEAD USING THE HALL EFFECT FOR REVERBERATION

Tsutomu Suzuki, Yokohama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 13, 1970, Ser. No. 89,431
Claims priority, application Japan, Nov. 15, 1969, 44/91105
Int. Cl. G11b 5/22, 5/28, 5/38
U.S. Cl. 179—100.2 CH 6 Claims

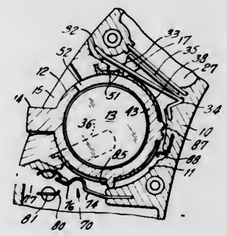


A first and second magneto-electric converting films, comprising for example, Hall elements, are vapor deposited onto a first and second highly permeable magnetic substances independently of each other. The resulting configuration is aligned so as to correspond with each track of a magnetic tape. A desired number of the magneto-electric converting films can be positioned parallel with each other. The resulting magnetic head with the multiple magneto-electric converting films is capable of producing a sustained reverberation or echo.

3,701,862
BATTERY HOLDER AND THREE-POSITION SWITCH FOR HEARING AID UNIT

Walter R. Vignini, Peekskill, N.Y., assignor to Gould Inc., Chicago, Ill.

Filed April 16, 1971, Ser. No. 134,810
Int. Cl. H01h 21/06; H04r 25/02
U.S. Cl. 179—107 H 5 Claims

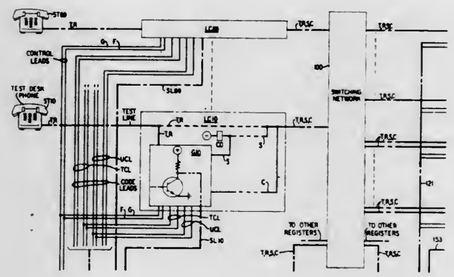


A hearing aid switch of the type shown in U.S. Pat. No. 3,475,566 issued Oct. 28, 1969, is provided with additional contact position to add an additional mode of operation without increasing the size of the switch or the structure in which it is contained. The switch has three positions: an "on" position which connects the microphone of the hearing aid unit to the amplifier, a "mid" position which connects an additional transducer in the hearing aid to the amplifier (as for instance a telephone pick-up) and an "off" position.

3,701,863
SWITCHING NETWORK TEST CIRCUIT

Dieter Moritz Paul Eisenlohr, Middletown, N.J., and Roderic Romero, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 11, 1970, Ser. No. 97,200
Int. Cl. H04m 3/26
U.S. Cl. 179—175.2 R 7 Claims

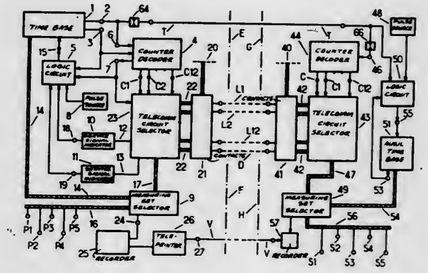


A switching system is disclosed having improved facilities for extending test calls to preselected trunk side circuits. A circuit that is to receive a test call is reserved by operating its make busy switch. This immediately makes the circuit unavailable for the reception of normal type traffic and permits it to complete the serving of any call on which it is currently engaged. A subsequently placed test call does not have to compete with other traffic and is assured of obtaining a connection to the reserved circuit.

3,701,864
AUTOMATIC MEASURING SYSTEM FOR A GROUP OF TELECOMMUNICATION CIRCUITS

Pierre L. Marotte, Conflans-Sainte-Honorine, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France

Filed May 3, 1971, Ser. No. 139,387
Claims priority, application France, May 28, 1970, 7019491
Int. Cl. H04m 1/24, 3/00
U.S. Cl. 179—175.2 R 5 Claims

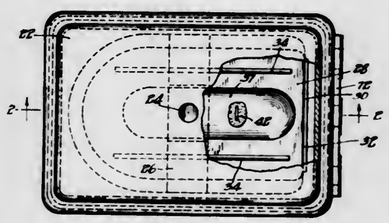


Automatic apparatus for sequentially measuring the transmission characteristics of a number of telecommunication circuits without interrupting the normal operation of the said circuits. The apparatus comprises a master system located at a first station and an auxiliary system located at a second station; each of the systems comprises a telecommunication circuit switching selector, a signal level measuring set switching selector and programmed control means for the said selectors, to automatically provide a number N of consecutive measurement cycles each comprising a number M of different measurements bothways between the two stations. The apparatus also uses a service channel, a remote control channel and a bypass circuit; the latter is used for traffic as a momentary replacement for whichever telecommunication circuit is undergoing the measurement cycle. The apparatus is particularly adapted to frequency division multiplex carrier-current telecommunication systems.

3,701,865
ACOUSTIC TRANSDUCER HAVING DIAPHRAGM PIVOTED IN ITS SURROUND

Elmer Victor Carlson, Prospect Heights, and Mead Clifford Killion, Elk Grove Village, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

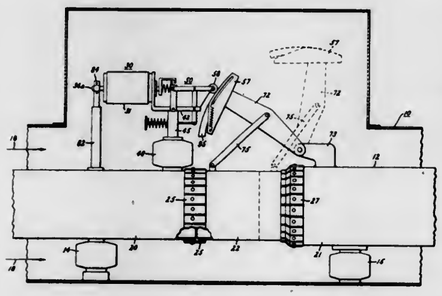
Continuation of Ser. No. 748,272, July 29, 1968, abandoned.
This application June 25, 1971, Ser. No. 157,023
Int. Cl. H04r 7/22, 17/02
U.S. Cl. 179—181 R 2 Claims



An electronic appliance particularly adapted for converting acoustical energy to electrical energy. The appliance includes a carrier having an elongated piezoelectric element mounted in cantilever fashion on said carrier and a hinged diaphragm

mounted on the carrier and connected to the piezoelectric element. The hinged portion of the diaphragm being spaced away from the fixed end of the piezoelectric element. An audio frequency amplification circuit is connected to the piezoelectric element. Components of the circuit are mounted on the carrier and selected components are encapsulated.

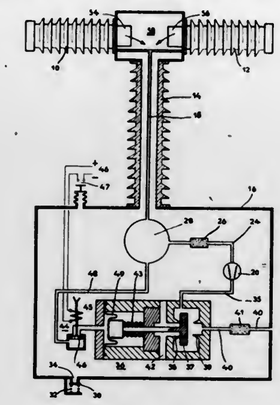
3,701,866
DISCONNECTING SWITCH FOR FORCE-COOLED ISOLATED PHASE BUS
Richard H. Miller, Berwyn, Pa., assignor to General Electric Company
Filed Aug. 9, 1971, Ser. No. 170,064
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **6 Claims**



A disconnecting switch for a force-cooled isolated phase bus comprises means for interrupting magnetizing currents when the switch is opened. The interrupting means comprises a vacuum-type circuit interrupter located in the space between the bus conductor and its surrounding enclosure. The bus conductor comprises a plurality of bus sections, one of which is movable to establish a gap in the bus conductor and to actuate a cam for controlling the vacuum interrupter. When the gap in the bus conductor is established, a shunting path extends through the closed vacuum interrupter until the cam allows the vacuum interrupter to open. The cam includes an auxiliary portion movable with respect to the rest of the cam for maintaining the continuity of the shunting path through the interrupter until the interrupter opens.

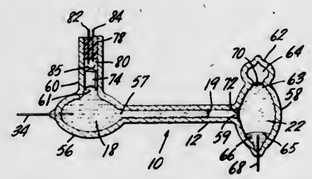
3,701,867
DOUBLE PRESSURE COMPRESSED AIR ELECTRIC APPARATUS HAVING AN AIR DRYING DEVICE
Jean Claude Henry, and Gerard Billon, both of Grenoble, France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Feb. 26, 1971, Ser. No. 119,255
Claims priority, application France, March 4, 1970, 7007817
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 E **3 Claims**

Double pressure compressed air electric apparatus such as an air-blast circuit interrupter having a high-pressure tank and a low-pressure (exhaust) tank whereby the low-pressure is greater than the atmospheric pressure under normal operating conditions. A compressor taking air from the low-pressure tank supplies high-pressure air to the high-pressure tank. A three-way valve cooperating with an air-drying device causes said compressor to take air from the atmosphere in case the low-pressure drops to a dangerous value under the influence



of a leakage in the system. The additional quantity of air taken from the atmosphere is dried by the air-drying device.

3,701,868
LIQUID-STATE SWITCHING DEVICE
Arsene N. Lucian, 2405 Cherry Street, Manasquan Park, N.J.
Filed May 18, 1970, Ser. No. 37,965
Int. Cl. H01h *29/00, 29/06, 29/02*
U.S. Cl. 200—192 **24 Claims**

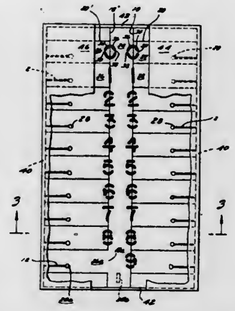


A liquid-state switching device utilizes movement of a column of liquid, resulting from a change in surface tension of the liquid caused by electrocapillary action, to operate various switch means. The electrocapillary effect is induced across a single interface sets of single of mercury and an electrolyte or electrolytes. Filter partitions are installed to maintain the liquids in a proper relationship throughout variations in position of the switching device. Means are provided to assist the return of the column of liquids to their normal positions including a bias voltage, a permanently installed resistance, and/or pressurized gas pockets.

3,701,869
TOUCH SWITCH ARRAY PANEL
Abraham H. Jacob, Longmeadow, and John L. Franke, Chicopee, both of Mass., assignors to General Instrument Corporation, Newark, N.J.
Filed April 1, 1971, Ser. No. 130,198
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 R **26 Claims**

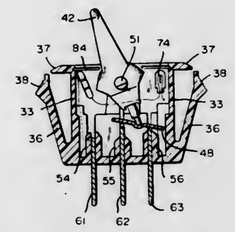
A panel for an array of touch switches is defined by separated but adjacent conductive sections mounted on a support panel, a set of first switch sections, each constituting a contact for a selected one of the number of switches involved, being arranged on the panel in a given direction and a second and elongated switch section, corresponding to a contact common to all of the switches, being arranged on the panel so as to

extend alongside but spaced from the set of first sections. The lines separating the second section from the individual first section may be in the form of indicia such as numbers, and where those indicia are of appreciable width their central portions are formed of conductive subsections which are parts of one or more of the conductive sections corresponding to the



particular switch involved. The supporting panel may be light-transmissive, while the conductive sections may be substantially opaque, and particularly when the lines of separation are in the form of indicia, illuminating means may be provided on the underside of the support panel, thereby to provide for illumination of the lines defining the indicia corresponding to the particular switch actuated at any given time.

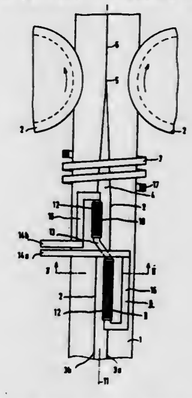
3,701,870
SWITCH CASE CONSTRUCTION
Richard W. Sorenson, West Hartford, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.
Filed Sept. 20, 1971, Ser. No. 182,001
Int. Cl. H01h *9/18, 9/02*
U.S. Cl. 200—168 C **8 Claims**



An electric switch case including modular contact terminal elements, said case being molded and having integrally formed partitions defining channels for protection of electric wiring from the electrically conductive switching elements in said case.

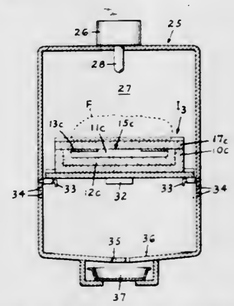
3,701,871
APPARATUS FOR INDUCTIVE LONGITUDINAL OR HELICAL SEAM WELDING OF TUBULAR METALLIC WORKPIECES
Hans Schafer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 10, 1971, Ser. No. 122,889
Claims priority, application Germany, March 13, 1970, P 20 11 915.7
Int. Cl. H05b *9/02*
U.S. Cl. 219—8.5 **4 Claims**

An apparatus for inductive longitudinal or helical seam welding of tubular metallic workpieces has a tube roller device for advancing a tubular workpiece shaped from a metal band so as to have a V-shaped gap between the butt faces of the band. The roller device also applies pressure to the workpiece for joining the butt faces. The apparatus has a longitudinal inductor and a second ring-shaped inductor disposed between the longitudinal inductor and the location whereat the butt faces are joined. The longitudinal inductor is located above the V-shaped gap in partially overlapping relation to the gap



edges and has longitudinal iron yoke sheet metal members in proximity to the edges. The longitudinal inductor has two component parts one of which overlaps one of the gap edges and the other part overlaps the opposite edge of the V-shaped gap. Current supply conductors form respective windings for the two conductor parts. Each of the windings is arranged above a portion of the tube surface corresponding adjacent to the gap edge overlapped by the corresponding one of the component inductor parts.

3,701,872
HEATING AND LOADING IMPLEMENT FOR MICROWAVE ENERGY
Melvin L. Levinson, 1 Meinger Street, Avenel, N.J.
Continuation-in-part of Ser. Nos. 470,809, July 9, 1965, abandoned, and Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Feb. 9, 1968, Ser. No. 704,389
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **11 Claims**

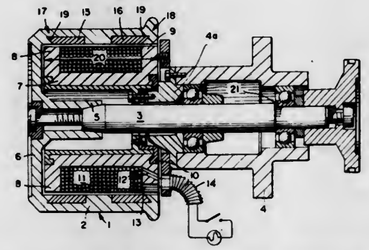


A process and an implement for converting microwave energy into heat energy which includes a body having a plurality of resistive particles therein. Upon subjecting the particles to microwave irradiation, a plurality of electric arcs are generated throughout the particles, thereby resulting in the microwave energy being converted into heat energy, and the electric arcs serving as a load for the microwave irradiation source. The implement is particularly useful with microwave ovens.

3,701,873
INDUCTIVELY HEATED GODET

Karl Bauer; Gerhard Martens, and Herbert Schlminski, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Sept. 17, 1970, Ser. No. 73,004
Claims priority, application Germany, Sept. 25, 1969, P 19 48 525.7
Int. Cl. H05b 5/00
U.S. Cl. 219—10.61 9 Claims

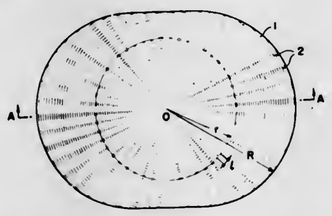


A godet assembly in which a rotated, inductively heated cylindrical godet shell is provided on its inner wall with radially recessed openings from which there extends an axially recessed opening, preferably triangular in a longitudinal section, a non-magnetic material of high electrical conductivity such as copper being advantageously filled into these recessed openings in close adherent contact with the wall surfaces of the openings, such that the openings and preferably with the embedded non-magnetic material are arranged radially and axially to maintain a uniform temperature on the outer circumferential surface of the shell.

3,701,874
APPARATUS FOR INDUCTION HARDENING OF ANTI-WEAR MECHANICAL MEMBERS

Nobuyasu Gomada, and Genzo Kosaka, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Division of Ser. No. 754,340, Aug. 21, 1968, Pat. No. 3,647,577. This application Dec. 9, 1970, Ser. No. 96,659
Claims priority, application Japan, Aug. 30, 1967, 42/55601; Sept. 4, 1967, 42/56674
Int. Cl. H05b 5/06
U.S. Cl. 219—10.57 7 Claims

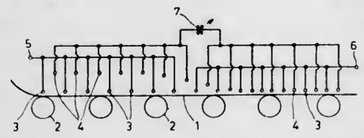


A flat, anti-wear mechanical member, which the mating member moves in sliding contact with, characterized by the fact that it is induction hardened at the surface layer thereof in such manner as to form many separate hardened layers which are distributed in the surface layer radially and concentrically with respect to the center of the surface of the member; a process for the induction hardening of a flat member, characterized by supporting an induction heating coil above a radius vector of the surface layer to be hardened of the flat member so that an alternate magnetic flux density is kept uniform throughout the surface layer by flowing a high frequency electric current intermittently through the heating coil while revolving the member, thereby to form many separate hardened layers which are distributed as mentioned above; and an apparatus for the practice of the process.

3,701,875
H. F. HEATING APPARATUS

Noel John Charles Witsey, Upper Belvedere, Kent, and James Charles Clark, Putney, London, S.W. 15, both of England, assignors to Interhern Limited

Filed June 15, 1970, Ser. No. 45,994
Claims priority, application Great Britain, June 30, 1969, 32,928/69
Int. Cl. H05b 9/04
U.S. Cl. 219—10.81 14 Claims

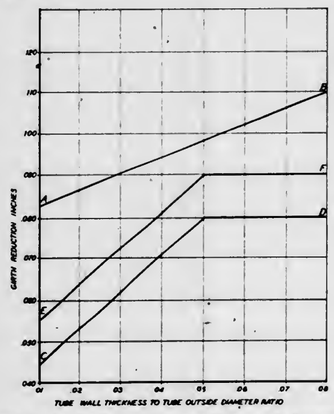


A high frequency dielectric heating apparatus with a novel stray-field platen. The platen comprises a first group of a parallel rod electrodes spaced apart in a first plane. A second group of parallel rod electrodes are alternately arranged between and in parallel with the first group of electrodes. In one region of the platen the rods of the second group are displaced in a direction away from the material to be heated, whereas in a second region of the platen the rods of the second group are closer to the material, or even in the same plane as the rods of the first group. The two regions produce different heating effects on the dielectric material. A high frequency generator is connected across adjacent electrodes. The spacing between the electrodes can be varied and the electrodes can be inclined at an angle to the lateral direction of the material to provide further variations in the heating effect across the platen.

3,701,876
PROPORTIONING GIRTH REDUCTION IN HIGH FREQUENCY WELDING OF COPPER OR COPPER BASE ALLOY TUBING

Russell L. Yungbluth, Florrisant, Mo., assignor to Olin Corporation

Filed June 21, 1971, Ser. No. 154,753
Int. Cl. B23k 31/06
U.S. Cl. 219—67 2 Claims

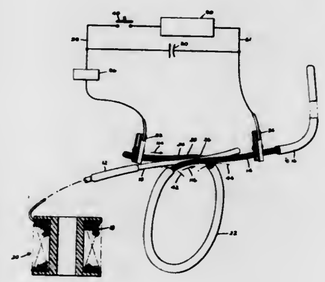


In welding metal strip into tubing, the strip is formed into an open tube whose edges define a longitudinally extending gap and are brought together at a weld point. The girth of the tube at the weld point is reduced to substantially squeeze out the molten metal and form a force weld. The degree of girth reduction is proportioned to the ratio of tube wall thickness to tube outside diameter such that the girth reduction falls within the region delineated by the area ABCD, and preferably by the area CDEF in FIG. 3, for ratios up to 0.08. For ratios in excess of 0.08, the girth reduction is at least 0.080 inch and, preferably, from 0.080 to 0.090 inch.

3,701,877
METHOD AND APPARATUS FOR MAKING ELECTRICAL CONNECTIONS

Hugh H. Richardson, New Haven, Ind., assignor to General Electric Company

Filed Dec. 20, 1971, Ser. No. 209,764
Int. Cl. B23k 9/00
U.S. Cl. 219—97 10 Claims



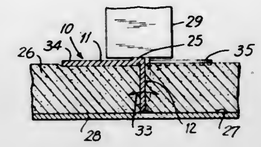
Disclosed methods include connecting at least two conductors by establishing at least one electric current conducting circuit by forming a conductor into at least one loop so that at least one pair of spaced apart portions of the conductor, separated by an intervening or intermediate portion of the conductor, are positioned adjacent to one another; relatively positioning a preselected segment of at least one other conductor and the adjacent portions of the first conductor so that the preselected segment is located between the pair of spaced apart portions; and causing electric current to flow through the at least one loop so that an arc between the pair of spaced apart portions is produced and at least two conductors are welded together by the arc. Also disclosed are methods of forming two spaced apart loops in a first conductor, and connecting the first conductor loop portions to second and third conductors respectively by an arc between pairs of portions of each loop. Also disclosed is apparatus having a conducting loop fixture and means for causing current to flow through the loop fixture so that an arc is struck between adjacent portions of the fixture to connect at least two conductors.

3,701,878
SHEET METAL RESISTANCE WELDING PIN

Milton Hinden, Massapequa, N.Y., and David Porat, Brookline, Mass., assignors to Duro-Dyne Corporation, Farmingdale, N.Y.

Filed April 30, 1971, Ser. No. 138,901
Int. Cl. B23k 9/00
U.S. Cl. 219—98 10 Claims

A resistance welding pin formed of sheet metal adapted to attach insulation to a duct or the like. The pin includes a head portion and a shank portion and is characterized by the shank portion being folded, and including elements both substantially in the plane of and normal to the plane of the head. The portions of the shank disposed in the plane are recessed or cut away to define a weakened area to facilitate a controlled relative flexing movement between the shank and the head.

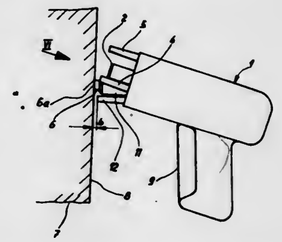


The pin includes a contact portion adapted to engage an electrode, the recessed or weakened portion being out of the circuit between the contact portion and the tip portion which is actually affixed to the duct.

3,701,879
ELECTRICAL PRECLEANING FOR STUD-WELDING TO A METAL

Norbert Gstohl, Eschen, and Dankmar Tauern, Triesenberg, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed April 7, 1971, Ser. No. 132,040
Claims priority, application Germany, April 13, 1970, P 20 17 655.0
Int. Cl. B23k 9/20; B23p 1/08
U.S. Cl. 219—99 5 Claims



The surface of a metal workpiece, to which a capacitor discharge stud welding gun is to weld a stud, is precleaned by discharging the gun while it holds a tungsten or other high-melting-point electrode against the workpiece. This passes a stud-welding current pulse through the electrode and the workpiece. It causes a short explosion heating effect that tears up the surface of the workpiece and rips away the thus loosened contamination. It produces a clean metal surface whose extent corresponds to the diameter of the electrode. The magnitude and duration of the pulse are such as to have welded a stud with a lower melting point to the metal. The tungsten electrode may be replaced with titanium, niobium, zirconium, molybdenum, etc. These have lower melting points and produce slight surface diffusion of these materials into the metal to form desirable alloys.

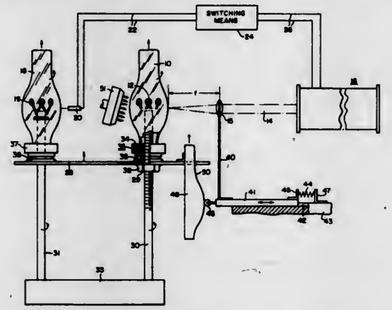
3,701,880
METHOD FOR SCULPTURING AN INDICIA OR DECORATIVE DESIGN IN THE SURFACE OF AN ARTICLE WITH A BEAM OF CORPUSCULAR ENERGY

Clair M. Rively, Old Bridge, and James Petro, Little Falls, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 29, 1968, Ser. No. 779,995
Int. Cl. B23k 9/00
U.S. Cl. 219—121 EB 22 Claims

An indicia or artistic pattern, etc. is sculptured into the surface of an article, such as a glass envelope for an electric lamp

or the like, by subjecting the article to a laser or an electron beam and varying the position of the article relative to the beam at a speed and in a manner such that the beam scans the article and removes preselected surface portions thereof either by vaporization or by thermally-induced fracturing and spalling. In the case of vitreous or ceramic articles that are susceptible to thermally-induced fracturing, etching by vaporization is achieved by preheating the article to a temperature which is near or above the strain point of the material. The sculpturing is preferably programmed by pulse-operating a laser with a control means which includes a photocell that scans a prototype article having the desired indicia or pattern on its surface.



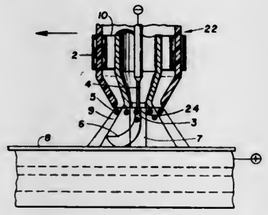
Apparatus for automatically reproducing a pattern or indicia in the surface of an article utilizing a laser source, a prototype article, means for correlating the movement of the prototype article and the article being processed relative to the laser beam and a photocell, and means for maintaining the laser beam in focused relationship with the surface of the article when the latter is of non-planar configuration is also disclosed.

Novel decorative effects in the case of glass lamp bulbs are achieved by laser-etching the desired pattern in a coating applied to the exterior surface of the bulb and by subjecting a bulb to a series of laser pulses which produce a plurality of spaced cavities in the bulb surface by thermally-induced spalling and give it a pleasing facet-like appearance.

3,701,881
METHOD AND APPARATUS FOR WELDING METAL SHEETS

Wolfgang Rother, Meiningen; Eberhard Mordig, Potsdam; Erwin Wenzel; Dieter Gronert, both of Elsterwerda; Karl Sand, Finsterwalde; Joachim Kasbohm, Berlin; Heinz Henicke, Berlin-Altglienicke; Helmut Landmann, Werder-Havel, and Winfried Stocker, Babelsberg, all of Germany, assignors to Veb Kombinat Luft-Und Kaltetechnik, Dresden, Germany

Continuation-in-part of Ser. No. 729,700, May 16, 1968, abandoned. This application March 8, 1971, Ser. No. 122,246
Int. Cl. B23k *9/08*
U.S. Cl. 219—123 **11 Claims**

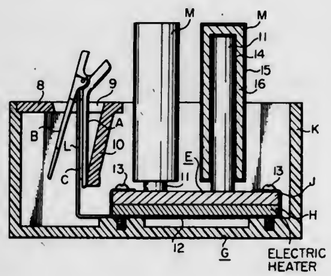


In a method of welding relatively thin metal sheets composed at least in part of steel, the steps of electromagnetically holding the sheets which are to be welded while directing to a location on a line where the welding seam is to be situated a welding arc having a hot electrically conductive core and a relatively cold electrically non-conductive sheath, providing relative motion between the sheets and the arc along a line corresponding to the seam, surrounding the arc with a wall of protective gas preventing access of the outer atmosphere to the arc, and providing a magnetic field which deflects the core away from the sheath so that the core impinges upon the line at a location on said line spaced from the location where the sheath impinges upon the line, the core and the sheath both impinging upon the sheets within the wall of protective gas, while providing for the electromagnetic holding a magnetic field which does not interfere with said deflection of the welding arc.

3,701,882
HEATING DEVICE FOR HAIR CURLERS AND CLIPS

Yukio Wada, and Yoshinori Abura, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed July 29, 1970, Ser. No. 59,121
Claims priority, application Japan, Aug. 7, 1969, 44/62458
Int. Cl. A45d *4/00, 8/24*; H05b *3/02*
U.S. Cl. 219—222 **4 Claims**



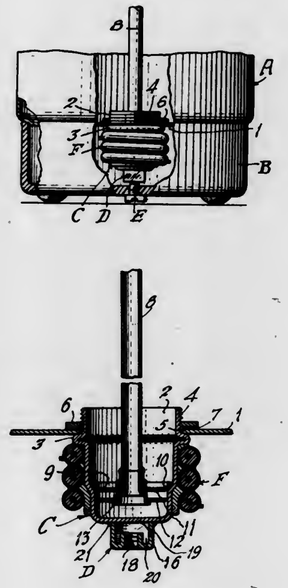
A heating device for heating hair curlers and clips each having a heat storing member. The hair curlers are of the tubular type and the hair clips are of the type having a pair of synthetic resin clipping plates hinged at one end to rockably and resiliently engage each other and with one of the clipping plates being provided on its inner surface with a flat heat-storing member having a higher thermoconductivity than the clipping plates. The heating device comprises an open-top housing containing therein an electric heat generating means including a plate-shaped heating member provided with a plurality of projected pins each adapted to receive a hair curler. A flat plate-shaped member in heat exchange relation with the heat generating means is provided in the housing and adapted to be engaged by a clip. The housing is provided with a camming member for camming the heat-storing plate in the hair clip into thermoconducting contact with the flat plate-shaped member. In an alternative embodiment, each of the projected pins is integrally formed with a flat end portion adapted to be engaged by a hair clip.

3,701,883
ELECTRIC HEATER FOR COFFEE PERCOLATOR

George E. Tilp, Short Hills, N.J., assignor to Adams Industries, Union, N.J.

Filed Dec. 21, 1970, Ser. No. 99,757
Int. Cl. H05b *3/02*; A47j *3/44*
U.S. Cl. 219—436 **2 Claims**

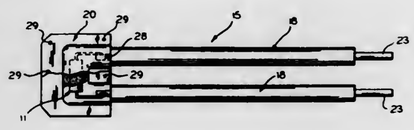
A cup-shaped well formed of sheet metal has its side wall bulged outwardly into an exterior circumferential bead and its open end exteriorly screw-threaded and extending through a hole in the bottom wall of the percolator body. The circumferential bead is resilient and has spaced apart parallel portions perpendicular to the axis of the well and connected by an arcuate cross-section circumferential portion. One of the parallel portions of the bead abuts the bottom side of said wall, and a nut is screwed on said threaded end in abutment with the top side of said wall to fasten the well on said wall, and on the exterior of the bottom of said well is a resilient sheet metal nut to receive a screw for separably securing the base of the percolator on said body.



3,701,884
METAL CAST COOKING UNIT HAVING A TEMPERATURE SENSITIVE CONTROL SENSOR

Philip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Winfield, Ill.

Division of Ser. No. 878,832, Nov. 21, 1969, Pat. No. 3,650,024. This application July 16, 1971, Ser. No. 163,318
Int. Cl. H05b *3/68*
U.S. Cl. 219—449 **8 Claims**

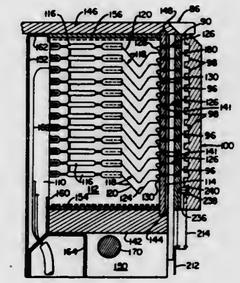


A cooking unit of cast metal having a temperature sensitive control sensor cast therein including a temperature sensitive resistance element constructed and arranged in a casing or sheath so that it is capable of being cast directly into the metal mass, wherein the elements of the sensor will withstand the high temperatures in the casting processes and maintain its integrity.

3,701,885
DATA COLLECTION STATION AND STATIC CARD READER THEREFOR

Richard C. Webb, Broomfield, and Robert T. Heath, Denver, both of Colo., assignors to Colorado Instruments Inc., Bloomfield, Colo.

Division of Ser. No. 614,865, Feb. 9, 1967, Pat. No. 3,553,436. This application April 16, 1970, Ser. No. 33,122
Int. Cl. G06k *7/04*; H01h *19/10, 43/08*
U.S. Cl. 235—61.11 C **2 Claims**



A static card reader comprising a card receiving chamber having spaced-apart, generally parallel inner and outer walls, a switching chamber including a plurality of circuit portions, a first printed circuit board, and other printed circuit boards, means for moving said chambers relative to each other from a card inserting position to a card reading position, said means being disposed in a position not to preclude visual observation of the card to the outer wall of said card chamber, and card ejection means operated in response to the return of the chambers to the card inserting position, said ejection means being engageable with the lower edge of the card for elevating it in said card chamber to a position in which it may be manually removed from same. Each circuit portion contained within the switching chamber has a first part disposed upon said first printed circuit board and a second part disposed upon one of the other printed circuit boards. Each second part of each circuit portion includes a switching contact biased to a normally closed position with a corresponding first part of said circuit portion. Each switch actuator has a corresponding switching contact, both of which are formed from a single piece of electrically conducting material. Each switch actuator is adapted to move through corresponding apertures in a punched card or to be precluded from moving through the punched card when engageable with a non-perforated portion of same. Each switching contact, upon being brought into engagement with a corresponding first part of said circuit portion, is constructed for movement across said corresponding first part of said circuit portion thereby effecting a wiping action thereacross to facilitate maintaining good electrical contact between said first and second circuit portions.

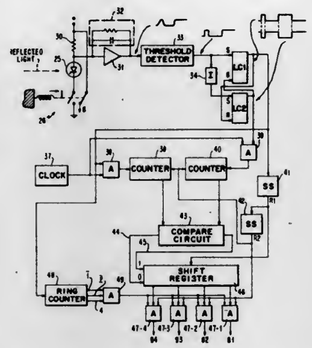
3,701,886
METHOD OF REPRESENTING DATA CODES WITH EQUAL WIDTH BAR AND DEVICE FOR READING SAME

John Earle Jones, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,722
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **4 Claims**

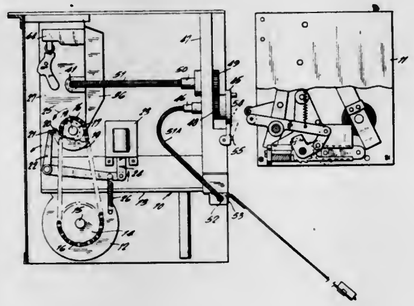
Binary coded data is represented on a record medium by alternate regions of differing characteristics. Adjacent regions form equal width pairs, thus the total width of the representations is not dependent on code content. Machine reading of

the code is accomplished by timing a scan of the representation in the adjacent regions of the pairs of regions of alternate characteristics and comparing the scan times in both regions



of each pair to determine which region in each pair is larger to thereby assign a binary one or zero value to the encoded binary bit represented by the pair.

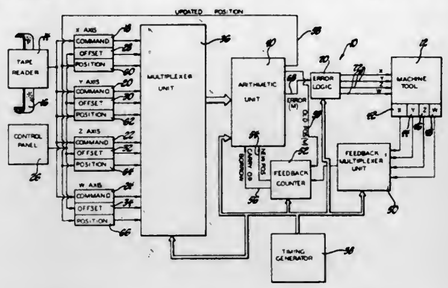
3,701,887
ADMISSION PASS RECORDING AND CANCELLING MACHINE
Charles Campo, 348 North Ashland Avenue, Berkeley, Ill.
Filed Oct. 1, 1971, Ser. No. 185,757
Int. Cl. G06m 1/00
U.S. Cl. 235—91 R **5 Claims**



Admission Pass tickets are received within a machine which is thereby activated to complete a cycle including cancelling the pass by a punch, imprinting a record of the operation upon a record sheet and registering the number of completed cycles, or inserted passes, upon a counter. Errors in machine operation are prevented through the use of positive locking mechanisms, cable driven elements and a threaded transport for the punch.

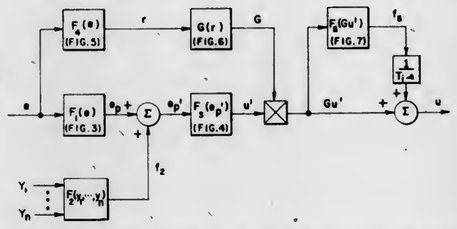
3,701,888
TIME SHARED POSITION FEEDBACK SYSTEM FOR NUMERICAL CONTROL
George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation
Filed Aug. 5, 1970, Ser. No. 62,236
Int. Cl. G06f 15/46; G05b 19/30
U.S. Cl. 235—150.1 **11 Claims**

A numerical control system for machines having a plurality of movable elements wherein position feedback signals are generated by transforming a phase shift into a digital count indicating absolute position in either a positive or negative scale



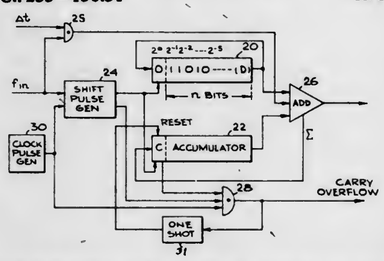
range. The respective feedback signals are time multiplexed to reduce hardware.

3,701,889
VARIABLE-STRUCTURE AUTOMATIC CONTROL SYSTEM
Roger L. Barron, Burke, and Dixon Cleveland, McLean, both of Va., assignors to Adaptronics, Inc., McLean, Va.
Filed June 25, 1970, Ser. No. 49,768
Int. Cl. G05b 17/02, 13/02
U.S. Cl. 235—151.1 **18 Claims**



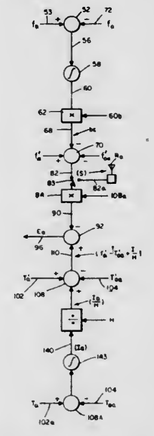
This disclosure relates to a variable-structure automatic control system of improved design wherein a measure of the instantaneous distance between the actual system operating point in a phase space, defined in terms of control error and its derivatives, and the desired equilibrium point in said space is determined and employed to adjust the controller gain.

3,701,890
DIGITAL DIFFERENTIAL ANALYZER EMPLOYING MULTIPLE OVERFLOW BITS
Ernst Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed Dec. 8, 1970, Ser. No. 96,120
Int. Cl. G05b 19/18; G06j 1/02
U.S. Cl. 235—150.31 **12 Claims**



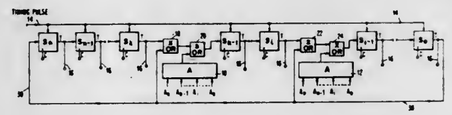
An arrangement for increasing the frequency of the occurrence of overflow from a digital differential integrator (DDI) is provided by deriving multiple bits in the form of a binary number from the most significant bit section of the accumulator register of the digital differential integrator.

3,701,891
METHODS OF AN SYSTEMS FOR COORDINATED SYSTEM-WISE ENERGY BALANCING IN THE CONTROL OF BULK POWER TRANSFER
Nathan Cohn, Jenkintown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed May 26, 1971, Ser. No. 146,980
Int. Cl. G06g 7/62
U.S. Cl. 235—151.21 **8 Claims**



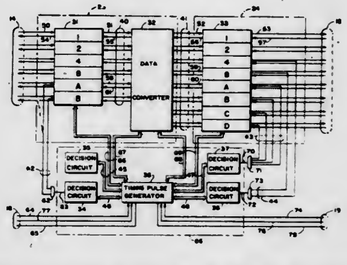
In order to achieve coordinated system-wide energy balancing in the control of bulk power transfer, the system known as the net interchange tie-line bias control is modified so as to reduce inadvertent interchange to zero while at the same time maintaining the average frequency of the interconnection as a whole at a predetermined value. This is accomplished by introducing into the control system of each area a coordinated modifying function corresponding with the quotient of the inadvertent interchange for each area measured over a span of time common to all areas divided by a constant, representative of a common corrective time period for all areas, together with an additional modifying factor representative of the time integral of frequency deviation over a predetermined time period common to all areas multiplied by a bias factor common to all areas.

3,701,892
PARITY CHECKED SHIFT REGISTER COUNTERS
William C. Carter, Ridgefield, Conn., and Peter R. Schneider, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1970, Ser. No. 99,083
Int. Cl. G06f 11/10
U.S. Cl. 235—153 **17 Claims**



The present invention relates to a family of parity-checked shift register counters having a counting period not determined by a power of 2 wherein the power is determined by the number of shift register stages. It will be apparent that the range of the counter is effected by the number of stages but not necessarily the actual count. The family of counters is further characterized in that either odd or even parity may be designed into the output pattern of said counter, which parity will be automatically maintained for all binary-bit patterns to produce. The family of counters is further characterized in that they require only N+6 logic circuits wherein there are N shift register stages, four 2-input exclusive ORs and 2 N input AND circuits. The counters are also characterized in that they are self testing. That is, all components are tested for faults in normal operations.

3,701,893
DATA CONVERTER FOR A COMPUTER SYSTEM
Kazunori Shimaya; Katsuzo Kaneko; Yoshinori Fujio, and Yoshihiro Sato, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Aug. 23, 1971, Ser. No. 173,849
Int. Cl. G06f 3/00
U.S. Cl. 235—154 **5 Claims**

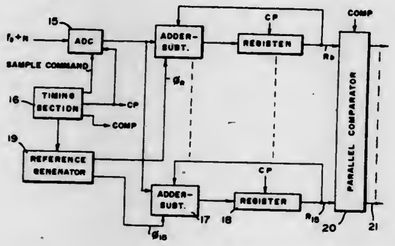


A data converting method and apparatus for converting a first data including numerical data and letter data of a first number of binary digits, such as a character unit, to a second data of a second number of binary digits, such as a byte unit, and vice versa, in response to data-conversion signals supplied from a central data processor. In the method and apparatus of the invention a first additional code is added to the letter data prior to the conversion of the data, and a predetermined number of bits of the numerical data are packed and converted to the second data after the ommission of redundant and nonrelated bits. A second additional code is added to the excess numerical data in the second data produced in the packing process. The portion of the second data which include the first additional code is converted into numerical data. The portion of the second data containing neither of the additional codes is converted to a predetermined plural number of numerical data.

3,701,894
APPARATUS FOR DERIVING SYNCHRONIZING PULSES FROM PULSES IN A SINGLE CHANNEL PCM COMMUNICATIONS SYSTEM
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Lucien A. Couvillon, Jr., 1891 Alpha Road, Glendale, Calif.; Christopher Carl, 303 N. Oakland Avenue, Pasadena, Calif.; Richard M. Goldstein, 5534 Rockcastle Drive, LaCanada, Calif.; Edward C. Posner, 1460 Rose Villa, and Richard R. Green, 252-D East California Street, both of Pasadena, Calif.
Filed Sept. 11, 1970, Ser. No. 70,967
Int. Cl. G06f 15/34; H04l 7/08
U.S. Cl. 235—181 **4 Claims**

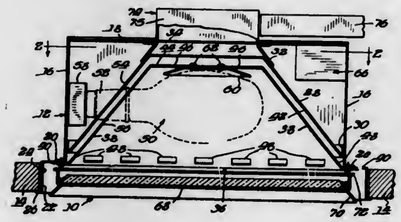
A method and apparatus is disclosed for bit synchronization of a received PCM communications signal, without requiring a separate synchronization channel in the communications

signal by digital correlation of the received square-wave signal with a predetermined number of phase displaced replicas of its expected form. Each phase displaced replica is correlated with the input signal to determine which phase displaced replica produces the largest correlation signal. In carrying out the correlation of the square-wave signal with a given phased displaced replica, the two levels of the replica corresponding to



the +1 and −1 binary values of the input signal are employed as sign signals to control the arithmetic addition or subtraction of the input signal binary values to the contents of an accumulator. The binary values of the input signal are produced by means for sampling and converting the input signal into +1 and −1 values. A plurality of samples of the input signal are thus accumulated during each cycle of a number of input signal cycles to develop a correlation value.

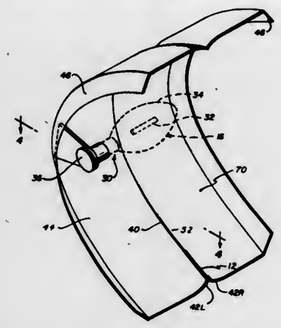
3,701,895
COMBINED LIGHTING AND VENTILATING FIXTURE
Donald Arthur Sweetser, Sparta, Tenn., assignor to Thomas Industries, Inc., Louisville, Ky.
Filed June 30, 1971, Ser. No. 158,280
Int. Cl. F21s ; F21v *29/00*
U.S. Cl. 240—9 A **7 Claims**



A luminaire having a housing for mounting in the plenum area above a ceiling and including a reflector supported generally within the housing for reflecting light from a light source supported therein. The housing and reflector establish primary and secondary air flow paths for removing heat from the light source and from ballast means and related electrical components supported by the housing.

3,701,896
LUMINAIRE FOR AREA LIGHTING
James Ronald Pate, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 94,697, Dec. 3, 1970, abandoned. This application Feb. 25, 1971, Ser. No. 118,879
Int. Cl. F21s *1/00, 3/00*; F21v *7/06*
U.S. Cl. 240—25 **10 Claims**

This luminaire includes an elongated generally horizontal light source, a multiple section generally parabolic reflector disposed behind the light source, and a refractor in front of the light source. The reflector includes two symmetrical transversely disposed paraboloid sections with the light source at the focus of both sections to produce essentially two spaced brams of reflected light. The area between the beams is illuminated



by direct light which passes through a control lens to form a third beam. The overall effect is essentially a rectangle of light of generally uniform intensity suitable for lighting a rectangular area such as a roadway from a luminaire set back from the roadway.

3,701,897
LIGHT FIXTURE WITH CHANGING LIGHT EMISSION
Davis W. Pennington, Santa Ana, and Ruth N. Taylor, Laguna Beach, both of Calif., assignors to Kinetic Lighting
Filed Nov. 25, 1970, Ser. No. 92,579
Int. Cl. F21s *1/06, 3/06*
U.S. Cl. 240—78 CF **7 Claims**

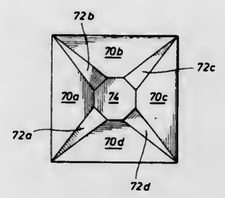


A light fixture having a light source surrounded by an opaque cylinder member having a large number of small holes therein for permitting light to pass therethrough into a set of prisms disposed in a cylinder just outside said cylinder member, and a motor to rotate said cylinder member about its axis, said prisms being elongated substantially parallel to said axis, said cylinder member being flexible to permit it to be mounted on three spokes radiating from the output rotary shaft of said motor by said spokes being received through three of said holes in said cylinder member.

3,701,898
LIGHT REFLECTOR SYSTEM
Albert C. McNamara, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed July 29, 1970, Ser. No. 59,117
Int. Cl. F21v *7/00*
U.S. Cl. 240—103 R **26 Claims**

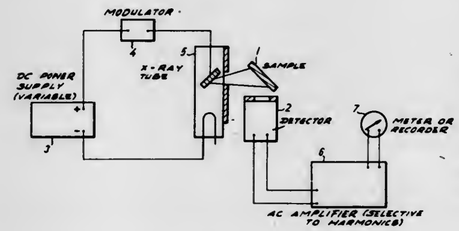
A light reflector for a light source having flat sided reflecting surfaces, the corners also being reflecting surfaces, each

corner having its smallest dimension in the plane of the reflector opening and gradually widening toward the base of the reflector along lines permitting primary reflections emitting from the corners to pass directly through the reflector opening without further reflection. Additional slanted, flat side and



corner pieces provide for further primary reflection emissions. Also, approximately placed light shields screen direct emissions from the light source and from primary emissions near the reflector edges without interferring with direct emissions through the center of the reflector opening.

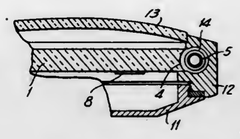
3,701,899
METHOD OF EFFECTING X-RAY ANALYSES
Rastislav Voparil, Prague, Czechoslovakia, assignor to Chirana Modrany narodiri podnik, Prague, Czechoslovakia
Filed Jan. 22, 1970, Ser. No. 4,978
Claims priority, application Czechoslovakia, Jan. 27, 1969, 511-69
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **2 Claims**



To the anode of an X-ray tube a basic direct current voltage is applied, approaching the threshold voltage required for the excitation of the analyzed element, and superimposed on this voltage is a sinusoidal alternating voltage. In the positive portions of the sinusoidal voltage the combined voltage exceeds the threshold voltage, whereas in the negative portions it lies below the same. The contents of the analyzed element is registered by a detector whose electronic evaluating device is selectively sensitive to the third or higher harmonics.

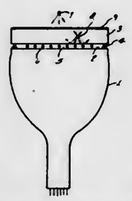
3,701,900
DEVICE FOR ILLUMINATING FLAT CARRIERS WITH MARKINGS
Oscar Thuler, Berne, Switzerland, assignor to Conrad Precision Industries, Inc., New York, N.Y.
Filed June 11, 1969, Ser. No. 832,267
Int. Cl. G21h *3/02*
U.S. Cl. 250—71 R **9 Claims**

A device for illuminating flat carriers in accordance with the invention, characterized by the fact that the light produced by a radioactive light source is radiated upon the carrier consisting of a transparent material, the radiated light being totally reflected by a part of a main surface of the carrier, one main face of the carrier being adapted to reflect or disperse light at areas where markings appear, or at any areas



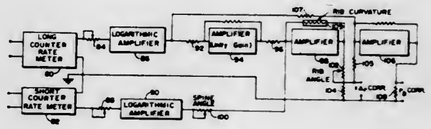
other than those of the markings, in order to allow the light which is reflected or dispersed at these areas to escape through the other main face of the carrier.

3,701,901
PHOTOTUBES FOR SCINTILLATION DETECTOR
Albert Suhami; Benjamin Sabbah; Dan Inbar, all of Haifa; Artzi Yarom, Jerusalem, and Dan Ben-Zeev, Haifa, all of Israel, assignors to Elscint Ltd., Haifa, Israel
Filed Jan. 7, 1970, Ser. No. 1,198
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **13 Claims**



The invention relates to phototubes and in particular to photo multiplier tubes such as those associated with scintillation crystals and which are provided with an array of conductor elements juxtaposed with respect to the photo cathode of the tube and which when subjected to voltage pulsing in a scanning sequence are capable of providing information concerning the spatial distribution of light incident on the photo cathode.

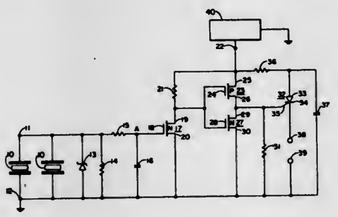
3,701,902
DUAL DETECTOR COMPENSATED DENSITY WALL LOGGING SYSTEM
Hermann W. Janssen, Kiel, Germany, and James F. Mooring, Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Division of Ser. No. 652,115, July 10, 1967, Pat. No. 3,617,746. This application June 9, 1971, Ser. No. 151,520
Int. Cl. G01v *5/00*; G01t *1/16*
U.S. Cl. 250—83.3 R **2 Claims**



A density well logging compensation system wherein the outputs of the two detectors, which are spaced different distances from a gamma ray source, are applied to temperature compensated logarithmic amplifiers the outputs of which are compared to derive a correction signal which is employed to correct the output of one of the detectors to give true for-

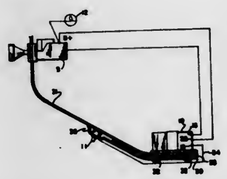
mation density. In connection with the spine and ribs plot of such a system, provision is made for adjusting both the spine angle and the rib angle so that the compensation system may be employed with density logging tools of different geometries and physical dimensions. Furthermore, provision is made for compensating for curvature of the rib with increasing mud-cake thickness. Facilities are also provided for holding the source end of the logging instrument against the borehole wall to minimize errors in the compensated output of the system.

3,701,903
PIEZOELECTRIC VEHICLE IMPACT SENSOR
Donald M. Merhar, Shorewood, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 29, 1970, Ser. No. 85,123
Int. Cl. B60l *3/00*
U.S. Cl. 307—9 **6 Claims**



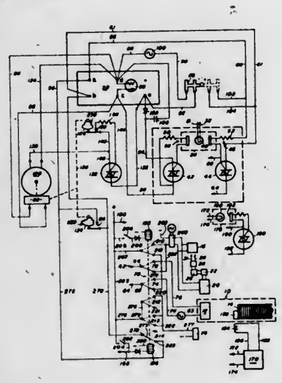
A piezoelectric vehicle impact sensor which is responsive to changes in the vehicle's velocity caused by particular impacts upon the vehicle from predetermined directions relative to the vehicle. A piezoelectric crystal which has a sensitive axis is firmly attached within the vehicle. A mass is mounted within the vehicle for compressing the crystal along the sensitive axis in response to an impact from the predetermined directions, thereby causing the crystal to generate a voltage as a function of the impact. A voltage limiter limits the amplitude of the voltage to a predetermined level. An integrating circuit receives the voltage from the voltage limiter and produces a signal which is an integral of that voltage. A detecting circuit is responsive to a particular value of the signal from the integrating circuit for activating an apparatus such as an inflatable passenger restraining system.

3,701,904
VEHICLE HEADLIGHT SWITCH WITH TIME DELAY
Donald J. Gardner, 3741 Penbrook Lane, Flint, Mich.
Filed June 9, 1970, Ser. No. 44,685
Int. Cl. B60g *1/04*
U.S. Cl. 307—10 BP **5 Claims**



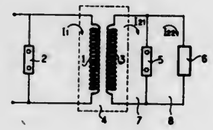
A control system is provided for the manual activation of a time delay circuit which will cause the head lamps of a vehicle to be energized for a predetermined length of time. It incorporates a head lamp control relay controlled by a transistor switch incorporating an RC time constant to provide the desired delay and a momentary on switch to activate the system. The momentary on switch may function in cooperation with the dome lamp switch.

3,701,905
STATIC STOPPER
Leland W. Sprinkle, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Interior
Filed Oct. 27, 1971, Ser. No. 192,901
Int. Cl. H02p *1/16*
U.S. Cl. 307—133 **5 Claims**



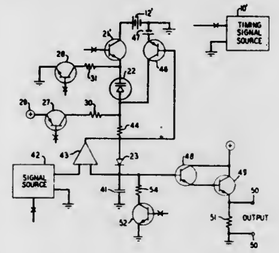
A time regulated switching device is made applicable to screen apparatus operation control signals so as to prevent accidental control of the apparatus by spurious signals randomly interposed with already sequentially-generated control signals. A timed cam control of switch activity in the device directed by the control signals before they are effective to initiate desired functions of the apparatus determine an interval of delay in which the control potential of spurious signals is dissipated. Energizations of means engaging a clutch adapted to transfer a drive from a timing motor which displaces the cam against a bias thereon toward restored disposition thereof, occur in response to the control signals, and are coordinated with control of motor energizations by the cam for assuring the effectiveness of further valid control signals in regulating operations of the apparatus after the delay interval.

3,701,906
SUPERCONDUCTIVE POWER STORAGE AND RELEASE DEVICE
Jean Denel, Paris; Jacques Maldy, Wissous, and Enrique Santa-Maria, Villiers-sur-Orge, all of France, assignors to Compagnie Generale D'Electricite, Paris, France
Filed Oct. 1, 1971, Ser. No. 185,620
Claims priority, application France, Oct. 1, 1970, 7035536
Int. Cl. G11c *11/44*
U.S. Cl. 307—149 **8 Claims**



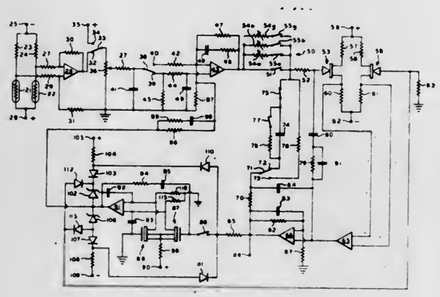
A device for rapidly transferring energy from a superconductive storage device to a utilization device. A first switch is coupled across the superconductive device and a second switch is coupled across a secondary of a transformer comprising the superconductive device and the secondary. The utilization device is coupled across the secondary in parallel with the second switch.

3,701,907
CIRCUIT EMPLOYING CHARGE STORAGE DIODE IN FAST DISCHARGE MODE
Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Division of Ser. No. 781,167, Dec. 4, 1968, Pat. No. 3,626,213.
This application Oct. 23, 1970, Ser. No. 83,634
Int. Cl. H03k *5/20*, *17/74*
U.S. Cl. 307—235 **5 Claims**



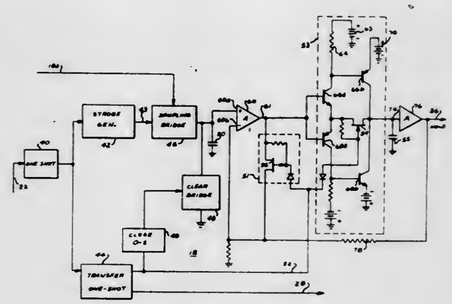
The output of a charge storage diode in its reverse conducting spike discharge mode utilized to impose a fixed supplemental charge on a capacitor in each of plural sample and hold circuits just after a signal sample charge has been placed in the capacitor. Isolating diodes couple a common signal source to the respective capacitors, and each diode is reversely biased by the total of the sample and supplemental charges in its holding capacitor to prevent crosstalk among the various holding capacitors. A memory drive circuit and a single sample and hold circuit are also shown to demonstrate the mentioned spike discharge mode of charge storage diode operation.

3,701,908
PEAK DETECTOR AND AMPLIFIER CIRCUIT
Harold M. Neer, and Vern A. Street, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Feb. 1, 1971, Ser. No. 111,203
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **9 Claims**



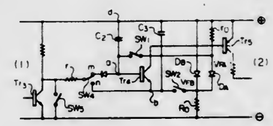
An output circuit is provided for use with a chromatographic analyzer. The analyzer output is amplified and passed through an attenuation network to an integrator. The output signal from the integrator is applied selectively through an amplifier to the input of the first amplifier to provide an automatic zero circuit. Additional differentiating, peak reading and storage circuits are selectively connected to the output of the integrator.

3,701,909
PEAK AND HOLD SYSTEM
Walter V. Holmes, Morrisville, Pa., and John F. Renz, Cinnaminson, N.J., assignors to Computer Test Corporation
Filed Aug. 17, 1970, Ser. No. 64,310
Int. Cl. G11c *11/34*; H03k *17/18*
U.S. Cl. 307—246 **15 Claims**



A system and method for detecting the time of maximum amplitude of a bipolar unknown signal and generating a trigger pulse referenced to that time. The unknown signal is sampled at the time of the trigger pulse and the resultant sampled value is stored in short term storage. The short term stored value is transferred by control logic to long term storage where it remains available to be analyzed.

3,701,910
COMPENSATING CIRCUIT FOR VOLTAGE AND TEMPERATURE IN A TRANSISTOR CIRCUIT
Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha COPAL, Tokyo, Japan
Filed Nov. 19, 1970, Ser. No. 90,939
Claims priority, application Japan, Nov. 22, 1969, 44/93724; Dec. 26, 1969, 45/1617
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **2 Claims**

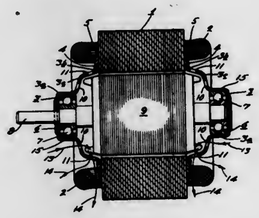


Compensating circuit for voltage and temperature in a transistor circuit of complementary connection having an NPN type transistor and a PNP type transistor with its base connected to the collector of the NPN transistor. The voltage of the base of the NPN transistor is compared with the voltage of the emitter thereof so as to trigger the same so that the PNP transistor is triggered. The circuit comprises a first voltage dividing series circuit and a second voltage dividing series circuit. The first voltage dividing series circuit consists of a varistor diode and a resistor. The first series circuit is connected to the terminals of the electric source, so that the divided voltage of the varistor diode is applied to the emitter of the NPN transistor. The second voltage dividing series circuit consists of a varistor diode and a resistor. The second series circuit is connected to the terminals of the varistor diode of the first series circuit so that the divided voltage of the varistor diode of the second series circuit is applied between the base and the emitter of the NPN transistor. The variation in the voltage of the varistor diode in each of the first and the second series circuit due to the variation in the voltage of the electric source as well as the variation in the temperature is made small thereby permitting the NPN transistor to be stabilized.

3,701,911
MOTOR BEARING SUPPORT AND COOLING MEANS

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed May 20, 1971, Ser. No. 145,450
Int. Cl. H02k 9/04
U.S. Cl. 310—60 10 Claims

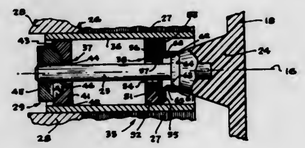


A bearing support for apparatus having a rotor mounted on a shaft and a stator having windings comprising a cup-shaped member consisting of an inner section for supporting rotor bearing means and an outer section secured at its outer periphery to the stator at a point radially inwardly of the windings and spaced from said rotor to define a rotor chamber, means defining a plurality of openings in the outer section of the cup-shaped member to provide an effectively cooling air flow to and from the rotor chamber upon relative rotation of the rotor and stator, the openings being of a configuration and orientation to direct the air over the windings and bearing means.

3,701,912
FAN MOTOR BEARING ASSEMBLY

Gerhard Schulze, Eichendorffweg 18, D-8021 Hohenschaeftlarn, Germany

Filed Nov. 8, 1971, Ser. No. 196,424
Int. Cl. H02k 5/16
U.S. Cl. 310—90 8 Claims

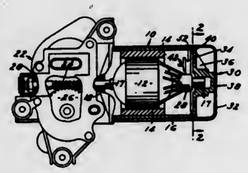


A bearing assembly for mounting a fan motor rotor on a stationary cantilever shaft; the bearing assembly includes a rotor bearing member encompassing the shaft and having two oppositely facing bearing surfaces of conical or spherical configuration. A first stator bearing member, affixed to the shaft, engages one rotor bearing surface. A floating stator bearing member engages the other rotor bearing surface. The stator bearing members have bearing surfaces complementary to the rotor bearing surfaces, and at least one surface of each mating pair constitutes a self-lubricating surface. A resilient cup or other simple resilient biasing means, connected to the floating stator bearing member, biases the assembly to maintain both sets of bearing surfaces in continuous engagement regardless of changes and imbalance in axial thrust, bearing wear, and thermal expansion; the biasing means also restrains the floating bearing member against rotation.

3,701,913
STRUCTURE FOR CLOSING A MOTOR HOUSING AND FOR SUPPORTING BRUSH ELEMENTS MAKING CONTACT WITH THE ARMATURE THEREOF

Eugene C. Cagnon, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 14, 1969, Ser. No. 841,696
Int. Cl. H01r 39/38
U.S. Cl. 310—247 4 Claims

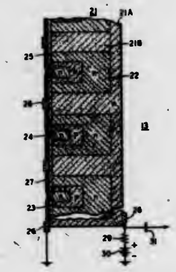


A structure both for closing the end of an electric motor housing and for supporting brush elements in electrical contact with an armature of the motor has the following elements. An electrically nonconductive supporting hub which closes the end of the motor is formed which has a surface lying in a plane generally perpendicular to the central axis of the hub. A plurality of brush boxes are also integrally formed which extend upwardly from the hub's surface. The brush boxes define a continuous enclosure for receiving therewithin brushes of electrically conductive material. Electrical connectors are provided for connecting the brushes through the supporting hub to the exterior of the motor. Springs are also provided for each of the brushes to bias the associated brush along its associated brush box and into engagement with the motor armature.

3,701,914
STORAGE TUBE WITH ARRAY ON PNPN DIODES

Gilbert Frank Amelio, Basking Ridge, and George Elwood Smith, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed March 3, 1970, Ser. No. 16,197
Int. Cl. H01j 31/28, 31/38; H01l 11/10
U.S. Cl. 313—66 2 Claims

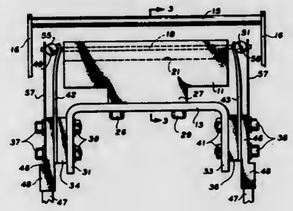


A storage tube is provided with a storage element comprising a plurality of PNPN bistable photodiodes which share a common terminal P-type zone, the other zones being discrete. A first electrode makes low resistance connection to the common P-type zone and a second electrode makes electrical connection to the discrete terminal N-type zones by way of individual film resistors. The radiation pattern to be stored is made incident on the P-type surface and an electron beam scans the opposite surface. The operating potentials are such that the beam makes impact only on those N-type terminal zones associated with photodiodes triggered to the low resistance state by the incident radiation.

3,701,915
ELECTRON BEAM GUN

Kazumi N. Tsujimoto, El Cerrito, Calif., assignor to Air Reduction Company Incorporated, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,684
Int. Cl. H01j 29/46, 1/00, 29/56
U.S. Cl. 313—82 3 Claims

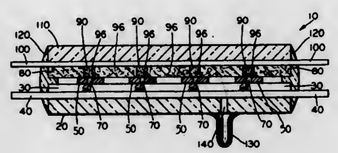


An electron beam gun is described wherein a pair of elongated filaments are placed parallel to one another in the elongated channel of a focusing electrode.

3,701,916
DISPLAY PANEL HAVING GAS-FILLED CELLS UTILIZING PHOSPHOR MATERIALS

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 1, 1971, Ser. No. 111,310
Int. Cl. H01j 1/62
U.S. Cl. 313—108 B 11 Claims



The display panel includes a plurality of gas-filled cells and electrodes therefor, with some of the cells being formed by apertures in an insulating plate. The panel includes a selected phosphor material which is integral with said insulating plate and is exposed in the apertures therein.

3,701,917
DISPLAY PANEL HAVING A PLURALITY OF ARRAYS OF GAS-FILLED CELLS

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

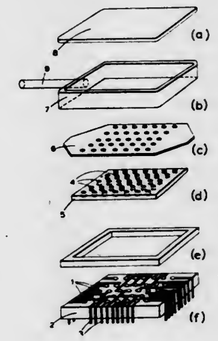
Continuation of Ser. No. 880,025, Nov. 26, 1969, abandoned.
This application May 10, 1971, Ser. No. 141,724
Int. Cl. H01j 61/06, 61/30
U.S. Cl. 313—188 8 Claims

A display panel includes a slotted structure for providing gas communication paths, the slotted structure comprising insulating plates having a plurality of parallel slots which extend completely through one of the plates, and along substantially the entire length thereof, electrodes are disposed between the plates and above and below the plates to form two layers of cells.

3,701,918
GASEOUS-FLOW, DISCHARGE DISPLAY DEVICE WITH AN ARRAY OF HOLLOW CATHODES

David Henry Odhams Allen, East Grinstead, Sussex; Raymond Frederick Hall, Crawley, Sussex, and George Frederick Weston, Merstham, Surray, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 766,525, Oct. 10, 1968, abandoned.
This application Jan. 22, 1971, Ser. No. 108,965
Claims priority, application Great Britain, Aug. 29, 1968, 46,406/68
Int. Cl. H01j 61/06, 61/64
U.S. Cl. 313—209 2 Claims



An electrical display device employing an array of electrically conductive dot cathodes and an anode or anodes for cooperating therewith to define an array of glow discharge paths, the dimensions and relative locations of the cathodes and anodes and pressure and composition of the atmosphere being such that only a negative flow discharge is produced and the positive column is suppressed.

3,701,919
INTEGRATED VACUUM CIRCUITS

Donovan V. Geppert, Sunnyvale, Calif., assignor to Electron Emission Systems, Inc., Tucson, Ariz.

Filed Oct. 6, 1969, Ser. No. 864,031
Int. Cl. H01j 1/88, 19/42
U.S. Cl. 313—250 15 Claims

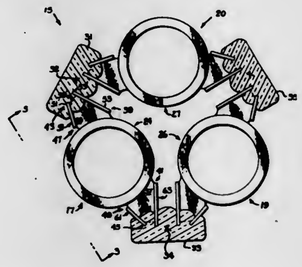


An integrated circuit operative in vacuum and having all circuit elements formed in coplanar fashion on a single surface of a substrate to provide superior performance even in the presence of adverse environmental conditions. The circuit is especially adapted to microminiaturization and includes a unique electron discharge device having coplanar electrodes easily formed on a substrate surface by relatively simple film deposition techniques.

3,701,920
CATHODE RAY TUBE ELECTRODE ELEMENT

Louis R. Wanner, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Division of Ser. No. 51,761, July 2, 1970, Pat. No. 3,659,134.
This application Jan. 19, 1972, Ser. No. 218,968
Int. Cl. H01j 1/88, 19/42; H01k 1/18
U.S. Cl. 313—292 5 Claims



Substantially U-shaped support means provide improved positioning and support for the individual electrode elements comprising a cathode ray tube electron gun assembly. The related side members of each U-shaped support channel are oriented in substantially parallel relationship with the longitudinal axis of the respective support rod. The discrete shaping of the electrode support arm provides structural cooperation with the contiguously reformed support rod material to provide an enhanced locking effect therebetween.

3,701,921
ELECTRIC LAMP WITH REFRACTORY METAL COMPONENTS CONNECTED TO MOLYBDENUM FOILS

Hans Wiedenmann, Heidenheim, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed Oct. 21, 1970, Ser. No. 82,685
Claims priority, application Germany, Nov. 20, 1969, P 19 56 484.2
Int. Cl. H1j 5/00
U.S. Cl. 313—332 6 Claims

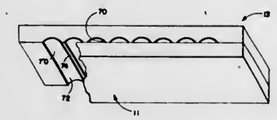
An envelope of glass of high silica content, such as quartz glass or similar, has molybdenum foils pinch-sealed into the lamp envelope. Lamp components of refractory material, such as molybdenum, or tungsten are welded to the foils, for example by ultrasonic welding, by interposition of an intermediate layer of aluminum foil, for example up to 0.1 mm. thickness.



3,701,922
ELECTRON BEAM LINE SCANNER WITH TRANSVERSE BINARY CONTROL

Richard A. Honzik, La Palma, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Aug. 31, 1970, Ser. No. 68,326
Int. Cl. H01j 31/26
U.S. Cl. 315—10 20 Claims



A pair of dielectric plates have control electrodes formed on oppositely positioned broad surfaces thereof, there being an evacuated narrow space formed between such surfaces to provide paths for an electron beam between a cathode and a target. Such surfaces have conductive control electrodes formed thereon, the electrodes on one of the plates including paired electrodes arranged in a coded finger pattern defining electron beam channels between the cathode and target. The electrodes encompass substantially all of the plate surface area between which the channels are formed. Binary control signals are utilized to apply potentials to preselected ones of said electrodes to create transverse electric fields in the channels bounded thereby, thereby aborting the electron beam in such channels. The beam is in this manner permitted to pass through channels of the scanner in which there are no transverse fields so as to excite the target portions located by these channels.

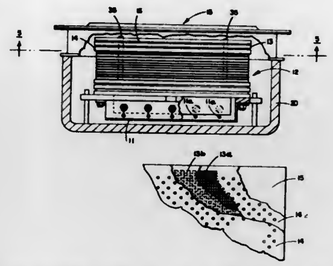
3,701,923
INHERENT STORAGE FOR CHARGED PARTICLE BEAM SCANNER

Walter F. Goede, Harbor City, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 9, 1971, Ser. No. 179,092
Int. Cl. H01j 29/41
U.S. Cl. 315—12 11 Claims

The output of an area of a charged particle source such as an electron source passes from this source through a plurality of control plates to a target which may comprise a phosphor target plate. The control plates have a plurality of apertures formed therein which are aligned with each other from plate to plate to define channels between the electron source and the target. The target is scanned by means of digital control signals which are applied to the control plates. A collector plate and a storage plate are interposed between the control plates and the phosphor target in that order. Control signals are successively applied to the various plates to first write

signals onto the storage plate in accordance with the digital excitation of the control plates, to then apply the signals

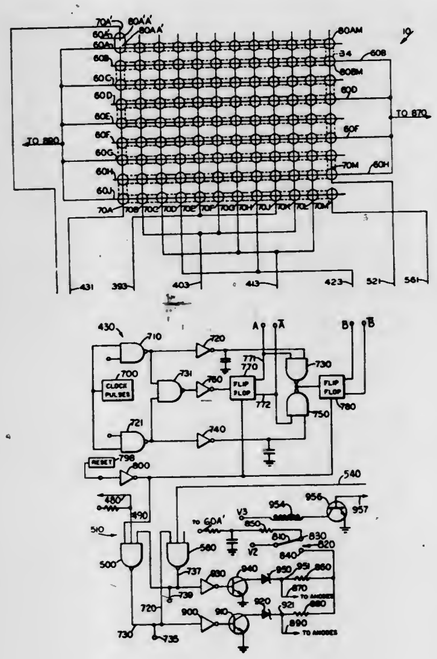


stored in the storage plate to the phosphor during a flood mode, and finally to erase the signals stored in the storage plate.

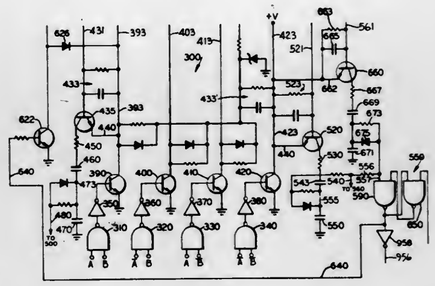
3,701,924
SYSTEM FOR OPERATING A DISPLAY PANEL

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 17, 1970, Ser. No. 64,227
Int. Cl. H03k 23/18
U.S. Cl. 315—84.6 8 Claims



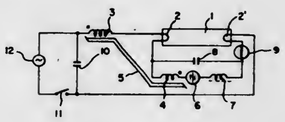
A circuit for scanning a display panel including means for automatically progressing from cell to cell along a row, sensing the arrival at the end of a row and automatically switching to the next row and causing the scanning operation to proceed in the opposite direction to the end of this next row, and thus automatically scanning from row to row and finally sensing the last cell in the panel and resetting the panel and circuit for the start of another complete scanning cycle.



3,701,925
INSTANTANEOUS STARTING SYSTEM FOR DISCHARGE LAMP

Shunichi Nozawa, Akashi; Hisashi Kuroi; Masamichi Hatada, both of Kyoto, and Shunsaku Fukuyama, Amagasaki, all of Japan, assignors to Blackwell Electronics Ind. Co., Ltd., Shimogyo-ku, Kyoto, Japan

Filed Feb. 23, 1971, Ser. No. 117,935
Claims priority, application Japan, Feb. 28, 1970, 45/17365; April 22, 1970, 45/34997; Sept. 30, 1970, 45/86091; Sept. 30, 1970, 45/86092; Sept. 30, 1970, 45/86093
Int. Cl. H05b 39/02, 41/14
U.S. Cl. 315—101 17 Claims



A system for the instantaneous starting of a fluorescent lamp includes a circuit connected across the lamp having a start compensation device to apply a half-sinusoidal wave derived from a commercial power supply and oscillatory means to provide a high frequency oscillation across the lamp. The oscillatory means may include a symmetrical silicon switch (SSS) or an inversely blocking two-terminal thyristor and an oscillation adjusting inductance and capacitor. The start compensation device may be a start compensation winding wound on the same core as a current limiting winding in series with the lamp, and a start compensation diode may be connected in series with the start compensation winding. Alternatively, the diode alone may serve as the start compensation device. A thermistor having a positive characteristic may be connected in the circuit across the lamp.

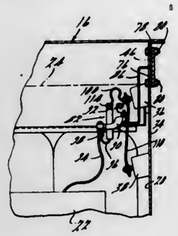
3,701,926
INTERNAL FUSE FOR TRANSFORMER

Jerry Risk, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

Filed Jan. 20, 1972, Ser. No. 219,388
Int. Cl. H02h 7/04
U.S. Cl. 317—15 10 Claims

A fuse holder assembly which is particularly adapted to be utilized in conjunction with the protection system for the pri-

mary side of a transformer assembly wherein the fuse holder is mounted on a plate, the plate being supported on the face of the transformer casing. The fuse holder extends from the plate through an aperture in the transformer housing such that the fuse is supported below the level of cooling fluid within the

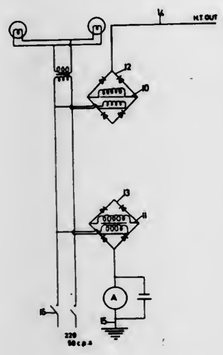


transformer housing. The assembly of the present invention is suitable for use in connection with any type of fuse and also the transformer assembly includes a protective cover which encloses the area on which the plate is mounted to render the system tamper-proof.

3,701,927
LOCATION OF FAULTS IN CABLES

Frank Edward Jenkinson, Johannesburg, Republic of South Africa, assignor to Patented Devices (Proprietory) Limited, Reuven, Johannesburg, Republic of South Africa

Filed June 11, 1971, Ser. No. 152,158
Claims priority, application South Africa, June 11, 1970, 3973
Int. Cl. G01r *31/08*
U.S. Cl. 317—16 **2 Claims**

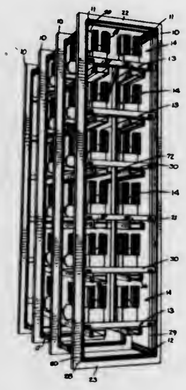


Apparatus for reducing the resistance of a high resistance fault between two cores or between one core and the sheath of an electrical cable comprising a first transformer having a high open circuit voltage rating and a low short circuit current rating and a second transformer having a low open circuit voltage rating and a high short circuit current rating. The two transformers are connected in series and across the two faulty cores or between the faulty and the sheath and their respective primary windings are energized. Initially the sum of the two secondary voltages will be applied to the cable to reduce the fault resistance. This will cause the fault current to increase. When the fault current increases beyond the short circuit current rating of the first transformer this transformer will zero leaving only the second transformer to burn the fault down to a point where conventional fault locating apparatus can be employed to locate the fault.

3,701,928
FRAMEWORK FOR SUPPORTING AIR COOLED ELECTRICAL AND ELECTRONIC EQUIPMENT

Ariel Rual Davis, 3476 Fleetwood Dr., Salt Lake City, Utah

Filed July 27, 1970, Ser. No. 58,533
Int. Cl. H02b *1/04*
U.S. Cl. 317—99 **11 Claims**

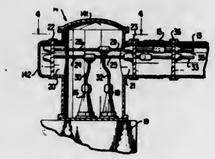


A framework comprising a plurality of vertical rectangular open frames interconnected at the top and bottom by tie beams and intermediately by a plurality of vertically spaced shelves. The shelves have horizontal cross members mounted on the frames and current-carrying connecting support beams mounted on the cross members in electrically isolated relation therewith. Cables in the frame, crossmembers and beams supply low current to current controlled units mounted on these connecting support beams and electrically connected thereto. Vertical bus bars are connected to said connecting support beams for supplying current thereto and said current-control units.

3,701,929
THREE-PHASE BUS SYSTEM AND INTERCONNECTING MEMBER

Kazuo Taguchi, Fuchu, and Hiroaki Tsuchida, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Company Ltd., Kanagawa-ken, Japan

Filed May 11, 1971, Ser. No. 142,271
Claims priority, application Japan, May 13, 1970, 45/40125
Int. Cl. H02b *1/20*; H02g *5/00*
U.S. Cl. 317—103 **3 Claims**

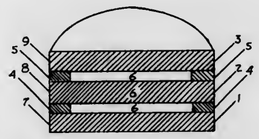


A three-phase bus system is disclosed which employs a connecting structure, which is adapted for connecting the lead-out bushings of a three-phase power transformer to three-phase bus conductors. The connecting structure includes a T-shaped member having two arms and a leg. The two arms of the T-shaped member are slidably supported in the bus conductors. A bent connecting conductor is provided for connecting a bushing terminal to the leg of the T-shaped member in a slidable and rotatable fashion whereby freedon of connection during assembly can be readily obtained.

3,701,930
ELECTROLYTIC TRANSISTOR WITH COLLECTOR IN BASE-EMITTER CURRENT PATH

Joseph Tami, Jr., 7725 Apperson Street, Tujunga, Calif.

Filed Feb. 11, 1971, Ser. No. 114,627
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **5 Claims**

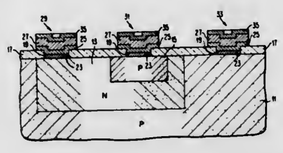


An improved self-healing electrolytic transistor using electrode materials and solutions similar to those used in electrolytic capacitors; in which; the collector is placed within the emitter to base current path; also having means for varying the internal input resistance; and which is capable of high power output.

3,701,931
GOLD TANTALUM-NITROGEN HIGH CONDUCTIVITY METALLURGY

Martin Revitz, Poughkeepsie, and James M. Thompson, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1971, Ser. No. 140,891
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **5 Claims**

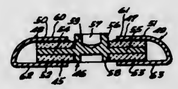


A high conductivity metallurgy interconnection system for semiconductor devices is formed of laminar stripes having a film of gold disposed between films of tantalum-nitrogen.

3,701,932
VARIABLE DISK CAPACITORS

John E. Johanson, Boonton, N.J., assignor to Johanson Manufacturing Corporation, Boonton, N.J.

Filed Jan. 3, 1972, Ser. No. 214,593
Int. Cl. H01g *5/06*
U.S. Cl. 317—254 **15 Claims**

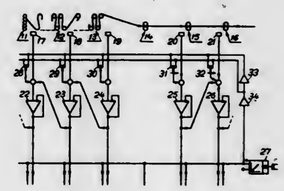


Variable disk micro-miniature adjustable capacitors for use in microwave electronic circuitry and comprising a pair of ceramic disks having electrically-conductive outer surface layer portions and interposed by an electrically-conductive rotor plate all held in face-to-face, coaxially-stacked relation by conductive spring clamp means electrically connected with the electrically-conductive layers of the ceramic disks are described.

3,701,933
DEVICE FOR PAPER MACHINES

Sture Andersson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 13, 1969, Ser. No. 849,786
Claims priority, application Sweden, Aug. 22, 1968, 11343/68
Int. Cl. B21b *37/06*
U.S. Cl. 318—7 **1 Claim**

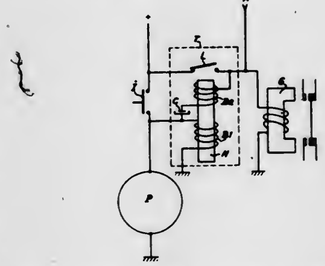


A device for controlling a paper web with at least two sections, each section being provided with its own driving member and amplifier for the speed control. A measuring means is arranged in this speed control to measure the position of the paper web and the output signal of said means is supplied to a summation amplifier. Said summation amplifiers are cascade-connected and their input sides are provided with emitters for process signals and potentiometers which are fed from a ramp voltage proportional to the speed of the machine and common for the device.

3,701,934
CONTROL SYSTEM FOR A WINDSHIELD WIPER AND CLEANER UNIT

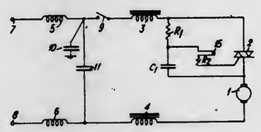
Charles Guidicelli, Bagnolet, France, assignor to Societe Anonyme STOP, St. Oven, France

Filed May 4, 1971, Ser. No. 140,039
Claims priority, application France, May 15, 1970, 7017815
Int. Cl. B60s *1/02*
U.S. Cl. 318—102 **1 Claim**



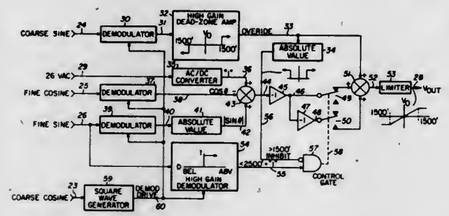
The invention relates to a control system for a vehicle windshield-wiper and cleaner allowing the windshield-wiper and the windshield-cleaner to be energized simultaneously and to be de-energized one after the other. In this system, the operation of the windshield-wiper is controlled through the contact of an electromagnetic relay having a first coil connected across the motor actuating the pump of the windshield-cleaner, and a second coil connected in series with a capacitor across the control switch of the pump. When the control switch is closed, the relay is energized and the capacitor is short-circuited. When the control switch is opened, the current charging the capacitor flows through the second coil of the relay and causes a delay to the release of this relay, hence a delay to the deenergization of the windshield-wiper. With this arrangement, a delay of substantial and constant duration can be obtained with a capacitor of relatively small size.

3,701,935
CIRCUIT FOR FOOD MIXER
Arthur A. Collie, Hayling Island, England, assignor to Kenwood Manufacturing (Working) Limited, Hampshire, England
Continuation of Ser. No. 812,002, April 1, 1969, abandoned. This application June 23, 1971, Ser. No. 156,038
Int. Cl. H02p 5/08
U.S. Cl. 318—325 **4 Claims**



An alternating current electric motor speed control circuit including a bi-directional semiconductor control element in the motor circuit triggered from a blocking to a conductive state by the application of a potential to its control electrode applied through governor contacts of a motor speed governor contacts, which contacts are closed when the motor speed drops below a particular value which can be varied and which carry a small proportion of the total motor current.

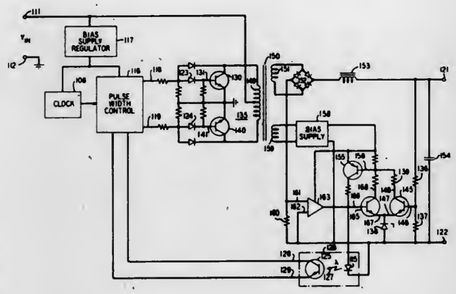
3,701,936
FINE & COARSE SYNCHRO SERVOMOTOR CONTROL INCLUDING A DUAL SIN/COSINE TO DC CONVERTER
Kenneth G. Martin, Cedar Rapids, and Paul A. Senferer, Baltic, both of S. Dak., assignors to Collins Radio Company, Cedar Rapids, S. Dak.
Filed Dec. 10, 1971, Ser. No. 206,603
Int. Cl. G05b 11/18
U.S. Cl. 318—595 **12 Claims**



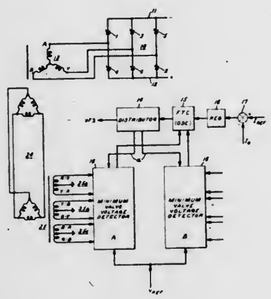
Dual-synchro coarse and fine error signals definitive of the discrepancy between a selected condition and that being experienced are converted by static means to a linear DC control signal. Linearization means implementing the control function $1-\cos\theta+\sin\theta$ are employed as concerns the fine error analog input signal, and the coarse error analog input signal is employed for switching functions which occur only at zero error and control extremes, thus obviating control discontinuities, transients, and sudden changes in control linearity.

3,701,937
PULSE-WIDTH MODULATED DC TO DC CONVERTER WITH ZERO PERCENT DUTY CYCLE CAPABILITY
Donald Earle Combs, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 30, 1971, Ser. No. 214,312
Int. Cl. H02m 3/32
U.S. Cl. 321—2 **8 Claims**

A pulse-width modulated DC to DC converter is enabled to operate into short circuits and limit the current output by having the capability of operating at zero percent duty cycle. The regulation feedback loop utilizes a light-emitting diode and phototransistor optical arrangement to permit isolation between the input and output sides of the converter. The light emitting diode is responsive to voltage monitoring and current monitoring circuitry on the output side of the converter. The converter operates in a crossover mode in which the regulation switches from voltage regulation to current regulation or vice versa as load conditions change.

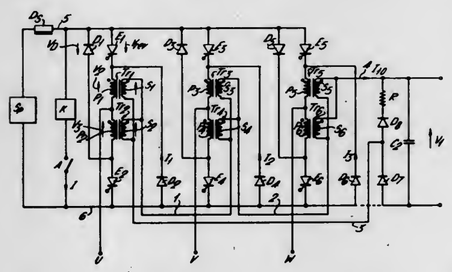


3,701,938
MINIMUM VALVE VOLTAGE METHOD AND CONTROL APPARATUS FOR HVDC POWER CONVERTERS
Philip Chadwick, Media Pike, Pa., assignor to General Electric Company, Philadelphia, Pa.
Filed Aug. 9, 1971, Ser. No. 170,081
Int. Cl. H02m 7/12, 1/18
U.S. Cl. 321—11 **18 Claims**



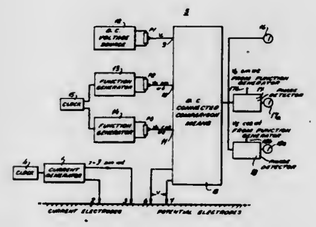
A minimum valve voltage firing control method and circuit for HVDC thyristor power converter circuit operated in the rectifying mode. The valve of the commutating voltage across the respective thyristor valves is sampled and the minimum sampled value during each valve firing stored on a capacitor through the medium of suitable valve voltage sampling and gating circuits. The stored valve voltage samples are compared to a minimum valve voltage reference value and an error signal derived under conditions where an insufficient valve voltage is indicated. The error signal is employed to increase the minimum angle of delay of firing α to a safe value adequate to assure a sufficient valve firing voltage.

3,701,939
REVERSE VOLTAGE CIRCUIT FOR THYRISTORS
Tom Kastrup Petersen, and Nells Juul Henriksen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Dec. 28, 1970, Ser. No. 101,599
Claims priority, application Denmark, Dec. 29, 1969, 6861
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R **3 Claims**



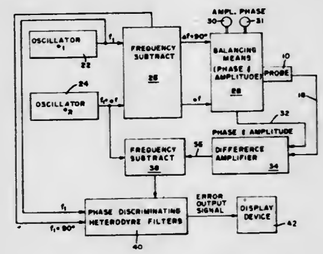
The invention relates to a reverse voltage circuit for thyristors which has particular application to an inverter circuit. The basic circuit includes a thyristor, a first diode, and a transformer having the primary winding thereof in series relation to the diode. The first diode and the transformer primary winding are in parallel relation to the thyristor with the diode being antiparallel relative to the thyristor. The transformer secondary winding and a second diode are in series and a D.C. voltage source biases the second diode in a counter direction relative to the secondary winding. With this circuit higher reverse voltages are obtained having relatively lengthy durations to effect switching off of a thyristor in a satisfactory manner.

3,701,940
SYSTEM FOR DETERMINING ELECTRIC GEOPHYSICAL PROSPECTING WORK USING SYNCHRONIZED CLOCKS AND DIRECT COUPLED COMPARISON MEANS
Bruno Yngve Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden
Filed Dec. 28, 1970, Ser. No. 102,020
Claims priority, application Sweden, Jan. 5, 1970, 81/1970
Int. Cl. G01v 3/06
U.S. Cl. 324—1 **2 Claims**



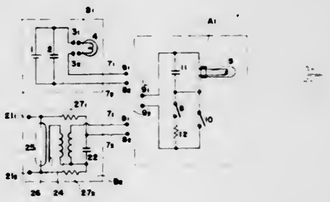
A system for determining in geophysical prospecting work the complex electric field generated by an AC current charged to the ground, wherein the synchronization of the AC current charged to the ground and a compensation measuring means is provided by at least one precision clock, e.g., quartz-oscillator, and wherein the measuring means is direct-coupled and provided with means compensating for and balancing the DC current occurring in the measured signal. The measuring means is further provided with means compensating for the part of the measured signal being in phase with said AC current and means compensating for the part of the measured signal being 90° out of phase from said AC current.

3,701,941
MAGNETIC ANOMALY DETECTOR WITH MEANS FOR OBTAINING DIFFERENT TEST FREQUENCIES
Walter J. Bantz, Fairfield, and Richard J. Pittaro, Stamford, both of Conn., assignors to Branson Instruments Incorporated, Stamford, Conn.
Filed Sept. 28, 1971, Ser. No. 184,350
Int. Cl. G01r 33/12
U.S. Cl. 324—37 **20 Claims**



A magnetic detecting apparatus comprises a probe having two coils which are moved through a metallic workpiece (tubing) to detect anomalies. The coils are connected to an electronic circuit which includes two oscillators whose output frequencies are subtracted to provide a signal of suitable frequency to the probe coils. Additionally, phase shift means are provided to produce a balancing signal in order to analyze and display the anomaly responsive signal produced by the test coils with respect to phase and amplitude. Different test frequencies are obtained by changing the frequency of one of the oscillators.

3,701,942
ATTACHABLE TEST DEVICE FOR A FLASH DEVICE
Tatsuo Kobayashi, and Yoshiharu Ota, both of Kawanishi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed March 13, 1970, Ser. No. 19,326
Claims priority, application Japan, March 17, 1969, 44/20289
Int. Cl. G01r 31/02, 31/22
U.S. Cl. 324—51 **3 Claims**



A photographic camera provided with a circuit composed of an indicating lamp connected to one of a pair of terminals on the camera which terminals are connectable respectively to synchro-terminals of a flash device. A shunting condenser is connected in parallel with the indicating lamp, and a circuit having a resistance and a manually operative test switch in series, in parallel with a synchronizing switch is connected

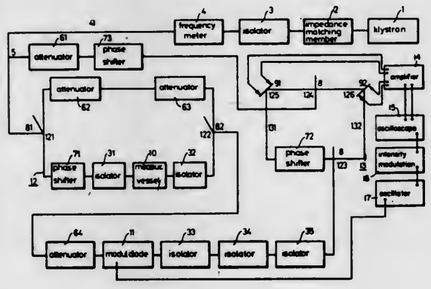
between the other of the pair of terminals and the indicating lamp and condenser. Thereby, all the flash circuits including a flash tube, the flash device, the synchro-terminals of the flash device and the camera and the electrical connection therebetween may be tested by means of the indicating lamp by the closing of the test switch.

3,701,943

PROCESS AND DOUBLE-BRIDGE ARRANGEMENT FOR EXAMINATION OF RAPID PHASE AND AMPLITUDE CHANGES OF HIGH-FREQUENCY WAVES CAUSED BY A MEDIUM UNDER TEST

Nils Kaiser, 80 Waldpromenade, Gauting, near Munich, Germany

Continuation-in-part of Ser. No. 290,139, June 24, 1963, abandoned. This application Sept. 7, 1967, Ser. No. 666,058
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 R **4 Claims**



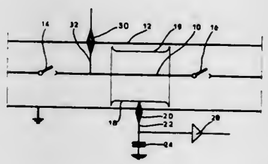
The present invention relates to a method of examining the condition of a medium undergoing chemical or physical changes, as for example, the measurement of reaction speeds, wherein the medium undergoing physical and/or chemical change is subjected to ultrahigh frequency radiation beams and detecting and measuring any changes in phase of the said frequency after contact with the medium. One convenient method of carrying out the claimed invention comprises directing an ultrahigh frequency wave beam at a specified frequency upon the medium to be measured and detecting and measuring any changes of amplitude and phase of the frequency of the beam after leaving said medium.

3,701,944

HIGH-VOLTAGE METAL-CLAD APPARATUS COMPRISING A CAPACITIVE VOLTAGE DIVIDER

Jean E. Amalric, Grenoble, France, assignor to Merlin Gerin, Grenoble, France

Filed Aug. 3, 1971, Ser. No. 168,694
Claims priority, application France, Aug. 6, 1970, 7029159
Int. Cl. G01r 1/20, 35/02
U.S. Cl. 324—126 **5 Claims**



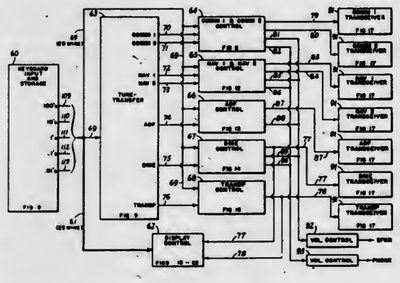
High-voltage metal-clad apparatus comprising a pressurized grounded metal enclosure and an axial high voltage conductor. A capacitive voltage divider cooperates with a section of the conductor that can be isolated to deliver a low voltage output signal. A movable probe can apply a test voltage to the conductor to calibrate the voltage divider in situ. The probe is voltage-supplied through a bushing traversing the enclosure and rated only for a fraction of the rated high voltage of the apparatus.

3,701,945

INTEGRATED PUSH BUTTON PANEL FOR CONTROLLING AIRCRAFT INSTRUMENTALITIES

Reginald R. Gallant, Bristol; Roger S. Swain, Wolcott, and Neil S. Waterman, Stamford, all of Conn., assignors to Atlantic Design & Development Corporation, Stamford, Conn.

Filed June 20, 1969, Ser. No. 835,164
Int. Cl. H04b 1/44
U.S. Cl. 325—25 **5 Claims**



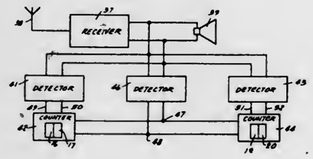
A panel for controlling a plurality of instruments has a centrally disposed numerical keyboard of eleven push buttons and a plurality of digital display means, one display connected with the keyboard to indicate the sequence in which the numerical push buttons have been manipulated, each of the other display means connected with one of the instruments to indicate the digital data by which it is controlled. Digital memory storage units are associated with the keyboard and with each instrument. Switching means on the control panel enables the selected numerical setting in the keyboard storage unit to be transferred to any of the other display means, while servo means directs each instrument to respond to the digital data registered in its digital memory storage unit, as may be shown by its associated display. The eleventh push button serves to clear the keyboard and its associated digital display.

3,701,946

DEVICE FOR TRANSMITTING AND DISPLAYING SCORES ON TELEVISION AND RADIO RECEIVERS

Duane S. Anderson, 1142 Heather Lane, Glen Ellyn, Ill.

Filed Dec. 11, 1970, Ser. No. 97,063
Int. Cl. H04b 1/00
U.S. Cl. 325—64 **3 Claims**



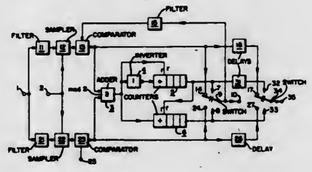
System and apparatus for presenting to radio and TV users secondary information such as scores in sports events. Periodically, auxiliary information is transmitted with the radio and television signals which is detected at the receiver and supplied to an auxiliary presentation device which continuously presents the auxiliary information to the user.

3,701,947

METHOD OF MAKING A DECISION ON THE VALUE OF A PULSATORY SIGNAL AND DEVICE FOR CARRYING OUT THIS METHOD

Derk Van Der Houwen, Leidschendam, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,801
Claims priority, application Netherlands, Jan. 23, 1970, 7000945
Int. Cl. H04b 1/10
U.S. Cl. 325—321 **3 Claims**



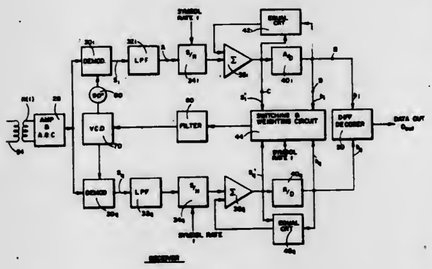
A decision arrangement for deciding the value of pulsatory signals occurring in a synchronous baseband transmission system comprises a first decision circuit with quantized feedback for providing a variable decision threshold. Possible instabilities of the first decision circuit as a result of the quantized feedback are corrected by providing a second decision circuit with a fixed decision threshold and by coupling both decision circuits to a decision comparator controlling a switch so as to connect either the first decision circuit or the second decision circuit to the output of the decision arrangement in accordance with a predetermined program of the decision comparator.

3,701,948

SYSTEM FOR PHASE LOCKING ON A VIRTUAL CARRIER

Gerald K. McAuliffe, Mahopac, N.Y., assignor to North American Rockwell Corporation

Filed Sept. 17, 1970, Ser. No. 72,962
Int. Cl. H04b 1/68
U.S. Cl. 325—329 **3 Claims**



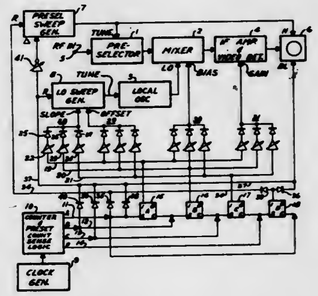
The present invention is directed to a phase lock system which can derive a demodulating carrier reference signal for use in a suppressed carrier quadrature, amplitude modulating digital data transmission system which does not require the transmission of a low level carrier or pilot tones. The system operates by multiplying the equalized received signal in each channel by the decoded n-level data signal of the other received channel, subtracting the products and dividing the result by the sum of the squares of the data signal levels to arrive at an error signal which is proportional to the phase error between the demodulating carrier reference signal and the suppressed transmitting carrier. The derived error signal can be made independent of data signal level values and the received signal levels even in the presence of severe intersymbol interference. The derived phase error signal is fed back to a variable oscillator providing the demodulating carrier reference signal to change the phase of the reference signal so as to reduce the error signal towards zero.

3,701,949

WIDEBAND FREQUENCY SCANNING RADIO RECEIVER

Sidney Turkish, Dix Hills, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed March 22, 1971, Ser. No. 126,476
Int. Cl. H04b 1/36
U.S. Cl. 325—332 **4 Claims**



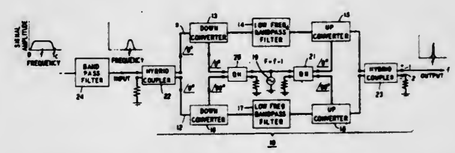
A superheterodyne system utilizing successive harmonics of an electrically tunable local oscillator, which is repeatedly swept over a frequency range of about one octave or less, to scan throughout a radio frequency range of several octaves in a substantially continuous manner.

3,701,950

NARROW-BAND FILTER

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed April 14, 1971, Ser. No. 134,007
Int. Cl. H04b 1/26
U.S. Cl. 325—340 **7 Claims**



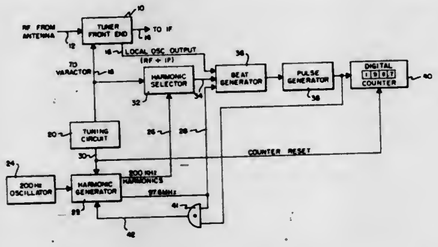
An extremely narrow-band filter, having a passband of less than one hertz in the megahertz range, comprises two parallel, signal processing wavepaths, each of which includes, in cascade, a down-converter, a low-frequency narrow-band filter, and an up-converter. A local oscillator signal, derived from a common local signal source, is coupled to each of the converters in such phase that the output signal from each converter in one wavepath is in time quadrature with the output signal from the corresponding converter in the other wavepath. An input power divider couples the input of each down-converter to a common input circuit. A hybrid coupler connects the outputs from the two up-converters to a common output circuit.

In one embodiment, automatic frequency control is applied to the local oscillator along with means for controlling the bandwidth of the low-frequency filters. In another embodiment, the filter output signal is shifted in frequency and then used as the local oscillator.

3,701,951
DIGITAL INDICATOR FOR USE WITH TUNABLE ELECTRONIC APPARATUS

Friedrich Johann Krausser, Jericho, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1971, Ser. No. 104,068
Int. Cl. H04b 1/06
U.S. Cl. 325—455 **6 Claims**

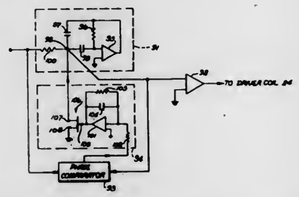


A digital tuning indicator for use with tunable electronic apparatus such as FM multiplex receivers includes a harmonic generator which produces a multitude of RF voltages corresponding, respectively, to the frequencies to which the device may be tuned over the frequency band of interest. A mixer or beat generator is responsive to the variable frequency output of the local RF oscillator of the receiver and the harmonic corresponding to the frequency to which the receiver is tuned. A pulse generator coupled to the output of the beat generator produces a pulse when the frequency to which the receiver is tuned approaches the frequency of a station within the frequency band. These pulses are counted by a digital counter which is calibrated to provide a visual indication of the frequency of the station to which the receiver is tuned.

3,701,952
DENSITOMETER

Charles Eveleigh Miller, and Gerald Lance Schlatter, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 65,371, Aug. 20, 1970, Pat. No. 3,677,067. This application Oct. 20, 1971, Ser. No. 190,788
Int. Cl. G06g 7/18
U.S. Cl. 308—127 **2 Claims**

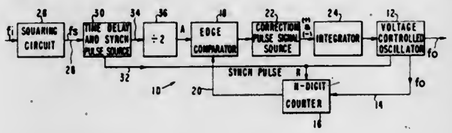


A densitometer which utilizes a thin vane vibrated by a magnetostrictive tube. A piezoelectric crystal pickup feeds an amplifier and tracking filter to energize a coil around the magnetostrictive tube. The device is, in effect, an electromagnetic oscillator in that the coil is driven in phase with the detected signal. Vibration thus increases in amplitude until limited electrically. A linearization circuit provides an output D.C. voltage directly proportional to fluid density, gas, or liquid, which may be impressed upon a conventional D.C. voltmeter calibrated linearly in density. A great many features, both in the mechanical structure and in the electronics, make it possible to easily calibrate the instrument to read, for example, to within an accuracy tolerance of ± 0.01 percent over a fluid density range of, for example, from about 0.08 pounds per cubic foot to 80.0 pounds per cubic foot. Another outstanding advantage of the invention relates to a probe type construction which may be used in a pipeline of any size.

3,701,953
DIGITAL PHASE LOCK LOOP CIRCUIT EMPLOYING OSCILLATOR TRIGGERED AT ZERO VOLTAGE CROSSING OF INPUT SIGNAL

Andre Lubarsky, Jr., Sunnyvale, Calif., assignor to Telecommunications Technology, Inc.

Filed Nov. 16, 1970, Ser. No. 90,103
Int. Cl. H03b 3/04; H03k 5/18
U.S. Cl. 328—155 **12 Claims**

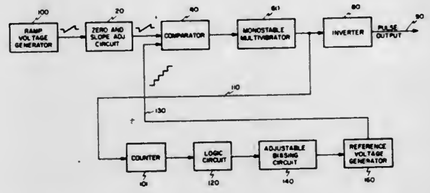


A predetermined number of pulses from the output of a controlled oscillator means is counted. The time duration required to reach this number is compared to the time duration of a predetermined portion of an input signal. On the basis of this comparison the pulse frequency of the oscillator means is varied such that in subsequent time duration comparisons, the time difference is substantially eliminated and the output pulses are in a phase relationship with said input signal.

3,701,954
ADJUSTABLE PULSE TRAIN GENERATOR

Albert F. Seminatore, San Jose, and Steven R. Bryan, Campbell, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 7, 1971, Ser. No. 160,381
Int. Cl. H03k 1/00, 5/00
U.S. Cl. 328—59 **3 Claims**



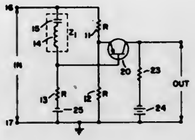
A compact simplified pulse generator for generating a train of accurately timed pulses. The timing or spacing between pulses can be adjusted as desired. This is accomplished using a single comparator and a single monostable multivibrator with a digitally controlled reference voltage generator.

3,701,955
DELAY EQUALIZING AMPLIFIER HAVING BRIDGE CIRCUIT INPUT

John Gordon Spencer, Ottawa, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed April 6, 1971, Ser. No. 131,674
Int. Cl. H03f 1/42
U.S. Cl. 330—21 **12 Claims**

A delay equalizer circuit with constant impedance input is constituted by a bridge having three resistive arms and a fourth arm consisting of a resonant circuit. One diagonal receives the input and the base and emitter of a transistor are connected across the other diagonal. Negative feedback causes the emitter to follow the base voltage closely.

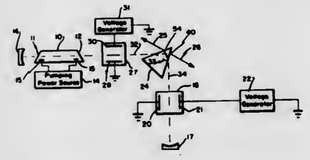


The transistor furnishes an equalized output through its collector circuit which is well suited for coupling to transistor amplifying stages.

3,701,956
METHOD OF AN APPARATUS FOR GENERATING ULTRA-SHORT TIME-DURATION LASER PULSES

William W. Simmons, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 14, 1971, Ser. No. 143,515
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **10 Claims**

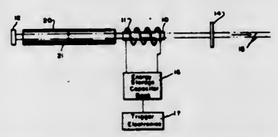


Both a method and an apparatus are disclosed for generating laser pulses having a time duration on the order of subnanoseconds. These light pulses also have a high output power. They are generated by causing a laser to lase and removing the bulk of the radiation contained in the laser cavity. The remaining radiation or light extends over only a short length of the cavity. This light pulse is mode locked, that is it consists of individual Fourier components of the proper phase so that the short light pulse retains its shape while being amplified again in the laser cavity. This short-duration light pulse may then be made to issue from the cavity. Alternatively, the amplified light may be made to issue as a pulse train or set of pulses. Finally, a single pulse may be utilized for mode locking another laser where the ultra-short time-duration pulse may be amplified again. This may be considered priming and subsequent mode locking of the second laser.

3,701,957
COHERENCE CONTROLLED RUBY LASER

Ralph F. Wuerker, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 12, 1971, Ser. No. 188,150
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 **6 Claims**

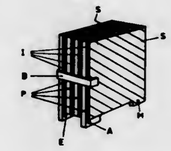


A pulsed ruby laser is caused to oscillate substantially in a single mode to increase its coherence length. This is accomplished by the provision of one or more dye cells containing chlorophyll *d* as a saturable absorber for the laser radiation. The dye cell has a length of no less than one-quarter and no more than two-thirds that of the optical laser cavity and preferably has a length of approximately one-half that of the cavity. Due to the provision of such a long chlorophyll *d* dye cell the initial mode of oscillation of the laser is favored, and the dye cell discriminates to a substantial extent against all other oscillating modes. This longitudinal mode control improves the temporal or longitudinal coherence of the laser. The chlorophyll *d* operating as a saturable absorber preferably is in a solvent transparent to the ruby radiation and having a high viscosity to minimize the effects of Brownian motion.

3,701,958
MULTISECTION BANDPASS FILTER FROM SMALL SIGNAL CIRCUITS

Herbert Jaag, Villingen, Germany, assignor to SABA Schwarzwalder Apparate-Bau-Anstalt August Schwer Sohne GmbH, Villingen, Germany

Filed Dec. 18, 1970, Ser. No. 80,443
Claims priority, application Germany, Dec. 17, 1969, P 69 48 645.9
Int. Cl. H03h 7/06, 7/08; H05k 1/14
U.S. Cl. 333—70 S **8 Claims**

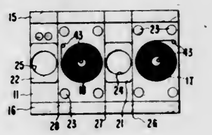


Individual sections of the filter are printed on separate circuit boards, the rear faces of which are covered with a shielding layer. The boards are sandwiched together, separated by insulating plates, resulting pile forming the multisection filter.

3,701,959
MICROWAVE CAVITY RESONATOR WITH PRINTED CIRCUIT INTERIOR WALLS AND MODULATION COILS

Stuart C. Hansen, Santa Clara County, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed March 24, 1971, Ser. No. 127,745
Int. Cl. H01p 7/06, 11/00
U.S. Cl. 333—83 R **3 Claims**

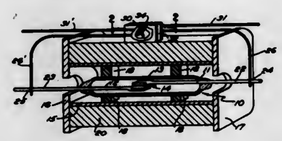


A microwave cavity resonator useful in electron paramagnetic resonance spectrometers made from a printed circuit board having an electrically conductive surface printed on one side thereof and folded so as to form a plurality of the walls of a parallelepipedon cavity resonator, the conductive surface of the circuit board forming the inner conductive surfaces of the cavity. Modulation coils formed by printed circuit techniques on the other side of the circuit board serve as field modulation coils for the cavity resonator, the conductive inner wall surfaces aligned with said coils being made pervious to enhance penetration of the modulation field into the cavity resonator.

3,701,960
REED RELAY HAVING LOW THERMAL EMF

Bruce D. Campbell, Foster, R.I., assignor to Coto-Coil Co., Inc.

Filed July 12, 1971, Ser. No. 161,781
Int. Cl. H01h 45/14
U.S. Cl. 335—154 7 Claims

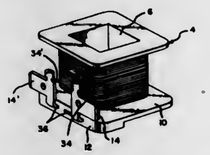


A reed relay switch consists of a pair of low reluctance, ferromagnetic, flattened reeds, which are hermetically sealed into a glass tube. The ferromagnetic material extends out of the glass tube and to a juncture with interconnecting conductors to external circuits. These junctures are usually of dissimilar metals and generate thermal EMF's. A thermally conductive electrical insulating body is provided and the connections are made at either side of this body so that the thermal EMF's produced by the thermally active junctions tend to cancel each other and reduce the thermal EMF across the reed relay.

3,701,961
ELECTRICAL BOBBIN WITH TERMINALS

Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 66,379, Aug. 24, 1970, Pat. No. 3,641,650.
This application Feb. 9, 1972, Ser. No. 224,799
Int. Cl. H01f 15/10
U.S. Cl. 336—192 1 Claim



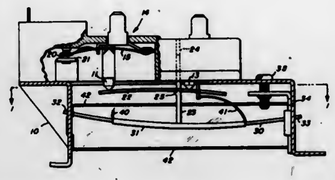
An electrical terminal intended to be inserted into a flange of an electrical coil bobbin a: a serated mounting arm at one end, a U-shaped crimp portion at the other end and a laterally extending tab between the mounting arm and the crimp portion. The mounting arm is inserted into a hole in the bobbin flange, a wire from the coil is crimped to the terminal at the crimp portion, and the mounting arm is then bent towards the coil so that the tab extends parallel to the coil windings.

3,701,962
SWITCHING DEVICE FOR OPERATING A PLURALITY OF SWITCHES IN SEQUENCE WITH AMBIENT TEMPERATURE COMPENSATION

Thomas E. Ball, Anoka, and Vincent R. Anderson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed March 18, 1971, Ser. No. 125,673
Int. Cl. H01h 71/22
U.S. Cl. 337—101 7 Claims

A switching device for operating a plurality switch means sequentially wherein the operators of each of the switch means are engaged by a wobble plate at spaced positions around the periphery of the plate. A thermal operator comprising a heated bimetal has an output member for engaging the center of the wobble plate to apply a force on the plate and thus a force on each of the switch operators depending upon distance between the output member and the switch operator. The wobble plate is made of plurality of bimetal sheet mem-

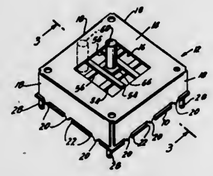


bers to bend in a cup shaped manner upon changes in temperature to provide ambient temperature compensation for the switching device.

3,701,963
SINGLE CONTROL DEVICE FOR PLURAL VARIABLE RESISTORS

Masao Kasazima, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1972, Ser. No. 221,733
Claims priority, application Japan, Feb. 3, 1971, 46/3773
Int. Cl. H01c 9/02
U.S. Cl. 338—128 10 Claims



An improved control device for use in volume adjustment of a multi-speaker sound system is provided with means for simultaneously adjusting the volume of some or all of the speakers in the system. A plurality of variable resistors are mounted on an insulating substrate, the effective resistance of each resistor being adjustable by sliding contact means.

In a first embodiment of the invention an independent sliding contact means is provided for each variable resistor, those sliding contacts being simultaneously adjustable by means of a control knob operatively connected to a crossover linkage arrangement. The control knob extends through a window in the housing whereby the position of the apparent sound source is adjusted by reference to the position of the control knob within the housing substrate.

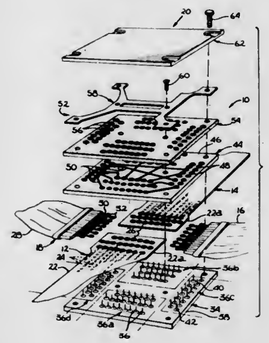
In a second embodiment of the invention the individual resistors each comprise a unique resistive pattern and a single carrier is provided with a plurality of sliding contacts engaging that resistive pattern in a predetermined manner in response to the manual operation of the control knob.

3,701,964
FLAT CABLE ELECTRICAL WIRING SYSTEM

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Sept. 4, 1970, Ser. No. 69,555
Int. Cl. H01b 7/08; H01r 29/00; H05k 1/04
U.S. Cl. 339—17 F 20 Claims

A flat cable electrical wiring system including a number of flat electrical cables and a terminal junction assembly electrically connecting selected cable conductors. The terminal junction assembly has a terminal board mounting projecting electrically isolated terminal pins receiving apertured terminals on the cable conductors and retaining means for retaining the terminals on the terminal pins. Two cable configurations are disclosed, one having flat conductors whose terminals are attached in a fixed geometric pattern directly to one end of the flat cable sheath and the other having round conductors whose terminal ends extend beyond the ends of the cable sheath. A variety of terminal junction assemblies are disclosed including one in which selected cable conductors are electrically connected by a flexible programmable circuit member or plug having terminal pins engaging elements electrically connected by programmable circuit means in a manner which permits wiring changes without major modifi-

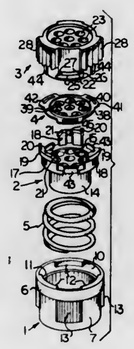


cation of the basic wiring system by substitution of one program circuit member for another. In another disclosed terminal junction assembly, selected cable conductors are electrically connected by engagement of their terminals over common terminal pins. The junction assemblies may be arranged for electrical interconnection of flat-to-flat or flat-to-round conductor cables, electrical interconnection of flat cable and existing conventional wiring systems, and for testing and monitoring of the individual wiring circuits entering the junction.

3,701,965
CONNECTOR FOR ELECTRICAL TERMINALS

Gideon A. DuRocher, and Ellsworth S. Miller, both of Mount Clemens, Mich., assignors to Essex International Inc.

Filed July 28, 1971, Ser. No. 166,936
Int. Cl. H01r 13/52, 13/54
U.S. Cl. 339—60 M 18 Claims

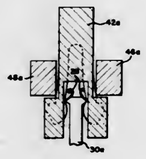


A connector for electrical terminals has a housing within which is accommodated a rotary and axially movable first terminal carrier which constantly is biased by a spring to move axially of the housing toward a second terminal carrier which is rotatably assembled with the housing and is drivingly coupled to the first carrier to impart rotation thereto. Discontinuous flanges on the housing and the first carrier disable axial movement of the latter in one position of rotary adjustment thereof and in a second position of rotary adjustment enable axial movement of the first carrier toward the second carrier. The second carrier has discontinuous flanges which cooperate with the discontinuous flanges on the housing in the second position of rotary adjustment of the carriers to prevent separation of the second carrier from the housing. The terminals carried by the carriers confront one another and engage a resilient, compressible pad of elastomeric material containing electrically conductive particles which establish a conductive path between the confronting terminals. The terminals themselves preferably are integrally formed at the free ends of wire conductors.

3,701,966
ELECTRICAL CONNECTOR

Robert Maclay Murray, Elizabethtown, Pa., assignor to AMP Domestic Inc.

Division of Ser. No. 864,787, Oct. 8, 1969, Pat. No. 3,585,502.
This application Aug. 28, 1970, Ser. No. 68,034
Int. Cl. H01r 11/24
U.S. Cl. 339—95 R 1 Claim



An electrical connector formed by a die blanking operation having an improved smooth edge contact surface formed by a fine scraping of said edge to remove the rough fractured surface remaining after the blanking operation; also, the method and apparatus for forming said improved smooth contact surface.

3,701,967
FEMALE CONNECTOR STRIP WITH INTERCHANGEABLY RETAINED CONTACT SPRINGS

Erich Kreutter, Winterbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,899
Claims priority, application Germany, Feb. 4, 1970, P 20 05 100.7
Int. Cl. H01r 9/08
U.S. Cl. 339—217 S 2 Claims

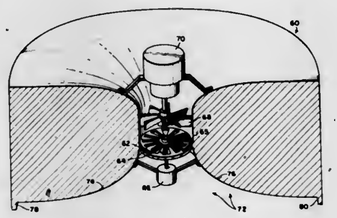


A female connector strip having contact springs which are interchangeably retained in a contact chamber. The contact chamber has a rectangular cross-section with each of the contact springs being of substantially U-shaped cross-section and having a box-shaped supporting body. The springs have contact points consisting of two ends of the limbs of the U-profile which, within the range of one face side of the supporting body are extended and folded towards the inside, the ends being directed towards each other. Further, the resilient ends of the contact reeds are touching each other.

3,701,968
AIR CUSHION SEISMIC VIBRATOR

Robert A. Broding, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed March 9, 1970, Ser. No. 17,440
Int. Cl. G01v 1/22
U.S. Cl. 340—17 14 Claims



A seismic vibrator is designed for use over all kinds of terrain including marshy areas where conventional land or sea vibrators cannot be used. The vibrator is an air cushion vehicle modified by the addition of an air flow modulator which pressure modulates the air cushion. The pressure modulations are passed on to the material beneath the vehicle.

3,701,969
OPTICAL FAILSAFE AIRPLANE LANDING GUIDANCE SYSTEM

Robert E. Lambert, Hazardville; Edward W. Beal, Wethersfield, and Anthony J. Bacewicz, East Hartford, all of Conn., assignors to Connecticut International Corporation, Windsor Locks, Conn.

Filed July 13, 1971, Ser. No. 162,131
Int. Cl. B64f 1/18; G08g 5/02
U.S. Cl. 340—25 12 Claims

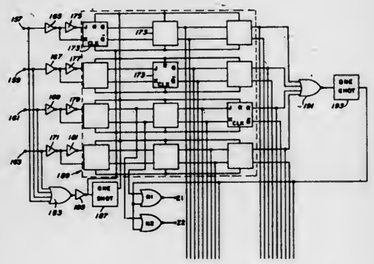


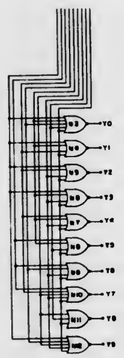
An optical failsafe airplane landing guidance system is disclosed. A pair of lights are placed longitudinally relative to each other along a runway and emit light beams pointed upwardly and parallel to the runway define the vertical boundaries of a safe landing corridor. The lights are connected in series and include a photocell and a bi-stable relay in their control circuit to control the level of light and disable the system when either of the lights is out of adjustment. Each light includes an attitude switch comprising a heavy cylindrical pendulum supported by a stranded cable and positioned in a cup submerged in a viscous liquid, such as an equal mixture of two silicone liquids having centistoke ratings of about a 5 to 1 ratio, having minimum viscosity change over an ambient temperature range of −65° F. to +130° F. The cylindrical pendulum is spaced from the cup by an annulus which forms a hydraulic orifice in which the ratio of the diameter of the cylindrical to the width of the orifice is about 10 to 1 so that the pendulum is vibration insensitive and the switch will not close under low frequency vibrations having a double amplitude of about 10 times the maximum allowable misadjustment acceptable for landing guidance.

3,701,970
SELECTING APPARATUS AND METHOD FOR PHONOGRAPH

Thomas P. Jachimek, Evergreen Park, and Thomas A. Murrell, Urbana, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Continuation-in-part of Ser. No. 862,624, Sept. 11, 1969, abandoned. This application Sept. 11, 1970, Ser. No. 71,501
Int. Cl. G11b 19/08; G07f 11/00
U.S. Cl. 340—162 10 Claims





Vending selections are identified by a character format. Selections are chosen by sequentially actuating switches representing the characters. The characters of the selection identifying format are coded and stored until the entire format has been coded and stored, at which time the coded format is transmitted for subsequent reception, storage and decoding. Integrated circuitry is utilized.

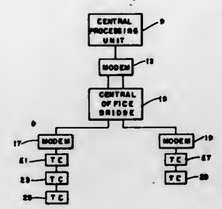
3,701,971
TERMINAL MESSAGE MONITOR

Gary L. Sanner, Detroit, and Charles B. Hebeler, Farmington, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 9, 1970, Ser. No. 79,563
Int. Cl. G06f 3/00, 9/18
U.S. Cl. 340—172.5 6 Claims

A monitoring system to permit a first terminal computer on line with a central processor to monitor message traffic from the central processor to other terminals concatenated or in a multidrop mode with the first. When messages are sent through a modem to a plurality of terminal computers in a concatenated configuration a verification of message traffic is provided. Logic circuitry is provided for monitoring both transmitted and received information and providing a printout

of the communication line information. The monitoring terminal, regardless of the address of the message, will store the

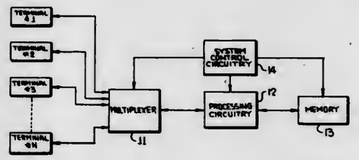


communication line information in its memory and print out the stored information to provide a positive communication system check.

3,701,972
DATA PROCESSING SYSTEM

Arnold D. Berkeley; Eugene W. Bold, both of Potomac; Donald E. Jefferson, Silver Spring, and Gerard A. Zeller, Ellicott City, all of Md., assignors to Computer Retrieval Systems, Inc., Bethesda, Md.

Filed Dec. 16, 1969, Ser. No. 885,608
Int. Cl. G06f 15/40, 11/00, 3/14
U.S. Cl. 340—172.5 202 Claims



A programmable special purpose data processor is provided with both circuits and stored programs for effecting one or more specific processing jobs. Data characters, sequentially provided by a data terminal and processed in accordance with similarly provided control characters, are stored in a memory unit after being processed. A stored program of instructions controls processing in a predetermined sequence which can be modified by the control characters. The stored characters may be selectively modified and/or displayed at the terminal. The various circuits provided as part of the processor operatively interconnect only in response to specific active instructions and are preferably modular in nature so as to be readily interchanged or, if desired, added to or deleted from the system.

The programs are a plurality of stored instructions of either fixed minimum length or variable length, packed one after the other without wasted space in a program memory unit. No instructions can be erased or otherwise changed during the course of processing, and all instructions contain an N-bit operation code. These operation codes are selectively addressed to effect various circuit operations when addressed. In one embodiment each instruction contains only an operation code; in another embodiment some instructions also include a next address portion and a match character portion stored at respective addresses immediately following the operation code of the same instruction. The next address portion designates the address of the next instruction to be performed where that address does not sequentially follow the address of the current instruction; the match character portion contains a reference number to be compared with data being processed.

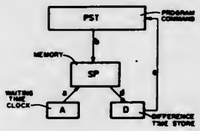
In another respect of the invention multiple data terminals are serviced on a time-sharing basis. A multiplexer sequentially samples each terminal, which, when found ready for processing, has an entire unit record of data completely processed before sequential sampling is resumed. Once a processing job is begun for a terminal that terminal cannot be locked out during subsequent multiplexer cycles until the job is completed.

In another aspect of the invention, text processing is accomplished in a manner to permit a document to be edited by summoning specified stored lines of processed text characters from a random access memory. The summoned line can be modified in whole or in part. The processor, upon receiving text characters to be inserted in the summoned line, stores them at an available location in memory, irrespective of the proximity of that location to the stored portions of the original document. By a novel document-chaining technique, the corrected document may be selectively displayed in its proper sequence. Document chaining is also employed to keep track of successive pages in a document which are not necessarily stored successively in memory.

3,701,973
DATA PROCESSING ARRANGEMENT FOR PROCESSING WAITING TIME COMMANDS

Dietrich von der Pfordten, Egenbuttel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,570
Claims priority, application Germany, Sept. 24, 1969, P 19 48 302.4
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 4 Claims

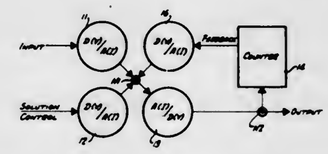


A data processing arrangement for processing waiting time commands comprising a source of clock signals representing real time and waiting time, a memory for recording the real times of termination of waiting time commands, means for providing only one waiting time clock is set at the difference time between the instantaneous real time and the real time of the next termination of the waiting time of a waiting time command whenever a waiting time terminates and also when a new waiting time command occurs.

3,701,974
LEARNING CIRCUIT

Lewis Keith Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed May 20, 1971, Ser. No. 145,213
Int. Cl. G05b 13/00
U.S. Cl. 340—172.5 10 Claims



A learning circuit of the type adapted to converge on a desired output in response to solution control signals. A number generator is provided for producing digital circuit input signals according to a predetermined probability distribution. A digital to analog converter converts the digital input signals to discrete analog input currents. Another digital

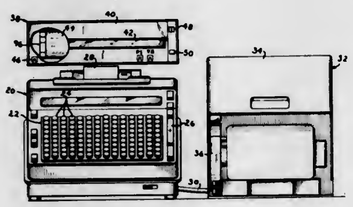
to analog converter is responsive to digital solution control signals for producing discrete analog solution control currents. A digital counter has a digital counting signal input and an output comprising a digital voltage counter state feedback signal proportional to the count in the counter. An additional digital to analog converter is provided for converting the digital counter state feedback signal to a discrete analog feedback current. The input current, the solution control current and the feedback current are summed at a current node. The current node has a sum current output for driving an analog to digital converter which converts the sum current output to a digital voltage output. The digital voltage output constitutes the circuit output and is also applied to the digital voltage counting input of the digital counter.

3,701,975

APPARATUS FOR INSTRUCTING DATA SYSTEM MACHINE OPERATORS IN THE ENCODING OF SOURCE DOCUMENTS

Frank J. McBride, 104 West Lake Drive, and Carl Robert Lindsley, 2332 Mayfair Drive, both of Salina, Kans.

Filed Dec. 23, 1970, Ser. No. 100,956
Int. Cl. G09b 13/04
U.S. Cl. 340—172.5 **6 Claims**



Apparatus for instructing the operator of a data system machine, such as a multiple row keyboard adding machine of an add-punch system. Instructions for each line of the source document are on a suitable optical medium, such as a rotary drum or a film strip. A line of instructions for a given line to be completed on the document is displayed in view of the operator, and the display is automatically advanced to the next succeeding line of instructions when the line on the document is encoded and the document likewise advanced to the next line. The lines of instructions on the medium are grouped into programs corresponding to the various types of source documents to be accommodated, each program being selectable by the operator. After completion of encoding at the end of a selected program, the display automatically returns to the first line of instruction of the selected program in readiness for the next document of that type to be prepared.

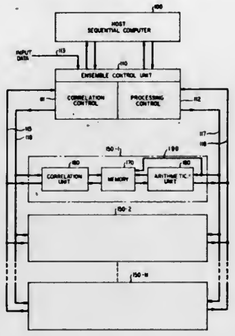
3,701,976

FLOATING POINT ARITHMETIC UNIT FOR A PARALLEL PROCESSING COMPUTER

Richard Robert Shively, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 13, 1970, Ser. No. 54,522
Int. Cl. G06f 15/16, 7/38
U.S. Cl. 340—172.5 **11 Claims**

A digital array data processor having a plurality of substantially identical processing units is described. Each processing unit includes a floating point arithmetic unit which performs arithmetic operations based on control signals sent on a common bus to each processing unit. The arithmetic unit further includes a single step combinatorial shifting circuit for aligning and normalizing operands.

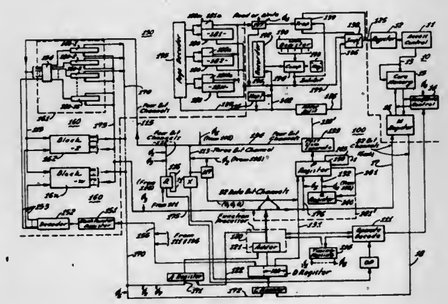


3,701,977

GENERAL PURPOSE DIGITAL COMPUTER

Myron J. Mendelson, Encino, and Alfred W. England, Los Angeles, both of Calif., assignors to Delaware SDS, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 572,835, Aug. 16, 1966, abandoned. This application Oct. 27, 1969, Ser. No. 869,773
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **8 Claims**



A computer CPU and memory system with private, fast access CPU memory organized in blocks and program variable block selector. The locations of the selected block serve as accumulator extension and index registers. Mapping, memory protect and interrupt features with priority control are included.

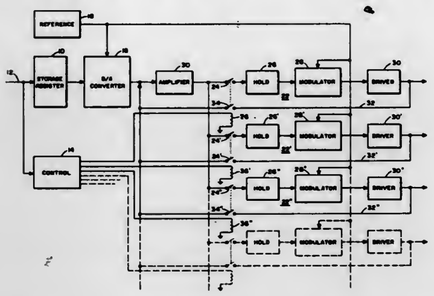
3,701,978

STORAGE AND CONVERTER SYSTEM

Herbert Edward Miller, Brookline, Mass., assignor to Epsco Incorporated, Westwood, Mass.

Division of Ser. No. 785,284, Dec. 19, 1968, Pat. No. 3,585,308. This application Oct. 23, 1970, Ser. No. 83,585
Int. Cl. G11c 21/00
U.S. Cl. 340—173 R **8 Claims**

A multiplex converter system for continuously, selectively updating information in a plurality of analog output channels by means of a single input channel by converting an input signal from the input channel to a first analog signal and storing it in a particular one of the channels to provide a second analog signal output from that channel which is a replica of the first analog signal, while the other channels are similarly updated by other input signals supplied by the input channel.



3,701,979

SLOW WRITE-FAST READ MEMORY METHOD AND SYSTEM

Donald O. Smith, Lexington; Kenneth J. Harte, Carlisle, and Mitchell S. Cohen, Watertown, all of Mass., assignors to Micro-Bit Corporation, Burlington, Mass.

Filed Jan. 9, 1970, Ser. No. 1,755
Int. Cl. G11c 11/42, 11/34
U.S. Cl. 340—173 R **31 Claims**

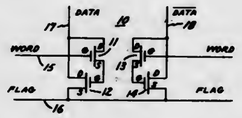
A slow write-fast read out information storage and retrieval method and system is described for use as a computer memory. The method and system employs a memory element comprising a conductive back layer, a semiconductor layer and an insulator enriched with an additive polarizing material such as the alkali metals sodium or lithium and a conductive front layer arranged in the order named in the form of a sandwich with the semiconductor layer and polarizing material enriched insulator layer forming an interface. By selectively heating discrete different locations on the memory element with a directed electron beam in accordance with the intelligence to be recorded, and applying a polarizing electric potential across the memory element which maintains the insulator layer positive with respect to the semiconductor layer concurrently with the selective heating, positive electric charges (which are non-destructive during read-out) will be formed in the insulator layer due to mobile ions of the additive alkali metal polarizing material which are transported to the interface as a result of the polarizing potential. The positive electric charges in turn produce space charge regions in the semiconductor layer adjacent to the interface at the selectively heated different discrete locations. If the semiconductor layer is a p-type semiconductor, the space charge region is a depletion region. If the semiconductor layer is a n-type semiconductor, the space charge region will be an accumulation region. By subsequently allowing the insulator layer to cool, the mobile ion charges thus transported to the interface at the selectively heated locations will be frozen in to thereby form selectively located, semi-permanent, space charge regions in the semiconductor layer whereby the intelligence to be recorded is embodied in the selectively located charges. In a subsequent reading operation, a read-out electron beam is caused to penetrate through the insulator layer and interface to the space charge region of the semiconductor layer where it will produce electron-hole carriers in the space charge region. To facilitate the reading operation, a polarizing, reading potential may be applied across the memory element simultaneously with the read-out electron beam. In the selectively located space charge regions, a considerably increased electron-hole pair current will be produced compared to that normally induced by the electron beam itself in those regions which have not been selectively polarized. Consequently a pulsed current output can be derived during the reading operation which is indicative of the data or intelligence stored in the memory element.

3,701,980

HIGH DENSITY FOUR-TRANSISTOR MOS CONTENT ADDRESSED MEMORY

Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 3, 1970, Ser. No. 60,336
Int. Cl. G11c 11/40, 15/00
U.S. Cl. 340—173 AM **22 Claims**



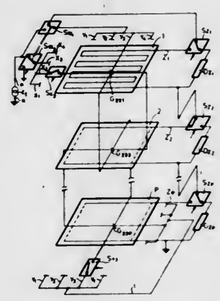
A content addressed memory cell containing the minimum number of access lines and the minimum number of semiconductor devices is disclosed. In this cell, each intersection of the DATA, DATA, WORD, and FLAG lines contains a single transistor; preferably a metal-oxide semiconductor, field-effect transistor. By appropriate selection of these lines as inputs and outputs to the cell, the functions of writing, reading, searching, searching with mask, and refreshing are obtained.

3,701,981

THREE-DIMENSIONAL STORAGE DEVICE COMPRISING MAGNETIC MEMORY ELEMENTS

Gerrit Hilbertus Schouten; Nicolaas Bohlmeijer; Hendrik van der Steeg, and Marinus Cornelius van der Maarel, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,984
Claims priority, application Netherlands, Oct. 31, 1969, 6916401
Int. Cl. G11c 5/02, 11/06
U.S. Cl. 340—174 AC **8 Claims**



Three-dimensional store in which the x- and/or the y- with the z-conductors are connected in series to one or to two cur-

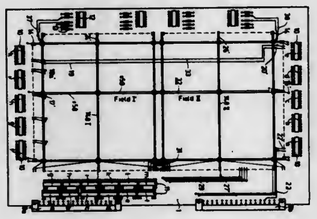
rent sources. The internal dissipation of the store is thus reduced and a complete compensation both in waveform and in time of half the write current is obtained by the forbidding current.

A plurality of z-conductors may be used in each plane for reducing the impedance connected to the current source, said z-conductors forming mutual dummies.

3,701,982
MEMORY MATRIX UNIT

Jurgen Freudeberg, Elserfeld, and Hermann Rudolff, Kreuztal-Buschhit, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,961
Claims priority, application Germany, Oct. 24, 1969, P 19 53 553.6
Int. Cl. G11c 5/08
U.S. Cl. 340—174 MA **4 Claims**

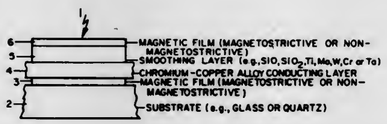


A memory construction employing fields of cores arranged on both sides of a bilaterally printed circuit board, the electrical connections of the fields being established by lead through contacts, and including accessing and drive components on both sides of the bilaterally printed circuit.

3,701,983
MAGNETOSTATICALLY COUPLED THIN-FILM MAGNETIC MEMORY DEVICES

Dennis M. Franklin, Randolph; Richard M. Horarelch, Sudbury, and Harvey Rubinstein, Lynnfield, all of Mass., assignors to Sylvania Electric Products, Inc.

Filed Dec. 19, 1969, Ser. No. 886,515
Int. Cl. G11c 11/14
U.S. Cl. 340—174 QA **20 Claims**



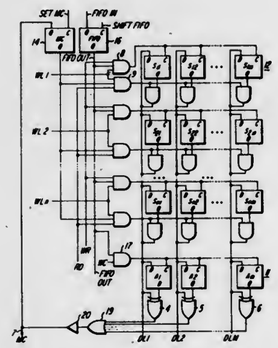
A multilayer magnetostatically coupled thin-film magnetic memory device comprising, in succession, a first magnetic film, a chromium-copper alloy conducting layer having a reasonably low resistivity, a smoothing layer, and a second magnetic film. Due to the presence of chromium in the chromium-copper alloy forming the conducting layer, when the second magnetic film is subsequently formed on the smoothing layer at an elevated temperature, the resulting grain growth and surface roughness of the chromium-copper alloy conducting layer are less severe than with other known metals having reasonably low resistivity values (e.g., copper, silver, gold, and aluminum) previously suggested for use as conducting layers in magnetostatically coupled thin-film magnetic memory devices. Consequently, the effects of grain growth and surface roughness of the chromium-copper alloy conducting layer on the static magnetic properties of the second magnetic film are less severe than heretofore, and a smaller combined thickness of the conducting layer and smoothing layer is required to make the values of the static magnetic properties of the first and second magnetic films nearly equal. As a further result of the smaller combined thickness of the conducting and smoothing layers made possible by the use of chromium in the chromium-copper alloy, an improved magnetostatic coupling between the two magnetic films is obtained.

An alternative multiplayer magnetostatically coupled thin-film magnetic memory device having no smoothing layer is also disclosed for use in less stringent applications where very close matching of the values of the static magnetic properties of the two magnetic films is not required.

3,701,984
MEMORY SUBSYSTEM ARRAY

Joseph Richard Burns, Trenton, N.J., assignor to RCA Corporation

Filed March 5, 1971, Ser. No. 121,368
Int. Cl. G11c 15/00
U.S. Cl. 340—173 R **4 Claims**



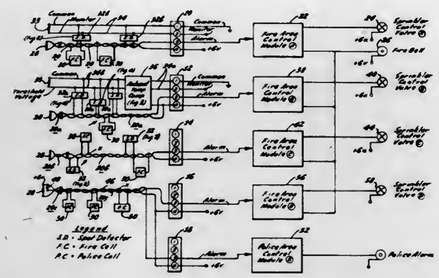
Memory subsystem used with a main storage memory for storing data signals representing blocks of information arranged in words. Digit lines coupled in parallel to all memory subsystems carry block address signals which are compared to associative word signals stored in each memory subsystem. If the block address signals match the associative word signals in one of the memory subsystems, the data signals are retrieved from the memory subsystem containing the matching associative word. If no memory subsystem contains a matching associative word, the information addressed is retrieved from the main storage memory and the data signals and block address signals are transferred to a selected memory subsystem and stored.

3,701,985
FIRE DETECTION SYSTEM AND UNIT

John S. Davies, 1010 Norumbega Drive, Monrovia, Calif.

Continuation-in-part of Ser. No. 735,006, June 6, 1968, abandoned. This application April 5, 1971, Ser. No. 131,122
Int. Cl. G08b 17/06
U.S. Cl. 340—228 **4 Claims**

A fire detection system includes an elongated heat sensing element which may be extended throughout the area to be protected, and it also includes a multiplicity of spot detector units which are spaced along the heat sensing element at critical points in the area to be protected. The spot detector units respond instantaneously to abnormal temperature conditions

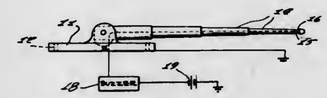


to complete an electric circuit through the aforesaid heat sensing element for alarm and control purposes.

3,701,986
ALERT-GUARD

Sterling Mosley, and Hosea Jackson, both of 1408 Magnolia Street, North Little Rock, Ark.

Filed July 31, 1967, Ser. No. 657,267
Int. Cl. G08b 21/00
U.S. Cl. 340—279 **2 Claims**

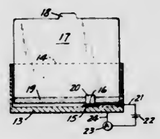


A warning signal device for motorists to alert a driver, who is starting to fall asleep, the device including a telescoping rod that would activate a buzzer or other alarm connected in an electrical circuit.

3,701,987
MISPLACED FILE INDICATING SYSTEM

John S. Leighton, 10830 40th Avenue North, Minneapolis, Minn.

Filed Aug. 16, 1971, Ser. No. 172,119
Int. Cl. G08b 21/00
U.S. Cl. 340—280 **8 Claims**

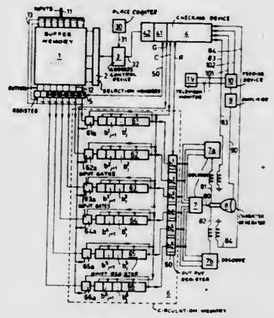


A system is provided for electrically indicating that an error in filing has taken place. In one form, the file container is metal and serves as one electrode. An insulated bus bar is diagonally positioned across the file bearing surface. A circuit is formed by the file container, a power source, alarm and bus bar and is completed when a conductive lower edge of the file folder is misfiled. When in the proper position an insulator over the appropriate portion of the conductive edge of the file folder keeps the file folder from completing the circuit.

3,701,988
CHARACTER DISPLAY DEVICE FOR TELEVISION MONITOR

Houterman Jan Allaart, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,396
Claims priority, application Netherlands, Feb. 14, 1969, 6802281
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **4 Claims**

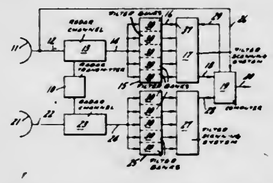


A device for displaying digital information in the form of characters on a television screen comprising a circulation memory in which the information for a line of characters circulates and in which during the display on a screen of a normal television monitor the information of the characters for a line is available per picture line at the output of the circulation memory for forming in a character generator control signals for producing dots on the television screen dependent upon the parts of the characters to be displayed on one line and coinciding with the picture line to be written at that instant, and in which during a space time between lines of characters the circulation memory is provided with information for a following line of characters from a buffer memory.

3,701,989
CENTROID SEEKING METHOD FOR DETERMINING AZIMUTH AND ELEVATION ANGLE SIMULTANEOUSLY

Charles D. Calhoon, Sr., Catonsville; Louis P. Goetz, Linthicum, and Harry B. Smith, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 20,233, April 5, 1960, abandoned. This application April 5, 1963, Ser. No. 271,557
Int. Cl. G01s 9/02
U.S. Cl. 343—16 R **4 Claims**



The invention relates to a radar system for determining azimuth and elevation simultaneously. The invention utilizes two radar channels and an antenna having a single reflector and offset feeds which transmit two lobes of energy simultaneously. Reflected energy returning from a target will be intercepted by the upper lobe, lower lobe or both lobes. As the antenna sweeps and the lobe of energy intercepts the target, a number of cycles of transmission-reception and filter scanning is obtained. The respective counts of each channel of received lobe energy is compared and the result of this comparison

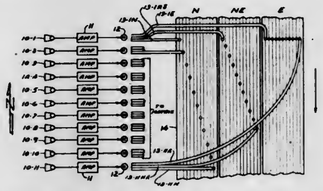
represents the elevation of the target. Moreover, the system processes the received information to obtain the azimuth location of the target.

3,701,990

FIBER OPTIC DISPLAY DEVICE

Fordyce E. Tuttle, deceased, late of 1017 North Lake Way, Palm Beach, Fla. (by Eleanor Porter Tuttle, executrix)

Filed Dec. 23, 1969, Ser. No. 887,567
Int. Cl. G01d 5/26
U.S. Cl. 346—1 **7 Claims**



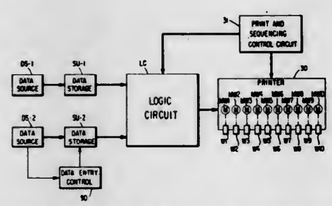
Signals from an array of different energy transducers representative of a vibrational energy wave are correlated in a predetermined recording matrix so that the relative azimuth direction of the vibrational energy wave from the array of transducers is recorded on a moving film having a speed that compensates for that of the moving vibrational energy wave to provide a final display having readily identifiable directional information of the received vibrational energy wave. Transducer signals are transferred from the transducers to a matrix pattern with the use of fiber optical elements.

3,701,991

ELECTRONIC CONTROLS FOR ALPHANUMERIC PRINTER

Richard Dennis Livesey, Pointe Claire, Quebec, Canada, assignor to Robert Morse Corporation Limited, West Montreal, Quebec, Canada

Filed May 28, 1970, Ser. No. 41,429
Int. Cl. G01g 23/38
U.S. Cl. 346—9 **22 Claims**



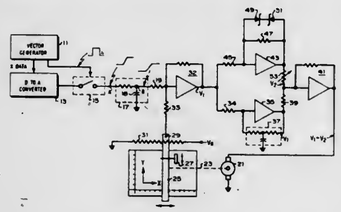
The recording system of this invention comprises a plurality of data sources respectively supplying the weight of a weighed out load and additional information usually associated with the weighed load. The data information from these sources is stored in coded form or data words in separate storage units until a read-out and print command is selectively produced, at which time the stored information is read out by a logic circuit and printed by a line type printing machine. The printing machine has a plurality of motor driven alpha-numeric printing wheels, and there is a corresponding plurality of counters in the logic circuit. Each data word read out from storage is loaded into one counter, and the counters then count down to zero or some other reference value. During the countdown, clock pulses are conducted to operate the printing wheel motors, thereby advancing the print wheels. When each counter reaches zero or other reference value, the passage of clock pulses for driving the associated print wheel motor is inhibited, thus stopping advancement of the associated printing wheel at its proper printing position. The logic circuit further provides for the printing of a plurality of lines with the same set of printing wheels by reading out the stored information sequentially according to the lines of print and by re-positioning the printing wheels after each line of print.

3,701,992

SERVOSYSTEM FOR GRAPHICAL RECORDER

Daniel E. Allen, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 1, 1971, Ser. No. 194,386
Int. Cl. G01d 3/06
U.S. Cl. 346—32 **7 Claims**



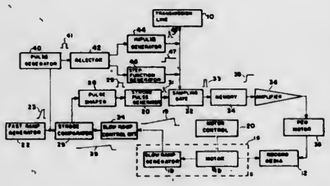
An X-Y graphical recorder has a moving pen which is moved along each axis by a position feedback servosystem responsive to digital data from a vector generator. The servosystem includes two parallel connected operational amplifiers, one of which provides an output proportional to analog pen position control signals and the other of which produces a constant level output in response to any pen position control signal greater than the predetermined low value. The outputs from the two servoamplifiers are summed and coupled to a servomotor which drives the pen.

3,701,993

RAMP GENERATOR A CHART RECORDER

Leonardus Johannes Geerling, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 28, 1971, Ser. No. 158,922
Int. Cl. G01d
U.S. Cl. 346—33 R **8 Claims**



A ramp generator for a chart recorder or the like and a chart recorder for permanently recording information on recording media by sampling means for sampling signals is described. The ramp generator generates a ramp signal whose magnitude gradually changes in response to movement of the recording media rather than time. The ramp signal thus derived is applied to a strobe comparator via a slow ramp control circuit as the reference level thereof for producing a strobe pulse to drive the sampling gate and thereby sampling a signal applied thereto.

3,701,994

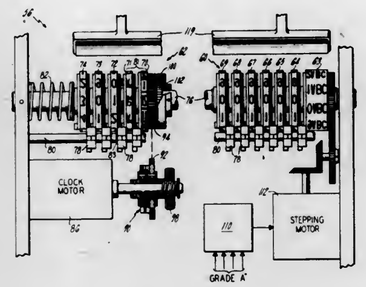
GASOLINE STATION ACCOUNTING SYSTEM

Coates F. Bateman, West Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,342
Int. Cl. B67d 5/24
U.S. Cl. 346—43 **4 Claims**

A gasoline station accounting system for a multiple grade gasoline station comprising a manually operable printing

recorder for each grade having coaxial totalizer and clock printing counters and manually operable to provide a single



line printout of the total volume of the grade of gasoline dispensed and the day and time of the printout.

3,701,995

PRINTING HAMMER ARRANGEMENT

Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 24, 1970, Ser. No. 58,022
Int. Cl. B41j 3/16; G03g 19/00; G06k 15/14
U.S. Cl. 346—74 MP **7 Claims**



An arrangement for printing hammers wherein a plurality of pivotably mounted hammers are provided, the hammers being divided into a plurality of sets, each hammer of a set having fist and second legs which are angularly displaced from one another by a fixed amount, this fixed amount being different for each set. The first leg of each hammer is positioned adjacent a recording device and the second leg of each hammer is positioned adjacent a selectively actuable electromagnet. The actuation of an electromagnet causes the movement of the associated hammer thereby causing the recording of information. In one embodiment the recording device includes a platen, paper and an inked ribbon provided adjacent the first legs of the hammers, the first legs striking the ribbon thereby imprinting a mark on the paper.

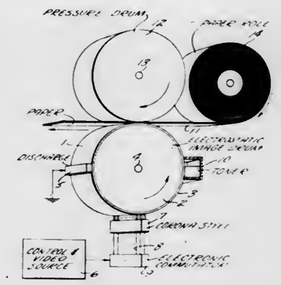
In another embodiment the recording device includes a magnetizable drum and the first leg of each hammer is aligned with a magnetic actuator, the movement of the first leg causing movement of the magnetic actuator, thereby providing a magnetic mark on the magnetizable drum.

3,701,996

TRANSFER ELECTROSTATIC PRINTING SYSTEM

Richmond Perley, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 2, 1970, Ser. No. 94,368
Int. Cl. G03g 15/16, 15/20, 15/22
U.S. Cl. 346—74 ES **4 Claims**



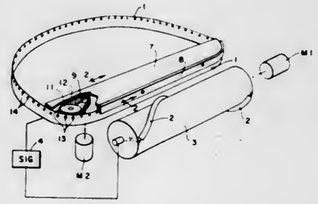
This printing system utilizes an electrostatic drum to selectively receive charges from a row of corona styli, the charges attracting dry toner particles so as to form a selective row of dots, a plurality of dot rows capable of presenting an image of language text or a plot of graphical information. The toner is embedded in the image receiving paper as the paper passes between the electrostatic image drum and a cooperating pressure drum. Auxiliary transfer processes, heat or moisture and charge/selective erase processes are all eliminated.

3,701,997

FACSIMILE RECORDER AND MOVING ELECTRODE THEREFOR

Frederick W. Simpkins, Husdon, Mass., assignor to Alden Research Foundation

Filed March 30, 1971, Ser. No. 129,518
Int. Cl. G01d 15/06; B01k 3/04
U.S. Cl. 346—74 E **4 Claims**

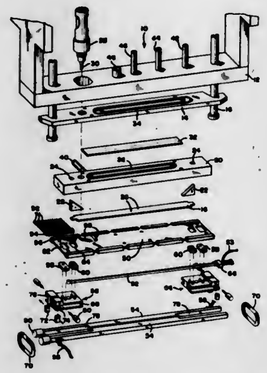


A facsimile recorder marks a paper impregnated with electrolyte and a lake former by migration of ions from an endless loop metal electrode to the paper when electrical current is passed from the electrode to a cooperative electrode through the recording paper pressed therebetween. The loop electrode is fed through a track which holds a portion of it straight where it opposes the cooperative electrode, and has a coating of fine molybdenum-containing material bonded to its surface to prevent the accumulation and adhesion of lake on the loop electrode which would impede free feed of the loop electrode through the track.

3,701,998
TWIN ROW DROP GENERATOR

Garland V. Mathis, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 14, 1971, Ser. No. 189,298
Int. Cl. G01d 15/18
U.S. Cl. 346—75 3 Claims

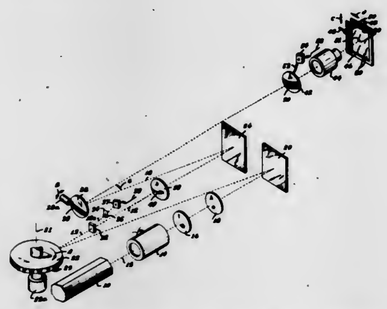


A drop generator in which two rows of orifices are formed in an orifice plate to cause two rows of drops to be generated from a single drop generating head. The drops pass through two corresponding rows of charge rings and then pass on opposite sides of an electrically conductive strip which, in cooperation with other elements of the generator, provides an electrostatic deflecting field to deflect charged drops into drop catchers. Electrically conductive plates can be utilized in conjunction with the conductive strip to set up the deflecting field or the drop catchers can be used for this purpose.

3,701,999
COMPUTER OUTPUT LASER MICROFORM RECORDING SYSTEM

David B. Congleton, San Pedro; Donald L. Roberts, Cypress, and Pat E. Evans, Torrance, all of Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 21, 1970, Ser. No. 65,790
Int. Cl. G06k 15/02
U.S. Cl. 346—76 L 20 Claims

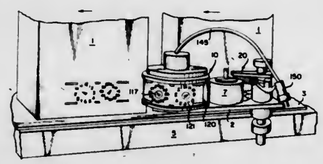


A computer output laser microform recording system which includes a recirculating memory for storing binary coded characters originating in a computer and a character generator which translates the binary coded characters to shapes for recording. The laser micro-image recorder employs a rotating polygon having a plurality of mirror faces for reflecting the laser beam as a continuous series of long horizontal scan lines. These scan lines are deflected vertically by a tilt mirror. An optical detector senses the start of the usable portion of each mirror face of the polygon to produce a horizontal sync pulse that is used to initiate circuits for controlling the transmission of binary coded characters from the recirculating memory to operate the character generator in synchronism with the moving recording laser beam. The binary coded characters are circulated in the recirculating memory once for each horizontal scan of the laser beam and made available to the character generator which successively provides a series of waveform patterns corresponding to a horizontal slice of each of the characters which is recorded during each of the horizontal scans by modulating the laser beam so as to effectively synthesize the characters in a row piecewise in a vertical direction.

3,702,000
HOUR AND/OR MINUTE CODE MARKER

Patrick Delligatti, c/o Dalemark Industries Inc., 143 Rogers Avenue, Brooklyn, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,739
Int. Cl. G07c 1/02; B41f 17/00
U.S. Cl. 346—92 7 Claims



A marking device for marking moving objects with the specific time in hours and/or minutes or other continuously varying data is comprised of a revolvable carrier drum having a means for physical contact with the object for rotation thereby and biasing means to return the drum to a rest or zero position after the object is marked, said carrier drum having at least one electric motor suitably geared to a pointer to rotate a shaft one complete revolution per given period of time, a slip ring assembly also housed within the drum assembly to transmit electric power from a stationary source to the electric motor; the drum having on its external surface a printing surface designating time or other data and surrounding the pointer which also comprises a printing pad.

3,702,001
METHOD OF ELECTROSENSITIVE PRINTING OR RECORDING AND APPARATUS THEREFOR

Teresio Gassino, and Alfredo Olivei, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea(Torino), Italy

Filed April 15, 1970, Ser. No. 28,565
Claims priority, application Italy, April 15, 1969, 51426 A/69; April 15, 1969, 51465 A/69
Int. Cl. G01d 15/06, 15/34
U.S. Cl. 346—74 E 17 Claims



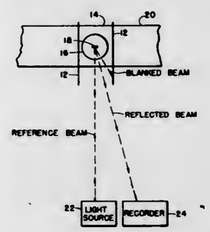
A method and apparatus for electrosensitive printing or recording on a trackless, untreated paper sheet which utilizes a head consisting of a pair or series of pairs of electrodes

located on the same side of the paper sheet, the electrodes of each pair being opposite in polarity and the head being coupled to a device for impregnating the paper sheet with an electrolytic solution immediately before printing or recording thereon.

3,702,002
OSCILLOGRAPH RECORDER TRACE BLANKER APPARATUS

Richard R. Taylor, and Frank A. MacKay, both of Riverside, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1971, Ser. No. 201,694
Int. Cl. G01d 15/14
U.S. Cl. 346—109 4 Claims

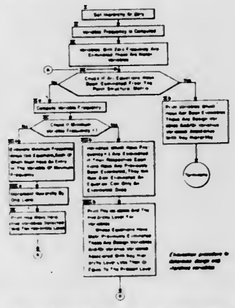


Electromechanical apparatus for blanking galvanometer traces and which can be used to advantage in high-speed computer data systems which include multi-channel oscilloscope recorders. A galvanometer is positioned symmetrically between two non-magnetic flat plates which are parallel to the galvanometer reference beam. The two plates are spaced apart a distance sufficient to allow the galvanometer reference beam to be deflected a selectively predetermined amount in each direction from the center of the galvanometer during unblanked operation. During blanked operation, electrical circuitry, which can be actuated locally or remotely, removes normal excitation from the galvanometer and energizes its with a blanking signal which deflects the reference beam onto one of the two plates to block it or shield it from the oscillograph recorder.

3,702,003
ALGORITHM TO MINIMIZE ITERATIVE COMPUTATION IN A PROCESS FOR THE ANALYSIS OR DESIGN OF A PHYSICAL SYSTEM

W. Fred Ramirez, Jr., Boulder, and Charles R. Vestal, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 9, 1970, Ser. No. 79,579
Int. Cl. G06f 15/32, 15/46
U.S. Cl. 444—1 9 Claims



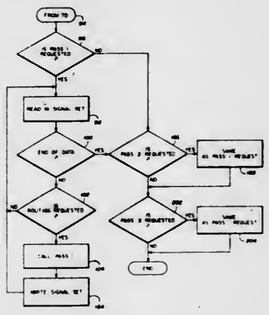
A process is described for the solution of a system of algebraic equations. A general purpose computer is programmed to perform the steps of the process. These steps include (1) forming a consolidated matrix descriptive of the entire system of equations and variables, (2) identifying design (specified) variables and/or iterative variables by a unique elimination procedure so as to minimize the number of iterative variables and to minimize the number of relations which must be solved simultaneously (i.e. minimize nested iterative calculations), (3) using a calculation procedure to determine the computational sequence for solution of the equations, and (4) solving these equations in the order determined by the computational sequence and determining the numerical values of the system variables.

This process reduces computer computation time and identifies those essential variables which must be specified (design variables) in order to obtain a solution. Any physical system which is described by an under-specified or adequately specified set of equations can be solved by this process. One application involves designing a chemical processing plant by solving an under-specified set of equations descriptive of the units, streams, etc. of the plant.

3,702,004
PROCESS AND SYSTEM FOR ROUTING INTERCONNECTIONS BETWEEN LOGIC SYSTEM ELEMENTS

Mark F. Eskew, Richardson, and Beverly F. Hyde, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1970, Ser. No. 1,525
Int. Cl. G06f 15/20
U.S. Cl. 444—1 22 Claims

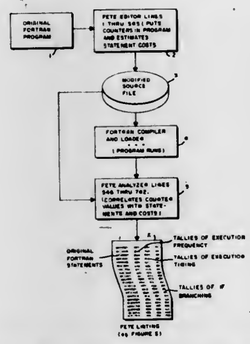


Artwork for a logic circuit to be fabricated by printed circuit board techniques is produced by a data processing machine programmed to run a packaging routine, a placement routine, and a routing routine, in addition to check routines. All logic elements for a particular circuit are coded and identified prior to carrying out any of the machine run routines. This circuit diagram information, along with mechanical criteria of the printed circuit board on which the circuit is to be fabricated, are supplied as input data to the data processing machine. The data processing machine first takes the coded circuit diagram information and checks it for errors. It then packages the individual logic elements into multi-element units (integrated circuits). Upon completion of the packaging routine, the data processor places the multi-element units within the limits of the mechanical criteria supplied as input data. After the packaging and placing routines have been completed, the machine routes interconnections between the terminal pins of the multi-element units using a numbered ordered maze restrained to proceed within pre-established limits.

3,702,005
EXECUTION TIME ANALYZER

Daniel H. H. Ingalls, Jr., Menlo Park, Calif., assignor to United Data Services, Palo Alto, Calif.

Filed May 24, 1971, Ser. No. 146,353
Int. Cl. G06f *15/26, 9/06, 11/00*
U.S. Cl. 444—1 **9 Claims**

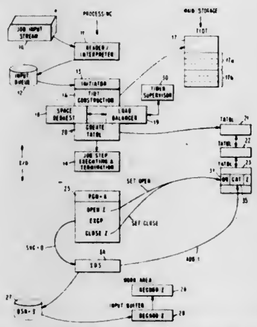


The Fortran Execution Time Estimator (FETE) for software monitoring and performance evaluation is a three-step process. The first step accepts FORTRAN IV source programs and produces an edited file with counters and flags. The second step executes the edited file. After execution, the third step re-reads the edited file and correlates it with the final counter values to provide a listing. The executable statements are collected and appear in the listing beside the exact number of executions and approximate computation time. The number of true branches of logical IFs are tallied on the right of the listing, and subtotals appear at the end of each routine for which an execution-time profile is made.

3,702,006
METHOD FOR BALANCING THE UTILIZATION OF INPUT/OUTPUT DEVICES

Josiah B. Page, Salt Point, N.Y., assignor to International Business Machine Corporation, Armonk, N.Y.

Filed June 9, 1971, Ser. No. 151,452
Int. Cl. G06f *3/04, 9/19*
U.S. Cl. 444—1 **23 Claims**

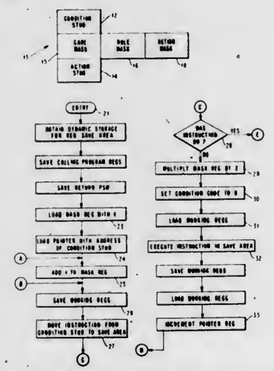


During the operation of a data processing system capable of multi-tasking, a count is made of the number of times each I/O device is accessed by each task. The counting is done over the time interval between successive allocation routines. During each allocation, an analysis is made using the count and time interval to estimate the utilization of each device due to the current tasks. An estimate is also made of the anticipated utilization due to the task undergoing allocation. The estimated current and anticipated utilization are then considered and an attempt is made to allocate data sets to the least utilized I/O devices so as to achieve balanced I/O activity.

3,702,007
TABLE DRIVEN PROGRAM

Roderic A. Davis, II, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,747
Int. Cl. G06f *9/12, 7/22*
U.S. Cl. 444—1 **6 Claims**

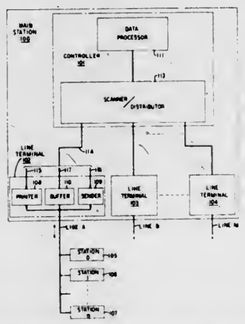


A new decision table and method of using the decision table with data processing apparatus are disclosed. A general purpose driver is provided for executing various decision tables. When a problem program reaches the point where a decision table is to be executed, the problem program calls the driver and identifies the selected decision table. The condition stub of the decision table includes a series of instructions from which the driver forms a condition mask. The driver selects the appropriate action according to the condition mask and a set of rules and an action stub in the decision table. The action may comprise a single instruction or series of related instructions or several independent instruction or groups of instructions.

3,702,008
PROGRAM FOR POLLING PARTY LINE DATA STATIONS FOR MESSAGE PICKUPS

George Stephen Groth, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1970, Ser. No. 95,737
Int. Cl. H04j *3/12*
U.S. Cl. 444—1 **13 Claims**

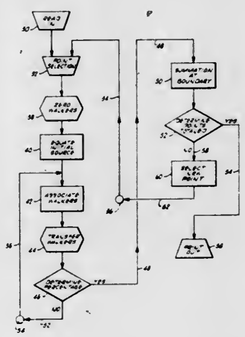


Data stations on multistation lines are polled for messages in accordance with a program which directly varies the number of times each station is polled during a polling round with the quantity of messages available at the station, as determined by responses to prior pollings. Initially, all stations are polled and the identities of those having available messages are placed in a data pattern defining an alternate poll code sequence. The alternate sequence is then utilized for subsequent polling rounds during which the data pattern is modified by wiping out the identities of stations no longer having messages. After a predetermined number of alternate rounds or after all the messages are collected, whichever occurs first, the initial polling round is again sent and the process repeated. Data processing is provided by a programmed general purpose computer.

3,702,009
SIMULATION OF PRESSURE BEHAVIOR IN PETROLEUM RESERVOIRS

David E. Baldwin, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 23, 1970, Ser. No. 83,393
Int. Cl. G06f *15/20, 15/06*
U.S. Cl. 444—1 **1 Claim**



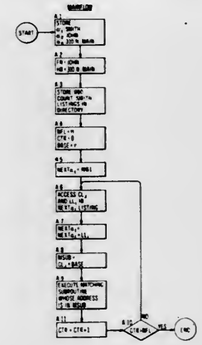
A method for formulating a simple model in simulation of pressure behavior in a petroleum reservoir, the method consisting of utilization of electronic data processing apparatus for performing a novel computational approach to establishment of unknown pressure quantities as deduced from probabilities of known parameters. The method utilizes a variation on the Monte Carlo or Random Walk technique, a variation known as the Exodus modification, which enables stochastic simulation of a petroleum reservoir in terms of its pressure behavior and patterns throughout.

3,702,010
INFORMATION RETRIEVAL STRATEGY

Robert Benjamin Schmidt, Arlington Heights; George Wallace Smith, Jr., Naperville, and Robert Bernard Walford, Lombard, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1970, Ser. No. 80,036
Int. Cl. G06f *9/16*
U.S. Cl. 444—1 **7 Claims**

A method for retrieving variable length file listings from a file of listings is disclosed. Each listing in the file is identified as belonging to one of the plurality of classes of listings comprising the file by means of a fixed length class byte in the listing format. The length of each listing is recorded in a similar fashion in the listing format. A computer program containing a matching subroutine for each class of listing contained in the file controls a stored program computer during a search of the file. During such a search, the computer accesses the class byte in the current listing being processed and uses this byte to determine the address of the matching subroutine to be used in processing the listing. Similarly, the computer uses the length byte in the current listing to calculate the address of the listing to be processed after processing of the current listing is completed.



3,702,011
APPARATUS AND METHOD FOR SIMULATING LOGIC FAULTS

Douglas Byron Armstrong, Bedminster, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 12, 1970, Ser. No. 36,581
Int. Cl. G06f *15/20*
U.S. Cl. 444—1 **14 Claims**

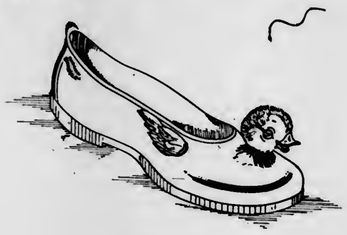


Apparatus and method for simulating logic circuit faults. The logic circuit to be simulated is divided into blocks and digital representations of the interconnections in each block are stored in data tables in the digital computer performing the simulation. Each block is dynamically simulated by computing both the error-free outputs and the faulty outputs that would be generated by the block in response to the proper inputs to the block. The result of the simulation is a list of system faults which may be transformed into a fault dictionary comprising a list of each possible trouble symptom and the set of faults that produce it.

DESIGNS

OCTOBER 31, 1972

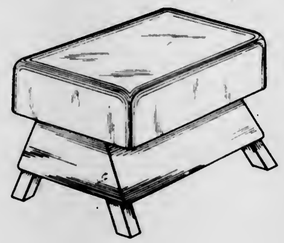
224,992
OVERSHOE
Mary K. Iskyan, 34—15 74th St., Jackson Heights, N.Y. 11372
Filed Dec. 14, 1970, Ser. No. 26,459
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—279



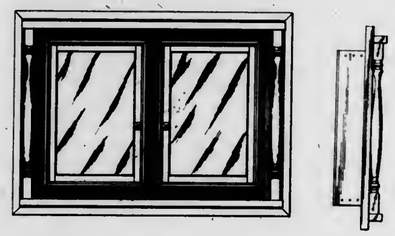
224,993
PILLOW OR SIMILAR ARTICLE
Linda Ellen Levine, 7530 Stonecrest, and Deborah Ann Zippel, 4407 Mill Run, both of Dallas, Tex. 75222
Filed Mar. 17, 1971, Ser. No. 125,467
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D3—9



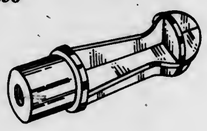
224,994
ADJUSTABLE LEG REST
Henry J. Sokolowski, Pierson, Iowa 51048
Filed Mar. 10, 1971, Ser. No. 123,130
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—32



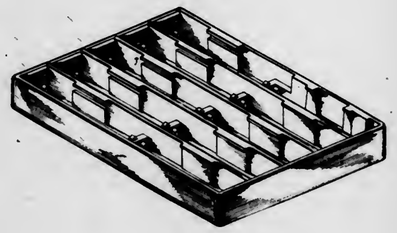
224,995
BATHROOM CABINET
Clarence E. Harrison, 612 E. Farmers Road, Seagoville, Tex. 75159
Filed Sept. 21, 1970, Ser. No. 25,103
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—127



224,996
POLE CONNECTOR FOR SHELVING, RACKS, AND THE LIKE
Joseph C. Putterman, 3521 Section Road, Cincinnati, Ohio 45237
Filed Oct. 27, 1971, Ser. No. 193,238
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236



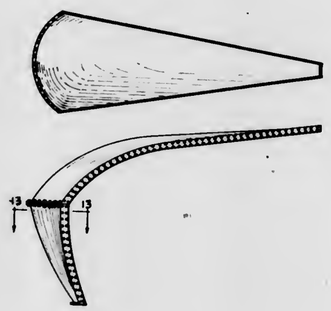
224,997
COMBINED PACKAGING AND DISPENSING TRAY FOR RAZOR BLADE CARTRIDGES
Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,645
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



224,998
TOOTHPASTE TUBE
Van Vechten Sayre, Chatham Township, Morris County, and Hugh R. Kirkpatrick, New Vernon, N.J., and Harry Zelenko, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed May 26, 1971, Ser. No. 147,291
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—194



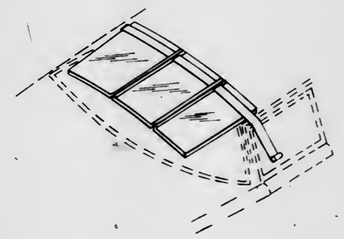
224,999
SECTIONAL PANEL ELEMENT OF A FIBER-GLASS REINFORCED POLYESTER HOUSING STRUCTURE
Christopher Hall, 6321 Floria St., Oakland, Calif. 94618
Filed Aug. 31, 1970, Ser. No. 24,780
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



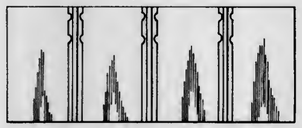
225,000
FOUR WHEEL TRACTOR
Erval D. Jackson, R.R. 2, Edgely, N. Dak.
Filed Apr. 13, 1970, Ser. No. 22,386
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



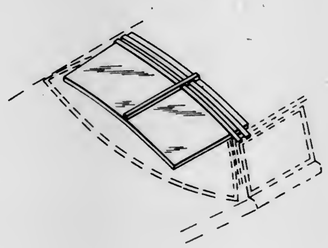
225,001
AUTOMOBILE RAIN VISOR FOR DRIVE-IN THEATRES
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 12, 1970, Ser. No. 24,437
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6



225,002
FOLDING RAIN VISOR FOR AUTOMOBILES
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 17, 1970, Ser. No. 24,536
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6



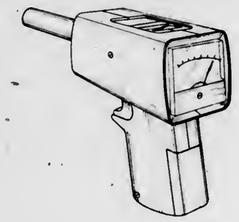
225,003
AUTOMOBILE RAIN VISOR FOR DRIVE-IN THEATRES
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 31, 1970, Ser. No. 24,775
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 15, 1984, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D14—6



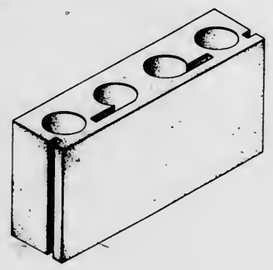
225,004
BABY SEAT
Giuseppe Gigante, % Dr. Ing. Misitano A.9, Via Padova 217–20127, Milan, Italy
Filed Feb. 12, 1971, Ser. No. 115,145
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D15—1



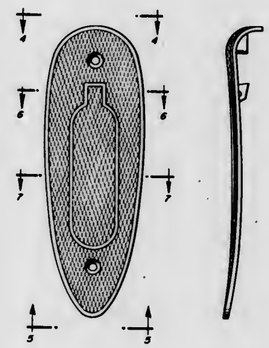
225,005
DEVICE FOR ELECTROCHEMICAL ANALYSIS
Robert L. Greene, Diamond Bar, Calif., assignor to Beckman Instruments, Inc.
Filed Feb. 22, 1971, Ser. No. 117,849
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2



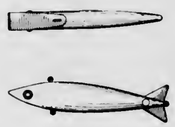
225,006
BLOCK
George B. Muse, Hillcrest Drive, Calhoun, Ga. 30701
Filed Mar. 8, 1971, Ser. No. 122,258
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



225,007
GUN BUTT PLATE
Calvin J. Albright, Jr., P.O. Box 695, Bishop, Calif. 93514
Filed Oct. 26, 1970, Ser. No. 25,635
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



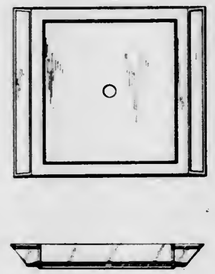
225,008
FISHING LURE
Carl R. Cordell, Jr., 215 Idlewood Drive, Hot Springs, Ark. 71901
Filed Dec. 4, 1970, Ser. No. 26,298
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 20, 1982, has been disclaimed
Int. Cl. D22—*05*
U.S. Cl. D22—27



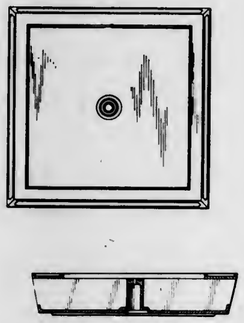
225,009
VAPORIZER
Wilhelm Buhren, Blaricum, Netherlands, assignor to United States Philips Corporation
Filed July 10, 1970, Ser. No. 23,891
Claims priority, application Switzerland Jan. 12, 1970
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



225,010
EXHAUST FAN COVER
Robert E. Steiner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.
Filed Jan. 21, 1971, Ser. No. 108,675
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

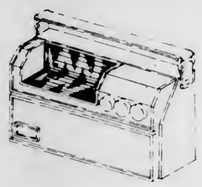


225,011
EXHAUST FAN COVER
Robert E. Steiner, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.
Filed Jan. 21, 1971, Ser. No. 108,690
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

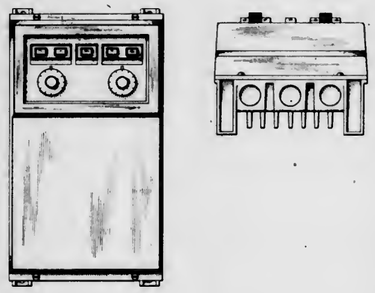


225,012
TRANSVERSE RADIO TUNING INDICATOR FACE PLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,929
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

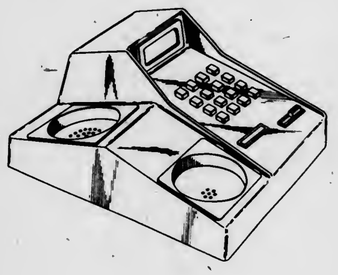




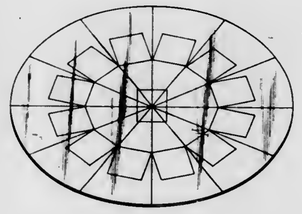
225,013
CABINET FOR AN ELECTRONIC APPARATUS
Earl K. Stewart, Scotia, N.Y., assignor to General Electric Company
Filed June 23, 1971, Ser. No. 156,148
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5



225,014
STOCK QUOTATION TERMINAL
Harold M. Weinberg, Villanova, Pa., assignor to Sonex, Inc., Philadelphia, Pa.
Filed Jan. 29, 1971, Ser. No. 111,164
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



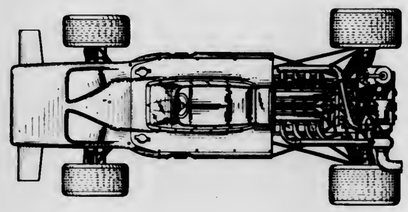
225,015
FORTUNE INDICATING CHART
Cecelia Donihue, 2426 E. Osborn, Salt Lake City, Utah 85016
Filed Mar. 29, 1971, Ser. No. 129,322
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



225,016
BUILDING TOY OR SIMILAR ARTICLE
Arthur Halpern, New York, N.Y., assignor to M. I. Sales, Inc., New York, N.Y.
Filed Mar. 23, 1971, Ser. No. 127,443
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



225,017
MODEL RACING CAR
Bruce Leslie McLaren, Surrey, England, assignor to Bruce McLaren Motor Racing Limited, Colnbrook, England
Filed May 22, 1970, Ser. No. 23,108
Claims priority, application Great Britain Nov. 27, 1969
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



225,018
FINGER RING
Leonard Shiman, Millburn, N.J., assignor to Shiman Manufacturing Co., Inc., Newark, N.J.
Filed Apr. 5, 1971, Ser. No. 131,565
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



225,019
HEIGHT MEASURING RULER OR SIMILAR ARTICLE
Robert Oberheim, Neu-Isenburg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 8, 1971, Ser. No. 113,806
Claims priority, application Germany Aug. 19, 1970
Term of patent 3½ years
Int. Cl. D10—*04*
U.S. Cl. D52—6



225,020
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,968
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,021
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,969
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



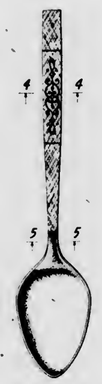
225,022
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,971
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,023
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,972
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,024
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,973
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,025
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,976
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,026
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,977
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,027
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,978
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



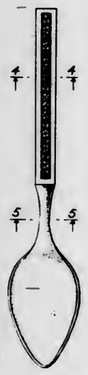
225,028
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,982
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



225,029
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 8, 1971, Ser. No. 196,851
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



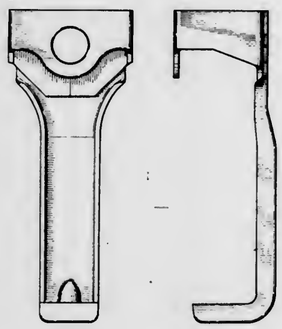
225,030
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed July 23, 1971, Ser. No. 165,885
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



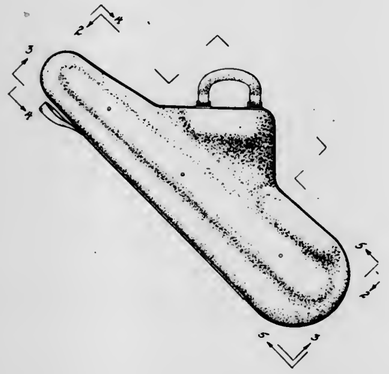
225,031
MACHINE FOR ASSEMBLING BUTTONS
Malcolm J. Roebuck, La Salle, Ill., assignor to First National Bank in Peru
Filed Mar. 4, 1971, Ser. No. 121,232
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



225,032
OVERHEAD CONVEYOR BRACKET
George E. Gonsalves, Brooklyn, and Felice Dosso, Staten Island, N.Y. (both of 623 Bergen St., Brooklyn, N.Y. 11238)
Filed July 31, 1970, Ser. No. 24,248
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D55—1



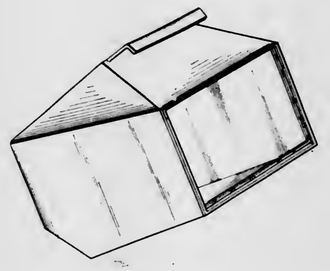
225,033
MUSICAL INSTRUMENT CARRYING CASE
Ray Hyman, 2046 Waverly St., Philadelphia, Pa. 19146
Filed Mar. 5, 1971, Ser. No. 121,623
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D56—1



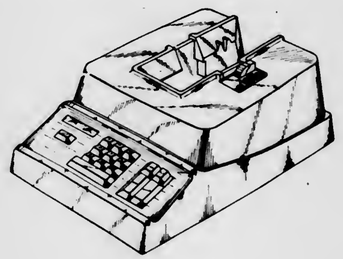
225,034
SINGLE LENS REFLEX CAMERA
Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Oct. 22, 1970, Ser. No. 25,597
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



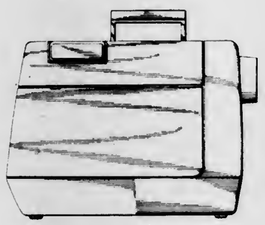
225,035
MICROFILM READER HOUSING
Jasper S. Chandler and Stephen P. Hines, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,553
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



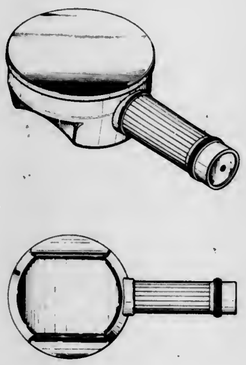
225,036
ADDING MACHINE
James J. Bienkowski, East Syracuse, and John T. Houlihan, Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed July 8, 1971, Ser. No. 160,966
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11



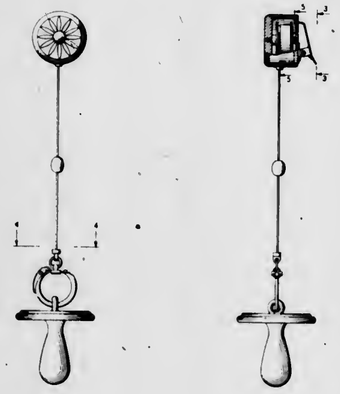
225,037
PORTABLE SEWING MACHINE
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed Mar. 1, 1971, Ser. No. 120,073
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



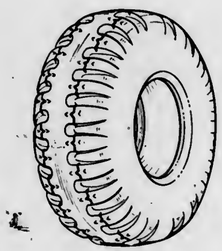
225,038
PORTABLE MASSAGER
Lester M. Cutler, Roslyn Heights, and Paul Friedman, Old Westbury, N.Y., assignors to Vibra-Baths Home Products, Inc.
Filed July 15, 1971, Ser. No. 163,133
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



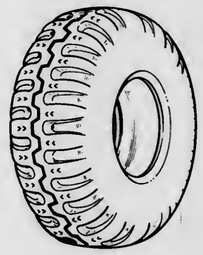
225,039
RETRACTIBLE CLIP-ON PACIFIER
Irene Sauritis, 710 Richfield Ave., Kenilworth, N.J. 07033
Continuation-in-part of design application Ser. No. 24,269, Aug. 3, 1970. This application Nov. 30, 1971, Ser. No. 203,392
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—8



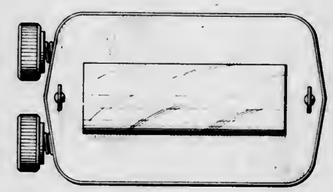
225,040
TIRE
Louis Marick, Grosse Pointe Farms, Mich., assignor to the United States of America as represented by the Secretary of the Army
Filed June 30, 1971, Ser. No. 158,669
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



225,041
TIRE
Louis Marick, Grosse Pointe Farms, Mich., assignor to the United States of America as represented by the Secretary of the Army
Filed June 30, 1971, Ser. No. 158,668
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



225,042
ROUTE HOLDER OR SIMILAR ARTICLE
Larry Lee Pierce, Flagview Park 1-A, Douglasville, Ga. 30134
Filed Feb. 8, 1971, Ser. No. 113,807
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—9



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TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aasted, Kai Christian Sophus. Storing mechanism for use in transferring objects from one conveyor to another. 3,701,406, Cl. 198-20.000.

AB Gustavsbergs Fabriker: *See—*
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Abbott Laboratories: *See—*
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Swett, Leo Ralph; and Paris, Gerard Yvon, 3,701,785.

Abdo, Joseph T. Slide valve. 3,701,365, Cl. 137-625.430.

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Dugge, Richard H.; and Carney, John L., Jr., 3,701,460.

Ackerman, Daniel Whitney, to Universal Instruments Corporation. Wire wrap tool. 3,701,367, Cl. 140-119.000.

Adams, Harvey Keith, to Radco Manufacturing Co., Inc. Water ski rack. 3,701,436, Cl. 211-60.0sk.

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Richmond, Abraham W., 3,701,556.

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Airco, Inc.: *See—*
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Airheart, Franklin B., to Airheat Products, Inc. Resettable, fail-safe disc brake system. 3,701,399, Cl. 188-71.800.

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Allaart, Houterman Jan, to U.S. Philips Corporation. Character display device for television monitor. 3,701,988, Cl. 340-324.00a.

Allen & Hamburys Limited: *See—*
Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, 3,701,808.

Allen, Daniel E., to Hewlett-Packard Company. Servosystem for graphical recorder. 3,701,992, Cl. 346-32.000.

Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, to U.S. Philips Corporation. Gaseous-glow, discharge display device with an array of hollow cathodes. 3,701,918, Cl. 313-209.000.

Allen, Harold A.: *See—*
Gartman, William W.; Evans, James G.; and Allen, Harold A., 3,701,682.

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Alps Electric Co., ltd.: *See—*
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Alroy, John D. Stackable members. 3,701,456, Cl. 220-97.00c.

Altmanshofer, Robert Dale: *See—*
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.

Amalric, Jean E., to Merlin Gerin. High-voltage metal-clad apparatus comprising a capacitive voltage divider. 3,701,944, Cl. 324-126.000.

Amelio, Gilbert Frank; and Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Storage tube with array on Pn Pn diodes. 3,701,914, Cl. 313-66.000.

American Can Company: *See—*
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American Hydrotherm Corporation: *See—*
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AMP Incorporated: *See—*
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Anders, Walter G.; and Obermiller, Herbert C., to Diebold, Incorporated. Pneumatic tube carrier construction. 3,701,497, Cl. 243-35.000.

Anderson, Duane S. Device for transmitting and displaying scores on television and radio receivers. 3,701,946, Cl. 325-64.000.

Anderson, Harold Peter; and Fenton, Francis Michael, to Bell Telephone Laboratories, Incorporated. Key telephone system call signaling and station set data transfer arrangement. 3,701,854, Cl. 179-18.0ad.

Anderson, Robert J., to Anderson, The. Particulate material drying apparatus. 3,701,203, Cl. 34-170.000.

Anderson, Sture, to Allmanna Svenska Elektriska Aktiebolaget. Device for paper machines. 3,701,933, Cl. 318-7.000.

Anderson, The: *See—*
Anderson, Robert J., 3,701,203.

Anderson, Vincent R.: *See—*
Ball, Thomas E.; and Anderson, Vincent R., 3,701,962.

Anderson, William G. Cup dispenser with revolving adapter. 3,701,457, Cl. 221-120.000.

Ando, Shizuo, to Pioneer Electronic Corporation. Adapter device for an automatic telephone answering apparatus. 3,701,850, Cl. 179-6.00c.

Andreasson, Per Arvid; and Persson, Mats Olof, to Elektriska Svetsningsaktiebolaget. Chain making apparatus. 3,701,251, Cl. 59-16.000.

Andress, William I.: *See—*
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Appleman, Lucille E.: *See—*
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Appleman, Milo Don, 50% to Terminal Testing Laboratories, Inc., 20% to Appleman, Lucille E. and 10% to Appleman, Milo D., Jr. Water purification system. 3,701,728, Cl. 210-29.000.

Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Anti-skid system for vehicles. 3,701,569, Cl. 303-21.0be.

Argue, Gary R.; and Owens, Boone B., to North American Rockwell Corporation. Solid state cell construction. 3,701,686, Cl. 136-83.000.

Armour Industrial Chemical Company, mesne: *See—*
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Arnaud, Jose L., to FMC Corporation. Process for leaching strontium sulfide black ash. 3,701,637, Cl. 23-312.00r.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asai, Norio: *See—*
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Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, to Nitto Kagaku Kogyo Kabushiki Kaisha, a/k/a Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd. Temperature control in suspension polymerisation. 3,701,761, Cl. 260-85.50r.

Ashland Oil, Inc.: *See—*
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Ashtabula Bow Socket Company: *See—*
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Ashton, Walter G.: *See—*
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Askins, Robert E.; and Roys, George P., to Thiokol Chemical Corporation. Test apparatus for combustion evaluation. 3,701,278, Cl. 73-35.000.

Asui, Hiroshi; and Takahashi, Mitsuo, to Nippon Mining Co., Ltd. Process for obtaining nickel concentrates from nickel oxide ores. 3,701,647, Cl. 75-3.000.

Atlantic Design & Development Corporation: *See—*
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Austin, Amory Earl; and Bechtold, Charles L., to Colgate-Palmolive Company. Means to inhibit overglaze damage by automatic dishwashing detergents. 3,701,736, Cl. 252-99.000.

Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M. Underwate sound signal for explosive echo ranging. 3,701,319, Cl. 102-7.000.

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Baginski, Martin R., to Ashtabula Bow Socket Company. Bicycle pedal having luminous portions thereon. 3,701,291, Cl. 74-594.400.

Bailey, David G. Apparatus for automatically adding preselected patterns of eluent solutions to a chromatographic column and monitoring and collecting eluted fractions. 3,701,609, Cl. 210-198.00c.

Bailly, Louis. Hook for hand hooking rugs. 3,701,461, Cl. 223-102.000.

Baker, William H., to Fluoroware, Inc. Detachable handle for receptacle. 3,701,558, Cl. 294-33.000.

Baldwin, David E., Jr., to Continental Oil Company. Simulation of pressure behavior in petroleum reservoirs. 3,702,009, Cl. 444-1.000.

Ball, Thomas E.; and Anderson, Vincent R., to Honeywell, Inc. Switching device for operating a plurality of switches in sequence with ambient temperature compensation. 3,701,962, Cl. 337-101.000.

Balow, Zella J. Brassieres for mastectomy patients. 3,701,168, Cl. 3-36.000.

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Barr, Charles R.; Williams, John; and Whitmore, Keith E., to Eastman Kodak Company. Certain mercaptan forming couplers. 3,701,783, Cl. 260-308.00d.

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Berges, David A.; Dunn, George L.; and Hoover, John R. E., to Smith Kline & French Laboratories. Esters of man deloylaminocephalosporanic acids. 3,701,775, Cl. 260-243.00c.

Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., to Hamilton Watch Company. Solid state timepiece with liquid crystal display. 3,701,249, Cl. 58-50.00r.

Bergin, Michael T.; and Bartolotta, Charles S., to Grumman Aerospace Corporation. Multi-axis optical alignment system including a spatial filter. 3,701,602, Cl. 356-152.000.

Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, to Continental Linoleum-Union-Betriebs AG. Apparatus for producing fibres of thermoplastic material. 3,701,621, Cl. 425-115.000.

Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., to Computer Retrieval Systems, Inc. Data processing system. 3,701,972, Cl. 340-172.500.

Berkman, Richard M.; and Schoefer, Peter B., to Science Spectrum Inc. Sample scattering cell for a photometer. 3,701,620, Cl. 356-246.000.

Beroff, Howard; and Richmond, Ernest L., to Ethicon, Inc. Apparatus for electropolishing of drilled surgical needles. 3,701,725, Cl. 204-297.00m.

Berry, James W.: *See—*
Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., 3,701,648.

Berry Metal Company: *See—*
Herff, Louis M., 3,701,518.

Bessett, Clifford H.: *See—*
Boyd, James W.; and Bessett, Clifford H., 3,701,447.

Best, Eric, to Hyster Company, mesne. Means for controlling pallet truck foot pedal position. 3,701,211, Cl. 280-43.120.

Bhatia, Satya Pal: *See—*
Prahacs, Steven; and Bhatia, Satya Pal, 3,701,824.

Bianchini, Giacomo, to DHJ Industries, Inc. Method and means for heat bonding. 3,701,709, Cl. 156-583.000.

Biegler, Hanns: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.

Biel, John H.: *See—*
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,701,786.

Billon, Gerard: *See—*
Henry, Jean Claude; and Billon, Gerard, 3,701,867.

Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, to VEB Kombinat Mess- und Regelungstechnik Dessau Werk Massindustrie Werdau. Apparatus for punching a data carrier such as a tape. 3,701,470, Cl. 234-99.000.

Bionetics, Inc.: *See—*
Patrick, Charles T., Jr., 3,701,346.

Blackwell Electronics Ind., Co., Ltd.: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.

Blair, Walter A.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Blair/Johnson, Inc.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Blengsli, Helmer L., to Tekology Corporation. Masonry materials and method of making the same. 3,701,671, Cl. 106-98.000.

Blood, Alden E.: *See—*
Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., 3,701,798.

Blore, James H., to Phillips Fibers Corporation. Panty-hose. 3,701,164, Cl. 2-224.00r.

Blouch, Eric L.: *See—*
Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., 3,701,249.

Bobrick Aero Missile Products: *See—*
Cowan, Arnold A., 3,701,552.

Boggs, Weldon C., to Food Research & Equipment Company. Deep fat fryer unit with solenoid valves and automatic controls. 3,701,313, Cl. 99-330.000.

Bogsten, Anders Richard. Drill, particularly a so-called deep hole drill or gun boring drill. 3,701,606, Cl. 408-59.000.

Bohlmeijer, Nicolaas: *See—*
Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, 3,701,981.

Bold, Eugene W.: *See—*
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.

Boliden Aktiebolag: *See—*
Nilsson, Bruno Yngve, 3,701,940.

Bond, James M. Apparatus facilitating care of a bedfast patient. 3,701,170, Cl. 4-174.000.

Boosen, Karl-Josef, to Lonza Ltd. Method for the production of acetoacetic acids. 3,701,803, Cl. 260-526.00r.

Boostrom, Roy E.; Mandell, Arman; and Malter, Lewis. Combination teaching aid and modular instrumental analysis system and components therefor. 3;701,603, Cl. 356-246.000.

Borelli, Ronald F.; and Garand, Donald J., to Honeywell, Inc. Printing apparatus. 3,701,337, Cl. 118-637.000.

Borg-Warner Corporation: *See—*
Newton, Alwin B., 3,701,264.

Born, Dieter; Stech, Peter; and Huebner, Werner, to Klein, Schanzlin & Becker A.G. Contact-free hydrostatic seal. 3,701,535, Cl. 277-3.

Bosche, Walwin J., Jr., to Wicks Organ Company, The. Swell shade control. 3,701,833, Cl. 84-346.000.

Bosworth, Nathaniel L. Abdominal wall punch. 3,701,352, Cl. 128-305.000.

Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, to Little, Arthur D., Inc. Method for forming mixed oxide heterogenous catalysts. 3,701,739, Cl. 252-454.000.

Bowe, Bohler & Weber KG Maschinenfabrik: *See—*
Sieber, Johannes Helmut, 3,701,625.

Bower, Robert G.: *See—*
Shneider, Harold M.; and Bower, Robert G., 3,701,524.

Bowers, Jeffrey L. Elastic projectile and tree-like target. 3,701,531, Cl. 273-95.00r.

Bowers, Regis D., to Chausse Manufacturing Co., Inc. Steam cleaner. 3,701,343, Cl. 126-271.20r.

Boyce, David C.: *See—*
Weinrich, Bernard W.; and Boyce, David C., 3,701,830.

Boyd, James W.; and Bessett, Clifford H., to Packaging Corporation of America. Tray construction. 3,701,447, Cl. 217-26.500.

Bradley, William H.: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Brady, Harold P., Jr.: *See—*
Richardson, Dean E.; Peterson, Adolph A., III; and Brady, Harold P., Jr., 3,701,742.

Brand, Boris Peter, to Ilford Limited. Color developing with a 4-sulfonaphthamide base. 3,701,661, Cl. 96-55.000.

Brand, Derek: *See—*
Imatt, Alex; and Brand, Derek, 3,701,477.

Branson Instruments, Incorporated: *See—*
Bantz, Walter J.; and Pittaro, Richard J., 3,701,941.

Braun, Richard E.; and Hopkins, Lionel G., to Magnetic Head Corporation. Unipartite read/write and/or center section housing for dual gap magnetic head assemblies employing unitary intertrack shielding extensions. 3,701,859, Cl. 179-100.20c.

Breed, Arthur R., to Lamson & Sessions Co., The. Lock bolt and method of making the same. 3,701,372, Cl. 151-22.000.

Breuner, Gerald L. Rotor hub and blade attachments. 3,701,612, Cl. 416-141.000.

Brieke, Hans-Gunter: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.

Brinker, Norman E.: *See—*
Fassler, Michael H.; and Brinker, Norman E., 3,701,379.

Briscoe, James A.: *See—*
Zeffer, Arthur A.; and Briscoe, James A., 3,701,500.

British Insulated Callender's Cables Limited: *See—*
Wills, Graham Boyce; and Walker, Frank Stanley, 3,701,683.

British Petroleum Company Limited, The: *See—*
Bennett, Ian Cameron; and Du Chaffaut, Jean Amaudric, 3,701,713.

Broding, Robert A., to Seismograph Service Corporation. Air cushion seismic vibrator. 3,701,968, Cl. 340-17.000.

Brooks, Doyle K. Book mark and page holding device. 3,701,332, Cl. 116-119.000.

Broussard, Edwin C. Turn around pan shield for automatic pin setters. 3,701,530, Cl. 273-43.00r.

Brown & Root, Inc.: *See—*
Nolan, Clyde E., Jr., 3,701,261.

Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Reverse osmosis apparatus and method for making same. 3,701,431, Cl. 210-321.000.

Brown, Carl A.; and Thomas, Jerald F., to Parker-Hannifin Corporation. Fluid filtering device. 3,701,424, Cl. 210-90.000.

Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., to Koehring Company. Apparatus for friction welding synthetic plastic container parts and the like. 3,701,708, Cl. 156-582.000.

Brown, Melvin L.: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.

Brown, William Brownloe, to Western Electric Company, Incorporated. Methods of and apparatus for continuously reeling strand material. 3,701,491, Cl. 242-25.00a.

Brunialti, Bruno; and Zaffignani, Giovanni, to Olivetti, Ing. C., & C., S.p.A. Data transmission by teleprinter. 3,701,841, Cl. 178-4.10b.

Brushaber, Larry: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.

Buchsieb, Richard H.: *See—*
Kimble, Floyd E.; and Buchsieb, Richard H., 3,701,485.

Buffa, Antonio: *See—*
Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio, 3,701,541.

Bunn, Stuart E.: *See—*
Owsley, Herbert B.; and Bunn, Stuart E., 3,701,342.

Bunn, Stuart E.; and Owsley, Herbert B. Valve assembly and valve member therefor. 3,701,361, Cl. 137-543.230.

Bunnell, John A.: *See—*
Goldsworthy, William D.; and Bunnell, John A., 3,701,489.

Burdeska, Kurt: *See—*
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,701,791.

Burnett, Richard T.; and Colpaert, James J., to Bendix Corporation. Parking actuator for disc brake. 3,701,400, Cl. 188-72.600.

Burns, Joseph Richard, to RCA Corporation. Memory subsystem array. 3,701,984, Cl. 340-173.00r.

Burroughs Corporation: *See—*
Glaser, David, 3,701,916.
Glaser, David, 3,701,924.
Kupsky, George A., 3,701,917.

Sanner, Gary L.; and Hebeler, Charles B., 3,701,971.

Buschow, Kurt Heinz Jurgen; and Westendorp, Frans Frederik, to U.S. Philips Corporation. Method of manufacturing a permanent magnet. 3,701,695, Cl. 148-103.000.

Buslik, Walter S.; and Chou, Albert S., to International Business Machines Corporation. Suspension system for holding a slider. 3,701,610, Cl. 248-204.000.

C & M Manufacturing Company, Inc.: *See*—
Smith, Raymond Leonard, Jr., 3,701,446.

Cagnon, Eugene C., to Ford Motor Company. Structure for closing a motor housing and for supporting a brush elements making contact with the armature thereof. 3,701,913, Cl. 310-247.000.

Caldwell, Albert L.: *See*—
Routson, Willis G.; and Caldwell, Albert L., 3,701,384.

Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., to United States of America, Navy, mesne. Centroid seeking method for determining azimuth and elevation angle simultaneously. 3,701,989, Cl. 343-16.00r.

California Institute of Technology: *See*—
Lovelock, James E., 3,701,632.

California R&D Center: *See*—
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,701,216.

Campbell, Bruce D., to Coto-Coil Co., Inc. Reed relay having low thermal EMF. 3,701,960, Cl. 335-154.000.

Campbell, Erwin A.: *See*—
Woolslayer, Homer J.; Woolslayer, Joseph R.; Jenkins, Cecil; and Campbell, Erwin A., 3,701,435.

Campo, Charles. Admission pass recording and cancelling machine. 3,701,887, Cl. 235-91.00r.

Canon Kabushiki Kaisha: *See*—
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, 3,701,860.

Canrad Precision Industries, Inc.: *See*—
Thuler, Oscar, 3,701,900.

Carey, Raymond L.: *See*—
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Carl, Christopher: *See*—
United States of America, National Aeronautics and Space Administration, 3,701,894.

Carle, Ross C., to ACF Industries Inc. Fluid dampened railway bolster spring. 3,701,322, Cl. 105-197.00b.

Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., to Upjohn Company, The. Catalytic preparation of polyimides from polyisocyanates. 3,701,756, Cl. 260-78.0tf.

Carling Electric, Inc.: *See*—
Sorenson, Richard W., 3,701,870.

Carlo Tassara S.p.A. Stabilimenti Elettrosiderurgici: *See*—
Manara, Angelo Teodoro, 3,701,511.

Carlson, Elmer Victor; and Killion, Mead Clifford, to Industrial Research Products, Inc. Acoustic transducer having diaphragam pivoted in its surroud. 3,701,865, Cl. 179-181.00r.

Carney, John L., Jr.: *See*—
Dugge, Richard H.; and Carney, John L., Jr., 3,701,460.

Carpenter, David Harry: *See*—
Stark, John, Jr.; and Carpenter, David Harry, 3,701,845.

Carr, George W., to Pullman Incorporated. Container chassis attachment arrangement. 3,701,562, Cl. 296-35.

Carrier Corporation: *See*—
Leonard, Louis H., Jr., 3,701,265.

Carter, Shirley J. Fuel feeding apparatus. 3,701,513, Cl. 261-18.00a.

Carter, William C.; and Schneider, Peter R., to International Business Machines Corporation. Parity checked shift register counters. 3,701,892, Cl. 235-153.000.

Cary Products, Inc.: *See*—
Mc Larty, Shirley, 3,701,311.

Cassell, Perry E. Torque overload release coupling. 3,701,404, Cl. 192-56.00r.

Centofante, James Vincent. Adjustable magnetic door stop. 3,701,557, Cl. 29-251.500.

Chadwick, Philip, to General Electric Company. Minimum valve voltage method and control apparatus for HVDC power converters. 3,701,938, Cl. 321-11.000.

Chainbelt, Rex, Inc.: *See*—
Kormanik, Richard A., 3,701,727.

Challis, Kenneth John: *See*—
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.

Chapman, Robert R., to Sortex Company of North America, Inc. Grading machine. 3,701,418, Cl. 209-99.000.

Chappel, Howard E.: *See*—
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.

Chausse Manufacturing Co., Inc.: *See*—
Bowers, Regis D., 3,701,343.

Chebuhar, Charles J.: *See*—
Windstrup, Robert F.; and Chebuhar, Charles J., 3,701,440.

Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, to Leningradsky Institut Inzhenerov Zheleznoforpzhnogo Transporta Imeni Akademik N. V. Obraztsova and Kalininsky Vagonostroitelny Zavod. Vibration damper for vehicles. 3,701,402, Cl. 188-314.000.

Chemical Construction Corporation: *See*—
Negra, John S.; and Warshaw, Abe, 3,701,822.

Chemiefaser Lenzing Akhengesellschaft Lenzing: *See*—
Sogner, Dominik, 3,701,281.

Chemische Werke Huls, A.G.: *See*—
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, 3,701,765.

Cherniavskyj, Jaroslav: *See*—
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.

Chew, Harvey L.: *See*—
Zimmer, William F., Jr.; and Chew, Harvey L., 3,701,703.

Chi, Tzu-Chiang, 30% to Andress, William I. Process for folding sheet material and packaged therefor. 3,701,522, Cl. 270-39.000.

Chieana Modrany narodni podnik: *See*—
Voparil, Rastislav, 3,701,899.

Chisholm, Raymond S., to PPG Industries, Inc. Method of tempering glass in a liquid. 3,701,266, Cl. 65-116.000.

Chlouper, Frank J.: *See*—
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., 3,701,640.

Chou, Albert S.: *See*—
Buslik, Walter S.; and Chou, Albert S., 3,701,610.

Chupp, John P., to Monsanto Company. N-(1-Cycloalken-1yl) ureas and thioureas. 3,701,807, Cl. 260-553.00a.

Ciba-Geigy AG: *See*—
Piller, Bernhard; and Seitz, Karl, 3,701,664.
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,701,791.

Cincinnati Milacron Chemicals Inc.: *See*—
Stapfer, Christian H., 3,701,781.

Cities Service Oil Company: *See*—
Rakow, Marvin S.; and Konig, Robert J., 3,701,641.

Clark, James Charles: *See*—
Witsey, Noel John Charles; and Clark, James Charles, 3,701,875.

Clark, Robert N., to Owens-Illinois, Inc. Process for applying phosphor particles to a dielectric layer of a gaseous discharge device. 3,701,658, Cl. 96-3.10.

Clark, Wallace; Jones, Reginald A.; and Teeters, James L. Drive mechanism for wheeled vehicle. 3,701,543, Cl. 280-234.000.

Cleff, Herbert: *See*—
Jentsch, Dietrich; and Cleff, Herbert, 3,701,180.

Clement, Rene; Manfredi, Pierre; and Roulliay, Roger. Flexible welding rod having organically bound core and protective sheath. 3,701,444, Cl. 214-146.000.

Cleveland, Dixon: *See*—
Barron, Roger L.; and Cleveland, Dixon, 3,701,889.

Coats, John H.; Herr, Milton E.; and Herr, Ross R., to Upjohn Company, The. Antibiotic sphaeropsidin. 3,701,790, Cl. 260-348.00c.

Cochran, Larry Allen: *See*—
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.

Cochran, Larry Allen, to RCA Corporation. Color compensating network for an integrated circuit television receiver. 3,701,844, Cl. 179-5.4he.

Cockerton, Kenneth Archibald: *See*—
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.

Cohen, Mitchell S.: *See*—
Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., 3,701,979.

Cohn, Nathan, to Leeds & Northrup Company. Methods of and systems for coordinated system-wide energy balancing in the control of bulk power transfer. 3,701,891, Cl. 235-151.210.

Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., to Petrolite Corporation. Electric treatment of dispersions. 3,701,723, Cl. 204-188.000.

Cole, Jack; and McIntosh, John Robert. Glass refinishing apparatus. 3,701,223, Cl. 51-241.00s.

Colgate-Palmolive Company: *See*—
Austin, Amory Earl; and Bechtold, Charles L., 3,701,736.
Finck, Patricia A., 3,701,735.

Collie, Arthur A., to Kenwood Manufacturing (Woking) Limited. Circuit for food mixer. 3,701,935, Cl. 318-325.000.

Collins Radio Company: *See*—
Martin, Kenneth G.; and Seuferer, Paul A., 3,701,936.

Colorado Instruments, Inc.: *See*—
Webb, Richard C.; and Heath, Robert T., 3,701,885.

Colorado Manufacturing Corporation: *See*—
DeMeyer, Roy W., 3,701,284.

Colpaert, James J.: *See*—
Burnett, Richard T.; and Colpaert, James J., 3,701,400.

Colt Industries Operating Corporation, mesne: *See*—
Lewis, Karl R., 3,701,213.

Columbia Broadcasting System, Inc.: *See*—
Rubio, Alfred M., 3,701,834.

Combs, Donald Earle, to Bell Telephone Laboratories, Incorporated. Pulse-width modulated DC to DC converter with zero percent duty cycle capability. 3,701,937, Cl. 321-2.000.

Combs, Robert L.: *See*—
Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., 3,701,741.

Commonwealth of Puerto Rico: *See*—
Ramos-Rodriguez, Emiliano, 3,701,789.

Compa, Russel Edward; and Liebowitz, Marvin. Distributor for liquid textile conditioners. 3,701,202, Cl. 34-72.000.

Compagnie Generale d'Electricite: *See*—

Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, 3,701,906.

Computer Retrieval Systems, Inc.: *See*—
Berkeley, Arnold D.; Bold, Eugene W.; Jefferson, Donald E.; and Zeller, Gerard A., 3,701,972.

Computer Test Corporation: *See*—
Holmes, Walter V.; and Renz, John F., 3,701,909.

Concrete Pipe Machinery Company: *See*—
Crawsord, Gerald R.; and Wenther, Joseph F., 3,701,617.

Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., to National Cash Register Company, The. Computer output laser microform recording system. 3,701,999, Cl. 346-76.00l.

Connecticut International Corporation: *See*—
Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., 3,701,969.

Connell, Joseph A.; and Baranyi, Anthony J., to Systems Capital Corporation. Means for the underground storage of liquified gas. 3,701,262, Cl. 62-45.000.

Connick, William J., Jr.: *See*—
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., 3,701,626.

Conrad, Erich Henry. Schiffli-embroidered panel and kit containing the same. 3,701,207, Cl. 35-26.000.

Consiglio Nazionale Delle Ricerche: *See*—
De Rossi, Mario, 3,701,684.

Container Corporation of America: *See*—
Standley, Wendell E., 3,701,231.

Continental Can Company, Inc.: *See*—
Windstrup, Robert F.; and Chebuhar, Charles J., 3,701,440.
Woodrow, James R.; and Lynski, Robert R., 3,701,466.

Continental Carbon Company: *See*—
Dahmen, Karel R., 3,701,827.

Continental Linoleum-Union-Betriebs AG: *See*—
Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, 3,701,621.

Continental Oil Company: *See*—
Baldwin, David E., Jr., 3,702,009.

Cook, Newell C., to General Electric Company. Soft-solderable molybdenum and tungsten surface containing diffused tin. 3,701,639, Cl. 29-195.000.

Cooper Industries, Inc.: *See*—
Fulcher, Junius H., 3,701,226.

COPAL: *See*—
Sato, Takayoshi, 3,701,910.

Coto-Coil Co., Inc.: *See*—
Campbell, Bruce D., 3,701,960.

Couvillon, Lucien A., Jr.: *See*—
United States of America, National Aeronautics and Space Administration, 3,701,894.

Coviello, Joseph: *See*—
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.

Cowan, Arnold A., to Bobrick Aero Missile Products. Composite construction for nipple used in ground starting for jet engines. 3,701,552, Cl. 285-158.000.

Cox, Arthur T. Guides for sliding doors. 3,701,179, Cl. 16-90.000.

Cox, Edwin W., to Cox, W. T., Company. Convertible raid-highway vehicle. 3,701,323, Cl. 105-215.00c.

Cox, W. T., Company: *See*—
Cox, Edwin W., 3,701,323.

Coyne et Bellier, Bureau d'Ingenieurs Conseils, mesne: *See*—
Puyo, Andre; and Habib, Pierre Andre, 3,701,554.

Crawsord, Gerald R.; and Wenther, Joseph F., to Concrete Pipe Machinery Company. Lock assembly for connecting a vibrating core of a concrete pipe making machine. 3,701,617, Cl. 425-186.000.

Crivello, James V., to General Electric Company. Process for making poly(arylenevinylenes). 3,701,740, Cl. 260-2.00h.

Cronert, Dieter: *See*—
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Cronin, Michael J., to Lockheed Aircraft Corporation. Flat cable electrical wiring system. 3,701,964, Cl. 339-17.00f.

Crosby, Robert C.; and Holley, John D., to Marmon Group, Inc., The. Railroad tie shredder. 3,701,483, Cl. 241-32.000.

Cross, Walter Peter. Battery casting of concrete panels. 3,701,508, Cl. 249-129.000.

Crown Zellerbach Corporation: *See*—
Shilling, Wilbur L., 3,701,814.

Crum, James N., to Harris-Intertype Corporation. Circumferential and lateral web registration control system. 3,701,464, Cl. 226-3.000.

Culligan International Company: *See*—
Morrison, Edwin A., 3,701,360.

Curtiss-Wright Corporation: *See*—
Palma, Michael A.; and Minarick, Joseph W., 3,701,401.
Watts, Hargus, 3,701,381.

Cutler-Hammer Inc.: *See*—
Turkish, Disney, 3,701,949.

Dahmen, Karel R., to Continental Carbon Company. Process and apparatus for the production of large particle-size, low structure carbon black. 3,701,827, Cl. 423-456.000.

Dainichi Nippon Cables Ltd.: *See*—
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Dainippon Pharmaceutical Co., Ltd.: *See*—
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.

Dalebout, Melvin w. Ski boot. 3,701,208, Cl. 36-2.5al.

Danfoss A/S: *See*—
Petersen, Tom Kastrup; and Henriksen, Neils Juul, 3,701,939.

Daniel Industries, Inc.: *See*—
Stroman, Larry J., 3,701,280.

Daniels, David A.; and Wendler, Kenneth T., to Grace, W. R., & Co. Extreme pressure properties of synthetic lubricants. 3,701,730, Cl. 252-49.900.

Dart Industries, Inc.: *See*—
Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., 3,701,751.

Davies, John S. Fire detection system and unit. 3,701,985, Cl. 340-228.000.

Davis, Ariel Rual. Framework for supporting air cooled electrical and electronic equipment. 3,701,928, Cl. 317-99.000.

Davis, Roderic A., II, to International Business Machines Corporation. Table driven program. 3,702,007, Cl. 444-1.000.

Davis, Stuart C., to Photo Corporation of America. Photographic camera exposure controlling means. 3,701,308, Cl. 95-11.50r.

Davis, Ward B., to Stesiliver Control Royalties. Disposable colorimetric ph indicator and sampling device for swimming pool water and thelike. 3,701,633, Cl. 23-253.0tp.

Dawe's Laboratories, Inc.: *See*—
Lakshminarayanan, Krishnaiyer, 3,701,715.

De Rooij, Abraham H.; and Kwanten, Ferdinand J. G., to Stamicarbon N.V. Cyclic process for the preparation of an oxime from a hydroxylammonium salt solution. 3,701,809, Cl. 260-566.00a.

De Rossi, Mario, to Consiglio Nazionale Delle Ricerche. Zinc-zinc halide storage battery. 3,701,684, Cl. 136-30.000.

De Vries, Douwe: *See*—
Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E., 3,701,549.

De Vries, Robert C.; and Fleischer, James F., to General Electric Company. Cubic boron nitride preparation from lithium-boron-nitrogen mixture. 3,701,826, Cl. 423-290.0on.

De Young, Robert J.: *See*—
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.

Dede, Joseph B., Jr.: *See*—
Horowitz, Frederic; and Dede, Joseph B., Jr., 3,701,743.

Deere & Company: *See*—
Hennen, John Joseph, 3,701,239.
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, 3,701,393.
Patterson, Roger Lee; and Ventresca, Mario, 3,701,385.
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Delaware SDS, Inc., mesne: *See*—
Mendelson, Myron J.; and England, Alfred W., 3,701,977.

Delbouille, Andre, to Solvay & Cie. Process for the polymerization of α-olefins. 3,701,766, Cl. 260-93.700.

Delligatti, Patrick. Hour and/or minute code marker. 3,702,000, Cl. 346-92.000.

DeMeyer, Roy W., to Colorado Manufacturing Corporation. Pressure gauge. 3,701,284, Cl. 73-41.00c.

Dermody, William J.; and Oltman, John E., to ESB Incorporated. Battery having sealant impregnated into separator. 3,701,690, Cl. 136-175.000.

Dervy, Aram J., to McDonnell Douglas Corporation. Method of fabricating a rocket nozzle liner. 3,701,704, Cl. 156-297.000.

Detroit Bullet Trap Corporation: *See*—
Nikoden, Joseph, 3,701,532.

Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., to Beckman Instruments, Inc. Liquid analysis apparatus. 3,701,716, Cl. 195-127.

Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See*—
Bader, Erich; Kannenberg, Karl G.; and Ricke, Hans-Benno, 3,701,676.
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.

Deutschman, Archie J., Jr.: *See*—
Ashby, Carl T.; Berry, James W.; and Deutschman, Archie J., Jr., 3,701,648.

DHJ Industries, Inc.: *See*—
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Diebold, Incorporated: *See*—
Anders, Walter G.; and Obermiller, Herbert C., 3,701,497.
Ekama, Pieter J., 3,701,496.

Dietz, Ernst Hermann, to Prontor Werk Gauthier, Alfred, GmbH. Photographic shutter with electronic time setting device. 3,701,310, Cl. 95-53.00e.

Dismon, Peter; and Jansen, Heinz, to Glanzstoff AG. Apparatus for applying a wire coil to a fine wire strand. 3,701,244, Cl. 57-18.000.

Dixson, Richard E.; and Merrill, Linus R. Device for demounting tires. 3,701,375, Cl. 157-1.330.

Docent Corporation: *See*—
Wolf, Stanley, 3,701,205.

Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., to Jamesbury Corporation. Handle for positioning an element. 3,701,286, Cl. 74-142.000.

Donninger, Cyril; Schofield, John A.; and Hawes, John E., to Shell Oil Company. Pyridine carbamates. 3,701,779, Cl. 260-294.80g.
Donovan, Howard Gleason, to Johns-Manville Corporation. Apparatus and process for suspending solids. 3,701,484, Cl. 241-5.000.
Doo, Ven Y.; Regh, Joseph; and Seto, David K., to International Business Machines Corporation. Photolithographic masks of semiconductor material. 3,701,659, Cl. 96-38.300.
Dorken & Mankel KG: *See—*
Jentsch, Dietrich; and Cleff, Herbert, 3,701,180.
Dow Chemical Company, The: *See—*
Routson, Willis G.; and Caldwell, Albert L., 3,701,384.
Downey, Thomas A., to Zurn Engineers. Vehicle mounted earth separating and conveying system. 3,701,422, Cl. 209-241.000.
Drake, George L., Jr.: *See—*
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., 3,701,626.
Dresser Industries, Inc.: *See—*
Feucht, Jacob E., 3,701,386.
Janssen, Hermann W.; and Mooring, James F., 3,701,902.
Reese, Anthony L., 3,701,362.
Williams, Robert C., 3,701,382.
Drury, James A. Microscope slide dryer. 3,701,201, Cl. 34-60.000.
Du Chaffaut, Jean Amaudric: *See—*
Bennett, Ian Cameron; and Du Chaffaut, Jean Amaudric, 3,701,713.
Du Pont de Nemours, E. I., and Company: *See—*
Barkley, John R.; O'Reilly, James J.; and Waring, Robert K., Jr., 3,701,585.
Franklin, Richard C., 3,701,624.
Gray, Walter Clarke, 3,701,248.
Knoth, Walter H., Jr.; and Parshall, George W., 3,701,804.
Settlage, Paul Herman; and Thornton, Roger Lea, 3,701,745.
Wray, Rhodes Ebeling, 3,701,490.
Du Rocher, Gideon A.; and Miller, Ellsworth S., to Essex International, Inc. Connector for electrical terminals. 3,701,965, Cl. 339-60.00m.
DUAL Gebruder Steidinger: *See—*
Laue, Eckhard, 3,701,534.
Ducasse, Viateur. Excess smoke eliminating system for boilers. 3,701,622, Cl. 431-76.000.
Dugge, Richard H.; and Carney, John L., Jr., to ACF Industries Incorporated. Hopper outlet valve providing lading samplying. 3,701,460, Cl. 222-193.000.
Dummermuth, Ernst, to Allen-Bradley Company. Digital differential analyzer employing multiple overflow bits. 3,701,890, Cl. 235-150.310.
Dunn, George L.: *See—*
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.
Dunne, Gilbert M., Jr.: *See—*
Rotsky, Bernard A.; and Dunne, Gilbert M.; Jr., 3,701,236.
Dunning, Franklin W.; and Gorjanc, Henry A., to McNeil Corporation. Storage and retrieval apparatus. 3,701,442, Cl. 214-16.40a.
Durkee, Gale H. Adjustable rake. 3,701,243, Cl. 56-400.180.
Duro-Dyne Corporation: *See—*
Hinden, Milton; and Porat, David, 3,701,878.
Dusing, Gerhard: *See—*
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, 3,701,480.
Duval, Georges A.; and Hernandez, Francois, to International Standard Electric Corporation. Selection systems for electrical circuits or equipments. 3,701,853, Cl. 179-18.0ha.
Eastman Kodak Company: *See—*
Barr, Charles R.; Williams, John; and Whitmore, Keith E., 3,701,783.
Brown, Barry M.; and Ray, Elbert L., 3,701,431.
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.
Meyer, Max F., Jr.; Combs, Robert L.; and Wooten, Willis C., Jr., 3,701,741.
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Bovarnick, Bennett; Eberts, Robert E.; and Nadkarni, Ravindra, 3,701,739.
Eck, Herbert Perciva. Bearing assembly. 3,701,571, Cl. 308-18.000.
Eck, Leonard F. Rotary engine. 3,701,306, Cl. 91-482.000.
Ecodyme Corporation, mesne: *See—*
Lindstol, Anders, 3,701,423.
Edamitsu, Masayuki: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Substituted [3-(4-phenyl-1-piperazinyl) propoxy or propyl thio] anilines. 3,701,777, Cl. 260-268.0ph.
Edmonds, James T., Jr.: *See—*
Grimes, Monford D.; and Edmonds, James T., Jr., 3,701,665.
Egnelov, Gunnar Kristoffer; and Eriksson, Sune Vilhelm, to Atlas Capco Aktiebolag. Wire line core drilling apparatus. 3,701,389, Cl. 175-246.000.
Eichers, Ursula: *See—*
Magosch, Karl-Heinz; Rombusch, Konrad; and Eichers, Ursula, 3,701,765.
Eisele, Werner Frank; and Zimmermann, Detlef, to Northern Electric Company Limited. Multiple conductor cable terminal. 3,701,835, Cl. 174-41.000.
Eisenlohr, Dieter Moritz; and Romero, Roderic, to Bell Telephone Laboratories, Incorporated. Switching network test circuit. 3,701,863, Cl. 179-175.20r.
Ekama, Pieter J., to Diebold, Incorporated. Pneumatic tube system Y-tube diverter construction. 3,701,496, Cl. 243-29.000.
Eklund, Sven Emil, to AB Gustavsbergs Fabriker. Thermostat-controlled mixing valve. 3,701,472, Cl. 236-12.00r.
Eldon Industries, Inc.: *See—*
Paulson, Erland G.; and Mandala, Charles G., 3,701,391.
Electro Development Corporation: *See—*
Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., 3,701,279.
Electron Emission Systems, Inc., mesne: *See—*
Geppert, Donovan V., 3,701,919.
Elektriska Svetsningsaktiebolaget: *See—*
Andreasson, Per Arvid; and Persson, Mats Olof, 3,701,251.
Ellzey, Samuel E., Jr.; Connick, William J., Jr.; Reeves, Wilson A.; and Drake, George L., Jr. Process for rendering cellulosics water-and oil-repellent. 3,701,626, Cl. 8-115.500.
Elscint Ltd.: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.
Emerson Electric Co.: *See—*
Krausser, Friedrich Johann, 3,701,951.
Emhart Corporation: *See—*
Kulig, Constantine W., 3,701,407.
Emmerson, Arthur F. Automotive vehicle body access and drain plug. 3,701,560, Cl. 296-1.00r.
Engelhard Minerals & Chemicals Corporation: *See—*
Mercade, Venancio V., 3,701,417.
England, Alfred W.: *See—*
Mendelson, Myron J.; and England, Alfred W., 3,701,977.
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, to Imperial Chemical Industries Limited. Electrodes for electrochemical processes. 3,701,724, Cl. 204-290.00f.
Epsco, Incorporated: *See—*
Miller, Herbert Edward, 3,701,978.
Erickson, Gustav F., to U.M.C. Industries, Inc. Money-handling device. 3,701,523, Cl. 270-67.000.
Erickson, Lloyd A.: *See—*
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Eriksson, Sune Vilhelm: *See—*
Egnelov, Gunnar Kristoffer; and Eriksson, Sune Vilhelm, 3,701,389.
Erkfritz, Donald S., to Ingersoll Milling Machine Company. Slotting cutter and indexable inserts therefor. 3,701,187, Cl. 29-95.000.
Erlichman, Irving, to Polaroid Corporation. Reflex member velocity control means. 3,701,304, Cl. 95-42.000.
Ervin, Guy, III, to North American Rockwell Corporation. Process for a solid state cell by spraying with an organic solvent. 3,701,685, Cl. 136-83.00r.
ESB Incorporated: *See—*
Dermody, William J.; and Oltman, John E., 3,701,690.
Eskew, Mark F.; and Hyde, Beverly F., to Texas Instruments Incorporated. Process and system for routing interconnections between logic system elements. 3,702,004, Cl. 444-1.000.
Esquire, Inc.: *See—*
Mc Namara, Albert C., Jr., 3,701,898.
Essex International, Inc.: *See—*
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Esso Research and Engineering Company: *See—*
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Worley, Arthur C.; and Kane, Ronald S., 3,701,359.
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Evans, James G.: *See—*
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Evans, Pat E.: *See—*
Congleton, David B.; Roberts, Donald L.; and Evans, Pat E., 3,701,999.
Evans, Ralph Henry, Jr.; and Holmlund, Chester Eric, to American Cyanamid Company. Preparation of 5,6-dihydro-5-hydroxy-6-propenyl-2- pyrone by fermentation and derivatives thereof. 3,701,787, Cl. 260-343.500.
Excel Mfg., Ltd.: *See—*
Malmgren, John Stanley, 3,701,276.
Ezekiel, Frederick D.: *See—*
Schubert, Dale W.; and Ezekiel, Frederick D., 3,701,499.
FA. Saba Schwarzwader Apparate-Bau-Anstalt August Schwer Sohne GmbH: *See—*
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Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.
Fairchild Industries, Inc.: *See—*
Jordan, David B., 3,701,288.
Fancher, Llewellyn W., to Stauffer Chemical Company. Plant growth regulators. 3,701,799, Cl. 260-468.00p.
Fanto-Kurtos, Peter Robert: *See—*
Berglund, Per Henrik Sixten; Fanto-Kurtos, Peter Robert; and Mattson, Nils Albert Uno, 3,701,621.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Farone, Eugene Richard, to Lubrizol Corporation, The. Preparation of thermosetting compositions and thermoset resins from polymers of N--oxohydrocarbon-substituted acrylamides. 3,701,754, Cl. 260-64.000.
Farrell, Robert P., Jr., to United States of America, Interior, mesne. Snagging device for inverted grinder. 3,701,486, Cl. 241-46.110.
Farrissey, William J., Jr.: *See—*
Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., 3,701,756.
Fassler, Michael H.; and Brinker, Norman E., to United Aircraft Corporation. Process of casting utilizing magnesium oxide cores. 3,701,379, Cl. 164-132.000.
Fathauer, George H., to Overton Corporation. Sample scale. 3,701,390, Cl. 177-113.000.
Favreau, Marcel, to Vilas Industries Limited. Adjustable furniture leg. 3,701,506, Cl. 248-188.500.
Fearon, Joseph G.; and Battermann, George Monte Gilbert, to Morrison-Knudsen Company, Inc. Method and apparatus for laying railroad ties on a prepared road surface. 3,701,320, Cl. 104-6.000.
Feldmuhle Aktiengesellschaft: *See—*
Barnscheidt, Wolfgang, 3,701,335.
Fenton, Francis Michael: *See—*
Anderson, Harold Peter; and Fenton, Francis Michael, 3,701,854.
Fenwick, Jay G., to Streater Industries, Inc. Shelf and bracket assembly. 3,701,325, Cl. 108-1.000.
Fernandez, Jose J. Vacuum spectacle bridge. 3,701,592, Cl. 351-130.000.
Ferrara, Peter B., to United States of America, Army. Fiberoptic clearance light system. 3,701,498, Cl. 244-17.110.
Feucht, Jacob E., to Dresser Industries, Inc. Hydraulic drifter. 3,701,386, Cl. 173-78.000.
Feugere, Francis: *See—*
Quesnel, Guy; and Feugere, Francis, 3,701,487.
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Fichtel & Sachs AG: *See—*
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Schwerdhoefer, Hans Joachim, 3,701,333.
Schwerdhofer, Hans Joachim; and Wolf, Gerhard Max, 3,701,546.
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Field, William J., to Fields Industrial Research (1971) Limited. Portable cutting torch apparatus. 3,701,515, Cl. 266-23.00k.
Fields Industrial Research (1971) Limited: *See—*
Field, William J., 3,701,515.
Finck, Patricia A., to Colgate-Palmolive Company. Automatic dishwashing compositions. 3,701,735, Cl. 252-99.000.
Finney, Philip F., to Thermo-Couple Products Company, Inc. Metal cast cooking unit having a temperature sensitive control sensor. 3,701,884, Cl. 219-449.000.
Firestone Tire & Rubber Company, The: *See—*
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Fischer, Alfred; and Strawser, Terry M., to Tenneco Chemicals Inc. Oil-soluble mixed copper soap products. 3,701,729, Cl. 252-1.000.
Fischer, Jack, to Advertising Metal Display Co. Drawer slide assembly. 3,701,577, Cl. 312-339.000.
Fisher, Chester Donald, to Sprout, Waldron & Company, Inc. Pressurized refiner seal assembly. 3,701,488, Cl. 241-256.000.
Fisher Gange Limited: *See—*
Fisher, William Frederick, 3,701,377.
Graham, Eric Purdy, 3,701,378.
Fisher, Michael H., to Merck & Co., Inc. Imidazo [1,2-a] pyridines. 3,701,780, Cl. 260-290.800.
Fisher, William Frederick, to Fisher Gange Limited. Method and apparatus for die casting by pressure injection. 3,701,377, Cl. 164-113.000.
Fleischer, James F.: *See—*
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Fluoroware, Inc.: *See—*
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FMC Corporation: *See—*
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Goldstein, David, 3,701,737.
Radimer, Kenneth J.; and Munday, Theodore F., 3,701,825.
Willmore, Charles R., 3,701,840.
Folk, Kenneth Foster, to AMP Incorporated. Electrical bobbin with terminals. 3,701,961, Cl. 336-192.000.
Food Research & Equipment Company: *See—*
Boggs, Weldon C., 3,701,313.
Ford Motor Company: *See—*
Cagnon, Eugene C., 3,701,913.
Johnson, Olin B.; and Labana, Santokh S., 3,701,679.
Forestek, Clarence W. Method for producing fissures in metallic surfaces of chromium. 3,701,698, Cl. 156-18.000.
Fork, Frank W., to Robertson, H. H., Company. Multiple electrical service underfloor access housing. 3,701,837, Cl. 174-50.000.
Formica Corporation: *See—*
Giddings, Sydney Arthur; and Valerius, Paul Nicholas, 3,701,706.
Kelly, Peter Bernard, 3,701,711.
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., to Blair/Johnson, Inc. Simple protein and method of deriving it from liver using an aqueous solution of a divalent metal ion. 3,701,768, Cl. 260-112.00r.
Foster Wheeler Corporation: *See—*
Willis, Cullie B., Jr., 3,701,341.
Fougere, Guy L. Coin selector utilizing a coin impeller. 3,701,405, Cl. 194-101.000.
Frank, Benno: *See—*
Treptow, Heinz; Frank, Benno; and Schippers, Heinz, 3,701,268.
Frank, Robert G., to PPG Industries Inc. Moving glass locating devices. 3,701,643, Cl. 65-62.000.
Frank, Robert G., to PPG Industries, Inc. Method and apparatus for shaping glass sheets with opposed roller sets. 3,701,644, Cl. 65-106.000.
Franke, John L.: *See—*
Jacob, Abraham H.; and Franke, John L., 3,701,869.
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, to Sylvania Electric Products, Inc. Magnetostatically-coupled thin-film magnetic memory devices. 3,701,983, Cl. 340-174.0qa.
Franklin, Richard C., to Du Pont de Nemours, E. I., and Company. Dyeing cotton and paper with bis(arylazo or sulfoarylazo)-J-acid urea reaction mixture and composition therefor. 3,701,624, Cl. 8-7.000.
French, William H.; and Rushton, Brian M., to Ashland Oil, Inc. Peroxide bleaching of epoxidized fatty acid esters. 3,701,767, Cl. 260-97.500.
Freudeberg, Jurgen; and Rudolff, Hermann, to U.S. Philips Corporation. Memory matrix unit. 3,701,982, Cl. 340-174.0ma.
Friedrich Uhde GmbH: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.
Friesen, Peter. Trailer construction. 3,701,561, Cl. 296-27.000.
Fritzsche, Donald E., to General Electric Company. Work surface clamping means for drop-in cooking equipment. 3,701,171, Cl. 4-187.00a.
Froget, Pierre, "Griesser" Alpes Maritines. Device for slide-shifting and winding twin vertical screens or blades. 3,701,376, Cl. 160-121.000.
Frost, Wade W., to Oxford Industries, Inc. Garment retriever and stacker. 3,701,328, Cl. 112-121.290.
Fuji Photo Film Co., Ltd.: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.
Fujio, Yoshinori: *See—*
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.
Fujisaki, Hiroshi: *See—*
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, 3,701,663.
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, to Dainichi Nippon Cables Ltd. Manufacture of electrically insulating paper. 3,701,720, Cl. 204-132.000.
Fujitsu Limited: *See—*
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.
Fukada, Kenzo: *See—*
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, 3,701,516.
Fukushima, Keitaro: *See—*
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Fukuyama, Shunsaku: *See—*
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Fulcher, Junius H., to Cooper Industries, Inc. Adjustable positionable structural device. 3,701,226, Cl. 52-109.000.
Funakoshi, Yoshiro: *See—*
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.
Furst, Stefan, to Schlafhorst, W., & Co. Warp knitting machine. 3,701,267, Cl. 66-86.000.
Furusawa, Hironobu: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Non-aqueous electrolyte for lithium electrochemical generators. 3,701,688, Cl. 136-100.00r.
Gadler, Gustav Ake Bernhard. Transfer device for use in cutting units for paper sheets. 3,701,441, Cl. 214-8.5ss.
GAF Corporation: *See—*
Plue, Arnold F.; and Katz, Leon, 3,701,769.
Gagnon, Pierre; and Laforest, Pierre. Batching system. 3,701,409, Cl. 198-54.000.
Gaiser, Robert F., to Bendix Corporation, The. Hydraulic master cylinder. 3,701,257, Cl. 60-54.60f.

Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., to Atlantic Design & Development Corporation. Integrated push button panel for controlling aircraft instrumentalities. 3,701,945, Cl. 325-25.000.

Garand, Donald J.: *See—*
Borelli, Ronald F.; and Garand, Donald J., 3,701,337.

Garbuzov, Vladimir Mikhailovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.

Gardner, Donald J. Vehicle headlight switch with time delay. 3,701,904, Cl. 307-10.0bp.

Garrett Corporation, The: *See—*
Matthews, Jennifer V.; and Hamrick, Thomas T., 3,701,536.

Gartman, William W.; Evans, James G.; and Allen, Harold A., to Texas Instruments Incorporated. Thin film deposition system. 3,701,682, Cl. 117-201.000.

Gas Council, The: *See—*
Nicklin, Thomas, 3,701,811.

Gasser, Hermann; and Hotz, Hansruedi, to Luwa AG. Method and apparatus for treatment of an endless fibre strand or the like. 3,701,182, Cl. 28-59.000.

Gassino, Teresio; and Olivei, Alfredo, to Olivetti, Ing. C., & C., S.p.A. Method of electrosensitive printing or recording and apparatus therefor. 3,702,001, Cl. 346-74.00e.

Gatti, Alvaro: *See—*
Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio, 3,701,541.

Gebhart, Herbert J., Jr.; and Makin, Earle C., Jr., to Monsanto Company. Process for preparation of tricyclopentadiene. 3,701,812, Cl. 260-666.0py.

Gee, Wendell P.: *See—*
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., 3,701,286.

Geerling, Leonardus Johannes, to Tektronix, Inc. Ramp generator a chart recorder. 3,701,993, Cl. 346-33.00r.

General Electric Company: *See—*
Chadwick, Philip, 3,701,938.
Cook, Newell C., 3,701,639.
Crivello, James V., 3,701,740.
De Vries, Robert C.; and Fleischer, James F., 3,701,826.
Fritzsche, Donald E., 3,701,171.
Grubb, Willard T.; and Macur, Robert Anthony, 3,701,687.
Henkes, John L., Jr., 3,701,581.
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.
Mets, Edwin J., 3,701,696.
Miller, Richard H., 3,701,866.
Mundy, Joseph L., 3,701,980.
Richardson, Hugh H., 3,701,877.
Shaw, Harvey P., 3,701,753.

General Instrument Corporation: *See—*
Jacob, Abraham H.; and Franke, John L., 3,701,869.

General Kinetics, Inc.: *See—*
Gutterman, Robert P.; and Washington, Le Baron H., 3,701,565.

Gentry, Hermond G., to Mead Corporation, The. Packaging machine. 3,701,230, Cl. 53-48.000.

Georgia-Pacific Corporation: *See—*
Horowitz, Frederic; and Dede, Joseph B., Jr., 3,701,743.

Geppert, Donovan V., to Electron Emission Systems, Inc., mesne. Integrated vacuum circuits. 3,701,919, Cl. 313-250.000.

Gerbier, Gerard Marcel: *See—*
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, 3,701,688.

Gerdes, Dirk: *See—*
Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, 3,701,635.

Germain, Leo M., to Gulf Oil Canada Limited. Adhesively laminated flexible webs. 3,701,710, Cl. 161-148.000.

Giddings, Sydney Arthur; and Valerius, Paul Nicholas, to Formica Corporation. Process for preparing a decorative laminate in which a thermoplastic film is used to absorb thermal shock shear stress. 3,701,706, Cl. 156-306.000.

Gilliam, Joe L., to Melvin, Mary E. Salt water sinker. 3,701,212, Cl. 43-44.870.

Gillig, Witmar: *See—*
Von, Angerer Roland; and Gillig, Witmar, 3,701,183.

Gilmore, Samuel E.: *See—*
Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E., 3,701,549.

Glanzstoff AG: *See—*
Dismon, Peter; and Jansen, Heinz, 3,701,244.

Glaser, David, to Burroughs Corporation. Display panel having gas-filled cells utilizing phosphor materials. 3,701,916, Cl. 313-108.00b.

Glaser, David, to Burroughs Corporation. System for operating a display panel. 3,701,924, Cl. 315-84.600.

Glaser, Josef: *See—*
Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.

Glinski, Vincent J., to Bell Telephone Laboratories, Incorporated. Monolithic integrated circuit structures and methods of making same. 3,701,198, Cl. 29-578.000.

Global Marine Inc.: *See—*
Koot, Nicholas L., 3,701,387.

Goede, Walter F., to Northrop Corporation. Inherent storage for charged particle beam scanner. 3,701,923, Cl. 315-12.000.

Goetz, George G. Light modulating deflectable membrane. 3,701,586, Cl. 350-161.000.

Goetz, Louis P.: *See—*
Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., 3,701,989.

Goldstein, David, to FMC Corporation. Sodium carbonate-sodium bicarbonate agglomerate. 3,701,737, Cl. 252-182.000.

Goldstein, Richard M.: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.

Goldsworthy, William D.; and Bunnell, John A. Apparatus for winding filament about three axes of a mandrel. 3,701,489, Cl. 242-7.200.

Gomada, Nobuyasu; and Kosaka, Genzo, to Toyo Kogyo Co., Ltd. Apparatus for induction hardening of anti-wear mechanical members. 3,701,874, Cl. 219-10.570.

Gomez-de-Bonilla, Juan Kindelan Y.: *See—*
Vayssiere, Pierre; and Gomez-de-Bonilla, Juan Kindelan Y., 3,701,519.

Gono, Yoshio: *See—*
Sanjo, Sadao; Yamada Hiroshi; and Gono, Yoshio, 3,701,608.

Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,701,186.
McGinnis, Herbert E., 3,701,411.
Murphy, Walter T.; and Japs, Archie B., 3,701,681.

Goodrich, B. J., Company, The: *See—*
Zeffer, Arthur A.; and Briscoe, James A., 3,701,500.

Goold, Raymond. Coupling units for articulated vehicles. 3,701,547, Cl. 280-432.000.

Goransson, Ingemar E.: *See—*
Granstrom, Staffan N.; and Goransson, Ingemar E., 3,701,357.

Gorjanc, Henry A.: *See—*
Dunning, Franklin W.; and Gorjanc, Henry A., 3,701,442.

Goscenski, Edward J., Jr.: *See—*
Lewis, Richard L.; and Goscenski, Edward J., Jr., 3,701,305.

Goss, Gas, Inc.: *See—*
Goss, Herbert C., 3,701,463.

Goss, Herbert C., to Goss, Gas, Inc. Holding and carrying rack for miniature oxygen and fuel gas tanks. 3,701,463, Cl. 224-45.00r.

Gotch, Henry Edward: *See—*
Neale, Michael John; and Gotch, Henry Edward, 3,701,475.

Goto, Nobuo: *See—*
Miyauchi, Sakae; Tanaka, Kazumitsu; and Goto, Nobuo, 3,701,847.

Gould Inc., mesne: *See—*
Vignini, Walter R., 3,701,862.

Gourdine Systems, Inc.: *See—*
Rotsky, Bernard A.; and Dunne, Gilbert M., Jr., 3,701,236.

Grace, W. R., & Co.: *See—*
Daniels, David A.; and Wendler, Kenneth T., 3,701,730.
Lard, Edwin W., 3,701,721.
Peterson, John B., 3,701,282.
Sternau, Martin M., 3,701,234.

Graham, Eric Purdy, to Fisher Gange Limited. Method of injection die casting. 3,701,378, Cl. 164-113.000.

Granstrom, Staffan N.; and Goransson, Ingemar E., to Allmanna Svenska Elektriska Aktiebolaget. Electromagnetic valve means for tapping molten metal. 3,701,357, Cl. 137-81.500.

Gray, Bronis G., to Airco, Inc. Oxy-fuel burners in furnace tuyeres. 3,701,517, Cl. 266-29.000.

Gray, Walter Clarke, to Du Pont de Nemours, E. I., and Company. Interlaced multifilament yarn. 3,701,248, Cl. 57-153.000.

Green, Richard R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,701,894.

Greenfield, Stanley A.: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,701,784.

Greenway, John Michael, to Imperial Chemical Industries Limited. Ring threading tool. 3,701,246, Cl. 57-34.00r.

Grefco, Inc.: *See—*
Ruff, David L.; and Siddiqui, Nadeem U., 3,701,672.

Grier, John D., to Owens-Illinois, Inc. Method of increasing light transmission efficiency of gas discharge device. 3,701,184, Cl. 29-25.160.

Grimes, Monford D.; and Edmonds, James T., Jr., to Phillips Petroleum Company. Reduction of sulfur extraction from poly(arylene sulfied) coated cookware. 3,701,665, Cl. 99-1.000.

Grodsky, Gerold M.: *See—*
Fortini, Jack G.; Blair, Walter A.; and Grodsky, Gerold M., 3,701,768.

Gronke, Ronald E.; and Schultz, William H., to Skil Corporation. Circular saw. 3,701,369, Cl. 143-43.00c.

Grosseau, Albert A. G., to Societe Anonyme Automobiles Citroen. Vehicle suspension system. 3,701,542, Cl. 280-124.00b.

Grossman, James Douglas; and Light, Kenneth K., to International Flavors and Fragrances Inc. Alkyl esters of 4-chloro-alkyl resorcylic acid. 3,701,801, Cl. 260-473.00s.

Groth, George Stephen, to Bell Telephone Laboratories, Incorporated. Program for polling party line data stations for message pickup. 3,702,008, Cl. 444-1.000.

Grubb, Willard T.; and Macur, Robert Anthony, to General Electric Company. Electrode containing a catalytic coating of platinum, palladium, and a third metal and fuel cell utilizing same. 3,701,687, Cl. 136-86.00r.

Grumman Aerospace Corporation: *See—*
Bergin, Michael T.; and Bartolotta, Charles S., 3,701,602.

Grunewalder, Werner, to Henkel & Cie G.m.b.H. Process for the chemical cleaning of textiles. 3,701,627, Cl. 8-142.000.

Gstohl, Norbert; and Tauern, Dankmar, to Hilti Aktiengesellschaft. Electrical precleaning for stud-welding to a metal. 3,701,879, Cl. 219-99.000.

GTE Sylvania Incorporated: *See—*
Wanner, Louis R., 3,701,920.

Gudmestad, Ragnar, to Atros Engineering Company. Wire length measuring and cutting apparatus. 3,701,301, Cl. 83-151.000.

Guenther, Harvey C. Blood exchanging apparatus and process. 3,701,350, Cl. 128-214.00b.

Guidicelli, Charles, to Societe Anonyme STOP. Electromagnetic pump. 3,701,614, Cl. 417-413.000.

Guidicelli, Charles, to Societe Anonyme STOP. Control system for a windshield wiper and cleaner uint. 3,701,934, Cl. 318-102.000.

Guillot, Francis Jacques. Coin size tester preventing fraudulent operation of parking meters. 3,701,600, Cl. 194-74.000.

Gulf Oil Canada Limited: *See—*
Germain, Leo M., 3,701,710.

Gulf Research & Development Company: *See—*
Neighbors, Ralph P., 3,701,646.

Gutterman, Robert P.; and Washington, Le Baron H., to General Kinetics, Inc. Article input device for liquid-containing apparatus. 3,701,565, Cl. 302-14.000.

Haavaldsen, Johan: *See—*
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.

Habib, Pierre Andre: *See—*
Puyo, Andre; and Habib, Pierre Andre, 3,701,554.

Hack, Al, & Associates, Inc.: *See—*
Hack, Albert G. W.; and Hamilton, John B., 3,701,651.

Hack, Albert G. W.; and Hamilton, John B., to Hack, Al, & Associates, Inc. Process for production of mercury. 3,701,651, Cl. 75-101.00r.

Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., to Eastman Kodak Company. Hydrocarbon dac-b resin prepared by polymerizing dac-b using two polymerization temperature ranges followed by hydrogenation. 3,701,760, Cl. 260-82.000.

Hagemeyer, Hugh John, Jr.: *See—*
Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., 3,701,798.

Hagiwara, Zenji, to Nippon Rensui Kabushiki Kaisha. Lithium isotope separation. 3,701,638, Cl. 23-312.000.

Haines, Jack A., to Heath Company. Variable width slit mechanism for use in a scanning monochromator. 3,701,589, Cl. 350-271.000.

Hall, Raymond Frederick: *See—*
Allen, David Henry Odhams; Hall, Raymond Frederick; and Weston, George Frederick, 3,701,918.

Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company NV. Bearing support and cooling means. 3,701,911, Cl. 310-60.000.

Halpaap, Herbert: *See—*
Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, 3,701,678.

Hamilton, John B.: *See—*
Hack, Albert G. W.; and Hamilton, John B., 3,701,651.

Hamilton Watch Company: *See—*
Bergey, John M.; Blouch, Eric L.; and Walton, Richard S., 3,701,249.

Hammes, Paul A.: *See—*
Morse, Lewis D.; and Hammes, Paul A., 3,701,668.

Hammond, Donald L., to Hewlett-Packard Company. Acousto-optical filter having scanned acoustic frequency compensated by controlled distributed birefringence. 3,701,583, Cl. 350-149.000.

Hamrick, Thomas T.: *See—*
Matthews, Jennifer V.; and Hamrick, Thomas T., 3,701,536.

Hanna, Daniel C.: *See—*
Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David (said Ebeling and said Hildebrand assors. to said), 3,701,356.

Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David, said Ebeling and said Hildebrand assors. to said Hanna, Daniel C. Car washing apparatus. 3,701,356, Cl. 134-58.00r.

Hansen, Stuart C., to Varian Associates. Microwave cavity resonator with printed circuit interior walls and modulation coils. 3,701,959, Cl. 333-83.00r.

Hardison, Leslie C., to Universal Oil Products Company. Method and means for two-stage catalytic treating of engine exhaust gases. 3,701,823, Cl. 423-213.000.

Hardman, Bruce B.: *See—*
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., 3,701,795.

Hare, Terence G., to Miller Manufacturing Company. Faucet body and method of manufacture. 3,701,364, Cl. 137-625.410.

Hargitay, Bartholomew, to Union Carbide Corporation. Process for the fractionation of polymers. 3,701,764, Cl. 260-88.301.

Harker, Robert Ian, to Johns-Manville Corporation. Hydrothermal synthesis, of perovskite composed of $CaO\text{-}TiO_2$. 3,701,828, Cl. 423-598.000.

Harokopus, William P.: *See—*
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., 3,701,568.

Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., to Electro Development Corporation. Aircraft weight and center of gravity indicator system. 3,701,279, Cl. 73-65.000.

Harris, Kenneth D. Clamp. 3,701,555, Cl. 287-110.000.

Harris, William G., Jr., to United States of America, Navy. Mooring line cutter system. 3,701,331, Cl. 114-221.00a.

Harris-Intertype Corporation: *See—*
Crum, James N., 3,701,464.
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, 3,701,176.
Sylvester, Peter A.; and Wojciechowski, Walter J., 3,701,316.

Harte, Kenneth J.: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., 3,701,979.

Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, to Allen & Hamburys Limited. Phenylethanolamines. 3,701,808, Cl. 260-556.00a.

Hartsell, Joe L. Collet assembly. 3,701,538, Cl. 279-30.000.

Harvey, Douglas G. Inflatable intravaginal applicator for animals. 3,701,351, Cl. 128-260.000.

Hasegawa, Hiroshi; and Iriuchijima, Makoto. Process for the production of methyl ethyl ketone from butene. 3,701,810, Cl. 260-597.00b.

Haslem, Alfred E. Tilting bed trailer. 3,701,445, Cl. 214-506.000.

Hatada, Masamichi: *See—*
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, 3,701,925.

Hawes, John E.: *See—*
Donninger, Cyril; Schofield, John A.; and Hawes, John E., 3,701,779.

Hayashibara Company: *See—*
Okada, Shigetaka; and Tsuyama, Naoto, 3,701,714.

Heartness, Olaf. Oil pollution barrier. 3,701,259, Cl. 61-1.00f.

Heath Company: *See—*
Haines, Jack A., 3,701,589.

Heath, Robert T.: *See—*
Webb, Richard C.; and Heath, Robert T., 3,701,885.

Hebeler, Charles B.: *See—*
Sanner, Gary L.; and Hebeler, Charles B., 3,701,971.

Heckert, David C., to Procter & Gamble Company, The. Preparation of alpha-haloketones using ultraviolet light. 3,701,722, Cl. 204-162.00e.

Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, to Medrad, Inc. Angiographic injector equipment. 3,701,345, Cl. 08/22/72.

Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, to Takeda Chemical Industries, Ltd. Method for puffing gelatinized rice grains. 3,701,667, Cl. 99-81.000.

Hellar, Martin W.; and Kiener, Michael A., to Addressograph-Multigraph Corporation. Simultaneous conversion and fusion of electrostatically produced printing masters. 3,701,673, Cl. 117-17.500.

Heller, Martin G.; and Kelly, Donald. De-reeling apparatus for electrical components. 3,701,298, Cl. 83-23.000.

Hendricks, Robert G.; and Eberhart, Billie J. Frame for utilization with a three-wheel, pedal driven vehicle. 3,701,545, Cl. 280-282.

Hendrickson, George Vernon, to Viking Snowmobile, Inc. Drive means for snowmobile devices. 3,701,394, Cl. 180-5.00r.

Henicke, Heinz: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Henkel & Cie G.m.b.H.: *See—*
Grunewalder, Werner, 3,701,627.

Henkes, John L., Jr., to General Electric Company. Stereoscopic enhancement of pictorial displays. 3,701,581, Cl. 350-144.000.

Hennen, John Joseph, to Deere & Company. Harvesting machine. 3,701,239, Cl. 56-13.500.

Henriksen, Neils Juul: *See—*
Petersen, Tom Kastrup; and Henriksen, Neils Juul, 3,701,939.

Henry, Jean Claude; and Billon, Gerard, to Merlin Gerin Societe Anonyme. Double pressure compressed air electric apparatus having an air drying device. 3,701,867, Cl. 200-148.00e.

Hensen, Friedhelm: *See—*
Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, 3,701,512.

Hepner, Charles F.; and Tzakis, George J., to Zenith Radio Corporation. Matrix amplifier network with novel D-C set-up arrangement. 3,701,843, Cl. 178-5.4sd.

Hercock, Robert James; and Scrutton, Simon Lindsay, to Ilford Limited. Liquid toners for electrophotography eontaining 12-hydroxy stearin. 3,701,731, Cl. 252-62.100.

Herff, Louis M., to Berry Metal Company. Oxygen lance control arrangement for basic oxygen furnace. 3,701,518, Cl. 266-34.01m.

Herman, Leslie E. Wire-formed pallet. 3,701,326, Cl. 108-53.000.

Hernandez, Francois. *See—*
Duval, Georges A.; and Hernandez, Francois, 3,701,853.

Herr, Milton E.: *See—*
Coats, John H.; Herr, Milton E.; and Herr, Ross R., 3,701,790.

Herr, Ross R.: *See—*
Coats, John H.; Herr, Milton E.; and Herr, Ross R., 3,701,790.

Herscovici, Saul: *See—*
Lemons, David Forrest; Marquart, Gordon Le Roy; and Herscovici, Saul, 3,701,393.

Hester, Jackson B., Jr., to Upjohn Company, The. 1-Carbolower alkoxy-6-phenyl-4h-s-triazols 1,4 benzodiazepine compounds. 3,701,782, Cl. 260-308.00r.

Hetrich, Harold Arthur, to Western Electric Company, Incorporated. Fluidic masking apparatus for etching. 3,701,705, Cl. 156-345.000.

Heuser, Gerhard: *See—*
Kiesow, Wilhelm; and Heuser, Gerhard, 3,701,196.

Hewlett-Packard Company: *See—*
Allen, Daniel E., 3,701,992.
Hammond, Donald L., 3,701,583.

Heyman Manufacturing Company: *See—*
Klumpp, Ferdinand, Jr., 3,701,505.
Hickner, George B.: *See—*
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., 3,701,568.
Hildebrand, David: *See—*
Hanna, Daniel C.; Ebeling, Jack F.; and Hildebrand, David, 3,701,356.
Hill, Benjamin T., Jr. Portable dual motion picture viewer. 3,701,596, Cl. 352-129.000.
Hilti Aktiengesellschaft: *See—*
Gstohl, Norbert; and Tauern, Dankmar, 3,701,879.
Hinden, Milton; and Porat, David, to Duro-Dyne Corporation. Sheet metal resistance welding pin. 3,701,878, Cl. 219-98.000.
Hintze, George, Jr. Fence mower. 3,701,238, Cl. 56-10.400.
Hinves, John R.: *See—*
Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M., 3,701,319.
Hirsbrunner, Hans G.: *See—*
Santala, Teuvo J.; and Hirsbrunner, Hans G., 3,701,654.
Hochstein, Roland: *See—*
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, 3,701,309.
Hoerner Waldorf Corporation: *See—*
Tull, Herbert G., III., 3,701,314.
Hoffmann-La Roche, Inc.: *See—*
Bartholini, Giuseppe, 3,701,829.
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,701,777.
Hogan, Harold E.: *See—*
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.
Hojo, Takeshi, to Kabushikikaisha Tokyo Keiki Seizosho. Gyroscopic instrument. 3,701,200, Cl. 33-321.000.
Holler, Howard V., to Shell Oil Company. Polyalkenylarene compositions. 3,701,762, Cl. 260-88.200.
Holley, John D.: *See—*
Crosby, Robert C.; and Holley, John D., 3,701,483.
Holliday, Robert G., to Xerox Corporation. Expandable cassette. 3,701,495, Cl. 242-197.000.
Holmes, M., Manufacturing & Equipment, Ltd.: *See—*
Johnson, David John, 3,701,615.
Holmes, Walter V.; and Renz, John F., to Computer Test Corporation. Peak and hold system. 3,701,909, Cl. 307-246.000.
Holmlund, Chester Eric: *See—*
Evans, Ralph Henry, Jr.; and Holmlund, Chester Eric, 3,701,787.
Holroyd, John, to National Research Development, Corporation. Applicator for liquids. 3,701,604, Cl. 401-7.000.
Holub, Fred F.; Berger, Abe; Hardman, Bruce B.; and Urkevich, Michael P., to General Electric Company. Aliphatically unsaturated amic acid and silylated amic acid. 3,701,795, Cl. 260-448.20n.
Honeywell, Inc.: *See—*
Ball, Thomas E.; and Anderson, Vincent R., 3,701,962.
Borelli, Ronald F.; and Garand, Donald J., 3,701,337.
Merhar, Donald M., 3,701,903.
Proulx, George G., 3,701,494.
Shneider, Harold M.; and Bower, Robert G., 3,701,524.
Honeywell Information Systems Inc.: *See—*
Olney, Frederick Darwin, Jr., 3,701,329.
Honeywell Information Systems Inc., mesne: *See—*
Olney, Frederick D., Jr., 3,701,838.
Hong, Sung Whee: *See—*
Schichman, Daniel; and Hong, Sung Whee, 3,701,702.
Honzik, Richard A., to Northrop Corporation. Electron beam line scanner with transverse binary control. 3,701,922, Cl. 315-10.000.
Hoover, John R. E.: *See—*
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.
Hope, Henry F.; and Hope, Stephen F. Film turnabout system. 3,701,526, Cl. 271-51.000.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 3,701,526.
Hopkins, Lionel G.: *See—*
Braun, Richard E.; and Hopkins, Lionel G., 3,701,859.
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., to Aldrich Chemical Company, Inc. Dibenzofuranyl-aminoalcohols. 3,701,786, Cl. 260-293.580.
Hornreich, Richard M.: *See—*
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.
Horowitz, Frederic; and Dede, Joseph B., Jr., to Georgia-Pacific Corporation. Modified urea-formaldehyde plywood adhesive. 3,701,743, Cl. 161-262.000.
Hotz, Hansruedi: *See—*
Gasser, Hermann; and Hotz, Hansruedi, 3,701,182.
Hough, Douglas Gordon: *See—*
Lasko, John Jaye; and Hough, Douglas Gordon, 3,701,563.
House, Bruce F., to Shelley Manufacturing Company. Operating apparatus for cart. 3,701,396, Cl. 188-21.000.
Houser, Philip H., to Mead Corporation, The. Drop generator with rotatable transducer. 3,701,476, Cl. 239-102.000.
Howard, Herbert H., to Marine Swimming Pool Equipment Co. Swimming pool skimmer with vacuum and sweeping controls. 3,701,427, Cl. 210-169.000.
Howson, W. H., Limited: *See—*
Moore, Brian Joseph; and Wakinson, Leonard James, 3,701,657.
Hoyt Corporation: *See—*
Schell, Orville Carroll, 3,701,429.
Huddleston, Erie George, to Oxford Industries, Inc. Garments with detectable marks. 3,701,165, Cl. 2-243.00r.
Hudgins, Wilbur E.: *See—*
Rossman, Joseph J.; and Hudgins, Wilbur E., 3,701,537.
Huebner, Werner: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.
Humlong, Robert F.: *See—*
Pawsat, Carlton P.; and Humlong, Robert F., 3,701,289.
Pawsat, Carlton P.; and Humlong, Robert F., 3,701,290.
Hutter, James Francis; and Kelly, Leonard, to Sphere Investments Limited. Method of and apparatus for sorting ores. 3,701,419, Cl. 209-111.800.
Hyde, Beverly F.: *See—*
Eskew, Mark F.; and Hyde, Beverly F., 3,702,004.
Hyster Company, mesne: *See—*
Best, Eric, 3,701,211.
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, to Nippon Kokan Kabushiki Kaisha. Method of treating steel. 3,701,693, Cl. 148-6.240.
Iijima, Tetsya: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
Ikegami, Shigeru: *See—*
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.
Ilford Limited: *See—*
Brand, Boris Peter, 3,701,661.
Hercock, Robert James; and Scrutton, Simon Lindsay, 3,701,731.
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.
Piccotti, Enzo, 3,701,662.
Pratt, John McDonald; and Whitear, Brian Ronald David, 3,701,660.
Illinois Tool Works, Inc.: *See—*
Pestka, John A.; and Erickson, Lloyd A., 3,701,302.
Wornke, Louis J.; and Pestka, John A., 3,701,373.
Imatt, Alex; and Brand, Derek. Elevated and concealed sprinkler system. 3,701,477, Cl. 239-276.000.
Imperial Chemical Industries Limited: *See—*
Entwisle, John Hubert; Lee, Denis; and Scrutton, Anthony, 3,701,724.
Greenway, John Michael, 3,701,246.
Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, 3,701,747.
Pratt, John McDonald; and Whitear, Brian Ronald David, 3,701,660.
Inbar, Dan: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.
Industrial Research Products, Inc.: *See—*
Carlson, Elmer Victor; and Killion, Mead Clifford, 3,701,865.
Ingalls, Daniel H. H., Jr., to United Data Services. Execution time analyzer. 3,702,005, Cl. 444-1.000.
Ingberman, Arthur K.: *See—*
Keogh, Michael J.; and Ingberman, Arthur K., 3,701,806.
Ingersoll Milling Machine Company: *See—*
Erkfritz, Donald S., 3,701,187.
Ingvorsen, Helmuth. Substrate-containing test container for the cultivation and inspection of micro organisms. 3,701,717, Cl. 195-139.000.
Institut de Recherches de la Siderurgie Francaise: *See—*
Vayssiere, Pierre; and Gomez-de-Bonilla, Juan Kindelan Y., 3,701,519.
Institutt for Atomenergi: *See—*
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International Business Machines Corporation: *See—*
Buslik, Walter S.; and Chou, Albert S., 3,701,610.
Carter, William C.; and Schneider, Peter R., 3,701,892.
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Doo, Ven Y.; Regh, Joseph; and Seto, David K., 3,701,659.
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Grossman, James Douglas; and Light, Kenneth K., 3,701,801.
International Paper Company: *See—*
Tuitt, Milton James, 3,701,415.
International Standard Electric Corporation: *See—*
Duval, Georges A.; and Hernandez, Francois, 3,701,853.
International Telephone and Telegraph Corporation: *See—*
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, 3,701,952.
Pate, James Ronald, 3,701,896.
Staller, Karel Jan, 3,701,995.
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Iriuchijima, Makoto: *See—*
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Isaacson, Boris. Method of and apparatus for treating a gas to remove foreign constituents therefrom. 3,701,235, Cl. 55-84.000.
Ishigami, Masaki: *See—*
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, 3,701,816.
Ishitobi, Masami: *See—*

Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
Ishiwari, Keishiro: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
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Miyamoto, Hiroshi; Isojima, Tsuyoshi; and Minowa, Osamu, 3,701,317.
Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 3,701,294, Cl. 74-866.000.
ITT Industries, Inc.: *See—*
Kreutter, Erich, 3,701,967.
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, to Canon Kabushiki Kaisha. Magnetic recording and reproducing apparatus with time control in cartridge. 3,701,860, Cl. 179-100.20z.
Iyer, Kishori S.: *See—*
Jones, Peter Hadley; and Iyer, Kishori S., 3,701,770.
Jaag, Herbert, to FA. Saba Schwarzwader Apparate-Bau-Anstalt August Schwer Sohne GmbH. Multisection bandpass filter from small signal circuits. 3,701,958, Cl. 333-70.00a.
Jachimek, Thomas P.; and Murrell, Thomas A., to Seeburg Corporation of Delaware, The. Selecting apparatus and method for phonograph. 3,701,970, Cl. 340-162.000.
Jack, David: *See—*
Hartley, David; Lunt, Lawrence Henry Charles; and Jack, David, 3,701,808.
Jackman, Dennis: *See—*
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Jackson, Hosea: *See—*
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Jackson, James C., to Phillips Petroleum Company. Method of heat sealing a peelable cover onto a container. 3,701,699, Cl. 156-69.000.
Jacob, Abraham H.; and Franke, John L., to General Instrument Corporation. Touch switch array panel. 3,701,869, Cl. 200-167.00r.
Jacobs, Richard Lee: *See—*
Saaty, Nabil Najib; and Jacobs, Richard Lee, 3,701,796.
Jacobson, Gunnar, to Aktiebolaget Bofors. Coupling device for pipes with circular cross sections. 3,701,550, Cl. 285-39.000.
Jager, Gerhard: *See—*
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Jamesbury Corporation: *See—*
Donnelly, James F.; Gee, Wendell P.; and Phipps, Nelson S., 3,701,286.
Jansen, Heinz: *See—*
Dismon, Peter; and Jansen, Heinz, 3,701,244.
Janssen, Hermann W.; and Mooring, James F., to Dresser Industries, Inc. Dual detector compensated density wall logging system. 3,701,902, Cl. 250-83.30r.
Japan Exlan Company, Limited: *See—*
Kuratani, Keijiro; and Fukushima, Keitaro, 3,701,820.
Japs, Archie B.: *See—*
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Jarman, Alonzo B.: *See—*
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Jefferson, Donald E.: *See—*
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Jenkins, Cecil: *See—*
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Jenkinson, Frank Edward, to Patented Devices (Proprietary) Limited. Location of faults in cables. 3,701,927, Cl. 317-16.000.
Jenoptik Jena, G.m.b.H.: *See—*
Trebitz, Doris; and Rumpoldin, Ernst, 3,701,588.
Zollner, Friedrich, 3,701,579.
Jensen, Douglas S., to Tonka Corporation. Toy vehicle cab assembly. 3,701,217, Cl. 46-222.000.
Jentsch, Dietrich; and Cleff, Herbert, to Dorken & Mankel KG. Door closer. 3,701,180, Cl. 16-55.000.
Johanson, John E., to Johanson Manufacturing Corporation. Variable disk capacitors. 3,701,932, Cl. 317-254.000.
Johanson Manufacturing Corporation: *See—*
Johanson, John E., 3,701,932.
Johansson, Hans Arne Valendier, to Mo och Domsjo Aktiebolag. Tray-like stackable container. 3,701,467, Cl. 229-31.00r.
Johns-Manville Corporation: *See—*
Donovan, Howard Gleason, 3,701,484.
Harker, Robert Ian, 3,701,828.
Johnson, David John, to Holmes, M., Manufacturing & Equipment, Ltd. Tire vulcanizing machine. 3,701,615, Cl. 425-23.000.
Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Vinyl resin and graded acrylic rubber-urethane-acrylate paint and painting process. 3,701,679, Cl. 117-93.310.
Johnson, Robert C. Deep hole drilling tool. 3,701,607, Cl. 408-59.000.
Johnson, Robert M.: *See—*
Axelson, Carl A.; Hinves, John R.; Mc Gann, Elton Y.; and Johnson, Robert M., 3,701,319.
Johnson, Sam H., Jr.: *See—*
Hagemeyer, Hugh J., Jr.; Hogan, Harold E.; and Johnson, Sam H., Jr., 3,701,760.
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., to Union Carbide Corporation. Plasticized non-aqueous methyl methacrylate polymer dispersion coating compositions. 3,701,746, Cl. 260-31.600.
Jones, Donald: *See—*
Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, 3,701,345.
Jones, Donald E.: *See—*
Wise, David F.; Tyndall, R. B.; and Jones, Donald E., 3,701,240.
Jones, John Earle, to International Business Machines Corporation. Method of representing data codes with equal width bar and device for reading same. 3,701,886, Cl. 235-61.11e.
Jones, Lawrence T.: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,701,216.
Jones, Peter Hadley; and Iyer, Kishori S., to Abbott Laboratories. 9,11-Cyclic boronate esters of the 6,9-hemiketal of erythromycin A. 3,701,770, Cl. 260-210.00e.
Jones, Reginald A.: *See—*
Clark, Wallace; Jones, Reginald A.; and Teeters, James L., 3,701,543.
Jordan, David B., to Fairchild Industries, Inc. Control apparatus having a finger operated dual motion control device. 3,701,288, Cl. 74-471.0xy.
Kabushiki Kaisha Nakamura Seisakusho: *See—*
Shirou, Mende, 3,701,295.
Kabushikikaisha Tokyo Keiki Seizosho: *See—*
Hojo, Takeshi, 3,701,200.
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of fixing a bearing cup in a Hooke S type universal joint. 3,701,189, Cl. 29-148.40a.
Kaiser Aluminum & Chemical Corporation: *See—*
Richter, Robert K.; and Shkredka, Jurek, 3,701,380.
Kaiser, Nils. Process and double-bridge arrangement for examination of rapid phase and amplitude changes of high-frequency waves caused by a medium under test. 3,701,943, Cl. 324-58.50r.
Kalkreuth, Hasso: *See—*
Binder, Wolfgang; Kalkreuth, Hasso; Glaser, Josef; and Fahrenkrug, Gunter, 3,701,470.
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Process for the non-electrolytic time metallizing of non-conductors. 3,701,675, Cl. 117-47.00a.
Kamimura, Haruo: *See—*
Nagai, Hiroshi; and Kamimura, Haruo, 3,701,272.
Kamo, Keizo: *See—*
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, 3,701,189.
Kamphausen, Dan, to Twentieth Century Products Corporation. Toilet flush valve assembly. 3,701,169, Cl. 4-57.000.
Kane, Ronald S.: *See—*
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Kaneko, Katsuzo: *See—*
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Kannenberg, Karl G.: *See—*
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Karobath, Ernst; and Pultizer, Wolfgang, to Telephone- und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sonne, Firma. Primary cells. 3,701,689, Cl. 136-135.00r.
Kasazima, Masao, to Alps Electric Co., ltd. Single control device for plural variable resistors. 3,701,963, Cl. 338-128.000.
Kasbohm, Joachim: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.
Katchka, Jay R. Flow control device with pressure regulation. 3,701,598, Cl. 137-599.000.
Katz, Leon: *See—*
Plue, Arnold F.; and Katz, Leon, 3,701,769.
Katzenfurt, Karl Clos; and Keiner, Fritz, to Leitz, Ernst, G.m.b.H. Shutter release mechanism in photographic cameras. 3,701,307, Cl. 95-10.0po.
Kawai, Shinji, to Aisin Seiki Kabushiki Kaisha. Braking force regulating assembly. 3,701,616, Cl. 303-22.00r.
Kawakami, Yukichika: *See—*
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Keiner, Fritz: *See—*
Katzenfurt, Karl Clos; and Keiner, Fritz, 3,701,307.
Keiner, Heinz, to Leitz, Ernst, G.m.b.H. Automatic lap dissolve for motion picture cameras. 3,701,594, Cl. 352-91.000.
Keiner, Heinz; and Schafer, Wilhelm, to Leitz, Ernst, G.m.b.H. Movie camera with cam-driven gripper. 3,701,597, Cl. 352-194.000.
Kelly, Donald: *See—*
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Kelly, Leonard: *See—*
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Kelly, Peter Bernard, to Formica Corporation. Decorative aluminum clad laminate. 3,701,711, Cl. 161-214.000.
Kemmerling, Arthur E. Choker-type collar. 3,701,339, Cl. 119-106.000.

Kendall, Lytton A., Jr., to Ohio State University, The. Wire drawing apparatus using vibratory-mechanical energy and curved transmission line. 3,701,271, Cl. 72-56.000.
Kenney, Harold E.: *See—*
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Kenwood Manufacturing (Woking) Limited: *See—*
Collie, Arthur A., 3,701,935.
Keogh, Michael J.; and Ingberman, Arthur K., to Union Carbide Corporation. Process for preparing a mixture of aromatic sulfones and aromatic sulfonyl chlorides. 3,701,806, Cl. 260-543.00r.
Kiener, Michael A.: *See—*
Hellar, Martin W.; and Kiener, Michael A., 3,701,673.
Kiesow, Wilhelm; and Heuser, Gerhard, to Uhde, Friedrich, GmbH. Method of making welded joints. 3,701,196, Cl. 29-494.000.
Killion, Mead Clifford: *See—*
Carlson, Elmer Victor; and Killion, Mead Clifford, 3,701,865.
Kim, Raymond W. H.: *See—*
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, 3,701,595.
Kimble, Floyd E.: *See—*
Kimble, Floyd E.; and Buchsieb, Richard H. (said Buchsieb assor. of), 3,701,485.
Kimble, Floyd E.; and Buchsieb, Richard H., said Buchsieb assor. of 4/5 to Kimble, Floyd E. Rotor construction for impact crusher. 3,701,485, Cl. 241-32.000.
Kimbrough, Laurence B., to RCA Corporation. Apparatus and method for applying a bead of sealing material to a sealing surface of a cathode-ray tube. 3,701,674, Cl. 117-43.000.
Kinetic Lighting: *See—*
Pennington, Davis W.; and Taylor, Ruth N., 3,701,897.
Kinghorn, John S.: *See—*
Wagoner, Robert B.; and Kinghorn, John S., 3,701,458.
Kinkel, Christian F., to American Can Company. Method and tool for forming a score. 3,701,330, Cl. 113-15.00a.
Kinney, Layton Frederick, to Armour Industrial Chemical Company, mesne. Polymerization of unsaturated compounds with salts of arylaliphatic carboxylic acids. 3,701,744, Cl. 260-23.7.
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, to RCA Corporation. Color compensating networks with range limitation, 3,701,842, Cl. 178-5.4he.
Klatyk, Knut: *See—*
Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, 3,701,678.
Klein, Schanzlin & Becker A.G.: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.
Klumpp, Ferdinand, Jr., to Heyman Manufacturing Company. Cable connector. 3,701,505, Cl. 248-56.000.
Knorr-Bremse GmbH: *See—*
Reitz, Reinhard, 3,701,570.
Knorre, Helmut: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,701,675.
Knoth, Walter H., Jr.; and Parshall, George W., to Du Pont de Nemours, E. I., and Company. Process for adipic acid manufacture. 3,701,804, Cl. 260-530.00r.
Kobayashi, Tatsuo; and Ota, Yoshiharu, to Minolta Camera Kabushiki Kaisha. Attachable test device for a flash device. 3,701,942, Cl. 324-51.000.
Kobusch, Earl W. Method of framing a picture and product thereof. 3,701,209, Cl. 40-152.100.
Koch, Carl, to Sinar AG Schaffhausen. Optical attachment for viewing a focusing screen of a camera. 3,701,582, Cl. 350-145.000.
Koehring Company: *See—*
Brown, Gaylor W.; Brushaber, Larry; and Brown, Melvin L., 3,701,708.
Kojima, Tadashi, to Konishiroku Photo Industry Co., Ltd. Image focusing lens system for copying machines. 3,701,587, Cl. 350-202.000.
Koltermann, Jadwiga: *See—*
Michejda, Oskar, 3,701,254.
Komagata, Hideki: *See—*
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Komline-Sanderson Engineering Corporation: *See—*
Schlegel, William L., 3,701,432.
Kondo, Asaji; Fujisaki, Hiroshi; Miyano, Shizuo; and Yazawa, Kenichiro, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 3,701,663, Cl. 96-86.000.
Kondo, Isamu. Stop ring. 3,701,303, Cl. 85-8.800.
Konig, Robert J.: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
Kojima, Tadashi, 3,701,587.
Konrad, Peter: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Koomey, Paul C.; De Vries, Douwe; and Gilmore, Samuel E. Connector. 3,701,549, Cl. 285-24.000.
Koot, Nicholas L., to Global Marine Inc. Core sampling apparatus. 3,701,387, Cl. 175-6.000.
Kormanik, Richard A., to Chainbelt, Rex, Inc. Two-stage aerobic and facultative waste treatment. 3,701,727, Cl. 210-14.000.
Kosaka, Genzo: *See—*
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Koshelev, A. Vladimir: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.
Kovic, Joseph J., to Packaging Industries, Inc. Apparatus and method for transporting articles. 3,701,297, Cl. 83-13.000.
Krakauer, Sidney; and Rosenberg, David, to Pall Corporation. Filter for use in the filtration of blood. 3,701,433, Cl. 210-436.000.
Kranys, Rudolph J.: *See—*
Heilman, Marlin S.; Kranys, Rudolph J.; and Jones, Donald, 3,701,345.
Krausser, Friedrich Johann, to Emerson Electric Co. Digital indicator for use with turnable electronic apparatus. 3,701,951, Cl. 325-455.000.
Kreutter, Erich, to ITT Industries, Inc. Female connector strip with interchangeably retained contact springs. 3,701,967, Cl. 339-217.00s.
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Kroekel, Charles Henry, to Rohm & Haas Company. Unsaturated polyester resinous compositions. 3,701,748, Cl. 260-40.000.
Kronig, Walter: *See—*
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Krumholz, Frank C., to Allis-Chalmers Manufacturing Company. Planter and method of preparing soil. 3,701,327, Cl. 111-81.000.
Kruthaupt, Charles H. Exercising apparatus. 3,701,529, Cl. 272-83.00r.
Kubo, Seitoku: *See—*
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Kuhi, Burkhart: *See—*
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Kuhlman Corporation: *See—*
Risk, Jerry, 3,701,926.
Kuhner, Gerhard; Sauer, Heinrich; Jager, Gerhard; and Dusing, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Apparatus and process for atomizing liquids, particularly carbon black raw materials. 3,701,480, Cl. 239-420.000.
Kuiken, Hendrik, to U.S. Philips Corporation. Toothed gearing. 3,701,287, Cl. 74-462.000.
Kulig, Constantine W., to Emhart Corporation. Glassware transfer mechanism. 3,701,407, Cl. 198-20.000.
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Kupsky, George A., to Burroughs Corporation. Display panel having a plurality of arrays of gas-filled cells. 3,701,917, Cl. 313-188.000.
Kuraray Co., Ltd.: *See—*
Sogi, Hidenobu, 3,701,701.
Kuratani, Keijiro; and Fukushima, Keitaro, to Japan Exlan Company, Limited. Process for high speed wet spinning of acrylonitrile fibers. 3,701,820, Cl. 264-182.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kurita, Jiro: *See—*
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, 3,701,816.
Kurland, Jerome J. Speed register. 3,701,471, Cl. 235-78.000.
Kuroi, Hisashi: *See—*
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Kuts, Mathew, to Goodrich, B. F., Company, The. Trimming machine. 3,701,186, Cl. 29-33.00a.
Kwanten, Ferdinand J. G.: *See—*
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Kyoikushuppan Co., Ltd.: *See—*
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Labana, Santokh S.: *See—*
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Labelle, Harold E., Jr.; and Little, William T., to Tyco Laboratories, Inc. Crystal growing apparatus. 3,701,636, Cl. 23-301.0sp.
Laboue, Bernard Andre, to Societe Industrielle Honeywell Bull. Support assembly for electrolytic deposition on contact element. 3,701,726, Cl. 204-297.00r.
Lado, William J., to Pettibone Corporation. System for automatically paying-out line proportional to extension of crane boom. 3,701,439, Cl. 212-55.000.
Laforest, Pierre: *See—*
Gagnon, Pierre; and Laforest, Pierre, 3,701,409.
Laguerre, Leon Ker, to Minigrip, Inc. Apparatus for assembling a slider on a fastener strip. 3,701,191, Cl. 29-207.5sl.
Laguerre, Leon Ker, to Minigrip, Inc. Mechanism for assembling sliders on interlockin fastener strips. 3,701,192, Cl. 29-207.5sl.
Lahme, Norbert: *See—*
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Lakshminarayanari, Krishnaiyer, to Dawe's Laboratories, Inc. Method for the production of glucose oxidase. 3,701,715, Cl. 195-65.000.
Lambert, Robert E.; Beal, Edward W.; and Bacewicz, Anthony J., to Connecticut International Corporation. Optical failsafe airplane landing guidance system. 3,701,969, Cl. 340-25.000.
Lambrecht, Ralph E., to Outboard Marine Corporation. Marine propeller with resilient hub structure. 3,701,611, Cl. 416-134.000.
Lamson & Sessions Co., The: *See—*
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Landmann, Helmut: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Lard, Edwin W., to Grace, W. R., & Co. Curable liquid polyene-polythiol compositions containing polyacrylicacid and derivatives thereof. 3,701,721, Cl. 204-159.160.
Larson, Leighton W. Bi-valved cast. 3,701,349, Cl. 128-82.100.
Lasko, John Jaye; and Hough, Douglas Gordon, to Hough, Douglas Gordon. Locking means for dump truck. 3,701,563, Cl. 298-38.000.
Laue, Eckhard, to DUAL Gebruder Steidinger. Photoelectric switching device for record players. 3,701,534, Cl. 274-1.001.
Laval, Claude C., Jr. Sewage solid separating device. 3,701,425, Cl. 210-136.000.
Lavalou, Michel: *See—*
Papee, Denis; and Lavalou, Michel, 3,701,718.
Lawrence, Frank D. Holders for containers. 3,701,416, Cl. 206-65.00c.
Lazarus, Stanley David; and Lofguist, Robert Alden, to Allied Chemical Corporation. Orthoester catalysis of polyester polycondensation. 3,701,757, Cl. 260-75.00r.
Le Vantine, Allan D., to TRW Inc. Means for making a multi-facet substantially paraboloidal collimator. 3,701,521, Cl. 269-48.000.
Leahy, James B.; and Pierson, Robert B., to Rex Chainbelt Inc. Roller flight conveyor chain. 3,701,413, Cl. 198-183.000.
Lease, Charles A.; Patinkin, Seymour H.; and Chlouper, Frank J., to Atlantic Richfield Company. Composition. 3,701,640, Cl. 44-66.000.
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 1/2 to Pullman Incorporated and 1/2 to Farbenfabriken Bayer Aktiengesellschaft. Continuous electrochemical process for reaction of compounds containing aliphatic unsaturation. 3,70,719, Cl. 204-131.000.
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Lee, Geun Sam. Continuous railway transportation system. 3,701,321, Cl. 104-148.0lm.
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., to Stauffer Chemical Company. Certain geranyl phenyl'ethers and their epoxides and their use in controlling insects. 3,701,759, Cl. 260-200.00h.
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Leonard, Louis H., Jr., to Carrier Corporation. Absorption refrigeration system. 3,701,265, Cl. 62-475.000.
Lesh, Ed. Sewage disposal systems. 3,701,428, Cl. 210-170.000.
Leslie, Robert J. Injector valve for granular materials. 3,701,479, Cl. 239-407.000.
Levinson, Melvin L. Heating and loading implement for microwave energy. 3,701,872, Cl. 219-10.550.
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Lewis, Hubert G. Biaxial optical tool presetter. 3,701,199, Cl. 33-185.00r.
Lewis, Karl R., to Colt Industries Operating Corporation, mesne. Revolver firing mechanism with single action and double action movement. 3,701,213, Cl. 42-65.000.
Lewis, Richard L.; and Goscenski, Edward J., Jr., to Bendix Corporation, The. Hydraulic brake booster with ball valves. 3,701,305, Cl. 91-457.000.
Lewis, Richard L.; Hickner, George B.; and Harokopus, William P., to Bendix Corporation, The. Adaptive braking system utilizing doppler radar. 3,701,568, Cl. 303-21.00p.
Lichfield, Ernest W., to United States of America, Navy, The. Pressure-subtracting hypsometric apparatus. 3,701,283, Cl. 73-401.000.
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Lock, Joseph H., to Mead Corporation, The. Panel interlocking means and method. 3,701,181, Cl. 24-204.000.
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Lozeau, Paul R.; and Sabonis, Charles J., to Mohawk Data Sciences Corporation. Skew control apparatus for feeding a wide-web ribbon in a high speed printer. 3,701,318, Cl. 101-336.000.
Lubarsky, Andre, Jr., to Telecommunications Technology, Inc. Digital phase lock loop circuit employing oscillator triggered at zero voltage crossing of input signal. 3,701,953, Cl. 328-155.000.
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Lucian, Arsene N. Liquid-state switching device. 3,701,868, Cl. 200-152.001.
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Martin, James. Ejection seat and mechanism therefor. 3,701,502, Cl. 244-122.0ad.
Martin, James. Parachute harness and release mechanism therefor. 3,701,503, Cl. 244-122.0ad.
Martin, Kenneth G.; and Seuferer, Paul A., to Collins Radio Company. Dine and coarse sychro servomotor control including a dual sin/coSine to DC Converter. 3,701,936, Cl. 318-595.000.
Martin, Myron D. Corn popper. 3,701,312, Cl. 99-238.600.
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McAuliffe, Gerald K., to North American Rockwell Corporation. System for phase locking on a virtual carrier. 3,701,948, Cl. 325-329.000.
McBride, Frank J.; and Lindsley, Carl Robert. Apparatus for instructing data system machine operators in the encoding of source documents. 3,701,975, Cl. 340-172.500.
McClenahan, William F. Plumbing installation jig. 3,701,172, Cl. 4-252.000.
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., to Taylor-Wilson Manufacturing Company. Pipe coating apparatus. 3,701,336, Cl. 118-423.000.
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McGinnis, Herbert E., to Goodrich, B. F., Company, The. Conveyor system. 3,701,411, Cl. 198-109.000.
McGuire, John S. Pipe joint system. 3,701,548, Cl. 285-81.000.
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Morgan, George W., to Sebsea Equipment Associates Limited, mesne. Multi-conduit riser with a flexible joint. 3,701,551, Cl. 285-137.00r.
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Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, 3,701,294.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, to Nissan Motor Company, Limited. Gear train arrangements. 3,701,293, Cl. 74-759.000.
Mori, Yoichi; Marumo, Nagayuki; Noburu, Fukazawa; and Ohie, Koichi, to Nissan Jidosha Kabushiki Kaisha. Automatic speed change device for vehicles. 3,701,623, Cl. 74-695.000.
Morishima, Yoshio, to Shibata, Ryoji and Shibata, Zenzaburo. Filing implement. 3,701,605, Cl. 402-58.000.
Moriwaki, Shokichi: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.
Morozumi, Manami: *See—*
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Morrison, Edwin A., to Culligan International Company. Water softener valve. 3,701,360, Cl. 137-454.600.
Morrison-Knudsen Company, Inc.: *See—*
Fearon, Joseph G.; and Battermann, George Monte Gilbert, 3,701,320.
Morse, Lewis D.; and Hammes, Paul A., to Merck & Co., Inc. Composition for improving bread making and texture. 3,701,668, Cl. 99-91.000.
Morse, Robert, Corporation, Limited: *See—*
Livesey, Richard Dennis, 3,701,991.
Morton-Norwich Products, Inc., mesne: *See—*
Winitz, Milton, 3,701,666.
Mosley, Sterling; and Jackson, Hosea. Alert-guard. 3,701,986, Cl. 340-279.000.
Moulard, Rene Andre Louis: *See—*
Neale, Michael John; and Gotch, Henry Edward, 3,701,475.
Mozier, Edna G. Restaurant arrangement including dining tables on simulated boats. 3,701,224, Cl. 52-27.000.
Munday, Theodore F.: *See—*
Radimer, Kenneth J.; and Munday, Theodore F., 3,701,825.
Mundy, Joseph L., to General Electric Company. High density four-transistor MOS content addressed memory. 3,701,980, Cl. 340-173.0am.
Murphy, Walter T.; and Japs, Archie B., to Goodrich, B. F., Company, The. Microporous coatings for textile fabrics from cements of polyurethane in dimethylformamide adjusted to pH range 3 to 6. 3,701,681, Cl. 117-161.0kp.
Murray, Robert Maclay, to AMP Domestic, Inc., mesne. Electrical connector. 3,701,966, Cl. 339-95.00r.
Murrell, Thomas A.: *See—*
Jachimek, Thomas P.; and Murrell, Thomas A., 3,701,970.
Myachev, Vladimir Fedorovich: *See—*
Chelnokov, Ivan Ivanovich; Garbuzov, Vladimir Mikhailovich; Koshelev, A. Vladimir; Levit, Georgy Mikhailovich; Maltsev, Albert Alexandrovich; and Myachev, Vladimir Fedorovich, 3,701,402.
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Nagai, Hiroshi; and Kamimura, Haruo, to Nippon Kokan Kabushiki Kaisha. Method of manufacturing seamless steel pipes. 3,701,272, Cl. 72-97.000.
Nakamura, Akira: *See—*
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Nakazona, Kiroshi: *See—*
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National Research Development, Corporation: *See—*

Holroyd, John, 3,701,604.
National Starch and Chemical Corporation, mesne: *See—*
Maska, Rudolf, 3,701,758.
Navara, Joseph. Chisel retractor tool. 3,701,348, Cl. 128-20.000.
Neale, Michael John; and Gotch, Henry Edward, to Moulard, Rene Andre Louis. Apparatus for treating human hair. 3,701,475, Cl. 239-11.000.
Neer, Harold M.; and Street, Vern A., to Phillips Petroleum Company. Peak detector and amplifier circuit. 3,701,908, Cl. 307-235.000.
Negra, John S.; and Warshaw, Abe, to Chemical Construction Corporation. Process and catalyst for treating combustion exhaust gas. 3,701,822, Cl. 423-213.000.
Neighbors, Ralph P., to Gulf Research & Development Company. Combating weeds with lower alkyl phenycarbamoyloxythiolcarbanilates. 3,701,646, Cl. 71-100.000.
Nelco Corporation: *See—*
Schindler, Edgar C.; and McEachron, John C., 3,701,451.
Newton, Alwin B., to Borg-Warner Corporation. Controls for multiple-phase ejector refrigeration systems. 3,701,264, Cl. 62-191.000.
Nicklin, Thomas, to Gas Council, The. Alkylation of phenols. 3,701,811, Cl. 260-621.00r.
Nikoden, Joseph, to Detroit Bullet Trap Corporation. Bullet deflection apparatus. 3,701,532, Cl. 273-102.400.
Nilsson, Bruno Yngve, to Boliden Aktiebolag. System for determining electric fields in geophysical prospecting work using synchronized clocks and direct coupled comparison means. 3,701,940, Cl. 324-1.000.
Nilsson, Vilgot Raymond, to Alfa-Laval AB. Centrifuge sludge control and method of operating same. 3,701,469, Cl. 233-20.00a.
Nippon Electric Company, Limited: *See—*
Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, 3,701,893.
Nippon Kogaku K. K.: *See—*
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Nippon Mining Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Nissan Jidosha Kabushiki Kaisha: *See—*
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Noburu, Fukazawa: *See—*
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Noda, Yutaka: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.
Nogami, Sumitaka; Ishigami, Masaki; and Kurita, Jiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Phosphorus-containing polymers and a process for the preparation thereof. 3,701,816, Cl. 260-927.000.
Nolan, Clyde E., Jr., to Brown & Root, Inc. Apparatus for providing off shore installation. 3,701,261, Cl. 61-72.300.
Nordal, Vegard: *See—*
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.
Noreus, Goteborg Sture Erik Olof: *See—*
Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, 3,701,712.
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North American Rockwell Corporation: *See—*
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Ervin, Guy, III, 3,701,685.
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Spencer, John Gordon, 3,701,955.
Northrop Corporation: *See—*
Goede, Walter F., 3,701,923.
Honzik, Richard A., 3,701,922.
Northsea, George A., to National Gypsum Company. Board handling apparatus. 3,701,408, Cl. 198-32.
Norton Company: *See—*
Wespi, George E., 3,701,220.
Zimmer, William F., Jr.; and Chew, Harvey L., 3,701,703.
Noshay, Allen: *See—*
Matzner, Markus; Noshay, Allen; and Barclay, Robert, Jr., 3,701,815.
Nozawa, Hideyo, to Nippon Kogaku K. K. Safety device for a normal-to-reverse rotation change-over switch in a movie camera. 3,701,593, Cl. 352-91.000.
Nozawa, Shunichi; Kuroi, Hisashi; Hatada, Masamichi; and Fukuyama, Shunsaku, to Blackwell Electronics Ind., Co., Ltd. Instantaneous starting system for discharge lamp. 3,701,925, Cl. 315-101.000.
Nupnau, Arthur E.: *See—*
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Nyegaard & Co. A/S: *See—*
Almen, Torsten H. O.; Haavaldsen, Johan; and Nordal, Vegard, 3,701,771.
Obermiller, Herbert C.: *See—*
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Oi, Hidesaburo: *See—*
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Oil Mop Inc.: *See—*
Rhodes, Herbert M., 3,701,258.
Okada, Shigetaka; and Tsuyama, Naoto, to Hayashibara Company. Processes for the production of oligosaccharide having fructose molecules on their reducing ends. 3,701,714, Cl. 195-31.00r.
Okada, Tomio; and Asai, Norio, to Sagami Chemical Research Center. Process for preparing diaminomaleonitrile. 3,701,797, Cl. 260-465.50r.
Okamoto, Atutoshi: *See—*
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Okamoto, Takeshi. Complementary time indicating mechanism for a clock. 3,701,252, Cl. 58-126.00r.
Okazaki, Nobuo: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsya, 3,701,293.
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Olivetti, Ing. C., & C., S.p.A.: *See—*
Brunialti, Bruno; and Zaffignani, Giovanni, 3,701,841.
Gassino, Teresio; and Olivei, Alfredo, 3,702,001.
Olney, Frederick D., Jr., to Honeywell Information Systems Inc., mesne. Circuit board. 3,701,838, Cl. 174-68.500.
Olney, Frederick Darwin, Jr., to Honeywell Information Systems Inc. Stitch control mechanisms and thread cutter. 3,701,329, Cl. 112-252.000.
Oltman, John E.: *See—*
Dermody, William J.; and Oltman, John E., 3,701,690.
Olympia Oyster Company: *See—*
McMillin, David C., 3,701,338.
Ono, Tsuneyoshi, to Xerox Corporation. Adjustable return mechanism for a watch. 3,701,250, Cl. 58-76.000.
Oouchi, Chiaki: *See—*
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O'Reilly, James J.: *See—*
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Organon Inc.: *See—*
Van Der Burg, Willem Jacob, 3,701,778.
Ormiston, Peter Thomas, to Solartron Electronic Group Limited, The. Weapon training systems. 3,701,206, Cl. 35-25.000.
Osborne, Brian G.: *See—*
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Ashina, Yoshiro; Oshima, Iwao; and Sekine, Kazunori, 3,701,761.
Osmond, Desmond Wilfred John; Wagstaff, Ian; and Waite, Frederick Andrew, to Imperial Chemical Industries Limited. Process for making a dispersion of polymer particles in an organic liquid. 3,701,747, Cl. 260-33.6.
Osuka, Tatsumi; and Oouchi, Chiaki, to Nippon Kokan Kabushiki Kaisha. Heat treatment method for ferrite pearlite steel. 3,701,694, Cl. 148-12.000.
Ota, Yoshiharu: *See—*
Kobayashi, Tatsuo; and Ota, Yoshiharu, 3,701,942.
Otten, Klaus Detlef: *See—*
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Outboard Marine Corporation: *See—*
Lambrecht, Ralph E., 3,701,611.
Overton Corporation: *See—*
Fathauer, George H., 3,701,390.
Overway, Roy E.; and Warrick, Frank G., to Sealed Power Corporation. Machine for forming piston ring spacer-expanders from strip stock. 3,701,275, Cl. 72-335.000.
Owens, Boone B.: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
Stream, Ralph M., 3,701,642.
Owens-Illinois, Inc.: *See—*
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Grier, John D., 3,701,184.
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Owsley, Herbert B.; and Bunn, Stuart E. Valve member. 3,701,342, Cl. 123-41.160.
Oxford Industries, Inc.: *See—*
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Huddleston, Erie George, 3,701,165.
Packaging Corporation of America: *See—*
Boyd, James W.; and Bessett, Clifford H., 3,701,447.
Packaging Industries, Inc.: *See—*
Kovic, Joseph J., 3,701,297.
Page, John T.: *See—*
Von Linsowe, Carl V., 3,701,358.
Page, Josiah B., to International Business Machines Corporation. Method for balancing the utilization of input/output devices. 3,702,006, Cl. 444-1.000.
Painley, Elmer F.: *See—*
McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., 3,701,277.
Pall Corporation: *See—*
Krakauer, Sidney; and Rosenberg, David, 3,701,433.
Pallos, Perenc M.: *See—*
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., 3,701,759.
Palma, Michael A.; and Minarick, Joseph W., to Curtiss-Wright Corporation. Torque overload sensing and indicating device for torque limiting brake mechanism. 3,701,401, Cl. 188-134.000.
Palmer Chemical and Equipment Company, Inc.: *See—*
Palmer, Harold C., 3,701,533.
Palmer, Harold C., to Palmer Chemical and Equipment Company, Inc. Material discharging dart. 3,701,533, Cl. 273-106.50r.
Papee, Denis; and Lavalou, Michel, to Produits Chimiques Pechiney-Saint-Gobain. High porous activated alumina and method. 3,701,718, Cl. 203-141.000.
Paris, Gerard Yvon: *See—*
Swett, Leo Ralph; and Paris, Gerard Yvon, 3,701,785.
Paris, Jean Denel; Maldy, Wissous; and Santa-Maria, Enrique, to Compagnie Generale d'Electricite. Power storage and release device superconductive. 3,701,906, Cl. 370-149.000.
Parker, David George, to Masson Scott Thrissell Engineering, Ltd. Article insertion devices. 3,701,232, Cl. 53-187.000.
Parker, John J.: *See—*
Morawski, London T.; and Parker, John J., 3,701,539.
Parker, John J.; Living Trust, The: *See—*
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Parshall, George W.: *See—*
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Pasquine, Arthur R.; Snow, Harland J.; and Wagner, Edward E. Cigarette perforating apparatus. 3,701,353, Cl. 131-23.00r.
Pate, James Ronald, to International Telephone and Telegraph Corporation. Luminaire for area lighting. 3,701,896, Cl. 240-25.000.
Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Wiedenmann, Hans, 3,701,921.
Patented Devices (Proprietary) Limited: *See—*
Jenkinson, Frank Edward, 3,701,927.
Patinkin, Seymour H.: *See—*
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Patrick, Charles T., Jr., to Bionetics, Inc. Medical electrode. 3,701,346, Cl. 128-2.06e.
Patterson, Roger Lee; and Ventresca, Mario, to Deere & Company. Land wheel control means. 3,701,385, Cl. 172-386.000.
Paulson, Erland G.; and Mandala, Charles G., to Eldon Industries, Inc. Buoyancy type weighing scale. 3,701,391, Cl. 177-207.000.
Pawsat, Carlton P.; and Humlong, Robert F., to Wald Manufacturing Company. Reflective pedal. 3,701,289, Cl. 74-594.400.
Pawsat, Carlton P.; and Humlong, Robert F. Reflective pedal. 3,701,290, Cl. 74-594.400.
Pelham, Joseph E.; and Osburn, Albert Ray, to Thiokol Chemical Corporation. Demand, solid-propellant gas generator. 3,701,256, Cl. 60-39.470.
Pennington, Davis W.; and Taylor, Ruth N., to Kinetic Lighting. Light fixture with changing light emission. 3,701,897, Cl. 240-78.0cf.
PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiquos: *See—*
Pillon, Daniel; and Trinh, Van Quy, 3,701,776.
Perley, Richmond, to United Aircraft Corporation. Transfer electrostatic printing system. 3,701,996, Cl. 346-74.0es.
Perry, Elmer W. Roof structure with stationary and moveable sheathed sections. 3,701,225, Cl. 52-71.000.
Persson, Mats Olof: *See—*
Andreasson, Per Arvid; and Persson, Mats Olof, 3,701,251.
Pestka, John A.: *See—*
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Pestka, John A.; and Erickson, Lloyd A., to Illinois Tool Works, Inc. Grommet type fastener. 3,701,302, Cl. 85-80.000.
Petersen, Tom Kastrup; and Henriksen, Neils Juul, to Danfoss A/S. Reverse voltage circuit for thyristors. 3,701,939, Cl. 321-45.00r.
Peterson, Adolph A., 111: *See—*
Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., 3,701,742.
Peterson, Earl A. Positive engagement clutch. 3,701,403, Cl. 192-38.000.
Peterson, John B., to Grace, W. R., & Co. Cold storage temperature monitor. 3,701,282, Cl. 73-358.000.
Petro, James: *See—*
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Cole, Ernest A.; Mayse, Weldon D.; and Watson, Frederick D., 3,701,723.
Pettibone Corporation: *See—*
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Pfizer Inc.: *See—*
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Phillips, Benjamin, to Universal Electric Company. Bearing structure. 3,701,574, Cl. 308-72.000.
Phillips Fibers Corporation: *See—*
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Phillips Petroleum Company: *See—*
Grimes, Monford D.; and Edmonds, James T., Jr., 3,701,665.
Jackson, James C., 3,701,699.
Neer, Harold M.; and Street, Vern A., 3,701,908.
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Photo Corporation of America: *See—*
Davis, Stuart C., 3,701,308.
Piccotti, Enzo, to Ilford Limited. Color photographic process using a bleach-fix solution containing a metal complex of a selenium compound. 3,701,662, Cl. 96-55.000.
Pierce, Chardo, Micronizing Company: *See—*
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Pierce, Chardo W., to Pierce, Chardo, Micronizing Company. Infrared micronizing cooker. 3,701,670, Cl. 99-235.00a.
Pierce, Harold C. Boxed product carloading. 3,701,324, Cl. 105-369.00b.
Pierson, Robert B.: *See—*
Leahy, James B.; and Pierson, Robert B., 3,701,413.
Pilipovich, Donald: *See—*
Lindahl, Charles B.; Schack, Carl J.; and Pilipovich, Donald, 3,701,630.
Piller, Bernhard; and Seitz, Karl, to Ciba-Geigy AG. Process for hardening light-sensitive photographic layers containing gelatine. 3,701,664, Cl. 96-111.000.
Pillon, Daniel; and Trinh, Van Quy, to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiquos. Sulfones derived from trichlorothiophene. 3,701,776, Cl. 260-247.100.
Pinnolis, Samuel; and Schmidt, Wilhelm E. A., to Western Electric Company, Incorporated. Apparatus for removing an article clamped in a workholder. 3,701,520, Cl. 269-13.000.
Pioneer Electronic Corporation: *See—*
Ando, Shizuo, 3,701,850.
Suzuki, Tsutomu, 3,701,861.
Pittaro, Richard J.: *See—*
Bantz, Walter J.; and Pittaro, Richard J., 3,701,941.
Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Preparation of fluorinated alcohols. 3,701,752, Cl. 260-6.50f.
Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. 1,4-Bis-(heptafluoroisopropoxy)-2,3-epoxy-butane. 3,701,792, Cl. 260-348.00r.
Placements Jean Paul Tanguay Ltee, mesne: *See—*
Tanguay, Jean Paul, 3,701,370.
Platt, John Robert; and Rohowetz, Stanley Edward, to American Can Company. Plastic ring pull easy open end. 3,701,453, Cl. 220-54.000.

Plue, Arnold F.; and Katz, Leon, to GAF Corporation. N-(p-aminophenyl) pyrrolidine containing monoazo dyes. 3,701,769, Cl. 260-468.00p.
Plumpe, William H., Jr.; and Weichselbaum, Theodore E., to Sherwood Medical Industries, Inc. Photometric read out and analyzing system. 3,701,601, Cl. 356-96.000.
Polaroid Corporation: *See—*
Erlichman, Irving, 3,701,304.
Rogers, Howard G., 3,701,656.
Pomatti, Renato C., to Texaco Inc. Reinforced polyethylene. 3,701,750, Cl. 260-41.000.
Porat, David: *See—*
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Porter, Curt C., to Merck & Co., Inc. Method of inhibiting dopamine β-hydroxylase. 3,701,831, Cl. 424-251.000.
Porter, Curt C., to Merck & Co., Inc. Method of inhibiting dopamine β hydroxylase. 3,701,832, Cl. 424-273.000.
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PPG Industries, Inc.: *See—*
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Frank, Robert G., 3,701,643.
Frank, Robert G., 3,701,644.
Prahacs, Steven; and Bhatia, Satya Pal, to Pulp and Paper Research Institute of Canada. Method of removing odoriferous sulphur compounds from vapours or gas streams. 3,701,824, Cl. 423-225.000.
Pratt, John McDonald; and Whitear, Brian Ronald David, to Imperial Chemical Industries, Limited and Ilford Limited. Photosensitive element containing photolabile cobalt or iron complex and the use thereof in color development. 3,701,660, Cl. 96-48.00r.
Priest, Melvin E., to Deere & Company. Spray type row crop thinner. 3,701,218, Cl. 47-1.430.
Prieur, Lucien Robert: *See—*
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Pringle, William L., to Pringle, William L., and Associates, Inc. Fuel tank assembly. 3,701,540, Cl. 280-5.00a.
Pringle, William L., and Associates, Inc.: *See—*
Pringle, William L., 3,701,540.
Prival, Guy; and Prieur, Lucien Robert, to Societe Industrielle Bull-General Electric (Societe Anonyme). Multichannel magnetic head unit of laminated construction. 3,701,858, Cl. 179-100.20c.
Procter & Gamble Company, The: *See—*
Heckert, David C., 3,701,722.
Procter, James F.; Mebus, Henry R.; De Young, Robert J.; and Coviello, Joseph, to Harris-Intertype Corporation. Press to binder transfer system. 3,701,176, Cl. 11-1.00r.
Produits Chimiques Pechiney-Saint-Gobain: *See—*
Papee, Denis; and Lavalou, Michel, 3,701,718.
Prontor Werk Gauthier, Alfred, GmbH: *See—*
Dietz, Ernst Hermann, 3,701,310.
Proulx, George G., to Honeywell Inc. Electropneumatically controlled servo for tape mechanism. 3,701,494, Cl. 242-184.000.
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, to Ciba-Geigy AG. Salicyloylamino-anthraquinone pigments. 3,701,791, Cl. 260-377.000.
Pullman Incorporated: *See—*
Carr, George W., 3,701,562.
Leduc, Joseph-Adrien M.; Lurie, Charles; Kronig, Walter; and Konrad, Peter, 3,701,719.
Pulp and Paper Research Institute of Canada: *See—*
Prahacs, Steven; and Bhatia, Satya Pal, 3,701,824.
Pultizer, Wolfgang: *See—*
Karobath, Ernst; and Pultizer, Wolfgang, 3,701,689.
Puyo, Andre; and Habib, Pierre Andre, to Coyne et Bellier, Bureau d'Ingenieurs Conseils, mesne. Reinforcing and prestressing cable. 3,701,554, Cl. 287-78.000.
Puzik, Otto V., to Willow Hill Industries, Inc. Vehicle axle spindle. 3,701,564, Cl. 301-131.000.
Quesnel, Guy; and Feugere, Francis. Rotatable drum device. 3,701,487, Cl. 241-178.000.
Radco Manufacturing Co., Inc.: *See—*
Adams, Harvey Keith, 3,701,436.
Radimer, Kenneth J.; and Munday, Theodore F., to FMC Corporation. Stabilization of hydrogen perioxide with ethylenediamine tetra (methylenephosphonic acid). 3,701,825, Cl. 423-273.0on.
Raffaelli, Milo L., Sr.: *See—*
Scholl, Carl W.; and Raffaelli, Milo L., Sr., 3,701,707.
Ragland, Frank Rowland, Jr., to RCA Corporation. Method of assembling and mounting an aperture mask in a mask-panel assembly of a cathode-ray tube using a full surface spacer. 3,701,193, Cl. 29-25.150.
Rakow, Marvin S.; and Konig, Robert J., to Cities Service Oil Company. Stabilized distillate hydrocarbon fuel oil compositions and additives therefor. 3,701,641, Cl. 44-73.000.
Ramirez, W. Fred Jr.; and Vestal, Charles R., to Marathon Oil Company. Algorithm to minimize iterative computation in a process for the analysis or design of a physical system. 3,702,003, Cl. 444-1.000.
Ramos-Rodriguez, Emiliano, to Commonwealth of Puerto Rico. for jointly producing furfural and levulinic acid from bagasse and other lignocellulosic materials. 3,701,789, Cl. 260-347.900.
Ramqvist, Lars Henry: *See—*
Svanstrom, Elis Kjell Ake; and Ramqvist, Lars Henry, 3,701,649.
Randolph, Arthur J., to Tuftamatic, Inc. Quilt and cushion construction and button therefor. 3,701,174, Cl. 5-356.000.
Rauhut, Michael McKay: *See—*
Roberts, Bernard George; and Rauhut, Michael McKay, 3,701,738.
Rausch, John J.; and Van Thyne, Ray J., to Surface Technology Corporation. Columbium base alloy. 3,701,655, Cl. 75-174.000.
Ray, Elbert L.: *See—*
Brown, Barry M.; and Ray, Elbert L., 3,701,431.
Ray, Robert A.: *See—*
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., 3,701,716.
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Burns, Joseph Richard, 3,701,984.
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Kimbrough, Laurence B., 3,701,674.
Kirkwood, Loren Robert; Cochran, Larry Allen; and Altmanshofer, Robert Dale, 3,701,842.
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Stern, Herman Abraham, 3,701,368.
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Rederiaktiebolaget Nordstjernan: *See—*
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Reese, Anthony L., to Dresser Industries, Inc. Position indicating butterfly valve. 3,701,362, Cl. 137-556.300.
Reeves, Wilson A.: *See—*
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Regh, Joseph: *See—*
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Rehn, Karl-Heinz; and Otten, Klaus Detlef, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Automatic switch-off assembly for feed spools in textile. 3,701,247, Cl. 57-81.000.
Reichmann, Horst; and Rottmann, Gernot, to Vaillant, Joh, KG. Burner plate, in particular for forced-draft oilgas or gas burners. 3,701,481, Cl. 239-553.500.
Reitz, Gertrud: *See—*
Reitz, Reinhard, 3,701,570.
Reitz, Reinhard; deceased (by Reitz, Gertrud; legal representative), to Knorr-Bremse GmbH. Single release air brake for railroad vehicles. 3,701,570, Cl. 303-70.000.
Renz, John F.: *See—*
Holmes, Walter V.; and Renz, John F., 3,701,909.
Revitz, Martin; and Thompson, James M., to International Business Machines Corporation. Gold tantalum-nitrogen high conductivity metallurgy. 3,701,931, Cl. 317-234.00r.
Rex Chainbelt Inc.: *See—*
Leahy, James B.; and Pierson, Robert B., 3,701,413.
Reynolds, Howard Lloyd, to Bell TElephone Laboratories, Incorporated. First idle line pickup service. 3,701,855, Cl. 179-18.0es.
Rhodes, Herbert M., to Oil Mop Inc. Buoyant pulley locating and anchoring device for an oil mop. 3,701,258, Cl. 61-1.00f.
Richardson Company, The: *See—*
Testolin, Reno J., 3,701,222.
Richardson, Dean E.; Peterson, Adolph A., 111; and Brady, Harold P., Jr., to Union Carbide Corporation. Vinyl chloride polymers and method of preparing same. 3,701,742, Cl. 260-17.00r.
Richardson, Edwin A.; and Barnes, Herbert W., to Shell Oil Company. Fracture propping. 3,701,383, Cl. 166-281.000.
Richardson, Hugh H., to General Electric Company. Method and apparatus for making electrical connections. 3,701,877, Cl. 219-97.000.
Richmond, Abraham W., to Aeroquip Corporation. Control system for diesel locomotive. 3,701,556, Cl. 290-40.00b.
Richmond, Ernest L.: *See—*
Beroff, Howard; and Richmond, Ernest L., 3,701,725.
Richter, Hans H., to Leesona Corporation. Friction twisting unit. 3,701,245, Cl. 57-34.00r.
Richter, Robert H., to Magnavox Company, The. Packaging structure. 3,701,465, Cl. 229-14.00c.
Richter, Robert K.; and Shkredka, Jurek, to Kaiser Aluminum & Chemical Corporation. Cladding mold system. 3,701,380, Cl. 164-334.000.
Ricke, Hans-Benno: *See—*
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Riggs & Lambard Inc.: *See—*
Wilcox, Harold R., 3,701,269.
Riley, Howard B. Needle. 3,701,462, Cl. 223-102.000.
Ringkamp, Joseph B. Fluid dispensing device. 3,701,575, Cl. 312-45.000.
Risk, Jerry, to Kuhlman Corporation. Internal fuse for transformer. 3,701,926, Cl. 317-15.000.
Rively, Clair M.; and Petro, James, to Westinghouse Electric Corporation. Method for sculpturing an indicia or decorative design in the surface of an article with a beam of corpuscular energy. 3,701,880, Cl. 219t121.0eb.
Ro-Search Incorporated: *See—*
Auberry, Horace R.; and Liebscher, Anton, 3,701,273.
Roberts, Bernard George; and Rauhut, Michael McKay. Chemiluminescent improvements. 3,701,738, Cl. 252-188.300.
Roberts, Donald L.: *See—*
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Robertson, H. H., Company: *See—*
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Rockstroh, Horst: *See—*
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Rockwell Manufacturing Company: *See—*
McMahon, Richard A.; Lee, Winston F. Z.; and Painley, Elmer F., 3,701,277.
Roesch, Christian, to Sutton Engineering Company. Roller leveler with adjustable flattening section. 3,701,274, Cl. 72-165.000.
Rogers, Howard G., to Polaroid Corporation. Photographic products and processes for color diffusion transfer. 3,701,656, Cl. 96-300.000.
Rohm & Haas Company: *See—*
Kroekel, Charles Henry, 3,701,748.
Rohm and Haas Company: *See—*
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Rombusch, Konrad: *See—*
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Rose, James E.: *See—*
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Rose, James S.: *See—*
Carleton, Peter S.; Farrissey, William J., Jr.; and Rose, James S., 3,701,756.
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Rossler, Hubert; Halpaap, Herbert; and Klatyk, Knut, to Merck Patent Gesellschaft mit beschrankter Haftung. Film for layer chromatography. 3,701,678, Cl. 117-69.000.
Rossman, Joseph J.; and Hudgins, Wilbur E. Split transfer sleeve. 3,701,537, Cl. 279-1.00a.
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, to Veb Kombinat Luft-und Kaltetechnik. Method and apparatus for welding metal sheets. 3,701,881, Cl. 19-123.000.
Rotsky, Bernard A.; and Dunne, Gilbert M., Jr., to Gourdine Systems, Inc. Modularized electrostatic precipitator. 3,701,236, Cl. 55-114.000.
Rottmann, Gernot: *See—*
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Roulliay, Roger: *See—*
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Routson, Willis G.; and Caldwell, Albert L., to Dow Chemical Company, The. Method and composition for controlling flow through subterranean formations. 3,701,384, Cl. 166-292.000.
Roys, George P.: *See—*
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Rubinstein, Harvey: *See—*
Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.
Rubio, Alfred M., to Columbia Broadcasting System, Inc. Kettledrum and tuning mechanism therefor. 3,701,834, Cl. 84-419.000.
Rudolff, Hermann: *See—*
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Ruff, David L.; and Siddiqui, Nadeem U., to Grefco, Inc. Bituminous fibrous building product and method of preparing same. 3,701,672, Cl. 106-282.000.
Rumpoldin, Ernst: *See—*
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Runge, Peter Klaus, to Bell Telephone Laboratories, Incorporated. Tuned voltage variable birefringent acousto-optical filter. 3,701,584, Cl. 350-149.000.
Rushton, Brian M.: *See—*
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Ruska Instrument Corporation: *See—*
Worden, Raymond D., 3,701,634.
Russell, Frank W., to Norris Industries, Inc. Method of keying a padlock. 3,701,195, Cl. 29-434.000.
Russell, Lewis Keith, to Signetics Corporation. Learning circuit. 3,701,974, Cl. 340-172.500.
Ryan, Jerry E. Method for simulating the reduction of gravity. 3,701,528, Cl. 272-6.000.
Saaty, Nabil Najib; and Jacobs, Richard Lee, to Upjohn Company, The. Storage stable methylenebis (phenyl isocyanate) compositions. 3,701,796, Cl. 260-453.0sp.
Sabbah, Benjamin: *See—*
Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, 3,701,901.
Sabonis, Charles J.: *See—*
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Sachnik, Norman H. Foam generating nozzle. 3,701,482, Cl. 239-590.300.
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Saito, Kazuhisa: *See—*
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Saji, Yasuo: *See—*
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.
Sakamoto, Tsuneo, to Kyoikushuppan Co., Ltd. Flexible, soft, foam resin assembling process. 3,701,214, Cl. 46-25.000.
Samuelson, Hans Olof; and Noreus, Goteborg Sture Erik Olof, to Mo och Domsjo Aktiebolag. Process for treating cellulosic materials with alkali and oxygen in the presence of complex magnesium salts. 3,701,712, Cl. 162-65.000.
Sand, Karl: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.
Sanjo, Sadao; Yamada Hiroshi; and Gono, Yoshio. Textile-forwarding units with pressure rollers operable jointly and individually. 3,701,608, Cl. 226-155.000.
Sanner, Gary L.; and Hebeler, Charles B., to Burroughs Corporation. Terminal message monitor. 3,701,971, Cl. 340-172.500.
Santa-Maria, Enrique: *See—*
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Santala, Teuvo J.; and Hirsbrunner, Hans G., to Texas Instruments, Incorporated. Silver-base alloy for making electrical contracts. 3,701,654, Cl. 75-173.000.
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Sassmannshausen, Guenter; and Lahme, Norbert, to Accumulatorenwerk Hoppecke Carl Zoellner & Sohn KG. Appliance for the catalytic reconstitution of hydrogen and oxygen gases generated by electric accumulators into water. 3,701,691, Cl. 136-179.000.
Satake, Toshihiko. Husker seperator. 3,701,420, Cl. 209-135.000.
Sato, Takayoshi, kabushikikaisha COPAL. Compensating circuit for voltage and temperature in a transistor circuit. 3,701,910, Cl. 307-255.000.
Sato, Yoshihiro: *See—*
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Sayigh, Adnan A. R.; and Ulrich, Henri, to Upjohn Company, The. 4-Azidosulfonyl phthalic anhydride. 3,701,788, Cl. 260-346.300.
Scelze, Robert G. Airport design. 3,701,501, Cl. 244-114.00r.
Schack, Carl J.: *See—*
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Schafer, Hans, to Siemens Aktiengesellschaft. Apparatus for inductive longitudinal or helical seam welding of tubular metallic workpieces. 3,701,871, Cl. 219-8.200.
Schafer, James A.: *See—*
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Schafer, Wilhelm: *See—*
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Schanck, James L., to Babcock & Wilcox Company, The. Stainless steel. 3,701,653, Cl. 75-124.000.
Schell, Orville Carroll, to Hoyt Corporation. Skimmer for removing floating matter from a body of liquid. 3,701,429, Cl. 210-242.000.
Schichman, Daniel; and Hong, Sung Whee, to Uniroyal, Inc. Method of free curing rubber. 3,701,702, Cl. 156-244.000.
Schiminski, Herbert: *See—*
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Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Molded electrical junction box. 3,701,451, Cl. 220-27.000.
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Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Screw extruder for processing thermoplastic materials. 3,701,512, Cl. 259-191.000.
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Schmidt, Hans Joachim; and Voeste, Theodor, to Metallgesellschaft AG. Method of carrying out liquid gas reactions. 3,701,793, Cl. 260-409.000.

Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, to Bell Telephone Laboratories, Incorporated. Information retrieval strategy. 3,702,010, Cl. 444-1.000.

Schmidt, Volker; and Schmidt, Erich A. Material cutting apparatus having a selector. 3,701,300, Cl. 83-80.000.

Schmidt, Wilhelm E. A.: *See—*
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Schoeller, Alexander. Short bottle crates made of plastic. 3,701,449, Cl. 220-21.000.

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Scholl, Carl W.; and Raffaelli, Milo L., Sr., to Scholl, Inc. Apparatus for making heat-sealed articles. 3,701,707, Cl. 156-380.000.

Scholl, Inc.: *See—*
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Schouten, Gerrit Hilbertus; Bohlmeijer, Nicolaas; Van Der Steeg, Hendrik; and Van der Maarel, Marinus Cornelis, to U.S. Philips Corporation. Three-dimensional storage device comprising magnetic memory elements. 3,701,981, Cl. 340-174.0ac.

Schrage, Albert: *See—*
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Schramm, Charles H.; Schrage, Albert; and Readio, Philip D., to Dart Industries, Inc. Fiber reinforced modified polyolefin compositions. 3,701,751, Cl. 260-41.00a.

Schubert, Dale W.; and Ezekiel, Frederick D., to Wright, Barry, Corporation. Active fluid isolation system. 3,701,499, Cl. 244-17.270.

Schuler, Manfred; and Yamamoto, Tatsumi. Scuba valve. 3,701,363, Cl. 137-599.000.

Schultz, William H.: *See—*
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Schulz, Horst, to Fichtel & Sachs AG. Multiple speed hub with automatic gear change and manual override. 3,701,292, Cl. 74-752.00e.

Schulze, Gerhard. Fan motor bearing assembly. 3,701,912, Cl. 310-90.000.

Schwerdhoefer, Hans Joachim, to Fichtel & Sachs AG. Gear shifting mechanism for a bicycle transmission. 3,701,333, Cl. 116-124.00r.

Schwerdhofer, Hans Joachim; and Wolf, Gerhard Max, to Fichtel & Sachs AG. Bicycle and gear shifting arrangement for the same. 3,701,546, Cl. 280-289.000.

Science Spectrum Inc.: *See—*
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Scott, Henry H. Crop culture with 1h-1,2,4-triazoles. 3,701,645, Cl. 71-1.000.

Scrutton, Anthony: *See—*
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Seeburg Corporation of Delaware, The: *See—*
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Segawa, Masahiro; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polyvinylidene fluoride flavanthron composition. 3,701,749, Cl. 260-41.00c.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Narrowband filter. 3,701,950, Cl. 325-470.000.

Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., to Rohm and Haas Company. 1,2,4-4h-Triazole derivatives. 3,701,784, Cl. 260-308.00r.

Seismograph Service Corporation: *See—*
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Seitz, Karl: *See—*
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Sekine, Kazunori: *See—*
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Shibata, Ryoji: *See—*
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Shibata, Zenzaburo: *See—*
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Shields, Walter A. Conveying vials in a straight path. 3,701,410, Cl. 198-106.000.

Shilling, Wilbur L., to Crown Zellerbach Corporation. Process of alkylation with base of metal oxide. 3,701,814, Cl. 260-475.0sc.

Shimaya, Kazunori; Kaneko, Katsuzo; Fujio, Yoshinori; and Sato, Yoshihiro, to Nippon Electric Company, Limited. Data converter for a computer system. 3,701,893, Cl. 235-154.000.

Shimizu, Masanao: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.

Shirane, Yasuhior; and Yamada, Junzo, to Sumitomo Metal Industries, Limited. Roll dampening. 3,701,397, Cl. 188-33.000.

Shirou, Mende, to Kabushiki Kaisha Nakamura Seisakusho. Torque wrench. 3,701,295, Cl. 81-52.400.

Shively, Richard Robert, to Bell Telephone Laboratories, Incorporated. Floating point arithmetic unit for a parallel processing computer. 3,701,976, Cl. 340-172.500.

Shkredka, Jurek: *See—*
Richter, Robert K.; and Shkredka, Jurek, 3,701,380.

Shneider, Harold M.; and Bower, Robert G., to Honeywell Inc. Modularized card reader. 3,701,524, Cl. 271-10.000.

Shutt, Paul B.; and Barnes, Charles M., to Bendix Corporation, The. Combination proportioning and bypass valve. 3,701,567, Cl. 303-6.00c.

Siddall, John B.: *See—*
Zurfluh, Rene C.; and Siddall, John B., 3,701,800.

Siddiqui, Nadeem U.: *See—*
Ruff, David L.; and Siddiqui, Nadeem U., 3,701,672.

Sieber, Johannes Helmut, to Bowe, Bohler & Weber KG Maschinenfabrik. Process for the chemical treatment of textile goods. 3,701,625, Cl. 8-94.000.

Siegele, James E.: *See—*
Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., 3,701,177.

Siemens Aktiengesellschaft: *See—*
Schafer, Hans, 3,701,871.

Signetics Corporation: *See—*
Russell, Lewis Keith, 3,701,974.

Simmons, William W., to TRW Inc. Method of an apparatus for generating ultra-short time-duration laser pulses. 3,701,956, Cl. 331-94.500.

Simpkins, Frederick W., to Alden Research Foundation. Facsimile recorder and moving electrode therefor. 3,701,997, Cl. 346-74.00e.

Sinar AG Schaffhausen: *See—*
Koch, Carl, 3,701,582.

SKF Industrial Trading and Development Company NV: *See—*
Hallerback, Stig Lennart, 3,701,911.

Skil Corporation: *See—*
Gronke, Ronald E.; and Schultz, William H., 3,701,369.

Sluijter, Robert Joahnnes; and Van Gerwen, Petrus Josephus, to U.S. Philips Corporation. Transmission system and associated transmitters and receivers for the transmission of synchronous pulse signals. 3,701,852, Cl. 179-15.0fs.

Sluijters, Robert: *See—*
Appeldoorn, Jacques W. J.; and Sluijters, Robert, 3,701,619.

Smith, Donald J., to Smith-Schreyer & Assoc., Inc. Shield connector for multi-strand shielded cables. 3,701,839, Cl. 174-78.000.

Smith, Donald O.; Harte, Kenneth J.; and Cohen, Mitchell S., to Micro-Bit Corporation. Slow write-fast read memory method and system. 3,701,979, Cl. 340-173.00r.

Smith, George E. Temporary vehicle markings. 3,701,210, Cl. 40-129.00c.

Smith, George Elwood: *See—*
Amelio, Gilbert Frank; and Smith, George Elwood, 3,701,914.

Smith, George Wallace, Jr.: *See—*
Schmidt, Robert Benjamin; Smith, George Wallace, Jr.; and Walford, Robert Bernard, 3,702,010.

Smith, Harry B.: *See—*
Calhoon, Charles D., Sr.; Goetz, Louis P.; and Smith, Harry B., 3,701,989.

Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., to California R&D Center. Wheel apparatus and rack and pinion launcher enabling repeated strokes and having automatic ejector. 3,701,216, Cl. 46-206.000.

Smith Kline & French Laboratories: *See—*
Berges, David A.; Dunn, George L.; and Hoover, John R. E., 3,701,775.

Smith, Raymond Leonard, Jr., to C & M Manufacturing Company, Inc. Horizontally turnable material handling forks. 3,701,446, Cl. 214-730.000.

Smith, Terrill D., to Monsanto Company. Functional fluid compositions. 3,701,732, Cl. 252-78.000.

Smith, Terrill D., to Monsanto Company. Functional fluid compositions. 3,701,733, Cl. 252-78.000.

Smith-Schreyer & Assoc., Inc.: *See—*
Smith, Donald J., 3,701,839.

Smuck, Harry A. Smoke eliminator. 3,701,237, Cl. 55-230.000.

Snapp, Thomas Carter, Jr.; Blood, Alden E.; and Hagemeyer, Hugh John, Jr., to Eastman Kodak Company. Synthesis of unsaturated compounds. 3,701,798, Cl. 260-465.900.

Snow, Harland J.: *See—*
Pasquine, Arthur R.; Snow, Harland J.; and Wagner, Edward E., 3,701,353.

Snow, James A. Apparatus for cutting strips from vehicle tires. 3,701,296, Cl. 82-54.000.

Sobajima, Masaru, to Nippon Kogaku K.K. Device for quenching and cooling a specimen in a high-temperature microscopic viewing system. 3,701,580, Cl. 350-90.000.

Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert A. G., 3,701,542.

Societe Anonyme DBA: *See—*
Toulier, Pierre, 3,701,285.

Societe Anonyme STOP: *See—*
Guidicelli, Charles, 3,701,614.
Guidicelli, Charles, 3,701,934.

Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Gabano, Jean-Paul; and Gerbier, Gerard Marcel, 3,701,688.

Societe Industrielle Bull-General Electric (Societe Anonyme): *See—*
Prival, Guy; and Prieur, Lucien Robert, 3,701,858.

Societe Industrielle Honeywell Bull: *See—*
Laboue, Bernard Andre, 3,701,726.

Sogi, Hidenobu, to Kuraray Co., Ltd. Fibrous sheet material and method of producing the same. 3,701,701, Cl. 156-229.000.

Sogner, Dominik, to Chemiefaser Lenzing Akhengesellschaft Lenzing. Measuring installation. 3,701,281, Cl. 73-351.000.

Soileau, Hosea J. Water level control device. 3,701,260, Cl. 61-12.000.

Solartron Electronic Group Limited, The: *See—*
Ormiston, Peter Thomas, 3,701,206.

Soloway, Samuel B.; and Morales, Juan G., to Shell Oil Company. O-(Halovinyl) phosphorodichloridothioates. 3,701,818, Cl. 260-957.000.

Solvay & Cie: *See—*
Delbouille, Andre, 3,701,766.

Sorenson, Richard W., to Carling Electric, Inc. Switch case construction. 3,701,870, Cl. 200-168.00c.

Sortex Company of North America, Inc.: *See—*
Chapman, Robert R., 3,701,418.

Soward, Dallas V.: *See—*
Harris, Carl R.; Banks, Robert B.; and Soward, Dallas V., 3,701,279.

Sparton Corporation: *See—*
Widenhofer, James W., 3,701,175.

Spencer, John Gordon, to Northern Electric Company, Limited. Delay equalizing amplifier having bridge circuit input. 3,701,955, Cl. 330-21.000.

Spetz, Mary Ann. Pre-constructed buttonhole and method of incorporating same in a garment. 3,701,167, Cl. 2-266.000.

Sphere Investments Limited: *See—*
Hutter, James Francis; and Kelly, Leonard, 3,701,419.

Spiegelberg, Hans: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,701,777.

Spiik, Karl E. G. Turntable type display rack assembly. 3,701,437, Cl. 211-133.000.

Sprinkle, Leland W., to United States of America, Interior. Static stopper. 3,701,905, Cl. 307-133.000.

Sprout, Waldron & Company, Inc.: *See—*
Fisher, Chester Donald, 3,701,488.

Staarmann, Herbert; Brieke, Hans-Gunter; and Gerdes, Dirk, to Friedrich Uhde GmbH. Pipe connector for the interior of reaction vessels. 3,701,635, Cl. 23-289.000.

Stackhouse, Robert H. Rain gun case. 3,701,371, Cl. 150-52.00r.

Staller, Karel Jan, to International Telephone and Telegraph Corporation. Printing hammer arrangement. 3,701,995, Cl. 346-74.0mp.

Stamicarbon N.V.: *See—*
De Rooij, Abraham H.; and Kwanten, Ferdinand J. G., 3,701,809.

Standley, Wendell E., to Container Corporation of America. Mechanism for forming gusset folds in container wrappers. 3,701,231, Cl. 53-48.000.

Stankovich, Frank M. Motorcycle front end assembly. 3,701,544, Cl. 280-276.000.

Stanley, Delmar O., to TRW Inc. Valve seat inserts. 3,701,652, Cl. 75-126.00a.

Stapfer, Christian H., to Cincinnati Milacron Chemicals Inc. Alpha-oximino ketone anti-skinning agents. 3,701,781, Cl. 260-22.00a.

Stapleton, Richard Joseph, to Bell Telephone Laboratories, Incorporated. Concentrator arrangement for wideband switching. 3,701,849, Cl. 179-200.0tv.

Star Industries, Inc.: *See—*
Meyer, Leonard; Ashton, Walter G.; and Siegele, James E., 3,701,177.

Stark, John, Jr.; and Carpenter, David Harry, to RCA Corporation. Hue control circuit for a color television receiver. 3,701,845, Cl. 178-5.4he.

Starrett, William Roswell, to Bell Telephone Laboratories, Incorporated. Switching voice and data communications simultaneously over a common path. 3,701,851, Cl. 179-15.0by.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 3,701,799.
Lee, Hwalin; Pallos, Perenc M.; and Menn, Juluis J., 3,701,759.

Stech, Peter: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,701,535.

Steinhauser, Incorporated: *See—*
Steinhauser, Wilbur L., 3,701,468.

Steinhauser, Wilbur L., to Steinhauser, Incorporated. Mailing envelope and message piece/label combination. 3,701,468, Cl. 229-70.000.

Stenmark, Donald G., to Esso Research and Engineering Company. Production of aromatics. 3,701,813, Cl. 260-668.00a.

Stern, Herman Abraham, to RCA Corporation. Fabrication of liquid crystal devices. 3,701,368, Cl. 141-1.000.

Sternal, Lambert S., to Timesavers, Inc., mesne. Apparatus for effecting superior sanding. 3,701,219, Cl. 51-140.000.

Sternau, Martin M., to Grace, W. R., & Co. Apparatus for making a closure on a container. 3,701,234, Cl. 53-329.000.

Sternberg, James C.: *See—*
Deuringer, Rudolf; Ray, Robert A.; and Sternberg, James C., 3,701,716.

Stesiliver Control Royalties: *See—*
Davis, Ward B., 3,701,633.

Stewart, William K., to Seco-Dyn, Inc. Fast acting valve. 3,701,599, Cl. 137-625.480.

Stinton, Frederick M. Splicing system and jack for stressing concrete. 3,701,509, Cl. 254-29.00a.

Stocker, Winfried: *See—*
Rother, Wolfgang; Mordig, Eberhard; Wenzel, Erwin; Cronert, Dieter; Sand, Karl; Kasbohm, Joachim; Henicke, Heinz; Landmann, Helmut; and Stocker, Winfried, 3,701,881.

Stone, Hilton F., Jr., to United Aircraft Corporation. Apparatus for and the method of compacting an irregularly shaped article. 3,701,190, Cl. 29-156.800.

Stover, Arthur H. Oil absorbent slag compositions. 3,701,734, Cl. 252-88.000.

Strawser, Terry M.: *See—*
Fischer, Alfred; and Strawser, Terry M., 3,701,729.

Stream, Ralph M., to Owens-Corning Fiberglas Corporation. Apparatus for making continuous glass fibers. 3,701,642, Cl. 65-11.00w.

Streater Industries, Inc.: *See—*
Fenwick, Jay G., 3,701,325.

Street, Vern A.: *See—*
Neer, Harold M.; and Street, Vern A., 3,701,908.

Stroman, Larry J., to Daniel Industries, Inc. Method and apparatus for determining the supercompressibility factor of natural gas. 3,701,280, Cl. 73-194.00m.

Stuck, Carl G.; and Wilkes, Arthur L., to American Data Systems Inc. Data terminal system. 3,701,856, Cl. 179-26.00a.

Stumpf, Gunter. Apparatus for forming stacks of cloth webs which are cut to length. 3,701,299, Cl. 83-72.000.

Suga, Hiroyoshi: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Ishiwari, Keishiro; Yotsui, Yoshikazu; Yamashita, Tadao; Edamitsu, Masayuki; and Moriwaki, Shokichi, 3,701,720.

Suhami, Albert; Sabbah, Benjamin; Inbar, Dan; Yarom, Artzi; and Ben-Zeev, Dan, to Elscint Ltd. Phototubes for scintillation detector. 3,701,901, Cl. 250-71.50r.

Sumitomo Metal Industries, Limited: *See—*
Shirane, Yasuhior; and Yamada, Junzo, 3,701,397.

Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, to Toyo Boseki Kabushiki Kaisha. Production of elastomers. 3,701,755, Cl. 260-75.00r.

Surface Technology Corporation: *See—*
Rausch, John J.; and Van Thyne, Ray J., 3,701,655.

Sutton Engineering Company: *See—*
Roesch, Christian, 3,701,274.

Suzuki, Akio: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,701,677.

Suzuki, Morio: *See—*
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, 3,701,772.

Suzuki, Tsutomu, to Pioneer Electronic Corporation. Magnetic head using the hall effect for reveberation. 3,701,861, Cl. 170-100.2ch.

Svanstrom, Elis Kjell Ake; and Ramqvist, Lars Henry, to Rederiaktiebolaget Nordstjernan. Process for the production of high melting metals. 3,701,649, Cl. 75-84.500.

Swain, Roger S.: *See—*
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., 3,701,945.

Sweetser, Donald Arthur, to Thomas Industries Inc. Combined lighting and ventilating fixture. 3,701,895, Cl. 240-9.00a.

Swett, Leo Ralph; and Paris, Gerard Yvon, to Abbott Laboratories. 1,3-Dimethyl-4,5-di (p-substituted phenyl)-6H-pyrrolo [2,3-c] pyrazoles. 3,701,785, Cl. 260-310.00r.

Sylvania Electric Products, Inc.: *See—*

Franklin, Dennis M.; Hornreich, Richard M.; and Rubinstein, Harvey, 3,701,983.
Sylvester, Peter A.; and Wojciechowski, Walter J., to Harris-Intertype Corporation. Ink and dampener form roll interruption for cleaning purposes. 3,701,316, Cl. 101-148.000.
Systems Capital Corporation: *See—*
Connell, Joseph A.; and Baranyi, Anthony J., 3,701,262.
Tada, Tetsuya. Hand sprayer. 3,701,478, Cl. 239-333.000.
Taguchi, Kazuo; and Tsuchida, Hiroaki, to Tokyo Shibaura Electric Company , Ltd. Three-phase bus system and interconnecting member. 3,701,929, Cl. 317-103.000.
Takahashi, Mitsuo: *See—*
Asui, Hiroshi; and Takahashi, Mitsuo, 3,701,647.
Takase, Yoshiyuki: *See—*
Minami, Shinsaku; Matsumoto, Jun-Ichi; Shimizu, Masanao; and Takase, Yoshiyuki, 3,701,773.
Takeda Chemical Industries, Ltd.: *See—*
Heki, Takao; Yasumatsu, Katsuharu; Sawada, Koshichi; and Funakoshi, Yoshiro, 3,701,667.
Taller, Robert A.: *See—*
Johnson, William R.; Sevy, William R.; Weigel, James E.; and Taller, Robert A., 3,701,746.
Tami, Joseph, Jr. Electrolytic transistor with collector in base-emitter current path. 3,701,930, Cl. 317-230.000.
Tamura, Kiminori; Morozumi, Manami; Noda, Yutaka; Suzuki, Morio; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Production of nucleotide anhydrides. 3,701,772, Cl. 260-211.50r.
Tanaka, Kazumitsu: *See—*
Miyauchi, Sakae; Tanaka, Kazumitsu; and Goto, Nobuo, 3,701,847.
Tanguay, Jean Paul, to Placements Jean Paul Tanguay Ltee, mesne. Multiple saw tree slasher. 3,701,370, Cl. 143-46.000.
Tarducci, Tullio; Gatti, Alvaro; and Buffa, Antonio. Folding bags to be used in shopping having collapsible wheels, and capable to be reduced to a hand-bag. 3,701,541, Cl. 280-37.000.
Tatchell, Keith Reid: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,701,680.
Tateno, Harunobu: *See—*
Usuda, Shogo; Mizusasa , Susumu; and Tateno, Harunobu, 3,701,857.
Tauern, Dankmar: *See—*
Gstohl, Norbert; and Tauern, Dankmar, 3,701,879.
Taylor, Frank. Decorative wall facing. 3,701,228, Cl. 52-309.000.
Taylor, Richard R.; and MacKay, Frank A., to United States of America, Navy. Oscillograph recorder trace blanker apparatus. 3,702,002, Cl. 346-109.000.
Taylor, Ruth N.: *See—*
Pennington, Davis W.; and Taylor, Ruth N., 3,701,897.
Taylor-Wilson Manufacturing Company: *See—*
McConnell, William M.; Bradley, William H.; Chappel, Howard E.; Whitfield, George P.; and Carey, Raymond L., 3,701,336.
Technequip Limited: *See—*
Maxwell, John Russell, 3,701,421.
Teeters, James L.: *See—*
Clark, Wallace; Jones, Reginald A.; and Teeters, James L., 3,701,543.
Teitelbaum, Bernard R., to Bendix Corporation, The. Annular slot proportional jet amplifier for a fluidic sound generator. 3,701,334, Cl. 116-137.000.
Tekology Corporation: *See—*
Blengsli, Helmer L., 3,701,671.
Tektronix, Inc.: *See—*
Geerling, Leonardus Johannes, 3,701,993.
Telecommunications Technology, Inc.: *See—*
Lubarsky, Andre, Jr., 3,701,953.
Telephone- und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sonne, Firma: *See—*
Karobath, Ernst; and Pultizer, Wolfgang, 3,701,689.
Teller, William M., to American Hydrotherm Corporation. Heating system. 3,701,473, Cl. 237-8.00r.
Temkin, Kenneth N.: *See—*
Wall, Donald G.; and Temkin, Kenneth N., 3,701,618.
Tenneco Chemicals Inc.: *See—*
Fischer, Alfred; and Strawser, Terry M., 3,701,729.
Terasaka, Masaji: *See—*
Iijima, Hiroshi; Terasaka, Masaji; and Tokita, Osamu, 3,701,693.
Terminal Testing Laboratories, Inc.,: *See—*
Appleman, Milo Don, 3,701,728.
Tesi, Giorgio: *See—*
McQuistion, William E.; and Tesi, Giorgio, 3,701,573.
Testolin, Reno J., to Richardson Company, The. Continuous sheet graining process. 3,701,222, Cl. 51-317.000.
Texaco Inc.: *See—*
Pomatti, Renato C., 3,701,750.
Texas Instruments Incorporated: *See—*
Eskew, Mark F.; and Hyde, Beverly F., 3,702,004.
Gartman, William W.; Evans, James G.; and Allen, Harold A., 3,701,682.
Santala, Teuvo J.; and Hirsbrunner, Hans G., 3,701,654.
Theobald, Stuart J. Rescue and safety vest. 3,701,395, Cl. 182-3.000.
Thermo-Couple Products Company, Inc.: *See—*
Finney, Philip F., 3,701,884.
Thermo-Sentinel Corporation: *See—*
Walls, Henry M.; Sayers, George M.; and Walls, Noel B., 3,701,344.
Thiele, Heinz; Becker, Dietrich; Hochstein, Roland; Rockstroh, Horst; and Lieckfeldt, Hans, to Zeiss Ikon Aktiengesellschaft. Photographic camera with motorized focal length and distance adjustment of the objective. 3,701,309, Cl. 95-45.000.
Thiokol Chemical Corporation: *See—*
Askins, Robert E.; and Roys, George P., 3,701,278.
Pelham, Joseph E.; and Osburn, Albert Ray, 3,701,256.
Thiokol Chemical Corporation, mesne: *See—*
Von Der Heide, Elmer J., 3,701,700.
Thomas Industries Inc.: *See—*
Sweetser, Donald Arthur, 3,701,895.
Thomas, Jerald F.: *See—*
Brown, Carl A.; and Thomas, Jerald F., 3,701,424.
Thompson, James M.: *See—*
Revitz, Martin; and Thompson, James M., 3,701,931.
Thomsen, Jack W.; Nupnau, Arthur E.; Kim, Raymond W. H.; and Cherniavskyj, Jaroslav, to Bell & Howell Company. Motion picture projector. 3,701,595, Cl. 352-124.000.
Thornton, Roger Lea: *See—*
Settlage, Paul Herman; and Thornton, Roger Lea, 3,701,745.
Thorp, Richard Conrad, to American Can Company. Easy opening container closure. 3,701,454, Cl. 220-54.000.
Thuler, Oscar, to Canrad Precision Industries, Inc. Device for illuminating flat carriers with markings. 3,701,900, Cl. 250-71.00r.
Tilp, George E., to Adams Industries. Electric heater for coffee percolator. 3,701,883, Cl. 219-436.000.
Timesavers, Inc., mesne: *See—*
Sternal, Lambert S., 3,701,219.
Tirelli, Paolo; and Saporiti, Elio, to ATOS Apparecchiature Oleodinamiche S.r.l. Hydraulic solenoid valve directly operated with adjustable over-ride speed. 3,701,366, Cl. 137-625.650.
Todd, Percy E. Method and apparatus for conveying dust. 3,701,566, Cl. 302-66.000.
Toho Beslon Co., Ltd.: *See—*
Yoshida, Masatoshi; Saji, Yasuo; Saito, Kazuhisa; and Ikegami, Shigeru, 3,701,819.
Tokita, Osamu: *See—*
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Tokyo Shibaura Electric Company , Ltd.: *See—*
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Tomita, Chikayoshi: *See—*
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Tonka Corporation: *See—*
Jensen, Douglas S., 3,701,217.
Tonn, Erwin W. Sealing gasket for a container. 3,701,452, Cl. 220-46.00r.
Toulier, Pierre, to Societe Anonyme DBA. Gearing starter. 3,701,285, Cl. 74-6.000.
Townsend, Curtis J. Manual fruit harvester. 3,701,242, Cl. 56-328.00r.
Toyo Boseki Kabushiki Kaisha: *See—*
Sumoto, Misao; Komagata, Hideki; Matsumoto, Hiroshi; and Furusawa, Hironobu, 3,701,755.
Toyo Kogyo Co., Ltd.: *See—*
Gomada, Nobuyasu; and Kosaka, Genzo, 3,701,874.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,701,569.
Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, 3,701,294.
Kadono, Yoji; Ogasawara, Yukio; and Kamo, Keizo, 3,701,189.
Trebitz, Doris; and Rumpoldin, Ernst, to Jenoptik Jena, G.m.b.H. Reproduction lens of high image-resolving power with an image-side numerical aperture of 0.5 comprising three doublets and three single lens elements. 3,701,588, Cl. 350-215.000.
Treptow, Heinz; Frank, Benno; and Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Air heating box for textile machines. 3,701,268, Cl. 68-5.00d.
Trinh, Van Quy: *See—*
Pillon, Daniel; and Trinh, Van Quy, 3,701,776.
Trown, Patrick Willoughby: *See—*
Miller, Philip Andrew; and Trown, Patrick Willoughby, 3,701,774.
TRW Inc.: *See—*
Le Vantine, Allan D., 3,701,521.
Simmons, William W., 3,701,956.
Stanley, Delmar O., 3,701,652.
Wuerker, Ralph F., 3,701,957.
Tsuchida, Hiroaki: *See—*
Taguchi, Kazuo; and Tsuchida, Hiroaki, 3,701,929.
Tsujimoto, Kazumi N., to Air Reduction Company, Incorporated. Electron beam gun. 3,701,915, Cl. 313-82.000.
Tsuyama, Naoto: *See—*
Okada, Shigetaka; and Tsuyama, Naoto, 3,701,714.
Tuftamatic, Inc.: *See—*
Randolph, Arthur J., 3,701,174.
Tuitt, Milton James, to International Paper Company. Web-lock carton. 3,701,415, Cl. 206-45.140.
Tull, Herbert G., III., to Hoerner Waldorf Corporation. Strapping apparatus. 3,701,314, Cl. 100-28.000.
Turkish, Disney, to Cutler-Hammer Inc. Wideband frequency scanning radio receiver. 3,701,949, Cl. 325-332.000.
Turner, Arthur Raymond. Building frame brackets. 3,701,613, Cl. 287-189.36c.

Tuttle, Eleanor Porter: *See—*
Tuttle, Fordyce E., 3,701,990.
Tuttle, Fordyce E.; deceased (by Tuttle, Eleanor Porter; executrix). Fiber optic display device. 3,701,990, Cl. 346-1.000.
Tuttle, Ralph L. Oil skimmer. 3,701,430, Cl. 210-242.000.
Tuwa-Plastik Dr. Herbert Warnecke Erzeugunt Von Kunststoffartikeln: *See—*
Warnecke, Herbert, 3,701,455.
Twentieth Century Products Corporation: *See—*
Kamphausen, Dan, 3,701,169.
Tyco Laboratories, Inc.: *See—*
Labelle, Harold E., Jr.; and Little, William T., 3,701,636.
Tyndall, R. B.: *See—*
Wise, David F.; Tyndall, R. B.; and Jones, Donald E., 3,701,240.
Tzakis, George J.: *See—*
Hepner, Charles F.; and Tzakis, George J., 3,701,843.
Ueshima, Kumao; Fukada, Kenzo; Yoshinaga, Masakazu; and Nakazona, Kiroshi, to Nippon Steel Corporation. Apparatus for supporting a blast furnace. 3,701,516, Cl. 266-25.000.
Uhde, Friedrich, GmbH: *See—*
Kiesow, Wilhelm; and Heuser, Gerhard, 3,701,196.
Ulrich, Henri: *See—*
Sayigh, Adnan A. R.; and Ulrich, Henri, 3,701,788.
U.M.C. Industries, Inc.: *See—*
Erickson, Gustav F., 3,701,523.
Unican Security Systems, Ltd.: *See—*
Belzberg, Samuel I., 3,701,450.
Union Carbide Corporation: *See—*
Hargitay, Bartholomew, 3,701,764.
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Putterman, Joseph C. Pole connector for shelving, racks, and the like. 224,996, 10–31–72, Cl. D8—236.
Richmond, Colin B. III, to Oneida Ltd. Spoon or similar article. 225,029, 10–31–72, Cl. D54—12.
Roebuck, Malcolm J., to First National Bank in Peru. Machine for assembling buttons. 225,031, 10–31–72, Cl. D55—1.
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Sayre, Van Vechten, H. R. Kirkpatrick, and H. Zelenko, to International Flavors & Fragrances Inc. Toothpaste tube. 224,998, 10–31–72, Cl. D9—194.
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78TF	3,701,756
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85.5R	3,701,761
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	3,701,766
97.5	3,701,767
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152	3,701,769
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211R	3,701,771
211.5R	3,701,772
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932	3,701,817
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255	3,701,910
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45	3,701,575
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	3,701,977
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173R	3,701,978
	3,701,979
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174MA	3,701,982
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74MP	3,701,995
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92	3,702,000
109	3,702,002
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456	3,701,827
466	3,701,630
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D 3—	9	224,993			225,002			225,011	D54—	12	225,020			225,028	D64—	11	225,036
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3,701,987	3,701,825	3,701,753	3,701,497	3,701,428	3,701,382
29 : 3,701,209	3,701,868	3,701,764	3,701,500	3,701,463	3,701,383
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3,701,830	3,701,924	3,701,878	3,701,652	3,701,653	3,701,670
30 : 3,701,320	3,701,932	3,701,920	3,701,673	3,701,674	3,701,682
3,701,876	3,701,937	3,701,931	3,701,681	3,701,705	3,701,723
33 : 3,701,578	3,701,950	3,701,948	3,701,698	3,701,748	3,701,742
34 : 3,701,198	3,701,976	3,701,949	3,701,700	3,701,758	49 : 3,701,208
3,701,202	3,701,984	3,701,951	3,701,706	3,701,775	3,701,256
3,701,210	3,701,995	3,701,980	3,701,711	3,701,781	51 : 3,701,353
3,701,225	3,702,008	3,702,000	3,701,722	3,701,784	3,701,490
3,701,229	3,702,011	3,702,006	3,701,734	3,701,802	3,701,631
3,701,236	36 : 3,701,166	3,702,007	3,701,754	3,701,804	3,701,757
3,701,259	3,701,173	3,701,205	3,701,849	3,701,828	3,701,889
3,701,298	3,701,194	37 : Re.27,516	3,701,890	3,701,831	53 : 3,701,279
3,701,341	3,701,205	3,701,207	3,701,998	3,701,832	3,701,338
3,701,368	3,701,234	3,701,224	40 : 3,701,371	3,701,837	3,701,451
3,701,381	3,701,265	3,701,240	3,701,435	3,701,840	3,701,814
3,701,401	3,701,274	3,701,248	3,701,528	3,701,866	55 : 3,701,168
3,701,414	3,701,288	3,701,273	3,701,665	3,701,891	3,701,282
3,701,417	3,701,318	3,701,308	3,701,908	3,701,938	3,701,301
3,701,432	3,701,359	3,701,520	3,701,968	3,701,961	3,701,327
3,701,456	3,701,367	3,701,886	3,702,009	3,701,966	3,701,373
3,701,484	3,701,410	39 : Re.27,518	41 : 3,701,356	43 : 3,701,789	3,701,692
3,701,517	3,701,431	3,701,186	3,701,732	44 : 3,701,245	3,701,727
3,701,641	3,701,433	3,701,203	3,701,733	57 : 3,701,314	3,701,786
3,701,668	3,701,439		3,701,743	59 : 3,701,928	3,701,790
3,701,690	3,701,473				

DESIGN PATENTS

5 : 225,008	25 : 224,997	34 : 224,998	225,020	225,028	38 : 225,000
6 : 224,999	225,001	225,018	225,021	225,029	39 : 224,996
225,005	225,002	225,037	225,022	225,030	42 : 225,014
225,007	225,003	225,039	225,023	225,032	225,033
13 : 225,006	26 : 225,040	36 : 224,992	225,024	225,035	48 : 224,993
225,042	225,041	225,012	225,025	225,036	224,995
17 : 225,031	29 : 225,010	225,013	225,026	225,038	49 : 225,015
19 : 224,994	225,011	225,016	225,027		

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BELL & HOWELL